



Definite Plan for the Lower Klamath Project

Appendix P – Estimate of Project Costs

June 2018



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Prepared for:

Klamath River Renewal Corporation

Prepared by:

KRRC Technical Representative:

AECOM Technical Services, Inc.
300 Lakeside Drive, Suite 400
Oakland, California 94612

CDM Smith
1755 Creekside Oaks Drive, Suite 200
Sacramento, California 95833

River Design Group
311 SW Jefferson Avenue
Corvallis, Oregon 97333

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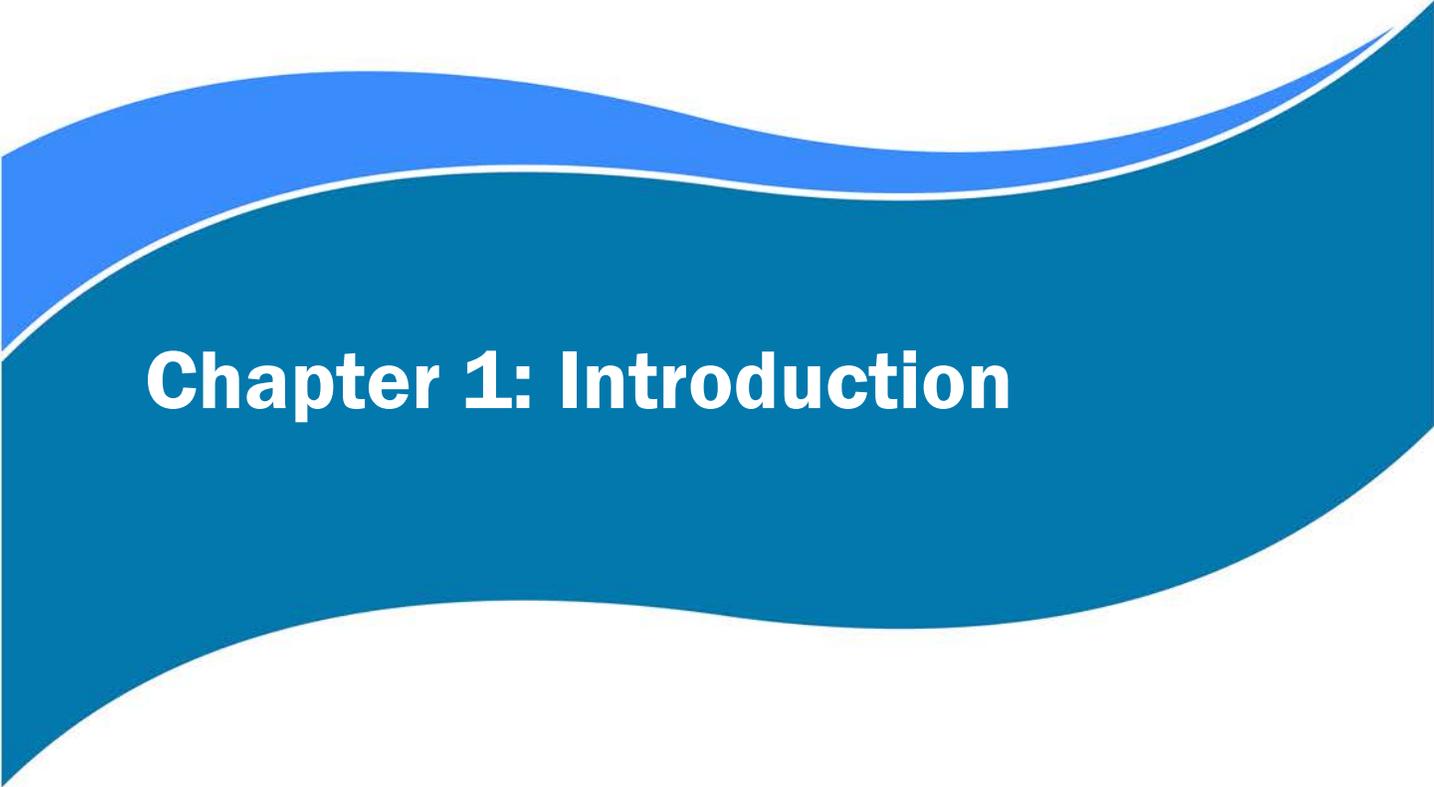
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Acronyms and Abbreviations

BOC	Board of Consultants
CA	California
CADD	Computer Aided Design and Drafting
CEQA	California Environmental Quality Act
DB	Design-Builder
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
ENR	Engineering News Record
FERC	Federal Energy Regulatory Commission
FY	Fiscal Year
G&A	General and Administrative
GHG	Green House Gas
GIS	Geographic Information System
KRRC	Klamath River Renewal Corporation
Lbs	pounds
LVPP	Looting and Vandalism Protection Program

m ³	cubic meters
MPE	Most Probable Estimate
MPH	Maximum Probable High
MPL	Minimum Probable Low
MW	Mega Watt
MWh	Mega Watt hour
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OC	On center
ODC	Other Direct Cost
OR	Oregon
PDB	Progressive Design-Builder
PLS	Pure live seed
RPS	Renewal Portfolio Standard
SF	Square Feet
SWRCB	State Water Resource Control Board
TCP	Traditional Cultural Properties
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey

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Chapter 1: Introduction

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1. INTRODUCTION

This report documents the estimated project cost for the Lower Klamath Project (Project), which in addition to construction cost, includes costs for management, administration and legal support, environmental compliance and permitting, engineering design, procurement, mitigation and monitoring before, during and following construction, as well as construction management. The estimated project cost is based on the preliminary design presented in the Definite Plan for the Lower Klamath Project (KRRC 2018) (the Definite Plan), in addition to ongoing coordination and consultation with Project stakeholders and regulatory agencies.

1.1 Report Objectives

Section 7.2 of the Klamath Hydroelectric Settlement Agreement, as amended (KHSA) sets forth required elements of the Definite Plan, which include:

- A detailed estimate of the actual or foreseeable costs associated with: the physical performance of Facilities Removal¹ consistent with the Detailed Plan; each of the tasks associated with the performance of the [Klamath River Renewal Corporation (KRRC)]’s obligations as stated in Section 7.1; seeking and securing permits and other authorizations; and insurance, performance bond, or similar measures, as set forth in Appendix L to this Settlement;
- The [KRRC]’s analysis demonstrating that the total cost of Facilities Removal is likely to be less than the State Cost Cap, which is the total of Customer Contribution and California Bond Funding as specified in Section 4²; and
- A detailed statement of the estimated costs of Facilities Removal.

This report addresses these elements of the KHSA and documents both the engineer’s opinion of construction cost, based on the project design elements and construction plan summary provided in the Definite Plan, and the total estimated project implementation cost. In addition to reporting the estimated project costs, Most Probable Low (MPL) and Most Probable High (MPH) estimates were prepared using a Monte Carlo analysis to account for uncertainties associated with the estimated project costs and identified project risks. The MPL and MPH estimates represent more optimistic and more conservative opinions of project costs, respectively.

¹ “Facilities Removal” is defined in the KHSA as the “physical removal of all or part of each of the Facilities to achieve at a minimum a free-flowing condition and volitional fish passage, site remediation and restoration, including previously inundated lands, measures to avoid or minimize adverse downstream impacts, and all associated permitting for such actions.”

² The State Cost cap is \$450,000.000.

1.2 Project Scope

The proposed Project (also referred to as the Full Removal alternative) is described in Sections 1, 4, 5, 6 and 7 of the Definite Plan. The Project involves the physical removal of each of the four dam developments (Iron Gate, Copco No. 1 and No. 2, and J.C. Boyle) to achieve at a minimum a free-flowing condition and volitional fish passage, site remediation and restoration, including previously inundated lands, measures to avoid or minimize adverse downstream impacts, and all associated permitting for such actions. Table 1-1 provides an overview of the four dam developments. The Project is located on the Klamath River approximately 200 miles from the Pacific Ocean in the states of Oregon and California (see Figure 1-1). The Definite Plan also describes a “Partial Removal” alternative which is presented for purposes of environmental review. Under the Partial Removal alternative, the objectives of free-flowing river conditions and volitional fish passage will be achieved, but portions of each dam will remain in place, along with ancillary buildings and structures such as powerhouses, foundations, tunnels, and pipes. Section 5 of the Definite Plan discusses the details of infrastructure to remain under this alternative.

Prior to removal of the dams and hydropower facilities, KRRC’s contractor will draw down the water surface elevation in each reservoir as low as possible to facilitate accumulated sediment evacuation and to create a dry work area for development removal activities. A number of infrastructure modifications will be necessary to facilitate drawdown. In general, drawdown will begin on January 1 of the drawdown year, and will extend through mid-March of the same year.

Table 1-1 Existing Dam Development Overview

Dam (State)	Description	Year Built	Capacity/Average Annual Production	Max. Surface Area of Reservoir (acres)	Reservoir Storage Capacity (acre-feet)	Dam Type	Dam Height/Length (feet)
J.C. Boyle (OR)	Reservoir, dam, fish ladder, power canal, two turbines and powerhouse	1958	98 MW/ 329,000 MWh	420	3,495 (total) 1,724 (active)	Earthfill	68/ 693
Copco No. 1 (CA)	Reservoir, dam, two turbines and powerhouse	1918	20 MW/ 106,000 MWh	1,000	46,900 (total) 6,235(active)	Concrete	126/ 415
Copco No. 2 (CA)	Division dam, small impoundment, two turbines and powerhouse	1925	27 MW/ 135,000 MWh	40	73 (total) negligible (active)	Concrete	33/ 278
Iron Gate (CA)	Reservoir, dam, one turbine, powerhouse and fish hatchery	1962	18 MW/ 116,000 MWh	944	58,800 (total) 3,790 (active)	Earthfill	173/ 740

After drawdown is accomplished, remaining reservoir sediments will be stabilized to the extent feasible and dam and hydropower facility removal will begin. Full reservoir area restoration will begin after drawdown, extend throughout the year, and possibly extend into the subsequent year. Vegetation establishment could extend several years.

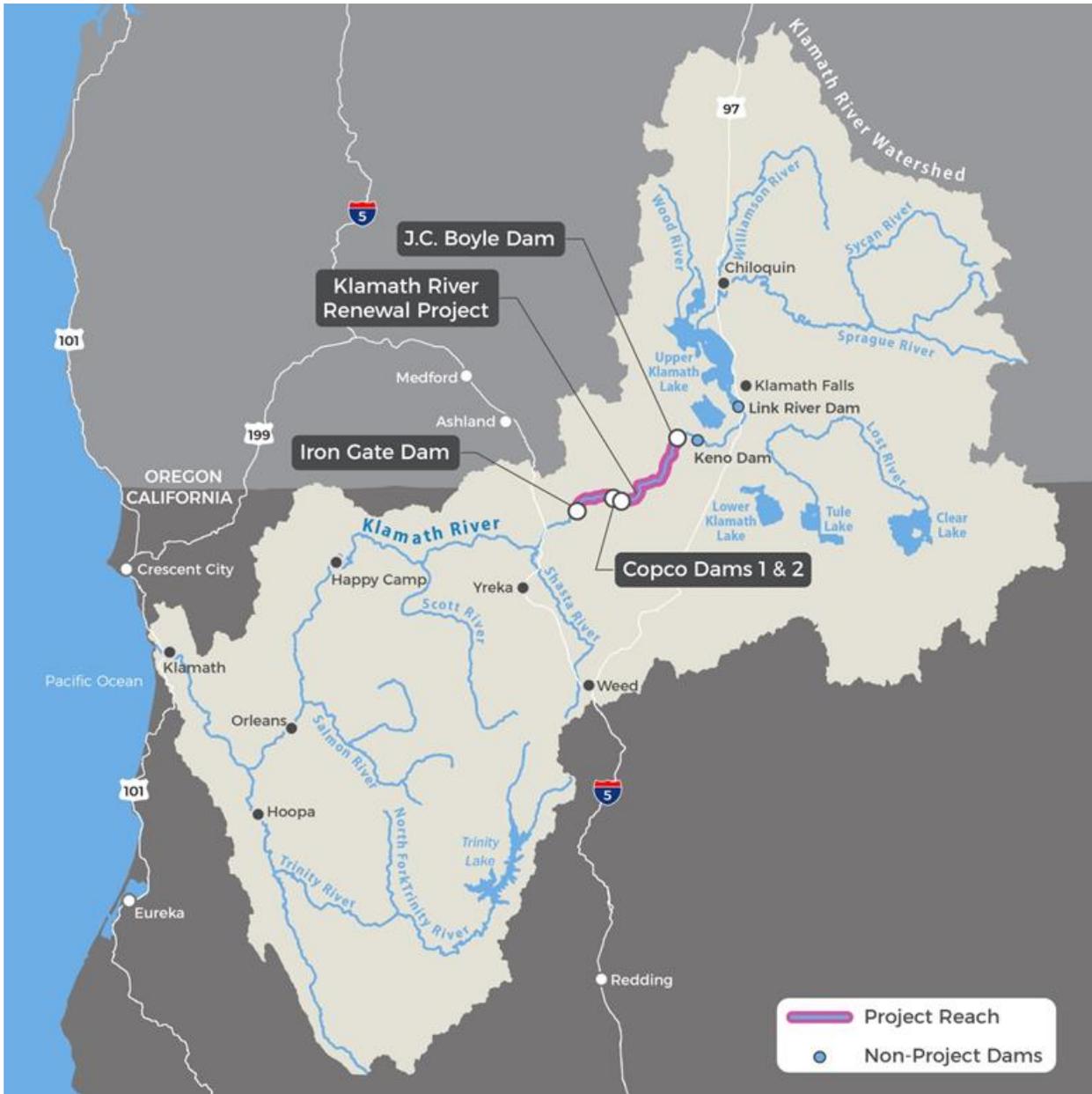


Figure 1-1 Klamath River Watershed and Facilities Locations

Other key project components include measures to reduce Project-related effects to aquatic and terrestrial resources, road and bridge improvements, relocation of the City of Yreka’s pipeline across Iron Gate Reservoir and associated diversion facility improvements, as well as demolition of various recreation facilities adjacent to the reservoirs. This estimate does not include costs associated with design and

construction of any hatchery improvements associated with the Project (as described in the Definite Plan), and as per the KHSA, these will be funded separately by PacifiCorp.³

1.3 Limitations

The opinion of estimated project costs presented in this report is based on information in the Definite Plan, ongoing coordination and consultation with project stakeholders and regulatory agencies, and market conditions at the time of preparation of the estimate. The construction cost was estimated with the use of a combination of built-up unit prices and statistical unit prices from published and internally developed and maintained historical databases factored for location, contractor markups, and other project-specific criteria. Logic, methods, and procedures for developing costs are typical for the construction industry.

Various limitations need to be considered in the use of both built-up and statistical unit prices. These limitations include the potential for changes in technology, methods, and construction applications; the impact of short-term economic cycles; and the time-lag of reporting databases. Any estimate of unit prices is not intended to predict the outcome of hard dollar results from open and competitive bidding.

AECOM represents that the services were conducted in a manner consistent with the standard of care ordinarily applied as the state of practice in the profession, given the amount of design information available at the time of estimate preparation. No other warranties, either expressed or implied, are included or intended.

Other implementation costs presented in this report, outside of the preliminary design and construction activities, should be considered preliminary, due to the fact that:

- Permitting coordination is currently ongoing. The understanding of anticipated mitigation, monitoring and reporting requirements should be considered preliminary until feedback is received from the agencies on the draft permit applications. KRRRC will obtain additional clarity on mitigation, monitoring and reporting once the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes are complete.
- KRRRC has not yet selected a Progressive Design-Builder (PDB) to finalize the dam removal designs and subsequently complete the associated construction. The current understanding and effort associated with PDB field studies and final design should be considered preliminary until that selection process is complete.

KRRRC is undertaking additional due diligence on construction costs, measures to lower construction costs, and measures to manage construction risk. These measures include risk management, selection of a PDB to perform the work, and negotiation of a PDB contract with a guaranteed maximum price for construction. Many risks considered in the Monte Carlo analysis that deal with design and regulatory compliance will be managed or better understood when this process is completed, likely lowering the MPH. These results of these inquiries will be further informed by the review and recommendations of a FERC approved

³ See Section 7.6.6 of the KHSA.

independent Board of Consultants (BOC) for the Lower Klamath Project. Among other inquires, the BOC will be convened to review and provide recommendations regarding the adequacy of available funding and reasonableness of updated cost estimates for the most probable cost and maximum cost for the Full Removal alternative, and the assumptions made to calculate those estimates. KRRC will incorporate the recommendations of the BOC into a revised Definite Plan.

1.4 Results Summary

Tables 1-2 and 1-3 below summarize the estimate of project costs, for both Full Removal and Partial Removal of the four dams.

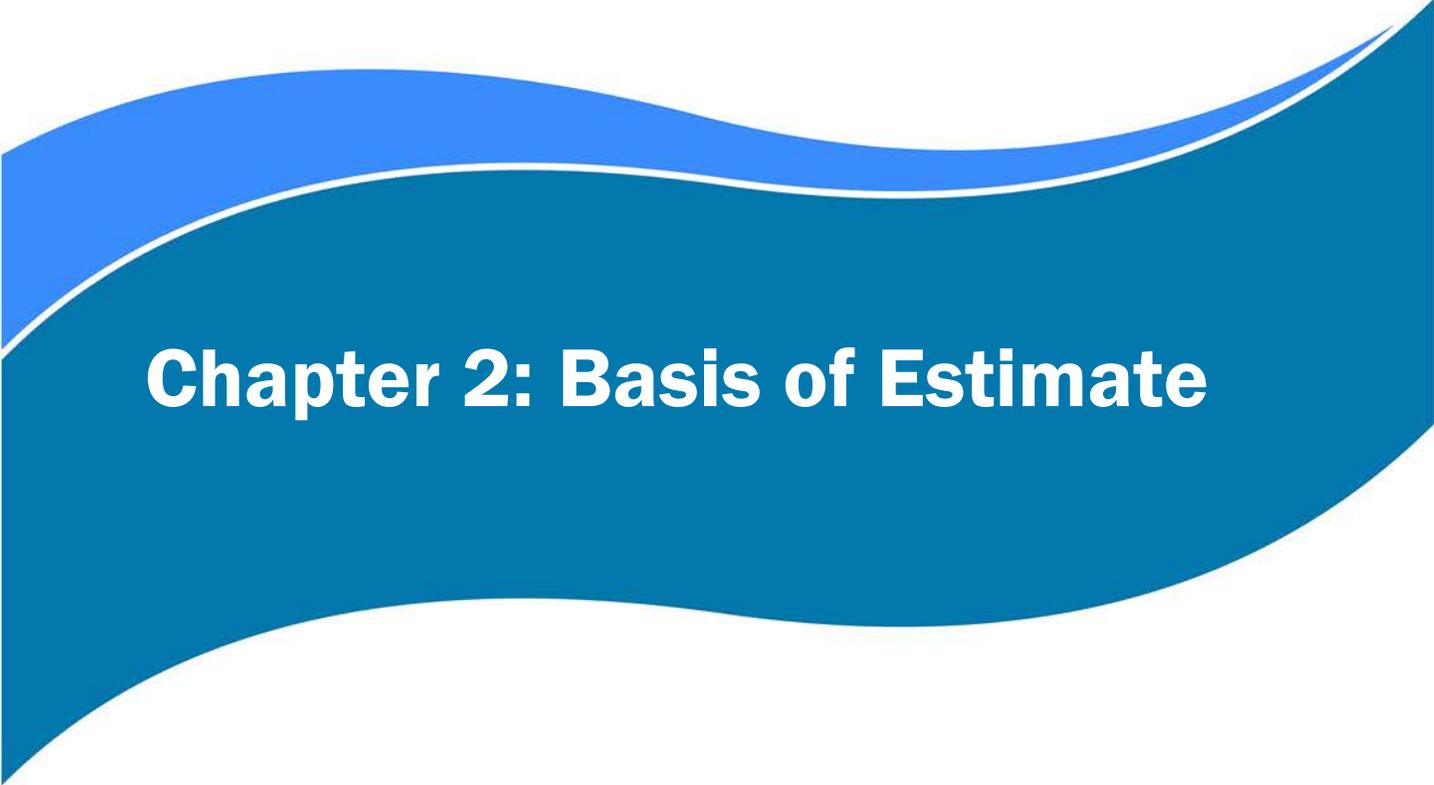
Similar to previous project estimates, the results show probabilistic MPL and MPH costs based on the results of Monte Carlo simulations. The right-hand column indicates the estimated project costs, whereas the forecast range from MPL to MPH indicate the range of probabilistic outcomes. The MPL is P10 (likely final project cost in 10% of all scenarios) and the MPH is P90 (likely final project cost in 90% of all scenarios). Details on these methods are described further in Section 2.7 (Monte Carlo Analysis) of this report.

Table 1-2 Results Summary - Full Removal

Cost Category	Forecast Range		Estimated Project Cost
	MPL (P10)	MPH (P90)	
Project Oversight			\$29,581,000
Environmental Compliance & Permitting			\$8,637,000
Engineering & Procurement			\$15,632,000
Construction Management			\$10,617,000
Construction	\$202,108,000	\$268,560,000	\$227,980,000
Anticipated Mitigation Measures			\$18,407,000
Monitoring & Reporting			\$18,405,000
Design & Construction Contingency			\$68,394,000
TOTAL	\$346,500,000	\$507,100,000	\$397,700,000

Table 1-3 Results Summary - Partial Removal

Cost Category	Forecast Range		Estimated Project Cost
	MPL (P10)	MPH (P90)	
Project Oversight			\$29,581,000
Environmental Compliance & Permitting			\$8,637,000
Engineering & Procurement			\$15,632,000
Construction Management			\$10,617,000
Construction	\$169,140,000	\$229,250,000	\$193,030,000
Anticipated Mitigation Measures			\$18,407,000
Monitoring & Reporting			\$18,405,000
Design & Construction Contingency			\$57,909,000
TOTAL	\$313,500,000	\$467,800,000	\$352,200,000

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Chapter 2: Basis of Estimate

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2. BASIS OF ESTIMATE

2.1 Cost Categories

For organizational purposes, the project costs have been summarized using the following cost categories:

- **Project Oversight:** Support services providing administration, project management and controls, contract management, Board of Consultants (BOC), outreach, insurance and legal support.
- **Environmental Compliance and Permitting:** Environmental compliance support and permitting.
- **Engineering and Procurement:** Field studies, engineering design, and construction procurement for the various project work packages. Design and procurement estimates assume a PDB, performance security, construction delivery method for the large dam removal work package.
- **Construction Management:** Full construction management services for implementation of all project components.
- **Construction:**
 - + Dam removals: Sequential removal of all four dams, including dam modifications, reservoir drawdown and removal of all associated dam infrastructure (including spillways, fish ladders, intake structures, penstocks, turbine units, electrical installations, buildings)
 - + Reservoir area improvements: Removal, grading and shaping of portions of reservoir sediment, bank stability measures
 - + Reservoir area restoration: Seeding, planting, weeding, monitoring and maintenance. Hydroseeding methods include by barge along the reservoir bank, by helicopter along steep slopes, by airplane along uneven large areas and by trailer mounted blower for areas easily accessible by truck
 - + Yreka water supply improvements: Improvements to the City of Yreka’s water supply intake and relocation of their water supply pipeline.
 - + Transportation infrastructure: Improvements to, or replacement of, bridges, culverts and road resurfacing to mitigate any project or construction related impact
 - + Recreation demolition: Demolition of existing recreation infrastructure and restoration of disturbed area to native vegetation
 - + Recreation improvements: New recreation infrastructure (e.g, water access, day-use areas, etc.) to avoid or minimize project impacts
 - + Downstream flood improvements: Improvements to existing structures and facilities to avoid or minimize adverse downstream flood-related impacts.

- **Anticipated Mitigation Measures:** Anticipated cultural resource measures, groundwater improvements, and water supply improvements that may be required by regulatory agencies to mitigate Project-related impacts.
- **Monitoring and Reporting:** Proposed aquatic resource, terrestrial resource, water quality, and sediment monitoring and reporting.

2.2 Construction Procurement Approach

KRRC based estimates for the various cost categories on a PDB construction procurement of the large dam removal work package, which includes construction access road and bridge accommodations, dam modifications, dam and hydropower facility removal, recreation demolition and reservoir and other restoration. KRRC will use a qualifications-based selection approach and hire a PDB contractor in late 2018/early 2019, followed by the PDB's completion of the final design in 2019.

There is a possibility that smaller work packages, including downstream flood control improvements, City of Yreka water supply improvements and proposed recreation facilities, may be procured separately using a design-bid-build, or similar, procurement strategy. For these packages, final design will proceed in 2018 and 2019, with request for construction proposals being issued in mid- to late-2019.

2.3 Construction Pricing

The construction estimates summarized herein are intended to capture the most current pricing for materials, wages and salaries, equipment, accepted productivity standards, and typical construction practices, procurement methods, current construction economic conditions, and site conditions for the current level of design. Detailed construction cost breakdowns for both Full Removal and Partial Removal alternatives are provided in Attachment A. Pay item cost detail worksheets, describing the calculation of individual cost estimate line items rates and prices are provided in Attachment B.

Construction cost estimates were prepared based on less than complete designs, and have inherent levels of risk and uncertainties (as discussed in Section 2.7). The following sections discuss the various aspects and assumptions associated with construction pricing for the Project.

2.3.1 Construction Pricing - Direct Costs

Experienced construction cost estimators developed direct cost construction pricing using logic, methods, and procedures for pricing that are typical for the construction industry. Unit rates were established using input from RS Means database, Equipment Watch database and Davis Bacon Wage Determination database. Overall prices were established by taking location, access and construction operation into consideration.

KRRC used the latest Davis Bacon Wage Determination for labor rates and fringes. The area used is based on Siskiyou County, California. The Project is located in a remote location which will require per diem for all employees. This consideration is included within the Contractor's overhead cost and associated percentage

KRRC based equipment costs on the latest understanding of the equipment required to complete the work. Unit prices include equivalent/similar pieces of equipment with present day rates from Equipment Watch Blue Book, and include equipment mobilization. In selecting the rates, Redding, California was used as the nearest available location. Equipment hourly rates include fuel, which is a factored rate of \$3.00/gallon based on average retail prices from nearby gas stations. KRRC estimated equipment and material sales tax at 7.75% based on recent sales tax data in Siskiyou County.

The major features and/or items in the estimate, such as the dam modifications, dam removal, and reservoir restoration are fairly well defined. KRRC estimated costs for these items using crew and equipment work-item analysis to develop unit costs, and then multiplying these by the quantity measurement to arrive at work item subtotals. Crew and equipment work-item analysis spreadsheets are presented in Attachment B.

KRRC used vendor quotes for materials such as gates for drawdown, pipelines, instrumentation, and hydroseeding. KRRC based costs for some of the smaller items of work within the estimate on the experience and judgment of the estimator using historical data from similar types of construction, factored for location, size, and other Project-specific criteria.

2.3.2 Construction General Requirements

As discussed in more detail below, the following markups were applied into the contractor's direct costs to account for general requirements:

- PDB Contractor's overhead at 15%
- PDB Contractor's profit and risk at 8%
- PDB Contractor's markup on subcontractors at 10%
- PDB Contractor's insurance at 1%
- PDB Contractor's bond at 1%

Contractor Overhead

KRRC calculated construction overhead for this Project using a slightly higher percentage than normal due to the remoteness of the Project, including establishing and maintaining workers' accommodation facilities, travel compensation, per diem payments and labor rate market conditions caused by the size of the Project in the remote location.

Construction overhead includes salaried payroll costs (salary, insurance, taxes, and fringe benefits) for management, supervisory, administrative, and safety employees. These employees include the Contractor's jobsite project management, documentation control, submittal preparation, surveying, field engineering, and

quality assurance costs. Recurring jobsite overhead expenses such as office rentals, utility bills, and maintenance expenses for jobsite facilities are also included in the general requirements, as are non-recurring expenses such as the bonds and insurance, purchase of office, engineering, and safety equipment, and outside engineering and surveying expenses.

The Contractor overhead percentage (15% percentage of direct construction cost) amounts to approximately \$30M over the construction duration. This is approximately equivalent to the following from the estimate of project costs (Full Removal):

- | | |
|---|-------|
| • PDB Contractor’s project management 2019 | \$3M |
| • PDB Contractor’s project management 2020-2021 | \$10M |
| • Establish and maintain workers accommodations | \$6M |
| • Offices & facilities for PDB Contractor | \$4M |
| • Offices & facilities for contract manager | \$4M |
| • Temporary facilities | \$3M |

Contractor Profit and Risk Markups

KRRC derived a profit and risk markup on direct construction costs of 8% by using the United States Army Corps of Engineers (USACE) Profited Weight Guidelines following the steps listed below. Figure 2-1 shows the calculation summary using the reference guidelines. The resulting amount included in the estimated project cost for Contractor’s profit and risk compensation is approx. \$17M.

- Risk: Where the work involves no risk or the degree of risk is very small, the weighting is 0.03; as the degree of risk increases, the weighting increase up to a maximum of 0.12. Lump sum items will have, generally, a higher weighted value than unit price items for which quantities are provided. Considerations include the portion of work to be done by subcontractors, nature of work, where work is to be performed, reasonableness of negotiated costs, amount of labor included in costs, whether negotiation is before or after performance of work, etc.
- Difficulty: If the work is most difficult and complex, the weighting is 0.12 and is proportionately reduced to .03 on the simplest jobs. This factor is tied in to some extent with the degree of risk. Considerations include the nature of the work, schedule, by whom it is done, where it is done, etc.
- Size of Job: Jobs not in excess of \$100,000 are weighted at 0.12. Jobs estimated between \$100,000 and \$5,000,000 are proportionally weighted from 0.12 to .05. Jobs from \$5,000,000 to \$10,000,000 are weighted at 0.04 and work in excess of \$10,000,000 at 0.03.
- Duration: Jobs in excess of 24 months are weighted at 0.12. Jobs of lesser duration are proportionately weighted to a minimum of .03 for jobs not to exceed 30 days. The period applies to only the change – not the contract duration.
- Investment: Weighted from 0.03 to 0.12 on the basis of below average, average, and above average. Considerations include the amount of subcontracting, mobilization payment item, Government-furnished property, method of making progress payments, etc.

- Government Assistance: Weighted from 0.12 to 0.03 on the basis of average to above average. Considerations include use of Government-owned property, equipment and facilities, expediting assistance, etc.
- Subcontracting: Weighted inversely proportional to the amount of subcontracting. Where 80% or more of the work is to be subcontracted, the weighting is to be 0.03 and such weighting proportionally increased to 0.12 where all the work is performed by the Contractor's own forces.

Categories		Methods	
Profit		Profit Weighted Guidelines	
Costs			
Weights must be between 0.03 to 0.12			
	Weight	x	Rate = Value
Risk	0.099		20 1.98 %
Difficulty	0.06		15 0.9 %
Size	0.03		15 0.45 %
Period	0.094		15 1.41 %
Invest (Contractor's)	0.033		5 0.16 %
Assist (Assistance by)	0.03		5 0.15 %
SubContracting	0.118		25 2.95 %
Total			100 8 %

Figure 2-1 Contractor Profit and Risk Calculation Summary

Risks identified on the risk register as transferred to the PDB Contractor are assumed to be covered within this amount. No allowance for risks categorized as transferred to the PDB Contractor are included in other project contingencies.

Subcontractor Markups

KRRC selected a subcontractor markup of 10% as derived by using industry standard construction subcontract requirements on similar projects.

Insurance Markups

KRRC selected an insurance markup of 1% of direct construction cost as derived by using industry standard insurance requirements on similar projects. Insurance markup can vary to account for work complexity, procurement lead time, etc. However, since the project scope is primarily demolition, KRRC considers a 1% insurance markup appropriate.

Bond Markups

KRRC selected a bonding markup of 1% of direct construction cost as derived by using industry standard bond requirements on similar projects.

2.3.3 Quantities

Detailed quantity takeoffs made for the earthworks items (excavation, fill and erosion protection) were computer-generated (and independently checked) using the surfaces presented in the drawings, and represent neat-line quantities. Earthwork volumes (cut, fill, balance) and other quantities are provided in Section 5 and associated figures of the Definite Plan.

2.3.4 Construction Schedule

KRRC based the estimate on the construction schedule and the construction plan described in the Definite Plan. As discussed in the plan, the schedule is predicated on the following:

- Construction of City of Yreka water supply improvements will be completed in 2020 (prior to drawdown) and may be under a separate contract from the PDB Contract for the dam removal work
- Construction of downstream flood control improvements will be completed in 2020 prior to drawdown) and may be under a separate contract from the PDB Contract for the dam removal work
- Construction of the access road improvements will be completed in 2020 (prior to drawdown)
- An effective Date of Agreement (guaranteed maximum price) for the dam removal PDB on or before February 15, 2020
- Lineal and concurrent activities
- Equipment application and production
- The ability to drawdown J.C. Boyle, Copco No. 1 and Iron Gate reservoirs at the beginning of 2021
- Major earthworks and removal activities are assumed to be performed using two 10-hour shifts, six days per week
- In-stream construction window in Oregon is assumed to be from July 1 through September 30
- In-stream construction window in California is assumed to be from June 15 through October 15

The duration of many of the schedule activities are determined from the labor and equipment productivity associated with the estimate pay item sheets.

The access road, dam modification, water supply, and downstream flood control construction will be completed during an estimated 6- to 8-month period in 2020, since these activities require completion prior to drawdown and facility removal. Subsequent dam removal and associated construction will occur during 8 months of work in 2021, with restoration related construction activities likely extending through 2022. Monitoring and reporting will extend for 5 years after construction completion.

2.4 Consulting Services Pricing

Outside of construction costs, other implementation activities such as project oversight, field studies, design, permitting, mitigation measures and monitoring generally involve labor and associated other direct costs (ODCs). ODCs can include office space, travel, meals, postage, specialty reproduction, and vendor quotes for

materials, supplies or services. For each of the implementation activities referenced above, KRRC developed independent estimates using standard labor rates and ODC values based on the latest understanding of the scope or work for the life of the Project. Details for each cost category are provided in Section 3. KRRC used a standard labor rate sheet for an environmental/engineering consulting firm, as shown below in Table 2-1, to develop the majority of the other implementation costs listed above. In some cases, KRRC used specialty rates to develop estimates for specialty activities such as project oversight and legal support.

Table 2-1 Environmental/Engineering Labor Rate Sheet

Labor Classification	Hourly Rate	Labor Classification	Hourly Rate
Senior Technical Advisor	\$285.00	Field Technician	\$75.00
Principal	\$285.00	Junior Field Technician	\$55.00
Project Manager	\$230.00	Certified Industrial Hygienist	\$165.00
Principal Engineer	\$200.00	Senior Data Management	\$130.00
Senior Engineer	\$180.00	Data Management	\$85.00
Engineer	\$145.00	Senior GIS/CADD/Graphics	\$120.00
Junior Engineer	\$100.00	GIS/CADD/Graphics	\$90.00
Principal Scientist/Planner	\$180.00	Technical Editor	\$105.00
Senior Scientist/Planner	\$160.00	Community Relations Specialist	\$110.00
Scientist/Planner	\$120.00	Project Controls/Procurement	\$95.00
Junior Scientist/Planner	\$95.00	Administrative Assistant	\$75.00
Senior Field	\$110.00	Clerical/Support	\$65.00

The hourly rates set forth in this schedule of fees and charges is valid from January 1, 2017 through December 31, 2017. The Hourly Rates are adjusted annually on January 1 of each subsequent year. The new Schedule of Fees and Charges will apply to existing and new assignments. For work extends beyond December 31, 2017 a 3% annual escalation on hourly rates will apply.

2.5 Escalation

KRRC based estimates on contemporary market information at the time of estimate preparation. As such it is necessary to include escalation to account for cost increases over the duration of the Project, particularly as this Project spans multiple years. KRRC escalated each line item in the cost estimate based on scheduled construction and other implementation activities.

KRRC used an escalation rate of 4% per year. This is based on cost index references and current cost trends observed in the industry. As shown in the below Engineering News Record (ENR) Historic Cost Index (Table 2-2), the last few years have seen a consistent uptrend in escalation, including the beginning of 2018. Considering this trend, along with other published historical data and professional judgment, it is reasonable to expect escalation to average out at around 4% per year over the duration of the Project.

Table 2-2 ENR Historic Cost Index

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVG	AVERAGE ANNUAL INCREASE
1990	4680	4685	4691	4693	4707	4732	4734	4752	4774	4771	4787	4777	4732	
1991	4777	4773	4772	4766	4801	4818	4854	4892	4891	4892	4896	4889	4835	2.177%
1992	4888	4884	4927	4946	4965	4973	4992	5032	5042	5052	5058	5059	4985	3.102%
1993	5071	5070	5106	5167	5262	5260	5252	5230	5255	5264	5278	5310	5210	4.514%
1994	5336	5371	5381	5405	5405	5408	5409	5424	5437	5437	5439	5439	5408	3.800%
1995	5443	5444	5435	5432	5433	5432	5484	5506	5491	5511	5519	5524	5471	1.165%
1996	5523	5532	5537	5550	5572	5597	5617	5652	5683	5719	5740	5744	5620	2.723%
1997	5765	5769	5759	5799	5837	5860	5863	5854	5851	5848	5838	5858	5826	3.665%
1998	5852	5874	5875	5883	5881	5895	5921	5929	5963	5986	5995	5991	5920	1.613%
1999	6000	5992	5986	6008	6006	6039	6076	6091	6128	6134	6127	6127	6059	2.348%
2000	6130	6160	6202	6201	6233	6238	6225	6233	6224	6259	6266	6283	6221	2.674%
2001	6281	6272	6279	6286	6288	6318	6404	6389	6391	6397	6410	6390	6343	1.961%
2002	6462	6462	6502	6480	6512	6532	6605	6592	6589	6579	6578	6563	6538	3.074%
2003	6581	6640	6627	6635	6642	6694	6695	6733	6741	6771	6794	6782	6694	2.386%
2004	6825	6862	6957	7017	7065	7109	7126	7188	7298	7314	7312	7308	7115	6.289%
2005	7297	7298	7309	7355	7398	7415	7422	7479	7540	7563	7630	7647	7446	4.652%
2006	7660	7689	7692	7695	7691	7700	7721	7722	7763	7883	7911	7888	7751	4.096%
2007	7880	7880	7856	7865	7942	7939	7959	8007	8050	8045	8092	8089	7966	2.774%
2008	8090	8094	8109	8112	8141	8185	8293	8362	8557	8623	8602	8551	8310	4.105%
2009	8549	8533	8534	8528	8574	8578	8566	8564	8586	8596	8592	8641	8570	3.081%
2010	8860	8672	8671	8677	8761	8805	8865	8858	8857	8921	8951	8952	8857	3.349%
2011	8938	8998	9011	9027	9035	9053	9080	9088	9116	9147	9173	9172	9070	2.405%
2012	9176	9198	9268	9273	9290	9291	9324	9351	9341	9376	9398	9412	9308	2.624%
2013	9437	9453	9456	9484	9516	9542	9552	9545	9552	9689	9666	9668	9547	2.564%
2014	9664	9681	9702	9750	9796	9800	9835	9846	9870	9886	9912	9936	9806	2.716%
2015	9972	9962	9972	9992	9975	10039	10037	10039	10065	10128	10092	10153	10035	2.335%
2016	10132	10181	10242	10279	10315	10337	10379	10385	10403	10434	10442	10530	10338	3.019%
2017	10542	10559	10667	10678	10692	10703	10789	10826	10823	10817	10870	10873	10737	3.856%
2018	10878	10889	10959										10909	5.520%

Base: 1913=100

Table 2-3 Turner Construction Building Cost Index



2.6 Design & Construction Contingency

Design contingencies are intended to account for three types of uncertainties which directly affect the estimated cost of a project as it advances from the planning stage through final design. These include: (1) unlisted items, (2) design and scope changes, and (3) cost estimating refinements. Based upon the apparent completeness of the listed items for the dam removal estimates, the design contingency was set at ± 10 percent of the construction cost, which is a typical value for a the level of design presented in the Definite Plan, particularly given the fact that a large percentage of the demolition work is means and methods driven, as opposed to detailed design

This estimate of project costs includes a percentage allowance for construction contingencies to cover differences in actual and estimated quantities, unforeseeable difficulties at the site, changed site conditions, possible changes in plans, and other uncertainties during the construction period. The allowance is based on engineering judgment of the major pay items in the estimate, reliability of the data, adequacy of the estimated quantities, and general knowledge of the site conditions. KRRC used a value of ± 20 percent of the construction cost for construction contingencies for the dam removal estimates, which is a typical value for this stage of project development.

KRRC applied the design and construction contingencies (total of 30%) discussed above as a percentage of the total construction cost, and added to the total estimate of project costs.

2.7 Monte Carlo Analysis

KRRC completed a Monte Carlo analysis to analyze uncertainties and risk, to be used as the basis for development of the MPL and MPH estimates.

The probabilistic range of costs for each estimate line item was determined with the use of ‘@Risk’ Monte Carlo analysis software. The Monte Carlo analysis involves determining the impact and likelihood of occurrence of identified and quantified uncertainties and risks by running simulations to identify the range of possible outcomes for a number of scenarios - 10,000 scenarios in the case of this Project. A random sampling is performed in the simulation by using uncertain risk variable inputs to generate the range of outcomes with a confidence measure for each outcome.

Levels of probability are described from P1 to P100, where the number following the ‘P’ represents the percentage of most probable outcomes. For example, the P1 estimate amount will only cover the lowest 1% of the possible cost outcomes, whereas P100 will cover the maximum estimate amount determined from running the 10,000 scenarios. A P80 estimate covers the most likely final project cost in 80% of all scenarios, and is often used by the construction industry (Barreras 2011), including the USACE (“Per regulation and guidance, the P80 confidence level is the normal and accepted cost confidence level”), to calculate the amount of risk contingency to carry on a project.

Due to the unique nature of this Project and the KRRC, KRRC selected a conservative P90 to represent the MPH for the Project. The P90 estimate covers the most likely final project cost in 90% of all scenarios. KRRC selected a P10 to represent the MPL.

2.8 Ongoing Due Diligence

2.8.1 General

KRRC is undertaking additional due diligence on construction costs, measures to lower construction costs, and measures to manage construction risk. KRRC will complete additional engineering, select a design-build contractor, negotiate a construction agreement with the Contractor, establish a guaranteed maximum price for the work to be performed, implement its insurance programs, and establish the requirements for all bid bonds, payment bonds, and the performance bond. Many risks considered in the Monte Carlo analysis that deal with design and regulatory compliance will be mitigated or better understood when this process is completed, likely lowering the MPH significantly.

2.8.2 Independent Board of Consultants (BOC)

The FERC approved the BOC for the Lower Klamath Project on May 22, 2018. Among other things, FERC's letter of approval included a plan and schedule to obtain BOC review of the estimate of project costs and MPH estimates for the Full Removal alternative, adequacy of available funds for facilities removal, adequacy of the proposed contingency reserve, and adequacy of the proposed insurance and bonding arrangements. The five-member BOC includes Dan Hertel, PE (Engineering Solutions, LLC), James Borg, PE (D&H Concepts, LLC), Craig Findlay, PhD, PE, GE (Findlay Engineering, Inc.), Mary Louise Keefe, PhD (R2 Resource Consultants, Inc.), Ted Chant, PE (Chant Limited) and Robert Muncil, ARM (Cool Insurance Agency, Inc.). KRRC plans to convene the BOC on or before August 1, 2018.

The Definite Plan will be further informed by the review and recommendations of the BOC. KRRC will incorporate the recommendations of the BOC into a revised Definite Plan and this Appendix P will be updated accordingly.

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Chapter 3: Cost Category Summaries

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3. COST CATEGORY SUMMARIES

The following sections provide detailed summaries of methods, assumptions and results of the estimate development for the various cost categories and subcategories.

3.1 Project Oversight

Project oversight and administration costs generally include costs associated with KRRC set-up and corporate insurance, management labor and travel, accounting and administrative support, project controls, contract management, BOC participation and facilitation, legal support, and outreach. Oversight costs exclude technical services, engineering, mitigation measures, construction contracting and land survey contracting. Table 3-1 summarizes estimated project costs for project oversight across the various project phases. Project oversight costs are the same for the Full and Partial Removal alternatives.

KRRC developed labor estimates for each activity using the latest understanding of management requirements in any given year, and applicable industry labor rates. KRRC developed ODCs using an understanding of actuals spent to date and requirements to continue management efforts into the future. ODCs include office space, travel, meals, postage, specialty reproduction, and vendor quotes for materials, supplies or services.

Table 3-1 Project Oversight Estimate Per Phase

Project Oversight	July 2016 - Jun 2017 (1 year)	July 2017 - Dec 2019 (2.5 years)	Jan 2020 - Jun 2022 (2.5 years)	Jul 2022 - Jun 2027 (5 years)	Total
Management Labor, ODCs & Insurance	\$ 722,000	\$ 3,653,000	\$ 4,469,000	\$ 832,000	\$ 9,676,000
Accounting and Administration	\$ 1,139,000	\$ 2,777,000	\$ 3,189,000	\$ 811,000	\$ 7,916,000
Contract Management and Controls	\$ 1,110,000	\$ 1,738,000	\$ 373,000	\$ 86,000	\$ 3,307,000
Board of Consultants Process	\$ -	\$ 906,000	\$ 494,000	\$ -	\$ 1,400,000
Legal Support	\$ -	\$ 3,052,000	\$ 1,294,000	\$ 241,000	\$ 4,587,000
Outreach	\$ 460,000	\$ 1,102,000	\$ 1,051,000	\$ 75,000	\$ 2,688,000
					\$ 29,580,000

Note: Numbers based on 2018 dollars and exclude escalation

Table 3-2 summarizes average Full Time Equivalent (FTE) staffing for the various activities and line items. FTE numbers give a general understanding of how many full time staff may be working on each activity throughout each year or phase. KRRC calculated FTEs by dividing annual labor costs by the total working hours per year/phase and the average labor rate for each activity. FTE values for the BOC were calculated using working hours for a quarter of any given year, since BOC members are not full-time employees.

Project oversight FTEs are generally highest from 2019 through 2021, as the KRRC will be managing numerous contracts for engineering and construction of the various project components.

Table 3-2 Project Oversight Average FTEs Per Phase

Project Oversight	July 2016 - Jun 2017 (1 year)	July 2017 - Dec 2019 (2.5 years)	Jan 2020 - Jun 2022 (2.5 years)	Jul 2022 - Jun 2027 (5 years)
Management Labor, ODCs & Insurance	1.1	2.4	2.9	0.2
Accounting and Administration	3.4	3.3	3.8	0.5
Contract Management and Controls	4.4	2.8	0.6	0.0
Board of Consultants Process	-	2.3	1.2	-
Legal Support	-	1.7	0.7	0.1
Outreach	1.0	1.0	0.9	0.0

3.2 Environmental Compliance and Permitting

KRRC’s plan for compliance with applicable laws and regulations is provided at Section 1.3 of the Definite Plan. Cost estimates reflected in this Appendix P are based upon implementation of that plan, and further assume that the license surrender order to be issued by the FERC will authorize implementation of the Definite Plan (as proposed) and will not impose any conditions that conflict with or are materially inconsistent with the Definite Plan. In addition to FERC’s surrender order (which will incorporate any conditions or requirements of the National Environmental Policy Act, California § 401 Clean Water Act Water Quality Certification, Oregon § 401 Clean Water Act Water Quality Certification, the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act and the National Historic Preservation Act), the California § 401 Clean Water Act Water Quality Certification to be issued by the California State Water Resources Control Board will include and address any measures needed to comply with the CEQA. This report also assumes that implementation of the Definite Plan will require a Section 404 individual permit from the USACE, coverage under an National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permits for construction-related stormwater discharges to surface waters in California and Oregon, and various other state and local permits required by applicable law. Table 3-3 summarizes estimated environmental compliance and permitting costs across the applicable project years. Environmental compliance and permitting costs are the same for the Full and Partial Removal alternatives.

KRRC developed labor estimates for each activity using the latest understanding of management requirements in any given year, and applicable industry labor rates. KRRC developed ODCs using an understanding of actuals spent to date and requirements to continue permitting and associated field efforts into the future. ODCs include travel, meals, and vendor quotes for materials, supplies or services.

Table 3-4 summarizes average FTE staffing for the various activities and line items. FTE numbers give a general understanding of how many full time staff may be working on each activity throughout each year or phase. KRRC calculated FTEs by dividing annual labor costs by the total working hours per year and the average labor rate for each activity.

Environmental compliance and permitting FTEs are generally highest in 2018 while numerous biological surveys are being completed along with development of materials to support FERC.

Table 3-3 Environmental Compliance Estimate Per Year

Permitting Activity	2017	2018	2019	2020	2021	2022	Subtotal
Permitting Approach	\$ 90,000	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ 140,000
Biological Surveys	\$ 50,000	\$ 960,000	\$ 800,000	\$ -	\$ -	\$ -	\$ 1,810,000
Federal Permitting	\$ 468,000	\$ 1,335,000	\$ 643,000	\$ 427,000	\$ 427,000	\$ 214,000	\$ 3,514,000
State Permitting	\$ 115,000	\$ 573,000	\$ 28,000	\$ -	\$ -	\$ -	\$ 716,000
Local Permitting	\$ 66,000	\$ 445,000	\$ 28,000	\$ -	\$ -	\$ -	\$ 539,000
TOTAL	\$ 789,000	\$ 3,363,000	\$ 1,499,000	\$ 427,000	\$ 427,000	\$ 214,000	\$ 6,719,000

Note: Numbers based on 2018 dollars and exclude escalation

Table 3-4 Environmental Compliance Average FTEs Per Year

Permitting Activity	2017	2018	2019	2020	2021	2022
Permitting Approach	0.3	0.1	-	-	-	-
Biological Surveys	0.0	3.7	3.0	-	-	-
Federal Permitting	1.4	4.0	1.9	1.3	1.3	0.6
State Permitting	0.3	1.7	0.1	-	-	-
Local Permitting	0.2	1.3	0.1	-	-	-

3.3 Engineering and Procurement

Engineering and procurement includes all activities required to complete the final project engineering designs and procure construction contractors to complete the construction. Section 2.2 describes the construction procurement approach for the Project, and is a basis for the procurement estimates provided herein.

The first step in the design process is to complete the necessary field work to obtain design data to support the design analyses and drawings. The following activities fall into this category:

- Topographic/Bathymetric Surveys: Obtain updated data of topographic and reservoir bathymetric conditions at the Project
- Geotechnical Investigations: Obtain geologic information to evaluate reservoir rim stability and other geologic conditions to support design components
- Hazardous Material Investigation: Complete phase 1 hazardous material assessments for existing hydropower and other pertinent project features
- Biological Reconnaissance: Obtain initial understanding of existing biological conditions that may affect proposed design layout
- Engineering Reconnaissance: Obtain understanding of existing site facilities and infrastructure to inform design and demolition activities
- Groundwater Monitoring: Obtain groundwater well data adjacent to reservoirs to assess potential impacts associated with reservoir drawdown

The next step in the design process is to refine the preliminary designs based on the latest field data and input from regulatory and other stakeholders. This refined design will serve as the basis for environmental and regulatory reviews. Primary project components are listed below, and described in detail in the Definite Plan.

- Dam & hydropower demolition
- Reservoir restoration
- Road and bridge improvements
- Relocation of the City of Yreka’s pipeline across Iron Gate Reservoir and associated diversion facility improvements
- Demolition [and replacement] of various recreation facilities adjacent to the reservoirs
- Recreation improvements
- Downstream flood control improvements
- Groundwater system improvements
- Fish hatchery modification and improvements (not included in estimate since funded separately by PacifiCorp)
- Cultural resource measures (to protect identified historic, cultural, and tribal resources)
- Groundwater improvements (well improvements adjacent to the reservoirs, if needed)

After preliminary design, the final engineering plans and specifications are developed. As described in Section 2.2, the PDB will complete final design of the large dam removal work package (access road improvements, dam modifications, access road improvements, dam and hydropower removal, and reservoir restoration), while final design of other components may be completed by a separate engineering entity.

The final activity for the engineering team(s) will be to provide engineering support during construction for quality control purposes.

Table 3-5 summarizes estimated engineering and procurement costs across the applicable project years. Engineering and procurement costs are the same for the Full and Partial Removal alternatives.

KRRC developed labor estimates for each activity using the latest understanding of engineering and procurement requirements in any given year, and applicable industry labor rates. KRRC developed ODCs using an understanding of actuals spent to date and requirements to continue engineering and procurement efforts into the future. ODCs include travel, meals, and vendor quotes for materials, supplies or services.

Table 3-5 Engineering & Procurement Estimate Per Year

Engineering & Procurement Activity	2017	2018	2019	2020	2021	2022	Subtotal
Design Data	\$ 537,000	\$ 1,455,000	\$ -	\$ -	\$ -	\$ -	\$ 1,992,000
Preliminary Design	\$ 1,909,000	\$ 1,796,000	\$ 125,000	\$ 25,000	\$ 25,000	\$ -	\$ 3,880,000
Final Design & Eng.							
Construction Support	\$ -	\$ 100,000	\$ 6,120,000	\$ 1,256,000	\$ 1,094,000	\$ 178,000	\$ 8,748,000
Procurement	\$ 37,000	\$ 524,000	\$ 348,000	\$ 103,000	\$ -	\$ -	\$ 1,012,000
TOTAL	\$ 2,483,000	\$ 3,875,000	\$ 6,593,000	\$ 1,384,000	\$ 1,119,000	\$ 178,000	\$ 15,632,000

Note: Numbers based on 2018 dollars and exclude escalation

Table 3-6 summarizes average FTE staffing for the various activities and line items. FTE numbers give a general understanding of how many full time staff may be working on each activity throughout each year or phase. KRRC calculated FTEs by dividing annual labor costs by the total working hours per year and the average labor rate for each activity.

FTEs are highest for engineering design in 2019, when multiple engineering design teams will be developing final design packages for the various project components.

Table 3-6 Engineering & Procurement FTEs Per Year

Permitting Activity	2017	2018	2019	2020	2021	2022
Design Data	1.6	4.4	-	-	-	-
Preliminary Design	5.6	5.3	0.3	-	-	-
Final Design & Eng.						
Construction Support	0.0	0.3	18.3	3.8	3.3	0.5
Procurement	0.1	1.3	1.3	-	-	-

3.4 Construction Management

The estimate and proposed construction management (CM) approach for the Project is based on the information available at the time of the development of this analysis and on the assumption that the dam removal construction will be performed under a PDB contract and that other project components may be constructed through the implementation of conventional contracting methods (e.g. design-bid-build (DBB)).

KRRC estimated construction management to support all construction commencing mobilization in early 2020, dam modifications and commencement of work on construction of other components such as access road and bridge work, waterline relocation and downstream flood control improvements. Support continues through reservoir drawdowns into 2021 and ramps-up in the second year of construction for the parallel demolition of dams, and reservoir restoration.

The proposed CM approach is based on the assumption that two construction management offices located at the Iron Gate and Copco areas will be established for 2020, with a third office established in 2021 for the J.C. Boyle area. The estimate also reflects the traveling constraints between each of the sites under the prospective contracts.

The principal construction management office will be located near the existing Iron Gate dam, where the Senior Construction Manager is located. There will be one Project Control Manager, one Scheduler and one Field Contract Administrator to support the construction, who will likely be located in the Iron Gate dam offices. KRRC considers establishing the principal office at this location advantageous as the excavation work at Iron Gate is one of the more labor-intensive critical path aspects to the construction. Secondary construction management offices will each be headed up by a separate Construction Manager. Costs for these facilities are included in the construction Contractor's general conditions.

Third-party inspection oversight on the PDB is an important factor in construction management of a sensitive high-visibility project such as this. Inspectors will provide oversight of Contractors' safety, quality, environmental, cultural and scope compliance. They will also make timely observations of construction progress and conditions, to support identification of potential productivity issues, and support avoidance and evaluation of potential change work.

KRRC assumed that some construction work may occur outside normal working hours, and is likely required for excavation of Iron Gate dam and demolition of Copco No. 1 dam. A second shift Dam Removal Inspector has been included for 7 months to allow for this likelihood.

A Safety Manager and Quality Manager are included at 40 hours/month each to provide audits of contractor and construction management practices against established procedures and standards.

KRRC calculated labor costs based on applicable industry contract rates where available and escalated them at 3% annually. KRRC based all labor costs on a 40 hour work week, except for inspector labor costs which are based on a 50 hour work week. An allowance of 20% on labor has been included to cover ODCs including travel, lodging and other remuneration associated with the remote sites.

The estimated project cost assumes that cultural resources and environmental monitoring will be required. These costs are not captured in the CM section, but are included elsewhere in this estimate.

Table 3-7 summarizes estimated construction management costs on a per-year basis, per labor category and shows ODCs included in the estimate. Construction management costs are the same for the Full and Partial Removal alternatives.

Table 3-8 show staff included in this estimate, where 1.00 = one FTE for one month.

Table 3-7 Construction Management Estimate Per Year

Construction Management Staff	Hrs/ week	2020	2021	2022	Total
Sr. Construction Manager (1 person)	40	\$ 441,852	\$ 508,019	\$ 43,605	\$ 993,477
Construction Manager (2 people)	40	\$ 410,262	\$ 916,948	\$ 80,378	\$ 1,407,588
Administrative Assistant (3 people at peak)	40	\$ 277,025	\$ 482,882	\$ 45,214	\$ 805,121
Field Contract Administration (1 person)	40	\$ 283,162	\$ 327,748	\$ 28,132	\$ 639,042
Lead Dam Removal Inspector (3 people at peak)	50	\$ -	\$1,090,055	\$ -	\$ 1,090,055
Second Shift Dam Removal Inspector (1 person)	50	\$ -	\$ 305,215	\$ -	\$ 305,215
Yreka Water Supply Inspector (0.5 person)	50	\$ 148,163	\$ -	\$ -	\$ 148,163
Rec Improvements Inspector (0.5 person)	50	\$ 148,163	\$ 174,409	\$ -	\$ 322,572
Flood Improvements Inspector (0.5 person)	50	\$ 148,163	\$ 174,409	\$ -	\$ 322,572
Bridges and Roads Inspector (1 person)	50	\$ 370,407	\$ 436,022	\$ 37,425	\$ 843,854
Specialty Inspectors (1 person)	50	\$ -	\$ 339,128	\$ -	\$ 339,128
Scheduler (1 person)	40	\$ 282,846	\$ 327,748	\$ 28,132	\$ 638,726
Project Control Engineer (1 person)	40	\$ 282,846	\$ 327,748	\$ 28,132	\$ 638,726
Safety Manager (0.25 person)	40	\$ 79,485	\$ 89,312	\$ 7,666	\$ 176,463
Quality Manager (0.25 person)	40	\$ 79,485	\$ 89,312	\$ 7,666	\$ 176,463
ODCs at 20%	-	\$ 590,372	\$1,117,791	\$ 61,270	\$ 1,769,433
TOTAL		\$ 3,542,231	\$ 6,706,749	\$ 367,620	\$ 10,616,599

Note: Numbers based on 2018 dollars and exclude escalation

Table 3-8 Construction Management FTEs Per Month

	2020												2021												2022		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CONSTRUCTION MANAGEMENT																											
Combined Construction Management																											
Sr. Construction Manager	0.25	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-
Administrative Assistant	-	0.50	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50	2.50	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Field Contract Administration	-	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-
Lead Dam Removal Inspector	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	-	-	-
Second Shift Dam Removal Inspector	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-
Yreka Water Supply Inspector	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rec Improvements Inspector	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-
Flood Improvements Inspector	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-
Specialty Inspectors	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-
Scheduler	-	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-
Project Control Engineer	-	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	-
Safety Manager	-	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	-	-
Quality Manager	-	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	-	-
ODCs at 20%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	2020												2021												2022		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CONSTRUCTION MANAGEMENT																											
Iron Gate																											
Sr. Construction Manager	0.25	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0		
Administrative Assistant	-	0.25	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0	
Field Contract Administration	-	0.17	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.3	
Lead Dam Removal Inspector	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-		
Second Shift Dam Removal Inspector	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-			
Yreka Water Supply Inspector	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-		
Rec Improvements Inspector	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-		
Flood Improvements Inspector	-	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-		
Specialty Inspectors	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	-		
Scheduler	-	0.17	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.3	
Project Control Engineer	-	0.17	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.3	
Safety Manager	-	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.1	
Quality Manager	-	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.1	

3.5 Construction

3.5.1 Dam Removal

The dam removal scope for Full and Partial Dam Removal alternatives is defined in Section 5 of the Definite Plan and was used as the basis for this estimate. Estimates were developed using the methods and schedule constraints summarized in Section 2.3 of this report. Escalation was applied per Section 2.5.

Pertinent assumptions from the Definite Plan are as follows:

- KRRC confirmed or updated quantities where new information was available, and as described in Section 5 of the Definite Plan.
- Estimate and schedule assumes that a second shift will be required for Copco No. 1 and Iron Gate demolition. KRRC assumed two 10-hour shifts, 5 days a week.
- Estimate and schedule assumes that work days are 8 hours per day, 6 days a week for Copco No. 2 and J.C. Boyle demolition.
- All concrete demolition debris will be hauled to onsite disposal area as described in more detail in Section 5 of the Definite Plan for Decommissioning (KRRC 2018).
- All earth work material from excavation activities will be hauled to onsite disposal area as described in more detail in Section 5 of the Definite Plan for Decommissioning (KRRC 2018).
- All concrete and earthwork demolition material will be processed during demolition activity and there is no process equipment (crusher, screener, and stacker) operated at disposal areas.
- One general PDB will be used to manage the entire design build process, but subcontractors will be used for certain specialized activities.

3.5.2 Reservoir Earthwork & Engineered Structures

This estimate assumes that a small percentage of sediment that remains in the reservoirs after drawdown will be mechanically excavated and placed elsewhere in the proposed floodplain area. Earthwork excavation volumes within the reservoir are based on surface models from historical site surveys compared to recently collected bathymetric data. KRRC developed labor rates, equipment rates, and materials costs from a combination of actual costs from past similar projects and RS Means Heavy Civil publication.

This estimate assumes the following:

- Earth excavation and subsequent fill (or disposal) will happen at the same time so that material is handled only once and placed on-site in the final location with minor grading and compaction. KRRC based volume estimates on neat line quantities using digital surface models.
- All excavated material is suitable for in-water disposal and will be disposed of on-site.

- Estimates include equipment and road access into site, assuming 3,000 linear feet (LF) on center (OC) or 0.56 miles per site (6 sites).

KRRC proposes elements for bank stability and channel fringe complexity, and will include a process-based restoration and velocity variations along bank line by adding large wood complexity for resting zone, feeding seams, cover and velocity refugia. KRRC based restoration areas and treatments on expected conditions after drawdown and may change based on actual conditions.

Areas identified for reservoir earthwork activities and engineered stability elements are described and shown in plan in Appendix H, Restoration Plan of the Definite Plan.

3.5.3 Restoration

Restoration activities can be broken into three primary categories: (1) Earthwork/engineered improvements (Section 3.5.2), (2) pre-drawdown activities, and (3) post drawdown activities. The following text summarizes key assumptions that are pertinent to the estimate development for the second two categories. A full description of these components can be found in Appendix H, Restoration Plan of the Definite Plan.

Pre-drawdown activities include seed collection, seed propagation and weed eradication, as further summarized below. In addition to the work described below, KRRC assumes completion of an RFP process to select a contractor or vendor for each activity.

1. **Seed Collection:** The main component of the revegetation process will be locally eco-typic seed of native plants for four different planting zones (bank wetland, bank riparian, floodplain riparian, and upland) based on hydrology. The seed will preserve the genetic integrity of the site and provide species and genetics best suited for this specific landscape. Collection of locally eco-typic seed subsequently grown by commercial growers to produce large amounts of seed or plant material will require advanced planning and will be implemented during the pre-dam removal period. To produce 50,000 lbs of pure live seed (PLS) in each of the four growing years before the 2022 fall season (totaling 200,000 lbs.), it is assumed that 3-7 lbs. of PLS/acre of wild collected seed will produce 2,000 LBS PLS/ acre. KRRC based this estimate upon propagation rate quotes obtained from BFI Native seed and Pacific Coast Seed. Conservatively, the higher seeding rate of 7 lbs PLS/acre is assumed to be planted on 25 acres at the seed propagation farm totaling the 175 lbs PLS of seed needed each year and resulting in the expected 50,000 lbs PLS if 2,000 lbs PLS is produced per acre on 25 acres. The cost of collecting 1 pound of wild seed ranges from low \$1,000 to high \$1,800. The seed must then be cleaned, stored in climate control warehouses and in some cases pre-treated. Seed pre-treatment may include scarification, stratification, imbibition, and others. Wild collected seed will be substantially more expensive than propagated seed due to additional cleaning costs.
2. **Seed Propagation:** In order reach the goal of 200,000 lbs. of PLS over 4 years, 25 acres of land will need to be rented to propagate collected seed (with an assumed minimal yield of 2,000 lbs PLS/acre) to produce 50,000 lbs per year. KRRC based the yield and other unit cost estimates on

information received from BFI, J Herbert Stone nursery, Pacific Coast Seed and the local forest service office.

3. **Weed Eradication:** The objective will be to implement a combination of weed control techniques that minimize the extent of environmental degradation and reduce the impact of chemical inputs on humans and non-target organisms. To identify the populations of existing invasive species, a field survey will be conducted at the site, geo-locating all invasive species. Assuming 100% of the project area outside of the existing reservoirs needs to be surveyed, it will take approximately 900 hours to survey the area. For a Scientist and Principal Scientist, the estimated cost is \$135,000 plus approximately \$2,247 for gas & mileage and \$21,000 for per diems and accommodations. In the years before drawdown, KRRC assumed that 30% of the site above the water line of the reservoir (85- acres) will require invasive species eradication. KRRC based this percentage on estimates from surveys performed in the fall of 2017. Once drawdown occurs, the acreage of the site with vegetation will increase along with the need for invasive species control. For two years after drawdown, KRRC assumed 300 acres to potentially require weed eradication treatment.

Post-drawdown activities include pioneer seeding, pole cutting and salvaged plant collection, revegetation in each planting zone, followed by establishment period and long-term maintenance. Each activity is further summarized below:

1. **Pioneer Seeding:** Establishing a pioneer crop on the site, soon after drawdown of the reservoirs, is essential to preventing erosion, planting inhospitable moist substrate, preventing invasive species from establishing at the site and building up soil biota and structure. The pioneer seed mix is intended to take advantage of less expensive native seed. The seed generated in large amounts during propagation (overstock), and sterile non-native seed (sterile wheat and Regreen) that can readily establish in the sediment and will be less of a risk if it is washed out due to spring flooding or if it freezes in the early months of the year. Once river and soil conditions have stabilized, a fall broadcast seeding will be applied including locally ecotypic, native and diverse seed stock for each planting zone. Broadcast aerial seeding will be performed from helicopter(s), and is a very cost-efficient method of application. KRRC based pricing on an estimate from Ben Timberland (Timberland Helicopters, Inc, Ashland, OR) on the hourly rate of \$950/hr. at the rate at which the operator can distribute the seed. KRRC assumed that the seed weighs on average 14 lbs/cubic foot, with a seed bucket that holds 27 cubic feet of seed, 12 minutes is assumed for each bucket. For distributing 100 lbs. PLS per acre, KRRC estimated to be 140 hours totaling 133,000 for a medium cost. The cost of seed per pound is based on cost for readily available seed from nurseries we anticipate working within the Project (i.e., California brome = \$8-9 per PLS).
2. **Pole Cuttings and Salvaged Plants:** The establishment of habitat will greatly accelerate with the installation of pole cuttings, as well as transplantation of salvaged plants. These plants will also help prevent erosion and add species diversity to the site. KRRC's contractor will collect pole cuttings and potentially store them, short-term, prior to installation. 'Salvaged plants' will be transplanted on site; therefore their costs are not associated with contract growing and nursery care. KRRC assumed that the contractor will absorb the cost of an expected 30% mortality rate of the pole cuttings. KRRC's contractor will collect pole cuttings from areas surrounding the site. In order to increase the number of pole cuttings available, in the year prior to drawdown, contractors will selectively cut back pole

cutting species marked for plant salvage. This will promote an ample supply of young growth that can be harvested as needed the following year. It is assumed that the harvest and installation will be simultaneous, limiting the need for storage off-site. The number of pole cuttings allotted will vary by zone. Each 100 square foot area, for both the bank riparian and bank wetland zones, will include five pole cuttings. For the floodplain riparian zone, each 100 square foot area will contain one pole cutting.

3. Revegetation

- a) **Emergent Wetland Planting Zone:** Revegetation for emergent wetlands will be installed instream along the river's edge. This vegetation will consist of 100% salvaged plants, taken from the rim of the reservoirs. During the first year, KRRC assumes salvaged plants at 20 LF OC along the edges of the river. The following spring, once the plants have established, KRRC's contractor will harvest propagules from installed salvaged plants and will then be planted at 10 LF OC between the plants from the prior year. KRRC based cost estimates for plant layout per acre on estimates from Caltrans and RS Means.
- b) **Bank Wetland Planting Zone:** Bank wetland zones will be delineated as areas suitable for plant growth approximately between the base flow and 2-year flood event water surface elevations (Q2) of the Klamath River. These areas will consist of salvaged plants and pole cuttings. KRRC expects 50 percent of this area to be restored. KRRC's contractor will transplant salvaged plants to this zone from the existing reservoir edge. KRRC based cost estimates for this work on RS Means and Caltrans data for the operation of a backhoe with a bucket and the plantings for pole cuttings. KRRC's contractor will install pole cuttings in this initial stage of planting in the spring after drawdown. KRRC's contractor will perform plant layout for all plants by the Contractor's crews marking each planting spot with a pinflag for an overall review by a restoration ecologist. KRRC's contractor will aerial seed the pioneer crop in all zones early in the drawdown year creating fast-growing erosion control before the river stabilizes. Once the pioneer crop has grown, KRRC's contractor will either roll or mow it to help open the soil to sunlight and create a habitat for the fall broadcasting of ecotypic native seed. In the early spring of the following year, KRRC's contractor will layout and install one pole cutting per 100 square foot (SF).
- c) **Bank Riparian Planting Zone:** The Bank Riparian Zone will extend approximately from the 2-year (Q2) to the 25-year (Q25) flood water surface elevations (Q-lines) of the Klamath River. KRRC expects 50 percent of this area to be available for restoration. It will be the most critical zone for rapid re-establishment of riparian habitat, short-term stability of the channel and banks, and for long-term establishment of an important transitional area between the riverine features and floodplain habitat areas. Planting densities within the riparian-bank areas will be variable, however, the substantial density of initial planting will be important to prevent invasion by reed canary grass (*Phalaris arundinacea*), a highly invasive non-native hybrid that is widespread around the reservoirs. The Bank Riparian zone will have a similar treatment to the Bank Wetland; with the same plant material and spacing. After drawdown, KRRC's contractor will transplant the plants from the rim of the reservoir to the river's edge. In the pioneer seeding process, KRRC's contractor will mainly apply mycorrhiza, with the seed in this area. In the fall, the area will be broadcast seeded with ecotypic zone selected seed. KRRC's contractor will install an additional pole cutting in the following spring. Selected areas will be fenced off to deter deer predation and

to serve as a seed bank to areas without fencing. Costs for fencing and installation and based on Caltrans data.

- d) **Floodplain Riparian Planting Zone:** Floodplain riparian zones will be delineated as those areas suitable for revegetation that occur approximately between the 25-year (Q25) and 100-year (Q100) flood water surface elevations of the Klamath River. The Riparian Floodplain Planting Zone will be planted similarly to the Bank Riparian Planting Zone; however, the plant densities will decrease, producing a decrease in plant layout costs for this zone. For each 100 SF area, there will be one pole cutting and one seed plant installation in the second year. The cost of Construction/Installation maintenance decreases slightly from Bank Riparian area; it will have an 18-month duration, until Plant Establishment. This section also includes emergency overhead irrigation in the high price estimate. KRRRC based unit prices for this on a quote from Rain for Rent for the entire site. Costs include \$60k for setup and design, \$40k/month rent and \$30k to disassemble the irrigation system, and a 5-month rental (\$320K) and an uncertainty factor of 2 for 1,790 acres (costs pro-rated from the estimate for the Project). KRRRC based costs for this on a quote from Rain for Rent that includes design and rental of all equipment.
- e) **Uplands below Rocky Wake Zone:** The area between the upper edge of the Riparian Floodplain Planting Zone and the lower edge of the Rocky Wake Planting Zone constitutes the Uplands below the Rocky Wake Planting Zone. This area is the only formerly submerged area where upland vegetation will grow on sedimentary substrate. KRRRC expects 50 percent of this area to be restored. The restoration process will be the same as for the planting zones below; mycorrhizal inoculant will be in the pioneer seed mix in the spring, broadcast seeding of the native ecotypic seed will be conducted in the fall 2021, and a spring 2022 with deer fence, emergency irrigation, and construction/installation maintenance. However, plantings in this zone will consist of four woody plants per 100 SF. Species will include acorns, juniper berries, pine nuts fir and various shrubs. KRRRC's contractor will install these plants with cocoon irrigation planters that will irrigate the plants and slowly deteriorate as the plant becomes self-sustainable. KRRRC's contractor will use an auger to create a planting pit approximately 2 feet in diameter and 1 foot deep. KRRRC based installation costs upon Saylor's installation cost.
- f) **Rocky Wake Planting Zone:** The Rocky Wake Planting Zone is the area of wake and wave action erosion around the edge of the existing reservoirs. Fluctuations of water level and wave action in the reservoir has eroded soil in a band or 'bathtub ring' leaving exposed rocky substrate, bedrock, areas that lack in vegetation. KRRRC assumed that only 20% of this area is feasible to restore. Soil amendments consisting of mycorrhizal inoculant will be added at the time of seeding. After the pioneer crop is broadcast seeded in the spring, the grown vegetation will be mowed or rolled in preparation for the fall broadcast seeding of the ecotypic seed. The plant selection and densities will be the same as the uplands below rocky wake zone. KRRRC's contractor will place deer fence in selected areas within the zone to create areas free of deer predation. These areas will serve as seed banks for the rest of the site if predation becomes severe. Additionally, overhead irrigation is included in the high estimation cost.
- g) **Disturbed Uplands Planting Zone:** The Disturbed Uplands Planting Zone will consist of the existing developed areas proposed for demolition and recreational areas that will be removed after drawdown occurs. The revegetation schedule remains the same. However, the initial soil

preparation may vary. These areas will most likely have highly compacted areas due to the existence of concrete or vehicular traffic on gravel areas. In these areas, it is assumed that 75% of the recreation area will need de-compaction. KRRC's contractor will cross rip compacted areas (before fall seeding) to a depth of 24 inches to loosen the soil and prepare it for seeding and planting. After de-compaction, KRRC expects this area to have healthy viable soils, so it is assumed that 90% of the area will be restored.

- h) Upland Stockpiles Planting Zone: Upland Stockpiles Planting Zones include areas where materials from the dam removal will be deposited. The topsoil in these areas will be heavily compacted. The revegetation process for these areas will be the same as for the Disturbed Uplands Planting Zone, however, 100% of this zone will have to be de-compacted, slightly increasing it's per acre cost. KRRC based estimates for this treatment on RS Means data for \$110 to rip soil with a bulldozer.
 - i) Undisturbed Uplands Planting Zone: The Undisturbed Uplands Planting Zone will consist of areas above the Rocky Wake Zone that may be only minimally disturbed by the eradication of invasive exotic species. These areas will go through active weed removal for at least 3 years before drawdown. KRRC's contractor will reseed potential bare and disturbed patches resulting from invasive species eradication with a native upland seed mix via broadcasting. The majority of these areas will have existing native vegetation and only 30% is expected to need restoration.
4. **Establishment Period Maintenance:** KRRC assumes that the Project will be monitored and maintained for 5 consecutive years. Maintenance and monitoring, during the first plant establishment year is crucial to achieving revegetation performance criteria established in the revegetation plan and agreed to with regulatory agencies. The quality of establishment maintenance and monitoring will determine whether the project area will be taken over by invasive exotics or by heathy native plants. KRRC's contractor will perform monthly establishment maintenance and monitoring from November 1 through April 1 and bi-weekly the rest of the year, totaling approximately 20 visits during this critical first year. During each visit, botanists will be surveying the project area for a number of performance criteria related objectives. Plant species diversity and cover, the growth and health of woody vegetation, acres of wetlands, and noxious weed coverage may be monitored. The location of individual species or areas of species will be geo-located. Other monitoring items may include the minimum coverage of woody shrubs and trees in key restoration areas. KRRC based the labor rate for monitoring on the mean hourly rate of a Scientist and Principal Scientist, resulting in a probable cost of \$139,884 for each visit, equaling about 932 hours of monitoring surveys at a rate of 2.5 acre/hour. Maintenance will follow monitoring, and may include re-seeding/re-planting of native vegetation (as necessary), invasive plant management, herbivore control, irrigation maintenance and other activities as situations arise (e.g., implementation of erosion repairs). KRRC based rates for these items roughly on quoted rates for invasive species removal in the area (\$3,000/acre).
5. **Long-term Maintenance:** After Establishment Period Maintenance and Monitoring, long-term monitoring will continue for 4 years. For monitoring, the cost per visit and the rate of surveying is consistent throughout at 2.5 acres/hour (assuming the mean hourly rate of a Scientist and Principal Scientist). Tasks outlined in the Establishment Maintenance activity will also continue throughout this period. However, KRRC anticipates both the number of visits and maintenance needs (i.e. hourly

cost) to decrease. In Year Two (2024), there are bi-monthly surveys from November through April and monthly surveys the rest of the year, totaling 10 visits. In the second year, the number of acres in need of treatment is 80% of the total acreage, and cost of maintenance is 80% of the establishment monitoring. In Year Three (2025) there are 5 visits, one visit between November and April and bi-monthly the rest of the year. The number of acres and the cost of maintenance are 60% of the total acreage and cost of the establishment maintenance. In Year Four (2026) there are 4 visits and the acres and cost decrease to 40%. And in Year Five (2027), the final year, visits are down to twice a year and the percentage of land in need of maintenance and the rate cost is down to 20%. At this point the site should be close to natural conditions and meet the performance criteria for the upland, riparian floodplain, riparian bank, and wetland zones, as well as for invasive exotic plant presence.

3.5.4 Yreka Water Line Replacement

KRRC assumed for development of this estimate that an underground pipeline will be constructed to relocate the City of Yreka’s water supply line currently crossing Iron Gate reservoir. This relocation option is discussed in detail in Section 7.5 of the Definite Plan.

The scope for replacing the Yreka Water Line will involve installation of two micro-tunneling pits on either side of the Klamath River. Once these pits are fully excavated and shored, micro tunneling equipment will install a 36” steel casing below the river bed. Once the casing is installed, a new 24-inch waterline will be installed to take the place of the river crossing section of the existing water line. On either side of the Klamath River, the new pipe will be installed using an open cut excavation method. Once the waterline is completely installed, tested and active, the micro tunneling pits and the open excavation are to be backfilled with existing material. Once the backfill operation is complete, the existing waterline will be removed and recycled.

The cost estimate for the Yreka Water Line Replacement was developed using the RS Means database with a city cost index adjustment of Redding, California. Crew output for each operation was adjusted to account for access, location, and construction operation. KRRC assumed that a pile and lagging wall will be used to shore micro tunneling pits and it will be installed simultaneously with the excavation operation.

3.5.5 Transportation Improvements

This section describes the proposed road improvements and maintenance activities that are the basis for the estimate of project costs. It is based on design information provided in Sections 5 and 7.4 of the Definite Plan. Several road, intersection, structure and culvert improvements are proposed as part of the Project to:

- Facilitate access for project-related vehicles and equipment associated with dam removal
- Provide safety measures for both public and project roads used during the dam removals
- Return roads used by project-related vehicles to the respective owners and users in an acceptable state, restoring any reduction in function attributed to the Project

The improvements will be implemented at various phases throughout the Project. Some will require completion prior to the dam removals (related to construction access), and others will be contingent on a future assessment of road elements once reservoir drawdown or hauling activities are complete (maintenance activities). There will also be some ongoing activities throughout the Project to maintain roads heavily trafficked by project construction vehicles.

Table 3-9 provides a summary of all pertinent road segments, bridges, and culverts and the associated improvements or maintenance. Table 3-10 summarizes maintenance and rehabilitation cost assumptions associated with roads being used for construction access. Section references within the table are to the sections within the Definite Plan.

Table 3-9 Transportation Improvements

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
J.C. Boyle				
The Dalles California Highway (US97)	• Pavement rehabilitation unlikely during or post-Project (Section 5.2.2)			X
Green Springs Highway (OR66)	• Pavement rehabilitation unlikely during or post-Project (Section 5.2.2)			X
Keno Worden Road	• Pavement rehabilitation unlikely during or post-Project (Section 5.2.2)			X
Topsy Grade Road	• Potential pavement rehabilitation during or post-Project (Section 5.2.2)			X
Culvert at Unnamed Creek	• Potential sediment removal and downstream erosion protection (Section 7.4.3)		X	
J.C. Boyle Dam Access Road from OR66	• Re-grading uneven or rutted areas (Section 5.2.2)	X		
Junction of OR66 and J.C. Boyle Dam Access Road	• Intersection widening (Section 5.2.2) • Tree removal (Section 5.2.2) • Signage (Section 5.2.2)	X		
Timber Bridge	• Remove (Section 5.2.2)	X		
Power Canal Access Road	• Periodic roadway maintenance grading during construction (Section 5.2.2)	X		
J.C. Boyle Disposal Access Road	• Re-grading (Section 5.2.2) • Minor widening (Section 5.2.2)	X		
Copco and Iron Gate				
Copco Road (I-5 to Ager Road)	• Potential pavement rehabilitation during or post-Project (Section 5.2.2)			X
Copco Road (Ager Road to Lakeview Road)	• Potential pavement rehabilitation during or post-Project (Section 5.2.2)			X
Dry Creek Bridge	• Temporary bridge for construction access during Project (Section 5.2.2)	X		

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
Copco Road (Lakeview Road to Daggett Road)	<ul style="list-style-type: none"> Roadway maintenance during construction (Section 5.2.2) Potential pavement rehabilitation during or post-Project (Section 5.2.2) 	X		X
Unnamed Culverts between Brush Creek and Scotch Creek	<ul style="list-style-type: none"> Potential rehabilitation or replacement post-construction (Section 7.4.3) 			X
Scotch Creek Culvert	<ul style="list-style-type: none"> Replace (Section 7.4.3) 		X	
Camp Creek Culvert	<ul style="list-style-type: none"> Replace with bridge (Section 7.4.3) 		X	
Jenny Creek Bridge	<ul style="list-style-type: none"> Replace (Section 7.4.3) 		X	
Copco Road (Daggett Road to Copco Access Road)	<ul style="list-style-type: none"> Potential road surface maintenance during or post-Project (Section 5.2.2) 			X
Fall Creek Bridge	<ul style="list-style-type: none"> Replace (Section 5.2.2) 	X		
Copco Road (Copco Access Road to Copco Road Bridge)	<ul style="list-style-type: none"> Potential road surface maintenance during or post-Project (Section 5.2.2) 			X
Beaver Creek and E.F. Beaver Creek Culverts	<ul style="list-style-type: none"> Potential erosion protection (Section 7.4.3) 		X	
Raymond Gulch Culvert	<ul style="list-style-type: none"> Potential erosion protection (Section 7.4.3) 		X	
Copco Road Bridge	<ul style="list-style-type: none"> Potential abutment erosion protection (Section 7.4.3) 		X	
Copco Access Road	<ul style="list-style-type: none"> Clear, grub and regrade (Section 5.2.2) Minor widening into hillside if possible (Section 5.2.2) Remove after construction is complete and restore area to native vegetation 	X		
Copco Cove Access	<ul style="list-style-type: none"> Minor works to enable barge mobilization (Section 5.2.2) 	X		
Culverts at Unnamed Creeks (Copco Lake)	<ul style="list-style-type: none"> Potential erosion protection (Section 7.4.3) 		X	

Location	Improvements (Section References to Definite Plan (KRRC 2018))	Purpose		
		Construction Access	Drawdown Related	Maintenance/ Rehabilitation
Ager Beswick Road	<ul style="list-style-type: none"> None (Section 5.2.2) 			
Mallard Cove Boat Ramp Access	<ul style="list-style-type: none"> Minor works to enable barge mobilization (Section 5.2.2) 	X		
Daggett Road	<ul style="list-style-type: none"> Minor grading improvements (Section 5.2.2) Potential road surface maintenance during and post-Project (Section 5.2.2) 	X		X
Daggett Road Bridge	<ul style="list-style-type: none"> Replace (Section 5.2.2) 	X		
Lakeview Road (Copco Road to Iron Gate disposal site)	<ul style="list-style-type: none"> Potential road surface maintenance during and post-Project (Section 5.2.2) 			X
Lakeview Road Bridge	<ul style="list-style-type: none"> Replace (Section 5.2.2) 	X		
Iron Gate Powerhouse Access Road	<ul style="list-style-type: none"> Signage Potential road surface maintenance during construction (Section 5.2.2) Remove after construction is complete and restore area to native vegetation (Section 5.2.2) 	X		X
Iron Gate Left Abutment Access Road	<ul style="list-style-type: none"> Remove after construction is complete and restore area to native vegetation (Section 5.2.2) 	X		
Iron Gate Upstream Left Abutment Access Road	<ul style="list-style-type: none"> Remove after construction is complete and restore area to native vegetation (Section 5.2.2) 	X		
Other Locations	<ul style="list-style-type: none"> 			
Pedestrian Bridge #1	<ul style="list-style-type: none"> Will likely need to be removed by KRRC (Section 7.2). Cost estimate includes demolition only. 			X
Pedestrian Bridge #2	<ul style="list-style-type: none"> Evaluation will be performed by KRRC to determine whether removal or replacement will be required (Section 7.2). Cost estimate includes demolition only. 			X

Table 3-10 Road Maintenance Assumptions

Location	Maintenance/Rehabilitation Assumptions
J.C. Boyle	
The Dalles California Highway (US97)	• None
Green Springs Highway (OR66)	• None
Keno Worden Road	• None
Topsy Grade Road	• Pre and post-construction 0.9 miles of 9-inch aggregate base section repair
J.C. Boyle Dam Access Road from OR66	• Pre-construction improvements include minor cut/fill, 0.25 miles of new 9-inch aggregate base section and 0.7 miles of 9-inch aggregate base section repair; Post-construction improvements include 0.6 miles of 9-inch aggregate base section repair
Power Canal Access Road	• Pre and post-construction 1.5 miles of 9-inch aggregate base section repair
Powerhouse Access Road	• None
J.C. Boyle Disposal Access Road	• Minor regrading & widening
Copco and Iron Gate	
Copco Road (I-5 to Ager Road)	• Post-construction 1 mile new asphalt overlay
Copco Road (Ager Road to Lakeview Road)	• Pre-construction improvements include 0.5 miles of crack sealer, and 0.75 miles of new asphalt section; Post-construction improvements include 1.0 miles of new asphalt overlay
Copco Road (Lakeview Road to Daggett Road)	• Pre-construction improvements include 1.0 mile of crack sealer, and 1.5 miles of new asphalt section; Post-construction improvements include 2.0 miles of new asphalt overlay
Copco Road (Daggett Road to Copco Access Road)	• Pre and post-construction 1.5 miles of 9-inch aggregate base section repair
Copco Road (Copco Access Road to Copco Road Bridge)	• Pre and post-construction 1.5 miles of 9-inch aggregate base section repair • Post-construction 0.25 mile overlay and minor riprap
Copco Access Road	• Pre-construction 2,500 CY cut/fill and 0.9 miles 9-inch aggregate base overlay • Remove after construction is complete and restore area to native vegetation
Ager Beswick Road	• None
Mallard Cove Boat Ramp Access	• Minor works to enable barge mobilization
Daggett Road	• None
Lakeview Road (Copco Road to Iron Gate disposal site)	• Post-construction improvements include 0.7 miles 6-inch aggregate base overlay
Iron Gate Powerhouse Access Road	• Remove after construction is complete and restore area to native vegetation

Location	Maintenance/Rehabilitation Assumptions
Iron Gate Left Abutment Access Road	<ul style="list-style-type: none"> Remove after construction is complete and restore area to native vegetation
Iron Gate Upstream Left Abutment Access Road	<ul style="list-style-type: none"> Remove after construction is complete and restore area to native vegetation

3.5.6 Recreation Plan

Costs associated with demolition of existing recreation facilities are included in the dam removal cost category. This section summarizes assumptions associated with construction of any new recreation facilities connected with the Project. Although the final recommendation for proposed recreation facilities has not been made, a list of possible improvements have been scoped for inclusion in this cost estimate.

Recreation costs were derived from itemized estimates for the various recreation facilities listed in Table 3-11. Rates and prices are derived from a combination of historical contracting information including Lake Berryessa Recreation Area Renovation project, and RS Means. Estimated project costs assume operation and maintenance support at each facility for up to 5 years.

Table 3-11 Assumptions For New or Improved Recreation Facilities

Dam (Sate)	Description
Campgrounds	
Jenny Creek Campground Expansion	Expand campground and upgrade facilities including new restroom, 5 picnic tables, 2 fire grates, 5 trash bins and minimal earthwork
Topsy Campground Upgrade	Replace or redesign boat ramp for river access
New Campground	New 20-site campground in TBD location (includes picnic tables, fire grates, trash bins and restroom)
Day-use Areas	
Fall Creek Day-use Area Upgrade	Upgrade facilities and reconstruct trail leading to Fall Creek waterfall
Iron Gate Hatchery Day-use Area Upgrade	Reconstruct day use site to provide additional facilities and a boat ramp
New Day-use Areas	Provide up to two day-use sites with river access at TBD defined locations. Includes new picnic table, fire grate, and trash bins. One of the sites may be located at the J.C. Boyle powerhouse and substation
River Access	
Fishing River Access Points	Up to two river access points at TBD locations. Sites include signage, portable toilets and trash receptacles
Boating River Access Ramps	Up to two river boating access points at TBD locations. Sites include access and boat ramps
Trails	
J.C. Boyle to Iron Gate walking trail	Up to 20 miles of non-motorized trail from J.C. Boyle to Iron Gate. Includes up to two viewing areas and/or interpretive signage

Dam (Sate)	Description
Walking Trails for River Access	Non-motorized side trails off main trail for access river

3.5.7 Downstream Flood Control Improvements

This section summarizes the assumptions used to develop costs associated with any required downstream flood control improvements. The analysis that led to the selection of improvements is discussed in Section 7.7 of the Definite Plan.

The cost estimate includes elevating 36 habitable homes and other structures. The rate used assumes that it will take five days to raise each house, with subcontractor costs based on the average cost of raising a building in California. Additional cost was included to add two sets of stairs per house, and supporting labor team for ancillary work associated with flood proofing.

3.5.8 Public Health and Safety Measures

The estimate includes costs for cattle exclusion fencing at reservoir sites where the former reservoirs will no longer be able to serve as a natural barrier to livestock, and for the protection of revegetation efforts against damage. Fencing will likely be four-wire fence with metal T-posts at 12 LF intervals.

Fencing quantities have been determined from a detailed analysis of fencing lengths in GIS, focused on fencing the reservoir restoration areas while avoiding fencing along portions of the perimeter with steep topography above the reservoir, forest and housing. As the scope is developed further, additional definition may be obtained by considering where fences might need to tie into property boundary fences (if they exist) or where steep topography just below the reservoir surface might act as a barrier.

3.6 Anticipated Mitigation Measures

The following sections summarize cost assumptions associated with anticipated regulatory mitigation measures for groundwater wells, downstream water intakes and cultural resources.

3.6.1 Groundwater Improvements

Groundwater well improvements adjacent to the reservoirs may be necessary if reservoir drawdown has a negative impact on existing well water levels. A groundwater well management plan is contained in Appendix N of the Definite Plan and is the basis for the estimate.

The current estimates assume public outreach will be completed with relevant property owners, and subsequent installation and monitoring of up to five (5) new 60-foot deep, 3-inch diameter monitoring wells will be completed. Well drilling costs assume PVC casing and hard rock geology. Wells will be monitored monthly for water level and water quality constituents over a 3-year period.

The estimate assumes up to 20 wells will ultimately require replacement. Costs include drilling of new wells and abandonment of existing wells. The estimate also assumes temporary water will be provided for up to 30 days during well installation.

3.6.2 Downstream Water Supply

Sediment buildup during reservoir drawdown may affect some downstream water supply intakes as needed, the KRRC will excavate affected intakes to clear them of aggraded sediment materials, and provide temporary settling basins or groundwater wells if potable water supply is impacted. Jetting and vacuum technologies such as those used for cleaning storm drains and sewers will be used to remove sediment at intakes. Temporary settling basins may also be used to remove silt and sediment prior to the primary treatment performed by the water right holder.

There are approximately 50 water diversions off the Klamath River that could be affected. The USBR believed between 7 and 18 intakes would require maintenance. As some intakes have been added after the 2012 EIS/R, this estimate is based on the higher end of the range as the most probable number of intakes that could require maintenance actions.

In some cases, where diversions are used primarily for irrigation, the KRRC may need to pay for lost or damaged crops. Water rights holders reported alfalfa and pasture as the majority crop types irrigated with the diverted water during the drawdown period. In 2012, the average return for alfalfa produced in Siskiyou County was approximately \$1,200 per acre, where the average yield was approximately 6 tons per acre (UCCE 2012). Assuming all 129 acres will be affected, the cost will be approximately \$154,800.

Supplying livestock with water requires providing a stock water tank and water. A 500 gallon stock water tank is estimated.

Table 3-12 Assumptions For Downstream Water Supply

Cost Level	Elements Included in Cost Estimate
MPE	Intake excavation for 18 intakes Water supply for domestic use for 8 water rights (claimed or registered rights with reported diversions) Temporary settling basins at 18 intakes Temporary groundwater wells at 18 intakes
Direct Crop Loss Mitigation	Payment for lost hay crops on 129 acres of irrigated lands.
Stock watering	Provide 500 gallon water tank and 1,500 gallons of water per month.

References:

- UCCE (University of California Cooperative Extension). 2012. Sample Costs to Establish and Produce Alfalfa Hay – Intermountain Siskiyou County, Scott Valley- Mixed Irrigation. Accessed February 27, 2018. Available at: https://coststudyfiles.ucdavis.edu/uploads/cs_public/a6/b3/a6b35d9d-bd82-495c-86b1-1987dd6154ae/alfalfa_im_scott2012.pdf

- County Road 67 Sediment Trap Maintenance Pilot Project 2013-2014, Douglas County CO. CH2M, Denver CO. Available at: http://www.vactor.com/Portals/0/PDF/hxx/HXX_Brochure_WEB_11.16.pdf
- League of Oregon Cities and the Community Planning Workshop at the University of Oregon. Water, Wastewater and Stormwater Rate Survey. March, 2015.
- Raftelis Financial Consultants, Inc. and California-Nevada Section of the American Water Works Association. 2015 California-Nevada Water and Wastewater Rate Survey.

3.6.3 Cultural Resources

Cultural resources mitigation and protective measures may be required during drawdown, throughout the dam removal and reservoir restoration durations, and post-construction. Activities will likely involve short- and long-term cultural site monitoring, inadvertent discovery of cultural resources, among others. Additional information about the potential scope of activities is available in Appendix L of the Definite Plan.

Site monitoring and resolution of inadvertent discoveries of cultural resources and human remains will follow protocols established during agency and tribal consultations, as documented in the Historic, Cultural, and Tribal Resources Management Plan discussed in Appendix L, as well as actions developed and approved during consultations under Section 106 and agreed to during consultations with California-recognized tribes.

The cultural resource mitigation and protective measures estimate is based on the following assumptions associated with agency and tribal outreach, drawdown and post-drawdown surveys/inspections, curation fees, discovery contingencies and associated protection and mitigation measures.

Agency and Tribal Outreach

During the two-year construction period starting with reservoir drawdown, management of cultural resources and associated mitigation will require ongoing agency and tribal outreach, consultation, and meeting attendance.

Post-construction, long-term cultural resources management and monitoring activities are estimated for a 3-year period, and based on the Historic, Cultural, and Tribal Resources Management Plan.

Drawdown Surveys

Archaeological and cultural inventories are planned for the J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate reservoir zones during (1) the course of drawdown activities, and (2) post-drawdown reservoir areas as soon as surface conditions permit. Cost assumptions associated with each are listed below:

- Drawdown Shoreline Survey: To the extent possible, and in consideration of safety factors, periodic pedestrian archaeological inventory will be conducted along the reservoir shorelines as drawdown occurs. The principal goal of this shoreline survey is to identify and reduce looting and disturbances of known and currently unknown cultural resources. Inventory methods for this shoreline survey are still under development, but may include low-elevation aerial surveys (e.g., drones, helicopter) or barge surveys, if feasible, that target areas subject to slumping or those that are not sufficiently

dried to allow safe access via foot-traffic and survey vehicles. A team of one archaeologist and one tribal monitor will conduct the shoreline inventory at each reservoir, for three teams (J.C. Boyle, Copco No.1 and 2, and Iron Gate). The estimate allows for weekly reconnaissance for six people for a 2-month period before the post-drawdown pedestrian inventory of the reservoir areas can begin.

- **Post-drawdown Reservoir Survey:** Archaeological inventory will be conducted of the post-drawdown reservoir areas after water has receded and soils have sufficiently dried to allow for pedestrian survey. Based on current estimates, the former reservoir footprints encompass a total of 2,275 acres. Archaeological pedestrian inventory will focus on reservoir areas covered by 0-4 feet of sediment, where water-induced erosion has the greatest potential to reveal buried archaeological deposits. The 0-4 foot sediment area is estimated as encompassing about 1,500 acres. Selected deep probing may be used in areas of high archaeological sensitivity that exceed sediment depth of 4 feet. Using a standard rate of 25 acres per person per day, 1,500-acre survey will require approximately 60 person/days to complete. Assuming an average of one site per every 50 acres inventoried, 30 archaeological sites would require recordation, which in turn will require an additional 60 person/days of effort.

Construction Surveys

Construction cultural resource monitoring is associated with implementation of the reservoir restoration plan during 2021 and 2022. The restoration plan involves removal of some portion of the remaining reservoir sediments to re-expose some high value pre-inundation river terraces. The Klamath River corridor and its associated terraces are areas of high archaeological and tribal resource sensitivity, and any subsurface disturbances associated with exposing the pre-inundation landscape (within approx. 5 vertical feet) will minimally require cultural resources monitoring.

Two teams comprised of archaeologists and tribal monitors, will participate during the course of any reservoir restoration actions. The estimate allows for monitoring for four people for a period of one year (FY 2021-2022). If cultural resources are inadvertently discovered during the restoration area monitoring activity, their recordation and evaluation will continue under Discovery Contingencies (see below).

Post-Construction Surveys

Post-construction cultural resources management and monitoring reflects compliance with mitigation of tribal cultural impacts, will be developed in the Historic, Cultural and Tribal Resources Management Plan, will require ongoing consultation with affected tribes, including meetings to identify site-specific mitigation as new sites are exposed or discovered; needs for additional survey; development and implementation of a Looting and Vandalism Protection Program (LVPP), including long-term monitoring and site documentation; tribal issue facilitation; and long-term assistance with implementation of the Programmatic Agreement. These requirements are expected to include efforts beyond those covered under more routine agency and tribal consultation.

The LVPP provisions for archaeological and tribal monitoring is estimated to occur for a maximum of 3 years following completion of ground disturbance activities. Monitoring frequency is currently estimated at

quarterly. The estimate for LVPP monitoring allows for two, 2-person crews, comprised of one archaeologist and one tribal monitor, for a 2-week period every quarter, for a total of 12 quarters. Additional non-field related costs are included for ongoing agency and tribal consultation and meetings.

Curation Fees

Curation fees have been included in the estimate for artifacts recovered during phase II and phase III fieldwork. As currently estimated, archaeological investigations involve excavation of 120m³ for phase II efforts and 200m³ for phase III efforts, for a total of 320m³. The estimate allows for permanent curation of archaeological materials recovered during the phase II and phase III programs as 1 archive box per 2m³ of excavated sediment, for a 160 archive boxes. An additional 250 boxes may be required for discovery contingencies, for an estimated project total of 410 boxes. At an average of \$500/ft³ (2018 price quote from Oregon Museum of Natural and Cultural History), the curation of 410 archive boxes of cultural materials is estimated at \$205,000 excluding escalation. Curation support labor for final artifact and paperwork preparation is estimated at an average of 4 hours per archive box.

Inadvertent Discovery Contingencies

Two types of inadvertent discovery contingencies are anticipated during project implementation, including unanticipated exposure of archaeological resources and human remains. For purposes of this cost estimate, it is assumed that up to 160 discoveries (60 archaeological materials and 100 human remains) may occur in both short-term and long-term contexts. Additional information is provided below:

- **Archaeological Resources:** It is anticipated that up to 30 new archaeological resources may be discovered during inventory of the former reservoir areas. Stabilization and/or recovery work (excavation) may be required at the anticipated sites to reduce project-related effects, particularly those related to erosion. In addition, ground disturbances associated with the reservoir restoration actions may expose archaeological components when reservoir sediments are removed and the pre-inundation landscape is exposed. The estimate allows for discovery, stabilization, and/or recovery work of up to an additional 30 new archaeological resources associated with restoration actions. The estimate allows a per unit rate of \$30,000 per resource for stabilization and/or recovery work for each of the 60 newly identified archaeological resources, to include recordation, archaeological excavation, analysis, and reporting.
- **Human Remains:** Drawdown, dam removal, and post-dam removal activities have the potential to expose human burials within the former reservoir areas, as well as in downriver contexts where elevated water levels and subsequent bank erosion may occur. The estimate allows a per resource rate of \$15,000 for recovery of 100 human remain locations. Discovery, removal, and/or relocation of human remains will require investigation and recovery by a 4-person team, comprised of one field supervisor (archaeologist or physical anthropologist), two archaeological technicians, and one tribal monitor for a period of two days in the field. Archaeological materials recovered from discovery situations will require reporting, analysis and curation.

TCP Reserve Fund

Current agency and tribal consultation efforts have not yet addressed issues related to mitigation of impacts to TCPs. Therefore, a conservative reserve fund of \$1,000,000 has been estimated for this possibility.

3.7 Monitoring & Reporting

3.7.1 Aquatic Resource Measures

Measures to benefit aquatic resources (AR) have been developed through coordination with state and federal regulatory agencies, and have been incorporated into the Project. Aquatic resource activities will take place prior to, during, and after dam removal and are based on Appendix I of the Definite Plan. The following provides a summary of cost assumptions associated with AR measures:

- Monitoring of tributary confluence areas for connectivity will occur for 2 years post-dam removal and will include 9 key tributaries within the reservoir and downstream depositional reach (Iron Gate Dam to Cottonwood Creek).
- Tributary confluence connectivity maintenance will occur for 2 years and will require hand crews for 3 weeks per year for downstream tributaries, and 4 weeks of equipment removal per year for reservoir reach tributaries.
- Water quality monitoring and fish rescue/relocation will occur at 13 key tributaries and only during the year of drawdown.
- Juvenile fish rescue and relocation efforts will only take place if temperature and sediment thresholds are exceeded and will take no more than 3 weeks to complete during year of drawdown.
- Cost includes approximately \$4 million in gravel augmentation for full mitigation of spawning habitat. The actual amount necessary is likely less and will be based on surveys completed after drawdown.
- Sucker rescue and relocation effort will occur on all three reservoirs and take no more than 2 weeks to complete.
- Freshwater mussels will be relocated to the hydroelectric reach between Keno Dam and the head of J.C. Boyle Reservoir. The relocation effort will take no more than 2 weeks.

3.7.2 Terrestrial Resource Measures

Measures to benefit terrestrial resources (TER) have been developed through coordination with state and federal regulatory agencies, and have been incorporated into the Project. Terrestrial resource activities will take place prior to, during, and after dam removal and are based on Appendix J of the Definite Plan. The following provides a summary of cost assumptions associated with TER measures:

- Habitat Restoration: Includes monitoring and reporting for 3 years following vegetation installation.
- Nesting Bird Surveys: Includes osprey and cliff swallow nest exclusion; monitoring; reporting; pre-clearing nest surveys; work zone monitoring and rescue. Likelihood of northern spotted owl nesting during construction period is low and is excluded from the estimate.

- Bald and Golden Eagles: Likelihood of existence and discovery of nesting bald or golden eagles during construction period is low and is excluded from the estimate.
- Special Status Plants: Likelihood of existence and discovery of special status plants during the construction period is low and is excluded from the estimate.
- Permanent Loss of Wetlands: Includes monitoring and reporting for 5 years, post-construction.
- Roosts for Special Status Bats: Estimate includes a combination of retained/modified structures and new artificial roost structures.

3.7.3 Water Quality Monitoring

Water quality monitoring was estimated to include monitoring at up to ten main stem stations along the Klamath River. Eight of these are existing USGS stations, while two will be new stations. Existing stations will be upgraded with equipment to meet the project objectives.

All sites will be equipped with a multi-parameter sonde to measure temperature, pH, dissolved oxygen, specific conductance and turbidity. In addition, all sites except Keno will be equipped with a high-range turbidity sensor and side-looking acoustic profiler (for acoustic attenuation and backscatter measurements). A TSS and NTU laboratory relationship study will be conducted using sediment samples collected from the reservoirs.

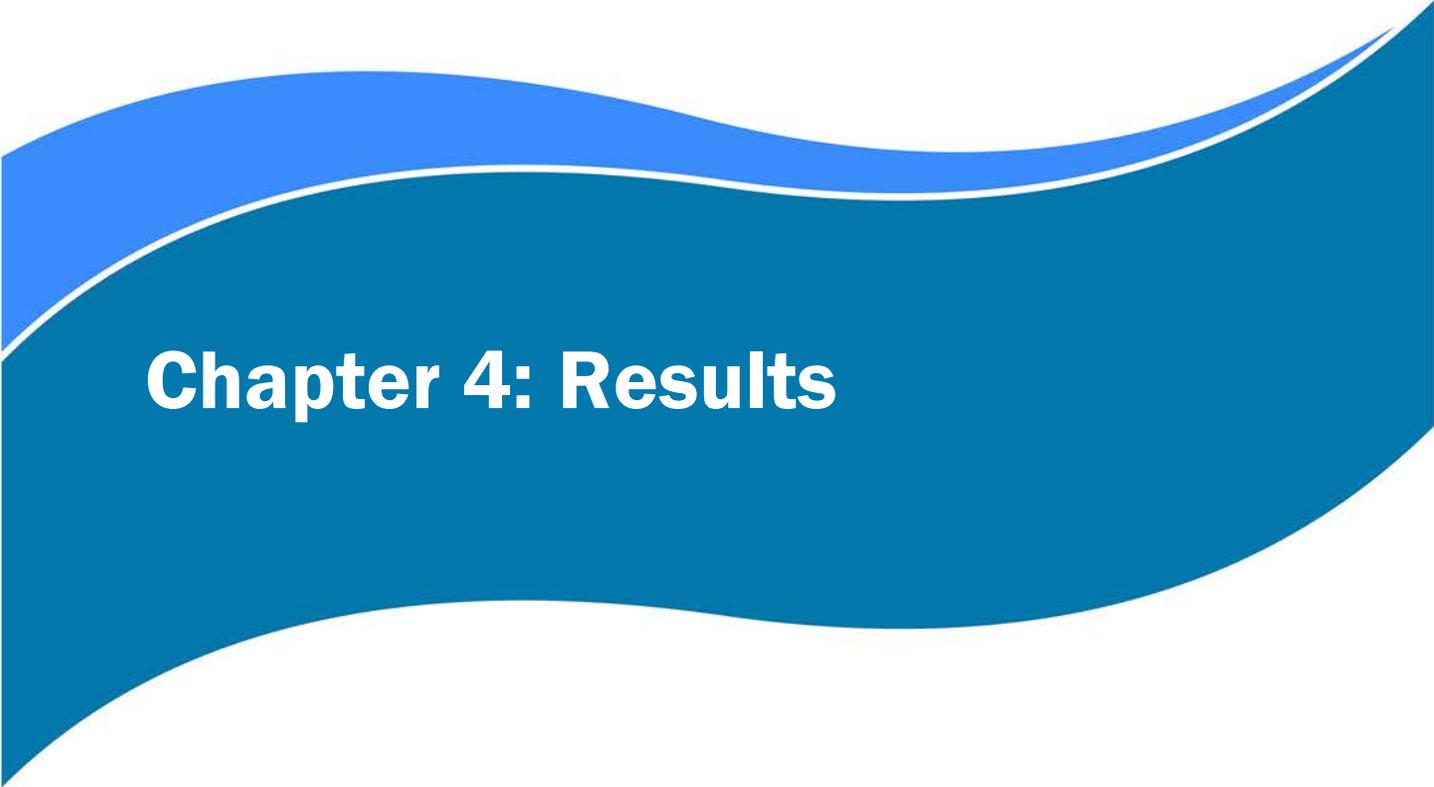
Analysis and reporting of data will be according to United States Geological Survey (USGS) guidelines. The primary final products of the monitoring network will be 15-minute time series of stage, discharge, temperature, pH, dissolved oxygen, specific conductance, turbidity, acoustic attenuation, acoustic backscatter, and suspended-sediment concentration (SSC, potentially discriminating between silt/clay and sand), and suspended-sediment flux.

Rates and prices are based on a USGS proposal submitted in March 2018, and account for monitoring for 3 years following dam removal.

Additional sediment, reservoir and estuary monitoring were assumed during the 5 year period after removal of the dams. The estimate assumes the following:

- High definition aerial photos and LiDAR will be flown together in a single aircraft mobilization each year in the spring of years 2-5. Year 1 includes only high definition aerial photos.
- Volitional fish passage monitoring includes 2 weeks of fieldwork to monitor fish passage through hydroelectric reach, and additional amounts for reporting.
- Monitoring work for all three reservoir areas will be performed at the same time.
- Corrective actions are not included in costs, if they are needed based on monitoring results.
- Estuary and river sampling for toxins before and after dam removal using four separate sampling events.

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Chapter 4: Results

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4. RESULTS

The following sections provide a summary of the results of the cost analyses described above. Detailed construction cost breakdowns for both Full Removal and Partial Removal alternatives are provided in Attachment A. Pay item cost detail worksheets, describing the calculation of individual cost estimate line items rates and prices are provided in Attachment B.

In addition to the estimated project cost results, a full range of results from the Monte Carlo analysis are provided in Section 4.2, and a comparison to the USBR 2012 estimate is provided in Section 4.3.

4.1 Total Cost Summary

Tables 4-1 and 4-2 provide a summary of the estimate of project costs for Full and Partial Removal alternatives, respectively. As described in Section 2.6, a combined design and construction contingency (30% of construction cost) has been included in the estimates. As the detailed design advances toward final construction drawings and specifications, the design contingency will decrease to near zero. While the construction contingency may decrease as more field data and information becomes available, some level of construction contingency will persist throughout the construction phase.

In addition to the estimate of project costs, the summary tables show probabilistic MPL and MPH costs based on the results of Monte Carlo simulations. The right-hand column indicates the estimated project costs, whereas the forecast range from MPL to MPH indicate the range of probabilistic outcomes.

As discussed in more detail in Section 2.7, while it is typical for large water infrastructure projects to select P80 to represent the upper range of project planning contingency (MPH), due to the unique nature of this Project and the KRRC, a more conservative P90 was selected to represent the MPH for the Project. The P90 estimate will cover the most likely final project cost in 90% of all risk scenarios. A P10 was selected to represent the MPL.

Table 4-1 Results Summary - Full Removal

Line Item/Cost Category		Forecast Range		Estimated Project Cost
		MPL (P10)	MPH (P90)	
Project Oversight		\$29,466,000	\$29,778,000	\$29,581,000
10	Project Oversight	\$29,466,000	\$29,778,000	\$29,581,000
Environmental Compliance & Permitting		\$8,525,000	\$8,829,000	\$8,637,000
21	Permitting	\$6,607,000	\$6,911,000	\$6,719,000
22	Environmental Compliance Support	\$1,918,000	\$1,918,000	\$1,918,000
Engineering & Procurement		\$15,023,000	\$16,925,000	\$15,632,000
31	Design Data	\$1,938,000	\$2,085,000	\$1,992,000
32	Engineering - AECOM	\$5,949,000	\$6,400,000	\$6,115,000
33	Engineering - PDB	\$6,152,000	\$7,381,000	\$6,513,000
34	Procurement	\$984,000	\$1,059,000	\$1,012,000
Construction Management		\$10,328,000	\$11,111,000	\$10,617,000
35	Construction Management	\$10,328,000	\$11,111,000	\$10,617,000
Construction		\$202,108,000	\$268,560,000	\$227,980,000
41	Dam Removal	\$99,282,000	\$117,341,000	\$106,827,000
42	Restoration Earthwork	\$19,887,000	\$24,270,000	\$21,051,000
43	Restoration of Vegetation	\$46,133,000	\$71,103,000	\$57,957,000
44	Yreka Water Line Replacement	\$2,665,000	\$3,305,000	\$2,900,000
45	Transportation (Bridges, Culverts, Roads)	\$26,980,000	\$41,340,000	\$30,799,000
46	Recreation Improvements	\$3,295,000	\$6,486,000	\$4,584,000
47	Flood Proofing	\$1,340,000	\$1,715,000	\$1,499,000
48	Public Health And Safety Measures	\$2,526,000	\$3,000,000	\$2,363,000
Anticipated Mitigation Measures		\$17,264,000	\$19,510,000	\$18,407,000
51	Groundwater Improvements	\$1,627,000	\$2,317,000	\$1,982,000
52	Water Supply And Water Rights	\$980,000	\$1,185,000	\$1,091,000
53	Cultural Resources	\$14,657,000	\$16,008,000	\$15,334,000
Monitoring & Reporting		\$15,332,000	\$22,571,000	\$18,405,000
61	Aquatic Resource Measures	\$6,326,000	\$8,101,000	\$6,691,000
62	Terrestrial Resources Measures	\$1,387,000	\$3,164,000	\$2,395,000
63	Water Quality Monitoring	\$7,619,000	\$11,306,000	\$9,319,000
Design & Construction Contingency		-	-	\$68,394,000
Risk Contingency		\$48,410,000	\$129,794,000	-
TOTAL		\$346,500,000	\$507,100,000	\$397,700,000

Table 4-2 Results Summary - Partial Removal

Line Item/Cost Category		Forecast Range		Estimated Project Cost
		MPL (P10)	MPH (P90)	
Project Oversight		\$29,466,000	\$29,778,000	\$29,581,000
10	Project Oversight	\$29,466,000	\$29,778,000	\$29,581,000
Environmental Compliance & Permitting		\$8,525,000	\$8,829,000	\$8,637,000
21	Permitting	\$6,607,000	\$6,911,000	\$6,719,000
22	Environmental Compliance Support	\$1,918,000	\$1,918,000	\$1,918,000
Engineering & Procurement		\$15,023,000	\$16,925,000	\$15,632,000
31	Design Data	\$1,938,000	\$2,085,000	\$1,992,000
32	Engineering - AECOM	\$5,949,000	\$6,400,000	\$6,115,000
33	Engineering - PDB	\$6,152,000	\$7,381,000	\$6,513,000
34	Procurement	\$984,000	\$1,059,000	\$1,012,000
Construction Management		\$10,328,000	\$11,111,000	\$10,617,000
35	Construction Management	\$10,328,000	\$11,111,000	\$10,617,000
Construction		\$169,140,000	\$229,250,000	\$193,030,000
41	Dam Removal	\$66,316,000	\$78,042,000	\$71,877,000
42	Restoration Earthwork	\$19,887,000	\$24,270,000	\$21,051,000
43	Restoration of Vegetation	\$46,131,000	\$71,101,000	\$57,957,000
44	Yreka Water Line Replacement	\$2,665,000	\$3,306,000	\$2,900,000
45	Transportation (Bridges, Culverts, Roads)	\$26,980,000	\$41,329,000	\$30,799,000
46	Recreation Improvements	\$3,295,000	\$6,487,000	\$4,584,000
47	Flood Proofing	\$1,340,000	\$1,715,000	\$1,499,000
48	Public Health And Safety Measures	\$2,526,000	\$3,000,000	\$2,363,000
Anticipated Mitigation Measures		\$17,270,000	\$19,505,000	\$18,407,000
51	Groundwater Improvements	\$1,627,000	\$2,317,000	\$1,982,000
52	Water Supply And Water Rights	\$985,000	\$1,180,000	\$1,091,000
53	Cultural Resources	\$14,657,000	\$16,008,000	\$15,334,000
Monitoring & Reporting		\$15,330,000	\$22,576,000	\$18,405,000
61	Aquatic Resource Measures	\$6,326,000	\$8,102,000	\$6,691,000
62	Terrestrial Resources Measures	\$1,386,000	\$3,166,000	\$2,395,000
63	Water Quality Monitoring	\$7,618,000	\$11,308,000	\$9,319,000
Design & Construction Contingency		-	-	\$57,909,000
Risk Contingency		\$48,410,000	\$129,794,000	-
TOTAL		\$313,500,000	\$467,800,000	\$352,200,000

4.2 Monte Carlo Results

The probabilistic range of costs for each estimate line item was determined with the use of ‘@Risk’ Monte Carlo analysis software. The Monte Carlo analysis involves determining the impact and likelihood of occurrence of identified and quantified uncertainties and risks by running simulations to identify the range of possible outcomes for a number of scenarios - 10,000 scenarios in the case of this Project. A random sampling is performed in the simulation by using uncertain risk variable inputs to generate the range of outcomes with a confidence measure for each outcome. For each uncertain variable in a simulation, the possible values are defined using probability distributions. The type of distribution selected depends on the factors surrounding the variable. Selected distributions are included in Attachment C.

Tables 4-3 and 4-4 summarize the results of the Monte Carlo analysis for the Full Removal and Partial Removal alternatives, respectively. Levels of probability are described from P1 to P100, where the number following the ‘P’ represents the percentage of most probable outcomes. For example, the P1 estimate amount will only cover the lowest 1% of the possible cost outcomes, whereas P100 will cover the maximum estimate amount determined from running the 10,000 scenarios.

Table 4-3 Results Summary – Full Removal Monte Carlo Results

FULL REMOVAL (Year of Construction Dollars)												
Estimate Element	Forecast Range											
	Mean	P01	P10 (MPL)	P20	P30	P40	P50 (Median)	P60	P70	P80	P90 (MPH)	P100
Project Oversight	29,616,000	29,402,000	29,466,000	29,508,000	29,543,000	29,575,000	29,608,000	29,641,000	29,678,000	29,721,000	29,778,000	29,951,000
10 Project Oversight	29,616,000	29,402,000	29,466,000	29,508,000	29,543,000	29,575,000	29,608,000	29,641,000	29,678,000	29,721,000	29,778,000	29,951,000
Environmental Compliance & Permitting	8,671,000	8,462,000	8,525,000	8,565,000	8,600,000	8,631,000	8,663,000	8,696,000	8,731,000	8,773,000	8,829,000	9,006,000
21 Permitting	6,753,000	6,544,000	6,607,000	6,647,000	6,682,000	6,713,000	6,745,000	6,778,000	6,813,000	6,855,000	6,911,000	7,088,000
22 Environmental Compliance Support	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000
Engineering & Procurement	15,925,000	14,675,000	15,023,000	15,261,000	15,465,000	15,659,000	15,855,000	16,059,000	16,288,000	16,557,000	16,925,000	18,099,000
31 Design Data	2,009,000	1,908,000	1,938,000	1,958,000	1,974,000	1,989,000	2,005,000	2,020,000	2,038,000	2,058,000	2,085,000	2,168,000
32 Engineering - AECOM	6,166,000	5,855,000	5,949,000	6,009,000	6,060,000	6,107,000	6,154,000	6,202,000	6,255,000	6,317,000	6,400,000	6,657,000
33 Engineering - PDB	6,730,000	5,943,000	6,152,000	6,300,000	6,429,000	6,553,000	6,678,000	6,811,000	6,960,000	7,137,000	7,381,000	8,173,000
34 Procurement	1,020,000	969,000	984,000	994,000	1,002,000	1,010,000	1,018,000	1,026,000	1,035,000	1,045,000	1,059,000	1,101,000
Construction Management	10,705,000	10,168,000	10,328,000	10,433,000	10,521,000	10,603,000	10,684,000	10,768,000	10,860,000	10,967,000	11,111,000	11,599,000
35 Construction Management	10,705,000	10,168,000	10,328,000	10,433,000	10,521,000	10,603,000	10,684,000	10,768,000	10,860,000	10,967,000	11,111,000	11,599,000
Construction	234,343,000	187,033,000	202,108,000	211,338,000	218,958,000	225,995,000	232,913,000	240,034,000	247,749,000	256,702,000	268,560,000	305,421,000
41 Dam Removal	108,104,000	95,066,000	99,282,000	101,858,000	103,967,000	105,905,000	107,795,000	109,727,000	111,811,000	114,207,000	117,341,000	126,917,000
42 Restoration Earthwork	21,928,000	19,197,000	19,887,000	20,391,000	20,839,000	21,275,000	21,721,000	22,198,000	22,732,000	23,377,000	24,270,000	27,408,000
43 Restoration	58,537,000	39,492,000	46,133,000	49,949,000	52,999,000	55,745,000	58,387,000	61,045,000	63,855,000	67,036,000	71,103,000	82,327,000
44 Yreka Water Line Replacement	2,973,000	2,532,000	2,665,000	2,750,000	2,822,000	2,889,000	2,955,000	3,024,000	3,100,000	3,188,000	3,305,000	3,663,000
45 Transportation	33,673,000	24,519,000	26,980,000	28,661,000	30,135,000	31,555,000	33,008,000	34,559,000	36,302,000	38,405,000	41,340,000	51,748,000
46 Recreation Improvements	4,848,000	2,555,000	3,295,000	3,743,000	4,112,000	4,452,000	4,784,000	5,126,000	5,496,000	5,923,000	6,486,000	8,198,000
47 Flood Proofing	1,524,000	1,251,000	1,340,000	1,394,000	1,438,000	1,478,000	1,517,000	1,558,000	1,601,000	1,651,000	1,715,000	1,898,000
48 Public Health And Safety	2,756,000	2,421,000	2,526,000	2,592,000	2,646,000	2,696,000	2,746,000	2,797,000	2,852,000	2,915,000	3,000,000	3,262,000
Anticipated Mitigation Measures	18,392,000	16,621,000	17,264,000	17,623,000	17,904,000	18,156,000	18,395,000	18,632,000	18,882,000	19,159,000	19,510,000	20,435,000
51 Groundwater Improvements	1,974,000	1,429,000	1,627,000	1,738,000	1,825,000	1,902,000	1,976,000	2,048,000	2,125,000	2,210,000	2,317,000	2,603,000
52 Water Supply And Water Rights	1,084,000	916,000	980,000	1,014,000	1,040,000	1,064,000	1,086,000	1,107,000	1,130,000	1,154,000	1,185,000	1,265,000
53 Cultural Resources	15,334,000	14,276,000	14,657,000	14,871,000	15,039,000	15,190,000	15,333,000	15,477,000	15,627,000	15,795,000	16,008,000	16,567,000
Monitoring & Reporting	18,876,000	13,513,000	15,332,000	16,384,000	17,232,000	18,009,000	18,761,000	19,531,000	20,360,000	21,316,000	22,571,000	26,570,000
61 Aquatic Resource Measures	7,137,000	6,092,000	6,326,000	6,512,000	6,683,000	6,855,000	7,032,000	7,226,000	7,447,000	7,719,000	8,101,000	9,581,000
62 Terrestrial Resources Measures	2,294,000	813,000	1,387,000	1,690,000	1,922,000	2,125,000	2,314,000	2,501,000	2,693,000	2,904,000	3,164,000	3,812,000
63 Water Quality Monitoring	9,445,000	6,608,000	7,619,000	8,182,000	8,627,000	9,029,000	9,415,000	9,804,000	10,220,000	10,693,000	11,306,000	13,177,000
Contingencies	87,387,000	27,366,000	48,410,000	59,454,000	67,928,000	76,144,000	84,215,000	92,833,000	102,114,000	113,550,000	129,794,000	233,371,000
Full Removal Total	423,900,000	307,200,000	346,500,000	368,600,000	386,200,000	402,800,000	419,100,000	436,200,000	454,700,000	476,700,000	507,100,000	654,500,000

Table 4-4 Results Summary – Partial Removal Monte Carlo Results

PARTIAL REMOVAL (Year of Construction Dollars)												
Estimate Element	Forecast Range											
	Mean	P01	P10 (MPL)	P20	P30	P40	P50 (Median)	P60	P70	P80	P90 (MPH)	P100
Project Oversight	29,616,000	29,402,000	29,466,000	29,508,000	29,543,000	29,575,000	29,608,000	29,641,000	29,678,000	29,721,000	29,778,000	29,959,000
10 Project Oversight	29,616,000	29,402,000	29,466,000	29,508,000	29,543,000	29,575,000	29,608,000	29,641,000	29,678,000	29,721,000	29,778,000	29,959,000
Environmental Compliance & Permitting	8,671,000	8,463,000	8,525,000	8,566,000	8,599,000	8,631,000	8,663,000	8,695,000	8,731,000	8,773,000	8,829,000	9,017,000
21 Permitting	6,753,000	6,545,000	6,607,000	6,648,000	6,681,000	6,713,000	6,745,000	6,777,000	6,813,000	6,855,000	6,911,000	7,099,000
22 Environmental Compliance Support	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000	1,918,000
Engineering & Procurement	15,925,000	14,680,000	15,025,000	15,261,000	15,466,000	15,659,000	15,855,000	16,059,000	16,289,000	16,558,000	16,927,000	18,123,000
31 Design Data	2,009,000	1,908,000	1,938,000	1,958,000	1,974,000	1,989,000	2,005,000	2,020,000	2,038,000	2,058,000	2,085,000	2,183,000
32 Engineering - AECOM	6,166,000	5,857,000	5,949,000	6,009,000	6,060,000	6,107,000	6,154,000	6,202,000	6,255,000	6,317,000	6,400,000	6,655,000
33 Engineering - PDB	6,730,000	5,946,000	6,154,000	6,300,000	6,430,000	6,553,000	6,678,000	6,811,000	6,961,000	7,138,000	7,383,000	8,182,000
34 Procurement	1,020,000	969,000	984,000	994,000	1,002,000	1,010,000	1,018,000	1,026,000	1,035,000	1,045,000	1,059,000	1,103,000
Construction Management	10,705,000	10,165,000	10,329,000	10,433,000	10,521,000	10,603,000	10,684,000	10,768,000	10,860,000	10,968,000	11,110,000	11,566,000
35 Construction Management	10,705,000	10,165,000	10,329,000	10,433,000	10,521,000	10,603,000	10,684,000	10,768,000	10,860,000	10,968,000	11,110,000	11,566,000
Construction	198,295,000	155,492,000	169,140,000	177,485,000	184,370,000	190,737,000	196,989,000	203,433,000	210,410,000	218,506,000	229,250,000	262,996,000
41 Dam Removal	72,056,000	63,530,000	66,316,000	68,004,000	69,379,000	70,641,000	71,871,000	73,126,000	74,471,000	76,018,000	78,042,000	84,008,000
42 Restoration Earthwork	21,928,000	19,198,000	19,887,000	20,391,000	20,839,000	21,275,000	21,721,000	22,198,000	22,733,000	23,377,000	24,270,000	27,427,000
43 Restoration of Vegetation	58,537,000	39,481,000	46,131,000	49,949,000	53,001,000	55,752,000	58,388,000	61,045,000	63,857,000	67,032,000	71,101,000	82,340,000
44 Yreka Water Line Replacement	2,973,000	2,532,000	2,665,000	2,750,000	2,822,000	2,889,000	2,955,000	3,024,000	3,100,000	3,188,000	3,306,000	3,683,000
45 Transportation	33,673,000	24,522,000	26,980,000	28,662,000	30,133,000	31,554,000	33,006,000	34,560,000	36,301,000	38,402,000	41,329,000	52,148,000
46 Recreation Improvements	4,848,000	2,556,000	3,295,000	3,743,000	4,112,000	4,452,000	4,784,000	5,126,000	5,496,000	5,923,000	6,487,000	8,226,000
47 Flood Proofing	1,524,000	1,251,000	1,340,000	1,394,000	1,438,000	1,478,000	1,518,000	1,558,000	1,601,000	1,651,000	1,715,000	1,918,000
48 Public Health And Safety	2,756,000	2,422,000	2,526,000	2,592,000	2,646,000	2,696,000	2,746,000	2,796,000	2,851,000	2,915,000	3,000,000	3,246,000
Anticipated Mitigation Measures	18,392,000	16,629,000	17,270,000	17,627,000	17,907,000	18,157,000	18,395,000	18,630,000	18,879,000	19,157,000	19,505,000	20,442,000
51 Groundwater Improvements	1,974,000	1,427,000	1,628,000	1,738,000	1,825,000	1,902,000	1,976,000	2,048,000	2,125,000	2,210,000	2,317,000	2,610,000
52 Water Supply And Water Rights	1,084,000	925,000	985,000	1,018,000	1,043,000	1,065,000	1,086,000	1,106,000	1,127,000	1,151,000	1,180,000	1,255,000
53 Cultural Resources	15,334,000	14,277,000	14,657,000	14,871,000	15,039,000	15,190,000	15,333,000	15,476,000	15,627,000	15,796,000	16,008,000	16,577,000
Monitoring & Reporting	18,876,000	13,507,000	15,330,000	16,383,000	17,233,000	18,008,000	18,762,000	19,532,000	20,360,000	21,314,000	22,576,000	26,522,000
61 Aquatic Resource Measures	7,137,000	6,091,000	6,326,000	6,512,000	6,683,000	6,854,000	7,033,000	7,226,000	7,447,000	7,717,000	8,102,000	9,569,000
62 Terrestrial Resources Measures	2,294,000	811,000	1,386,000	1,690,000	1,922,000	2,125,000	2,315,000	2,501,000	2,693,000	2,905,000	3,166,000	3,823,000
63 Water Quality Monitoring	9,445,000	6,605,000	7,618,000	8,181,000	8,628,000	9,029,000	9,414,000	9,805,000	10,220,000	10,692,000	11,308,000	13,130,000
Contingencies	87,387,000	27,366,000	48,410,000	59,454,000	67,928,000	76,144,000	84,215,000	92,833,000	102,114,000	113,550,000	129,794,000	233,371,000
Partial Removal Total	387,900,000	275,700,000	313,500,000	334,700,000	351,600,000	367,500,000	383,200,000	399,600,000	417,300,000	438,500,000	467,800,000	612,000,000

4.3 Comparison with Previous Estimates

A previous estimate was developed by the USBR in 2012 and is documented in the Detailed Plan for Dam Removal – Klamath River Dams (USBR 2012). Table 4-5 below compares the new estimate of project cost for Full Removal to the 2012 estimate amounts. It is important to note that previous USBR estimates were organized using different cost categories, in addition to separating escalation out as a stand-alone line item. For comparison purposes, the 2012 estimate has been reorganized into the new cost categories, and escalation has been incorporated into applicable line items.

Based on the analyses summarized herein, the projected project cost estimate for Full Removal increased from approximately \$292M to \$398M. The MPH estimate for Full Removal increased from \$493M to \$507M. The MPL estimate for Full Removal increased from \$238M to \$347M.

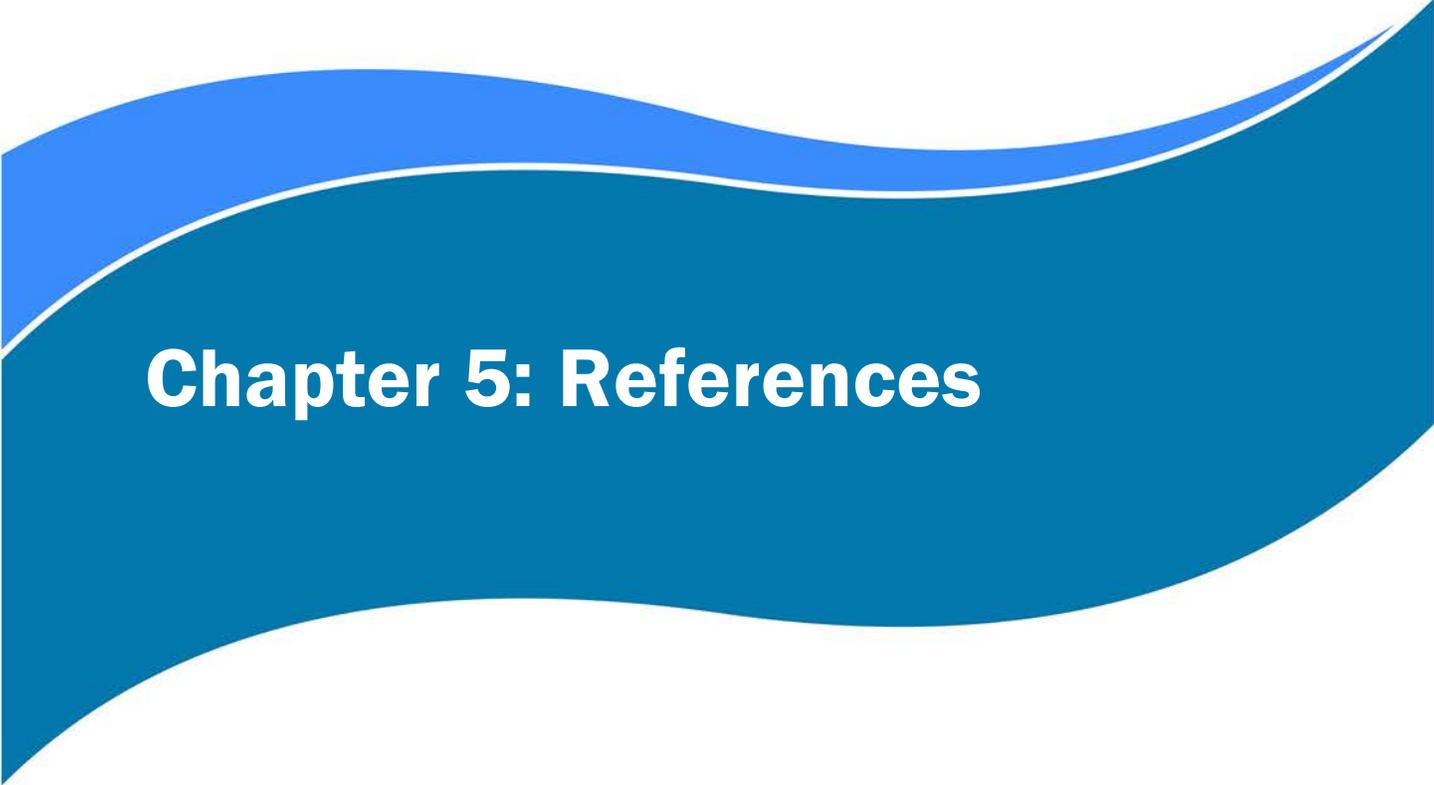
Based on the analyses summarized herein, the projected project cost estimate for Partial Removal increased from approximately \$235M to \$352M. The MPH estimate for Partial Removal increased from \$404M to \$468M. The MPL estimate for Full Removal increased from \$185M to \$314M.

There are several categories where the new estimate shows notable increases from the previous USBR estimate. A brief discussion of these increases is provided below:

- **Escalation:** The current project construction schedule includes construction beginning in 2020, which is one year later than what was assumed in the 2012 USBR estimate. This results in an increase in project funds that are reserved to account for escalation.
- **Project Oversight:** The previous USBR estimate did not account for costs attributable to KRRC project oversight and associated costs currently required for KRRC management, accounting, controls, etc. Accounting for these project oversight costs increases the overall project cost by approximately \$30M.
- **Transportation Costs:** As new field data and associated engineering assessments have been completed, the costs associated with anticipated improvements and maintenance activities to accommodate construction access and traffic have increased significantly. It is anticipated that these costs may decrease through value engineering and future PDB input.
- **Restoration Costs:** Through close coordination with resource agency representatives and other stakeholders, the approach to reservoir restoration has evolved from the approach and assumptions that were utilized by USBR in 2012. The revised approach is detailed in Appendix H of the Definite Plan and represents both current resource agency expectations, as well as the latest science on restoration techniques to increase the probability of successful plant and habitat establishment. The revised approach includes accommodation of some level of floodplain earthwork, as well as more proactive revegetation efforts within the riparian zone, both of which have increased cost.

Table 4-5 Comparison to Previous Estimate

FULL REMOVAL (Year of Construction Dollars)		
Estimate Element	USBR 2012 Estimate	Estimated Project Cost
Project Oversight	2,361,957	29,581,000
10 Project Oversight	-	29,581,000
Environmental Compliance & Permitting	7,085,871	8,637,000
21 Permitting	7,085,871	6,719,000
22 Environmental Compliance Support	-	1,918,000
Engineering & Procurement	14,171,743	15,632,000
31 Design Data	2,361,957	1,992,000
32 Engineering - AECOM	4,723,914	6,115,000
33 Engineering - PDB	4,723,914	6,513,000
34 Procurement	2,361,957	1,012,000
Construction Management	23,619,571	10,617,000
35 Construction Management	23,619,571	10,617,000
Construction	143,627,356	227,980,000
41 Dam Removal	97,262,754	106,827,000
42 Restoration Earthwork	-	21,051,000
43 Restoration	27,298,194	57,957,000
44 Yreka Water Line Replacement	2,218,619	2,900,000
45 Transportation	2,035,303	30,799,000
46 Recreation Improvements	4,761,605	4,584,000
47 Flood Proofing	5,025,441	1,499,000
48 Public Health And Safety	5,025,441	2,363,000
Anticipated Mitigation Measures	35,540,544	18,407,000
51 Groundwater Improvements	1,158,992	1,982,000
52 Water Supply And Water Rights	459,828	1,091,000
53 Cultural Resources	32,665,364	15,334,000
54 Other Mitigations	1,256,360	-
Monitoring & Reporting	19,272,565	18,405,000
61 Aquatic Resource Measures	5,615,930	6,691,000
62 Terrestrial Resources Measures	590,489	2,395,000
63 Water Quality Monitoring	13,066,146	9,319,000
Contingencies	45,920,393	68,394,000
Design & Contingency	45,920,393	68,394,000
Full Removal Total	291,600,000	397,700,000

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Chapter 5: References

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5. REFERENCES

Barreras, A. J. 2011. Risk management: Monte Carlo simulation in cost estimating. Project Management Institute Conference Proceedings, 2011

KRRC 2018. Definite Plan for the Lower Klamath Project, Klamath River Renewal Corporation, June 2018.

UCCE 2012. University of California Cooperative Extension – Sample Costs to Establish and Produce Alfalfa Hay, Intermountain – Siskiyou County.

USBR 2012. United States Bureau of Reclamation. Detailed Plan for Dam Removal – Klamath River Dams – Klamath Hydroelectric Project – FERC License No. 2082 – Oregon-California. July 2012.

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Attachment A Cost Estimate

A.1 Cost Estimate - Full Removal

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Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction					
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High	
10			OVERSIGHT													
10	Project		Compensation & Benefits	7/16-6/17 (year 1)	1	SUM	29,017.00	29,017	29,017	0%	29,017	0%	29,017	29,017	29,017	29,017
10	Project		Compensation & Benefits	7/17-12/19 (2.5 years)	1	SUM	1,557,347.00	1,557,347	1,557,347	0%	1,557,347	0%	1,557,347	1,557,347	1,557,347	1,557,347
10	Project		Compensation & Benefits	1/20-6/22 (2.5 years)	1	SUM	3,276,136.00	3,276,136	3,276,136	0%	3,276,136	0%	3,276,136	3,276,136	3,276,136	3,276,136
10	Project		Compensation & Benefits	7/22-6/27 (5 years)	1	SUM	193,967.00	193,967	193,967	0%	193,967	0%	193,967	193,967	193,967	193,967
10	Project		Travel and Meetings	7/16-6/17 (year 1)	1	SUM	45,223.00	45,223	45,223	0%	45,223	0%	45,223	45,223	45,223	45,223
10	Project		Travel and Meetings	7/17-12/19 (2.5 years)	1	SUM	272,538.00	272,538	272,538	0%	272,538	0%	272,538	272,538	272,538	272,538
10	Project		Travel and Meetings	1/20-6/22 (2.5 years)	1	SUM	450,000.00	450,000	450,000	0%	450,000	0%	450,000	450,000	450,000	450,000
10	Project		Travel and Meetings	7/22-6/27 (5 years)	1	SUM	45,000.00	45,000	45,000	0%	45,000	0%	45,000	45,000	45,000	45,000
10	Project		Dam Removal Contractors	Land Survey Contractor	1	SUM	1,020,000.00	1,020,000	1,020,000	0%	1,020,000	0%	1,020,000	1,020,000	1,020,000	1,020,000
10	Project		Professional Services; CEA Services & Expenses	7/16-6/17 (year 1)	1	SUM	1,054,732.00	1,054,732	1,054,732	0%	1,054,732	0%	1,054,732	1,054,732	1,054,732	1,054,732
10	Project		Professional Services; CEA Services & Expenses	7/17-12/19 (2.5 years)	1	SUM	2,386,949.16	2,386,949	2,386,949	0%	2,386,949	0%	2,386,949	2,386,949	2,386,949	2,386,949
10	Project		Professional Services; CEA Services & Expenses	1/20-6/22 (2.5 years)	1	SUM	2,375,442.96	2,375,443	2,375,443	0%	2,375,443	0%	2,375,443	2,375,443	2,375,443	2,375,443
10	Project		Professional Services; CEA Services & Expenses	7/22-6/27 (5 years)	1	SUM	563,853.35	563,853	563,853	0%	563,853	0%	563,853	563,853	563,853	563,853
10	Project		Legal Services; Power + Water, General Counsel	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Legal Services; Power + Water, General Counsel	7/17-12/19 (2.5 years)	1	SUM	500,863.00	500,863	500,863	0%	500,863	0%	500,863	500,863	500,863	500,863
10	Project		Legal Services; Power + Water, General Counsel	1/20-6/22 (2.5 years)	1	SUM	694,448.00	694,448	694,448	0%	694,448	0%	694,448	694,448	694,448	694,448
10	Project		Legal Services; Power + Water, General Counsel	7/22-6/27 (5 years)	1	SUM	240,843.00	240,843	240,843	0%	240,843	0%	240,843	240,843	240,843	240,843
10	Project		Legal Services; Hawkins, General Counsel	7/16-6/17 (year 1)	1	SUM	1,109,894.00	1,109,894	1,109,894	0%	1,109,894	0%	1,109,894	1,109,894	1,109,894	1,109,894
10	Project		Legal Services; Hawkins, General Counsel	7/17-12/19 (2.5 years)	1	SUM	718,211.00	718,211	718,211	0%	718,211	0%	718,211	718,211	718,211	718,211
10	Project		Legal Services; Hawkins, General Counsel	1/20-6/22 (2.5 years)	1	SUM	373,112.00	373,112	373,112	0%	373,112	0%	373,112	373,112	373,112	373,112
10	Project		Legal Services; Hawkins, General Counsel	7/22-6/27 (5 years)	1	SUM	86,063.00	86,063	86,063	0%	86,063	0%	86,063	86,063	86,063	86,063
10	Project		Legal Services; Hawkins, Construction Counsel	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Legal Services; Hawkins, Construction Counsel	7/17-12/19 (2.5 years)	1	SUM	2,551,000.00	2,551,000	2,551,000	0%	2,551,000	0%	2,551,000	2,551,000	2,551,000	2,551,000
10	Project		Legal Services; Hawkins, Construction Counsel	1/20-6/22 (2.5 years)	1	SUM	600,000.00	600,000	600,000	0%	600,000	0%	600,000	600,000	600,000	600,000
10	Project		Legal Services; Hawkins, Construction Counsel	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Board of Consultants	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Board of Consultants	7/17-12/19 (2.5 years)	1	SUM	905,850.00	905,850	905,850	0%	905,850	0%	905,850	905,850	905,850	905,850
10	Project		Board of Consultants	1/20-6/22 (2.5 years)	1	SUM	494,100.00	494,100	494,100	0%	494,100	0%	494,100	494,100	494,100	494,100
10	Project		Board of Consultants	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Accounting & Audit Fees	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Accounting & Audit Fees	7/17-12/19 (2.5 years)	1	SUM	246,728.00	246,728	246,728	0%	246,728	0%	246,728	246,728	246,728	246,728
10	Project		Accounting & Audit Fees	1/20-6/22 (2.5 years)	1	SUM	612,823.00	612,823	612,823	0%	612,823	0%	612,823	612,823	612,823	612,823
10	Project		Accounting & Audit Fees	7/22-6/27 (5 years)	1	SUM	206,252.00	206,252	206,252	0%	206,252	0%	206,252	206,252	206,252	206,252
10	Project		Risk Management Services	7/16-6/17 (year 1)	1	SUM	44,519.00	44,519	44,519	0%	44,519	0%	44,519	44,519	44,519	44,519
10	Project		Risk Management Services	7/17-12/19 (2.5 years)	1	SUM	91,250.00	91,250	91,250	0%	91,250	0%	91,250	91,250	91,250	91,250
10	Project		Risk Management Services	1/20-6/22 (2.5 years)	1	SUM	135,000.00	135,000	135,000	0%	135,000	0%	135,000	135,000	135,000	135,000
10	Project		Risk Management Services	7/22-6/27 (5 years)	1	SUM	10,000.00	10,000	10,000	0%	10,000	0%	10,000	10,000	10,000	10,000
10	Project		Communications External Services	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Communications External Services	7/17-12/19 (2.5 years)	1	SUM	485,400.00	485,400	485,400	0%	485,400	0%	485,400	485,400	485,400	485,400
10	Project		Communications External Services	1/20-6/22 (2.5 years)	1	SUM	950,790.00	950,790	950,790	0%	950,790	0%	950,790	950,790	950,790	950,790
10	Project		Communications External Services	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Insurance & Risk Management	7/16-6/17 (year 1)	1	SUM	25,138.00	25,138	25,138	0%	25,138	0%	25,138	25,138	25,138	25,138
10	Project		Insurance & Risk Management	7/17-12/19 (2.5 years)	1	SUM	195,451.00	195,451	195,451	0%	195,451	0%	195,451	195,451	195,451	195,451
10	Project		Insurance & Risk Management	1/20-6/22 (2.5 years)	1	SUM	405,475.00	405,475	405,475	0%	405,475	0%	405,475	405,475	405,475	405,475
10	Project		Insurance & Risk Management	7/22-6/27 (5 years)	1	SUM	107,895.00	107,895	107,895	0%	107,895	0%	107,895	107,895	107,895	107,895
10	Project		Project Specific Insurance	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Project Specific Insurance	7/17-12/19 (2.5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Project Specific Insurance	1/20-6/22 (2.5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Project Specific Insurance	7/22-6/27 (5 years)	1	SUM	100,000.00	100,000	100,000	0%	100,000	0%	100,000	100,000	100,000	100,000
10	Project		Admin, IT, Fees	7/16-6/17 (year 1)	1	SUM	38,991.00	38,991	38,991	0%	38,991	0%	38,991	38,991	38,991	38,991
10	Project		Admin, IT, Fees	7/17-12/19 (2.5 years)	1	SUM	52,426.00	52,426	52,426	0%	52,426	0%	52,426	52,426	52,426	52,426
10	Project		Admin, IT, Fees	1/20-6/22 (2.5 years)	1	SUM	65,973.00	65,973	65,973	0%	65,973	0%	65,973	65,973	65,973	65,973
10	Project		Admin, IT, Fees	7/22-6/27 (5 years)	1	SUM	30,732.00	30,732	30,732	0%	30,732	0%	30,732	30,732	30,732	30,732

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
10	Project		Project Management, AECOM	Detailed separately	1	sum	2,977,635.66	2,977,636	2,828,754	-5%	3,275,399	10%	2,977,636	2,828,754	3,275,399
10	Project		Outreach, AECOM	Detailed separately	1	sum	1,253,904.32	1,253,904	1,191,209	-5%	1,379,295	10%	1,253,904	1,191,209	1,379,295
20			ENVIRONMENTAL COMPLIANCE & PERMITTING												
21			PERMITTING												
21	Project		Permitting, AECOM	Detailed separately	1	sum	4,113,000.00	4,113,000	3,907,350	-5%	4,524,300	10%	4,113,000	3,907,350	4,524,300
21	Project		Environmental Legal Services; Perkins Coie	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-
21	Project		Environmental Legal Services; Perkins Coie	7/17-12/19 (2.5 years)	1	SUM	1,537,641.00	1,537,641	1,537,641	0%	1,537,641	0%	1,537,641	1,537,641	1,537,641
21	Project		Environmental Legal Services; Perkins Coie	1/20-6/22 (2.5 years)	1	SUM	1,068,125.00	1,068,125	1,068,125	0%	1,068,125	0%	1,068,125	1,068,125	1,068,125
21	Project		Environmental Legal Services; Perkins Coie	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-
22			CEQA & FERC SUPPORT												
22	Project		Agency Fees and Reimbursements	Oregon Department of Environmental Quality	1	SUM	97,000.00	97,000	97,000	0%	97,000	0%	97,000	97,000	97,000
22	Project		Agency Fees and Reimbursements	CA State Water Resources Control Board	1	SUM	58,950.00	58,950	58,950	0%	58,950	0%	58,950	58,950	58,950
22	Project		Agency Fees and Reimbursements	Still Water Sciences (SWRCB)	1	SUM	1,281,945.00	1,281,945	1,281,945	0%	1,281,945	0%	1,281,945	1,281,945	1,281,945
22	Project		Agency Fees and Reimbursements	Other Environmental Studies	1	SUM	480,000.00	480,000	480,000	0%	480,000	0%	480,000	480,000	480,000
30			ENGINEERING & CONSTRUCTION MANAGEMENT												
31			ENGINEERING - DESIGN DATA												
31	Project		Engineering - Design Data	Detailed separately	1	sum	1,992,000.00	1,992,000	1,892,400	-5%	2,191,200	10%	1,992,000	1,892,400	2,191,200
32			ENGINEERING - AECOM												
32	Project		Construction Cost Estimate	Detailed separately	1	sum	295,000.00	295,000	280,250	-5%	324,500	10%	295,000	280,250	324,500
32	Project		AECOM Preliminary Design & Mitigation	Detailed separately	1	sum	3,585,000.00	3,585,000	3,405,750	-5%	3,943,500	10%	3,585,000	3,405,750	3,943,500
32	Project		AECOM Final Design & Construction Support	Detailed separately	1	sum	1,950,000.00	1,950,000	1,852,500	-5%	2,145,000	10%	1,950,000	1,852,500	2,145,000
32	Project		Review of PDB Final Design	Detailed separately	1	sum	285,000.00	285,000	270,750	-5%	313,500	10%	285,000	270,750	313,500
33			ENGINEERING - PDB												
33	Project		Engineering - PDB	Detailed separately	1	sum	6,513,000.00	6,513,000	5,861,700	-10%	8,466,900	30%	6,513,000	5,861,700	8,466,900
34			PROCUREMENT												
34	Project		Procurement	Detailed separately	1	sum	1,011,574.86	1,011,575	960,996	-5%	1,112,732	10%	1,011,575	960,996	1,112,732
35			CONSTRUCTION MANAGEMENT												
35	Project		Construction Management	Detailed separately	1	sum	10,616,599.33	10,616,599	10,085,769	-5%	11,678,259	10%	10,616,599	10,085,769	11,678,259
40			CONSTRUCTION												
41			DAM REMOVAL												
41	JC Boyle	1.001	JC Boyle Dam Removal	Removal of Diversion Conduit Bulkheads	14.00	CY	1,323.00	18,522	17,596	-5%	19,448	5%	20,835	19,793	21,876
41	JC Boyle	1.002	JC Boyle Dam Removal	Remove Water from behind Tailrace Cofferdam	500,000	GAL	0.01	5,309	4,778	-10%	6,105	15%	5,972	5,375	6,868
41	JC Boyle	1.003	JC Boyle Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	61,036.38	61,036	54,933	-10%	70,192	15%	68,658	61,792	78,956
41	JC Boyle	1.004	JC Boyle Dam Removal	Construct Embankment Cofferdam in Tailrace around Powerh	2,000	CY	108.78	217,554	195,799	-10%	261,065	20%	244,719	220,247	293,662
41	JC Boyle	1.005	JC Boyle Dam Removal	Remove Spillway Concrete	2,100	CY	330.13	693,263	589,274	-15%	831,916	20%	779,827	662,853	935,793
41	JC Boyle	1.006	JC Boyle Dam Removal	Remove Monorail Structural Steel Components	15,000	LB	0.64	9,570	8,613	-10%	12,919	35%	10,765	9,688	14,533
41	JC Boyle	1.007	JC Boyle Dam Removal	Remove Fish Ladder Concrete	1,820	CY	333.49	606,952	546,257	-10%	667,647	10%	682,738	614,464	751,012
41	JC Boyle	1.008	JC Boyle Dam Removal	Remove Gravity Dam Section Concrete	600	CY	339.60	203,759	173,195	-15%	244,511	20%	229,201	194,821	275,041
41	JC Boyle	1.009	JC Boyle Dam Removal	Remove Timber Equipment Ramp on left side of Dam	10,500	LB	0.66	6,969	5,924	-15%	9,409	35%	7,840	6,664	10,584
41	JC Boyle	1.010	JC Boyle Dam Removal	Remove Pressure-Treated Lumber from Footbridge around Int	3,600	SF	7.19	25,886	23,298	-10%	29,769	15%	29,119	26,207	33,486
41	JC Boyle	1.011	JC Boyle Dam Removal	Remove Storage Shed located on access road	4,480	SF	27.79	124,519	118,293	-5%	136,970	10%	140,066	133,063	154,073
41	JC Boyle	1.012	JC Boyle Dam Removal	Remove Warehouse located on access road	2,580	SF	36.49	94,149	89,441	-5%	103,564	10%	105,905	100,609	116,495
41	JC Boyle	1.013	JC Boyle Dam Removal	Remove Fire System Control Bldg. on left abutment	520	SF	26.00	13,521	12,845	-5%	14,873	10%	15,209	14,448	16,730
41	JC Boyle	1.014	JC Boyle Dam Removal	Remove Dam Communication Bldg. on left abutment	490	SF	27.21	13,332	12,666	-5%	14,666	10%	14,997	14,247	16,497
41	JC Boyle	1.015	JC Boyle Dam Removal	Remove Concrete Slab on left abutment for former Control Ho	6,000	CY	1,778.57	10,671	9,604	-10%	12,272	15%	12,004	10,804	13,804
41	JC Boyle	1.016	JC Boyle Dam Removal	Remove 4'x5' Metal Hatch on top of Concrete Pull Box on left	1.00	CY	1,769.46	1,769	1,593	-10%	1,946	10%	1,990	1,791	2,189
41	JC Boyle	1.017	JC Boyle Dam Removal	Remove Reservoir Level Gauge House on Dam Crest	24.00	SF	138.69	3,328	3,162	-5%	3,661	10%	3,744	3,557	4,118
41	JC Boyle	1.018	JC Boyle Dam Removal	Upstream Riprap	2,200	CY	93.45	205,581	185,023	-10%	226,139	10%	231,251	208,126	254,376
41	JC Boyle	1.019	JC Boyle Dam Removal	Downstream Riprap	1,300	CY	93.02	120,930	108,837	-10%	133,023	10%	136,030	122,427	149,633
41	JC Boyle	1.020	JC Boyle Dam Removal	Miscellaneous Excavation	132,500	CY	10.42	1,380,126	1,173,107	-15%	1,656,151	20%	1,552,454	1,319,586	1,862,945
41	JC Boyle	1.021	JC Boyle Dam Removal	Cutoff Wall Concrete Demolition	70.00	CY	655.64	45,895	43,600	-5%	52,779	15%	51,626	49,044	59,369
41	JC Boyle	1.022	JC Boyle Dam Removal	Cutoff Wall Anchors	285	EA	12.66	3,664	3,481	-5%	4,030	10%	4,121	3,915	4,533
41	JC Boyle	1.023	JC Boyle Dam Removal	Remove & Dispose Hand Rails and Light Poles	5,000	LB	0.85	4,227	4,016	-5%	4,861	15%	4,755	4,517	5,468
41	JC Boyle	1.024	JC Boyle Dam Removal	Remove & Dispose Spillway Radial Gates and Hoists	124,000	LB	2.14	264,891	238,402	-10%	357,603	35%	297,967	268,170	402,255
41	JC Boyle	1.025	JC Boyle Dam Removal	Remove & Dispose Stop Logs and Slots (steel)	92,000	LB	0.94	86,725	78,053	-10%	104,070	20%	97,554	87,799	117,065
41	JC Boyle	1.026	JC Boyle Dam Removal	Remove & Dispose of 24" Slide Gate at Entrance to Fish Ladd	4,200	LB	0.70	2,919	2,773	-5%	4,233	45%	3,284	3,120	4,761
41	JC Boyle	1.026a	JC Boyle Dam Removal	Remove petroleum products from Red Bam Area	1,600	GAL	13.34	21,338	18,137	-15%	27,739	30%	24,002	20,402	31,203
41	JC Boyle	1.027	JC Boyle Dam Removal	Remove & Dispose of Spillway gate motor & control panel	1.00	EA	1,282.33	1,282	1,154	-10%	1,539	20%	1,442	1,298	1,731
41	JC Boyle	1.028	JC Boyle Dam Removal	Remove & Dispose of Distribution equipment, controlboards	1.00	EA	5,877.55	5,878	5,290	-10%	7,053	20%	6,611	5,950	7,934

KRRC Cost Estimate - Full Removal

June 2018

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	High	Estimate	Est Low	Est High		
41	JC Boyle	1.029	JC Boyle Dam Removal	Remove Powerhouse Concrete down to Elevation 3324.0	1,500	CY	546.51	819,762	737,786	-10%	983,714	20%	922,121	829,909	1,106,545
41	JC Boyle	1.030	JC Boyle Dam Removal	Remove Structural Steel Item associated with Powerhouse	94,000	LB	0.63	59,073	53,166	-10%	67,935	15%	66,450	59,805	76,417
41	JC Boyle	1.031	JC Boyle Dam Removal	Remove Warehouse near Powerhouse	5,060	SF	32.95	166,704	158,369	-5%	183,375	10%	187,520	178,144	206,272
41	JC Boyle	1.032	JC Boyle Dam Removal	Remove & Dispose of 2 - Governor oil systems	52,500	LB	0.80	41,929	39,833	-5%	48,219	15%	47,165	44,807	54,240
41	JC Boyle	1.033	JC Boyle Dam Removal	Remove & Dispose of Cooling water and bearing oil systems	6,500	LB	1.06	6,905	6,215	-10%	7,941	15%	7,768	6,991	8,933
41	JC Boyle	1.034	JC Boyle Dam Removal	Remove & Dispose of 2 - Francis Turbines	660,000	LB	0.75	417,204	354,624	-15%	521,505	25%	469,298	398,903	586,623
41	JC Boyle	1.035	JC Boyle Dam Removal	Remove & Dispose of 150 Ton crane	240,000	LB	0.82	196,396	166,937	-15%	235,675	20%	220,919	187,781	265,103
41	JC Boyle	1.036	JC Boyle Dam Removal	Remove & Dispose of Compressed Air systems	1,100	LB	0.88	973	875	-10%	1,216	25%	1,094	985	1,368
41	JC Boyle	1.037	JC Boyle Dam Removal	Remove & Dispose of 2 - CO2 systems	6,600	LB	0.99	6,504	5,853	-10%	7,805	20%	7,316	6,584	8,779
41	JC Boyle	1.038	JC Boyle Dam Removal	Remove & Dispose of Plant Water and Fire Protection	3,100	LB	0.74	2,298	2,068	-10%	2,757	20%	2,585	2,326	3,101
41	JC Boyle	1.039	JC Boyle Dam Removal	Remove & Dispose of Transformer Oil Fire Protection	6,500	LB	0.80	5,207	4,426	-15%	6,248	20%	5,857	4,979	7,029
41	JC Boyle	1.04	JC Boyle Dam Removal	Remove & Dispose of Unwatering Piping	33,000	LB	0.74	24,351	19,481	-20%	30,439	25%	27,392	21,913	34,240
41	JC Boyle	1.041	JC Boyle Dam Removal	Remove & Dispose of Drainage Piping	10,000	LB	0.84	8,353	7,100	-15%	10,024	20%	9,396	7,987	11,275
41	JC Boyle	1.042	JC Boyle Dam Removal	Remove & Dispose of 2-Oil Sump pumps	2,000	LB	1.27	2,536	2,283	-10%	2,917	15%	2,853	2,568	3,281
41	JC Boyle	1.043	JC Boyle Dam Removal	Remove & Dispose of Draft Tube Bulk Head Gates and Hoists	65,000	LB	0.71	46,356	39,403	-15%	57,946	25%	52,145	44,323	65,181
41	JC Boyle	1.043a	JC Boyle Dam Removal	Remove petroleum products from Mechanical Equipment	2,700	GAL	10.27	27,735	23,575	-15%	36,056	30%	31,198	26,519	40,558
41	JC Boyle	1.044	JC Boyle Dam Removal	Remove & Dispose of Outdoor Vertical AC Generator, Unit 1:	2.00	EA	158,304.56	316,609	269,118	-15%	364,100	15%	356,142	302,721	409,564
41	JC Boyle	1.045	JC Boyle Dam Removal	Remove & Dispose of Excitation equipment for 53/50 MVA Ge	2.00	EA	13,425.63	26,851	24,166	-10%	29,536	10%	30,204	27,184	33,224
41	JC Boyle	1.046	JC Boyle Dam Removal	Remove & Dispose of Surge protection equip. for 53/50 MVA	2.00	EA	8,153.33	16,307	14,676	-10%	17,937	10%	18,343	16,508	20,177
41	JC Boyle	1.047	JC Boyle Dam Removal	Remove & Dispose of Neutral grounding equip. for 53/50 MVA	2.00	EA	3,980.33	7,961	7,165	-10%	8,757	10%	8,955	8,059	9,850
41	JC Boyle	1.048	JC Boyle Dam Removal	Remove & Dispose of Generator Switchgear, 15kV - (6 sector	1.00	EA	19,730.68	19,731	16,771	-15%	24,663	25%	22,194	18,865	27,743
41	JC Boyle	1.049	JC Boyle Dam Removal	Remove & Dispose of Station Service Switchgear, 600 volt - (5	1.00	EA	10,780.56	10,781	9,703	-10%	11,859	10%	12,127	10,914	13,339
41	JC Boyle	1.050	JC Boyle Dam Removal	Remove & Dispose of Unit and plant control switchboard	1.00	EA	5,903.27	5,903	5,313	-10%	6,494	10%	6,640	5,976	7,304
41	JC Boyle	1.051	JC Boyle Dam Removal	Remove & Dispose of Battery system	1.00	EA	7,430.59	7,431	6,688	-10%	8,174	10%	8,358	7,523	9,194
41	JC Boyle	1.052	JC Boyle Dam Removal	Remove & Dispose of Raceways, Conduit and Cable	1.00	EA	13,891.88	13,892	12,503	-10%	15,281	10%	15,626	14,064	17,189
41	JC Boyle	1.053	JC Boyle Dam Removal	Remove & Dispose of Misc. power & control boards	1.00	EA	7,140.08	7,140	6,426	-10%	7,854	10%	8,032	7,228	8,835
41	JC Boyle	1.054	JC Boyle Dam Removal	Remove & Dispose of 5 Gantry Crane motors - hoist (50Hp).	1.00	EA	1,729.51	1,730	1,557	-10%	2,075	20%	1,945	1,751	2,335
41	JC Boyle	1.055	JC Boyle Dam Removal	Remove & Dispose of Gantry Crane control equipment (3 cubi	1.00	EA	5,869.29	5,869	5,282	-10%	6,456	10%	6,602	5,942	7,262
41	JC Boyle	1.056	JC Boyle Dam Removal	Remove & Dispose of Conduit and Cable	1.00	EA	10,561.93	10,562	9,506	-10%	12,674	20%	11,881	10,693	14,257
41	JC Boyle	1.057	JC Boyle Dam Removal	Remove & Dispose of Exterior Lighting	1.00	EA	10,640.74	10,641	9,577	-10%	12,237	15%	11,969	10,772	13,765
41	JC Boyle	1.058	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 59	1.66	MI	31,411.84	52,144	44,322	-15%	65,180	25%	58,655	49,856	73,318
41	JC Boyle	1.059	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 98	0.24	MI	27,715.54	6,652	5,654	-15%	8,315	25%	7,482	6,360	9,353
41	JC Boyle	1.060	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 58	1.66	MI	31,411.84	52,144	44,322	-15%	65,180	25%	58,655	49,856	73,318
41	JC Boyle	1.061	JC Boyle Dam Removal	Remove Intake Structure Concrete	1,600	CY	294.80	471,675	424,508	-10%	566,010	20%	530,570	477,513	636,685
41	JC Boyle	1.062	JC Boyle Dam Removal	Remove Fish Screen Building	2,010	SF	70.46	141,616	134,535	-5%	155,777	10%	159,298	151,333	175,228
41	JC Boyle	1.063	JC Boyle Dam Removal	Remove 24-inch-dia. Steel Fish Discharge Pipe	37,978	LB	0.31	11,804	10,033	-15%	14,755	25%	13,278	11,286	16,597
41	JC Boyle	1.064	JC Boyle Dam Removal	Remove Concrete Items associated with the 14-ft-diameter St	1,010	CY	313.62	316,752	269,239	-15%	364,265	15%	356,303	302,857	409,748
41	JC Boyle	1.065	JC Boyle Dam Removal	Remove Open Concrete Flume	26,000	CY	266.49	6,928,771	6,235,894	-10%	8,314,525	20%	7,793,925	7,014,533	9,352,710
41	JC Boyle	1.066	JC Boyle Dam Removal	Remove Structural Steel Items associated with the Forebay Tr	11,500	LB	0.49	5,628	4,784	-15%	7,035	25%	6,331	5,381	7,914
41	JC Boyle	1.067	JC Boyle Dam Removal	Remove Fore bay Concrete	2,500	CY	298.78	746,951	672,256	-10%	896,341	20%	840,218	756,197	1,008,262
41	JC Boyle	1.068	JC Boyle Dam Removal	Place Concrete Plugs at Tunnel Portals	30.00	CY	1,616.26	48,488	46,063	-5%	50,912	5%	54,542	51,815	57,269
41	JC Boyle	1.069	JC Boyle Dam Removal	Remove Concrete Items associated with Penstocks D/S from	1,800	CY	495.44	891,799	802,619	-10%	1,070,158	20%	1,003,152	902,837	1,203,783
41	JC Boyle	1.070	JC Boyle Dam Removal	Remove Head gate Control Building at Flume Entrance	500	SF	99.08	49,542	44,588	-10%	56,973	15%	55,728	50,155	64,087
41	JC Boyle	1.071	JC Boyle Dam Removal	Remove Fore bay Spillway Gate House	610	SF	89.23	54,431	48,988	-10%	65,318	20%	61,228	55,105	73,473
41	JC Boyle	1.072	JC Boyle Dam Removal	Remove Fore bay Control Building	560	SF	96.68	54,141	48,727	-10%	64,969	20%	60,901	54,811	73,081
41	JC Boyle	1.074	JC Boyle Dam Removal	Remove Insulated Generator Building next to Fore bay Control	90.00	SF	166.30	14,967	13,470	-10%	17,960	20%	16,835	15,152	20,203
41	JC Boyle	1.075	JC Boyle Dam Removal	Remove Fixed Wheel Gate (gate, Frame, and Hoist)	55,000	LB	0.53	29,090	23,272	-20%	36,363	25%	32,722	26,178	40,903
41	JC Boyle	1.076	JC Boyle Dam Removal	Remove Trash rack and trash rake (steel)	75,000	LB	0.51	38,047	30,438	-20%	47,559	25%	42,798	34,238	53,497
41	JC Boyle	1.077	JC Boyle Dam Removal	Remove stop Logs and slots (steel)	136,000	LB	0.79	107,370	96,633	-10%	134,213	25%	120,777	108,699	150,971
41	JC Boyle	1.078	JC Boyle Dam Removal	Remove Traveling Water Screen	124,000	LB	0.50	62,509	56,258	-10%	78,136	25%	70,314	63,282	87,892
41	JC Boyle	1.079	JC Boyle Dam Removal	Remove Fish By-Pass and Supports (steel)	610,000	LB	0.77	468,978	422,080	-10%	539,325	15%	527,537	474,783	606,667
41	JC Boyle	1.080	JC Boyle Dam Removal	Remove Gates and Hoists	18,500	LB	0.48	8,848	7,521	-15%	11,503	30%	9,953	8,460	12,939
41	JC Boyle	1.081	JC Boyle Dam Removal	Remove Trash rack and trash rake (steel)	47,249	LB	0.60	28,236	24,001	-15%	36,707	30%	31,762	26,998	41,291
41	JC Boyle	1.082	JC Boyle Dam Removal	Remove stop Logs and slots (steel)	37,069	LB	0.62	23,167	19,692	-15%	30,117	30%	26,060	22,151	33,878
41	JC Boyle	1.083	JC Boyle Dam Removal	Remove & Dispose Penstocks and bifurcation (steel)	1,600,000	LB	0.70	1,112,218	945,385	-15%	1,334,661	20%	1,251,094	1,063,429	1,501,312
41	JC Boyle	1.084	JC Boyle Dam Removal	Remove & Dispose Surge Tank (steel)	79,000	LB	0.82	64,445	58,000	-10%	83,778	30%	72,492	65,242	94,239
41	JC Boyle	1.085	JC Boyle Dam Removal	Remove & Dispose 2 - 108" Butterfly valves	148,000	LB	0.74	109,839	98,855	-10%	142,790	30%	123,554	111,198	160,620
41	JC Boyle	1.086	JC Boyle Dam Removal	Remove & Dispose Gate, Stem and Frame	28,000	LB	0.71	19,883	17,895	-10%	23,860	20%	22,366	20,129	26,839
41	JC Boyle	1.087	JC Boyle Dam Removal	Remove & Dispose of Steel Transition Manifolds on Upstream	250,000	LB	0.64	160,863	136,734	-15%	209,122	30%	180,949	153,807	235,234
41	JC Boyle	1.087a	JC Boyle Dam Removal	Remove petroleum products from Mechanical Equipment	380	GAL	16.54	6,284	5,342	-15%	8,169	30%	7,069	6,008	9,189
41	JC Boyle	1.097	JC Boyle Dam Removal	Clear and Grub Disposal Area (Embankment)	10.00	AC	12,954.90	129,549	116,594	-10%	142,504	10%	145,725	131,152	160,297
41	JC Boyle	1.098	JC Boyle Dam Removal	Clear and Grub, 40' width	2.40	AC	12,954.90	31,092	27,983	-10%	34,201	10%	34,974	31,477	38,471
41	JC Boyle	1.099	JC Boyle Dam Removal	4' thick gravel surfacing	2,150	T	29.66	63,762	57,386	-10%	70,139	10%	71,724	64,552	78,896
41	JC Boyle	1.103	JC Boyle Dam Removal	Soil Cover over Concrete Rubble	13,000	CY	8.64	112,348	101,113	-10%	134,818	20%	126,376	113,739	151,651
41	JC Boyle	1.107	JC Boyle Dam Removal	Embankment Fill in Waste way (Fore bay) Scour Hole	55,900	CY	77.16	4,313,417	3,882,075	-10%	4,744,759	10%	4,852,008	4,366,807	5,337,209
41	JC Boyle	1.108	JC Boyle Dam Removal	Topsy Recreational Area - Concrete total	68.00	CY	454.68	30,918	29,372	-5%	34,010	10%	34,779	33,040	38,256
41	JC Boyle	1.109	JC Boyle Dam Removal	Topsy Recreational Area - 6'x80' Floating dock made of lumbe	1.00	EA	8,816.20	8,816	8,375	-5%	9,257	5%	9,917	9,421	10,413
41	JC Boyle	1.110	JC Boyle Dam Removal	Topsy Recreational Area - 5'x20' Walkway leading to hex fishir	200										

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices								Escalated to Year of Construction		
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	JC Boyle	1.111	JC Boyle Dam Removal	Topsy Recreational Area - Regrade to natural contour	300	SF	14.63	4,390	4,171	-5%	4,829	10%	4,938	4,691	5,432
41	JC Boyle	1.112	JC Boyle Dam Removal	Pioneer Park - Picnic tables to be removed and hauled away	12.00	EA	156.62	1,879	1,785	-5%	1,973	5%	2,114	2,008	2,220
41	JC Boyle	1.113	JC Boyle Dam Removal	Pioneer Park - 12 Concrete fire rings	5.00	CY	353.89	1,769	1,681	-5%	1,858	5%	1,990	1,891	2,090
41	JC Boyle	1.114	JC Boyle Dam Removal	Pioneer Park - Portable toilets to be removed and hauled away	2.00	EA	1,002.35	2,005	1,904	-5%	2,105	5%	2,255	2,142	2,368
41	JC Boyle	1.115	JC Boyle Dam Removal	Pioneer Park - Signs to be removed and hauled away	6.00	EA	141.12	847	804	-5%	889	5%	952	905	1,000
41	JC Boyle	1.116	JC Boyle Dam Removal	Pioneer Park - Dumpster to be removed and hauled away	1.00	EA	2,971.02	2,971	2,674	-10%	3,417	15%	3,342	3,008	3,843
41	JC Boyle	1.118	JC Boyle Dam Removal	Pioneer Park - Regrade to natural contour	0.50	AC	17,560.36	8,780	7,902	-10%	9,658	10%	9,877	8,889	10,864
41	JC Boyle	5.000	JC Boyle Dam Removal	Remove Frame dead end structures 60-80 ft high	2.00	EA	7,101.59	14,203	12,783	-10%	17,044	20%	15,977	14,379	19,172
41	JC Boyle	5.001	JC Boyle Dam Removal	Remove (incl foundation) and Save Transformers 230KV	2.00	EA	2,688.70	5,377	4,840	-10%	6,184	15%	6,049	5,444	6,956
41	JC Boyle	5.002	JC Boyle Dam Removal	Remove (incl foundation) and Save Power Circuit Breakers 2	2.00	EA	3,640.83	7,282	6,918	-5%	8,100	10%	8,191	7,781	9,010
41	JC Boyle	5.003	JC Boyle Dam Removal	Substation Tie Structure 230KV	1.00	EA	41,482.05	41,482	37,334	-10%	47,704	15%	46,662	41,995	53,661
41	JC Boyle	5.004	JC Boyle Dam Removal	Remove Chain Link Fence	601	LF	17.70	10,639	9,575	-10%	11,703	10%	11,967	10,770	13,164
41	JC Boyle	5.005	JC Boyle Dam Removal	Demolish overhead distribution 2.5 miles (30-45 poles)	45.00	EA	1,160.01	52,200	46,980	-10%	62,640	20%	58,718	52,846	70,462
41	JC Boyle	5.032	JC Boyle Dam Removal	Install 230KV strain transmission structures outside JC Boyle S	2.00	EA	132,241.37	264,483	238,034	-10%	317,379	20%	297,507	267,756	357,009
41	Copco 1	2.001	Copco 1 Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in Reserve	1.00	LS	191,823.14	191,823	172,641	-10%	239,779	25%	215,775	194,197	269,719
41	Copco 1	2.002	Copco 1 Dam Removal	Remove Sediment from Diversion Tunnel Intake to provide acc	30.00	CY	3,434.68	103,040	92,736	-10%	123,649	20%	115,907	104,316	139,088
41	Copco 1	2.003	Copco 1 Dam Removal	Furnish, Install, and Remove Large Crane on Right Abutment	1.00	LS	566,865.71	566,866	481,836	-15%	651,896	15%	637,647	542,000	733,294
41	Copco 1	2.004	Copco 1 Dam Removal	Remove Water from behind Tailrace Cofferdam	200,000	GAL	0.01	2,091	1,882	-10%	2,405	15%	2,353	2,117	2,706
41	Copco 1	2.005	Copco 1 Dam Removal	Riprap Protection on Cofferdam	260	CY	148.31	38,561	32,777	-15%	46,273	20%	43,376	36,869	52,051
41	Copco 1	2.006	Copco 1 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	89,882.80	89,883	80,895	-10%	107,859	20%	101,106	90,995	121,327
41	Copco 1	2.007	Copco 1 Dam Removal	Remove Current Diversion Tunnel Plug	195	CY	1,390.41	271,129	244,016	-10%	325,355	20%	304,983	274,485	365,980
41	Copco 1	2.008	Copco 1 Dam Removal	Construct Embankment Cofferdam in Tailrace	1.700	CY	165.62	281,551	239,319	-15%	337,862	20%	316,707	269,201	380,049
41	Copco 1	2.009	Copco 1 Dam Removal	Installation of 3 each 72" Blind Flanges	38,000	LB	34.66	1,317,134	1,119,564	-15%	1,712,274	30%	1,481,597	1,259,357	1,926,076
41	Copco 1	2.009.2	Copco 1 Dam Removal	Installation of 16.5 X 18.5 Roller Gate and Gate Structure	1.00	LS	4,098,153.55	4,098,154	3,483,431	-15%	5,327,600	30%	4,609,865	3,918,366	5,992,825
41	Copco 1	2.009.3	Copco 1 Dam Removal	Removal of 16.5 X 18.5 Roller Gate and Gate Structure	1.00	LS	271,584.86	271,585	230,847	-15%	353,060	30%	305,496	259,672	397,145
41	Copco 1	2.010	Copco 1 Dam Removal	Remove Concrete Dam down to Elev. 2476	36,000	CY	227.38	8,185,528	7,366,975	-10%	9,822,633	20%	9,207,605	8,286,845	11,049,126
41	Copco 1	2.011	Copco 1 Dam Removal	Remove Concrete Intake Structure on Right Abutment	21,000	CY	346.51	7,276,705	6,185,199	-15%	8,732,046	20%	8,185,303	6,957,508	9,822,364
41	Copco 1	2.012	Copco 1 Dam Removal	Remove Structural Steel from Spillway	55,000	LB	1.27	69,659	59,210	-15%	87,074	25%	78,357	66,604	97,946
41	Copco 1	2.013	Copco 1 Dam Removal	Install Diversion Tunnel Plugs	30.00	CY	1,330.24	39,907	35,916	-10%	45,893	15%	44,890	40,401	51,624
41	Copco 1	2.014	Copco 1 Dam Removal	Remove Diversion Tunnel Control Structure Concrete	350	CY	231.13	80,895	72,805	-10%	97,074	20%	90,995	81,896	109,195
41	Copco 1	2.015	Copco 1 Dam Removal	Remove & Dispose of Hand Rails	11,000	LB	1.36	14,919	12,681	-15%	17,903	20%	16,782	14,265	20,139
41	Copco 1	2.016	Copco 1 Dam Removal	Remove & Dispose of Radial Gates	140,500	LB	1.11	156,117	140,505	-10%	195,146	25%	175,610	158,049	219,513
41	Copco 1	2.017	Copco 1 Dam Removal	Remove & Dispose Radial Gate Stop logs	18,000	LB	1.06	19,126	17,214	-10%	23,908	25%	21,515	19,363	26,893
41	Copco 1	2.018	Copco 1 Dam Removal	Remove & Dispose Stop log hoist, track and supports	26,000	LB	1.03	26,842	24,158	-10%	33,552	25%	30,193	27,174	37,742
41	Copco 1	2.019	Copco 1 Dam Removal	Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining	54,000	LB	1.04	56,361	47,906	-15%	67,633	20%	63,398	53,888	76,078
41	Copco 1	2.020	Copco 1 Dam Removal	Remove & Dispose of 3 - 72" butterfly valves (embedded)	55,000	LB	1.10	60,293	54,264	-10%	69,337	15%	67,822	61,040	77,995
41	Copco 1	2.021	Copco 1 Dam Removal	Remove & Dispose of 3 - 72" flapper valves with remote mech	78,000	LB	5.54	432,104	388,894	-10%	496,920	15%	486,058	437,453	558,967
41	Copco 1	2.022	Copco 1 Dam Removal	Remove & Dispose of Spillway gate motor & control panel	1.00	EA	1,318.63	1,319	1,187	-10%	1,516	15%	1,483	1,335	1,706
41	Copco 1	2.023	Copco 1 Dam Removal	Remove & Dispose Distribution equipment, panelboards	7.00	EA	5,877.55	5,878	5,290	-10%	7,053	20%	6,611	5,950	7,934
41	Copco 1	2.024	Copco 1 Dam Removal	Remove Powerhouse Concrete down to top of rock under the	3,100	CY	387.53	1,201,333	1,021,133	-15%	1,501,667	25%	1,351,337	1,148,636	1,689,171
41	Copco 1	2.025	Copco 1 Dam Removal	Remove Powerhouse Structural Steel	110,000	LB	1.02	112,188	95,360	-15%	134,625	20%	126,196	107,267	151,435
41	Copco 1	2.026	Copco 1 Dam Removal	Remove & Dispose of 2 - Governor Oil Systems	38,000	LB	1.07	40,521	36,469	-10%	50,651	25%	45,580	41,022	56,975
41	Copco 1	2.027	Copco 1 Dam Removal	Remove & Dispose of Cooling water and bearing oil systems	11,000	LB	3.16	34,710	31,239	-10%	41,652	20%	39,044	35,140	46,853
41	Copco 1	2.028	Copco 1 Dam Removal	Remove & Dispose of 4 - Horizontal Tandem Francis Turbines	452,000	LB	0.80	362,135	325,922	-10%	434,562	20%	407,353	366,618	488,824
41	Copco 1	2.029	Copco 1 Dam Removal	Remove & Dispose of 2 - 40 Ton indoor cranes	140,000	LB	0.74	103,941	88,350	-15%	124,729	20%	116,920	99,382	140,304
41	Copco 1	2.030	Copco 1 Dam Removal	Remove & Dispose of Compressed Air System	1,000	LB	1.00	997	897	-10%	1,147	15%	1,122	1,009	1,290
41	Copco 1	2.031	Copco 1 Dam Removal	Remove & Dispose of 2 - CO2 Systems	3,100	LB	1.05	3,252	2,927	-10%	3,739	15%	3,658	3,292	4,206
41	Copco 1	2.032	Copco 1 Dam Removal	Remove & Dispose of Plant Water and Fire Protection	2,600	LB	1.35	3,511	3,160	-10%	4,214	20%	3,950	3,555	4,740
41	Copco 1	2.033	Copco 1 Dam Removal	Remove & Dispose of Transformer Oil Fire Protection	5,400	LB	1.22	6,586	5,927	-10%	7,903	20%	7,408	6,667	8,890
41	Copco 1	2.034	Copco 1 Dam Removal	Remove & Dispose of Unwatering Piping	27,000	LB	0.73	19,738	16,777	-15%	24,672	25%	22,202	18,872	27,753
41	Copco 1	2.035	Copco 1 Dam Removal	Remove & Dispose of Drainage Piping	5,000	LB	1.04	5,202	4,422	-15%	6,503	25%	5,852	4,974	7,314
41	Copco 1	2.035a	Copco 1 Dam Removal	Remove petroleum products from mechanical equipment	1,250	GAL	4.39	5,490	4,941	-10%	6,313	15%	6,175	5,558	7,101
41	Copco 1	2.036	Copco 1 Dam Removal	Remove & Dispose of Horizontal AC Generator, Indoor Open R	2.00	EA	38,691.77	77,384	65,776	-15%	92,860	20%	87,046	73,989	104,455
41	Copco 1	2.037	Copco 1 Dam Removal	Remove & Dispose of Excitation equipment for 12.5 MVA Gen	1.50	EA	8,472.47	12,709	10,802	-15%	15,886	25%	14,296	12,151	17,869
41	Copco 1	2.038	Copco 1 Dam Removal	Remove & Dispose of Surge protection equip. for 12.5 MVA G	2.00	EA	2,504.46	5,009	4,258	-15%	6,512	30%	5,634	4,789	7,325
41	Copco 1	2.039	Copco 1 Dam Removal	Remove & Dispose of Neutral grounding equip. for 12.5 MVA G	2.00	EA	2,332.24	4,664	4,198	-10%	5,364	15%	5,247	4,722	6,034
41	Copco 1	2.040	Copco 1 Dam Removal	Remove & Dispose of Generator Switchgear, 5kV-includes uni	1.00	EA	20,666.10	20,666	18,599	-10%	23,766	15%	23,247	20,922	26,734
41	Copco 1	2.041	Copco 1 Dam Removal	Remove & Dispose of Station Service Switchgear, 600 volt - (S	1.00	EA	11,311.14	11,311	10,180	-10%	13,008	15%	12,723	11,451	14,632
41	Copco 1	2.042	Copco 1 Dam Removal	Remove & Dispose of Unit and plant control switchboard	1.00	EA	6,110.32	6,110	5,499	-10%	7,027	15%	6,873	6,186	7,904
41	Copco 1	2.043	Copco 1 Dam Removal	Remove & Dispose of Battery System	1.00	EA	20,638.63	20,639	18,575	-10%	23,734	15%	23,216	20,894	26,698
41	Copco 1	2.044	Copco 1 Dam Removal	Remove & Dispose of Raceways, Conduit and Cable	1.00	EA	17,082.48	17,082	15,374	-10%	19,645	15%	19,215	17,294	22,098
41	Copco 1	2.045	Copco 1 Dam Removal	Remove & Dispose of Misc. power & control boards	1.00	EA	6,945.94	6,946	6,251	-10%	7,988	15%	7,813	7,032	8,985
41	Copco 1	2.046	Copco 1 Dam Removal	Remove & Dispose of Step-up Transformers, indoor, oil-filled,	3.00	EA	64,338.39	193,015	173,714	-10%	221,967	15%	217,116	195,404	249,683
41	Copco 1	2.047	Copco 1 Dam Removal	Remove & Dispose of Step-up Transformers, indoor, oil-filled,	3.00	EA	57,252.76	171,758	154,582	-10%	197,522	15%	193,205	173,884	222,185
41	Copco 1	2.048	Copco 1 Dam Removal	Remove & Dispose of Seven 40-Ton Travelling Crane motors	1.00	EA	3,306.69	3,307	2,976	-10%	3,803	15%	3,720	3,348	4,278
41	Copco 1	2.049	Copco 1 Dam Removal	Remove & Dispose of 40-Ton Travelling Crane control equipm	1.00	EA	4,364.61	4,365							

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	Copco 1	2.051	Copco 1 Dam Removal	Remove & Dispose of Four 15-Ton Overhead Crane Motors -	1.00	EA	959.54	960	864	-10%	1,151	20%	1,079	971	1,295
41	Copco 1	2.052	Copco 1 Dam Removal	Remove & Dispose of 15-Ton Overhead Crane control equipm	1.00	EA	434.20	434	391	-10%	499	15%	488	440	562
41	Copco 1	2.053	Copco 1 Dam Removal	Remove & Dispose of 15-Ton Overhead Crane Festoon Cable	1.00	EA	637.49	637	574	-10%	733	15%	717	645	825
41	Copco 1	2.053a	Copco 1 Dam Removal	Remove petroleum products from mechanical equipment	10,500	GAL	10.39	109,116	98,204	-10%	125,483	15%	122,740	110,466	141,151
41	Copco 1	2.054	Copco 1 Dam Removal	Remove & Dispose of 69kV circuit breakers, oil0 filled, PCB	2.00	EA	861.46	1,723	1,551	-10%	1,895	10%	1,938	1,744	2,132
41	Copco 1	2.055	Copco 1 Dam Removal	Remove & Dispose of 69kV disconnect switches, group-opera	2.00	EA	861.46	1,723	1,551	-10%	1,895	10%	1,938	1,744	2,132
41	Copco 1	2.056	Copco 1 Dam Removal	Remove & Dispose of 60-foot wood poles	12.00	EA	1,296.96	15,563	13,229	-15%	18,676	20%	17,507	14,881	21,008
41	Copco 1	2.057	Copco 1 Dam Removal	Remove & Dispose of 30-foot wood cross arms	24.00	EA	484.41	11,626	9,882	-15%	13,951	20%	13,078	11,116	15,693
41	Copco 1	2.058	Copco 1 Dam Removal	Remove & Dispose of 69-kV insulator strings	12.00	EA	372.92	4,475	3,804	-15%	5,370	20%	5,034	4,279	6,041
41	Copco 1	2.059	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 3	1.66	MI	31,411.84	52,144	44,322	-15%	65,180	25%	58,655	49,856	73,318
41	Copco 1	2.060	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 15	1.23	MI	33,971.31	41,785	35,517	-15%	52,231	25%	47,002	39,952	58,753
41	Copco 1	2.061	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 26-1	0.07	MI	33,525.16	2,347	1,995	-15%	2,933	25%	2,640	2,244	3,300
41	Copco 1	2.062	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 26-2	0.07	MI	33,525.16	2,347	1,995	-15%	2,933	25%	2,640	2,244	3,300
41	Copco 1	2.063	Copco 1 Dam Removal	Remove gate house #1 from top of dam	720	SF	72.06	51,880	44,098	-15%	64,850	25%	58,358	49,604	72,947
41	Copco 1	2.064	Copco 1 Dam Removal	Remove gate house #2 from top of dam	690	SF	74.35	51,302	43,607	-15%	64,128	25%	57,708	49,052	72,135
41	Copco 1	2.065	Copco 1 Dam Removal	Remove Concrete Items associated with 10 ft. diam. Penstock	1,050	CY	300.38	315,398	268,089	-15%	394,248	25%	354,780	301,563	443,476
41	Copco 1	2.066	Copco 1 Dam Removal	Plug 14-foot diameter penstock with concrete	23.00	CY	3,373.31	77,586	69,828	-10%	89,224	15%	87,274	78,547	100,365
41	Copco 1	2.067	Copco 1 Dam Removal	Remove & Dispose of 8 screens	18,000	LB	1.17	21,014	18,913	-10%	25,217	20%	23,638	21,275	28,366
41	Copco 1	2.068	Copco 1 Dam Removal	Remove & Dispose of 8 Water Gates	18,000	LB	1.10	19,802	17,822	-10%	23,762	20%	22,274	20,047	26,729
41	Copco 1	2.069	Copco 1 Dam Removal	Remove & Dispose of 3 - 30" Dia. x 25' stand pipes	6,000	LB	0.91	5,458	4,912	-10%	6,550	20%	6,140	5,526	7,368
41	Copco 1	2.070	Copco 1 Dam Removal	Remove & Dispose of 14' Dia. penstock pipe	256,000	LB	1.31	335,207	284,926	-15%	419,009	25%	377,063	320,503	471,328
41	Copco 1	2.071	Copco 1 Dam Removal	Remove & Dispose of 10' Dia. penstock pipe	270,000	LB	1.37	370,853	315,225	-15%	463,566	25%	417,159	354,585	521,449
41	Copco 1	2.081	Copco 1 Dam Removal	Site work - Clear and Grub Disposal Area	4.00	AC	13,732.22	54,929	46,690	-15%	65,915	20%	61,788	52,519	74,145
41	Copco 1	2.082	Copco 1 Dam Removal	Site work - Soil Cover for Disposal Area	12,000	CY	6.84	82,107	69,791	-15%	98,529	20%	92,359	78,505	110,831
41	Copco 1	2.089	Copco 1 Dam Removal	Mallard Cove - Concrete total	106	CY	338.09	35,838	30,462	-15%	41,214	15%	40,313	34,266	46,360
41	Copco 1	2.09	Copco 1 Dam Removal	Mallard Cove - 25'x5' Dock made of composite decking and pd	1.00	EA	3,009.15	3,009	2,558	-15%	3,461	15%	3,385	2,877	3,893
41	Copco 1	2.091	Copco 1 Dam Removal	Mallard Cove - 20'x5' Gangway w/ aluminum grate and railings	1.00	EA	2,758.50	2,758	2,345	-15%	3,172	15%	3,103	2,637	3,568
41	Copco 1	2.092	Copco 1 Dam Removal	Mallard Cove - Signs to be removed and hauled away	6.00	EA	152.39	914	823	-10%	1,006	10%	1,029	926	1,131
41	Copco 1	2.093	Copco 1 Dam Removal	Mallard Cove - Wood plank tables to be removed and hauled a	8.00	EA	114.29	914	823	-10%	1,006	10%	1,029	926	1,131
41	Copco 1	2.094	Copco 1 Dam Removal	Mallard Cove - Parking area to be regraded	2.50	AC	7,451.08	18,628	16,765	-10%	21,422	15%	20,954	18,858	24,097
41	Copco 1	2.095	Copco 1 Dam Removal	Copco Cove - Concrete Total	84.00	CY	331.83	27,874	23,693	-15%	32,065	15%	31,354	26,651	36,058
41	Copco 1	2.096	Copco 1 Dam Removal	Copco Cove - Dock abutment railing made of 2.5" dia. steel pi	1.00	EA	1,446.70	1,447	1,302	-10%	1,591	10%	1,627	1,465	1,790
41	Copco 1	2.097	Copco 1 Dam Removal	Copco Cove - Signs to be removed and hauled away	6.00	EA	407.82	2,447	2,202	-10%	2,692	10%	2,752	2,477	3,028
41	Copco 1	2.098	Copco 1 Dam Removal	Copco Cove - Wood plank tables to be removed and hauled a	2.00	EA	152.39	305	274	-10%	335	10%	343	309	377
41	Copco 1	2.099	Copco 1 Dam Removal	Copco Cove - Regrade	2.30	AC	6,531.70	15,023	13,521	-10%	17,276	15%	16,899	15,209	19,434
41	Copco 1	2.100	Copco 1 Dam Removal	Diversion Tunnel Lining	1.00	LS	244,844.33	244,844	220,360	-10%	281,571	15%	275,417	247,875	316,729
41	Copco 1	5.006	Copco 1 Dam Removal	Remove Frame Dead End Structures 60-80ft High @ Switch Y	4.00	EA	6,436.15	25,745	21,883	-15%	33,468	30%	28,959	24,615	37,647
41	Copco 1	5.007	Copco 1 Dam Removal	Remove Power Circuit Breakers 69KV @ Switch Yard	2.00	EA	5,681.20	11,362	10,226	-10%	14,203	25%	12,781	11,503	15,976
41	Copco 1	5.008	Copco 1 Dam Removal	Remove Disconnect Switches @ Switch Yard	4.00	EA	9,731.40	38,926	35,033	-10%	48,657	25%	43,786	39,407	54,733
41	Copco 1	5.009	Copco 1 Dam Removal	Remove All Associated AUX Equipment @ Switch Yard (allow	1.00	LS	48,501.71	48,502	43,652	-10%	60,627	25%	54,558	49,102	68,197
41	Copco 1	5.010	Copco 1 Dam Removal	Remove Distribution Lines 69 KV Copco 1 Switch Yard and HB	6.00	EA	1,402.44	8,415	7,573	-10%	10,518	25%	9,465	8,519	11,832
41	Copco 1	5.011	Copco 1 Dam Removal	Remove Distribution Poles 2.4 KV Btw Copco 1/ HE Plant/ Cop	8.00	EA	1,950.45	15,604	14,043	-10%	19,505	25%	17,552	15,797	21,940
41	Copco 1	5.012	Copco 1 Dam Removal	Remove Production Poles in General Area of Copco 1	7.00	EA	1,956.86	13,698	11,643	-15%	17,807	30%	15,408	13,097	20,031
41	Copco 1	5.013	Copco 1 Dam Removal	Remove Village House Distribution Poles Near Dam (Est 10 ea	10.00	EA	1,293.71	12,937	10,997	-15%	16,818	30%	14,552	12,370	18,918
41	Copco 1	5.014	Copco 1 Dam Removal	Remove 69 KV Distribution Line 1.6 Miles (30 Poles)	30.00	EA	2,096.19	62,886	53,453	-15%	81,751	30%	70,738	60,127	91,959
41	Copco 1	5.015	Copco 1 Dam Removal	Remove Transmission Conductors on Poles 1X/001 and 2X/00	2.00	EA	2,686.44	5,373	4,567	-15%	6,985	30%	6,044	5,137	7,857
41	Copco 1	5.016	Copco 1 Dam Removal	Remove Transmission Conductors 1.3 Miles Copco 1 to Copco	6,864	LF	7.16	49,138	41,767	-15%	63,880	30%	55,274	46,983	71,856
41	Copco 2	3.001	Copco 2 Dam Removal	Construct and Remove Embankment Cofferdam-Right Side of	3,100	CY	59.70	185,071	148,057	-20%	259,100	40%	208,180	166,544	291,452
41	Copco 2	3.002	Copco 2 Dam Removal	Furnish, Install, and Remove RipRap	465	CY	129.88	60,392	48,314	-20%	84,549	40%	67,933	54,347	95,106
41	Copco 2	3.003	Copco 2 Dam Removal	Provide Dewatering behind Cofferdams	1.00	LS	143,210.99	143,211	128,890	-10%	186,174	30%	161,093	144,984	209,421
41	Copco 2	3.004	Copco 2 Dam Removal	Remove Water from behind Cofferdams	241,000	GAL	0.02	5,834	5,251	-10%	7,584	30%	6,563	5,906	8,531
41	Copco 2	3.005	Copco 2 Dam Removal	Construct and Remove Embankment Cofferdam-Left Side of D	1,100	CY	172.54	189,793	147,837	-22%	258,715	36%	213,491	166,297	291,019
41	Copco 2	3.006	Copco 2 Dam Removal	Furnish, Install, and Remove RipRap	250	CY	185.94	46,486	37,189	-20%	65,080	40%	52,290	41,832	73,207
41	Copco 2	3.007	Copco 2 Dam Removal	Provide Dewatering behind left Side Cofferdam	1.00	LS	79,612.67	79,613	71,651	-10%	103,496	30%	89,553	80,598	116,419
41	Copco 2	3.008	Copco 2 Dam Removal	Remove Water from behind Cofferdams	36,000	GAL	0.15	5,352	4,817	-10%	6,958	30%	6,021	5,418	7,827
41	Copco 2	3.009	Copco 2 Dam Removal	Remove Water from behind Tailrace Cofferdam	400,000	GAL	0.03	10,287	9,258	-10%	13,373	30%	11,571	10,414	15,043
41	Copco 2	3.010	Copco 2 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	49,938.86	49,939	44,945	-10%	64,921	30%	56,174	50,557	73,027
41	Copco 2	3.011	Copco 2 Dam Removal	Construct Embankment Cofferdam across Tailrace	1,700	CY	115.34	196,077	156,862	-20%	274,508	40%	220,560	176,448	308,784
41	Copco 2	3.014	Copco 2 Dam Removal	Remove Concrete in Dam	4,430	CY	253.02	1,120,868	952,738	-15%	1,625,258	45%	1,260,824	1,071,700	1,828,195
41	Copco 2	3.015	Copco 2 Dam Removal	Remove concrete equipment slab from top of embankment wi	5.00	CY	353.89	1,769	1,504	-15%	2,300	30%	1,990	1,692	2,588
41	Copco 2	3.016	Copco 2 Dam Removal	Remove Concrete Wing wall	240	CY	217.45	52,187	44,359	-15%	67,843	30%	58,703	49,898	76,314
41	Copco 2	3.017	Copco 2 Dam Removal	Right Abutment Removal - Random Fill	1,510	CY	52.34	79,041	67,185	-15%	98,801	25%	88,910	75,574	111,138
41	Copco 2	3.018	Copco 2 Dam Removal	Right Abutment Removal - Remove Hand Placed Riprap	5,400	SF	2.26	12,211	10,379	-15%	15,264	25%	13,736	11,675	17,170
41	Copco 2	3.019	Copco 2 Dam Removal	Right Abutment Removal - Gunite Curtain Wall	180	CY	333.73	60,071	51,060	-15%	75,089	25%	67,572	57,436	84,465
41	Copco 2	3.020	Copco 2 Dam Removal	Remove & Dispose - Hand rails and Light Poles	5,000	LB	0.84	4,183	3,556	-15%	5,020	20%	4,706	4,000	5,647
41	Copco 2	3.021	Copco 2 Dam Removal	Remove & Dispose - Radial Gates and Hoists	66,000	LB	0.81	53,452	45,434	-15%	72,160	35%	60,126	51,107	81,170
41	Copco 2	3.022</													

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	High	Estimate	Est Low	Est High		
41	Copco 2	3.023	Copco 2 Dam Removal	Remove & Dispose - Spillway intake gate motor & control pane	1.00	EA	1,297.31	1,297	1,168	-10%	1,492	15%	1,459	1,313	1,678
41	Copco 2	3.024	Copco 2 Dam Removal	Remove & Dispose - Spillway radial gate motor & control pane	1.00	EA	1,297.31	1,297	1,168	-10%	1,492	15%	1,459	1,313	1,678
41	Copco 2	3.025	Copco 2 Dam Removal	Remove & Dispose - Spillway trash rake motor, festoon cable	1.00	EA	551.31	551	496	-10%	634	15%	620	558	713
41	Copco 2	3.026	Copco 2 Dam Removal	Remove & Dispose - Distribution equipment, panelboards	1.00	EA	5,877.55	5,878	5,290	-10%	6,759	15%	6,611	5,950	7,603
41	Copco 2	3.027	Copco 2 Dam Removal	Remove Copper Shingles from Roof of Powerhouse	7,000	SF	2.07	14,473	12,302	-15%	16,644	15%	16,280	13,838	18,722
41	Copco 2	3.028	Copco 2 Dam Removal	Remove Powerhouse Concrete down to spring-line of turbine	1,110	CY	514.15	570,702	485,097	-15%	827,518	45%	641,962	545,668	930,845
41	Copco 2	3.029	Copco 2 Dam Removal	Remove Structural Steel items associated with Powerhouse	220,000	LB	0.96	211,759	169,407	-20%	296,463	40%	238,200	190,560	333,480
41	Copco 2	3.030	Copco 2 Dam Removal	Remove Control House Concrete	30,000	CY	317.78	9,533	7,627	-20%	12,870	35%	10,724	8,579	14,477
41	Copco 2	3.031	Copco 2 Dam Removal	Remove Control House Structural Steel Items	3,500	LB	0.88	3,088	2,471	-20%	4,324	40%	3,474	2,779	4,864
41	Copco 2	3.032	Copco 2 Dam Removal	Remove Shop Building	4,300	SF	69.45	298,623	238,898	-20%	388,210	30%	335,910	268,728	436,683
41	Copco 2	3.033	Copco 2 Dam Removal	Remove & Dispose - 2 - Governor oil systems	38,000	LB	1.06	40,406	34,345	-15%	50,507	25%	45,451	38,633	56,814
41	Copco 2	3.034	Copco 2 Dam Removal	Remove & Dispose - Cooling water and bearing oil systems	13,300	LB	0.93	12,414	10,552	-15%	15,518	25%	13,965	11,870	17,456
41	Copco 2	3.035	Copco 2 Dam Removal	Remove & Dispose - Oil / Water separator tank and piping	2,700	LB	0.93	2,520	2,142	-15%	3,149	25%	2,834	2,409	3,543
41	Copco 2	3.036	Copco 2 Dam Removal	Remove & Dispose - 12 - Cast Iron Columns	54,000	LB	0.83	44,692	35,754	-20%	53,631	20%	50,273	40,218	60,327
41	Copco 2	3.037	Copco 2 Dam Removal	Remove & Dispose - 2 - Francis Turbines	660,000	LB	0.83	547,502	438,002	-20%	711,753	30%	615,866	492,692	800,625
41	Copco 2	3.038	Copco 2 Dam Removal	Remove & Dispose - 2 - 40 Ton indoor cranes	140,000	LB	1.17	163,271	130,617	-20%	212,253	30%	183,658	146,926	238,755
41	Copco 2	3.039	Copco 2 Dam Removal	Remove & Dispose - Compressed Air Systems	1,000	LB	1.13	1,129	960	-15%	1,411	25%	1,270	1,080	1,588
41	Copco 2	3.040	Copco 2 Dam Removal	Remove & Dispose - 2 - CO2 Systems	2,100	LB	1.23	2,573	2,187	-15%	3,216	25%	2,894	2,460	3,618
41	Copco 2	3.041	Copco 2 Dam Removal	Remove & Dispose - Plant Water and Fire Protection	3,100	LB	1.41	4,373	3,717	-15%	5,466	25%	4,919	4,181	6,149
41	Copco 2	3.042	Copco 2 Dam Removal	Remove & Dispose - Transformer Oil Fire Protection	6,500	LB	0.87	5,633	4,788	-15%	7,042	25%	6,337	5,386	7,921
41	Copco 2	3.043	Copco 2 Dam Removal	Remove & Dispose - Unwatering Piping	32,000	LB	0.75	24,116	20,499	-15%	30,145	25%	27,127	23,058	33,909
41	Copco 2	3.044	Copco 2 Dam Removal	Remove & Dispose - Drainage Piping	10,000	LB	1.39	13,877	11,795	-15%	17,346	25%	15,609	13,268	19,512
41	Copco 2	3.044a	Copco 2 Dam Removal	Remove & Dispose - Petroleum Products from Mechanical Eq	3,300	GAL	4.54	14,972	13,475	-10%	17,217	15%	16,841	15,157	19,367
41	Copco 2	3.044b	Copco 2 Dam Removal	Remove & Dispose - Remove Petroleum Products at or near t	3,300	GAL	4.54	14,972	13,475	-10%	17,217	15%	16,841	15,157	19,367
41	Copco 2	3.045	Copco 2 Dam Removal	Remove & Dispose - AC Generator, Indoor Vertical	2.00	EA	82,295.42	164,591	148,132	-10%	189,279	15%	185,142	166,628	212,914
41	Copco 2	3.046	Copco 2 Dam Removal	Remove & Dispose - Excitation equipment for 15 MVA Genera	2.00	EA	8,173.98	16,348	14,713	-10%	18,800	15%	18,389	16,550	21,148
41	Copco 2	3.047	Copco 2 Dam Removal	Remove & Dispose - Surge protection equip. for 15 MVA Gene	2.00	EA	2,582.65	5,165	4,649	-10%	5,940	15%	5,810	5,229	6,682
41	Copco 2	3.048	Copco 2 Dam Removal	Remove & Dispose - Neutral grounding equip. for 15 MVA Ge	2.00	EA	2,514.72	5,029	4,526	-10%	5,784	15%	5,657	5,092	6,506
41	Copco 2	3.049	Copco 2 Dam Removal	Remove & Dispose - Generator Switchgear, 7.2kV-includes ur	1.00	EA	27,340.22	27,340	24,606	-10%	31,441	15%	30,754	27,679	35,367
41	Copco 2	3.050	Copco 2 Dam Removal	Remove & Dispose - Station Service Switchgear, 600-volt (5 s	1.00	EA	24,083.60	24,084	21,675	-10%	27,696	15%	27,091	24,382	31,154
41	Copco 2	3.051	Copco 2 Dam Removal	Remove & Dispose - Unit and plant control switchboard	1.00	EA	7,551.93	7,552	6,797	-10%	8,685	15%	8,495	7,645	9,769
41	Copco 2	3.052	Copco 2 Dam Removal	Remove & Dispose - Battery system	1.00	EA	10,473.21	10,473	9,426	-10%	12,044	15%	11,781	10,603	13,548
41	Copco 2	3.053	Copco 2 Dam Removal	Remove & Dispose - Raceways, Conduit and Cable	1.00	EA	15,384.27	15,384	13,846	-10%	17,692	15%	17,305	15,575	19,901
41	Copco 2	3.054	Copco 2 Dam Removal	Remove & Dispose - Misc. Power & Control Boards	1.00	EA	5,724.44	5,724	5,152	-10%	6,583	15%	6,439	5,795	7,405
41	Copco 2	3.055	Copco 2 Dam Removal	Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist	1.00	EA	3,548.91	3,549	3,194	-10%	4,259	20%	3,992	3,593	4,790
41	Copco 2	3.056	Copco 2 Dam Removal	Remove & Dispose - 40-Ton Travelling Crane control equipme	1.00	EA	11,203.08	11,203	10,083	-10%	13,444	20%	12,602	11,342	15,122
41	Copco 2	3.057	Copco 2 Dam Removal	Remove & Dispose - 40-Ton Travelling Crane Festoon Cable	1.00	EA	2,557.66	2,558	2,302	-10%	3,069	20%	2,877	2,589	3,452
41	Copco 2	3.058a	Copco 2 Dam Removal	Remove Oil from Oil-Filled Step-up Transformers	23,000	GAL	10.59	243,653	207,105	-15%	280,201	15%	274,077	232,965	315,188
41	Copco 2	3.061	Copco 2 Dam Removal	Remove Intake Structure Concrete	1,650	CY	299.68	494,479	420,307	-15%	741,718	50%	556,221	472,788	834,332
41	Copco 2	3.062	Copco 2 Dam Removal	Remove Concrete Items associated with 16-foot I.D. Wood St	1,310	CY	299.39	392,197	333,367	-15%	568,685	45%	441,168	374,993	639,693
41	Copco 2	3.063	Copco 2 Dam Removal	Place Concrete Plugs for Tunnels	100	CY	1,827.07	182,707	155,301	-15%	237,519	30%	205,521	174,692	267,177
41	Copco 2	3.064	Copco 2 Dam Removal	Remove Concrete Items associated with Penstocks D/S from	3,500	CY	298.85	1,045,973	836,779	-20%	1,359,765	30%	1,176,578	941,262	1,529,551
41	Copco 2	3.065	Copco 2 Dam Removal	Remove & Dispose of Caterpillar Gate (steel)	50,000	LB	0.92	45,874	38,993	-15%	52,755	15%	51,602	43,862	59,342
41	Copco 2	3.066	Copco 2 Dam Removal	Remove & Dispose of Trash rack and trash rake (steel)	86,000	LB	0.63	54,375	46,219	-15%	70,687	30%	61,164	51,990	79,513
41	Copco 2	3.067	Copco 2 Dam Removal	Remove & Dispose of Stop Logs and slots for intake (steel)	220,000	LB	0.78	170,795	145,176	-15%	222,034	30%	192,121	163,303	249,758
41	Copco 2	3.068	Copco 2 Dam Removal	Remove & Dispose of Wood Staves Soaked in Creosote	1,100,000	LB	0.93	1,021,716	715,201	-30%	1,328,231	30%	1,149,292	804,504	1,494,079
41	Copco 2	3.069	Copco 2 Dam Removal	Remove & Dispose of Cradles (steel)	290,000	LB	0.94	273,478	191,623	-30%	355,872	30%	307,929	215,550	400,308
41	Copco 2	3.070	Copco 2 Dam Removal	Remove & Dispose of Bands (steel)	463,000	LB	0.92	426,777	298,744	-30%	554,811	30%	480,067	336,047	624,086
41	Copco 2	3.071	Copco 2 Dam Removal	Remove & Dispose of Penstock after bifurcation to butterfly va	860,000	LB	1.08	925,612	647,928	-30%	1,203,295	30%	1,041,188	728,831	1,353,544
41	Copco 2	3.072	Copco 2 Dam Removal	Remove & Dispose of Bifurcated vent pipes and support struc	19,500	LB	1.13	22,033	15,423	-30%	28,643	30%	24,784	17,349	32,220
41	Copco 2	3.073	Copco 2 Dam Removal	Remove & Dispose of 2 - 138" Butterfly Valves	148,000	LB	0.88	129,906	90,934	-30%	168,878	30%	146,127	102,289	189,965
41	Copco 2	5.017	Copco 2 Dam Removal	Disconnect and Remove Medium Voltage Circuit Breakers 115	2.00	EA	678.35	1,357	1,153	-15%	1,899	40%	1,526	1,297	2,137
41	Copco 2	5.018	Copco 2 Dam Removal	Disconnect and Remove Medium Voltage Circuit Breakers 69k	5.00	EA	590.84	2,954	2,511	-15%	4,136	40%	3,323	2,825	4,652
41	Copco 2	5.019	Copco 2 Dam Removal	Disconnect and Remove Transformers 12KV @ substation	1.00	EA	816.83	817	694	-15%	1,144	40%	919	781	1,286
41	Copco 2	5.020	Copco 2 Dam Removal	Disconnect and Remove cable connection between Copco 2 a	0.10	MI	94,661.96	9,466	8,046	-15%	13,253	40%	10,648	9,051	14,907
41	Copco 2	5.021	Copco 2 Dam Removal	Remove All associated Aux Equipment @ substation (allowan	1.00	LS	24,184.84	24,185	20,557	-15%	33,859	40%	27,205	23,124	38,087
41	Copco 2	5.022	Copco 2 Dam Removal	Demolish overhead transmission line and structure 69KV Cop	5.00	MI	118,983.58	594,918	505,680	-15%	832,885	40%	669,202	568,821	936,882
41	Copco 2	5.023	Copco 2 Dam Removal	Demolish transmission conductor from existing structure pole.	1.50	MI	7,073.23	10,610	9,018	-15%	14,854	40%	11,935	10,144	16,708
41	Copco 2	5.024	Copco 2 Dam Removal	Remove structures between pole 2/007 and Iron Gate	6.00	EA	3,754.31	22,526	20,273	-10%	31,536	40%	25,339	22,805	35,474
41	Iron Gate	4.001	Iron Gate Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in Reserv	1.00	LS	191,823.14	191,823	172,641	-10%	220,597	15%	215,775	194,197	248,141
41	Iron Gate	4.002	Iron Gate Dam Removal	Furnish, Install, and Remove Temporary Air Vent Hose from B	50.00	EA	315.45	15,773	13,407	-15%	18,927	20%	17,742	15,081	21,290
41	Iron Gate	4.003	Iron Gate Dam Removal	Remove Reinforced Concrete Ring Located D/S of Closure Ga	46.00	CY	1,012.49	46,575	39,589	-15%	58,218	25%	52,390	44,532	65,488
41	Iron Gate	4.004	Iron Gate Dam Removal	Remove Reinforced Concrete Stoplog Structure	6.00	CY	1,738.55	10,431	9,388	-10%	11,996	15%	11,734	10,560	13,494
41	Iron Gate	4.005	Iron Gate Dam Removal	Remove Water from behind Tailrace Cofferdam	300,000	GAL	0.01	3,132	2,662	-15%	3,602	15%	3,523	2,995	4,051
41	Iron Gate	4.006	Iron Gate Dam Removal	Provide Dewatering behind Tailrace Cofferdam for removal of	1.00	LS	29,462.94	29,463	25,044	-15%	33,882	15%	33,142	28,171	38,113
41	Iron Gate	4.007	Iron Gate Dam Removal	Construct Embankment Cofferdam across Tailrace to remove	1,650	CY	112.09	184,946	166,451	-10%	212,687</				

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	Iron Gate	4.011	Iron Gate Dam Removal	Remove 9" dia. hinged blind flange	19,000	LB	6.49	123,371	104,866	-15%	148,046	20%	138,776	117,960	166,531
41	Iron Gate	4.012	Iron Gate Dam Removal	Remove 18" plug valve and 7" of 18" drainage pipe	2,620	LB	2.70	7,061	6,002	-15%	8,473	20%	7,943	6,751	9,531
41	Iron Gate	4.013.1	Iron Gate Dam Removal	Furnish and Install 1-16.5'x18" roller gate, stem, and operator	110,000	LB	34.16	3,757,547	3,381,793	-10%	4,133,302	10%	4,226,730	3,804,057	4,649,403
41	Iron Gate	4.013.2	Iron Gate Dam Removal	Remove Existing sluice and diversion gates from shaft by dived	110,000	LB	4.38	482,328	434,095	-10%	530,561	10%	542,554	488,298	596,809
41	Iron Gate	4.013.3	Iron Gate Dam Removal	Remove 16.5'X 18" sluice and diversion gates from shaft in Div	110,000	LB	0.58	64,216	57,794	-10%	70,637	10%	72,234	65,011	79,457
41	Iron Gate	4.014	Iron Gate Dam Removal	Remove Concrete in Observation Platform, Crest Wall and Wa	780	CY	298.81	233,072	209,765	-10%	256,379	10%	262,174	235,957	288,392
41	Iron Gate	4.015	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Intake Structure	715	CY	300.06	214,542	193,088	-10%	246,723	15%	241,330	217,197	277,530
41	Iron Gate	4.016	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Gate Tower	650	CY	196.63	127,809	108,637	-15%	146,980	15%	143,767	122,202	165,333
41	Iron Gate	4.017	Iron Gate Dam Removal	Remove Steel Footbridge to Gate Tower	13,000	LB	1.10	14,259	12,120	-15%	16,398	15%	16,039	13,633	18,445
41	Iron Gate	4.018	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Footbridge Abutment	39,000	CY	197.94	7,720	6,562	-15%	8,878	15%	8,684	7,381	9,986
41	Iron Gate	4.019	Iron Gate Dam Removal	Place Concrete Plugs for Diversion Tunnel	43,000	CY	1,672.11	71,901	64,711	-10%	79,091	10%	80,879	72,791	88,966
41	Iron Gate	4.020	Iron Gate Dam Removal	Remove Concrete Closure Gates in Gate Tower	85,000	CY	894.09	75,998	64,598	-15%	87,397	15%	85,487	72,664	98,310
41	Iron Gate	4.021	Iron Gate Dam Removal	Remove Upstream Riprap	92,400	CY	21.05	1,944,680	1,652,978	-15%	2,333,616	20%	2,187,500	1,859,375	2,625,000
41	Iron Gate	4.022	Iron Gate Dam Removal	Remove Downstream Riprap	23,400	CY	15.64	365,879	310,997	-15%	439,054	20%	411,564	349,829	493,876
41	Iron Gate	4.023	Iron Gate Dam Removal	Miscellaneous Excavation	270,000	CY	6.72	1,815,450	1,543,132	-15%	2,178,539	20%	2,042,134	1,735,814	2,450,561
41	Iron Gate	4.023.1	Iron Gate Dam Removal	Miscellaneous Excavation	761,159	CY	15.55	11,836,796	10,061,276	-15%	14,204,155	20%	13,314,785	11,317,568	15,977,742
41	Iron Gate	4.024	Iron Gate Dam Removal	Cutoff Wall Concrete Demolition	2,440	CY	112.84	275,336	247,803	-10%	316,637	15%	309,716	278,744	356,173
41	Iron Gate	4.025	Iron Gate Dam Removal	Earth Fill Crest Raise	13,000	CY	15.68	203,841	173,265	-15%	234,417	15%	229,293	194,899	263,687
41	Iron Gate	4.026	Iron Gate Dam Removal	Sheet pile Crest Raise	800	LF	281.18	224,946	191,204	-15%	258,688	15%	253,034	215,079	290,989
41	Iron Gate	4.027	Iron Gate Dam Removal	Remove 5 Monitoring Wells	5.00	EA	2,332.81	11,664	10,498	-10%	13,414	15%	13,120	11,808	15,089
41	Iron Gate	4.028	Iron Gate Dam Removal	Remove and Dispose of Trash Sluice Gate - 10 ft x 9 ft H	4,500	LB	1.01	4,544	3,408	-25%	5,680	25%	5,112	3,834	6,390
41	Iron Gate	4.029	Iron Gate Dam Removal	Remove and Dispose of Intake Structure	72,000	LB	0.90	64,663	54,964	-15%	77,596	20%	72,738	61,827	87,285
41	Iron Gate	4.030	Iron Gate Dam Removal	Remove and Dispose of Sluice and Diversion Tunnel Gate	28,000	LB	1.09	30,649	26,052	-15%	36,779	20%	34,476	29,304	41,371
41	Iron Gate	4.031	Iron Gate Dam Removal	Remove and Dispose of Hoist Stem - 6" Dia. Sch 160x150'	7,500	LB	1.01	7,578	6,441	-15%	9,093	20%	8,524	7,245	10,229
41	Iron Gate	4.032	Iron Gate Dam Removal	Remove and Dispose of Air Vent Pipe - 8" Dia. Sch 40 x160'	4,650	LB	2.12	9,855	8,377	-15%	11,826	20%	11,085	9,423	13,303
41	Iron Gate	4.034	Iron Gate Dam Removal	Remove and Dispose of Air Vent Pipe - 12" Dia. Sch 40 x560'	30,250	LB	2.26	68,353	58,100	-15%	82,024	20%	76,888	65,355	92,266
41	Iron Gate	4.035	Iron Gate Dam Removal	Remove and Dispose of Outlet Works Stop Logs	2,670	LB	1.01	2,696	2,022	-25%	3,370	25%	3,033	2,275	3,791
41	Iron Gate	4.036	Iron Gate Dam Removal	Remove and Dispose of Hydraulic Pump Motor (10 HP est) &	1.00	EA	415.82	416	312	-25%	520	25%	468	351	585
41	Iron Gate	4.037	Iron Gate Dam Removal	Remove and Dispose of Distribution Equipment, Junction Box	1.00	EA	2,019.67	2,016	1,515	-25%	2,525	25%	2,272	1,704	2,840
41	Iron Gate	4.038	Iron Gate Dam Removal	Remove and Dispose of Power Cable and 4" Conduit from Pen	800	FT	49.86	39,887	33,904	-15%	45,870	15%	44,867	38,137	51,598
41	Iron Gate	4.039	Iron Gate Dam Removal	Remove Powerhouse Concrete	5,200	CY	402.36	2,092,267	1,883,040	-10%	2,406,107	15%	2,353,516	2,118,214	2,706,543
41	Iron Gate	4.040	Iron Gate Dam Removal	Remove and Dispose of Turbine Unit	344,058	LB	0.95	327,583	278,446	-15%	376,721	15%	368,487	313,214	423,760
41	Iron Gate	4.041	Iron Gate Dam Removal	Remove and Dispose of Draft Tube Bulkheads	16,500	LB	0.98	16,235	13,800	-15%	19,482	20%	18,263	15,523	21,915
41	Iron Gate	4.042	Iron Gate Dam Removal	Remove and Dispose of Crane	24,000	LB	1.07	25,619	21,776	-15%	32,023	25%	28,818	24,495	36,022
41	Iron Gate	4.043	Iron Gate Dam Removal	Remove and Dispose of Governor	20,310	LB	1.04	21,033	17,878	-15%	25,240	20%	23,660	20,111	28,392
41	Iron Gate	4.044	Iron Gate Dam Removal	Remove and Dispose of Bearing Oil System and Cooling Water	9,182	LB	1.06	9,761	8,297	-15%	11,713	20%	10,980	9,333	13,176
41	Iron Gate	4.045	Iron Gate Dam Removal	Remove and Dispose of CO2 Systems	2,568	LB	1.01	2,604	2,343	-10%	3,124	20%	2,929	2,636	3,514
41	Iron Gate	4.046	Iron Gate Dam Removal	Remove and Dispose of Plant Water and Fire Protection System	9,182	LB	1.05	9,596	8,636	-10%	11,515	20%	10,794	9,714	12,953
41	Iron Gate	4.047	Iron Gate Dam Removal	Remove and Dispose of Sump Pumps	2,000	LB	1.05	2,092	1,883	-10%	2,510	20%	2,353	2,118	2,824
41	Iron Gate	4.048	Iron Gate Dam Removal	Remove and Dispose of Pumps	22,000	LB	1.09	24,084	21,676	-10%	28,901	20%	27,092	24,382	32,510
41	Iron Gate	4.049	Iron Gate Dam Removal	Remove and Dispose of Exposed Piping Around the Plant	19,291	LB	1.05	20,285	18,257	-10%	24,342	20%	22,818	20,536	27,382
41	Iron Gate	4.050	Iron Gate Dam Removal	Remove and Dispose of Unwating Piping	19,291	LB	0.88	16,967	15,270	-10%	19,512	15%	19,085	17,177	21,948
41	Iron Gate	4.051	Iron Gate Dam Removal	Remove and Dispose of Drainage Piping	9,518	LB	1.12	10,657	9,591	-10%	12,256	15%	11,988	10,789	13,786
41	Iron Gate	4.052	Iron Gate Dam Removal	Remove and Dispose of Transformer Oil and Fire Protection	9,182	LB	1.00	9,199	8,739	-5%	10,119	10%	10,347	9,830	11,382
41	Iron Gate	4.053	Iron Gate Dam Removal	Remove and Dispose of Compressed Air System	1,450	LB	0.91	1,313	1,182	-10%	1,510	15%	1,477	1,329	1,698
41	Iron Gate	4.053a	Iron Gate Dam Removal	Remove & Dispose - Petroleum Products from Mechanical Eq	1,100	GAL	10.05	11,057	10,504	-5%	12,163	10%	12,438	11,816	13,681
41	Iron Gate	4.054	Iron Gate Dam Removal	Remove and Dispose of AC Generator, Outdoor Horizontal	1.00	EA	91,158.88	91,159	82,043	-10%	104,833	15%	102,541	92,287	117,923
41	Iron Gate	4.055	Iron Gate Dam Removal	Remove and Dispose of Excitation equipment for 18.975 MVA	1.00	EA	2,384.74	2,385	2,146	-10%	2,742	15%	2,683	2,414	3,085
41	Iron Gate	4.056	Iron Gate Dam Removal	Remove and Dispose of Surge protection equip. for 18.975 MVA	1.00	EA	1,891.05	1,891	1,702	-10%	2,175	15%	2,127	1,914	2,446
41	Iron Gate	4.057	Iron Gate Dam Removal	Remove and Dispose of Neutral grounding equip. for 18.975 MVA	1.00	EA	3,980.33	3,980	3,582	-10%	4,577	15%	4,477	4,030	5,149
41	Iron Gate	4.058	Iron Gate Dam Removal	Remove and Dispose of Station Service Switchgear, 600 volt	1.00	EA	7,378.96	7,379	6,641	-10%	8,486	15%	8,300	7,470	9,545
41	Iron Gate	4.059	Iron Gate Dam Removal	Remove and Dispose of Unit and plant control switchboard	1.00	EA	23,948.92	23,949	21,554	-10%	27,541	15%	26,939	24,245	30,980
41	Iron Gate	4.060	Iron Gate Dam Removal	Remove and Dispose of Battery System - assume 60 batteries	1.00	EA	15,350.22	15,350	13,815	-10%	17,653	15%	17,267	15,540	19,857
41	Iron Gate	4.061	Iron Gate Dam Removal	Remove and Dispose of Raceways, Bus, Conduit and Cable	1.00	EA	18,352.70	18,353	16,517	-10%	21,106	15%	20,644	18,580	23,741
41	Iron Gate	4.062	Iron Gate Dam Removal	Remove and Dispose of Misc. power & control boards	1.00	EA	5,642.84	5,643	5,079	-10%	6,489	15%	6,347	5,713	7,300
41	Iron Gate	4.063	Iron Gate Dam Removal	Remove and Dispose of Transformer (3 phase, 275 kVA, 6600V)	1.00	EA	9,142.79	9,143	8,229	-10%	10,514	15%	10,284	9,256	11,827
41	Iron Gate	4.064	Iron Gate Dam Removal	Remove and Dispose of Governor Oil Pump Motors (10 hp and	2.00	EA	244.50	489	440	-10%	562	15%	550	495	633
41	Iron Gate	4.065	Iron Gate Dam Removal	Remove and Dispose of Vertical Motors, outdoor, (480V, 100 hp	4.00	EA	712.83	2,851	2,138	-25%	3,564	25%	3,207	2,405	4,009
41	Iron Gate	4.066	Iron Gate Dam Removal	Remove and Dispose of Transformer (3 phase, 300 kVA, 6600V)	1.00	EA	10,482.18	10,482	9,434	-10%	12,055	15%	11,791	10,612	13,560
41	Iron Gate	4.067	Iron Gate Dam Removal	Remove and Dispose of Step-up Transformer, outdoor, oil-filled	1.00	EA	85,541.22	85,541	76,987	-10%	98,372	15%	96,222	86,600	110,656
41	Iron Gate	4.068	Iron Gate Dam Removal	Remove and Dispose of Lattice steel structure, with 69-kV dis	1.00	EA	6,973.83	6,974	6,276	-10%	8,020	15%	7,845	7,060	9,021
41	Iron Gate	4.069	Iron Gate Dam Removal	Remove and Dispose of Generator Switchgear, outdoor, 7.2kV	1.00	EA	24,487.62	24,488	22,039	-10%	28,161	15%	27,545	24,791	31,677
41	Iron Gate	4.070	Iron Gate Dam Removal	Remove and Dispose of Single Phase Pole Transformers (2500	3.00	EA	2,514.24	7,543	6,788	-10%	8,674	15%	8,485	7,636	9,757
41	Iron Gate	4.071	Iron Gate Dam Removal	Remove Concrete in Penstock Intake Structure	460	CY	302.54	139,169	118,294	-15%	160,044	15%	156,546	133,064	180,028
41	Iron Gate	4.072	Iron Gate Dam Removal	Remove Concrete in Penstock Encasement	710	CY	300.16	213,116	191,805	-10%	245,084	15%	239,727	215,754	275,686
41	Iron Gate	4.073	Iron Gate Dam Removal	Remove Concrete in 3 Penstock Anchors and 7 Penstock Sup	3,110	CY	298.85	929,437	790,022	-15%	1,068,853	15%	1,045,491	888,667	1,202,314
41	Iron Gate	4.074	Iron Gate Dam Removal	Remove Steel Footbridge to Intake Structure	11,000	LB	1.11	12,161	10,337	-15%	13,986	15%	13,680	11,628	15,732
41	Iron Gate	4.075	Iron Gate Dam Removal	Remove Concrete in Intake Structure											

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	Iron Gate	4.076	Iron Gate Dam Removal	Remove and Dispose of Intake Structure	131,630	LB	1.04	136,401	115,941	-15%	156,862	15%	153,433	130,418	176,448
41	Iron Gate	4.077	Iron Gate Dam Removal	Remove and Dispose of Gate Hoist Stem - 6" Sch160x40'	1,800	LB	1.01	1,818	1,363	-25%	2,272	25%	2,045	1,534	2,556
41	Iron Gate	4.078	Iron Gate Dam Removal	Remove and Dispose of Water Fill line- 12" Dia STD x 27'	1,350	LB	1.01	1,363	1,022	-25%	1,704	25%	1,534	1,150	1,917
41	Iron Gate	4.079	Iron Gate Dam Removal	Remove and Dispose of Air Vent - 12" Dia STD x 32'	1,600	LB	1.01	1,616	1,212	-25%	2,020	25%	1,817	1,363	2,272
41	Iron Gate	4.080	Iron Gate Dam Removal	Remove and Dispose of Gage Wells	2,612	LB	1.01	2,638	1,978	-25%	3,297	25%	2,967	2,225	3,709
41	Iron Gate	4.081	Iron Gate Dam Removal	Remove and Dispose of Penstock Vent - 46" Dia, 0.25" Thick	7,440	LB	2.08	15,466	13,146	-15%	17,786	15%	17,398	14,788	20,007
41	Iron Gate	4.082	Iron Gate Dam Removal	Remove and Dispose of Penstock - 12" Dia, 0.25" Thick x 698'	294,428	LB	1.47	433,061	368,102	-15%	498,020	15%	487,135	414,065	560,205
41	Iron Gate	4.083	Iron Gate Dam Removal	Remove and Dispose of Bypass Outlet - 96" Dia, 0.25" Thick x	12,850	LB	0.90	11,547	9,815	-15%	13,279	15%	12,989	11,041	14,937
41	Iron Gate	4.084	Iron Gate Dam Removal	Remove and Dispose of Outlet Valve on bypass outlet - 66" Di	18,000	LB	1.62	29,193	24,814	-15%	33,572	15%	32,838	27,912	37,764
41	Iron Gate	4.085	Iron Gate Dam Removal	Remove and Dispose Overhead trolley Crane Motor (4hp est)	1.00	EA	1,188.04	1,188	891	-25%	1,485	25%	1,336	1,002	1,670
41	Iron Gate	4.086	Iron Gate Dam Removal	Remove and Dispose Distribution equipment, Junction Boxes	1.00	EA	2,970.11	2,970	2,228	-25%	3,713	25%	3,341	2,506	4,176
41	Iron Gate	4.087	Iron Gate Dam Removal	Remove and Dispose Power Cable and Conduit	1.00	EA	91,734.75	91,735	77,975	-15%	105,495	15%	103,189	87,711	118,667
41	Iron Gate	4.097	Iron Gate Dam Removal	Clear and Grub Disposal Area	29.00	AC	6,292.60	182,485	155,113	-15%	209,858	15%	205,271	174,481	236,062
41	Iron Gate	4.101	Iron Gate Dam Removal	Remove Building No. 2	800	SF	73.00	58,404	52,563	-10%	67,164	15%	65,696	59,127	75,551
41	Iron Gate	4.102	Iron Gate Dam Removal	Remove Building No. 3	1,088	SF	75.55	82,199	73,979	-10%	94,259	15%	92,463	83,217	106,332
41	Iron Gate	4.103	Iron Gate Dam Removal	Remove Concrete in Fish Ladder	1,240	CY	300.19	372,241	316,405	-15%	428,077	15%	418,721	355,913	481,529
41	Iron Gate	4.104	Iron Gate Dam Removal	Remove Concrete in Holding Ponds #1 thru #6	1,380	CY	196.04	270,529	243,476	-10%	311,109	15%	304,309	273,878	349,955
41	Iron Gate	4.105	Iron Gate Dam Removal	Remove Concrete in Fish Facility Items	1,200	CY	194.03	232,832	197,908	-15%	267,757	15%	261,905	222,619	301,191
41	Iron Gate	4.106	Iron Gate Dam Removal	Remove Miscellaneous Metalwork in Fish Facilities	12,000	LB	0.95	11,351	9,648	-15%	13,621	20%	12,768	10,853	15,322
41	Iron Gate	4.107	Iron Gate Dam Removal	Remove Concrete Associated with 30" Dia. water supply line	80.00	CY	194.03	15,522	13,194	-15%	17,850	15%	17,460	14,841	20,079
41	Iron Gate	4.108	Iron Gate Dam Removal	Remove Concrete in Aerator Structure	65.00	CY	191.23	12,430	10,565	-15%	14,294	15%	13,982	11,884	16,079
41	Iron Gate	4.109	Iron Gate Dam Removal	Remove Wood in Aerator Structure	6,000	LB	0.83	4,990	3,742	-25%	6,237	25%	5,613	4,210	7,016
41	Iron Gate	4.110	Iron Gate Dam Removal	Remove Structural Steel in Aerator Structure	2,500	LB	1.01	2,525	1,893	-25%	3,156	25%	2,840	2,130	3,550
41	Iron Gate	4.111	Iron Gate Dam Removal	Remove Asphalt Pavement	3,900	SF	6.54	25,489	21,665	-15%	29,312	15%	28,671	24,370	32,972
41	Iron Gate	4.112	Iron Gate Dam Removal	Remove Restroom Building near Aerator Structure	340	SF	60.38	20,528	18,475	-10%	23,607	15%	23,091	20,782	26,555
41	Iron Gate	4.113	Iron Gate Dam Removal	Remove Storage Shed near Aerator Structure	90.00	SF	70.22	6,320	5,688	-10%	7,268	15%	7,109	6,398	8,175
41	Iron Gate	4.114	Iron Gate Dam Removal	Remove Toe Drain Pipe	260	LF	27.00	7,021	5,968	-15%	8,074	15%	7,897	6,713	9,082
41	Iron Gate	4.115	Iron Gate Dam Removal	Remove Toe Drain Manhole	25.00	LF	59.40	1,485	1,114	-25%	1,856	25%	1,670	1,253	2,088
41	Iron Gate	4.116	Iron Gate Dam Removal	Berm Removal	53,000	CY	13.82	732,558	659,302	-10%	842,442	15%	824,028	741,625	947,633
41	Iron Gate	4.117	Iron Gate Dam Removal	Remove and Dispose of Intake Structures Trashracks	5,000	LB	0.89	4,455	3,341	-25%	5,569	25%	5,011	3,759	6,264
41	Iron Gate	4.118	Iron Gate Dam Removal	Remove and Dispose of Pipe Conduit, 30" Dia. x 0.25" Thick x	76,640	LB	1.03	78,948	67,106	-15%	94,738	20%	88,806	75,485	106,567
41	Iron Gate	4.119	Iron Gate Dam Removal	Remove and Dispose of Sluice Gate Valve, 30" Dia.	3,000	LB	1.01	3,030	2,272	-25%	3,787	25%	3,408	2,556	4,260
41	Iron Gate	4.120	Iron Gate Dam Removal	Remove and Dispose of Sluice Gate Stem, 2" Dia. Sch160x45'	360	LB	1.01	364	273	-25%	454	25%	409	307	511
41	Iron Gate	4.121	Iron Gate Dam Removal	Remove and Dispose of Butterfly Valve, 30" Dia.	2,435	LB	1.01	2,459	1,844	-25%	3,074	25%	2,766	2,074	3,457
41	Iron Gate	4.122	Iron Gate Dam Removal	Remove and Dispose of Piping- 30-in. Dia. x 0.25 Thickness x	7,200	LB	0.60	4,332	3,682	-15%	5,198	20%	4,872	4,142	5,847
41	Iron Gate	4.123	Iron Gate Dam Removal	Remove and Dispose of Piping- 24-in. Dia. x 0.25 Thickness x	15,872	LB	0.50	8,005	6,804	-15%	9,606	20%	9,004	7,654	10,805
41	Iron Gate	4.124	Iron Gate Dam Removal	Remove and Dispose of Piping- 20-in. Dia. x 0.25 Thickness x	4,505	LB	0.58	2,599	2,209	-15%	3,119	20%	2,923	2,485	3,508
41	Iron Gate	4.125	Iron Gate Dam Removal	Remove and Dispose of Piping- 18-in. Dia. x 0.25 Thickness x	29,088	LB	0.38	11,115	9,448	-15%	13,338	20%	12,503	10,627	15,003
41	Iron Gate	4.126	Iron Gate Dam Removal	Remove and Dispose of Piping- 16-in. Dia. x 0.25 Thickness x	6,972	LB	0.56	3,898	3,314	-15%	4,678	20%	4,385	3,727	5,262
41	Iron Gate	4.127	Iron Gate Dam Removal	Remove and Dispose of Piping- 12-in. Dia. x 0.25 Thickness x	2,176	LB	0.46	992	843	-15%	1,190	20%	1,116	948	1,339
41	Iron Gate	4.128	Iron Gate Dam Removal	Remove and Dispose of Piping- 10-in. Dia. x 0.25 Thickness x	1,932	LB	0.45	864	734	-15%	1,036	20%	972	826	1,166
41	Iron Gate	4.129	Iron Gate Dam Removal	Remove and Dispose of Piping- 8-in. Dia. x 0.25 Thickness x	3,588	LB	0.23	818	695	-15%	982	20%	920	782	1,104
41	Iron Gate	4.130	Iron Gate Dam Removal	Remove and Dispose of Piping- 3-in. Dia. x STD x 30'	1,088	LB	0.38	412	350	-15%	494	20%	463	394	556
41	Iron Gate	4.131	Iron Gate Dam Removal	Remove and Dispose of Gate Valves	21,792	LB	0.98	21,312	18,116	-15%	25,575	20%	23,974	20,378	28,768
41	Iron Gate	4.132	Iron Gate Dam Removal	Remove and Dispose of Basin #1	2,880	LB	2.89	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.133	Iron Gate Dam Removal	Remove and Dispose of Basin #2	3,860	LB	2.16	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.134	Iron Gate Dam Removal	Remove and Dispose of Basin #3	2,880	LB	2.89	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.135	Iron Gate Dam Removal	Remove and Dispose of Basin #4	3,580	LB	2.33	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.136	Iron Gate Dam Removal	Remove and Dispose of Basin #5	1,440	LB	5.79	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.137	Iron Gate Dam Removal	Remove and Dispose of Basin #6	1,440	LB	5.79	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.138	Iron Gate Dam Removal	Remove and Dispose of Holding Tank	7,400	LB	1.53	11,355	9,652	-15%	13,627	20%	12,773	10,857	15,328
41	Iron Gate	4.139	Iron Gate Dam Removal	Remove and Dispose of Misc.: Motors, control panels, cables,	1.00	EA	1,782.06	1,782	1,337	-25%	2,228	25%	2,005	1,503	2,506
41	Iron Gate	4.140	Iron Gate Dam Removal	Wanaka Springs - Concrete Total	28.00	CY	306.28	8,576	7,290	-15%	9,862	15%	9,647	8,200	11,094
41	Iron Gate	4.141	Iron Gate Dam Removal	Wanaka Springs - Double Pipe Railings	60.00	LF	47.52	2,851	2,138	-25%	3,564	25%	3,207	2,405	4,009
41	Iron Gate	4.142	Iron Gate Dam Removal	Wanaka Springs - Wood picnic tables to be removed and haul	5.00	EA	118.80	594	446	-25%	743	25%	668	501	835
41	Iron Gate	4.143	Iron Gate Dam Removal	Wanaka Springs - 25'x5' Wooden floating dock	125	SF	23.76	2,970	2,228	-25%	3,713	25%	3,341	2,506	4,176
41	Iron Gate	4.144	Iron Gate Dam Removal	Wanaka Springs - Rip and reseed site and access road	2.50	AC	6,798.10	16,995	14,446	-15%	19,545	15%	19,117	16,250	21,985
41	Iron Gate	4.145	Iron Gate Dam Removal	Wanaka Springs - Signs to be removed and hauled away	3.00	EA	356.41	1,069	802	-25%	1,337	25%	1,203	902	1,503
41	Iron Gate	4.146	Iron Gate Dam Removal	Wanaka Springs - 15'x5' Gangplank with Railings	75.00	SF	23.76	1,782	1,337	-25%	2,228	25%	2,005	1,503	2,506
41	Iron Gate	4.147	Iron Gate Dam Removal	Juniper Point - Concrete Total	19.00	CY	359.74	6,835	5,810	-15%	7,860	15%	7,688	6,535	8,842
41	Iron Gate	4.148	Iron Gate Dam Removal	Juniper Point - 2, 4x4 Toilet Vaults	32.00	SF	118.80	3,802	2,851	-25%	4,752	25%	4,276	3,207	5,346
41	Iron Gate	4.149	Iron Gate Dam Removal	Juniper Point - Wood picnic tables to be removed and hauled	8.00	EA	118.80	950	713	-25%	1,188	25%	1,069	802	1,336
41	Iron Gate	4.150	Iron Gate Dam Removal	Juniper Point - Signs to be removed and hauled away	4.00	EA	356.41	1,426	1,069	-25%	1,782	25%	1,604	1,203	2,005
41	Iron Gate	4.151	Iron Gate Dam Removal	Juniper Point - Dock pile railing	50.00	LF	47.52	2,376	1,782	-25%	2,970	25%	2,673	2,005	3,341
41	Iron Gate	4.152	Iron Gate Dam Removal	Juniper Point - 50'x5' Composite dock with poly floats	250	SF	31.34	7,834	7,081	-10%	8,618	10%	8,812	7,931	9,694
41	Iron Gate	4.153	Iron Gate Dam Removal	Juniper Point - 20'x5' Composite gangplank with railings	100	SF	23.76	2,376	1,782	-25%	2,970	25%	2,673	2,005	3,341
41	Iron Gate	4.155	Iron Gate Dam Removal	Juniper Point - Regrade to Natural Contour, rip, and reseed	2.00	AC	10,546.17	21,092	17,928	-15%	24,256	15%	23,726	20,167	27,285
41	Iron Gate	4.156	Iron Gate Dam Removal	Camp Creek - Concrete Total	110	CY	306.56	33,722	28,664	-15%	38,780	15%	37,932	32,243	43,622

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	High	Estimate	Est Low	Est High		
41	Iron Gate	4.157	Iron Gate Dam Removal	Camp Creek - 180'Lx16'Wx8'D Earth jetty to remove and/or re	855	CY	73.54	62,876	53,445	-15%	72,307	15%	70,727	60,118	81,336
41	Iron Gate	4.158	Iron Gate Dam Removal	Camp Creek - Well house 10'x16' concrete block building	160	SF	72.74	11,638	10,475	-10%	12,802	10%	13,092	11,783	14,401
41	Iron Gate	4.159	Iron Gate Dam Removal	Camp Creek - 2, 20'x5' Composite decking gangplanks	200	SF	23.76	4,752	3,564	-25%	5,940	25%	5,346	4,009	6,682
41	Iron Gate	4.160	Iron Gate Dam Removal	Camp Creek - 2, 20'x5' Floating composite w/ aluminum frame	200	SF	23.76	4,752	3,564	-25%	5,940	25%	5,346	4,009	6,682
41	Iron Gate	4.161	Iron Gate Dam Removal	Camp Creek - Concrete block double toilet bldg 10'x16'	160	SF	72.74	11,638	10,475	-10%	12,802	10%	13,092	11,783	14,401
41	Iron Gate	4.162	Iron Gate Dam Removal	Camp Creek - Dump stations and approx. 2000 gal buried	1.00	EA	6,596.62	6,597	5,607	-15%	7,916	20%	7,420	6,307	8,904
41	Iron Gate	4.163	Iron Gate Dam Removal	Camp Creek - Power poles and lines	3.00	EA	1,818.16	5,454	4,636	-15%	6,545	20%	6,136	5,215	7,363
41	Iron Gate	4.164	Iron Gate Dam Removal	Camp Creek - Remove waterlines and 3 faucets and regrade	600	LF	5.94	3,564	2,673	-25%	4,455	25%	4,009	3,007	5,011
41	Iron Gate	4.166	Iron Gate Dam Removal	Camp Creek - Steel pipe/plank picnic tables to be removed and	5.00	EA	118.80	594	446	-25%	743	25%	668	501	835
41	Iron Gate	4.167	Iron Gate Dam Removal	Camp Creek - Relocate concrete tables	12.00	EA	118.80	1,426	1,069	-25%	1,782	25%	1,604	1,203	2,005
41	Iron Gate	4.168	Iron Gate Dam Removal	Camp Creek - Regrade, rip, and reseed	4.00	AC	8,861.29	35,445	30,128	-15%	40,762	15%	39,871	33,890	45,852
41	Iron Gate	4.169	Iron Gate Dam Removal	Camp Creek - Signs to be removed and hauled away	7.00	EA	356.41	2,495	1,871	-25%	3,119	25%	2,806	2,105	3,508
41	Iron Gate	4.170	Iron Gate Dam Removal	Dutch Creek - 50'4'3" Dock Concrete Abutment	22.00	CY	333.37	7,334	6,601	-10%	8,068	10%	8,250	7,425	9,075
41	Iron Gate	4.171	Iron Gate Dam Removal	Dutch Creek - Double Pipe Railing	100	LF	47.52	4,752	3,564	-25%	5,940	25%	5,346	4,009	6,682
41	Iron Gate	4.172	Iron Gate Dam Removal	Mirror Cove - Concrete Total	89.00	CY	235.88	20,994	18,894	-10%	23,093	10%	23,615	21,254	25,977
41	Iron Gate	4.173	Iron Gate Dam Removal	Mirror Cove - 10'x16' Toilet Vault	160	SF	96.23	15,397	13,857	-10%	16,937	10%	17,320	15,588	19,052
41	Iron Gate	4.174	Iron Gate Dam Removal	Mirror Cove - 2, 30'x5' Composite Gangplanks w/ aluminum	300	SF	21.43	6,430	5,787	-10%	7,073	10%	7,233	6,510	7,957
41	Iron Gate	4.175	Iron Gate Dam Removal	Mirror Cove - Double pipe railings on dock	80.00	LF	47.52	3,802	2,851	-25%	4,752	25%	4,276	3,207	5,346
41	Iron Gate	4.177	Iron Gate Dam Removal	Mirror Cove - Regrade site	3.00	AC	12,512.61	37,538	31,907	-15%	43,169	15%	42,225	35,891	48,559
41	Iron Gate	4.178	Iron Gate Dam Removal	Mirror Cove - Signs to be removed and hauled away	7.00	EA	356.41	2,495	1,871	-25%	3,119	25%	2,806	2,105	3,508
41	Iron Gate	4.179	Iron Gate Dam Removal	Overlook Point - 1 concrete picnic table base	1.00	CY	356.41	356	267	-25%	446	25%	401	301	501
41	Iron Gate	4.180	Iron Gate Dam Removal	Overlook Point - Steel frame table to be removed and hauled a	1.00	EA	118.80	119	89	-25%	149	25%	134	100	167
41	Iron Gate	4.181	Iron Gate Dam Removal	Overlook Point - Regrade steep access road and site to natura	0.50	AC	30,630.71	15,315	13,018	-15%	17,613	15%	17,228	14,644	19,812
41	Iron Gate	4.182	Iron Gate Dam Removal	Long Gulch - 80'x25x4" Concrete boat ramp to be removed	25.00	CY	310.44	7,761	6,985	-10%	8,537	10%	8,730	7,857	9,603
41	Iron Gate	4.183	Iron Gate Dam Removal	Long Gulch - Remove picnic tables (steel frames with planks)	2.00	EA	118.80	238	178	-25%	297	25%	267	200	334
41	Iron Gate	4.184	Iron Gate Dam Removal	Long Gulch - Regrade ramp area to natural contours, rip, rese	0.05	AC	29,701.07	1,485	1,114	-25%	1,856	25%	1,670	1,253	2,088
41	Iron Gate	4.185	Iron Gate Dam Removal	Concrete Lining Installation for Diversion Tunnel	1.00	LS	1,196,251.74	1,196,252	1,076,627	-10%	1,315,877	10%	1,345,621	1,211,058	1,480,183
41	Iron Gate	5.025	Iron Gate Dam Removal	Remove Distribution Poles near Iron Gate Hydro Plant	5.00	EA	1,190.24	5,951	5,059	-15%	7,141	20%	6,694	5,690	8,033
41	Iron Gate	5.026	Iron Gate Dam Removal	Remove 69kV/6.6kV Transformer @Substation	1.00	EA	2,273.46	2,273	1,932	-15%	2,842	25%	2,557	2,174	3,197
41	Iron Gate	5.027	Iron Gate Dam Removal	Remove 6.6kV Power Circuit Breaker @Substation	1.00	EA	1,524.31	1,524	1,296	-15%	1,905	25%	1,715	1,457	2,143
41	Iron Gate	5.028	Iron Gate Dam Removal	Remove Generator @Substation	1.00	EA	4,767.78	4,768	4,053	-15%	5,960	25%	5,363	4,559	6,704
41	Iron Gate	5.029	Iron Gate Dam Removal	Remove all auxiliary equipment @Substation (Allowance)	1.00	LS	26,865.48	26,865	22,836	-15%	33,582	25%	30,220	25,687	37,775
41	Iron Gate	5.030	Iron Gate Dam Removal	New Connection @Iron Gate Hatchery from PacifiCorp's Horn	1.00	LS	298,809.00	298,809	268,928	-10%	328,690	10%	336,119	302,508	369,731
42			RESTORATION EARTHWORKS & HABITAT												
42	Copco 1 & 2		Tributary Connectivity	Removal of sediment and similar obstructions to ensure volitio	7.00	EA	119,000.00	833,000	749,700	-10%	1,124,550	35%	955,752	860,177	1,290,265
42	Copco 1 & 2		Wetlands, Floodplain and Off-channel Habitat Features Site 1	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Wetlands, Floodplain and Off-channel Habitat Features Site 1	Grading and shaping of floodplain sediments (no export)	81,367	CY	8.00	650,936	585,842	-10%	878,764	35%	732,214	658,993	988,490
42	Copco 1 & 2		Wetlands, Floodplain and Off-channel Habitat Features Site 1	Floodplain roughness for 50% of area	5.60	AC	30,000.00	168,000	151,200	-10%	226,800	35%	188,977	170,079	255,119
42	Copco 1 & 2		Site 2 (25.5 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 2 (25.5 acres)	Grading and shaping of floodplain sediments (no export)	164,252	CY	8.00	1,314,016	1,182,614	-10%	1,773,922	35%	1,478,089	1,330,280	1,995,421
42	Copco 1 & 2		Site 2 (25.5 acres)	Floodplain roughness for 50% of area	12.75	AC	30,000.00	382,500	344,250	-10%	516,375	35%	430,260	387,234	580,852
42	Copco 1 & 2		Site 3 (13.9 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 3 (13.9 acres)	Grading and shaping of floodplain sediments (no export)	78,556	CY	8.00	628,448	565,603	-10%	848,405	35%	706,919	636,227	954,340
42	Copco 1 & 2		Site 3 (13.9 acres)	Floodplain roughness for 50% of area	6.95	AC	30,000.00	208,500	187,650	-10%	281,475	35%	234,534	211,081	316,621
42	Copco 1 & 2		Site 4 (10.5 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 4 (10.5 acres)	Grading and shaping of floodplain sediments (no export)	50,600	CY	8.00	404,800	364,320	-10%	546,480	35%	455,345	409,810	614,716
42	Copco 1 & 2		Site 4 (10.5 acres)	Floodplain roughness for 50% of area	5.25	AC	30,000.00	157,500	141,750	-10%	212,625	35%	177,166	159,449	239,174
42	Copco 1 & 2		Site 5 (4.2 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 5 (4.2 acres)	Grading and shaping of floodplain sediments (no export)	20,267	CY	8.00	162,136	145,922	-10%	218,884	35%	182,381	164,143	246,214
42	Copco 1 & 2		Site 5 (4.2 acres)	Floodplain roughness for 50% of area	2.10	AC	30,000.00	63,000	56,700	-10%	85,050	35%	70,866	63,780	95,670
42	Copco 1 & 2		Site 6 (5.3 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 6 (5.3 acres)	Grading and shaping of floodplain sediments (no export)	17,148	CY	8.00	137,184	123,466	-10%	185,198	35%	154,313	138,882	208,323
42	Copco 1 & 2		Site 6 (5.3 acres)	Floodplain roughness for 50% of area	2.65	AC	30,000.00	79,500	71,550	-10%	107,325	35%	89,427	80,484	120,726
42	Copco 1 & 2		Site 6 (5.3 acres)	Bank Stability and Channel Fringe Complexity/Develop process	2,500	LF	253.00	632,500	569,250	-10%	853,875	35%	725,706	653,135	979,703
42	Copco 1 & 2		Large Wood Habitat Features	Ground-Based Placement	20.00	EA	27,990.00	559,800	503,820	-10%	755,730	35%	642,293	578,064	867,095
42	Copco 1 & 2		Large Wood Habitat Features	Helicopter Placement (@ 50 members staged and placed per	8.00	EA	57,000.00	456,000	410,400	-10%	615,600	35%	523,197	470,877	706,316
42	Copco 1 & 2		General Conditions	Contractor overhead	15%	%	7,287,820.00	1,093,173	983,856	-10%	1,475,784	35%	1,234,142	1,110,728	1,666,092
42	Copco 1 & 2		General Conditions	Insurance	1%	%	8,380,993.00	83,810	75,429	-10%	113,143	35%	94,618	85,156	127,734
42	Copco 1 & 2		General Conditions	Bond	1%	%	8,380,993.00	83,810	75,429	-10%	113,143	35%	94,618	85,156	127,734
42	Iron Gate		Tributary Connectivity	Removal of sediment and similar obstructions to ensure volitio	5.00	EA	119,000.00	595,000	535,500	-10%	803,250	35%	682,680	614,412	921,618
42	Iron Gate		Site 1 (14.2 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Iron Gate		Site 1 (14.2 acres)	Grading and shaping of floodplain sediments (no export)	60,000	CY	8.00	480,000	432,000	-10%	648,000	35%	539,935	485,941	728,912
42	Iron Gate		Site 1 (14.2 acres)	Floodplain roughness for 50% of area	7.10	AC	30,000.00	213,000	191,700	-10%	287,550	35%	239,596	215,636	323,455
42	Iron Gate		Site 2 (5.8 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Iron Gate		Site 2 (5.8 acres)	Grading and shaping of floodplain sediments (no export)	19,000	CY	8.00	152,000	136,800	-10%	205,200	35%	170,979	153,881	230,822
42	Iron Gate		Site 2 (5.8 acres)	Floodplain roughness for 50% of area	2.90	AC	30,000.00	87,000	78,300	-10%	117,450	35%	97,863	88,077	132,115

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
42	Iron Gate		Site 3 (23.1 acres)	Equipment & road access into site	2,000	LF	25.00	50,000	45,000	-10%	67,500	35%	56,243	50,619	75,928
42	Iron Gate		Site 3 (23.1 acres)	Grading and shaping of floodplain sediments (no export)	95,000	CY	8.00	760,000	684,000	-10%	1,026,000	35%	854,897	769,407	1,154,110
42	Iron Gate		Site 3 (23.1 acres)	Floodplain roughness for 75% of area	17.30	AC	30,000.00	519,000	467,100	-10%	700,650	35%	583,804	525,424	788,136
42	Iron Gate		Bank Stability and Channel Fringe Complexity	Develop process-based restoration and velocity variations along	1,000	LF	253.00	253,000	227,700	-10%	341,550	35%	290,282	261,254	391,881
42	Iron Gate		Large Wood Habitat Features	Ground-Based Placement	20.00	EA	27,990.00	559,800	503,820	-10%	755,730	35%	642,293	578,064	867,095
42	Iron Gate		Large Wood Habitat Features	Helicopter Placement (@ 50 members staged and placed per site)	4.00	EA	57,000.00	228,000	205,200	-10%	307,800	35%	261,598	235,439	353,158
42	Iron Gate		General Conditions	Contractor overhead	15%	%	4,046,800.00	607,020	546,318	-10%	819,477	35%	687,017	618,315	927,473
42	Iron Gate		General Conditions	Contractor profit (included in rates & prices)	0%	%	4,046,800.00	-	-	0%	-	0%	-	-	-
42	Iron Gate		General Conditions	Insurance	1%	%	4,653,820.00	46,538	41,884	-10%	62,827	35%	52,671	47,404	71,106
42	Iron Gate		General Conditions	Bond	1%	%	4,653,820.00	46,538	41,884	-10%	62,827	35%	52,671	47,404	71,106
42	JC Boyle		Tributary Connectivity	Removal of sediment and similar obstructions to ensure volition	2.00	EA	119,000.00	238,000	214,200	-10%	321,300	35%	273,072	245,765	368,647
42	JC Boyle		Site 1 (3.3 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 1 (3.3 acres)	Grading and shaping of floodplain sediments (no export)	37,000	CY	8.00	296,000	266,400	-10%	399,600	35%	332,960	299,664	449,496
42	JC Boyle		Site 1 (3.3 acres)	Floodplain roughness for 50% of area	1.65	AC	30,000.00	49,500	44,550	-10%	66,825	35%	55,681	50,113	75,169
42	JC Boyle		Site 2 (43.8 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 2 (43.8 acres)	Grading and shaping of floodplain sediments (no export)	35,000	CY	8.00	280,000	252,000	-10%	378,000	35%	314,962	283,466	425,199
42	JC Boyle		Site 2 (43.8 acres)	Floodplain roughness for 30% of area	21.90	AC	30,000.00	657,000	591,300	-10%	886,950	35%	739,036	665,132	997,698
42	JC Boyle		Site 3 (65.8 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 3 (65.8 acres)	Grading and shaping of floodplain sediments (no export)	53,000	CY	8.00	424,000	381,600	-10%	572,400	35%	476,942	429,248	643,872
42	JC Boyle		Site 3 (65.8 acres)	Floodplain roughness for 30% of area	20.00	AC	30,000.00	600,000	540,000	-10%	810,000	35%	674,918	607,427	911,140
42	JC Boyle		Site 4 (21.3 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 4 (21.3 acres)	Grading and shaping of floodplain sediments (no export)	17,000	CY	8.00	136,000	122,400	-10%	183,600	35%	152,982	137,683	206,525
42	JC Boyle		Site 4 (21.3 acres)	Floodplain roughness for 50% of area	10.65	AC	30,000.00	319,500	287,550	-10%	431,325	35%	359,394	323,455	485,182
42	JC Boyle		Bank Stability and Channel Fringe Complexity	Develop process-based restoration and velocity variations along	2,000	LF	253.00	506,000	455,400	-10%	683,100	35%	580,565	522,508	783,762
42	JC Boyle		Large Wood Habitat Features	Ground-Based Placement	30.00	EA	27,990.00	839,700	755,730	-10%	1,133,595	35%	963,439	867,095	1,300,643
42	JC Boyle		Large Wood Habitat Features	Helicopter Placement (50 members staged and placed per site)	2.00	EA	57,000.00	114,000	102,600	-10%	153,900	35%	130,799	117,719	176,579
42	JC Boyle		General Conditions	Contractor overhead	15%	%	4,509,700.00	676,455	608,810	-10%	913,214	35%	764,724	688,252	1,032,378
42	JC Boyle		General Conditions	Contractor profit (included in rates & prices)	0%	%	4,509,700.00	-	-	0%	-	0%	-	-	-
42	JC Boyle		General Conditions	Insurance	1%	%	5,186,155.00	51,862	46,675	-10%	70,013	35%	58,629	52,766	79,149
42	JC Boyle		General Conditions	Bond	1%	%	5,186,155.00	51,862	46,675	-10%	70,013	35%	58,629	52,766	79,149
43			RESTORATION OF VEGETATION												
43	JC Boyle		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.18	%	636,843.00	114,632	100,667	-12%	132,873	16%	115,847	101,734	134,282
43	JC Boyle		Restoration of Vegetation	Seed Collection	0.18	%	1,167,800.00	210,204	159,426	-24%	261,486	24%	221,213	167,775	275,181
43	JC Boyle		Restoration of Vegetation	Seed Propagation	0.18	%	2,803,989.00	504,718	189,718	-62%	648,718	29%	555,301	208,732	713,733
43	JC Boyle		Restoration of Vegetation	Weed Eradication	0.18	%	3,049,095.15	548,837	433,359	-21%	664,315	21%	606,617	478,982	734,252
43	JC Boyle		Restoration of Vegetation	Pioneer Seeding	0.18	%	2,150,000.00	387,000	252,000	-35%	594,000	53%	435,322	283,466	668,169
43	JC Boyle		Restoration of Vegetation	Container Plant Growing	0.18	%	1,057,742.00	190,394	69,627	-63%	311,160	63%	217,088	79,389	354,787
43	JC Boyle		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.18	%	8,043,339.82	1,447,801	776,357	-46%	2,198,979	52%	1,761,471	944,557	2,675,394
43	JC Boyle		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.18	%	8,189,100.00	1,474,038	668,469	-55%	2,493,180	69%	1,923,473	872,286	3,253,352
43	JC Boyle		Restoration of Vegetation	Emergent Wetland	0.85	AC	35,203.00	29,775	20,555	-31%	41,297	39%	34,260	23,651	47,519
43	JC Boyle		Restoration of Vegetation	Bank Wetland	4.21	AC	21,453.20	90,220	54,232	-40%	116,796	29%	103,198	62,034	133,597
43	JC Boyle		Restoration of Vegetation	Bank Riparian	32.92	AC	30,175.20	993,384	643,821	-35%	1,362,911	37%	1,144,047	741,466	1,569,618
43	JC Boyle		Restoration of Vegetation	Floodplain Riparian	55.08	AC	13,817.40	761,037	507,182	-33%	1,043,992	37%	876,122	583,879	1,201,866
43	JC Boyle		Restoration of Vegetation	Uplands below RW	24.20	AC	9,714.00	235,062	175,776	-25%	318,207	35%	273,032	204,169	369,607
43	JC Boyle		Restoration of Vegetation	Rocky Wake Zone	16.37	AC	9,719.00	159,096	118,909	-25%	221,113	39%	184,792	138,114	256,825
43	JC Boyle		Restoration of Vegetation	Disturbed Uplands above RWZ	42.29	AC	9,502.00	401,819	302,294	-25%	559,998	39%	466,536	350,982	650,192
43	JC Boyle		Restoration of Vegetation	Uplands Stockpiles	6.73	AC	8,856.67	59,595	44,882	-25%	83,046	39%	64,832	48,826	90,344
43	JC Boyle		Restoration of Vegetation	Undisturbed Uplands	10.07	AC	4,850.00	48,829	37,251	-24%	59,904	23%	56,385	43,015	69,173
43	JC Boyle		Restoration of Vegetation	Contractor overhead	1.00	LS	1,391,623.54	1,391,624	879,961	-37%	2,005,720	44%	1,643,136	1,030,506	2,379,157
43	Iron Gate		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.42	%	636,843.00	267,601	235,001	-12%	310,185	16%	270,438	237,492	313,474
43	Iron Gate		Restoration of Vegetation	Seed Collection	0.42	%	1,167,800.00	490,710	372,171	-24%	610,425	24%	516,409	391,662	642,394
43	Iron Gate		Restoration of Vegetation	Seed Propagation	0.42	%	2,803,989.00	1,178,236	442,886	-62%	1,514,396	29%	1,296,320	487,273	1,666,170
43	Iron Gate		Restoration of Vegetation	Weed Eradication	0.42	%	3,049,095.15	1,281,230	1,011,653	-21%	1,550,806	21%	1,416,113	1,118,156	1,714,070
43	Iron Gate		Restoration of Vegetation	Pioneer Seeding	0.42	%	2,150,000.00	903,430	588,280	-35%	1,386,660	53%	1,016,236	661,735	1,559,804
43	Iron Gate		Restoration of Vegetation	Container Plant Growing	0.42	%	1,057,742.00	444,463	162,540	-63%	726,386	63%	506,780	185,329	828,231
43	Iron Gate		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.42	%	8,043,339.82	3,379,811	1,812,363	-46%	5,133,395	52%	4,112,057	2,205,016	6,245,560
43	Iron Gate		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.42	%	8,189,100.00	3,441,060	1,560,504	-55%	5,820,190	69%	4,490,241	2,036,303	7,594,770
43	Iron Gate		Restoration of Vegetation	Emergent Wetland	1.78	AC	35,203.00	62,658	43,255	-31%	86,907	39%	72,099	49,772	100,000
43	Iron Gate		Restoration of Vegetation	Bank Wetland	7.59	AC	21,453.20	162,728	97,818	-40%	210,662	29%	186,135	111,888	240,965
43	Iron Gate		Restoration of Vegetation	Bank Riparian	23.87	AC	30,175.20	720,169	466,748	-35%	988,064	37%	829,395	537,538	1,137,919
43	Iron Gate		Restoration of Vegetation	Floodplain Riparian	34.82	AC	13,817.40	481,147	320,653	-33%	660,039	37%	553,907	369,143	759,851
43	Iron Gate		Restoration of Vegetation	Uplands below RW	33.33	AC	9,714.00	3,230,647	2,415,835	-25%	4,373,379	35%	3,752,497	2,806,068	5,079,817
43	Iron Gate		Restoration of Vegetation	Rocky Wake Zone	11.20	AC	9,719.00	108,851	81,355	-25%	151,281	39%	126,431	94,495	175,715
43	Iron Gate		Restoration of Vegetation	Disturbed Uplands above RWZ	70.53	AC	9,502.00	670,217	504,215	-25%	934,054	39%	778,163	585,424	1,084,494
43	Iron Gate		Restoration of Vegetation	Uplands Stockpiles	38.76	AC	8,856.67	343,285	258,534	-25%	478,368	39%	373,450	281,252	520,404

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
43	Iron Gate		Restoration of Vegetation	Undisturbed Uplands	20.99	AC	4,850.00	101,810	77,669	-24%	124,901	23%	117,563	89,688	144,227
43	Iron Gate		Restoration of Vegetation	Contractor overhead	1.00	LS	3,094,512.21	3,094,512	2,008,187	-35%	4,458,145	44%	3,660,630	2,354,359	5,298,930
43	Copco 1		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.40	%	636,843.00	253,909	222,977	-12%	294,314	16%	256,601	225,340	297,434
43	Copco 1		Restoration of Vegetation	Seed Collection	0.40	%	1,167,800.00	465,602	353,129	-24%	579,191	24%	489,986	371,623	609,525
43	Copco 1		Restoration of Vegetation	Seed Propagation	0.40	%	2,803,989.00	1,117,950	420,225	-62%	1,436,910	29%	1,229,992	462,341	1,580,919
43	Copco 1		Restoration of Vegetation	Weed Eradication	0.40	%	3,049,095.15	1,215,674	959,891	-21%	1,471,458	21%	1,343,656	1,060,945	1,626,368
43	Copco 1		Restoration of Vegetation	Pioneer Seeding	0.40	%	2,150,000.00	857,205	558,180	-35%	1,315,710	53%	964,239	627,877	1,479,995
43	Copco 1		Restoration of Vegetation	Container Plant Growing	0.40	%	1,057,742.00	421,722	154,224	-63%	689,220	63%	480,850	175,847	785,853
43	Copco 1		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.40	%	8,043,339.82	3,206,880	1,719,631	-46%	4,870,739	52%	3,901,659	2,092,194	5,925,999
43	Copco 1		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.40	%	8,189,100.00	3,264,994	1,480,659	-55%	5,522,394	69%	4,260,493	1,932,113	7,206,175
43	Copco 1		Restoration of Vegetation	Emergent Wetland	1.79	AC	35,203.00	63,017	43,503	-31%	87,405	39%	72,512	50,058	100,574
43	Copco 1		Restoration of Vegetation	Bank Wetland	7.65	AC	21,453.20	164,188	98,696	-40%	212,553	29%	187,806	112,893	243,127
43	Copco 1		Restoration of Vegetation	Bank Riparian	48.01	AC	30,175.20	1,448,583	938,839	-35%	1,987,438	37%	1,668,284	1,081,229	2,288,865
43	Copco 1		Restoration of Vegetation	Floodplain Riparian	58.23	AC	13,817.40	804,552	536,182	-33%	1,103,686	37%	926,218	617,264	1,270,588
43	Copco 1		Restoration of Vegetation	Uplands below RW	306	AC	9,714.00	2,968,059	2,219,475	-25%	4,017,909	35%	3,447,493	2,577,989	4,866,927
43	Copco 1		Restoration of Vegetation	Rocky Wake Zone	15.06	AC	9,719.00	146,354	109,386	-25%	203,405	39%	169,993	127,053	236,257
43	Copco 1		Restoration of Vegetation	Disturbed Uplands above RWZ	8.02	AC	9,502.00	76,226	57,346	-25%	106,233	39%	88,503	66,582	123,343
43	Copco 1		Restoration of Vegetation	Uplands Stockpiles	3.37	AC	8,856.67	29,844	22,476	-25%	41,587	39%	32,466	24,451	45,242
43	Copco 1		Restoration of Vegetation	Undisturbed Uplands	13.39	AC	4,850.00	64,957	49,554	-24%	79,689	23%	75,008	57,222	92,020
43	Copco 1		Restoration of Vegetation	Contractor overhead	1.00	LS	2,983,330.50	2,983,330	1,912,476	-36%	4,291,645	44%	3,530,879	2,244,456	5,103,293
43	Copco 2		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.00	%	636,843.00	701	615	-12%	812	16%	708	622	821
43	Copco 2		Restoration of Vegetation	Seed Collection	0.00	%	1,167,800.00	1,285	974	-24%	1,598	24%	1,352	1,025	1,682
43	Copco 2		Restoration of Vegetation	Seed Propagation	0.00	%	2,803,989.00	3,084	1,159	-62%	3,964	29%	3,394	1,276	4,362
43	Copco 2		Restoration of Vegetation	Weed Eradication	0.00	%	3,049,095.15	3,354	2,648	-21%	4,060	21%	3,707	2,927	4,487
43	Copco 2		Restoration of Vegetation	Pioneer Seeding	0.00	%	2,150,000.00	2,365	1,540	-35%	3,630	53%	2,660	1,732	4,083
43	Copco 2		Restoration of Vegetation	Container Plant Growing	0.00	%	1,057,742.00	1,164	426	-63%	1,902	63%	1,327	485	2,168
43	Copco 2		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.00	%	8,043,339.82	8,848	4,744	-46%	13,438	52%	10,765	5,772	16,350
43	Copco 2		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.00	%	8,189,100.00	9,008	4,085	-55%	15,236	69%	11,755	5,331	19,882
43	Copco 2		Restoration of Vegetation	Floodplain Riparian	0.81	AC	13,817.40	11,157	7,435	-33%	15,305	37%	12,844	8,560	17,619
43	Copco 2		Restoration of Vegetation	Disturbed Uplands above RWZ	1.19	AC	9,502.00	11,280	8,486	-25%	15,721	39%	13,097	9,853	18,253
43	Copco 2		Restoration of Vegetation	Contractor overhead	1.00	LS	9,894.21	9,894	6,468	-35%	14,234	44%	11,663	7,569	16,845
44			YREKA WATER LINE REPLACEMENT												
44	Project	6.001	Yreka Water Line Replacement	Microtunneling	612	LH	1,558.34	953,701	810,646	-20%	1,239,812	40%	1,052,154	894,331	1,367,800
44	Project	6.002	Yreka Water Line Replacement	Pile and Lagging Pre Drilling	458	LF	150.68	69,010	58,658	-20%	89,712	40%	76,134	64,714	98,974
44	Project	6.003	Yreka Water Line Replacement	Pile and Lagging Wall Installation	13,715	SF	73.01	1,001,297	851,102	-20%	1,301,686	40%	1,104,663	938,963	1,436,062
44	Project	6.004	Yreka Water Line Replacement	Pipe Installation	2,106	LF	133.76	281,698	239,443	-20%	366,207	40%	310,778	264,161	404,012
44	Project	6.005	Yreka Water Line Replacement	Excavation and Backfill	3,653	CY	88.45	323,097	274,632	-20%	420,026	40%	356,451	302,983	463,386
45			TRANSPORTATION (BRIDGES, CULVERTS, ROADS)												
45	Project		Lakeview Bridge	Sheet Pile Cofferdam For Center Footer	2,400	SF	38.40	92,161	73,729	-20%	119,809	30%	100,878	80,702	131,141
45	Project		Lakeview Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, fr	89.00	CY	39.77	3,540	2,832	-20%	4,602	30%	3,875	3,100	5,037
45	Project		Lakeview Bridge	Earth Work Cofferdam Construction for side footers	1,186	CY	15.26	18,097	14,478	-20%	23,526	30%	19,809	15,847	25,752
45	Project		Lakeview Bridge	Structure Excavation (Rock) Drilling and blasting rock, boulder	107	CY	186.20	19,924	15,939	-20%	25,901	30%	21,808	17,447	28,351
45	Project		Lakeview Bridge	Structure Excavation (Type D)	1,122	CY	20.27	22,741	18,193	-20%	29,563	30%	24,892	19,913	32,359
45	Project		Lakeview Bridge	Structure Excavation (Bridge)	159	CY	58.08	9,234	7,387	-20%	12,004	30%	10,107	8,086	13,140
45	Project		Lakeview Bridge	Prestressed concrete piles, square, 40' long, 24" square, price	480	LF	165.17	79,283	63,426	-20%	103,068	30%	86,781	69,425	112,816
45	Project		Lakeview Bridge	18" Diameter 40' Long Tie Down Anchor Installation	480	LF	101.95	48,937	39,149	-20%	63,618	30%	53,565	42,852	69,634
45	Project		Lakeview Bridge	Piling special costs, pre-augering for Pile and Tie Down Anch	960	LF	311.56	299,101	239,281	-20%	388,831	30%	327,390	261,912	425,606
45	Project		Lakeview Bridge	Mobilization, 150 ton, set up and remove crane, with pile leads	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Lakeview Bridge	A736 Barrier Wall	536	LF	388.00	207,966	166,373	-20%	270,356	30%	227,635	182,108	295,926
45	Project		Lakeview Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	46.00	LF	44.09	2,028	1,623	-20%	2,637	30%	2,220	1,776	2,886
45	Project		Lakeview Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	172	CY	1,953.07	335,929	268,743	-20%	436,707	30%	367,701	294,161	478,011
45	Project		Lakeview Bridge	Deck Structural concrete, in place, includes forms, Grade 60 r	168	CY	1,143.38	192,088	153,670	-20%	249,714	30%	210,255	168,204	273,332
45	Project		Lakeview Bridge	Footer Structural concrete, footing, reinforced, includes forms(448	CY	421.72	188,929	151,143	-20%	245,608	30%	206,798	165,438	268,837
45	Project		Lakeview Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	17.00	CY	293.49	4,989	3,992	-20%	6,486	30%	5,461	4,369	7,100
45	Project		Lakeview Bridge	Precast 36" I-Girder 65'	8.00	EA	29,970.09	239,761	191,809	-20%	311,689	30%	262,437	209,950	341,168
45	Project		Lakeview Bridge	Precast 36" I-Girder 48'	8.00	EA	35,810.59	286,485	229,188	-20%	372,430	30%	313,580	250,864	407,654
45	Project		Lakeview Bridge	Bridge Demolition	3,917	SF	60.00	235,020	188,016	-20%	305,526	30%	257,248	205,798	334,422
45	Project		Lakeview Bridge - Paving	Roadway Excavation	510	CY	40.00	20,400	16,320	-20%	25,500	25%	22,329	17,864	27,912
45	Project		Lakeview Bridge - Paving	Imported Borrow	2,510	CY	45.00	112,950	90,360	-20%	141,188	25%	123,633	98,906	154,541
45	Project		Lakeview Bridge - Paving	Hot Mix Asphalt (Type A)	450	T	130.00	58,500	46,800	-20%	73,125	25%	64,033	51,226	80,041
45	Project		Lakeview Bridge - Paving	Class 2 Aggregate Base	330	CY	65.00	21,450	17,160	-20%	26,813	25%	23,479	18,783	29,348
45	Project		Lakeview Bridge - Paving	Midwest Guardrail System	200	LF	40.61	8,122	6,498	-20%	10,153	25%	8,890	7,112	11,113
45	Project		Lakeview Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Lakeview Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Lakeview Bridge - Paving	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Lakeview Bridge - Paving	Temporary Fence (Type ESA)	300	LF	5.03	1,509	1,207	-20%	1,886	25%	1,652	1,321	2,065
45	Project		Lakeview Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Lakeview Bridge - Paving	Water Pollution Control	0.10	%	213,300.00	21,330	17,064	-20%	26,663	25%	23,347	18,678	29,184
45	Project		Lakeview Bridge - Paving	Roadside Sign - One Post	2.00	EA	270.00	540	432	-20%	675	25%	591	473	739
45	Project		Lakeview Bridge - Paving	Reset Roadside Sign	4.00	EA	300.00	1,200	960	-20%	1,500	25%	1,313	1,051	1,642
45	Project		Lakeview Bridge - Paving	Relocate Roadside Sign	2.00	EA	100.00	200	160	-20%	250	25%	219	175	274
45	Project		Lakeview Bridge - Paving	Thermoplastic Traffic Stripe	660	LF	0.86	568	454	-20%	710	25%	621	497	777
45	Project		Lakeview Bridge - Paving	Type III Barricade	4.00	EA	274.29	1,097	878	-20%	1,371	25%	1,201	961	1,501
45	Project		Lakeview Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Lakeview Bridge - Paving	Temporary Railing (Type K)	300	LF	47.00	14,100	11,280	-20%	17,625	25%	15,434	12,347	19,292
45	Project		Fall Creek Bridge	Structure Excavation (Bridge)	499	CY	58.08	28,980	23,184	-20%	37,674	30%	31,721	25,377	41,237
45	Project		Fall Creek Bridge	A736 Barrier Wall	100	LF	388.00	38,800	31,040	-20%	50,440	30%	42,469	33,975	55,210
45	Project		Fall Creek Bridge	Columns/Walls Structural Concrete includes forms, Grade 60 r	111	CY	1,953.07	216,791	173,433	-20%	281,829	30%	237,295	189,836	308,484
45	Project		Fall Creek Bridge	Deck Structural concrete, in place, includes forms, Grade 60 r	31.00	CY	1,143.38	35,445	28,356	-20%	46,078	30%	38,797	31,038	50,436
45	Project		Fall Creek Bridge	Footer Structural concrete, footing, reinforced, includes forms(4	86.00	CY	421.72	36,268	29,014	-20%	47,148	30%	39,698	31,758	51,607
45	Project		Fall Creek Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	22.00	CY	293.49	6,457	5,166	-20%	8,394	30%	7,068	5,654	9,188
45	Project		Fall Creek Bridge	Bridge Demolition	720	SF	60.00	43,200	34,560	-20%	56,160	30%	47,286	37,829	61,472
45	Project		Fall Creek Bridge - Paving	Roadway Excavation	720	CY	40.00	28,800	23,040	-20%	36,000	25%	31,524	25,219	39,405
45	Project		Fall Creek Bridge - Paving	Imported Borrow	2,380	CY	45.00	107,100	85,680	-20%	133,875	25%	117,229	93,784	146,537
45	Project		Fall Creek Bridge - Paving	Hot Mix Asphalt (Type A)	230	T	130.00	29,900	23,920	-20%	37,375	25%	32,728	26,182	40,910
45	Project		Fall Creek Bridge - Paving	Class 2 Aggregate Base	170	CY	65.00	11,050	8,840	-20%	13,813	25%	12,095	9,676	15,119
45	Project		Fall Creek Bridge - Paving	Midwest Guardrail System	100	LF	40.61	4,061	3,249	-20%	5,076	25%	4,445	3,556	5,556
45	Project		Fall Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Fall Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Fall Creek Bridge - Paving	Relocate Gate	1.00	EA	100.00	100	80	-20%	125	25%	109	88	137
45	Project		Fall Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Fall Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Fall Creek Bridge - Paving	Temporary Hydroseed	280	SY	9.22	2,582	2,065	-20%	3,227	25%	2,826	2,261	3,532
45	Project		Fall Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	280	SY	16.62	4,654	3,723	-20%	5,817	25%	5,094	4,075	6,367
45	Project		Fall Creek Bridge - Paving	Temporary Fiber Roll	375	LF	8.10	3,038	2,430	-20%	3,797	25%	3,325	2,660	4,156
45	Project		Fall Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Fall Creek Bridge - Paving	Water Pollution Control	0.10	%	176,850.00	17,685	14,148	-20%	22,106	25%	19,358	15,486	24,197
45	Project		Fall Creek Bridge - Paving	Temporary Traffic Stripe	500	LF	1.20	600	480	-20%	750	25%	657	525	821
45	Project		Fall Creek Bridge - Paving	Thermoplastic Traffic Stripe	275	LF	0.86	237	189	-20%	296	25%	259	207	324
45	Project		Fall Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Fall Creek Bridge - Paving	Traffic Control System	50.00	DA	1,000.00	50,000	40,000	-20%	62,500	25%	54,729	43,783	68,411
45	Project		Fall Creek Bridge - Paving	Temporary Railing (Type K)	200	LF	47.00	9,400	7,520	-20%	11,750	25%	10,289	8,231	12,861
45	Project		Daggett Road Bridge	Sheet Pile Cofferdam For Footers	7,200	SF	38.40	276,483	221,186	-20%	359,428	30%	302,633	242,106	393,422
45	Project		Daggett Road Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, fr	91.00	CY	39.77	3,619	2,896	-20%	4,705	30%	3,962	3,169	5,150
45	Project		Daggett Road Bridge	Structure Excavation (Rock) Drilling and blasting rock, boulder	107	CY	186.20	19,924	15,939	-20%	25,901	30%	21,808	17,447	28,351
45	Project		Daggett Road Bridge	Structure Excavation (Type D)	1,535	CY	20.27	31,112	24,889	-20%	40,445	30%	34,054	27,243	44,271
45	Project		Daggett Road Bridge	Structure Excavation (Bridge)	171	CY	58.08	9,931	7,945	-20%	12,910	30%	10,870	8,696	14,131
45	Project		Daggett Road Bridge	Prestressed concrete piles, square, 40' long, 24" square, price	480	LF	165.17	79,283	63,426	-20%	103,068	30%	86,781	69,425	112,816
45	Project		Daggett Road Bridge	18" Diameter 40' Long Tie Down Anchor Installation	480	LF	101.95	48,937	39,149	-20%	63,618	30%	53,565	42,852	69,634
45	Project		Daggett Road Bridge	Piling special costs, pre-augering for Pile and Tie Down Ancho	960	LF	311.56	299,101	239,281	-20%	388,831	30%	327,390	261,912	425,606
45	Project		Daggett Road Bridge	Mobilization, 150 ton, set up and remove crane, with pile leads	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Daggett Road Bridge	A736 Barrier Wall	530	LF	388.00	205,638	164,510	-20%	267,330	30%	225,087	180,070	292,613
45	Project		Daggett Road Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	46.00	LF	44.09	2,028	1,623	-20%	2,637	30%	2,220	1,776	2,886
45	Project		Daggett Road Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	157	CY	1,953.07	306,633	245,306	-20%	398,622	30%	335,634	268,507	436,324
45	Project		Daggett Road Bridge	Deck Structural concrete, in place, includes forms, Grade 60 r	167	CY	1,143.38	190,944	152,755	-20%	248,228	30%	209,004	167,203	271,705
45	Project		Daggett Road Bridge	Footer Structural concrete, footing, reinforced, includes forms(4	448	CY	421.72	188,929	151,143	-20%	245,608	30%	206,798	165,438	268,837
45	Project		Daggett Road Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	17.00	CY	293.49	4,989	3,992	-20%	6,486	30%	5,461	4,369	7,100
45	Project		Daggett Road Bridge	Precast 36" I-Girder 65'	8.00	EA	29,970.09	191,809	-20%	311,689	30%	262,437	209,950	341,168	
45	Project		Daggett Road Bridge	Precast 36" I-Girder 48'	8.00	EA	35,810.59	286,485	229,188	-20%	372,430	30%	313,580	250,864	407,654
45	Project		Daggett Road Bridge	Bridge Demolition	3,262	SF	60.00	195,720	156,576	-20%	254,436	30%	214,231	171,385	278,500
45	Project		Daggett Road Bridge - Paving	Roadway Excavation	1,500	CY	40.00	60,000	48,000	-20%	75,000	25%	65,675	52,540	82,093
45	Project		Daggett Road Bridge - Paving	Imported Borrow	5,500	CY	45.00	247,500	198,000	-20%	309,375	25%	270,908	216,727	338,635
45	Project		Daggett Road Bridge - Paving	Hot Mix Asphalt (Type A)	1,240	T	130.00	161,200	128,960	-20%	201,500	25%	176,446	141,157	220,558
45	Project		Daggett Road Bridge - Paving	Class 2 Aggregate Base	920	CY	65.00	59,800	47,840	-20%	74,750	25%	65,456	52,365	81,820
45	Project		Daggett Road Bridge - Paving	Remove Base and Surfacing	9,485	SF	6.00	56,910	45,528	-20%	71,138	25%	62,293	49,834	77,866
45	Project		Daggett Road Bridge - Paving	Midwest Guardrail System	200	LF	40.61	8,122	6,498	-20%	10,153	25%	8,890	7,112	11,113
45	Project		Daggett Road Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Daggett Road Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Daggett Road Bridge - Paving	Temporary Reinforced Silt Fence	1,000	LF	7.58	7,580	6,064	-20%	9,475	25%	8,297	6,638	10,371
45	Project		Daggett Road Bridge - Paving	Temporary Fence (Type ESA)	1,000	LF	5.03	5,030	4,024	-20%	6,288	25%	5,506	4,405	6,882
45	Project		Daggett Road Bridge - Paving	Temporary Hydroseed	1,200	SY	9.22	11,064	8,851	-20%	13,830	25%	12,110	9,688	15,138
45	Project		Daggett Road Bridge - Paving	Rolled Erosion Control / Jute Mesh	1,200	SY	16.62	19,944	15,955	-20%	24,930	25%	21,830	17,464	27,288
45	Project		Daggett Road Bridge - Paving	Temporary Fiber Roll	1,100	LF	8.10	8,910	7,128	-20%	11,138	25%	9,753	7,802	12,191
45	Project		Daggett Road Bridge - Paving	Temporary Construction Entrance	1.00	EA	4,303.25	4,303	3,443	-20%	5,379	25%	4,710	3,768	5,888
45	Project		Daggett Road Bridge - Paving	Water Pollution Control	0.10	%	585,410.00	58,541	46,833	-20%	73,176	25%	64,078	51,262	80,097
45	Project		Daggett Road Bridge - Paving	Roadside Sign - One Post	1.00	EA	270.00	270	216	-20%	338	25%	296	236	369
45	Project		Daggett Road Bridge - Paving	Remove Roadside Sign	2.00	EA	100.00	200	160	-20%	250	25%	219	175	274
45	Project		Daggett Road Bridge - Paving	Reset Roadside Sign	2.00	EA	300.00	600	480	-20%	750	25%	657	525	821
45	Project		Daggett Road Bridge - Paving	Thermoplastic Traffic Stripe	2,020	LF	0.86	1,737	1,390	-20%	2,172	25%	1,902	1,521	2,377
45	Project		Daggett Road Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Daggett Road Bridge - Paving	Traffic Control System	15.00	DA	1,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Daggett Road Bridge - Paving	Temporary Railing (Type K)	120	LF	47.00	5,640	4,512	-20%	7,050	25%	6,173	4,939	7,717
45	Project		Dry Creek Bridge	Temporary Bridge	1,015	SF	210.00	213,150	170,520	-20%	277,095	30%	233,310	186,648	303,302
45	Project		Dry Creek Bridge - Paving	Roadway Excavation	700	CY	40.00	28,000	22,400	-20%	35,000	25%	30,648	24,519	38,310
45	Project		Dry Creek Bridge - Paving	Imported Borrow	1,000	CY	45.00	45,000	36,000	-20%	56,250	25%	49,256	39,405	61,570
45	Project		Dry Creek Bridge - Paving	Hot Mix Asphalt (Type A)	600	T	130.00	78,000	62,400	-20%	97,500	25%	85,377	68,302	106,721
45	Project		Dry Creek Bridge - Paving	Class 2 Aggregate Base	380	CY	65.00	24,700	19,760	-20%	30,875	25%	27,036	21,629	33,795
45	Project		Dry Creek Bridge - Paving	Midwest Guardrail System	100	LF	40.61	4,061	3,249	-20%	5,076	25%	4,445	3,556	5,556
45	Project		Dry Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Dry Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Dry Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Dry Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Dry Creek Bridge - Paving	Temporary Hydroseed	550	SY	9.22	5,071	4,057	-20%	6,339	25%	5,551	4,440	6,938
45	Project		Dry Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	550	SY	16.62	9,141	7,313	-20%	11,426	25%	10,006	8,004	12,507
45	Project		Dry Creek Bridge - Paving	Temporary Fiber Roll	1,000	LF	8.10	8,100	6,480	-20%	10,125	25%	8,866	7,093	11,083
45	Project		Dry Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Dry Creek Bridge - Paving	Water Pollution Control	0.10	%	175,700.00	17,570	14,056	-20%	21,963	25%	19,232	15,385	24,000
45	Project		Dry Creek Bridge - Paving	Thermoplastic Traffic Stripe	650	LF	0.86	559	447	-20%	699	25%	612	489	765
45	Project		Dry Creek Bridge - Paving	Portable Changeable Message Signs	2.00	EA	3,000.00	6,000	4,800	-20%	7,500	25%	6,567	5,254	8,209
45	Project		Dry Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Dry Creek Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Dry Creek Bridge - Paving	Temporary Railing (Type K)	200	LF	47.00	9,400	7,520	-20%	11,750	25%	10,289	8,231	12,861
45	Project		Dry Creek Bridge - Temp Detour	Roadway Excavation	1,200	CY	40.00	48,000	38,400	-20%	60,000	25%	52,540	42,032	65,675
45	Project		Dry Creek Bridge - Temp Detour	Ditch Excavation	40.00	CY	35.00	1,400	1,120	-20%	1,750	25%	1,532	1,226	1,916
45	Project		Dry Creek Bridge - Temp Detour	Imported Borrow	1,620	CY	45.00	72,900	58,320	-20%	91,125	25%	79,795	63,836	99,744
45	Project		Dry Creek Bridge - Temp Detour	Hot Mix Asphalt (Type A)	530	T	130.00	68,900	55,120	-20%	86,125	25%	75,417	60,333	94,271
45	Project		Dry Creek Bridge - Temp Detour	Class 2 Aggregate Base	400	CY	65.00	26,000	20,800	-20%	32,500	25%	28,459	22,767	35,574
45	Project		Dry Creek Bridge - Temp Detour	Midwest Guardrail System	100	LF	40.61	4,061	3,249	-20%	5,076	25%	4,445	3,556	5,556
45	Project		Dry Creek Bridge - Temp Detour	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Dry Creek Bridge - Temp Detour	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Dry Creek Bridge - Temp Detour	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Dry Creek Bridge - Temp Detour	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Dry Creek Bridge - Temp Detour	Temporary Hydroseed	320	SY	9.22	2,950	2,360	-20%	3,688	25%	3,229	2,584	4,037
45	Project		Dry Creek Bridge - Temp Detour	Rolled Erosion Control / Jute Mesh	320	SY	16.62	5,318	4,255	-20%	6,648	25%	5,821	4,657	7,277
45	Project		Dry Creek Bridge - Temp Detour	Temporary Fiber Roll	400	LF	8.10	3,240	2,592	-20%	4,050	25%	3,546	2,837	4,433
45	Project		Dry Creek Bridge - Temp Detour	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Dry Creek Bridge - Temp Detour	Water Pollution Control	0.10	%	217,200.00	21,720	17,376	-20%	27,150	25%	23,774	19,019	29,718
45	Project		Dry Creek Bridge - Temp Detour	Construction Area Signs	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Dry Creek Bridge - Temp Detour	Temporary Traffic Stripe	620	LF	0.78	486	389	-20%	608	25%	532	426	665
45	Project		Dry Creek Bridge - Temp Detour	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Dry Creek Bridge - Temp Detour	Traffic Control System	5.00	DA	1,000.00	5,000	4,000	-20%	6,250	25%	5,473	4,378	6,841
45	Project		Dry Creek Bridge - Temp Detour	Temporary Railing (Type K)	160	LF	47.00	7,520	6,016	-20%	9,400	25%	8,231	6,585	10,289
45	Project		Camp Creek Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, fr	420	CY	39.77	16,705	13,364	-20%	21,717	30%	18,285	14,628	23,771
45	Project		Camp Creek Bridge	Earth Work Cofferdam Construction for side footers	1,186	CY	15.26	18,097	14,478	-20%	23,526	30%	19,809	15,847	25,752
45	Project		Camp Creek Bridge	Structure Excavation (Bridge)	585	CY	58.08	33,975	27,180	-20%	44,167	30%	37,188	29,750	48,344
45	Project		Camp Creek Bridge	Steel piles, "H" Sections, 50' long, HP14 X 89, excludes mobil	1,400	LF	86.12	120,571	96,457	-20%	156,742	30%	131,974	105,580	171,567
45	Project		Camp Creek Bridge	Piling special costs, pre-augering for Pile	1,400	LF	311.56	436,189	348,951	-20%	567,045	30%	477,443	381,955	620,676
45	Project		Camp Creek Bridge	Mobilization, 150 ton, set up and remove crane, with pile leads	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Camp Creek Bridge	A736 Barrier Wall	444	LF	388.00	172,270	137,816	-20%	223,952	30%	188,564	150,851	245,133
45	Project		Camp Creek Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	50.00	LF	44.09	2,205	1,764	-20%	2,866	30%	2,413	1,931	3,137
45	Project		Camp Creek Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	132	CY	1,953.07	257,806	206,245	-20%	335,148	30%	282,189	225,751	366,846

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Camp Creek Bridge	Deck Structural concrete, in place, includes forms, Grade 60 rebar	139	CY	1,143.38	158,930	127,144	-20%	206,609	30%	173,961	139,169	226,149
45	Project		Camp Creek Bridge	Footer Structural concrete, footing, reinforced, includes forms(4	162	CY	421.72	68,318	54,655	-20%	88,814	30%	74,780	59,824	97,214
45	Project		Camp Creek Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	19.00	CY	293.49	5,576	4,461	-20%	7,249	30%	6,104	4,883	7,935
45	Project		Camp Creek Bridge	Precast 36" I-Girder 67'	4.00	EA	29,970.09	119,880	95,904	-20%	155,844	30%	131,219	104,975	170,584
45	Project		Camp Creek Bridge	Precast 36" I-Girder 53'	8.00	EA	35,810.59	286,485	229,188	-20%	372,430	30%	313,580	250,864	407,654
45	Project		Camp Creek Bridge - Paving	Roadway Excavation	12,270	CY	40.00	490,800	392,640	-20%	613,500	25%	537,219	429,776	671,524
45	Project		Camp Creek Bridge - Paving	Ditch Excavation	200	CY	35.00	7,000	5,600	-20%	8,750	25%	7,662	6,130	9,578
45	Project		Camp Creek Bridge - Paving	Imported Borrow	12,550	CY	45.00	564,750	451,800	-20%	705,938	25%	618,164	494,531	772,705
45	Project		Camp Creek Bridge - Paving	Hot Mix Asphalt (Type A)	710	T	130.00	92,300	73,840	-20%	115,375	25%	101,030	80,824	126,287
45	Project		Camp Creek Bridge - Paving	Class 2 Aggregate Base	520	CY	65.00	33,800	27,040	-20%	42,250	25%	36,997	29,597	46,246
45	Project		Camp Creek Bridge - Paving	Midwest Guardrail System	400	LF	40.61	16,244	12,995	-20%	20,305	25%	17,780	14,224	22,225
45	Project		Camp Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Camp Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Camp Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Camp Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Camp Creek Bridge - Paving	Temporary Hydroseed	160	SY	9.22	1,475	1,180	-20%	1,844	25%	1,615	1,292	2,018
45	Project		Camp Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	160	SY	16.62	2,659	2,127	-20%	3,324	25%	2,911	2,329	3,638
45	Project		Camp Creek Bridge - Paving	Temporary Fiber Roll	225	LF	8.10	1,823	1,458	-20%	2,278	25%	1,995	1,596	2,494
45	Project		Camp Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Camp Creek Bridge - Paving	Water Pollution Control	0.10	%	497,800.00	49,780	39,824	-20%	62,225	25%	54,488	43,591	68,110
45	Project		Camp Creek Bridge - Paving	Roadside Sign - One Post	8.00	EA	270.00	2,160	1,728	-20%	2,700	25%	2,364	1,891	2,955
45	Project		Camp Creek Bridge - Paving	Thermoplastic Traffic Stripe	810	LF	0.86	697	557	-20%	871	25%	762	610	953
45	Project		Camp Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Camp Creek Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Camp Creek Bridge - Paving	Temporary Railing (Type K)	300	LF	47.00	14,100	11,280	-20%	17,625	25%	15,434	12,347	19,292
45	Project		Camp Creek Bridge - Temporary Culvert	Roadway Excavation	100	CY	40.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Camp Creek Bridge - Temporary Culvert	Ditch Excavation	150	CY	35.00	5,250	4,200	-20%	6,563	25%	5,747	4,597	7,183
45	Project		Camp Creek Bridge - Temporary Culvert	Imported Borrow	3,500	CY	45.00	157,500	126,000	-20%	198,875	25%	172,396	137,917	215,495
45	Project		Camp Creek Bridge - Temporary Culvert	Clearing & Grubbing	5,000	LS	1.00	5,000	4,000	-20%	6,250	25%	5,473	4,378	6,841
45	Project		Camp Creek Bridge - Temporary Culvert	Hot Mix Asphalt (Type A)	470	T	130.00	61,100	48,880	-20%	76,375	25%	66,879	53,503	83,598
45	Project		Camp Creek Bridge - Temporary Culvert	Class 2 Aggregate Base	235	CY	65.00	15,275	12,220	-20%	19,094	25%	16,720	13,376	20,900
45	Project		Camp Creek Bridge - Temporary Culvert	Rock Slope Protection (Class?) Method B	15.00	CY	100.00	1,500	1,200	-20%	1,875	25%	1,642	1,313	2,052
45	Project		Camp Creek Bridge - Temporary Culvert	Rock Slope Protection Fabric Class 8	45.00	SY	10.13	456	365	-20%	570	25%	499	399	624
45	Project		Camp Creek Bridge - Temporary Culvert	36" Alternative Pipe Culvert	300	LF	261.42	78,426	62,741	-20%	98,033	25%	85,843	68,675	107,304
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Fence (Type ESA)	600	LF	5.03	3,018	2,414	-20%	3,773	25%	3,303	2,643	4,129
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Hydroseed	630	SY	9.22	5,809	4,647	-20%	7,261	25%	6,358	5,086	7,947
45	Project		Camp Creek Bridge - Temporary Culvert	Rolled Erosion Control / Jute Mesh	630	SY	16.62	10,471	8,376	-20%	13,088	25%	11,461	9,169	14,326
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Fiber Roll	1,190	LF	8.10	9,639	7,711	-20%	12,049	25%	10,551	8,441	13,188
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Concrete Washout	2,000	LS	1.50	2,999	2,399	-20%	3,749	25%	3,283	2,626	4,104
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Camp Creek Bridge - Temporary Culvert	Water Pollution Control	0.10	%	328,506.85	32,851	26,281	-20%	41,063	25%	35,958	28,766	44,947
45	Project		Camp Creek Bridge - Temporary Culvert	Construction Area Signs	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Traffic Stripe	650	LF	0.78	510	408	-20%	637	25%	558	446	698
45	Project		Camp Creek Bridge - Temporary Culvert	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Camp Creek Bridge - Temporary Culvert	Traffic Control System	10.00	DA	1,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Railing (Type K)	600	LF	47.00	28,200	22,560	-20%	35,250	25%	30,867	24,694	38,584
45	Project		Jenny Creek Bridge	Sheet Pile Cofferdam For Center Footer	2,400	SF	38.40	92,161	73,729	-20%	119,809	30%	100,878	80,702	131,141
45	Project		Jenny Creek Bridge	Earth Work Cofferdam Construction for side footers	1,186	CY	15.26	18,097	14,478	-20%	23,526	30%	19,809	15,847	25,752
45	Project		Jenny Creek Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul, fro	142	CY	39.77	5,648	4,518	-20%	7,342	30%	6,182	4,946	8,037
45	Project		Jenny Creek Bridge	Structure Excavation (Type D)	320	CY	20.27	6,486	5,189	-20%	8,432	30%	7,099	5,679	9,229
45	Project		Jenny Creek Bridge	Structure Excavation (Bridge)	209	CY	58.08	12,138	9,710	-20%	15,779	30%	13,286	10,629	17,272
45	Project		Jenny Creek Bridge	Steel piles, "H" Sections, 50' long, HP14 X 89, excludes mobil	2,640	LF	86.12	227,362	181,890	-20%	295,571	30%	248,866	199,093	323,526
45	Project		Jenny Creek Bridge	Piling special costs, pre-augering for Pile and Tie Down Ancho	2,640	LF	311.56	822,527	658,022	-20%	1,069,286	30%	900,321	720,257	1,170,418
45	Project		Jenny Creek Bridge	Mobilization, 150 ton, set up and remove crane, with pile leads	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Jenny Creek Bridge	A736 Barrier Wall	776	LF	388.00	301,085	240,868	-20%	391,411	30%	329,562	263,649	428,430
45	Project		Jenny Creek Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	58.00	LF	44.09	2,557	2,046	-20%	3,325	30%	2,799	2,239	3,639
45	Project		Jenny Creek Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	174	CY	1,953.07	339,835	271,868	-20%	441,785	30%	371,976	297,581	483,569
45	Project		Jenny Creek Bridge	Deck Structural concrete, in place, includes forms, Grade 60 re	317	CY	1,143.38	362,451	289,961	-20%	471,186	30%	396,731	317,385	515,751
45	Project		Jenny Creek Bridge	Footer Structural concrete, footing, reinforced, includes forms(4	281	CY	421.72	118,503	94,802	-20%	154,053	30%	129,710	103,768	168,624
45	Project		Jenny Creek Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	22.00	CY	293.49	6,457	5,166	-20%	8,394	30%	7,068	5,654	9,188
45	Project		Jenny Creek Bridge	Precast 61" Bulb Tee 73'	8.00	EA	49,373.69	394,990	315,992	-20%	513,486	30%	432,347	345,878	562,052
45	Project		Jenny Creek Bridge	Precast 61" Bulb Tee 100'	8.00	EA	78,816.06	630,528	504,423	-20%	819,687	30%	690,163	552,131	897,212
45	Project		Jenny Creek Bridge	Bridge Demolition	3,102	SF	60.00	186,120	148,896	-20%	241,956	30%	203,723	162,978	264,840

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Jenny Creek Bridge - Paving	Roadway Excavation	30,000	CY	40.00	1,200,000	960,000	-20%	1,500,000	25%	1,313,495	1,050,796	1,641,869
45	Project		Jenny Creek Bridge - Paving	Ditch Excavation	210	CY	35.00	7,350	5,880	-20%	9,188	25%	8,045	6,436	10,056
45	Project		Jenny Creek Bridge - Paving	Imported Borrow	35,000	CY	45.00	1,575,000	1,260,000	-20%	1,968,750	25%	1,723,962	1,379,170	2,154,963
45	Project		Jenny Creek Bridge - Paving	Hot Mix Asphalt (Type A)	600	T	130.00	78,000	62,400	-20%	97,500	25%	85,377	68,302	106,721
45	Project		Jenny Creek Bridge - Paving	Class 2 Aggregate Base	370	CY	65.00	24,050	19,240	-20%	30,063	25%	26,325	21,060	32,906
45	Project		Jenny Creek Bridge - Paving	Midwest Guardrail System	200	LF	40.61	8,122	6,498	-20%	10,153	25%	8,890	7,112	11,113
45	Project		Jenny Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Jenny Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Jenny Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Jenny Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Jenny Creek Bridge - Paving	Temporary Hydroseed	1,770	SY	9.22	16,319	13,056	-20%	20,399	25%	17,863	14,290	22,329
45	Project		Jenny Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	1,770	SY	16.62	29,417	23,534	-20%	36,772	25%	32,200	25,760	40,250
45	Project		Jenny Creek Bridge - Paving	Temporary Fiber Roll	2,490	LF	8.10	20,169	16,135	-20%	25,211	25%	22,077	17,661	27,596
45	Project		Jenny Creek Bridge - Paving	Temporary Concrete Washout	2,000	LS	1.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Jenny Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Jenny Creek Bridge - Paving	Water Pollution Control	0.10	%	2,884,400.00	288,440	230,752	-20%	360,550	25%	315,720	252,576	394,651
45	Project		Jenny Creek Bridge - Paving	Roadside Sign - One Post	8.00	EA	270.00	2,160	1,728	-20%	2,700	25%	2,364	1,891	2,955
45	Project		Jenny Creek Bridge - Paving	Construction Area Signs	2,000	LS	1.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Jenny Creek Bridge - Paving	Thermoplastic Traffic Stripe	1,000	LF	0.86	860	688	-20%	1,075	25%	941	753	1,177
45	Project		Jenny Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Jenny Creek Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Jenny Creek Bridge - Paving	Temporary Railing (Type K)	300	LF	47.00	14,100	11,280	-20%	17,625	25%	15,434	12,347	19,292
45	Project		Other Structures	Pedestrian Bridge Total	800	SF	60.00	48,000	43,200	-10%	62,400	30%	52,540	47,286	68,302
45	Project		Other Structures	Bridge Demolition Ped Bridge Campground	800	SF	60.00	48,000	43,200	-10%	62,400	30%	52,540	47,286	68,302
45	Project		Other Structures	Bridge Demolition Timber JC Boyle	1,800	SF	60.00	108,000	97,200	-10%	140,400	30%	118,215	106,393	153,679
45	Project		Scotch Creek - Temporary Culvert	Roadway Excavation	550	CY	40.00	22,000	17,600	-20%	27,500	25%	24,081	19,265	30,101
45	Project		Scotch Creek - Temporary Culvert	Ditch Excavation	10.00	CY	35.00	350	280	-20%	438	25%	383	306	479
45	Project		Scotch Creek - Temporary Culvert	Imported Borrow	2,300	CY	45.00	103,500	82,800	-20%	129,375	25%	113,289	90,631	141,611
45	Project		Scotch Creek - Temporary Culvert	Hot Mix Asphalt (Type A)	510	T	130.00	66,300	53,040	-20%	82,875	25%	72,571	58,056	90,713
45	Project		Scotch Creek - Temporary Culvert	Class 2 Aggregate Base	380	CY	65.00	24,700	19,760	-20%	30,875	25%	27,036	21,629	33,795
45	Project		Scotch Creek - Temporary Culvert	Rock Slope Protection (Class?) Method B	10.00	CY	100.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Scotch Creek - Temporary Culvert	Rock Slope Protection Fabric Class 8	30.00	SY	10.13	304	243	-20%	380	25%	333	266	416
45	Project		Scotch Creek - Temporary Culvert	36" Alternative Pipe Culvert	250	LF	261.42	65,355	52,284	-20%	81,694	25%	71,536	57,229	89,420
45	Project		Scotch Creek - Temporary Culvert	Temporary Reinforced Silt Fence	300	LF	7.58	2,274	1,819	-20%	2,843	25%	2,489	1,991	3,111
45	Project		Scotch Creek - Temporary Culvert	Temporary Fence (Type ESA)	300	LF	5.03	1,509	1,207	-20%	1,886	25%	1,652	1,321	2,065
45	Project		Scotch Creek - Temporary Culvert	Temporary Hydroseed	590	SY	9.22	5,440	4,352	-20%	6,800	25%	5,954	4,763	7,443
45	Project		Scotch Creek - Temporary Culvert	Rolled Erosion Control / Jute Mesh	590	SY	16.62	9,806	7,845	-20%	12,257	25%	10,733	8,587	13,417
45	Project		Scotch Creek - Temporary Culvert	Temporary Fiber Roll	450	LF	8.10	3,645	2,916	-20%	4,556	25%	3,990	3,192	4,987
45	Project		Scotch Creek - Temporary Culvert	Temporary Concrete Washout	2,000	LS	1.50	2,999	2,399	-20%	3,749	25%	3,283	2,626	4,104
45	Project		Scotch Creek - Temporary Culvert	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Scotch Creek - Temporary Culvert	Water Pollution Control	0.10	%	283,509.90	28,351	22,681	-20%	35,439	25%	31,032	24,826	38,791
45	Project		Scotch Creek - Temporary Culvert	Construction Area Signs	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Scotch Creek - Temporary Culvert	Temporary Traffic Stripe	520	LF	0.78	408	326	-20%	510	25%	446	357	558
45	Project		Scotch Creek - Temporary Culvert	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Scotch Creek - Temporary Culvert	Traffic Control System	10.00	DA	1,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Scotch Creek - Temporary Culvert	Temporary Railing (Type K)	500	LF	47.00	23,500	18,800	-20%	29,375	25%	25,723	20,578	32,153
45	Project		Scotch Creek - Culvert	Roadway Excavation	3,000	CY	40.00	120,000	96,000	-20%	150,000	25%	131,350	105,080	164,187
45	Project		Scotch Creek - Culvert	Ditch Excavation	10.00	CY	35.00	350	280	-20%	438	25%	383	306	479
45	Project		Scotch Creek - Culvert	Imported Borrow	3,000	CY	45.00	135,000	108,000	-20%	168,750	25%	147,768	118,215	184,710
45	Project		Scotch Creek - Culvert	Hot Mix Asphalt (Type A)	170	T	130.00	22,100	17,680	-20%	27,625	25%	24,190	19,352	30,238
45	Project		Scotch Creek - Culvert	Class 2 Aggregate Base	120	CY	65.00	7,800	6,240	-20%	9,750	25%	8,538	6,830	10,672
45	Project		Scotch Creek - Culvert	Rock Slope Protection Class III, Method B	5.00	CY	100.00	500	400	-20%	625	25%	547	438	684
45	Project		Scotch Creek - Culvert	Rock Slope Protection Fabric Class 8	12.00	SY	10.13	122	97	-20%	152	25%	133	106	166
45	Project		Scotch Creek - Culvert	Structural Concrete, Box Culvert	10.00	CY	4,835.00	48,350	38,680	-20%	60,438	25%	52,923	42,338	66,154
45	Project		Scotch Creek - Culvert	Midwest Guardrail System	400	LF	34.19	13,676	10,941	-20%	17,095	25%	14,969	11,976	18,712
45	Project		Scotch Creek - Culvert	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Scotch Creek - Culvert	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Scotch Creek - Culvert	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Scotch Creek - Culvert	Temporary Hydroseed	220	SY	9.22	2,028	1,623	-20%	2,536	25%	2,220	1,776	2,775
45	Project		Scotch Creek - Culvert	Rolled Erosion Control / Jute Mesh	220	SY	16.62	3,656	2,925	-20%	4,571	25%	4,002	3,202	5,003
45	Project		Scotch Creek - Culvert	Temporary Fiber Roll	450	LF	8.10	3,645	2,916	-20%	4,556	25%	3,990	3,192	4,987
45	Project		Scotch Creek - Culvert	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Scotch Creek - Culvert	Water Pollution Control	0.10	%	334,221.56	33,422	26,738	-20%	41,778	25%	36,583	29,267	45,729
45	Project		Scotch Creek - Culvert	Construction Area Signs	1.00	LS	2,500.00	2,500	2,000	-20%	3,125	25%	2,736	2,189	3,421
45	Project		Scotch Creek - Culvert	Thermoplastic Traffic Stripe	200	LF	0.86	172	138	-20%	215	25%	188	151	235

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Scotch Creek - Culvert	Traffic Control System	1.00	LS	10,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Scotch Creek - Culvert	Temporary Railing (Type K)	200	LF	33.57	6,714	5,371	-20%	8,393	25%	7,349	5,879	9,187
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Roadway Excavation	3,000	CY	40.00	120,000	96,000	-20%	150,000	25%	131,350	105,080	164,187
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Imported Borrow	2,500	CY	45.00	112,500	90,000	-20%	140,625	25%	123,140	98,512	153,925
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Rock Slope Protection Class III, Method B	250	CY	100.00	25,000	20,000	-20%	31,250	25%	27,364	21,892	34,206
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Rock Slope Protection Fabric Class 8	700	SY	10.13	7,091	5,673	-20%	8,864	25%	7,762	6,209	9,702
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	60" CORRUGATED STEEL PIPE (.138" THICK)	80.00	LF	270.00	21,600	17,280	-20%	27,000	25%	23,643	18,914	29,554
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Temporary Fence (Type ESA)	600	LF	5.03	3,018	2,414	-20%	3,773	25%	3,303	2,643	4,129
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Water Pollution Control	0.10	%	286,191.00	28,619	22,895	-20%	35,774	25%	31,326	25,061	39,157
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Construction Area Signs	1.00	LS	600.00	600	480	-20%	750	25%	657	525	821
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Traffic Control System	1.00	LS	10,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Temporary Railing (Type K)	80.00	LF	33.57	2,686	2,149	-20%	3,357	25%	2,940	2,352	3,675
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Replace and Reconstruct 60-inch Culvert No.1 at Beaver Cree	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Replace and Reconstruct 60-inch Culvert No.2 at Beaver Cree	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Rd at Raymond Gulch Culvert	Rock Slope Protection Class III, Method B	150	CY	100.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Rd at Raymond Gulch Culvert	Rock Slope Protection Fabric Class 8	400	SY	10.13	4,052	3,242	-20%	5,065	25%	4,435	3,548	5,544
45	Project		Copco Rd at Raymond Gulch Culvert	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Copco Rd at Raymond Gulch Culvert	Temporary Fence (Type ESA)	600	LF	5.03	3,018	2,414	-20%	3,773	25%	3,303	2,643	4,129
45	Project		Copco Rd at Raymond Gulch Culvert	Water Pollution Control	1.00	LS	19,052.00	19,052	15,242	-20%	23,815	25%	20,854	16,683	26,067
45	Project		Copco Rd at Raymond Gulch Culvert	Traffic Control System	1.00	LS	1,000.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Copco Rd at Raymond Gulch Culvert	60-inch Culvert at Raymond Gulch	1.00	LS	10,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Patricia Avenue Culverts	Rock Slope Protection Class III, Method B	150	CY	100.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Patricia Avenue Culverts	Rock Slope Protection Fabric Class 8	400	SY	10.13	4,052	3,242	-20%	5,065	25%	4,435	3,548	5,544
45	Project		Patricia Avenue Culverts	Water Pollution Control	0.10	%	19,052.00	1,905	1,524	-20%	2,382	25%	2,085	1,688	2,607
45	Project		Patricia Avenue Culverts	Traffic Control System	1.00	LS	1,000.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Topsy Grade Culverts	Trench Excavation	275	CY	40.00	11,000	8,800	-20%	13,750	25%	12,040	9,632	15,050
45	Project		Topsy Grade Culverts	Clearing & Grubbing	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Topsy Grade Culverts	Rock Slope Protection Class III, Method B	800	CY	100.00	80,000	64,000	-20%	100,000	25%	87,566	70,053	109,458
45	Project		Topsy Grade Culverts	Rock Slope Protection Fabric Class 8	2,350	SY	10.13	23,806	19,044	-20%	29,757	25%	26,057	20,846	32,571
45	Project		Topsy Grade Culverts	24" corrugated steel pipe (.138" thick)	200	LF	137.50	27,500	22,000	-20%	34,375	25%	30,101	24,081	37,626
45	Project		Topsy Grade Culverts	Temporary Reinforced Silt Fence	1,000	LF	7.58	7,580	6,064	-20%	9,475	25%	8,297	6,638	10,371
45	Project		Topsy Grade Culverts	Temporary Fence (Type ESA)	1,000	LF	5.03	5,030	4,024	-20%	6,288	25%	5,506	4,405	6,882
45	Project		Topsy Grade Culverts	Water Pollution Control	0.10	%	144,305.50	14,431	11,544	-20%	18,038	25%	15,795	12,636	19,744
45	Project		Topsy Grade Culverts	Traffic Control System	1.00	LS	5,000.00	5,000	4,000	-20%	6,250	25%	5,473	4,378	6,841
45	Project		JC Boyle Unnamed Culverts	Rock Slope Protection Class III, Method B	115	CY	100.00	11,500	9,200	-20%	14,375	25%	12,588	10,070	15,735
45	Project		JC Boyle Unnamed Culverts	Rock Slope Protection Fabric Class 8	350	SY	10.13	3,546	2,836	-20%	4,432	25%	3,881	3,105	4,851
45	Project		JC Boyle Unnamed Culverts	Water Pollution Control	0.10	%	15,045.50	1,505	1,204	-20%	1,881	25%	1,647	1,317	2,059
45	Project		JC Boyle Unnamed Culverts	Traffic Control System	1.00	LS	1,000.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Copco Road at Unnamed Creek Culvert No. 1	Copco Road at Unnamed Creek Culvert No. 1	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Road at Unnamed Creek Culvert No. 2	Copco Road at Unnamed Creek Culvert No. 2	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		6'x6'x34' Box Culvert installation	6'x6'x34' Box Culvert installation	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Paving - Lakeview Disposal Access Road	Pre: none; Post: 0.7 miles 6" AB overlay (no drainage improve	1.00	EA	170,000.00	170,000	-	-20%	340,000	25%	191,227	-	382,454
45	Project		Paving - Copco 1 Dam Access	Pre: 2500CY roadway excavation, 0.9 miles 9" AB overlay (no	1.00	EA	250,000.00	250,000	190,000	-20%	370,000	25%	270,400	205,504	400,192
45	Project		Paving - Copco Rd from Copco 1 access to Copco Bridge	Pre: 1 mile 9" AB repair; Post: 1 mile 9" AB repair, 0.2 mile HM	1.00	EA	318,000.00	318,000	208,000	-20%	585,000	25%	352,204	230,372	647,922
45	Project		Paving - Copco 1 Ager Beswick Rd Barge Access	Pre: minor excavation and 9" AB section; Post: none	1.00	EA	60,000.00	60,000	-	-20%	120,000	25%	64,896	-	129,792
45	Project		Paving - US 97 Dalles CA Hwy	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	966,000	25%	-	-	1,086,619
45	Project		Paving - OR 66 Green Springs hwy	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	988,000	25%	-	-	1,111,366
45	Project		Paving - JC Boyle Keno Worden	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	988,000	25%	-	-	1,111,366
45	Project		Paving - JC Boyle Powerhouse Access Rd	Pre: 0.9 mile 9" AB repair; Post: 0.9 mile 9" AB repair	1.00	EA	880,000.00	880,000	440,000	-20%	1,320,000	25%	970,844	485,422	1,456,266
45	Project		Paving - JC Boyle Dam Access Rd (2,940 ft to dam toe)	Pre: minor excavation; 0.25 mile new 9" AB, 0.7 mile 9" AB rep	1.00	EA	335,000.00	335,000	212,000	-20%	574,000	25%	368,133	232,968	410,991
45	Project		Paving - JC Boyle Power Canal Access Rd	Pre: 1.5 mile 9" AB repair; post: 1.5 mile 9" AB repair; no guar	1.00	EA	432,000.00	432,000	216,000	-20%	744,000	25%	476,596	238,298	820,805
45	Project		Paving - JC Boyle Powerhouse Access Rd	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	216,000	25%	-	-	242,971
45	Project		Paving - Copco Rd I5 to Ager Rd	Pre: none; Post: 1 mile new asphalt overlay	1.00	EA	1,090,000.00	1,090,000	545,000	-20%	2,100,000	25%	1,226,102	613,051	2,362,214
45	Project		Paving - Copco Rd Ager Rd to Lakeview Rd	Pre: 0.5 miles crack sealer, 0.75 miles new asphalt; Post: 1 m	1.00	EA	1,625,000.00	1,625,000	1,185,000	-20%	5,235,000	25%	1,799,782	1,312,457	5,798,068
45	Project		Paving - Copco Rd to Lakeview Rd to Dagget Rd	Pre: 1 mile crack sealer, 1.5 miles new asphalt; Post: 2 miles n	1.00	EA	2,980,000.00	2,980,000	2,370,000	-20%	10,470,000	25%	3,300,524	2,624,913	11,596,136
45	Project		Paving - Copco Rd Daggett Rd to Copco 1 Access Rd	Pre: 1.5 mile 9" AB repair; Post: 1.5 mile 9" AB repair, no guar	1.00	EA	432,000.00	432,000	216,000	-20%	744,000	25%	476,596	238,298	820,805
46			RECREATION IMPROVEMENTS												
46	Project		Campground - Jenny Creek expansion & upgrade	Picnic table	7.00	EA	2,363.80	16,547	10,500	-37%	21,000	27%	18,112	11,493	22,986
46	Project		Campground - Jenny Creek expansion & upgrade	Fire grate	7.00	EA	675.37	4,728	3,000	-37%	6,000	27%	5,175	3,284	6,567

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
46	Project		Campground - Jenny Creek expansion & upgrade	Trash bins	7.00	EA	1,000.00	7,000	5,000	-29%	10,000	43%	7,662	5,473	10,946
46	Project		Campground - Jenny Creek expansion & upgrade	Parking	7.00	EA	562.81	3,940	2,500	-37%	5,000	27%	4,312	2,736	5,473
46	Project		Campground - Jenny Creek expansion & upgrade	Shade structure	3.00	EA	14,633.07	43,899	26,000	-41%	65,000	48%	48,051	28,459	71,148
46	Project		Campground - Jenny Creek expansion & upgrade	Restroom (single vault toilet)	2.00	EA	57,406.66	114,813	114,813	0%	204,000	78%	125,672	125,672	223,294
46	Project		Campground - Jenny Creek expansion & upgrade	Assumed earthwork	450	CY	9.00	4,052	2,400	-41%	4,800	18%	4,435	2,627	5,254
46	Project		Campground - Jenny Creek expansion & upgrade	Signage	2.00	EA	5,000.00	10,000	5,000	-50%	15,000	50%	10,946	5,473	16,419
46	Project		Campground - Jenny Creek expansion & upgrade	Operations and maintenance	5.00	YR	33,768.63	168,843	-	0%	600,000	255%	184,812	-	656,748
46	Project		Campground - Topsy upgrade	boat ramp	1.00	EA	10,000.00	10,000	10,000	0%	10,000	0%	10,946	10,946	10,946
46	Project		Campground - Topsy upgrade	trash bins	1.00	EA	1,000.00	1,000	1,000	0%	1,000	0%	1,095	1,095	1,095
46	Project		Campground - Topsy upgrade	Operations and maintenance	5.00	YR	11,256.21	56,281	-	0%	200,000	255%	61,604	-	218,916
46	Project		Campground - New campgrounds	picnic table	20.00	EA	2,363.80	47,276	47,276	0%	47,276	0%	51,747	51,747	51,747
46	Project		Campground - New campgrounds	fire grate	20.00	EA	675.37	13,507	13,507	0%	13,507	0%	14,785	14,785	14,785
46	Project		Campground - New campgrounds	trash bins	20.00	EA	1,000.00	20,000	20,000	0%	20,000	0%	21,892	21,892	21,892
46	Project		Campground - New campgrounds	restroom (single vault toilet)	6.00	EA	57,406.66	344,440	344,440	0%	344,440	0%	377,017	377,017	377,017
46	Project		Campground - New campgrounds	parking	20.00	EA	562.81	11,256	11,256	0%	11,256	0%	12,321	12,321	12,321
46	Project		Campground - New campgrounds	boat ramp	2.00	EA	11,256.21	22,512	14,633	-35%	22,512	0%	24,642	16,017	24,642
46	Project		Campground - New campgrounds	trash bins	2.00	EA	1,000.00	2,000	1,300	-35%	2,000	0%	2,189	1,423	2,189
46	Project		Campground - New campgrounds	picnic table	2.00	EA	2,363.80	4,728	4,255	-10%	4,728	0%	5,175	4,657	5,175
46	Project		Campground - New campgrounds	fire grate	2.00	EA	675.37	1,351	1,216	-10%	1,351	0%	1,478	1,331	1,478
46	Project		Campground - New campgrounds	trash bins	2.00	EA	1,000.00	2,000	2,000	0%	2,000	0%	2,189	2,189	2,189
46	Project		Campground - New campgrounds	assumed earthwork	1,200	CY	9.00	10,806	9,725	-10%	10,806	0%	11,828	10,645	11,828
46	Project		Campground - New campgrounds	signage	4.00	EA	5,000.00	20,000	10,000	-50%	30,000	50%	21,892	10,946	32,837
46	Project		Campground - New campgrounds	Operations and maintenance	5.00	YR	67,537.25	337,686	-	0%	1,200,000	255%	369,624	-	1,313,495
46	Project		Recreation area - Fall Creek upgrade	restroom (single vault toilet)	1.00	EA	57,406.66	57,407	51,666	-10%	103,332	80%	62,836	56,553	113,105
46	Project		Recreation area - Fall Creek upgrade	picnic table	5.00	EA	2,363.80	11,819	8,400	-29%	12,600	7%	12,937	9,194	13,792
46	Project		Recreation area - Fall Creek upgrade	shade structure	2.00	EA	14,633.07	29,266	26,340	-10%	43,899	50%	32,034	28,831	48,051
46	Project		Recreation area - Fall Creek upgrade	fire grate	4.00	EA	675.37	2,701	1,800	-33%	3,000	11%	2,957	1,970	3,284
46	Project		Recreation area - Fall Creek upgrade	trash bins	5.00	EA	1,000.00	5,000	4,000	-20%	6,000	20%	5,473	4,378	6,567
46	Project		Recreation area - Fall Creek upgrade	parking	6.00	EA	562.81	3,377	2,000	-41%	4,000	18%	3,696	2,189	4,378
46	Project		Recreation area - Fall Creek upgrade	reconstructed trail	0.50	MI	35,659.67	17,830	7,920	-56%	31,680	78%	19,516	8,669	34,676
46	Project		Recreation area - Fall Creek upgrade	assumed earthwork	300	CY	9.00	2,701	1,600	-41%	3,200	18%	2,957	1,751	3,503
46	Project		Recreation area - Fall Creek upgrade	signage	2.00	EA	5,000.00	10,000	5,000	-50%	15,000	50%	10,946	5,473	16,419
46	Project		Recreation area - Fall Creek upgrade	Operations and maintenance	5.00	YR	16,884.31	84,422	-	0%	300,000	255%	92,406	-	328,374
46	Project		Recreation area - Iron Gate Hatchery day use site	shade structure	3.00	EA	14,633.07	43,899	26,000	-41%	52,000	18%	48,051	28,459	56,918
46	Project		Recreation area - Iron Gate Hatchery day use site	picnic table	6.00	EA	2,363.80	14,183	8,400	-41%	16,800	18%	15,524	9,194	18,389
46	Project		Recreation area - Iron Gate Hatchery day use site	trash bins	7.00	EA	1,000.00	7,000	5,000	-29%	9,000	29%	7,662	5,473	9,851
46	Project		Recreation area - Iron Gate Hatchery day use site	parking	6.00	EA	562.81	3,377	2,000	-41%	4,000	18%	3,696	2,189	4,378
46	Project		Recreation area - Iron Gate Hatchery day use site	fire grate	6.00	EA	675.37	4,052	2,400	-41%	4,800	18%	4,435	2,627	5,254
46	Project		Recreation area - Iron Gate Hatchery day use site	restroom (single vault toilet)	2.00	EA	57,406.66	114,813	114,813	0%	204,000	78%	125,672	125,672	223,294
46	Project		Recreation area - Iron Gate Hatchery day use site	boat ramp	1.00	EA	11,256.21	11,256	10,131	-10%	10,131	-10%	12,321	11,089	11,089
46	Project		Recreation area - Iron Gate Hatchery day use site	assumed earthwork	450	CY	9.00	4,052	2,400	-41%	4,800	18%	4,435	2,627	5,254
46	Project		Recreation area - Iron Gate Hatchery day use site	signage	2.00	EA	5,000.00	10,000	5,000	-50%	15,000	50%	10,946	5,473	16,419
46	Project		Recreation area - Iron Gate Hatchery day use site	Operations and maintenance	5.00	YR	16,884.31	84,422	-	0%	300,000	255%	92,406	-	328,374
46	Project		Recreation area - River fishing access sites	parking	18.00	EA	562.81	10,131	-	0%	12,000	18%	11,089	-	13,135
46	Project		Recreation area - River fishing access sites	portable toilet	6.00	EA	787.93	4,728	4,728	0%	5,600	18%	5,175	5,175	6,130
46	Project		Recreation area - River fishing access sites	trash bins	6.00	EA	1,000.00	6,000	6,000	0%	8,000	33%	6,567	6,567	8,757
46	Project		Recreation area - River fishing access sites	signage	6.00	EA	5,000.00	30,000	30,000	0%	40,000	33%	32,837	32,837	43,783
46	Project		Recreation area - River fishing access sites	trail refurbishment	7,920	LF	6.75	53,490	53,490	0%	63,360	18%	58,548	58,548	69,353
46	Project		Recreation area - River fishing access sites	Operations and maintenance	5.00	YR	11,256.21	56,281	-	0%	200,000	255%	61,604	-	218,916
46	Project		Recreation area - New day use sites	picnic table	4.00	EA	2,363.80	9,455	-	0%	12,600	33%	10,349	-	13,792
46	Project		Recreation area - New day use sites	fire grate	4.00	EA	675.37	2,701	-	0%	3,600	33%	2,957	-	3,940
46	Project		Recreation area - New day use sites	trash bins	4.00	EA	1,000.00	4,000	-	0%	6,000	50%	4,378	-	6,567
46	Project		Recreation area - New day use sites	shade structure	2.00	EA	14,633.07	29,266	-	0%	39,000	33%	32,034	-	42,689
46	Project		Recreation area - New day use sites	assumed earthwork	200	CY	9.00	1,801	-	0%	2,400	33%	1,971	-	2,627
46	Project		Recreation area - New day use sites	signage	2.00	EA	5,000.00	10,000	-	0%	15,000	50%	10,946	-	16,419
46	Project		Recreation area - New day use sites	Operations and maintenance	5.00	YR	22,512.42	112,562	-	0%	400,000	255%	123,208	-	437,832
46	Project		Recreation area - New boat ramps	New boat ramps	4.00	EA	11,256.21	45,025	20,000	-56%	80,000	78%	49,283	21,892	87,566
46	Project		Non-motorized rec trails - JC Boyle to Iron Gate	Trail	20.00	MI	35,659.67	713,193	-	0%	1,267,200	78%	780,647	-	1,387,051
46	Project		Non-motorized rec trails - JC Boyle to Iron Gate	Signage	2.00	EA	5,000.00	10,000	-	0%	15,000	50%	10,946	-	16,419

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
46	Project		Non-motorized rec trails	Walking trails for recreation access to river	7.00	MI	35,659.67	249,618	158,400	-37%	316,800	27%	273,226	173,381	346,763
46	Project		Non-motorized rec trails - Walking/wildlife viewing/interpretive	Trail Grading	5.00	MI	35,659.67	178,298	-	0%	316,800	78%	195,162	-	346,763
46	Project		Non-motorized rec trails - Walking/wildlife viewing/interpretive	trash bins	1.00	EA	1,000.00	1,000	-	0%	1,000	0%	1,095	-	1,095
46	Project		Non-motorized rec trails - Walking/wildlife viewing/interpretive	Signage	2.00	EA	5,000.00	10,000	-	0%	15,000	50%	10,946	-	16,419
46	Project		General Conditions	Contractor overhead	15%	%	3,337,792.01	500,669	450,602	-10%	650,869	30%	548,022	493,219	712,428
46	Project		General Conditions	Contractor profit	8%	%	3,337,792.01	267,023	240,321	-10%	347,130	30%	292,278	263,050	379,962
46	Project		General Conditions	Insurance	1%	%	4,105,484.17	41,055	36,949	-10%	53,371	30%	44,938	40,444	58,419
46	Project		General Conditions	Bond	1%	%	4,105,484.17	41,055	36,949	-10%	53,371	30%	44,938	40,444	58,419
47			FLOOD PROOFING												
47	Project	10.010	Raise homes	Cost to raise homes and add 2 stairs	45.00	EA	30,187.71	1,358,447	1,086,758	-20%	1,765,981	30%	1,498,682	1,198,946	1,948,287
48			PUBLIC HEALTH AND SAFETY												
48	Project		Public Health and Safety	Cattle exclusion fencing	182,160	LF	11.90	2,167,704	2,489,116	15%	3,042,253	40%	2,363,345	2,713,766	3,316,825
50			MITIGATION MEASURES												
51			GROUNDWATER IMPROVEMENTS												
51	Project		Groundwater improvements	Outreach to well owners	1.00	SUM	55,000.00	55,000	55,000	0%	55,000	0%	59,488	59,488	59,488
51	Project		Groundwater improvements	Drill and install new monitoring wells	5.00	EA	16,000.00	80,000	48,000	-40%	80,000	0%	88,259	52,955	88,259
51	Project		Groundwater improvements	Sentinel water level monitoring of new wells and landowner for	36.00	MO	2,800.00	100,800	86,400	-14%	115,200	14%	115,743	99,208	132,278
51	Project		Groundwater improvements	WQ laboratory analytical testing	1.00	SUM	37,500.00	37,500	15,000	-60%	60,000	60%	41,371	16,548	66,194
51	Project		Groundwater improvements	Well replacements	20.00	EA	63,375.00	1,267,500	810,000	-36%	1,725,000	36%	1,483,366	947,950	2,018,782
51	Project		Groundwater improvements	Well abandonment	20.00	EA	2,625.00	52,500	30,000	-43%	75,000	43%	58,488	33,421	83,554
51	Project		Groundwater improvements	Temporary water supply	16.00	EA	3,406.25	54,500	36,000	-34%	73,000	34%	60,716	40,106	81,326
51	Project		Groundwater improvements	Permitting and Reporting	1.00	SUM	66,500.00	66,500	37,000	-44%	96,000	44%	74,084	41,220	106,949
52			WATER SUPPLY/RIGHTS												
52	Project		Water supply rights	Hay production	3,379	T	175.00	591,357	506,877	-14%	675,836	14%	652,403	559,203	745,604
52	Project		Water supply rights	Water supply for domestic use for water rights	1.00	LS	28.01	8,666	8,436	-3%	9,053	4%	9,561	9,306	9,988
52	Project		Water supply rights	Sediment removal at intakes	254	CY	500.00	126,999	63,500	-50%	190,499	50%	140,110	70,055	210,164
52	Project		Water supply rights	Groundwater wells - domestic	9.00	EA	10,000.00	90,000	40,000	-56%	100,000	11%	99,291	44,129	110,323
52	Project		Water supply rights	Groundwater wells - municipal	1.00	EA	100,000.00	100,000	93,000	-7%	100,000	0%	110,323	102,601	110,323
52	Project		Water supply rights	Sediment basin	39.00	EA	1,851.85	72,222	72,222	0%	72,222	0%	79,678	79,678	79,678
53			CULTURAL RESOURCES												
53			2017/18 Support												
53	Project		Cultural Resources Tasks	Generally	12.00	MO	168,958.33	2,027,500	1,824,750	-10%	2,230,250	10%	2,027,500	1,824,750	2,230,250
53			2018/19 Support												
53	Project		Cultural Resources Tasks	Generally	12.00	MO	168,958.33	2,027,500	1,824,750	-10%	2,230,250	10%	2,068,050	1,861,245	2,274,855
53			2019 H2 Support												
53	Project		Task management	Principal Scientist/Planner	208	HR	900.00	187,200	168,480	-10%	205,920	10%	194,688	175,219	214,157
53	Project		Task 1.2A Agency consultation	Principal Scientist/Planner	83.20	HR	180.00	14,976	13,478	-10%	16,474	10%	15,575	14,018	17,133
53	Project		Task 1.2A Agency consultation	Senior Scientist/Planner	41.60	HR	160.00	6,656	5,990	-10%	7,322	10%	6,922	6,230	7,614
53	Project		Task 1.2B Tribal consultation and work plans	Principal Scientist/Planner	256	HR	180.00	46,080	41,472	-10%	50,688	10%	47,923	43,131	52,716
53	Project		Task 1.2B Tribal consultation and work plans	Senior Scientist/Planner	128	HR	160.00	20,480	18,432	-10%	22,528	10%	21,299	19,169	23,429
53	Project		Task 1.2B Tribal consultation and work plans	Technical Editor	16.00	HR	105.00	1,680	1,512	-10%	1,848	10%	1,747	1,572	1,922
53	Project		Task 1.2B Tribal consultation and work plans	GIS/CADD/Graphics	24.00	HR	90.00	2,160	1,944	-10%	2,376	10%	2,246	2,022	2,471
53			2020-2024 Support												
53	Project		Task management	Principal Scientist/Planner	1,040	HR	180.00	187,200	168,480	-10%	205,920	10%	210,795	189,715	231,874
53	Project		Task 1.2A Agency consultation	Principal Scientist/Planner	416	HR	180.00	74,880	67,392	-10%	82,368	10%	84,318	75,886	92,750
53	Project		Task 1.2A Agency consultation	Senior Scientist/Planner	208	HR	160.00	33,280	29,952	-10%	36,608	10%	37,475	33,727	41,222
53	Project		Task 1.2B Tribal consultation and work plans	Principal Scientist/Planner	1,280	HR	180.00	230,400	207,360	-10%	253,440	10%	259,440	233,496	285,384
53	Project		Task 1.2B Tribal consultation and work plans	Senior Scientist/Planner	640	HR	160.00	102,400	92,160	-10%	112,640	10%	115,307	103,776	126,837
53	Project		Task 1.2B Tribal consultation and work plans	Technical Editor	80.00	HR	105.00	8,400	7,560	-10%	9,240	10%	9,459	8,513	10,405
53	Project		Task 1.2B Tribal consultation and work plans	GIS/CADD/Graphics	120	HR	90.00	10,800	9,720	-10%	11,880	10%	12,161	10,945	13,377
53	Project		Task 2.6L Curation	Principal Scientist/Planner	80.00	HR	180.00	14,400	12,960	-10%	15,840	10%	16,110	14,499	17,721
53	Project		Task 2.6L Curation	Scientist/Planner	1,640	HR	120.00	196,800	177,120	-10%	216,480	10%	220,165	198,148	242,181
53	Project		Task 2.6L Curation	Curation	410	EA	500.00	205,000	184,500	-10%	225,500	10%	229,338	206,405	252,272
53	Project		Task 2.6L Curation	Other direct costs	1.00	SUM	5,000.00	5,000	4,500	-10%	5,500	10%	5,594	5,034	6,153

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Principal Scientist/Planner	200	HR	180.00	36,000	32,400	-10%	39,600	10%	38,938	35,044	42,831
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Senior Scientist/Planner	290	HR	160.00	46,400	41,760	-10%	51,040	10%	50,186	45,168	55,205
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Scientist/Planner	1,180	HR	120.00	141,600	127,440	-10%	155,760	10%	153,155	137,839	168,470
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	4,543	4,088	4,997
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Junior Scientist/Planner	10.00	HR	95.00	950	855	-10%	1,045	10%	1,028	925	1,130
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	GIS/CADD/Graphics	100	HR	90.00	9,000	8,100	-10%	9,900	10%	9,734	8,761	10,708
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Tribal monitor subcontract	149	DA	617.00	91,933	82,740	-10%	101,126	10%	99,435	89,491	109,378
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Travel and perdiem	1.00	SUM	35,858.00	35,858	32,272	-10%	39,444	10%	38,784	34,906	42,662
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Principal Scientist/Planner	200	HR	180.00	36,000	32,400	-10%	39,600	10%	40,495	36,446	44,545
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Senior Scientist/Planner	98.00	HR	160.00	15,680	14,112	-10%	17,248	10%	17,638	15,874	19,402
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Scientist/Planner	972	HR	120.00	116,640	104,976	-10%	128,304	10%	131,204	118,084	144,325
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	4,724	4,252	5,197
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Junior Scientist/Planner	20.00	HR	95.00	1,900	1,710	-10%	2,090	10%	2,137	1,924	2,351
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	GIS/CADD/Graphics	120	HR	90.00	10,800	9,720	-10%	11,880	10%	12,149	10,934	13,363
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Field Technician	768	HR	75.00	57,600	51,840	-10%	63,360	10%	64,792	58,313	71,271
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Tribal monitor subcontract	77.00	DA	647.85	49,884	44,896	-10%	54,873	10%	56,113	50,502	61,725
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Travel and perdiem	1.00	SUM	30,900.00	30,900	27,810	-10%	33,990	10%	34,758	31,282	38,234
53	Project		Task 2.6N Discoveries - Burial recovery	Human remains	100	EA	15,000.00	1,500,000	1,350,000	-10%	1,650,000	10%	1,689,061	1,520,155	1,857,968
53	Project		Task 2.6N Discoveries - Burial recovery	Other direct costs	1.00	SUM	500.00	500	450	-10%	550	10%	563	507	619
53	Project		Task 2.6N Discoveries - Arch resources	Archaeological unit cost	60.00	EA	30,000.00	1,800,000	1,620,000	-10%	1,980,000	10%	2,026,874	1,824,186	2,229,561
53	Project		Task 2.6N Discoveries - Arch resources	Other direct costs	1.00	SUM	500.00	500	450	-10%	550	10%	563	507	619
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Principal Scientist/Planner	240	HR	180.00	43,200	38,880	-10%	47,520	10%	47,660	42,894	52,426
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Senior Scientist/Planner	1,808	HR	160.00	289,280	260,352	-10%	318,208	10%	319,143	287,229	351,057
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Scientist/Planner	1,928	HR	120.00	231,360	208,224	-10%	254,496	10%	255,244	229,719	280,768
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	4,634	4,170	5,097
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Junior Scientist/Planner	40.00	HR	95.00	3,800	3,420	-10%	4,180	10%	4,192	3,773	4,612
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	GIS/CADD/Graphics	120	HR	90.00	10,800	9,720	-10%	11,880	10%	11,915	10,723	13,106
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Field Technician	7,680	HR	75.00	576,000	518,400	-10%	633,600	10%	635,462	571,915	699,008
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Tribal monitor subcontract	452	EA	617.00	278,884	250,996	-10%	306,772	10%	307,674	276,906	338,441
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Other direct costs	1.00	SUM	127,984.00	127,984	115,186	-10%	140,782	10%	141,196	127,076	155,316
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Principal Scientist/Planner	240	HR	180.00	43,200	38,880	-10%	47,520	10%	52,586	47,328	57,845
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Senior Scientist/Planner	1,176	HR	160.00	188,160	169,344	-10%	206,976	10%	229,043	206,139	251,947
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Scientist/Planner	1,536	HR	120.00	184,320	165,888	-10%	202,752	10%	224,368	201,932	246,805
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	5,113	4,601	5,624
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Junior Scientist/Planner	40.00	HR	95.00	3,800	3,420	-10%	4,180	10%	4,626	4,163	5,088
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	GIS/CADD/Graphics	230	HR	90.00	20,700	18,630	-10%	22,770	10%	25,198	22,678	27,177
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Field Technician	7,680	HR	75.00	576,000	518,400	-10%	633,600	10%	701,151	631,036	771,267
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Tribal monitor subcontract	294	EA	647.85	190,468	171,421	-10%	209,515	10%	231,852	208,667	255,037
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Other direct costs	1.00	SUM	57,448.00	57,448	51,703	-10%	63,193	10%	69,930	62,937	76,923
53	Project		TCP Project allowance	TCP Project allowance	1.00	SUM	1,000,000.00	1,000,000	1,000,000	0%	1,000,000	0%	1,000,000	1,000,000	1,000,000
53	Project		Cultural resources allowance	Allowance for additional discoveries (reconciled with risk log)	1.00	SUM	1,000,000.00	1,000,000	1,000,000	0%	1,000,000	0%	1,000,000	1,000,000	1,000,000
60			MONITORING AND OTHER COSTS												
61			AQUATIC RESOURCES												
61	Project		Mainstem spawning (AR-1)	Tributary confluence monitoring (passage)	960	HR	46.13	44,280	39,852	-10%	66,420	50%	48,866	43,980	73,299
61	Project		Mainstem spawning (AR-1)	Confluence Area Maintenance (downstream tribs)	900	HR	46.13	41,513	37,361	-10%	62,269	50%	45,812	41,231	68,718
61	Project		Mainstem spawning (AR-1)	Confluence Area Maintenance (upstream tribs)	400	HR	102.50	41,000	36,900	-10%	61,500	50%	45,246	40,722	67,870
61	Project		Mainstem spawning (AR-1)	Mainstem Spawning Gravel Survey (45.3 miles)	100	HR	148.63	14,863	13,376	-10%	22,294	50%	16,402	14,762	24,603
61	Project		Mainstem spawning (AR-1)	Tributary Spawning Gravel Survey (13.9 miles)	200	HR	102.50	20,500	18,450	-10%	30,750	50%	22,623	20,361	33,935
61	Project		Mainstem spawning (AR-1)	Reporting and Coordination	1,280	HR	102.50	131,200	118,080	-10%	196,800	50%	144,789	130,310	217,183
61	Project		Mainstem spawning (AR-1)	Spawning Gravel Augmentation	16,132	CY	256.25	4,133,825	3,720,443	-10%	6,200,738	50%	4,561,971	4,105,774	6,842,957
61	Project		Mainstem spawning (AR-1)	Laborer (30 days)	240	HR	35.88	8,610	7,749	-10%	12,915	50%	9,502	8,552	14,253
61	Project		Mainstem spawning (AR-1)	200 Class Excavator (30 days)	240	HR	256.25	61,500	55,350	-10%	92,250	50%	67,870	61,083	101,804
61	Project		Juvenile outmigration (AR-2)	Tributary Confluence Monitoring (Passage)	960	HR	46.13	44,280	39,852	-10%	66,420	50%	48,866	43,980	73,299
61	Project		Juvenile outmigration (AR-2)	Tributary Confluence Monitoring (WQ)	960	HR	46.13	44,280	39,852	-10%	66,420	50%	48,866	43,980	73,299
61	Project		Juvenile outmigration (AR-2)	2018 Mainstem Winter Seining Recon	400	HR	107.63	43,050	38,745	-10%	64,575	50%	47,509	42,758	71,263
61	Project		Juvenile outmigration (AR-2)	2019 Mainstem Winter Seining	400	HR	153.75	61,500	55,350	-10%	92,250	50%	67,870	61,083	101,804
61	Project		Juvenile outmigration (AR-2)	Fish Transport (1 Truck)	400	HR	46.13	18,450	16,605	-10%	27,675	50%	20,361	18,325	30,541
61	Project		Juvenile outmigration (AR-2)	Fish Rescue and Relocation Crew	1,120	HR	153.75	172,200	154,980	-10%	258,300	50%	190,035	171,032	285,053
61	Project		Juvenile outmigration (AR-2)	Fish Transport (2 Trucks)	3,360	HR	46.13	154,980	139,482	-10%	232,470	50%	171,032	153,928	256,547
61	Project		Juvenile outmigration (AR-2)	Reporting and Coordination	1,280	HR	102.50	131,200	118,080	-10%	196,800	50%	144,789	130,310	217,183
61	Project		Juvenile outmigration (AR-2)	Miscellaneous Equipment	5.00	EA	6,150.00	30,750	27,675	-10%	46,125	50%	33,935	30,541	50,902
61	Project		Juvenile outmigration (AR-2)	H2O Monitoring Equipment	5.00	EA	30,750.00	153,750	138,375	-10%	230,625	50%	169,674	152,707	254,511

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
61	Project		Juvenile outmigration (AR-2)	H2O Monitoring Equipment	26.00	EA	307.50	7,995	7,196	-10%	11,993	50%	8,823	7,941	13,235
61	Project		Juvenile outmigration (AR-2)	Technician Equipment	14.00	EA	1,230.00	17,220	15,498	-10%	25,830	50%	19,004	17,103	28,505
61	Project		Juvenile outmigration (AR-2)	Transport Vehicle Rental (\$300/day for 21 days)	672	HR	46.13	30,996	27,896	-10%	46,494	50%	34,206	30,786	51,309
61	Project		Juvenile outmigration (AR-2)	Transport Vehicle Operational Cost (\$0.75/mi)	53,760	MI	0.92	49,594	44,634	-10%	74,390	50%	54,730	49,257	82,095
61	Project		Sucker rescue and relocation plan (AR-6)	Sucker Recapture Study (Spring and Fall)	280	HR	307.50	86,100	77,490	-10%	129,150	50%	95,018	85,516	142,526
61	Project		Sucker rescue and relocation plan (AR-6)	Sucker Salvage	280	HR	307.50	86,100	77,490	-10%	129,150	50%	95,018	85,516	142,526
61	Project		Sucker rescue and relocation plan (AR-6)	Sucker Transport (1 Truck)	140	HR	46.13	6,458	5,812	-10%	9,686	50%	7,126	6,414	10,689
61	Project		Sucker rescue and relocation plan (AR-6)	Reporting and Coordination	960	HR	102.50	98,400	88,560	-10%	147,600	50%	108,591	97,732	162,887
61	Project		Sucker rescue and relocation plan (AR-6)	Boat Electrofisher	300	HR	36.90	11,070	9,963	-10%	16,605	50%	12,217	10,995	18,325
61	Project		Sucker rescue and relocation plan (AR-6)	Boats (2 boats)	224	HR	92.25	20,664	18,598	-10%	30,996	50%	22,804	20,524	34,206
61	Project		Sucker rescue and relocation plan (AR-6)	Technician Equipment	12.00	EA	1,230.00	14,760	13,284	-10%	22,140	50%	16,289	14,660	24,433
61	Project		Sucker rescue and relocation plan (AR-6)	Tagging Equipment	1.00	EA	12,300.00	12,300	11,070	-10%	18,450	50%	13,574	12,217	20,361
61	Project		Sucker rescue and relocation plan (AR-6)	Transport Vehicle Rental (\$300/day)	168	HR	46.13	7,749	6,974	-10%	11,624	50%	8,552	7,696	12,827
61	Project		Sucker rescue and relocation plan (AR-6)	Transport Vehicle Operational Cost (\$0.75/mi)	7,200	MI	0.92	6,642	5,978	-10%	9,963	50%	7,330	6,597	10,995
61	Project		Freshwater mussel relocation (AR-7)	Freshwater Mussel Reconnaissance	280	HR	107.63	30,135	27,122	-10%	45,203	50%	33,256	29,931	49,884
61	Project		Freshwater mussel relocation (AR-7)	Mussel Salvage and Relocation	700	HR	107.63	75,338	67,804	-10%	113,006	50%	83,140	74,826	124,710
61	Project		Freshwater mussel relocation (AR-7)	Mussel Transport (1 Truck)	140	HR	46.13	6,458	5,812	-10%	9,686	50%	7,126	6,414	10,689
61	Project		Freshwater mussel relocation (AR-7)	Reporting and Coordination	960	HR	102.50	98,400	88,560	-10%	147,600	50%	108,591	97,732	162,887
61	Project		Freshwater mussel relocation (AR-7)	Miscellaneous Equipment	1.00	EA	6,150.00	6,150	5,535	-10%	9,225	50%	6,787	6,108	10,180
61	Project		Freshwater mussel relocation (AR-7)	Diving Gear	5.00	EA	1,230.00	6,150	5,535	-10%	9,225	50%	6,787	6,108	10,180
61	Project		Freshwater mussel relocation (AR-7)	Technician Equipment	10.00	EA	1,230.00	12,300	11,070	-10%	18,450	50%	13,574	12,217	20,361
61	Project		Freshwater mussel relocation (AR-7)	Transport Vehicle Rental (\$300/day)	8.00	HR	922.50	7,380	6,642	-10%	11,070	50%	8,144	7,330	12,217
61	Project		Freshwater mussel relocation (AR-7)	Transport Vehicle Operational Cost (\$0.75/mi)	14,000	MI	0.92	12,915	11,624	-10%	19,373	50%	14,253	12,827	21,379
62			TERRESTRIAL RESOURCES MEASURES												
62	Project		Habitat restoration plan (TER-1)	Annual maintenance and monitoring	3.00	EA	68,019.00	204,057	122,434	-40%	269,496	32%	248,394	149,036	328,051
62	Project		Habitat restoration plan (TER-1)	Annual reporting	3.00	EA	9,840.00	29,520	17,712	-40%	37,800	28%	35,934	21,560	46,013
62	Project		Habitat restoration plan (TER-1)	Post construction regulatory compliance and reporting	1.00	EA	14,760.00	14,760	8,856	-40%	18,900	28%	18,676	11,206	23,915
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Remove all nest platforms near construction, year 1	1.00	EA	53,640.30	53,640	-	0%	67,848	26%	58,017	-	73,384
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Nest exclusion monitoring, year 1	1.00	EA	110,896.80	110,897	-	0%	188,048	70%	119,946	-	203,393
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Remove all nest platforms near construction, year 2	1.00	EA	33,333.00	33,333	-	0%	46,632	40%	37,495	-	52,455
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Nest exclusion monitoring, year 2	1.00	EA	110,896.80	110,897	-	0%	188,048	70%	124,744	-	211,528
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Regulatory compliance and reporting, permitting	1.00	EA	9,840.00	9,840	-	0%	12,600	28%	11,069	-	14,173
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Remove nests near construction, year 1	1.00	EA	28,019.40	28,019	-	0%	55,048	96%	30,306	-	59,540
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Nest exclusion monitoring, year 1	1.00	EA	68,839.00	68,839	-	0%	146,600	113%	74,456	-	158,563
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Remove nests near construction, year 2	1.00	EA	22,463.90	22,464	-	0%	27,320	22%	25,269	-	30,731
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Nest exclusion monitoring, year 2	1.00	EA	68,839.00	68,839	-	0%	146,600	113%	77,435	-	164,905
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Regulatory compliance and reporting, permitting	1.00	EA	7,380.00	7,380	-	0%	12,600	71%	8,301	-	14,173
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Nesting bird surveys prior to vegetation clearing	1.00	EA	59,741.10	59,741	-	0%	212,568	256%	65,908	-	234,512
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Daily biological monitoring throughout construction	3,114	HR	109.47	340,882	-	0%	540,568	59%	376,072	-	596,372
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Regulatory compliance and reporting during construction	1.00	EA	63,960.00	63,960	23,665	-63%	63,960	0%	70,563	26,108	70,563
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Special status wildlife and habitat monitoring	1.00	EA	61,008.00	61,008	-	0%	107,520	76%	71,371	-	125,783
62	Project		Wetlands at Reservoirs (TER-5)	Wetland Project	10.00	AC	35,875.00	358,750	-	0%	700,000	95%	454,632	-	887,086
62	Project		Wetlands at Reservoirs (TER-5)	Monitoring	960	HR	64.79	62,197	-	0%	73,920	19%	78,820	-	93,676
62	Project		Special Status Bats (TER-6)	Pre-Demolition Exclusion	1.00	SUM	74,536.36	74,536	40,828	-45%	72,718	-2%	79,068	43,311	77,140
62	Project		Special Status Bats (TER-6)	Bat Exclusion Plan (Draft/Final)	1.00	SUM	8,171.51	8,172	7,972	-2%	7,972	-2%	8,668	8,457	8,457
62	Project		Special Status Bats (TER-6)	Field Prep/Health and Safety	1.00	SUM	2,882.20	2,882	2,812	-2%	2,812	-2%	3,057	2,983	2,983
62	Project		Special Status Bats (TER-6)	Biological Monitoring During Demolition	1.00	SUM	96,129.83	96,130	96,130	0%	96,130	0%	106,469	106,469	106,469
62	Project		Special Status Bats (TER-6)	Agency Coordination/Meetings	1.00	SUM	11,233.18	11,233	11,233	0%	11,233	0%	12,109	12,109	12,109
62	Project		Special Status Bats (TER-6)	Design Replacement Roosts	1.00	SUM	11,697.71	11,698	11,698	0%	11,698	0%	12,411	12,411	12,411
62	Project		Special Status Bats (TER-6)	Construct/Install Replacement Roosts	1.00	SUM	14,481.82	14,482	-	0%	25,643	77%	15,611	-	27,642
62	Project		Special Status Bats (TER-6)	Monitor Replacement Roosts (3 years)	1.00	SUM	145,169.93	145,170	-	0%	239,027	65%	170,090	-	280,058
63			WATER QUALITY MONITORING												
63	Project		Field installation & equipment	Keno	1.00	SUM	60,900.00	60,900	38,000	-38%	79,170	30%	63,336	39,520	82,337
63	Project		Field installation & equipment	JC Boyle	1.00	SUM	158,550.00	158,550	120,000	-24%	206,115	30%	171,488	129,792	222,934
63	Project		Field installation & equipment	Copco	1.00	SUM	90,300.00	90,300	-	0%	117,390	30%	97,668	-	126,969
63	Project		Field installation & equipment	Iron Gate	1.00	SUM	77,700.00	77,700	74,000	-5%	101,010	30%	80,808	76,960	105,050
63	Project		Field installation & equipment	Walker Bridge	1.00	SUM	80,850.00	80,850	77,000	-5%	105,105	30%	87,447	83,283	113,682
63	Project		Field installation & equipment	Seiad Valley	1.00	SUM	65,100.00	65,100	42,000	-35%	84,630	30%	70,412	45,427	91,536
63	Project		Field installation & equipment	Orleans	1.00	SUM	67,200.00	67,200	44,000	-35%	87,360	30%	69,888	45,760	90,854
63	Project		Field installation & equipment	Klamath	1.00	SUM	61,950.00	61,950	59,000	-5%	80,535	30%	64,428	61,360	83,756
63	Project		Field installation & equipment	Shasta	1.00	SUM	68,250.00	68,250	45,000	-34%	88,725	30%	76,772	50,619	99,804

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
63	Project		Field installation & equipment	Scott	1.00	SUM	68,250.00	68,250	45,000	-34%	88,725	30%	76,772	50,619	99,804
63	Project		Field installation & equipment	Salmon	0.00	SUM	-	-	-	0%	-	0%	-	-	-
63	Project		Field installation & equipment	Trinity	0.00	SUM	-	-	-	0%	-	0%	-	-	-
63	Project		Field installation & equipment	Equipment replacement	1.00	SUM	315,000.00	315,000	200,000	-37%	500,000	59%	388,654	246,765	616,912
63	Project		Operation & Maintenance	Keno	17.00	QTR	16,800.00	285,600	130,000	-54%	464,000	62%	326,120	148,444	529,831
63	Project		Operation & Maintenance	JC Boyle	21.00	QTR	16,800.00	352,800	170,000	-52%	400,000	13%	427,595	206,041	484,802
63	Project		Operation & Maintenance	Copco	13.00	QTR	16,800.00	218,400	-	0%	400,000	83%	254,135	-	465,449
63	Project		Operation & Maintenance	Iron Gate	25.00	QTR	4,200.00	105,000	92,000	-12%	116,000	10%	124,895	109,432	137,979
63	Project		Operation & Maintenance	Walker Bridge	13.00	QTR	11,550.00	150,150	132,000	-12%	275,000	83%	174,718	153,598	319,996
63	Project		Operation & Maintenance	Seiad Valley	21.00	QTR	4,200.00	88,200	36,000	-59%	100,000	13%	106,899	43,632	121,201
63	Project		Operation & Maintenance	Orleans	25.00	QTR	4,200.00	105,000	42,000	-60%	116,000	10%	124,895	49,958	137,979
63	Project		Operation & Maintenance	Klamath	25.00	QTR	4,200.00	105,000	36,000	-66%	116,000	10%	124,895	42,821	137,979
63	Project		Operation & Maintenance	Shasta	9.00	QTR	5,250.00	47,250	27,000	-43%	105,000	122%	56,022	32,013	124,494
63	Project		Operation & Maintenance	Scott	9.00	QTR	5,250.00	47,250	27,000	-43%	105,000	122%	56,022	32,013	124,494
63	Project		Operation & Maintenance	Salmon	0.00	SUM	-	-	-	0%	45,000	0%	-	-	50,619
63	Project		Operation & Maintenance	Trinity	0.00	SUM	-	-	-	0%	45,000	0%	-	-	50,619
63	Project		Sediment, Sampling & Recording	Keno	17.00	QTR	12,600.00	214,200	1,040,000	386%	348,000	62%	244,590	1,187,552	397,373
63	Project		Sediment, Sampling & Recording	JC Boyle	21.00	QTR	15,750.00	330,750	170,000	-49%	375,000	13%	400,871	206,041	454,502
63	Project		Sediment, Sampling & Recording	Copco	13.00	QTR	15,750.00	204,750	-	0%	375,000	83%	238,252	-	436,359
63	Project		Sediment, Sampling & Recording	Iron Gate	25.00	QTR	25,200.00	630,000	552,000	-12%	696,000	10%	749,370	656,591	827,875
63	Project		Sediment, Sampling & Recording	Walker Bridge	13.00	QTR	25,200.00	327,600	288,000	-12%	600,000	83%	381,203	335,123	698,174
63	Project		Sediment, Sampling & Recording	Seiad Valley	21.00	QTR	25,200.00	529,200	216,000	-59%	600,000	13%	641,393	261,793	727,203
63	Project		Sediment, Sampling & Recording	Orleans	25.00	QTR	25,200.00	630,000	252,000	-60%	696,000	10%	749,370	299,748	827,875
63	Project		Sediment, Sampling & Recording	Klamath	25.00	QTR	16,800.00	420,000	288,000	-31%	464,000	10%	499,580	342,569	551,917
63	Project		Sediment, Sampling & Recording	Shasta	9.00	QTR	23,100.00	207,900	99,000	-52%	462,000	122%	246,498	117,380	547,773
63	Project		Sediment, Sampling & Recording	Scott	9.00	QTR	23,100.00	207,900	99,000	-52%	462,000	122%	246,498	117,380	547,773
63	Project		Sediment, Sampling & Recording	Salmon	0.00	SUM	-	-	-	0%	198,000	0%	-	-	222,723
63	Project		Sediment, Sampling & Recording	Trinity	0.00	SUM	-	-	-	0%	198,000	0%	-	-	222,723
63	Project		Sediment, Sampling & Recording	Data Management	1.00	SUM	462,000.00	462,000	293,000	-37%	600,600	30%	567,821	360,112	738,168
63	Project		Sediment, Sampling & Recording	ODCs	1.00	SUM	163,800.00	163,800	115,000	-30%	372,000	127%	190,635	133,840	432,943
63	Project		Sediment, Sampling & Recording	Estuary and river sampling for toxins	4.00	SUM	52,500.00	210,000	200,000	-5%	273,000	30%	234,041	222,896	304,253
63	Project		Sediment, Sampling & Recording	TSS and NTU laboratory relationship study by USGS	1.00	SUM	157,500.00	157,500	150,000	-5%	204,750	30%	175,531	167,172	228,190
63	Project		Aerial photos & LiDAR	Annual aircraft surveys + 1 after 5 year gap	5.00	EA	63,000.00	315,000	283,500	-10%	472,500	50%	379,026	341,123	568,539
63	Project		Volitional fish passage monitoring	Annual field survey; 2 wk field survey + study.	5.00	EA	26,250.00	131,250	118,125	-10%	196,875	50%	157,928	142,135	236,891
63	Project		Drone LiDAR in site specific locations, analysis & reporting	Drone LiDAR in site specific locations, analysis & reporting	4.00	EA	21,000.00	84,000	75,600	-10%	126,000	50%	96,452	86,807	144,679
63	Project		Surface comparison and analysis of sediment erosion	Surface comparison and analysis of sediment erosion	4.00	EA	21,000.00	84,000	75,600	-10%	126,000	50%	96,452	86,807	144,679

A.2 Cost Estimate - Partial Removal

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Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction					
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High	
10			OVERSIGHT													
10	Project		Compensation & Benefits	7/16-6/17 (year 1)	1	SUM	29,017.00	29,017	29,017	0%	29,017	0%	29,017	29,017	29,017	29,017
10	Project		Compensation & Benefits	7/17-12/19 (2.5 years)	1	SUM	1,557,347.00	1,557,347	1,557,347	0%	1,557,347	0%	1,557,347	1,557,347	1,557,347	1,557,347
10	Project		Compensation & Benefits	1/20-6/22 (2.5 years)	1	SUM	3,276,136.00	3,276,136	3,276,136	0%	3,276,136	0%	3,276,136	3,276,136	3,276,136	3,276,136
10	Project		Compensation & Benefits	7/22-6/27 (5 years)	1	SUM	193,967.00	193,967	193,967	0%	193,967	0%	193,967	193,967	193,967	193,967
10	Project		Travel and Meetings	7/16-6/17 (year 1)	1	SUM	45,223.00	45,223	45,223	0%	45,223	0%	45,223	45,223	45,223	45,223
10	Project		Travel and Meetings	7/17-12/19 (2.5 years)	1	SUM	272,538.00	272,538	272,538	0%	272,538	0%	272,538	272,538	272,538	272,538
10	Project		Travel and Meetings	1/20-6/22 (2.5 years)	1	SUM	450,000.00	450,000	450,000	0%	450,000	0%	450,000	450,000	450,000	450,000
10	Project		Travel and Meetings	7/22-6/27 (5 years)	1	SUM	45,000.00	45,000	45,000	0%	45,000	0%	45,000	45,000	45,000	45,000
10	Project		Dam Removal Contractors	Land Survey Contractor	1	SUM	1,020,000.00	1,020,000	1,020,000	0%	1,020,000	0%	1,020,000	1,020,000	1,020,000	1,020,000
10	Project		Professional Services; CEA Services & Expenses	7/16-6/17 (year 1)	1	SUM	1,054,732.00	1,054,732	1,054,732	0%	1,054,732	0%	1,054,732	1,054,732	1,054,732	1,054,732
10	Project		Professional Services; CEA Services & Expenses	7/17-12/19 (2.5 years)	1	SUM	2,386,949.16	2,386,949	2,386,949	0%	2,386,949	0%	2,386,949	2,386,949	2,386,949	2,386,949
10	Project		Professional Services; CEA Services & Expenses	1/20-6/22 (2.5 years)	1	SUM	2,375,442.96	2,375,443	2,375,443	0%	2,375,443	0%	2,375,443	2,375,443	2,375,443	2,375,443
10	Project		Professional Services; CEA Services & Expenses	7/22-6/27 (5 years)	1	SUM	563,853.35	563,853	563,853	0%	563,853	0%	563,853	563,853	563,853	563,853
10	Project		Legal Services; Power + Water, General Counsel	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Legal Services; Power + Water, General Counsel	7/17-12/19 (2.5 years)	1	SUM	500,863.00	500,863	500,863	0%	500,863	0%	500,863	500,863	500,863	500,863
10	Project		Legal Services; Power + Water, General Counsel	1/20-6/22 (2.5 years)	1	SUM	694,448.00	694,448	694,448	0%	694,448	0%	694,448	694,448	694,448	694,448
10	Project		Legal Services; Power + Water, General Counsel	7/22-6/27 (5 years)	1	SUM	240,843.00	240,843	240,843	0%	240,843	0%	240,843	240,843	240,843	240,843
10	Project		Legal Services; Hawkins, General Counsel	7/16-6/17 (year 1)	1	SUM	1,109,894.00	1,109,894	1,109,894	0%	1,109,894	0%	1,109,894	1,109,894	1,109,894	1,109,894
10	Project		Legal Services; Hawkins, General Counsel	7/17-12/19 (2.5 years)	1	SUM	718,211.00	718,211	718,211	0%	718,211	0%	718,211	718,211	718,211	718,211
10	Project		Legal Services; Hawkins, General Counsel	1/20-6/22 (2.5 years)	1	SUM	373,112.00	373,112	373,112	0%	373,112	0%	373,112	373,112	373,112	373,112
10	Project		Legal Services; Hawkins, General Counsel	7/22-6/27 (5 years)	1	SUM	86,063.00	86,063	86,063	0%	86,063	0%	86,063	86,063	86,063	86,063
10	Project		Legal Services; Hawkins, Construction Counsel	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Legal Services; Hawkins, Construction Counsel	7/17-12/19 (2.5 years)	1	SUM	2,551,000.00	2,551,000	2,551,000	0%	2,551,000	0%	2,551,000	2,551,000	2,551,000	2,551,000
10	Project		Legal Services; Hawkins, Construction Counsel	1/20-6/22 (2.5 years)	1	SUM	600,000.00	600,000	600,000	0%	600,000	0%	600,000	600,000	600,000	600,000
10	Project		Legal Services; Hawkins, Construction Counsel	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Board of Consultants	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Board of Consultants	7/17-12/19 (2.5 years)	1	SUM	905,850.00	905,850	905,850	0%	905,850	0%	905,850	905,850	905,850	905,850
10	Project		Board of Consultants	1/20-6/22 (2.5 years)	1	SUM	494,100.00	494,100	494,100	0%	494,100	0%	494,100	494,100	494,100	494,100
10	Project		Board of Consultants	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Accounting & Audit Fees	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Accounting & Audit Fees	7/17-12/19 (2.5 years)	1	SUM	246,728.00	246,728	246,728	0%	246,728	0%	246,728	246,728	246,728	246,728
10	Project		Accounting & Audit Fees	1/20-6/22 (2.5 years)	1	SUM	612,823.00	612,823	612,823	0%	612,823	0%	612,823	612,823	612,823	612,823
10	Project		Accounting & Audit Fees	7/22-6/27 (5 years)	1	SUM	206,252.00	206,252	206,252	0%	206,252	0%	206,252	206,252	206,252	206,252
10	Project		Risk Management Services	7/16-6/17 (year 1)	1	SUM	44,519.00	44,519	44,519	0%	44,519	0%	44,519	44,519	44,519	44,519
10	Project		Risk Management Services	7/17-12/19 (2.5 years)	1	SUM	91,250.00	91,250	91,250	0%	91,250	0%	91,250	91,250	91,250	91,250
10	Project		Risk Management Services	1/20-6/22 (2.5 years)	1	SUM	135,000.00	135,000	135,000	0%	135,000	0%	135,000	135,000	135,000	135,000
10	Project		Risk Management Services	7/22-6/27 (5 years)	1	SUM	10,000.00	10,000	10,000	0%	10,000	0%	10,000	10,000	10,000	10,000
10	Project		Communications External Services	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Communications External Services	7/17-12/19 (2.5 years)	1	SUM	485,400.00	485,400	485,400	0%	485,400	0%	485,400	485,400	485,400	485,400
10	Project		Communications External Services	1/20-6/22 (2.5 years)	1	SUM	950,790.00	950,790	950,790	0%	950,790	0%	950,790	950,790	950,790	950,790
10	Project		Communications External Services	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Insurance & Risk Management	7/16-6/17 (year 1)	1	SUM	25,138.00	25,138	25,138	0%	25,138	0%	25,138	25,138	25,138	25,138
10	Project		Insurance & Risk Management	7/17-12/19 (2.5 years)	1	SUM	195,451.00	195,451	195,451	0%	195,451	0%	195,451	195,451	195,451	195,451
10	Project		Insurance & Risk Management	1/20-6/22 (2.5 years)	1	SUM	405,475.00	405,475	405,475	0%	405,475	0%	405,475	405,475	405,475	405,475
10	Project		Insurance & Risk Management	7/22-6/27 (5 years)	1	SUM	107,895.00	107,895	107,895	0%	107,895	0%	107,895	107,895	107,895	107,895
10	Project		Project Specific Insurance	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Project Specific Insurance	7/17-12/19 (2.5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Project Specific Insurance	1/20-6/22 (2.5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-	-
10	Project		Project Specific Insurance	7/22-6/27 (5 years)	1	SUM	100,000.00	100,000	100,000	0%	100,000	0%	100,000	100,000	100,000	100,000
10	Project		Admin, IT, Fees	7/16-6/17 (year 1)	1	SUM	38,991.00	38,991	38,991	0%	38,991	0%	38,991	38,991	38,991	38,991
10	Project		Admin, IT, Fees	7/17-12/19 (2.5 years)	1	SUM	52,426.00	52,426	52,426	0%	52,426	0%	52,426	52,426	52,426	52,426
10	Project		Admin, IT, Fees	1/20-6/22 (2.5 years)	1	SUM	65,973.00	65,973	65,973	0%	65,973	0%	65,973	65,973	65,973	65,973
10	Project		Admin, IT, Fees	7/22-6/27 (5 years)	1	SUM	30,732.00	30,732	30,732	0%	30,732	0%	30,732	30,732	30,732	30,732

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
10	Project		Project Management, AECOM	Detailed separately	1	sum	2,977,635.66	2,977,636	2,828,754	-5%	3,275,399	10%	2,977,636	2,828,754	3,275,399
10	Project		Outreach, AECOM	Detailed separately	1	sum	1,253,904.32	1,253,904	1,191,209	-5%	1,379,295	10%	1,253,904	1,191,209	1,379,295
20			ENVIRONMENTAL COMPLIANCE & PERMITTING												
21			PERMITTING												
21	Project		Permitting, AECOM	Detailed separately	1	sum	4,113,000.00	4,113,000	3,907,350	-5%	4,524,300	10%	4,113,000	3,907,350	4,524,300
21	Project		Environmental Legal Services; Perkins Coie	7/16-6/17 (year 1)	1	SUM	-	-	-	0%	-	0%	-	-	-
21	Project		Environmental Legal Services; Perkins Coie	7/17-12/19 (2.5 years)	1	SUM	1,537,641.00	1,537,641	1,537,641	0%	1,537,641	0%	1,537,641	1,537,641	1,537,641
21	Project		Environmental Legal Services; Perkins Coie	1/20-6/22 (2.5 years)	1	SUM	1,068,125.00	1,068,125	1,068,125	0%	1,068,125	0%	1,068,125	1,068,125	1,068,125
21	Project		Environmental Legal Services; Perkins Coie	7/22-6/27 (5 years)	1	SUM	-	-	-	0%	-	0%	-	-	-
22			CEQA & FERC SUPPORT												
22	Project		Agency Fees and Reimbursements	Oregon Department of Environmental Quality	1	SUM	97,000.00	97,000	97,000	0%	97,000	0%	97,000	97,000	97,000
22	Project		Agency Fees and Reimbursements	CA State Water Resources Control Board	1	SUM	58,950.00	58,950	58,950	0%	58,950	0%	58,950	58,950	58,950
22	Project		Agency Fees and Reimbursements	Still Water Sciences (SWRCB)	1	SUM	1,281,945.00	1,281,945	1,281,945	0%	1,281,945	0%	1,281,945	1,281,945	1,281,945
22	Project		Agency Fees and Reimbursements	Other Environmental Studies	1	SUM	480,000.00	480,000	480,000	0%	480,000	0%	480,000	480,000	480,000
30			ENGINEERING & CONSTRUCTION MANAGEMENT												
31			ENGINEERING - DESIGN DATA												
31	Project		Engineering - Design Data	Detailed separately	1	sum	1,992,000.00	1,992,000	1,892,400	-5%	2,191,200	10%	1,992,000	1,892,400	2,191,200
32			ENGINEERING - AECOM												
32	Project		Construction Cost Estimate	Detailed separately	1	sum	295,000.00	295,000	280,250	-5%	324,500	10%	295,000	280,250	324,500
32	Project		AECOM Preliminary Design & Mitigation	Detailed separately	1	sum	3,585,000.00	3,585,000	3,405,750	-5%	3,943,500	10%	3,585,000	3,405,750	3,943,500
32	Project		AECOM Final Design & Construction Support	Detailed separately	1	sum	1,950,000.00	1,950,000	1,852,500	-5%	2,145,000	10%	1,950,000	1,852,500	2,145,000
32	Project		Review of PDB Final Design	Detailed separately	1	sum	285,000.00	285,000	270,750	-5%	313,500	10%	285,000	270,750	313,500
33			ENGINEERING - PDB												
33	Project		Engineering - PDB	Detailed separately	1	sum	6,513,000.00	6,513,000	5,861,700	-10%	8,466,900	30%	6,513,000	5,861,700	8,466,900
34			PROCUREMENT												
34	Project		Procurement	Detailed separately	1	sum	1,011,574.86	1,011,575	960,996	-5%	1,112,732	10%	1,011,575	960,996	1,112,732
35			CONSTRUCTION MANAGEMENT												
35	Project		Construction Management	Detailed separately	1	sum	10,616,599.33	10,616,599	10,085,769	-5%	11,678,259	10%	10,616,599	10,085,769	11,678,259
40			CONSTRUCTION												
41			DAM REMOVAL												
41	JC Boyle	1.001	JC Boyle Dam Removal	Removal of Diversion Conduit Bulkheads	14.00	CY	1,323.00	18,522	17,596	-5%	19,448	5%	20,835	19,793	21,876
41	JC Boyle	1.002	JC Boyle Dam Removal	Remove Water from behind Tailrace Cofferdam	500,000	GAL	0.01	-	4,778	0%	6,105	0%	-	-	-
41	JC Boyle	1.003	JC Boyle Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	61,036.38	-	54,933	0%	70,192	0%	-	-	-
41	JC Boyle	1.004	JC Boyle Dam Removal	Construct Embankment Cofferdam in Tailrace around	2,000	CY	108.78	-	195,799	0%	261,065	0%	-	-	-
41	JC Boyle	1.005	JC Boyle Dam Removal	Remove Spillway Concrete	2,100	CY	330.13	693,263	589,274	-15%	831,916	20%	779,827	662,853	935,793
41	JC Boyle	1.006	JC Boyle Dam Removal	Remove Monorail Structural Steel Components	15,000	LB	0.64	9,570	8,613	-10%	12,919	35%	10,765	9,688	14,533
41	JC Boyle	1.007	JC Boyle Dam Removal	Remove Fish Ladder Concrete	1,820	CY	333.49	606,952	546,257	-10%	667,647	10%	682,738	614,464	751,012
41	JC Boyle	1.008	JC Boyle Dam Removal	Remove Gravity Dam Section Concrete	600	CY	339.60	-	173,195	0%	244,511	0%	-	-	-
41	JC Boyle	1.009	JC Boyle Dam Removal	Remove Timber Equipment Ramp on left side of Dam	10,500	LB	0.66	6,969	5,924	-15%	9,409	35%	7,840	6,664	10,584
41	JC Boyle	1.010	JC Boyle Dam Removal	Remove Pressure-Treated Lumber from Footbridge around	3,600	SF	7.19	25,886	23,298	-10%	29,769	15%	29,119	26,207	33,486
41	JC Boyle	1.011	JC Boyle Dam Removal	Remove Storage Shed located on access road	4,480	SF	27.79	-	118,293	0%	136,970	0%	-	-	-
41	JC Boyle	1.012	JC Boyle Dam Removal	Remove Warehouse located on access road	2,580	SF	36.49	-	89,441	0%	103,564	0%	-	-	-
41	JC Boyle	1.013	JC Boyle Dam Removal	Remove Fire System Control Bldg. on left abutment	520	SF	26.00	13,521	12,845	-5%	14,873	10%	15,209	14,448	16,730
41	JC Boyle	1.014	JC Boyle Dam Removal	Remove Dam Communication Bldg. on left abutment	490	SF	27.21	13,332	12,666	-5%	14,666	10%	14,997	14,247	16,497
41	JC Boyle	1.015	JC Boyle Dam Removal	Remove Concrete Slab on left abutment for former Control	6.00	CY	1,778.57	10,671	9,604	-10%	12,272	15%	12,004	10,804	13,804
41	JC Boyle	1.016	JC Boyle Dam Removal	Remove 4'x5' Metal Hatch on top of Concrete Pull Box on left	1.00	CY	1,769.46	1,769	1,593	-10%	1,946	10%	1,990	1,791	2,189
41	JC Boyle	1.017	JC Boyle Dam Removal	Remove Reservoir Level Gauge House on Dam Crest	24.00	SF	138.69	3,328	3,162	-5%	3,661	10%	3,744	3,557	4,118
41	JC Boyle	1.018	JC Boyle Dam Removal	Upstream Riprap	2,200	CY	93.45	205,581	185,023	-10%	226,139	10%	231,251	208,126	254,376
41	JC Boyle	1.019	JC Boyle Dam Removal	Downstream Riprap	1,300	CY	93.02	120,930	108,837	-10%	133,023	10%	136,030	122,427	149,633
41	JC Boyle	1.020	JC Boyle Dam Removal	Miscellaneous Excavation	132,500	CY	10.42	1,380,126	1,173,107	-15%	1,656,151	20%	1,552,454	1,319,586	1,862,945
41	JC Boyle	1.021	JC Boyle Dam Removal	Cutoff Wall Concrete Demolition	70.00	CY	655.64	45,895	43,600	-5%	52,779	15%	51,626	49,044	59,369
41	JC Boyle	1.022	JC Boyle Dam Removal	Cutoff Wall Anchors	285	EA	12.66	3,664	3,481	-5%	4,030	10%	4,121	3,915	4,533
41	JC Boyle	1.023	JC Boyle Dam Removal	Remove & Dispose Hand Rails and Light Poles	5,000	LB	0.85	4,227	4,016	-5%	4,861	15%	4,755	4,517	5,468
41	JC Boyle	1.024	JC Boyle Dam Removal	Remove & Dispose Spillway Radial Gates and Hoists	124,000	LB	2.14	264,891	238,402	-10%	357,603	35%	297,967	268,170	402,255
41	JC Boyle	1.025	JC Boyle Dam Removal	Remove & Dispose Stop Logs and Slots (steel)	92,000	LB	0.94	86,725	78,053	-10%	104,070	20%	97,554	87,799	117,065
41	JC Boyle	1.026	JC Boyle Dam Removal	Remove & Dispose of 24" Slide Gate at Entrance to Fish	4,200	LB	0.70	2,919	2,773	-5%	4,233	45%	3,284	3,120	4,761
41	JC Boyle	1.026a	JC Boyle Dam Removal	Remove petroleum products from Red Bam Area	1,600	GAL	13.34	21,338	18,137	-15%	27,739	30%	24,002	20,402	31,203
41	JC Boyle	1.027	JC Boyle Dam Removal	Remove & Dispose of Spillway gate motor & control panel	1.00	EA	1,282.33	1,282	1,154	-10%	1,539	20%	1,442	1,298	1,731
41	JC Boyle	1.028	JC Boyle Dam Removal	Remove & Dispose of Distribution equipment, controlboards	1.00	EA	5,877.55	5,878	5,290	-10%	7,053	20%	6,611	5,950	7,934

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low %	High %	Estimate	Est Low	Est High		
41	JC Boyle	1.029	JC Boyle Dam Removal	Remove Powerhouse Concrete down to Elevation 3324.0	1,500	CY	546.51	-	737,786	0%	983,714	0%	-	-	-
41	JC Boyle	1.030	JC Boyle Dam Removal	Remove Structural Steel Item associated with Powerhouse	94,000	LB	0.63	-	53,166	0%	67,935	0%	-	-	-
41	JC Boyle	1.031	JC Boyle Dam Removal	Remove Warehouse near Powerhouse	5,060	SF	32.95	166,704	158,369	-5%	183,375	10%	187,520	178,144	206,272
41	JC Boyle	1.032	JC Boyle Dam Removal	Remove & Dispose of 2 - Governor oil systems	52,500	LB	0.80	-	39,833	0%	48,219	0%	-	-	-
41	JC Boyle	1.033	JC Boyle Dam Removal	Remove & Dispose of Cooling water and bearing oil systems	6,500	LB	1.06	-	6,215	0%	7,941	0%	-	-	-
41	JC Boyle	1.034	JC Boyle Dam Removal	Remove & Dispose of 2 - Francis Turbines	660,000	LB	0.75	-	354,624	0%	521,505	0%	-	-	-
41	JC Boyle	1.035	JC Boyle Dam Removal	Remove & Dispose of 150 Ton crane	240,000	LB	0.82	196,396	166,937	-15%	235,675	20%	220,919	187,781	265,103
41	JC Boyle	1.036	JC Boyle Dam Removal	Remove & Dispose of Compressed Air systems	1,100	LB	0.88	-	875	0%	1,216	0%	-	-	-
41	JC Boyle	1.037	JC Boyle Dam Removal	Remove & Dispose of 2 - CO2 systems	6,600	LB	0.99	-	5,853	0%	7,805	0%	-	-	-
41	JC Boyle	1.038	JC Boyle Dam Removal	Remove & Dispose of Plant Water and Fire Protection	3,100	LB	0.74	-	2,068	0%	2,757	0%	-	-	-
41	JC Boyle	1.039	JC Boyle Dam Removal	Remove & Dispose of Transformer Oil Fire Protection	6,500	LB	0.80	-	4,426	0%	6,248	0%	-	-	-
41	JC Boyle	1.04	JC Boyle Dam Removal	Remove & Dispose of Unwating Piping	33,000	LB	0.74	-	19,481	0%	30,439	0%	-	-	-
41	JC Boyle	1.041	JC Boyle Dam Removal	Remove & Dispose of Drainage Piping	10,000	LB	0.84	-	7,100	0%	10,024	0%	-	-	-
41	JC Boyle	1.042	JC Boyle Dam Removal	Remove & Dispose of 2-Oil Sump pumps	2,000	LB	1.27	-	2,283	0%	2,917	0%	-	-	-
41	JC Boyle	1.043	JC Boyle Dam Removal	Remove & Dispose of Draft Tube Bulk Head Gates and	65,000	LB	0.71	-	39,403	0%	57,946	0%	-	-	-
41	JC Boyle	1.043a	JC Boyle Dam Removal	Remove petroleum products from Mechanical Equipment	2,700	GAL	10.27	27,735	23,575	-15%	36,056	30%	31,198	26,519	40,558
41	JC Boyle	1.044	JC Boyle Dam Removal	Remove & Dispose of Outdoor Vertical AC Generator, Unit 1:	2.00	EA	158,304.56	-	269,118	0%	364,100	0%	-	-	-
41	JC Boyle	1.045	JC Boyle Dam Removal	Remove & Dispose of Excitation equipment for 53/50 MVA	2.00	EA	13,425.63	-	24,166	0%	29,536	0%	-	-	-
41	JC Boyle	1.046	JC Boyle Dam Removal	Remove & Dispose of Surge protection equip. for 53/50 MVA	2.00	EA	8,153.33	-	14,676	0%	17,937	0%	-	-	-
41	JC Boyle	1.047	JC Boyle Dam Removal	Remove & Dispose of Neutral grounding equip. for 53/50	2.00	EA	3,980.33	-	7,165	0%	8,757	0%	-	-	-
41	JC Boyle	1.048	JC Boyle Dam Removal	Remove & Dispose of Generator Switchgear, 15kV - (6	1.00	EA	19,730.68	-	16,771	0%	24,663	0%	-	-	-
41	JC Boyle	1.049	JC Boyle Dam Removal	Remove & Dispose of Station Service Switchgear, 600 volt -	1.00	EA	10,780.56	-	9,703	0%	11,859	0%	-	-	-
41	JC Boyle	1.050	JC Boyle Dam Removal	Remove & Dispose of Unit and plant control switchboard	1.00	EA	5,903.27	-	5,313	0%	6,494	0%	-	-	-
41	JC Boyle	1.051	JC Boyle Dam Removal	Remove & Dispose of Battery system	1.00	EA	7,430.59	7,431	6,688	-10%	8,174	10%	8,358	7,523	9,194
41	JC Boyle	1.052	JC Boyle Dam Removal	Remove & Dispose of Raceways, Conduit and Cable	1.00	EA	13,891.88	-	12,503	0%	15,281	0%	-	-	-
41	JC Boyle	1.053	JC Boyle Dam Removal	Remove & Dispose of Misc. power & control boards	1.00	EA	7,140.08	-	6,426	0%	7,854	0%	-	-	-
41	JC Boyle	1.054	JC Boyle Dam Removal	Remove & Dispose of 5 Gantry Crane motors - hoist (50Hp ³).	1.00	EA	1,729.51	1,730	1,557	-10%	2,075	20%	1,945	1,751	2,335
41	JC Boyle	1.055	JC Boyle Dam Removal	Remove & Dispose of Gantry Crane control equipment (3	1.00	EA	5,869.29	5,869	5,282	-10%	6,456	10%	6,602	5,942	7,262
41	JC Boyle	1.056	JC Boyle Dam Removal	Remove & Dispose of Conduit and Cable	1.00	EA	10,561.93	10,562	9,506	-10%	12,674	20%	11,881	10,693	14,257
41	JC Boyle	1.057	JC Boyle Dam Removal	Remove & Dispose of Exterior Lighting	1.00	EA	10,640.74	10,641	9,577	-10%	12,237	15%	11,969	10,772	13,765
41	JC Boyle	1.058	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 59	1.66	MI	31,411.84	52,144	44,322	-15%	65,180	25%	58,655	49,856	73,318
41	JC Boyle	1.059	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 98	0.24	MI	27,715.54	6,652	5,654	-15%	8,315	25%	7,482	6,360	9,353
41	JC Boyle	1.060	JC Boyle Dam Removal	Remove & Dispose of Transmission Line No. 58	1.66	MI	31,411.84	52,144	44,322	-15%	65,180	25%	58,655	49,856	73,318
41	JC Boyle	1.061	JC Boyle Dam Removal	Remove Intake Structure Concrete	1,600	CY	294.80	-	424,508	0%	566,010	0%	-	-	-
41	JC Boyle	1.062	JC Boyle Dam Removal	Remove Fish Screen Building	2,010	SF	70.46	-	134,535	0%	155,777	0%	-	-	-
41	JC Boyle	1.063	JC Boyle Dam Removal	Remove 24-inch-dia. Steel Fish Discharge Pipe	37,978	LB	0.31	11,804	10,033	-15%	14,755	25%	13,278	11,286	16,597
41	JC Boyle	1.064	JC Boyle Dam Removal	Remove Concrete Items associated with the 14-ft-diameter	1,010	CY	313.62	316,752	269,239	-15%	364,265	15%	356,303	302,857	409,748
41	JC Boyle	1.065	JC Boyle Dam Removal	Remove Open Concrete Flume	26,000	CY	266.49	-	2,926,073	-10%	3,901,430	20%	-	-	-
41	JC Boyle	1.066	JC Boyle Dam Removal	Remove Structural Steel Items associated with the Forebay	11,500	LB	0.49	5,628	4,784	-15%	7,035	25%	6,331	5,381	7,914
41	JC Boyle	1.067	JC Boyle Dam Removal	Remove Fore bay Concrete	2,500	CY	298.78	746,951	403,353	-10%	537,804	20%	840,218	453,718	604,957
41	JC Boyle	1.068	JC Boyle Dam Removal	Place Concrete Plugs at Tunnel Portals	30.00	CY	1,616.26	48,488	46,063	-5%	50,912	5%	54,542	51,815	57,269
41	JC Boyle	1.069	JC Boyle Dam Removal	Remove Concrete Items associated with Penstocks D/S from	1,800	CY	495.44	891,799	802,619	-10%	1,070,158	20%	1,003,152	902,837	1,203,783
41	JC Boyle	1.070	JC Boyle Dam Removal	Remove Head gate Control Building at Flume Entrance	500	SF	99.08	49,542	44,588	-10%	56,973	15%	55,728	50,155	64,087
41	JC Boyle	1.071	JC Boyle Dam Removal	Remove Fore bay Spillway Gate House	610	SF	89.23	54,431	48,988	-10%	65,318	20%	61,228	55,105	73,473
41	JC Boyle	1.072	JC Boyle Dam Removal	Remove Fore bay Control Building	560	SF	96.68	54,141	48,727	-10%	64,969	20%	60,901	54,811	73,081
41	JC Boyle	1.074	JC Boyle Dam Removal	Remove Insulated Generator Building next to Fore bay	90.00	SF	166.30	14,967	13,470	-10%	17,960	20%	16,835	15,152	20,203
41	JC Boyle	1.075	JC Boyle Dam Removal	Remove Fixed Wheel Gate (gate, Frame, and Hoist)	55,000	LB	0.53	-	23,272	0%	36,363	0%	-	-	-
41	JC Boyle	1.076	JC Boyle Dam Removal	Remove Trash rack and trash rake (steel)	75,000	LB	0.51	-	30,438	0%	47,559	0%	-	-	-
41	JC Boyle	1.077	JC Boyle Dam Removal	Remove stop Logs and slots (steel)	136,000	LB	0.79	-	96,633	0%	134,213	0%	-	-	-
41	JC Boyle	1.078	JC Boyle Dam Removal	Remove Traveling Water Screen	124,000	LB	0.50	-	56,258	0%	78,136	0%	-	-	-
41	JC Boyle	1.079	JC Boyle Dam Removal	Remove Fish By-Pass and Supports (steel)	610,000	LB	0.77	-	422,080	0%	539,325	0%	-	-	-
41	JC Boyle	1.080	JC Boyle Dam Removal	Remove Gates and Hoists	18,500	LB	0.48	8,848	7,521	-15%	11,503	30%	9,953	8,460	12,939
41	JC Boyle	1.081	JC Boyle Dam Removal	Remove Trash rack and trash rake (steel)	47,249	LB	0.60	-	24,001	0%	36,707	0%	-	-	-
41	JC Boyle	1.082	JC Boyle Dam Removal	Remove stop Logs and slots (steel)	37,069	LB	0.62	-	19,692	0%	30,117	0%	-	-	-
41	JC Boyle	1.083	JC Boyle Dam Removal	Remove & Dispose Penstocks and bifurcation (steel)	1,600,000	LB	0.70	1,112,218	945,385	-15%	1,334,661	20%	1,251,094	1,063,429	1,501,312
41	JC Boyle	1.084	JC Boyle Dam Removal	Remove & Dispose Surge Tank (steel)	79,000	LB	0.82	64,445	58,000	-10%	83,778	30%	72,492	65,242	94,239
41	JC Boyle	1.085	JC Boyle Dam Removal	Remove & Dispose 2 - 108" Butterfly valves	148,000	LB	0.74	-	98,855	0%	142,790	0%	-	-	-
41	JC Boyle	1.086	JC Boyle Dam Removal	Remove & Dispose Gate, Stem and Frame	28,000	LB	0.71	19,883	17,895	-10%	23,860	20%	22,366	20,129	26,839
41	JC Boyle	1.087	JC Boyle Dam Removal	Remove & Dispose of Steel Transition Manifolds on Upstream	250,000	LB	0.64	160,863	136,734	-15%	209,122	30%	180,949	153,807	235,234
41	JC Boyle	1.087a	JC Boyle Dam Removal	Remove petroleum products from Mechanical Equipment	380	GAL	16.54	6,284	5,342	-15%	8,169	30%	7,069	6,008	9,189
41	JC Boyle	1.097	JC Boyle Dam Removal	Clear and Grub Disposal Area (Embankment)	10.00	AC	12,954.90	129,549	116,594	-10%	142,504	10%	145,725	131,152	160,297
41	JC Boyle	1.098	JC Boyle Dam Removal	Clear and Grub, 40' width	2.40	AC	12,954.90	31,092	27,983	-10%	34,201	10%	34,974	31,477	38,471
41	JC Boyle	1.099	JC Boyle Dam Removal	4" thick gravel surfacing	2,150	T	29.66	63,762	57,386	-10%	70,139	10%	71,724	64,552	78,896
41	JC Boyle	1.103	JC Boyle Dam Removal	Soil Cover over Concrete Rubble	13,000	CY	8.64	112,348	101,113	-10%	134,818	20%	126,376	113,739	151,651
41	JC Boyle	1.107	JC Boyle Dam Removal	Embankment Fill in Waste way (Fore bay) Scour Hole	55,900	CY	77.16	4,313,417	3,882,075	-10%	4,744,759	10%	4,852,008	4,366,807	5,337,209
41	JC Boyle	1.108	JC Boyle Dam Removal	Topsy Recreational Area - Concrete total	68.00	CY	454.68	30,918	29,372	-5%	34,010	10%	34,779	33,040	38,256
41	JC Boyle	1.109	JC Boyle Dam Removal	Topsy Recreational Area - 6'x80' Floating dock made of	1.00	EA	8,816.20	8,816	8,375	-5%	9,257	5%	9,917	9,421	10,413
41	JC Boyle	1.110	JC Boyle Dam Removal	Topsy Recreational Area - 5'x20' Walkway leading to hex	200	SF	10.02	2,005	1,904	-5%	2,105	5%	2,255	2,142	2,368

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices								Escalated to Year of Construction		
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	JC Boyle	1.111	JC Boyle Dam Removal	Topsy Recreational Area - Regrade to natural contour	300	SF	14.63	4,390	4,171	-5%	4,829	10%	4,938	4,691	5,432
41	JC Boyle	1.112	JC Boyle Dam Removal	Pioneer Park - Picnic tables to be removed and hauled away	12.00	EA	156.62	1,879	1,785	-5%	1,973	5%	2,114	2,008	2,220
41	JC Boyle	1.113	JC Boyle Dam Removal	Pioneer Park - 12 Concrete fire rings	5.00	CY	353.89	1,769	1,681	-5%	1,858	5%	1,990	1,891	2,090
41	JC Boyle	1.114	JC Boyle Dam Removal	Pioneer Park - Portable toilets to be removed and hauled	2.00	EA	1,002.35	2,005	1,904	-5%	2,105	5%	2,255	2,142	2,368
41	JC Boyle	1.115	JC Boyle Dam Removal	Pioneer Park - Signs to be removed and hauled away	6.00	EA	141.12	847	804	-5%	889	5%	952	905	1,000
41	JC Boyle	1.116	JC Boyle Dam Removal	Pioneer Park - Dumpster to be removed and hauled away	1.00	EA	2,971.02	2,971	2,674	-10%	3,417	15%	3,342	3,008	3,843
41	JC Boyle	1.118	JC Boyle Dam Removal	Pioneer Park - Regrade to natural contour	0.50	AC	17,560.36	8,780	7,902	-10%	9,658	10%	9,877	8,889	10,864
41	JC Boyle	5.000	JC Boyle Dam Removal	Remove Frame dead end structures 60-80 ft high	2.00	EA	7,101.59	14,203	12,783	-10%	17,044	20%	15,977	14,379	19,172
41	JC Boyle	5.001	JC Boyle Dam Removal	Remove (incl foundation) and Save Transformers 230KV	2.00	EA	2,688.70	5,377	4,840	-10%	6,184	15%	6,049	5,444	6,956
41	JC Boyle	5.002	JC Boyle Dam Removal	Remove (incl foundation) and Save Power Circuit Breakers	2.00	EA	3,640.83	7,282	6,918	-5%	8,010	10%	8,191	7,781	9,010
41	JC Boyle	5.003	JC Boyle Dam Removal	Substation Tie Structure 230KV	1.00	EA	41,482.05	41,482	37,334	-10%	47,704	15%	46,662	41,995	53,661
41	JC Boyle	5.004	JC Boyle Dam Removal	Remove Chain Link Fence	601	LF	17.70	10,639	9,575	-10%	11,703	10%	11,967	10,770	13,164
41	JC Boyle	5.005	JC Boyle Dam Removal	Demolish overhead distribution 2.5 miles (30-45 poles)	45.00	EA	1,160.01	52,200	46,980	-10%	62,640	20%	58,718	52,846	70,462
41	JC Boyle	5.032	JC Boyle Dam Removal	Install 230KV strain transmission structures outside JC Boyle	2.00	EA	132,241.37	264,483	238,034	-10%	317,379	20%	297,507	267,756	357,009
41	Copco 1	2.001	Copco 1 Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in	1.00	LS	191,823.14	191,823	172,641	-10%	239,779	25%	215,775	194,197	269,719
41	Copco 1	2.002	Copco 1 Dam Removal	Remove Sediment from Diversion Tunnel Intake to provide	30.00	CY	3,434.68	103,040	92,736	-10%	123,649	20%	115,907	104,316	139,088
41	Copco 1	2.003	Copco 1 Dam Removal	Furnish, Install, and Remove Large Crane on Right Abutment	1.00	LS	566,865.71	566,866	481,836	-15%	651,896	15%	637,647	542,000	733,294
41	Copco 1	2.004	Copco 1 Dam Removal	Remove Water from behind Tailrace Cofferdam	200,000	GAL	0.01	2,091	1,882	-10%	2,405	15%	2,353	2,117	2,706
41	Copco 1	2.005	Copco 1 Dam Removal	Riprap Protection on Cofferdam	260	CY	148.31	38,561	32,777	-15%	46,273	20%	43,376	36,869	52,051
41	Copco 1	2.006	Copco 1 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	89,882.80	89,883	80,895	-10%	107,859	20%	101,106	90,995	121,327
41	Copco 1	2.007	Copco 1 Dam Removal	Remove Current Diversion Tunnel Plug	195	CY	1,390.41	271,129	244,016	-10%	325,355	20%	304,983	274,485	365,980
41	Copco 1	2.008	Copco 1 Dam Removal	Construct Embankment Cofferdam in Tailrace	1,700	CY	165.62	281,551	239,319	-15%	337,862	20%	316,707	269,201	380,049
41	Copco 1	2.009	Copco 1 Dam Removal	Installation of 3 each 72" Blind Flanges	38,000	LB	34.66	1,317,134	1,119,564	-15%	1,712,274	30%	1,481,597	1,259,357	1,926,076
41	Copco 1	2.009.2	Copco 1 Dam Removal	Installation of 16.5 X 18.5 Roller Gate and Gate Structure	1.00	LS	4,098,153.55	4,098,154	3,483,431	-15%	5,327,600	30%	4,609,865	3,918,386	5,992,825
41	Copco 1	2.009.3	Copco 1 Dam Removal	Removal of 16.5 X 18.5 Roller Gate and Gate Structure	1.00	LS	271,584.86	271,585	230,847	-15%	353,060	30%	305,496	259,672	397,145
41	Copco 1	2.010	Copco 1 Dam Removal	Remove Concrete Dam down to Elev. 2476	36,000	CY	227.38	8,185,528	7,366,975	-10%	9,822,633	20%	9,207,605	8,286,845	11,049,126
41	Copco 1	2.011	Copco 1 Dam Removal	Remove Concrete Intake Structure on Right Abutment	21,000	CY	346.51	-	6,185,199	0%	8,732,046	0%	-	-	-
41	Copco 1	2.012	Copco 1 Dam Removal	Remove Structural Steel from Spillway	55,000	LB	1.27	69,659	59,210	-15%	87,074	25%	78,357	66,604	97,946
41	Copco 1	2.013	Copco 1 Dam Removal	Install Diversion Tunnel Plugs	30.00	CY	1,330.24	39,907	28,733	-10%	36,714	15%	44,890	32,321	41,299
41	Copco 1	2.014	Copco 1 Dam Removal	Remove Diversion Tunnel Control Structure Concrete	350	CY	231.13	-	72,805	0%	97,074	0%	-	-	-
41	Copco 1	2.015	Copco 1 Dam Removal	Remove & Dispose of Hand Rails	11,000	LB	1.36	14,919	12,681	-15%	17,903	20%	16,782	14,265	20,139
41	Copco 1	2.016	Copco 1 Dam Removal	Remove & Dispose of Radial Gates	140,500	LB	1.11	156,117	140,505	-10%	195,146	25%	175,610	158,049	219,513
41	Copco 1	2.017	Copco 1 Dam Removal	Remove & Dispose Radial Gate Stop logs	18,000	LB	1.06	19,126	17,214	-10%	23,908	25%	21,515	19,363	26,893
41	Copco 1	2.018	Copco 1 Dam Removal	Remove & Dispose Stop log hoist, track and supports	26,000	LB	1.03	26,842	24,158	-10%	33,552	25%	30,193	27,174	37,742
41	Copco 1	2.019	Copco 1 Dam Removal	Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining	54,000	LB	1.04	-	47,906	0%	67,633	0%	-	-	-
41	Copco 1	2.020	Copco 1 Dam Removal	Remove & Dispose of 3 - 72" butterfly valves (embedded)	55,000	LB	1.10	-	54,264	0%	69,337	0%	-	-	-
41	Copco 1	2.021	Copco 1 Dam Removal	Remove & Dispose of 3 - 72" flapper valves with remote	78,000	LB	5.54	432,104	388,894	-10%	496,920	15%	486,058	437,453	558,967
41	Copco 1	2.022	Copco 1 Dam Removal	Remove & Dispose of Spillway gate motor & control panel	1.00	EA	1,318.63	1,319	1,187	-10%	1,516	15%	1,483	1,335	1,706
41	Copco 1	2.023	Copco 1 Dam Removal	Remove & Dispose Distribution equipment, panelboards	1.00	EA	5,877.55	5,878	5,290	-10%	7,053	20%	6,611	5,950	7,934
41	Copco 1	2.024	Copco 1 Dam Removal	Remove Powerhouse Concrete down to top of rock under the	3,100	CY	387.53	-	1,021,133	0%	1,501,667	0%	-	-	-
41	Copco 1	2.025	Copco 1 Dam Removal	Remove Powerhouse Structural Steel	110,000	LB	1.02	-	95,360	0%	134,625	0%	-	-	-
41	Copco 1	2.026	Copco 1 Dam Removal	Remove & Dispose of 2 - Governor Oil Systems	38,000	LB	1.07	-	36,469	0%	50,651	0%	-	-	-
41	Copco 1	2.027	Copco 1 Dam Removal	Remove & Dispose of Cooling water and bearing oil systems	11,000	LB	3.16	-	31,239	0%	41,652	0%	-	-	-
41	Copco 1	2.028	Copco 1 Dam Removal	Remove & Dispose of 4 - Horizontal Tandem Francis	452,000	LB	0.80	-	325,922	0%	434,562	0%	-	-	-
41	Copco 1	2.029	Copco 1 Dam Removal	Remove & Dispose of 2 - 40 Ton indoor cranes	140,000	LB	0.74	-	88,350	0%	124,729	0%	-	-	-
41	Copco 1	2.030	Copco 1 Dam Removal	Remove & Dispose of Compressed Air System	1,000	LB	1.00	-	897	0%	1,147	0%	-	-	-
41	Copco 1	2.031	Copco 1 Dam Removal	Remove & Dispose of 2 - CO2 Systems	3,100	LB	1.05	-	2,927	0%	3,739	0%	-	-	-
41	Copco 1	2.032	Copco 1 Dam Removal	Remove & Dispose of Plant Water and Fire Protection	2,600	LB	1.35	-	3,160	0%	4,214	0%	-	-	-
41	Copco 1	2.033	Copco 1 Dam Removal	Remove & Dispose of Transformer Oil Fire Protection	5,400	LB	1.22	-	5,927	0%	7,903	0%	-	-	-
41	Copco 1	2.034	Copco 1 Dam Removal	Remove & Dispose of Unwating Piping	27,000	LB	0.73	-	16,777	0%	24,672	0%	-	-	-
41	Copco 1	2.035	Copco 1 Dam Removal	Remove & Dispose of Drainage Piping	5,000	LB	1.04	-	4,422	0%	6,503	0%	-	-	-
41	Copco 1	2.035a	Copco 1 Dam Removal	Remove petroleum products from mechanical equipment	1,250	GAL	4.39	5,490	4,941	-10%	6,313	15%	6,175	5,558	7,101
41	Copco 1	2.036	Copco 1 Dam Removal	Remove & Dispose of Horizontal AC Generator, Indoor Open	2.00	EA	38,691.77	-	65,776	0%	92,860	0%	-	-	-
41	Copco 1	2.037	Copco 1 Dam Removal	Remove & Dispose of Excitation equipment for 12.5 MVA	1.50	EA	8,472.47	-	10,802	0%	15,886	0%	-	-	-
41	Copco 1	2.038	Copco 1 Dam Removal	Remove & Dispose of Surge protection equip. for 12.5 MVA	2.00	EA	2,504.46	-	4,258	0%	6,512	0%	-	-	-
41	Copco 1	2.039	Copco 1 Dam Removal	Remove & Dispose of Neutral grounding equip. for 12.5 MVA	2.00	EA	2,332.24	-	4,198	0%	5,364	0%	-	-	-
41	Copco 1	2.040	Copco 1 Dam Removal	Remove & Dispose of Generator Switchgear, 5kV-includes	1.00	EA	20,666.10	-	18,599	0%	23,766	0%	-	-	-
41	Copco 1	2.041	Copco 1 Dam Removal	Remove & Dispose of Station Service Switchgear, 600 volt -	1.00	EA	11,311.14	-	10,180	0%	13,008	0%	-	-	-
41	Copco 1	2.042	Copco 1 Dam Removal	Remove & Dispose of Unit and plant control switchboard	1.00	EA	6,110.32	-	5,499	0%	7,027	0%	-	-	-
41	Copco 1	2.043	Copco 1 Dam Removal	Remove & Dispose of Battery System	1.00	EA	20,638.63	20,639	18,575	-10%	23,734	15%	23,216	20,894	26,698
41	Copco 1	2.044	Copco 1 Dam Removal	Remove & Dispose of Raceways, Conduit and Cable	1.00	EA	17,082.48	-	15,374	0%	19,645	0%	-	-	-
41	Copco 1	2.045	Copco 1 Dam Removal	Remove & Dispose of Misc. power & control boards	1.00	EA	6,945.94	-	6,251	0%	7,988	0%	-	-	-
41	Copco 1	2.046	Copco 1 Dam Removal	Remove & Dispose of Step-up Transformers, indoor, oil-filled,	3.00	EA	64,338.39	-	173,714	0%	221,967	0%	-	-	-
41	Copco 1	2.047	Copco 1 Dam Removal	Remove & Dispose of Step-up Transformers, indoor, oil-filled,	3.00	EA	57,252.76	-	154,582	0%	197,522	0%	-	-	-
41	Copco 1	2.048	Copco 1 Dam Removal	Remove & Dispose of Seven 40-Ton Travelling Crane motors	1.00	EA	3,306.69	-	2,976	0%	3,803	0%	-	-	-
41	Copco 1	2.049	Copco 1 Dam Removal	Remove & Dispose of 40-Ton Travelling Crane control	1.00	EA	4,364.61	-	3,928	0%	5,019	0%	-	-	-
41	Copco 1	2.050	Copco 1 Dam Removal	Remove & Dispose of 40-Ton Travelling Crane Festoon Cable	1.00	EA	1,534.84	-	1,381	0%	1,842	0%	-	-	-

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	Copco 1	2.051	Copco 1 Dam Removal	Remove & Dispose of Four 15-Ton Overhead Crane Motors -	1.00	EA	959.54	-	864	0%	1,151	0%	-	-	-
41	Copco 1	2.052	Copco 1 Dam Removal	Remove & Dispose of 15-Ton Overhead Crane control	1.00	EA	434.20	-	391	0%	499	0%	-	-	-
41	Copco 1	2.053	Copco 1 Dam Removal	Remove & Dispose of 15-Ton Overhead Crane Festoon	1.00	EA	637.49	-	574	0%	733	0%	-	-	-
41	Copco 1	2.053a	Copco 1 Dam Removal	Remove petroleum products from mechanical equipment	10,500	GAL	10.39	109,116	98,204	-10%	125,483	15%	122,740	110,466	141,151
41	Copco 1	2.054	Copco 1 Dam Removal	Remove & Dispose of 69kV circuit breakers, oil0 filled, PCB	2.00	EA	861.46	1,723	1,551	-10%	1,895	10%	1,938	1,744	2,132
41	Copco 1	2.055	Copco 1 Dam Removal	Remove & Dispose of 69kV disconnect switches, group-	2.00	EA	861.46	1,723	1,551	-10%	1,895	10%	1,938	1,744	2,132
41	Copco 1	2.056	Copco 1 Dam Removal	Remove & Dispose of 60-foot wood poles	12.00	EA	1,296.96	15,563	13,229	-15%	18,676	20%	17,507	14,881	21,008
41	Copco 1	2.057	Copco 1 Dam Removal	Remove & Dispose of 30-foot wood cross arms	24.00	EA	484.41	11,626	9,882	-15%	13,951	20%	13,078	11,116	15,693
41	Copco 1	2.058	Copco 1 Dam Removal	Remove & Dispose of 69-kV insulator strings	12.00	EA	372.92	4,475	3,804	-15%	5,370	20%	5,034	4,279	6,041
41	Copco 1	2.059	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 3	1.66	MI	31,411.84	52,144	44,322	-15%	65,180	25%	58,655	49,856	73,318
41	Copco 1	2.060	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 15	1.23	MI	33,971.31	41,785	35,517	-15%	52,231	25%	47,002	39,952	58,753
41	Copco 1	2.061	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 26-1	0.07	MI	33,525.16	2,347	1,995	-15%	2,933	25%	2,640	2,244	3,300
41	Copco 1	2.062	Copco 1 Dam Removal	Remove & Dispose of Transmission Line No. 26-2	0.07	MI	33,525.16	2,347	1,995	-15%	2,933	25%	2,640	2,244	3,300
41	Copco 1	2.063	Copco 1 Dam Removal	Remove gate house #1 from top of dam	720	SF	72.06	-	44,098	0%	64,850	0%	-	-	-
41	Copco 1	2.064	Copco 1 Dam Removal	Remove gate house #2 from top of dam	690	SF	74.35	-	43,607	0%	64,128	0%	-	-	-
41	Copco 1	2.065	Copco 1 Dam Removal	Remove Concrete Items associated with 10 ft. diam.	1,050	CY	300.38	-	268,089	0%	394,248	0%	-	-	-
41	Copco 1	2.066	Copco 1 Dam Removal	Plug 14-foot diameter penstock with concrete	23.00	CY	3,373.31	-	69,828	0%	89,224	0%	-	-	-
41	Copco 1	2.067	Copco 1 Dam Removal	Remove & Dispose of 8 screens	18,000	LB	1.17	-	18,913	0%	25,217	0%	-	-	-
41	Copco 1	2.068	Copco 1 Dam Removal	Remove & Dispose of 8 Water Gates	18,000	LB	1.10	-	17,822	0%	23,762	0%	-	-	-
41	Copco 1	2.069	Copco 1 Dam Removal	Remove & Dispose of 3 - 30" Dia. x 25' stand pipes	6,000	LB	0.91	-	4,912	0%	6,550	0%	-	-	-
41	Copco 1	2.070	Copco 1 Dam Removal	Remove & Dispose of 14' Dia. penstock pipe	256,000	LB	1.31	-	284,926	0%	419,009	0%	-	-	-
41	Copco 1	2.071	Copco 1 Dam Removal	Remove & Dispose of 10' Dia. penstock pipe	270,000	LB	1.37	-	315,225	0%	463,566	0%	-	-	-
41	Copco 1	2.081	Copco 1 Dam Removal	Site work - Clear and Grub Disposal Area	4.00	AC	13,732.22	54,929	36,685	-15%	51,790	20%	61,788	41,265	58,257
41	Copco 1	2.082	Copco 1 Dam Removal	Site work - Soil Cover for Disposal Area	12,000	CY	6.84	82,107	55	-15%	77	20%	92,359	61	87
41	Copco 1	2.089	Copco 1 Dam Removal	Mallard Cove - Concrete total	106	CY	3,389.09	35,838	30,462	-15%	41,214	15%	40,313	34,266	46,360
41	Copco 1	2.09	Copco 1 Dam Removal	Mallard Cove - 25'x5' Dock made of composite decking and	1.00	EA	3,009.15	3,009	2,558	-15%	3,461	15%	3,385	2,877	3,893
41	Copco 1	2.091	Copco 1 Dam Removal	Mallard Cove - 20'x5' Gangway w/ aluminum grate and	1.00	EA	2,758.50	2,758	2,345	-15%	3,172	15%	3,103	2,637	3,568
41	Copco 1	2.092	Copco 1 Dam Removal	Mallard Cove - Signs to be removed and hauled away	6.00	EA	152.39	914	823	-10%	1,006	10%	1,029	926	1,131
41	Copco 1	2.093	Copco 1 Dam Removal	Mallard Cove - Wood plank tables to be removed and hauled	8.00	EA	114.29	914	823	-10%	1,006	10%	1,029	926	1,131
41	Copco 1	2.094	Copco 1 Dam Removal	Mallard Cove - Parking area to be regraded	2.50	AC	7,451.08	18,628	16,765	-10%	21,422	15%	20,954	18,858	24,097
41	Copco 1	2.095	Copco 1 Dam Removal	Copco Cove - Concrete Total	84.00	CY	331.83	27,874	23,693	-15%	32,065	15%	31,354	26,651	36,058
41	Copco 1	2.096	Copco 1 Dam Removal	Copco Cove - Dock abutment railing made of 2.5" dia. steel	1.00	EA	1,446.70	1,447	1,302	-10%	1,591	10%	1,627	1,465	1,790
41	Copco 1	2.097	Copco 1 Dam Removal	Copco Cove - Signs to be removed and hauled away	6.00	EA	407.82	2,447	2,202	-10%	2,692	10%	2,752	2,477	3,028
41	Copco 1	2.098	Copco 1 Dam Removal	Copco Cove - Wood plank tables to be removed and hauled	2.00	EA	152.39	305	274	-10%	335	10%	343	309	377
41	Copco 1	2.099	Copco 1 Dam Removal	Copco Cove - Regrade	2.30	AC	6,531.70	15,023	13,521	-10%	17,276	15%	16,899	15,209	19,434
41	Copco 1	2.100	Copco 1 Dam Removal	Diversion Tunnel Lining	1.00	LS	244,844.33	244,844	220,360	-10%	281,571	15%	275,417	247,875	316,729
41	Copco 1	5.006	Copco 1 Dam Removal	Remove Frame Dead End Structures 60-80ft High @ Switch	4.00	EA	6,436.15	25,745	21,883	-15%	33,468	30%	28,959	24,615	37,647
41	Copco 1	5.007	Copco 1 Dam Removal	Remove Power Circuit Breakers 69KV @ Switch Yard	2.00	EA	5,681.20	11,362	10,226	-10%	14,203	25%	12,781	11,503	15,976
41	Copco 1	5.008	Copco 1 Dam Removal	Remove Disconnect Switches @ Switch Yard	4.00	EA	9,731.40	38,926	35,033	-10%	48,657	25%	43,786	39,407	54,733
41	Copco 1	5.009	Copco 1 Dam Removal	Remove All Associated AUX Equipment @ Switch Yard	1.00	LS	48,501.71	48,502	43,652	-10%	60,627	25%	54,558	49,102	68,197
41	Copco 1	5.010	Copco 1 Dam Removal	Remove Distribution Lines 69 KV Copco 1 Switch Yard and	6.00	EA	1,402.44	8,415	7,573	-10%	10,518	25%	9,465	8,519	11,832
41	Copco 1	5.011	Copco 1 Dam Removal	Remove Distribution Poles 2.4 KV Btw Copco 1/ HE Plant/	8.00	EA	1,950.45	15,604	14,043	-10%	19,505	25%	17,552	15,797	21,940
41	Copco 1	5.012	Copco 1 Dam Removal	Remove Production Poles in General Area of Copco 1	7.00	EA	1,956.86	13,698	11,643	-15%	17,807	30%	15,408	13,097	20,031
41	Copco 1	5.013	Copco 1 Dam Removal	Remove Village House Distribution Poles Near Dam (Est 10	10.00	EA	1,293.71	12,937	10,997	-15%	16,818	30%	14,552	12,370	18,918
41	Copco 1	5.014	Copco 1 Dam Removal	Remove 69 KV Distribution Line 1.6 Miles (30 Poles)	30.00	EA	2,096.19	62,886	53,453	-15%	81,751	30%	70,738	60,127	91,959
41	Copco 1	5.015	Copco 1 Dam Removal	Remove Transmission Conductors on Poles 1X/001 and	2.00	EA	2,686.44	5,373	4,567	-15%	6,985	30%	6,044	5,137	7,857
41	Copco 1	5.016	Copco 1 Dam Removal	Remove Transmission Conductors 1.3 Miles Copco 1 to	6,864	LF	7.16	49,138	41,767	-15%	63,880	30%	55,274	46,983	71,856
41	Copco 2	3.001	Copco 2 Dam Removal	Construct and Remove Embankment Cofferdam-Right Side of	3,100	CY	59.70	185,071	148,057	-20%	259,100	40%	208,180	166,544	291,452
41	Copco 2	3.002	Copco 2 Dam Removal	Furnish, Install, and Remove RipRap	465	CY	129.88	60,392	48,314	-20%	84,549	40%	67,933	54,347	95,106
41	Copco 2	3.003	Copco 2 Dam Removal	Provide Dewatering behind Cofferdams	1.00	LS	143,210.99	143,211	128,890	-10%	186,174	30%	161,093	144,984	209,421
41	Copco 2	3.004	Copco 2 Dam Removal	Remove Water from behind Cofferdams	241,000	GAL	0.02	5,834	5,251	-10%	7,584	30%	6,563	5,906	8,531
41	Copco 2	3.005	Copco 2 Dam Removal	Construct and Remove Embankment Cofferdam-Left Side of	1,100	CY	172.54	189,793	147,837	-22%	258,715	36%	213,491	166,297	291,019
41	Copco 2	3.006	Copco 2 Dam Removal	Furnish, Install, and Remove RipRap	250	CY	185.94	46,486	37,189	-20%	65,080	40%	52,290	41,832	73,207
41	Copco 2	3.007	Copco 2 Dam Removal	Provide Dewatering behind left Side Cofferdam	1.00	LS	79,612.67	79,613	71,651	-10%	103,496	30%	89,553	80,598	116,419
41	Copco 2	3.008	Copco 2 Dam Removal	Remove Water from behind Cofferdams	36,000	GAL	0.15	5,352	4,817	-10%	6,958	30%	6,021	5,418	7,827
41	Copco 2	3.009	Copco 2 Dam Removal	Remove Water from behind Tailrace Cofferdam	400,000	GAL	0.03	-	9,258	0%	13,373	0%	-	-	-
41	Copco 2	3.010	Copco 2 Dam Removal	Provide Dewatering behind Tailrace Cofferdam	1.00	LS	49,938.86	-	44,945	0%	64,921	0%	-	-	-
41	Copco 2	3.011	Copco 2 Dam Removal	Construct Embankment Cofferdam across Tailrace	1,700	CY	115.34	-	156,862	0%	274,508	0%	-	-	-
41	Copco 2	3.014	Copco 2 Dam Removal	Remove Concrete in Dam	4,430	CY	253.02	1,120,868	909,431	-15%	1,551,383	45%	1,260,824	1,022,987	1,745,095
41	Copco 2	3.015	Copco 2 Dam Removal	Remove concrete equipment slab from top of embankment	5.00	CY	353.89	1,769	1,504	-15%	2,300	30%	1,990	1,692	2,588
41	Copco 2	3.016	Copco 2 Dam Removal	Remove Concrete Wing wall	240	CY	217.45	52,187	44,359	-15%	67,843	30%	58,703	49,898	76,314
41	Copco 2	3.017	Copco 2 Dam Removal	Right Abutment Removal - Random Fill	1,510	CY	52.34	-	67,185	0%	98,801	0%	-	-	-
41	Copco 2	3.018	Copco 2 Dam Removal	Right Abutment Removal - Remove Hand Placed Riprap	5,400	SF	2.26	-	10,379	0%	15,264	0%	-	-	-
41	Copco 2	3.019	Copco 2 Dam Removal	Right Abutment Removal - Gunite Curtain Wall	180	CY	333.73	-	51,060	0%	75,089	0%	-	-	-
41	Copco 2	3.020	Copco 2 Dam Removal	Remove & Dispose - Hand rails and Light Poles	5,000	LB	0.84	4,183	3,556	-15%	5,020	20%	4,706	4,000	5,647
41	Copco 2	3.021	Copco 2 Dam Removal	Remove & Dispose - Radial Gates and Hoists	66,000	LB	0.81	53,452	45,434	-15%	72,160	35%	60,126	51,107	81,170
41	Copco 2	3.022	Copco 2 Dam Removal	Remove & Dispose - 5-Radial Gate Stop logs & Slots (steel)	95,800	LB	0.93	89,381	75,974	-15%	120,665	35%	100,542	85,461	135,732

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	High	Estimate	Est Low	Est High		
41	Copco 2	3.023	Copco 2 Dam Removal	Remove & Dispose - Spillway intake gate motor & control	1.00	EA	1,297.31	1,297	1,168	-10%	1,492	15%	1,459	1,313	1,678
41	Copco 2	3.024	Copco 2 Dam Removal	Remove & Dispose - Spillway radial gate motor & control	1.00	EA	1,297.31	1,297	1,168	-10%	1,492	15%	1,459	1,313	1,678
41	Copco 2	3.025	Copco 2 Dam Removal	Remove & Dispose - Spillway trash rake motor, festoon cable	1.00	EA	551.31	551	496	-10%	634	15%	620	558	713
41	Copco 2	3.026	Copco 2 Dam Removal	Remove & Dispose - Distribution equipment, panelboards	1.00	EA	5,877.55	5,878	5,290	-10%	6,759	15%	6,611	5,950	7,603
41	Copco 2	3.027	Copco 2 Dam Removal	Remove Copper Shingles from Roof of Powerhouse	7,000	SF	2.07	-	12,302	0%	16,644	0%	-	-	-
41	Copco 2	3.028	Copco 2 Dam Removal	Remove Powerhouse Concrete down to spring-line of turbine	1,110	CY	514.15	-	485,097	0%	827,518	0%	-	-	-
41	Copco 2	3.029	Copco 2 Dam Removal	Remove Structural Steel items associated with Powerhouse	220,000	LB	0.96	-	169,407	0%	296,463	0%	-	-	-
41	Copco 2	3.030	Copco 2 Dam Removal	Remove Control House Concrete	30.00	CY	317.78	9,533	7,627	-20%	12,870	35%	10,724	8,579	14,477
41	Copco 2	3.031	Copco 2 Dam Removal	Remove Control House Structural Steel Items	3,500	LB	0.88	3,088	2,471	-20%	4,324	40%	3,474	2,779	4,864
41	Copco 2	3.032	Copco 2 Dam Removal	Remove Shop Building	4,300	SF	69.45	-	238,898	0%	388,210	0%	-	-	-
41	Copco 2	3.033	Copco 2 Dam Removal	Remove & Dispose - 2 - Governor oil systems	38,000	LB	1.06	-	34,345	0%	50,507	0%	-	-	-
41	Copco 2	3.034	Copco 2 Dam Removal	Remove & Dispose - Cooling water and bearing oil systems	13,300	LB	0.93	-	10,552	0%	15,518	0%	-	-	-
41	Copco 2	3.035	Copco 2 Dam Removal	Remove & Dispose - Oil / Water separator tank and piping	2,700	LB	0.93	-	2,142	0%	3,149	0%	-	-	-
41	Copco 2	3.036	Copco 2 Dam Removal	Remove & Dispose - 12 - Cast Iron Columns	54,000	LB	0.83	-	35,754	0%	53,631	0%	-	-	-
41	Copco 2	3.037	Copco 2 Dam Removal	Remove & Dispose - 2 - Francis Turbines	660,000	LB	0.83	-	438,002	0%	711,753	0%	-	-	-
41	Copco 2	3.038	Copco 2 Dam Removal	Remove & Dispose - 2 - 40 Ton indoor cranes	140,000	LB	1.17	-	130,617	0%	212,253	0%	-	-	-
41	Copco 2	3.039	Copco 2 Dam Removal	Remove & Dispose - Compressed Air Systems	1,000	LB	1.13	-	960	0%	1,411	0%	-	-	-
41	Copco 2	3.040	Copco 2 Dam Removal	Remove & Dispose - 2 - CO2 Systems	2,100	LB	1.23	-	2,187	0%	3,216	0%	-	-	-
41	Copco 2	3.041	Copco 2 Dam Removal	Remove & Dispose - Plant Water and Fire Protection	3,100	LB	1.41	-	3,717	0%	5,466	0%	-	-	-
41	Copco 2	3.042	Copco 2 Dam Removal	Remove & Dispose - Transformer Oil Fire Protection	6,500	LB	0.87	-	4,788	0%	7,042	0%	-	-	-
41	Copco 2	3.043	Copco 2 Dam Removal	Remove & Dispose - Unwaterning Piping	32,000	LB	0.75	-	20,499	0%	30,145	0%	-	-	-
41	Copco 2	3.044	Copco 2 Dam Removal	Remove & Dispose - Drainage Piping	10,000	LB	1.39	-	11,795	0%	17,346	0%	-	-	-
41	Copco 2	3.044a	Copco 2 Dam Removal	Remove & Dispose - Petroleum Products from Mechanical	3,300	GAL	4.54	14,972	13,475	-10%	17,217	15%	16,841	15,157	19,367
41	Copco 2	3.044b	Copco 2 Dam Removal	Remove & Dispose - Remove Petroleum Products at or near	3,300	GAL	4.54	14,972	13,475	-10%	17,217	15%	16,841	15,157	19,367
41	Copco 2	3.045	Copco 2 Dam Removal	Remove & Dispose - AC Generator, Indoor Vertical	2.00	EA	82,295.42	-	148,132	0%	189,279	0%	-	-	-
41	Copco 2	3.046	Copco 2 Dam Removal	Remove & Dispose - Excitation equipment for 15 MVA	2.00	EA	8,173.98	-	14,713	0%	18,800	0%	-	-	-
41	Copco 2	3.047	Copco 2 Dam Removal	Remove & Dispose - Surge protection equip. for 15 MVA	2.00	EA	2,582.65	-	4,649	0%	5,940	0%	-	-	-
41	Copco 2	3.048	Copco 2 Dam Removal	Remove & Dispose - Neutral grounding equip. for 15 MVA	2.00	EA	2,514.72	-	4,526	0%	5,784	0%	-	-	-
41	Copco 2	3.049	Copco 2 Dam Removal	Remove & Dispose - Generator Switchgear, 7.2kV-includes	1.00	EA	27,340.22	-	24,606	0%	31,441	0%	-	-	-
41	Copco 2	3.050	Copco 2 Dam Removal	Remove & Dispose - Station Service Switchgear, 600-volt (5	1.00	EA	24,083.60	-	21,675	0%	27,696	0%	-	-	-
41	Copco 2	3.051	Copco 2 Dam Removal	Remove & Dispose - Unit and plant control switchboard	1.00	EA	7,551.93	-	6,797	0%	8,685	0%	-	-	-
41	Copco 2	3.052	Copco 2 Dam Removal	Remove & Dispose - Battery system	1.00	EA	10,473.21	-	9,426	0%	12,044	0%	-	-	-
41	Copco 2	3.053	Copco 2 Dam Removal	Remove & Dispose - Raceways, Conduit and Cable	1.00	EA	15,384.27	-	13,846	0%	17,692	0%	-	-	-
41	Copco 2	3.054	Copco 2 Dam Removal	Remove & Dispose - Misc. Power & Control Boards	1.00	EA	5,724.44	-	5,152	0%	6,583	0%	-	-	-
41	Copco 2	3.055	Copco 2 Dam Removal	Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist	1.00	EA	3,548.91	-	3,194	0%	4,259	0%	-	-	-
41	Copco 2	3.056	Copco 2 Dam Removal	Remove & Dispose - 40-Ton Travelling Crane control	1.00	EA	11,203.08	-	10,083	0%	13,444	0%	-	-	-
41	Copco 2	3.057	Copco 2 Dam Removal	Remove & Dispose - 40-Ton Travelling Crane Festoon Cable	1.00	EA	2,557.66	-	2,302	0%	3,069	0%	-	-	-
41	Copco 2	3.058a	Copco 2 Dam Removal	Remove Oil from Oil-Filled Step-up Transformers	23,000	GAL	10.59	243,653	207,105	-15%	280,201	15%	274,077	232,965	315,188
41	Copco 2	3.061	Copco 2 Dam Removal	Remove Intake Structure Concrete	1,650	CY	299.68	-	420,307	0%	741,718	0%	-	-	-
41	Copco 2	3.062	Copco 2 Dam Removal	Remove Concrete Items associated with 16-foot I.D. Wood	1,310	CY	299.39	-	333,367	0%	568,685	0%	-	-	-
41	Copco 2	3.063	Copco 2 Dam Removal	Place Concrete Plugs for Tunnels	100	CY	1,827.07	182,707	99,392	-15%	152,012	30%	205,521	111,803	170,993
41	Copco 2	3.064	Copco 2 Dam Removal	Remove Concrete Items associated with Penstocks D/S from	3,500	CY	298.85	-	836,779	0%	1,359,765	0%	-	-	-
41	Copco 2	3.065	Copco 2 Dam Removal	Remove & Dispose of Caterpillar Gate (steel)	50,000	LB	0.92	-	38,993	0%	52,755	0%	-	-	-
41	Copco 2	3.066	Copco 2 Dam Removal	Remove & Dispose of Trash rack and trash rake (steel)	86,000	LB	0.63	-	46,219	0%	70,687	0%	-	-	-
41	Copco 2	3.067	Copco 2 Dam Removal	Remove & Dispose of Stop Logs and slots for intake (steel)	220,000	LB	0.78	-	145,176	0%	222,034	0%	-	-	-
41	Copco 2	3.068	Copco 2 Dam Removal	Remove & Dispose of Wood Staves Soaked in Creosote	1,100,000	LB	0.93	1,021,716	715,201	-30%	1,328,231	30%	1,149,292	804,504	1,494,079
41	Copco 2	3.069	Copco 2 Dam Removal	Remove & Dispose of Cradles (steel)	290,000	LB	0.94	273,748	191,623	-30%	355,872	30%	307,929	215,550	400,308
41	Copco 2	3.070	Copco 2 Dam Removal	Remove & Dispose of Bands (steel)	463,000	LB	0.92	426,777	298,744	-30%	554,811	30%	480,067	336,047	624,086
41	Copco 2	3.071	Copco 2 Dam Removal	Remove & Dispose of Penstock after bifurcation to butterfly	860,000	LB	1.08	-	647,928	0%	1,203,295	0%	-	-	-
41	Copco 2	3.072	Copco 2 Dam Removal	Remove & Dispose of Bifurcated vent pipes and support	19,500	LB	1.13	-	15,423	0%	28,643	0%	-	-	-
41	Copco 2	3.073	Copco 2 Dam Removal	Remove & Dispose of 2 - 138" Butterfly Valves	148,000	LB	0.88	-	90,934	0%	168,878	0%	-	-	-
41	Copco 2	5.017	Copco 2 Dam Removal	Disconnect and Remove Medium Voltage Circuit Breakers	2.00	EA	678.35	1,357	1,153	-15%	1,899	40%	1,526	1,297	2,137
41	Copco 2	5.018	Copco 2 Dam Removal	Disconnect and Remove Medium Voltage Circuit Breakers	5.00	LB	590.84	2,954	2,511	-15%	4,136	40%	3,323	2,825	4,652
41	Copco 2	5.019	Copco 2 Dam Removal	Disconnect and Remove Transformers 12KV @ substation	1.00	EA	816.83	817	694	-15%	1,144	40%	919	781	1,286
41	Copco 2	5.020	Copco 2 Dam Removal	Disconnect and Remove cable connection between Copco 2	0.10	MI	94,661.96	9,466	8,046	-15%	13,253	40%	10,648	9,051	14,907
41	Copco 2	5.021	Copco 2 Dam Removal	Remove All associated Aux Equipment @ substation	1.00	LS	24,184.84	24,185	20,557	-15%	33,859	40%	27,205	23,124	38,087
41	Copco 2	5.022	Copco 2 Dam Removal	Demolish overhead transmission line and structure 69KV	5.00	MI	118,983.58	594,918	505,680	-15%	832,885	40%	669,202	568,821	936,882
41	Copco 2	5.023	Copco 2 Dam Removal	Demolish transmission conductor from existing structure pole.	1.50	MI	7,073.23	10,610	9,018	-15%	14,854	40%	11,935	10,144	16,708
41	Copco 2	5.024	Copco 2 Dam Removal	Remove structures between pole 2/007 and Iron Gate	6.00	EA	3,754.31	22,526	20,273	-10%	31,536	40%	25,339	22,805	35,474
41	Iron Gate	4.001	Iron Gate Dam Removal	Furnish, Install, and Remove Barge-Mounted Crane in	1.00	LS	191,823.14	191,823	172,641	-10%	220,597	15%	215,775	194,197	248,141
41	Iron Gate	4.002	Iron Gate Dam Removal	Furnish, Install, and Remove Temporary Air Vent Hose from	50.00	EA	315.45	-	13,407	0%	18,927	0%	-	-	-
41	Iron Gate	4.003	Iron Gate Dam Removal	Remove Reinforced Concrete Ring Located D/S of Closure	46.00	CY	1,012.49	46,575	39,589	-15%	58,218	25%	52,390	44,532	65,488
41	Iron Gate	4.004	Iron Gate Dam Removal	Remove Reinforced Concrete Stoplog Structure	6.00	CY	1,738.55	10,431	9,388	-10%	11,996	15%	11,734	10,560	13,494
41	Iron Gate	4.005	Iron Gate Dam Removal	Remove Water from behind Tailrace Cofferdam	300,000	GAL	0.01	-	2,662	0%	3,602	0%	-	-	-
41	Iron Gate	4.006	Iron Gate Dam Removal	Provide Dewatering behind Tailrace Cofferdam for removal of	1.00	LS	29,462.94	-	25,044	0%	33,882	0%	-	-	-
41	Iron Gate	4.007	Iron Gate Dam Removal	Construct Embankment Cofferdam across Tailrace to remove	1,650	CY	112.09	-	166,451	0%	212,687	0%	-	-	-
41	Iron Gate	4.010	Iron Gate Dam Removal	Upstream Cofferdam to be Removed in the Wet	20,000	CY	14.70	294,012	249,910	-15%	338,114	15%	330,723	281,115	380,332

KRRC Cost Estimate - Partial Removal

June 2018

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	High	Estimate	Est Low	Est High		
41	Iron Gate	4.011	Iron Gate Dam Removal	Remove 9" dia. hinged blind flange	19,000	LB	6.49	123,371	104,866	-15%	148,046	20%	138,776	117,960	166,531
41	Iron Gate	4.012	Iron Gate Dam Removal	Remove 18" plug valve and 7" of 18" drainage pipe	2,620	LB	2.70	7,061	6,002	-15%	8,473	20%	7,943	6,751	9,531
41	Iron Gate	4.013.1	Iron Gate Dam Removal	Furnish and Install 1-16.5'x18" roller gate, stem, and operator	110,000	LB	34.16	3,757,547	3,381,793	-10%	4,133,302	10%	4,226,730	3,804,057	4,649,403
41	Iron Gate	4.013.2	Iron Gate Dam Removal	Remove Existing sluice and diversion gates from shaft by	110,000	LB	4.38	482,328	434,095	-10%	530,561	10%	542,554	488,298	596,809
41	Iron Gate	4.013.3	Iron Gate Dam Removal	Remove 16.5'X 18" sluice and diversion gates from shaft in	110,000	LB	0.58	64,216	57,794	-10%	70,637	10%	72,234	65,011	79,457
41	Iron Gate	4.014	Iron Gate Dam Removal	Remove Concrete in Observation Platform, Crest Wall and	780	CY	298.81	233,072	209,765	-10%	256,379	10%	262,174	235,957	288,392
41	Iron Gate	4.015	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Intake Structure	715	CY	300.06	214,542	193,088	-10%	246,723	15%	241,330	217,197	277,530
41	Iron Gate	4.016	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Gate Tower	650	CY	196.63	127,809	108,637	-15%	146,980	15%	143,767	122,202	165,333
41	Iron Gate	4.017	Iron Gate Dam Removal	Remove Steel Footbridge to Gate Tower	13,000	LB	1.10	14,259	12,120	-15%	16,398	15%	16,039	13,633	18,445
41	Iron Gate	4.018	Iron Gate Dam Removal	Remove Concrete in Diversion Tunnel Footbridge Abutment	39.00	CY	197.94	7,720	6,562	-15%	8,878	15%	8,684	7,381	9,986
41	Iron Gate	4.019	Iron Gate Dam Removal	Place Concrete Plugs for Diversion Tunnel	43.00	CY	1,672.11	71,901	64,711	-10%	79,091	10%	80,879	72,791	88,966
41	Iron Gate	4.020	Iron Gate Dam Removal	Remove Concrete Closure Gates in Gate Tower	85.00	CY	894.09	75,998	64,598	-15%	87,397	15%	85,487	72,664	98,310
41	Iron Gate	4.021	Iron Gate Dam Removal	Remove Upstream Riprap	92,400	CY	21.05	1,944,680	1,652,978	-15%	2,333,616	20%	2,187,500	1,859,375	2,625,000
41	Iron Gate	4.022	Iron Gate Dam Removal	Remove Downstream Riprap	23,400	CY	15.64	365,879	310,997	-15%	439,054	20%	411,564	349,829	493,876
41	Iron Gate	4.023	Iron Gate Dam Removal	Miscellaneous Excavation	270,000	CY	6.72	1,815,450	1,543,132	-15%	2,178,539	20%	2,042,134	1,735,814	2,450,561
41	Iron Gate	4.023.1	Iron Gate Dam Removal	Miscellaneous Excavation	761,159	CY	15.55	11,836,796	10,061,276	-15%	14,204,155	20%	13,314,785	11,317,568	15,977,742
41	Iron Gate	4.024	Iron Gate Dam Removal	Cutoff Wall Concrete Demolition	2,440	CY	112.84	275,336	247,803	-10%	316,637	15%	309,716	278,744	356,173
41	Iron Gate	4.025	Iron Gate Dam Removal	Earth Fill Crest Raise	13,000	CY	15.68	203,841	173,265	-15%	234,417	15%	229,293	194,899	263,687
41	Iron Gate	4.026	Iron Gate Dam Removal	Sheet pile Crest Raise	800	LF	281.18	224,946	191,204	-15%	258,688	15%	253,034	215,079	290,989
41	Iron Gate	4.027	Iron Gate Dam Removal	Remove 5 Monitoring Wells	5.00	EA	2,332.81	11,664	10,498	-10%	13,414	15%	13,120	11,808	15,089
41	Iron Gate	4.028	Iron Gate Dam Removal	Remove and Dispose of Trash Sluice Gate - 10 ft x 9 ft H	4,500	LB	1.01	4,544	3,408	-25%	5,680	25%	5,112	3,834	6,390
41	Iron Gate	4.029	Iron Gate Dam Removal	Remove and Dispose of Intake Structure	72,000	LB	0.90	64,663	54,964	-15%	77,596	20%	72,738	61,827	87,285
41	Iron Gate	4.030	Iron Gate Dam Removal	Remove and Dispose of Sluice and Diversion Tunnel Gate	28,000	LB	1.09	30,649	26,052	-15%	36,779	20%	34,476	29,304	41,371
41	Iron Gate	4.031	Iron Gate Dam Removal	Remove and Dispose of Hoist Stem - 6" Dia. Sch 160x150'	7.500	LB	1.01	7,578	6,441	-15%	9,093	20%	8,524	7,245	10,229
41	Iron Gate	4.032	Iron Gate Dam Removal	Remove and Dispose of Air Vent Pipe - 8" Dia. Sch 40 x160'	4,650	LB	2.12	9,855	8,377	-15%	11,826	20%	11,085	9,423	13,303
41	Iron Gate	4.034	Iron Gate Dam Removal	Remove and Dispose of Air Vent Pipe - 12" Dia. Sch 40 x560'	30,250	LB	2.26	68,353	58,100	-15%	82,024	20%	76,888	65,355	92,266
41	Iron Gate	4.035	Iron Gate Dam Removal	Remove and Dispose of Outlet Works Stop Logs	2,670	LB	1.01	2,696	2,022	-25%	3,370	25%	3,033	2,275	3,791
41	Iron Gate	4.036	Iron Gate Dam Removal	Remove and Dispose of Hydraulic Pump Motor (10 HP est) &	1.00	EA	415.82	416	312	-25%	520	25%	468	351	585
41	Iron Gate	4.037	Iron Gate Dam Removal	Remove and Dispose of Distribution Equipment, Junction	1.00	EA	2,019.67	2,020	1,515	-25%	2,525	25%	2,272	1,704	2,840
41	Iron Gate	4.038	Iron Gate Dam Removal	Remove and Dispose of Power Cable and 4" Conduit from	800	FT	49.86	39,887	33,904	-15%	45,870	15%	44,867	38,137	51,598
41	Iron Gate	4.039	Iron Gate Dam Removal	Remove Powerhouse Concrete	5,200	CY	402.36	-	1,883,040	0%	2,406,107	0%	-	-	-
41	Iron Gate	4.040	Iron Gate Dam Removal	Remove and Dispose of Turbine Unit	344,058	LB	0.95	-	278,446	0%	376,721	0%	-	-	-
41	Iron Gate	4.041	Iron Gate Dam Removal	Remove and Dispose of Draft Tube Bulkheads	16,500	LB	0.98	-	13,800	0%	19,482	0%	-	-	-
41	Iron Gate	4.042	Iron Gate Dam Removal	Remove and Dispose of Crane	24,000	LB	1.07	-	21,776	0%	32,023	0%	-	-	-
41	Iron Gate	4.043	Iron Gate Dam Removal	Remove and Dispose of Governor	20,310	LB	1.04	-	17,878	0%	25,240	0%	-	-	-
41	Iron Gate	4.044	Iron Gate Dam Removal	Remove and Dispose of Bearing Oil System and Cooling	9,182	LB	1.06	-	8,297	0%	11,713	0%	-	-	-
41	Iron Gate	4.045	Iron Gate Dam Removal	Remove and Dispose of CO2 Systems	2,568	LB	1.01	-	2,343	0%	3,124	0%	-	-	-
41	Iron Gate	4.046	Iron Gate Dam Removal	Remove and Dispose of Plant Water and Fire Protection	9,182	LB	1.05	-	8,636	0%	11,515	0%	-	-	-
41	Iron Gate	4.047	Iron Gate Dam Removal	Remove and Dispose of Sump Pumps	2,000	LB	1.05	-	1,883	0%	2,510	0%	-	-	-
41	Iron Gate	4.048	Iron Gate Dam Removal	Remove and Dispose of Pumps	22,000	LB	1.09	-	21,676	0%	28,901	0%	-	-	-
41	Iron Gate	4.049	Iron Gate Dam Removal	Remove and Dispose of Exposed Piping Around the Plant	19,291	LB	1.05	-	18,257	0%	24,342	0%	-	-	-
41	Iron Gate	4.050	Iron Gate Dam Removal	Remove and Dispose of Unwatering Piping	19,291	LB	0.88	-	15,270	0%	19,512	0%	-	-	-
41	Iron Gate	4.051	Iron Gate Dam Removal	Remove and Dispose of Drainage Piping	9,518	LB	1.12	-	9,591	0%	12,256	0%	-	-	-
41	Iron Gate	4.052	Iron Gate Dam Removal	Remove and Dispose of Transformer Oil and Fire Protection	9,182	LB	1.00	-	8,739	0%	10,119	0%	-	-	-
41	Iron Gate	4.053	Iron Gate Dam Removal	Remove and Dispose of Compressed Air System	1,450	LB	0.91	-	1,182	0%	1,510	0%	-	-	-
41	Iron Gate	4.053a	Iron Gate Dam Removal	Remove & Dispose - Petroleum Products from Mechanical	1,100	GAL	10.05	11,057	10,504	-5%	12,163	10%	12,438	11,816	13,681
41	Iron Gate	4.054	Iron Gate Dam Removal	Remove and Dispose of AC Generator, Outdoor Horizontal	1.00	EA	91,158.88	-	82,043	0%	104,833	0%	-	-	-
41	Iron Gate	4.055	Iron Gate Dam Removal	Remove and Dispose of Excitation equipment for 18.975 MVA	1.00	EA	2,384.74	-	2,146	0%	2,742	0%	-	-	-
41	Iron Gate	4.056	Iron Gate Dam Removal	Remove and Dispose of Surge protection equip. for 18.975	1.00	EA	1,891.05	-	1,702	0%	2,175	0%	-	-	-
41	Iron Gate	4.057	Iron Gate Dam Removal	Remove and Dispose of Neutral grounding equip. for 18.975	1.00	EA	3,980.33	-	3,582	0%	4,577	0%	-	-	-
41	Iron Gate	4.058	Iron Gate Dam Removal	Remove and Dispose of Station Service Switchgear, 600 volt	1.00	EA	7,378.96	-	6,641	0%	8,486	0%	-	-	-
41	Iron Gate	4.059	Iron Gate Dam Removal	Remove and Dispose of Unit and plant control switchboard	1.00	EA	23,948.92	-	21,554	0%	27,541	0%	-	-	-
41	Iron Gate	4.060	Iron Gate Dam Removal	Remove and Dispose of Battery System - assume 60	1.00	EA	15,350.22	15,350	13,815	-10%	17,653	15%	17,267	15,540	19,857
41	Iron Gate	4.061	Iron Gate Dam Removal	Remove and Dispose of Raceways, Bus, Conduit and Cable	1.00	EA	18,352.70	-	16,517	0%	21,106	0%	-	-	-
41	Iron Gate	4.062	Iron Gate Dam Removal	Remove and Dispose of Misc. power & control boards	1.00	EA	5,642.84	-	5,079	0%	6,489	0%	-	-	-
41	Iron Gate	4.063	Iron Gate Dam Removal	Remove and Dispose of Transformer (3 phase, 275 kVA,	1.00	EA	9,142.79	-	8,229	0%	10,514	0%	-	-	-
41	Iron Gate	4.064	Iron Gate Dam Removal	Remove and Dispose of Governor Oil Pump Motors (10 hp	2.00	EA	244.50	-	440	0%	562	0%	-	-	-
41	Iron Gate	4.065	Iron Gate Dam Removal	Remove and Dispose of Vertical Motors, outdoor, (480V, 100	4.00	EA	712.83	2,851	2,138	-25%	3,564	25%	3,207	2,405	4,009
41	Iron Gate	4.066	Iron Gate Dam Removal	Remove and Dispose of Transformer (3 phase, 300 kVA,	1.00	EA	10,482.18	10,482	9,434	-10%	12,055	15%	11,791	10,612	13,560
41	Iron Gate	4.067	Iron Gate Dam Removal	Remove and Dispose of Step-up Transformer, outdoor, oil-	1.00	EA	85,541.22	85,541	76,987	-10%	98,372	15%	96,222	86,600	110,656
41	Iron Gate	4.068	Iron Gate Dam Removal	Remove and Dispose of Lattice steel structure, with 69-kV	1.00	EA	6,973.83	6,974	6,276	-10%	8,020	15%	7,845	7,060	9,021
41	Iron Gate	4.069	Iron Gate Dam Removal	Remove and Dispose of Generator Switchgear, outdoor,	1.00	EA	24,487.62	24,488	22,039	-10%	28,161	15%	27,545	24,791	31,677
41	Iron Gate	4.070	Iron Gate Dam Removal	Remove and Dispose of Single Phase Pole Transformers (25	3.00	EA	2,514.24	7,543	6,788	-10%	8,674	15%	8,485	7,636	9,757
41	Iron Gate	4.071	Iron Gate Dam Removal	Remove Concrete in Penstock Intake Structure	460	CY	302.54	139,169	118,294	-15%	160,044	15%	156,546	133,064	180,028
41	Iron Gate	4.072	Iron Gate Dam Removal	Remove Concrete in Penstock Encasement	710	CY	300.16	213,116	191,805	-10%	245,084	15%	239,727	215,754	275,686
41	Iron Gate	4.073	Iron Gate Dam Removal	Remove Concrete in 3 Penstock Anchors and 7 Penstock	3,110	CY	298.85	929,437	790,022	-15%	1,068,853	15%	1,045,491	888,667	1,202,314
41	Iron Gate	4.074	Iron Gate Dam Removal	Remove Steel Footbridge to Intake Structure	11,000	LB	1.11	12,161	10,337	-15%	13,986	15%	13,680	11,628	15,732
41	Iron Gate	4.075	Iron Gate Dam Removal	Remove Concrete in Intake Structure Footbridge Abutment	5.00	CY	820.58	4,103	3,487	-15%	4,718	15%	4,615	3,923	5,307

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
41	Iron Gate	4.076	Iron Gate Dam Removal	Remove and Dispose of Intake Structure	131,630	LB	1.04	136,401	115,941	-15%	156,862	15%	153,433	130,418	176,448
41	Iron Gate	4.077	Iron Gate Dam Removal	Remove and Dispose of Gate Hoist Stem - 6" Sch160x40'	1,800	LB	1.01	1,818	1,363	-25%	2,272	25%	2,045	1,534	2,556
41	Iron Gate	4.078	Iron Gate Dam Removal	Remove and Dispose of Water Fill line- 12" Dia STD x 27'	1,350	LB	1.01	1,363	1,022	-25%	1,704	25%	1,534	1,150	1,917
41	Iron Gate	4.079	Iron Gate Dam Removal	Remove and Dispose of Air Vent - 12" Dia STD x 32'	1,600	LB	1.01	1,616	1,212	-25%	2,020	25%	1,817	1,363	2,272
41	Iron Gate	4.080	Iron Gate Dam Removal	Remove and Dispose of Gage Wells	2,612	LB	1.01	2,638	1,978	-25%	3,297	25%	2,967	2,225	3,709
41	Iron Gate	4.081	Iron Gate Dam Removal	Remove and Dispose of Penstock Vent - 46" Dia, 0.25" Thick	7,440	LB	2.08	15,466	13,146	-15%	17,786	15%	17,398	14,788	20,007
41	Iron Gate	4.082	Iron Gate Dam Removal	Remove and Dispose of Penstock - 12" Dia, 0.25" Thick x	294,428	LB	1.47	433,061	368,102	-15%	498,020	15%	487,135	414,065	560,205
41	Iron Gate	4.083	Iron Gate Dam Removal	Remove and Dispose of Bypass Outlet - 96" Dia, 0.25" Thick	12,850	LB	0.90	11,547	9,815	-15%	13,279	15%	12,989	11,041	14,937
41	Iron Gate	4.084	Iron Gate Dam Removal	Remove and Dispose of Outlet Valve on bypass outlet - 66"	18,000	LB	1.62	29,193	24,814	-15%	33,572	15%	32,838	27,912	37,764
41	Iron Gate	4.085	Iron Gate Dam Removal	Remove and Dispose Overhead trolley Crane Motor (4hp est)	1.00	EA	1,188.04	1,188	891	-25%	1,485	25%	1,336	1,002	1,670
41	Iron Gate	4.086	Iron Gate Dam Removal	Remove and Dispose Distribution equipment, Junction Boxes	1.00	EA	2,970.11	2,970	2,228	-25%	3,713	25%	3,341	2,506	4,176
41	Iron Gate	4.087	Iron Gate Dam Removal	Remove and Dispose Power Cable and Conduit	1.00	EA	91,734.75	91,735	77,975	-15%	105,495	15%	103,189	87,711	118,667
41	Iron Gate	4.097	Iron Gate Dam Removal	Clear and Grub Disposal Area	29.00	AC	6,292.60	182,485	155,113	-15%	209,858	15%	205,271	174,481	236,062
41	Iron Gate	4.101	Iron Gate Dam Removal	Remove Building No. 2	800	SF	73.00	58,404	52,563	-10%	67,164	15%	65,696	59,127	75,551
41	Iron Gate	4.102	Iron Gate Dam Removal	Remove Building No. 3	1,088	SF	75.55	82,199	73,979	-10%	94,529	15%	92,463	83,217	106,332
41	Iron Gate	4.103	Iron Gate Dam Removal	Remove Concrete in Fish Ladder	1,240	CY	300.19	372,241	316,405	-15%	428,077	15%	418,721	355,913	481,529
41	Iron Gate	4.104	Iron Gate Dam Removal	Remove Concrete in Holding Ponds #1 thru #6	1,380	CY	196.04	270,529	243,476	-10%	311,109	15%	304,309	273,878	349,955
41	Iron Gate	4.105	Iron Gate Dam Removal	Remove Concrete in Fish Facility Items	1,200	CY	194.03	232,832	197,908	-15%	267,757	15%	261,905	222,619	301,191
41	Iron Gate	4.106	Iron Gate Dam Removal	Remove Miscellaneous Metalwork in Fish Facilities	12,000	LB	0.95	11,351	9,648	-15%	13,621	20%	12,768	10,853	15,322
41	Iron Gate	4.107	Iron Gate Dam Removal	Remove Concrete Associated with 30" Dia. water supply line	80.00	CY	194.03	15,522	13,194	-15%	17,850	15%	17,460	14,841	20,079
41	Iron Gate	4.108	Iron Gate Dam Removal	Remove Concrete in Aerator Structure	65.00	CY	191.23	12,430	10,565	-15%	14,294	15%	13,982	11,884	16,079
41	Iron Gate	4.109	Iron Gate Dam Removal	Remove Wood in Aerator Structure	6,000	LB	0.83	4,990	3,742	-25%	6,237	25%	5,613	4,210	7,016
41	Iron Gate	4.110	Iron Gate Dam Removal	Remove Structural Steel in Aerator Structure	2,500	LB	1.01	2,525	1,893	-25%	3,156	25%	2,840	2,130	3,550
41	Iron Gate	4.111	Iron Gate Dam Removal	Remove Asphalt Pavement	3,900	SF	6.54	25,489	21,665	-15%	29,312	15%	28,671	24,370	32,972
41	Iron Gate	4.112	Iron Gate Dam Removal	Remove Restroom Building near Aerator Structure	340	SF	60.38	20,528	18,475	-10%	23,607	15%	23,091	20,782	26,555
41	Iron Gate	4.113	Iron Gate Dam Removal	Remove Storage Shed near Aerator Structure	90.00	SF	70.22	6,320	5,688	-10%	7,268	15%	7,109	6,398	8,175
41	Iron Gate	4.114	Iron Gate Dam Removal	Remove Toe Drain Pipe	260	LF	27.00	7,021	5,968	-15%	8,074	15%	7,897	6,713	9,082
41	Iron Gate	4.115	Iron Gate Dam Removal	Remove Toe Drain Manhole	25.00	LF	59.40	1,485	1,114	-25%	1,856	25%	1,670	1,253	2,088
41	Iron Gate	4.116	Iron Gate Dam Removal	Berm Removal	53,000	CY	13.82	732,558	659,302	-10%	842,442	15%	824,028	741,625	947,633
41	Iron Gate	4.117	Iron Gate Dam Removal	Remove and Dispose of Intake Structures Trashracks	5,000	LB	0.89	4,455	3,341	-25%	5,569	25%	5,011	3,759	6,264
41	Iron Gate	4.118	Iron Gate Dam Removal	Remove and Dispose of Pipe Conduit, 30" Dia. x 0.25" Thick	76,640	LB	1.03	78,948	67,106	-15%	94,738	20%	88,806	75,485	106,567
41	Iron Gate	4.119	Iron Gate Dam Removal	Remove and Dispose of Sluice Gate Valve, 30" Dia.	3,000	LB	1.01	3,030	2,272	-25%	3,787	25%	3,408	2,556	4,260
41	Iron Gate	4.120	Iron Gate Dam Removal	Remove and Dispose of Sluice Gate Stem, 2" Dia.	360	LB	1.01	364	273	-25%	454	25%	409	307	511
41	Iron Gate	4.121	Iron Gate Dam Removal	Remove and Dispose of Butterfly Valve, 30" Dia.	2,435	LB	1.01	2,459	1,844	-25%	3,074	25%	2,766	2,074	3,457
41	Iron Gate	4.122	Iron Gate Dam Removal	Remove and Dispose of Piping- 30-in. Dia. x 0.25 Thickness	7,200	LB	0.60	4,332	3,682	-15%	5,198	20%	4,872	4,142	5,847
41	Iron Gate	4.123	Iron Gate Dam Removal	Remove and Dispose of Piping- 24-in. Dia. x 0.25 Thickness	15,872	LB	0.50	8,005	6,804	-15%	9,606	20%	9,004	7,654	10,805
41	Iron Gate	4.124	Iron Gate Dam Removal	Remove and Dispose of Piping- 20-in. Dia. x 0.25 Thickness	4,505	LB	0.58	2,599	2,209	-15%	3,119	20%	2,923	2,485	3,508
41	Iron Gate	4.125	Iron Gate Dam Removal	Remove and Dispose of Piping- 18-in. Dia. x 0.25 Thickness	29,088	LB	0.38	11,115	9,448	-15%	13,338	20%	12,503	10,627	15,003
41	Iron Gate	4.126	Iron Gate Dam Removal	Remove and Dispose of Piping- 16-in. Dia. x 0.25 Thickness	6,972	LB	0.56	3,898	3,314	-15%	4,678	20%	4,385	3,727	5,262
41	Iron Gate	4.127	Iron Gate Dam Removal	Remove and Dispose of Piping- 12-in. Dia. x 0.25 Thickness	2,176	LB	0.46	992	843	-15%	1,190	20%	1,116	948	1,339
41	Iron Gate	4.128	Iron Gate Dam Removal	Remove and Dispose of Piping- 10-in. Dia. x 0.25 Thickness	1,932	LB	0.45	864	734	-15%	1,036	20%	972	826	1,166
41	Iron Gate	4.129	Iron Gate Dam Removal	Remove and Dispose of Piping- 8-in. Dia. x 0.25 Thickness x	3,588	LB	0.23	818	695	-15%	982	20%	920	782	1,104
41	Iron Gate	4.130	Iron Gate Dam Removal	Remove and Dispose of Piping- 3-in. Dia. x STD x 30'	1,088	LB	0.38	412	350	-15%	494	20%	463	394	556
41	Iron Gate	4.131	Iron Gate Dam Removal	Remove and Dispose of Gate Valves	21,792	LB	0.98	21,312	18,116	-15%	25,575	20%	23,974	20,378	28,768
41	Iron Gate	4.132	Iron Gate Dam Removal	Remove and Dispose of Basin #1	2,880	LB	2.89	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.133	Iron Gate Dam Removal	Remove and Dispose of Basin #2	3,860	LB	2.16	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.134	Iron Gate Dam Removal	Remove and Dispose of Basin #3	2,880	LB	2.89	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.135	Iron Gate Dam Removal	Remove and Dispose of Basin #4	3,580	LB	2.33	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.136	Iron Gate Dam Removal	Remove and Dispose of Basin #5	1,440	LB	5.79	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.137	Iron Gate Dam Removal	Remove and Dispose of Basin #6	1,440	LB	5.79	8,336	7,086	-15%	10,003	20%	9,377	7,970	11,252
41	Iron Gate	4.138	Iron Gate Dam Removal	Remove and Dispose of Holding Tank	7,400	LB	1.53	11,355	9,652	-15%	13,627	20%	12,773	10,857	15,328
41	Iron Gate	4.139	Iron Gate Dam Removal	Remove and Dispose of Misc.: Motors, control panels, cables,	1.00	EA	1,782.06	1,782	1,337	-25%	2,228	25%	2,005	1,503	2,506
41	Iron Gate	4.140	Iron Gate Dam Removal	Wanaka Springs - Concrete Total	28.00	CY	306.28	8,576	7,290	-15%	9,862	15%	9,647	8,200	11,094
41	Iron Gate	4.141	Iron Gate Dam Removal	Wanaka Springs - Double Pipe Railings	60.00	LF	47.52	2,851	2,138	-25%	3,564	25%	3,207	2,405	4,009
41	Iron Gate	4.142	Iron Gate Dam Removal	Wanaka Springs - Wood picnic tables to be removed and	5.00	EA	118.80	594	446	-25%	743	25%	668	501	835
41	Iron Gate	4.143	Iron Gate Dam Removal	Wanaka Springs - 25'x5' Wooden floating dock	125	SF	23.76	2,970	2,228	-25%	3,713	25%	3,341	2,506	4,176
41	Iron Gate	4.144	Iron Gate Dam Removal	Wanaka Springs - Rip and reseed site and access road	2.50	AC	6,798.10	16,995	14,446	-15%	19,545	15%	19,117	16,250	21,985
41	Iron Gate	4.145	Iron Gate Dam Removal	Wanaka Springs - Signs to be removed and hauled away	3.00	EA	356.41	1,069	802	-25%	1,337	25%	1,203	902	1,503
41	Iron Gate	4.146	Iron Gate Dam Removal	Wanaka Springs - 15'x5' Gangplank with Railings	75.00	SF	23.76	1,782	1,337	-25%	2,228	25%	2,005	1,503	2,506
41	Iron Gate	4.147	Iron Gate Dam Removal	Juniper Point - Concrete Total	19.00	CY	359.74	6,835	5,810	-15%	7,860	15%	7,688	6,535	8,842
41	Iron Gate	4.148	Iron Gate Dam Removal	Juniper Point - 2, 4x4 Toilet Vaults	32.00	SF	118.80	3,802	2,851	-25%	4,752	25%	4,276	3,207	5,346
41	Iron Gate	4.149	Iron Gate Dam Removal	Juniper Point - Wood picnic tables to be removed and hauled	8.00	EA	118.80	950	713	-25%	1,188	25%	1,069	802	1,336
41	Iron Gate	4.150	Iron Gate Dam Removal	Juniper Point - Signs to be removed and hauled away	4.00	EA	356.41	1,426	1,069	-25%	1,782	25%	1,604	1,203	2,005
41	Iron Gate	4.151	Iron Gate Dam Removal	Juniper Point - Dock pile railing	50.00	LF	47.52	2,376	1,782	-25%	2,970	25%	2,673	2,005	3,341
41	Iron Gate	4.152	Iron Gate Dam Removal	Juniper Point - 50'x5' Composite dock with poly floats	250	SF	31.34	7,834	7,081	-10%	8,618	10%	8,812	7,931	9,694
41	Iron Gate	4.153	Iron Gate Dam Removal	Juniper Point - 20'x5' Composite gangplank with railings	100	SF	23.76	2,376	1,782	-25%	2,970	25%	2,673	2,005	3,341
41	Iron Gate	4.155	Iron Gate Dam Removal	Juniper Point - Regrade to Natural Contour, rip, and reseed	2.00	AC	10,546.17	21,092	17,928	-15%	24,256	15%	23,726	20,167	27,285
41	Iron Gate	4.156	Iron Gate Dam Removal	Camp Creek - Concrete Total	110	CY	306.56	33,722	28,664	-15%	38,780	15%	37,932	32,243	43,622

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	High	Estimate	Est Low	Est High		
41	Iron Gate	4.157	Iron Gate Dam Removal	Camp Creek - 180'Lx16'Wx8'D Earth jetty to remove and/or	855	CY	73.54	62,876	53,445	-15%	72,307	15%	70,727	60,118	81,336
41	Iron Gate	4.158	Iron Gate Dam Removal	Camp Creek - Well house 10'x16' concrete block building	160	SF	72.74	11,638	10,475	-10%	12,802	10%	13,092	11,783	14,401
41	Iron Gate	4.159	Iron Gate Dam Removal	Camp Creek - 2, 20'x5' Composite decking gangplanks	200	SF	23.76	4,752	3,564	-25%	5,940	25%	5,346	4,009	6,682
41	Iron Gate	4.160	Iron Gate Dam Removal	Camp Creek - 2, 20'x5' Floating composite w/ aluminum	200	SF	23.76	4,752	3,564	-25%	5,940	25%	5,346	4,009	6,682
41	Iron Gate	4.161	Iron Gate Dam Removal	Camp Creek - Concrete block double toilet bldg 10'x16'	160	SF	72.74	11,638	10,475	-10%	12,802	10%	13,092	11,783	14,401
41	Iron Gate	4.162	Iron Gate Dam Removal	Camp Creek - Dump stations and approx. 2000 gal buried	1.00	EA	6,596.62	6,597	5,607	-15%	7,916	20%	7,420	6,307	8,904
41	Iron Gate	4.163	Iron Gate Dam Removal	Camp Creek - Power poles and lines	3.00	EA	1,818.16	5,454	4,636	-15%	6,545	20%	6,136	5,215	7,363
41	Iron Gate	4.164	Iron Gate Dam Removal	Camp Creek - Remove waterlines and 3 faucets and regrade	600	LF	5.94	3,564	2,673	-25%	4,455	25%	4,009	3,007	5,011
41	Iron Gate	4.166	Iron Gate Dam Removal	Camp Creek - Steel pipe/plank picnic tables to be removed	5.00	EA	118.80	594	446	-25%	743	25%	668	501	835
41	Iron Gate	4.167	Iron Gate Dam Removal	Camp Creek - Relocate concrete tables	12.00	EA	118.80	1,426	1,069	-25%	1,782	25%	1,604	1,203	2,005
41	Iron Gate	4.168	Iron Gate Dam Removal	Camp Creek - Regrade, rip, and reseed	4.00	AC	8,861.29	35,445	30,128	-15%	40,762	15%	39,871	33,890	45,852
41	Iron Gate	4.169	Iron Gate Dam Removal	Camp Creek - Signs to be removed and hauled away	7.00	EA	356.41	2,495	1,871	-25%	3,119	25%	2,806	2,105	3,508
41	Iron Gate	4.170	Iron Gate Dam Removal	Dutch Creek - 50'4'3" Dock Concrete Abutment	22.00	CY	333.37	7,334	6,601	-10%	8,068	10%	8,250	7,425	9,075
41	Iron Gate	4.171	Iron Gate Dam Removal	Dutch Creek - Double Pipe Railing	100	LF	47.52	4,752	3,564	-25%	5,940	25%	5,346	4,009	6,682
41	Iron Gate	4.172	Iron Gate Dam Removal	Mirror Cove - Concrete Total	89.00	CY	235.88	20,994	18,894	-10%	23,093	10%	23,615	21,254	25,977
41	Iron Gate	4.173	Iron Gate Dam Removal	Mirror Cove - 10'x16' Toilet Vault	160	SF	96.23	15,397	13,857	-10%	16,937	10%	17,320	15,588	19,052
41	Iron Gate	4.174	Iron Gate Dam Removal	Mirror Cove - 2, 30'x5' Composite Gangplanks w/ aluminum	300	SF	21.43	6,430	5,787	-10%	7,073	10%	7,233	6,510	7,957
41	Iron Gate	4.175	Iron Gate Dam Removal	Mirror Cove - Double pipe railings on dock	80.00	LF	47.52	3,802	2,851	-25%	4,752	25%	4,276	3,207	5,346
41	Iron Gate	4.177	Iron Gate Dam Removal	Mirror Cove - Regrade site	3.00	AC	12,512.61	37,538	31,907	-15%	43,169	15%	42,225	35,891	48,559
41	Iron Gate	4.178	Iron Gate Dam Removal	Mirror Cove - Signs to be removed and hauled away	7.00	EA	356.41	2,495	1,871	-25%	3,119	25%	2,806	2,105	3,508
41	Iron Gate	4.179	Iron Gate Dam Removal	Overlook Point - 1 concrete picnic table base	1.00	CY	356.41	356	267	-25%	446	25%	401	301	501
41	Iron Gate	4.180	Iron Gate Dam Removal	Overlook Point - Steel frame table to be removed and hauled	1.00	EA	118.80	119	89	-25%	149	25%	134	100	167
41	Iron Gate	4.181	Iron Gate Dam Removal	Overlook Point - Regrade steep access road and site to	0.50	AC	30,630.71	15,315	13,018	-15%	17,613	15%	17,228	14,644	19,812
41	Iron Gate	4.182	Iron Gate Dam Removal	Long Gulch - 80'x25x4" Concrete boat ramp to be removed	25.00	CY	310.44	7,761	6,985	-10%	8,537	10%	8,730	7,857	9,603
41	Iron Gate	4.183	Iron Gate Dam Removal	Long Gulch - Remove picnic tables (steel frames with planks)	2.00	EA	118.80	238	178	-25%	297	25%	267	200	334
41	Iron Gate	4.184	Iron Gate Dam Removal	Long Gulch - Regrade ramp area to natural contours, rip,	0.05	AC	29,701.07	1,485	1,114	-25%	1,856	25%	1,670	1,253	2,088
41	Iron Gate	4.185	Iron Gate Dam Removal	Concrete Lining Installation for Diversion Tunnel	1.00	LS	1,196,251.74	1,196,252	1,076,627	-10%	1,315,877	10%	1,345,621	1,211,058	1,480,183
41	Iron Gate	5.025	Iron Gate Dam Removal	Remove Distribution Poles near Iron Gate Hydro Plant	5.00	EA	1,190.24	5,951	5,059	-15%	7,141	20%	6,694	5,690	8,033
41	Iron Gate	5.026	Iron Gate Dam Removal	Remove 69kV/6.6kV Transformer @Substation	2.00	EA	2,273.46	2,273	1,932	-15%	2,842	25%	2,557	2,174	3,197
41	Iron Gate	5.027	Iron Gate Dam Removal	Remove 6.6kV Power Circuit Breaker @Substation	1.00	EA	1,524.31	1,524	1,296	-15%	1,905	25%	1,715	1,457	2,143
41	Iron Gate	5.028	Iron Gate Dam Removal	Remove Generator @Substation	1.00	EA	4,767.78	4,768	4,053	-15%	5,960	25%	5,363	4,559	6,704
41	Iron Gate	5.029	Iron Gate Dam Removal	Remove all auxiliary equipment @Substation (Allowance)	1.00	LS	26,865.48	26,865	22,836	-15%	33,582	25%	30,220	25,687	37,775
41	Iron Gate	5.030	Iron Gate Dam Removal	New Connection @Iron Gate Hatchery from PacifiCorp's	1.00	LS	298,809.00	298,809	268,928	-10%	328,690	10%	336,119	302,508	369,731
42			RESTORATION EARTHWORKS & HABITAT												
42	Copco 1 & 2		Tributary Connectivity	Removal of sediment and similar obstructions to ensure	7.00	EA	119,000.00	833,000	749,700	-10%	1,124,550	35%	955,752	860,177	1,290,265
42	Copco 1 & 2		Wetlands, Floodplain and Off-channel Habitat Features Site 1	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Wetlands, Floodplain and Off-channel Habitat Features Site 1	Grading and shaping of floodplain sediments (no export)	81,367	CY	8.00	650,936	585,842	-10%	878,764	35%	732,214	658,993	988,490
42	Copco 1 & 2		Wetlands, Floodplain and Off-channel Habitat Features Site 1	Floodplain roughness for 50% of area	5.60	AC	30,000.00	168,000	151,200	-10%	226,800	35%	188,977	170,079	255,119
42	Copco 1 & 2		Site 2 (25.5 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 2 (25.5 acres)	Grading and shaping of floodplain sediments (no export)	164,252	CY	8.00	1,314,016	1,182,614	-10%	1,773,922	35%	1,478,089	1,330,280	1,995,421
42	Copco 1 & 2		Site 2 (25.5 acres)	Floodplain roughness for 50% of area	12.75	AC	30,000.00	382,500	344,250	-10%	516,375	35%	430,260	387,234	580,852
42	Copco 1 & 2		Site 3 (13.9 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 3 (13.9 acres)	Grading and shaping of floodplain sediments (no export)	78,556	CY	8.00	628,448	565,603	-10%	848,405	35%	706,919	636,227	954,340
42	Copco 1 & 2		Site 3 (13.9 acres)	Floodplain roughness for 50% of area	6.95	AC	30,000.00	208,500	187,650	-10%	281,475	35%	234,534	211,081	316,621
42	Copco 1 & 2		Site 4 (10.5 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 4 (10.5 acres)	Grading and shaping of floodplain sediments (no export)	50,600	CY	8.00	404,800	364,320	-10%	546,480	35%	455,345	409,810	614,716
42	Copco 1 & 2		Site 4 (10.5 acres)	Floodplain roughness for 50% of area	5.25	AC	30,000.00	157,500	141,750	-10%	212,625	35%	177,166	159,449	239,174
42	Copco 1 & 2		Site 5 (4.2 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 5 (4.2 acres)	Grading and shaping of floodplain sediments (no export)	20,267	CY	8.00	162,136	145,922	-10%	218,884	35%	182,381	164,143	246,214
42	Copco 1 & 2		Site 5 (4.2 acres)	Floodplain roughness for 50% of area	2.10	AC	30,000.00	63,000	56,700	-10%	85,050	35%	70,866	63,780	95,670
42	Copco 1 & 2		Site 6 (5.3 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Copco 1 & 2		Site 6 (5.3 acres)	Grading and shaping of floodplain sediments (no export)	17,148	CY	8.00	137,184	123,466	-10%	185,198	35%	154,313	138,882	208,323
42	Copco 1 & 2		Site 6 (5.3 acres)	Floodplain roughness for 50% of area	2.65	AC	30,000.00	79,500	71,550	-10%	107,325	35%	89,427	80,484	120,726
42	Copco 1 & 2		Site 6 (5.3 acres)	Bank Stability and Channel Fringe Complexity	2,500	LF	253.00	632,500	569,250	-10%	853,875	35%	725,706	653,135	979,703
42	Copco 1 & 2		Large Wood Habitat Features	Ground-Based Placement	20.00	EA	27,990.00	559,800	503,820	-10%	755,730	35%	642,293	578,064	867,095
42	Copco 1 & 2		Large Wood Habitat Features	Helicopter Placement (@ 50 members staged and placed per	8.00	EA	57,000.00	456,000	410,400	-10%	615,600	35%	523,197	470,877	706,316
42	Copco 1 & 2		General Conditions	Contractor overhead	15%	%	7,287,820.00	1,093,173	983,856	-10%	1,475,784	35%	1,234,142	1,110,728	1,666,092
42	Copco 1 & 2		General Conditions	Insurance	1%	%	8,380,993.00	83,810	75,429	-10%	113,143	35%	94,618	85,156	127,734
42	Copco 1 & 2		General Conditions	Bond	1%	%	8,380,993.00	83,810	75,429	-10%	113,143	35%	94,618	85,156	127,734
42	Iron Gate		Tributary Connectivity	Removal of sediment and similar obstructions to ensure	5.00	EA	119,000.00	595,000	535,500	-10%	803,250	35%	682,680	614,412	921,618
42	Iron Gate		Site 1 (14.2 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Iron Gate		Site 1 (14.2 acres)	Grading and shaping of floodplain sediments (no export)	60,000	CY	8.00	480,000	432,000	-10%	648,000	35%	539,935	485,941	728,912
42	Iron Gate		Site 1 (14.2 acres)	Floodplain roughness for 50% of area	7.10	AC	30,000.00	213,000	191,700	-10%	287,550	35%	239,596	215,636	323,455
42	Iron Gate		Site 2 (5.8 acres)	Equipment & road access into site	3,000	LF	25.00	75,000	67,500	-10%	101,250	35%	84,365	75,928	113,892
42	Iron Gate		Site 2 (5.8 acres)	Grading and shaping of floodplain sediments (no export)	19,000	CY	8.00	152,000	136,800	-10%	205,200	35%	170,979	153,881	230,822
42	Iron Gate		Site 2 (5.8 acres)	Floodplain roughness for 50% of area	2.90	AC	30,000.00	87,000	78,300	-10%	117,450	35%	97,863	88,077	132,115

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
42	Iron Gate		Site 3 (23.1 acres)	Equipment & road access into site	2,000	LF	25.00	50,000	45,000	-10%	67,500	35%	56,243	50,619	75,928
42	Iron Gate		Site 3 (23.1 acres)	Grading and shaping of floodplain sediments (no export)	95,000	CY	8.00	760,000	684,000	-10%	1,026,000	35%	854,897	769,407	1,154,110
42	Iron Gate		Site 3 (23.1 acres)	Floodplain roughness for 75% of area	17.30	AC	30,000.00	519,000	467,100	-10%	700,650	35%	583,804	525,424	788,136
42	Iron Gate		Bank Stability and Channel Fringe Complexity	Develop process-based restoration and velocity variations	1,000	LF	253.00	253,000	227,700	-10%	341,550	35%	290,282	261,254	391,881
42	Iron Gate		Large Wood Habitat Features	Ground-Based Placement	20.00	EA	27,990.00	559,800	503,820	-10%	755,730	35%	642,293	578,064	867,095
42	Iron Gate		Large Wood Habitat Features	Helicopter Placement (@ 50 members staged and placed per	4.00	EA	57,000.00	228,000	205,200	-10%	307,800	35%	261,598	235,439	353,158
42	Iron Gate		General Conditions	Contractor overhead	15%	%	4,046,800.00	607,020	546,318	-10%	819,477	35%	687,017	618,315	927,473
42	Iron Gate		General Conditions	Contractor profit (included in rates & prices)	0%	%	4,046,800.00	-	-	0%	-	0%	-	-	-
42	Iron Gate		General Conditions	Insurance	1%	%	4,653,820.00	46,538	41,884	-10%	62,827	35%	52,671	47,404	71,106
42	Iron Gate		General Conditions	Bond	1%	%	4,653,820.00	46,538	41,884	-10%	62,827	35%	52,671	47,404	71,106
42	JC Boyle		Tributary Connectivity	Removal of sediment and similar obstructions to ensure	2.00	EA	119,000.00	238,000	214,200	-10%	321,300	35%	273,072	245,765	368,647
42	JC Boyle		Site 1 (3.3 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 1 (3.3 acres)	Grading and shaping of floodplain sediments (no export)	37,000	CY	8.00	296,000	266,400	-10%	399,600	35%	332,960	299,664	449,496
42	JC Boyle		Site 1 (3.3 acres)	Floodplain roughness for 50% of area	1.65	AC	30,000.00	49,500	44,550	-10%	66,825	35%	55,681	50,113	75,169
42	JC Boyle		Site 2 (43.8 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 2 (43.8 acres)	Grading and shaping of floodplain sediments (no export)	35,000	CY	8.00	280,000	252,000	-10%	378,000	35%	314,962	283,466	425,199
42	JC Boyle		Site 2 (43.8 acres)	Floodplain roughness for 30% of area	21.90	AC	30,000.00	657,000	591,300	-10%	886,950	35%	739,036	665,132	997,698
42	JC Boyle		Site 3 (65.8 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 3 (65.8 acres)	Grading and shaping of floodplain sediments (no export)	53,000	CY	8.00	424,000	381,600	-10%	572,400	35%	476,942	429,248	643,872
42	JC Boyle		Site 3 (65.8 acres)	Floodplain roughness for 30% of area	20.00	AC	30,000.00	600,000	540,000	-10%	810,000	35%	674,918	607,427	911,140
42	JC Boyle		Site 4 (21.3 acres)	Equipment & road access into site	500	LF	25.00	12,500	11,250	-10%	16,875	35%	14,061	12,655	18,982
42	JC Boyle		Site 4 (21.3 acres)	Grading and shaping of floodplain sediments (no export)	17,000	CY	8.00	136,000	122,400	-10%	183,600	35%	152,982	137,683	206,525
42	JC Boyle		Site 4 (21.3 acres)	Floodplain roughness for 50% of area	10.65	AC	30,000.00	319,500	287,550	-10%	431,325	35%	359,394	323,455	485,182
42	JC Boyle		Bank Stability and Channel Fringe Complexity	Develop process-based restoration and velocity variations	2,000	LF	253.00	506,000	455,400	-10%	683,100	35%	580,565	522,508	783,762
42	JC Boyle		Large Wood Habitat Features	Ground-Based Placement	30.00	EA	27,990.00	839,700	755,730	-10%	1,133,595	35%	963,439	867,095	1,300,643
42	JC Boyle		Large Wood Habitat Features	Helicopter Placement (50 members staged and placed per	2.00	EA	57,000.00	114,000	102,600	-10%	153,900	35%	130,799	117,719	176,579
42	JC Boyle		General Conditions	Contractor overhead	15%	%	4,509,700.00	676,455	608,810	-10%	913,214	35%	764,724	688,252	1,032,378
42	JC Boyle		General Conditions	Contractor profit (included in rates & prices)	0%	%	4,509,700.00	-	-	0%	-	0%	-	-	-
42	JC Boyle		General Conditions	Insurance	1%	%	5,186,155.00	51,862	46,675	-10%	70,013	35%	58,629	52,766	79,149
42	JC Boyle		General Conditions	Bond	1%	%	5,186,155.00	51,862	46,675	-10%	70,013	35%	58,629	52,766	79,149
43			RESTORATION OF VEGETATION												
43	JC Boyle		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.18	%	636,843.00	114,632	100,667	-12%	132,873	16%	115,847	101,734	134,282
43	JC Boyle		Restoration of Vegetation	Seed Collection	0.18	%	1,167,800.00	210,204	159,426	-24%	261,486	24%	221,213	167,775	275,181
43	JC Boyle		Restoration of Vegetation	Seed Propagation	0.18	%	2,803,989.00	504,718	189,718	-62%	648,718	29%	555,301	208,732	713,733
43	JC Boyle		Restoration of Vegetation	Weed Eradication	0.18	%	3,049,095.15	548,837	433,359	-21%	664,315	21%	606,617	478,982	734,252
43	JC Boyle		Restoration of Vegetation	Pioneer Seeding	0.18	%	2,150,000.00	387,000	252,000	-35%	594,000	53%	435,322	283,466	668,169
43	JC Boyle		Restoration of Vegetation	Container Plant Growing	0.18	%	1,057,742.00	190,394	69,627	-63%	311,160	63%	217,088	79,389	354,787
43	JC Boyle		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.18	%	8,043,339.82	1,447,801	776,357	-46%	2,198,979	52%	1,761,471	944,557	2,675,394
43	JC Boyle		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.18	%	8,189,100.00	1,474,038	668,469	-55%	2,493,180	69%	1,923,473	872,286	3,253,352
43	JC Boyle		Restoration of Vegetation	Emergent Wetland	0.85	AC	35,203.00	29,775	20,555	-31%	41,297	39%	34,260	23,651	47,519
43	JC Boyle		Restoration of Vegetation	Bank Wetland	4.21	AC	21,453.20	90,220	54,232	-40%	116,796	29%	103,198	62,034	133,597
43	JC Boyle		Restoration of Vegetation	Bank Riparian	32.92	AC	30,175.20	993,384	643,821	-35%	1,362,911	37%	1,144,047	741,466	1,569,618
43	JC Boyle		Restoration of Vegetation	Floodplain Riparian	55.08	AC	13,817.40	761,037	507,182	-33%	1,043,992	37%	876,122	583,879	1,201,866
43	JC Boyle		Restoration of Vegetation	Uplands below RW	24.20	AC	9,714.00	235,062	175,776	-25%	318,207	35%	273,032	204,169	369,607
43	JC Boyle		Restoration of Vegetation	Rocky Wake Zone	16.37	AC	9,719.00	159,096	118,909	-25%	221,113	39%	184,792	138,114	256,825
43	JC Boyle		Restoration of Vegetation	Disturbed Uplands above RWZ	42.29	AC	9,502.00	401,819	302,294	-25%	559,998	39%	466,536	350,982	650,192
43	JC Boyle		Restoration of Vegetation	Uplands Stockpiles	6.73	AC	8,856.67	59,595	44,882	-25%	83,046	39%	64,832	48,826	90,344
43	JC Boyle		Restoration of Vegetation	Undisturbed Uplands	10.07	AC	4,850.00	48,829	37,251	-24%	59,904	23%	56,385	43,015	69,173
43	JC Boyle		Restoration of Vegetation	Contractor overhead	1.00	LS	1,391,623.54	1,391,624	879,961	-37%	2,005,720	44%	1,643,136	1,030,506	2,379,157
43	Iron Gate		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.42	%	636,843.00	267,601	235,001	-12%	310,185	16%	270,438	237,492	313,474
43	Iron Gate		Restoration of Vegetation	Seed Collection	0.42	%	1,167,800.00	490,710	372,171	-24%	610,425	24%	516,409	391,662	642,394
43	Iron Gate		Restoration of Vegetation	Seed Propagation	0.42	%	2,803,989.00	1,178,236	442,886	-62%	1,514,396	29%	1,296,320	487,273	1,666,170
43	Iron Gate		Restoration of Vegetation	Weed Eradication	0.42	%	3,049,095.15	1,281,230	1,011,653	-21%	1,550,806	21%	1,416,113	1,118,156	1,714,070
43	Iron Gate		Restoration of Vegetation	Pioneer Seeding	0.42	%	2,150,000.00	903,430	588,280	-35%	1,386,660	53%	1,016,236	661,735	1,559,804
43	Iron Gate		Restoration of Vegetation	Container Plant Growing	0.42	%	1,057,742.00	444,463	162,540	-63%	726,386	63%	506,780	185,329	828,231
43	Iron Gate		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.42	%	8,043,339.82	3,379,811	1,812,363	-46%	5,133,395	52%	4,112,057	2,205,016	6,245,560
43	Iron Gate		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.42	%	8,189,100.00	3,441,060	1,560,504	-55%	5,820,190	69%	4,490,241	2,036,303	7,594,770
43	Iron Gate		Restoration of Vegetation	Emergent Wetland	1.78	AC	35,203.00	62,668	43,255	-31%	86,907	39%	72,099	49,772	100,000
43	Iron Gate		Restoration of Vegetation	Bank Wetland	7.59	AC	21,453.20	162,728	97,818	-40%	210,662	29%	186,135	111,888	240,965
43	Iron Gate		Restoration of Vegetation	Bank Riparian	23.87	AC	30,175.20	720,169	466,748	-35%	988,064	37%	829,395	537,538	1,137,919
43	Iron Gate		Restoration of Vegetation	Floodplain Riparian	34.82	AC	13,817.40	481,147	320,653	-33%	660,039	37%	553,907	369,143	759,851
43	Iron Gate		Restoration of Vegetation	Uplands below RW	333	AC	9,714.00	3,230,647	2,415,835	-25%	4,373,379	35%	3,752,497	2,806,068	5,079,817
43	Iron Gate		Restoration of Vegetation	Rocky Wake Zone	11.20	AC	9,719.00	108,851	81,355	-25%	151,281	39%	126,431	94,495	175,715
43	Iron Gate		Restoration of Vegetation	Disturbed Uplands above RWZ	70.53	AC	9,502.00	670,217	504,215	-25%	934,054	39%	778,163	585,424	1,084,494
43	Iron Gate		Restoration of Vegetation	Uplands Stockpiles	38.76	AC	8,856.67	343,285	258,534	-25%	478,368	39%	373,450	281,252	520,404

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
43	Iron Gate		Restoration of Vegetation	Undisturbed Uplands	20.99	AC	4,850.00	101,810	77,669	-24%	124,901	23%	117,563	89,688	144,227
43	Iron Gate		Restoration of Vegetation	Contractor overhead	1.00	LS	3,094,512.21	3,094,512	2,008,187	-35%	4,458,145	44%	3,660,630	2,354,359	5,298,930
43	Copco 1		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.40	%	636,843.00	253,909	222,977	-12%	294,314	16%	256,601	225,340	297,434
43	Copco 1		Restoration of Vegetation	Seed Collection	0.40	%	1,167,800.00	465,602	353,129	-24%	579,191	24%	489,986	371,623	609,525
43	Copco 1		Restoration of Vegetation	Seed Propagation	0.40	%	2,803,989.00	1,117,950	420,225	-62%	1,436,910	29%	1,229,992	462,341	1,580,919
43	Copco 1		Restoration of Vegetation	Weed Eradication	0.40	%	3,049,095.15	1,215,674	959,891	-21%	1,471,458	21%	1,343,656	1,060,945	1,626,368
43	Copco 1		Restoration of Vegetation	Pioneer Seeding	0.40	%	2,150,000.00	857,205	558,180	-35%	1,315,710	53%	964,239	627,877	1,479,995
43	Copco 1		Restoration of Vegetation	Container Plant Growing	0.40	%	1,057,742.00	421,722	154,224	-63%	689,220	63%	480,850	175,847	785,853
43	Copco 1		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.40	%	8,043,339.82	3,206,880	1,719,631	-46%	4,870,739	52%	3,901,659	2,092,194	5,925,999
43	Copco 1		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.40	%	8,189,100.00	3,264,994	1,480,659	-55%	5,522,394	69%	4,260,493	1,932,113	7,206,175
43	Copco 1		Restoration of Vegetation	Emergent Wetland	1.79	AC	35,203.00	63,017	43,503	-31%	87,405	39%	72,512	50,058	100,574
43	Copco 1		Restoration of Vegetation	Bank Wetland	7.65	AC	21,453.20	164,188	98,696	-40%	212,553	29%	187,806	112,893	243,127
43	Copco 1		Restoration of Vegetation	Bank Riparian	48.01	AC	30,175.20	1,448,583	938,839	-35%	1,987,438	37%	1,668,284	1,081,229	2,288,865
43	Copco 1		Restoration of Vegetation	Floodplain Riparian	58.23	AC	13,817.40	804,552	536,182	-33%	1,103,686	37%	926,218	617,264	1,270,588
43	Copco 1		Restoration of Vegetation	Uplands below RW	306	AC	9,714.00	2,968,059	2,219,475	-25%	4,017,909	35%	3,447,493	2,577,989	4,866,927
43	Copco 1		Restoration of Vegetation	Rocky Wake Zone	15.06	AC	9,719.00	146,354	109,386	-25%	203,405	39%	169,993	127,053	236,257
43	Copco 1		Restoration of Vegetation	Disturbed Uplands above RWZ	8.02	AC	9,502.00	76,226	57,346	-25%	106,233	39%	88,503	66,582	123,343
43	Copco 1		Restoration of Vegetation	Uplands Stockpiles	3.37	AC	8,856.67	29,844	22,476	-25%	41,587	39%	32,466	24,451	45,242
43	Copco 1		Restoration of Vegetation	Undisturbed Uplands	13.39	AC	4,850.00	64,957	49,554	-24%	79,689	23%	75,008	57,222	92,020
43	Copco 1		Restoration of Vegetation	Contractor overhead	1.00	LS	2,983,330.50	2,983,330	1,912,476	-36%	4,291,645	44%	3,530,879	2,244,456	5,103,293
43	Copco 2		Restoration of Vegetation	On-Site Pilot Growing Experiment	0.00	%	636,843.00	701	615	-12%	812	16%	708	622	821
43	Copco 2		Restoration of Vegetation	Seed Collection	0.00	%	1,167,800.00	1,285	974	-24%	1,598	24%	1,352	1,025	1,682
43	Copco 2		Restoration of Vegetation	Seed Propagation	0.00	%	2,803,989.00	3,084	1,159	-62%	3,964	29%	3,394	1,276	4,362
43	Copco 2		Restoration of Vegetation	Weed Eradication	0.00	%	3,049,095.15	3,354	2,648	-21%	4,060	21%	3,707	2,927	4,487
43	Copco 2		Restoration of Vegetation	Pioneer Seeding	0.00	%	2,150,000.00	2,365	1,540	-35%	3,630	53%	2,660	1,732	4,083
43	Copco 2		Restoration of Vegetation	Container Plant Growing	0.00	%	1,057,742.00	1,164	426	-63%	1,902	63%	1,327	485	2,168
43	Copco 2		Restoration of Vegetation	Establ. Prd. Maint. & Monitor'g	0.00	%	8,043,339.82	8,848	4,744	-46%	13,438	52%	10,765	5,772	16,350
43	Copco 2		Restoration of Vegetation	Long-Term Maint. & Monitor'g	0.00	%	8,189,100.00	9,008	4,085	-55%	15,236	69%	11,755	5,331	19,882
43	Copco 2		Restoration of Vegetation	Floodplain Riparian	0.81	AC	13,817.40	11,157	7,435	-33%	15,305	37%	12,844	8,560	17,619
43	Copco 2		Restoration of Vegetation	Disturbed Uplands above RWZ	1.19	AC	9,502.00	11,280	8,486	-25%	15,721	39%	13,097	9,853	18,253
43	Copco 2		Restoration of Vegetation	Undisturbed Uplands	0.00	AC	4,850.00	4	3	-24%	5	23%	4	3	5
43	Copco 2		Restoration of Vegetation	Contractor overhead	1.00	LS	9,894.21	9,894	6,468	-35%	14,234	44%	11,663	7,569	16,845
44			YREKA WATER LINE REPLACEMENT												
44	Project	6.001	Yreka Water Line Replacement	Microtunneling	612	LH	1,558.34	953,701	810,646	-20%	1,239,812	40%	1,052,154	894,331	1,367,800
44	Project	6.002	Yreka Water Line Replacement	Pile and Lagging Pre Drilling	458	LF	150.68	69,010	58,658	-20%	89,712	40%	76,134	64,714	98,974
44	Project	6.003	Yreka Water Line Replacement	Pile and Lagging Wall Installation	13,715	SF	73.01	1,001,297	851,102	-20%	1,301,686	40%	1,104,663	938,963	1,436,062
44	Project	6.004	Yreka Water Line Replacement	Pipe Installation	2,106	LF	133.76	281,698	239,443	-20%	366,207	40%	310,778	264,161	404,012
44	Project	6.005	Yreka Water Line Replacement	Excavation and Backfill	3,653	CY	88.45	323,097	274,632	-20%	420,026	40%	356,451	302,983	463,386
45			TRANSPORTATION (BRIDGES, CULVERTS, ROADS)												
45	Project		Lakeview Bridge	Sheet Pile Cofferdam For Center Footer	2,400	SF	38.40	92,161	73,729	-20%	119,809	30%	100,878	80,702	131,141
45	Project		Lakeview Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul,	89.00	CY	39.77	3,540	2,832	-20%	4,602	30%	3,875	3,100	5,037
45	Project		Lakeview Bridge	Earth Work Cofferdam Construction for side footers	1,186	CY	15.26	18,097	14,478	-20%	23,526	30%	19,809	15,847	25,752
45	Project		Lakeview Bridge	Structure Excavation (Rock) Drilling and blasting rock,	107	CY	186.20	19,924	15,939	-20%	25,901	30%	21,808	17,447	28,351
45	Project		Lakeview Bridge	Structure Excavation (Type D)	1,122	CY	20.27	22,741	18,193	-20%	29,563	30%	24,892	19,913	32,359
45	Project		Lakeview Bridge	Structure Excavation (Bridge)	159	CY	58.08	9,234	7,387	-20%	12,004	30%	10,107	8,086	13,140
45	Project		Lakeview Bridge	Prestressed concrete piles, square, 40' long, 24" square,	480	LF	165.17	79,283	63,426	-20%	103,068	30%	86,781	69,425	112,816
45	Project		Lakeview Bridge	18" Diameter 40' Long Tie Down Anchor Installation	480	LF	101.95	48,937	39,149	-20%	63,618	30%	53,565	42,852	69,634
45	Project		Lakeview Bridge	Piling special costs, pre-augering for Pile and Tie Down	960	LF	311.56	299,101	239,281	-20%	388,831	30%	327,390	261,912	425,606
45	Project		Lakeview Bridge	Mobilization, 150 ton, set up and remove crane, with pile	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Lakeview Bridge	A736 Barrier Wall	536	LF	388.00	207,968	166,373	-20%	270,356	30%	227,635	182,108	295,926
45	Project		Lakeview Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	46.00	LF	44.09	2,028	1,623	-20%	2,637	30%	2,220	1,776	2,886
45	Project		Lakeview Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	172	CY	1,953.07	335,929	268,743	-20%	436,707	30%	367,701	294,161	478,011
45	Project		Lakeview Bridge	Deck Structural concrete, in place, includes forms, Grade 60	168	CY	1,143.38	192,088	153,670	-20%	249,714	30%	210,255	168,204	273,332
45	Project		Lakeview Bridge	Footer Structural concrete, footing, reinforced, includes	448	CY	421.72	188,929	151,143	-20%	245,608	30%	206,798	165,438	268,837
45	Project		Lakeview Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	17.00	CY	293.49	4,989	3,992	-20%	6,486	30%	5,461	4,369	7,100
45	Project		Lakeview Bridge	Precast 36" I-Girder 65'	8.00	EA	29,970.09	239,761	191,809	-20%	311,689	30%	262,437	209,950	341,168
45	Project		Lakeview Bridge	Precast 36" I-Girder 48'	8.00	EA	35,810.59	286,485	229,188	-20%	372,430	30%	313,580	250,864	407,654
45	Project		Lakeview Bridge	Bridge Demolition	3,917	SF	60.00	235,020	188,016	-20%	305,526	30%	257,248	205,798	334,422
45	Project		Lakeview Bridge - Paving	Roadway Excavation	510	CY	40.00	20,400	16,320	-20%	25,500	25%	22,329	17,864	27,912
45	Project		Lakeview Bridge - Paving	Imported Borrow	2,510	CY	45.00	112,950	90,360	-20%	141,188	25%	123,633	98,906	154,541
45	Project		Lakeview Bridge - Paving	Hot Mix Asphalt (Type A)	450	T	130.00	58,500	46,800	-20%	73,125	25%	64,033	51,226	80,041
45	Project		Lakeview Bridge - Paving	Class 2 Aggregate Base	330	CY	65.00	21,450	17,160	-20%	26,813	25%	23,479	18,783	29,348
45	Project		Lakeview Bridge - Paving	Midwest Guardrail System	200	LF	40.61	8,122	6,498	-20%	10,153	25%	8,890	7,112	11,113

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Lakeview Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Lakeview Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Lakeview Bridge - Paving	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Lakeview Bridge - Paving	Temporary Fence (Type ESA)	300	LF	5.03	1,509	1,207	-20%	1,886	25%	1,652	1,321	2,065
45	Project		Lakeview Bridge - Paving	Temporary Concrete Washout	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Lakeview Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Lakeview Bridge - Paving	Water Pollution Control	0.10	%	213,300.00	21,330	17,064	-20%	26,663	25%	23,347	18,678	29,184
45	Project		Lakeview Bridge - Paving	Roadside Sign - One Post	2.00	EA	270.00	540	432	-20%	675	25%	591	473	739
45	Project		Lakeview Bridge - Paving	Reset Roadside Sign	4.00	EA	300.00	1,200	960	-20%	1,500	25%	1,313	1,051	1,642
45	Project		Lakeview Bridge - Paving	Relocate Roadside Sign	2.00	EA	100.00	200	160	-20%	250	25%	219	175	274
45	Project		Lakeview Bridge - Paving	Construction Area Signs	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Lakeview Bridge - Paving	Thermoplastic Traffic Stripe	660	LF	0.86	568	454	-20%	710	25%	621	497	777
45	Project		Lakeview Bridge - Paving	Type III Barricade	4.00	EA	274.29	1,097	878	-20%	1,371	25%	1,201	961	1,501
45	Project		Lakeview Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Lakeview Bridge - Paving	Temporary Railing (Type K)	300	LF	47.00	14,100	11,280	-20%	17,625	25%	15,434	12,347	19,292
45	Project		Fall Creek Bridge	Structure Excavation (Bridge)	499	CY	58.08	28,980	23,184	-20%	37,674	30%	31,721	25,377	41,237
45	Project		Fall Creek Bridge	A736 Barrier Wall	100	LF	388.00	38,800	31,040	-20%	50,440	30%	42,469	33,975	55,210
45	Project		Fall Creek Bridge	Columns/Walls Structural Concrete includes forms, Grade 60	111	CY	1,953.07	216,791	173,433	-20%	281,829	30%	237,295	189,836	308,484
45	Project		Fall Creek Bridge	Deck Structural concrete, in place, includes forms, Grade 60	31.00	CY	1,143.38	35,445	28,356	-20%	46,078	30%	38,797	31,038	50,436
45	Project		Fall Creek Bridge	Footer Structural concrete, footing, reinforced, includes	86.00	CY	421.72	36,268	29,014	-20%	47,148	30%	39,698	31,758	51,607
45	Project		Fall Creek Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	22.00	CY	293.49	6,457	5,166	-20%	8,394	30%	7,068	5,654	9,188
45	Project		Fall Creek Bridge	Bridge Demolition	720	SF	60.00	43,200	34,560	-20%	58,160	30%	47,286	37,829	61,472
45	Project		Fall Creek Bridge - Paving	Roadway Excavation	720	CY	40.00	28,800	23,040	-20%	36,000	25%	31,524	25,219	39,405
45	Project		Fall Creek Bridge - Paving	Imported Borrow	2,380	CY	45.00	107,100	85,680	-20%	133,875	25%	117,229	93,784	146,537
45	Project		Fall Creek Bridge - Paving	Hot Mix Asphalt (Type A)	230	T	130.00	29,900	23,920	-20%	37,375	25%	32,728	26,182	40,910
45	Project		Fall Creek Bridge - Paving	Class 2 Aggregate Base	170	CY	65.00	11,050	8,840	-20%	13,813	25%	12,095	9,676	15,119
45	Project		Fall Creek Bridge - Paving	Midwest Guardrail System	100	LF	40.61	4,061	3,249	-20%	5,076	25%	4,445	3,556	5,556
45	Project		Fall Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Fall Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Fall Creek Bridge - Paving	Relocate Gate	1.00	EA	100.00	100	80	-20%	125	25%	109	88	137
45	Project		Fall Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Fall Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Fall Creek Bridge - Paving	Temporary Hydroseed	280	SY	9.22	2,582	2,065	-20%	3,227	25%	2,826	2,261	3,532
45	Project		Fall Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	280	SY	16.62	4,654	3,723	-20%	5,817	25%	5,094	4,075	6,367
45	Project		Fall Creek Bridge - Paving	Temporary Fiber Roll	375	LF	8.10	3,038	2,430	-20%	3,797	25%	3,325	2,660	4,156
45	Project		Fall Creek Bridge - Paving	Temporary Concrete Washout	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Fall Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Fall Creek Bridge - Paving	Water Pollution Control	0.10	%	176,850.00	17,685	14,148	-20%	22,106	25%	19,358	15,486	24,197
45	Project		Fall Creek Bridge - Paving	Construction Area Signs	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Fall Creek Bridge - Paving	Temporary Traffic Stripe	500	LF	1.20	600	480	-20%	750	25%	657	525	821
45	Project		Fall Creek Bridge - Paving	Thermoplastic Traffic Stripe	275	LF	0.86	237	189	-20%	296	25%	259	207	324
45	Project		Fall Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Fall Creek Bridge - Paving	Traffic Control System	50.00	DA	1,000.00	50,000	40,000	-20%	62,500	25%	54,729	43,783	68,411
45	Project		Fall Creek Bridge - Paving	Temporary Railing (Type K)	200	LF	47.00	9,400	7,520	-20%	11,750	25%	10,289	8,231	12,861
45	Project		Daggett Road Bridge	Sheet Pile Cofferdam For Footers	7,200	SF	38.40	276,483	221,186	-20%	359,428	30%	302,633	242,106	393,422
45	Project		Daggett Road Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul,	91.00	CY	39.77	3,619	2,896	-20%	4,705	30%	3,962	3,169	5,150
45	Project		Daggett Road Bridge	Structure Excavation (Rock) Drilling and blasting rock,	107	CY	186.20	19,924	15,939	-20%	25,901	30%	21,808	17,447	28,351
45	Project		Daggett Road Bridge	Structure Excavation (Type D)	1,535	CY	20.27	31,112	24,889	-20%	40,445	30%	34,054	27,243	44,271
45	Project		Daggett Road Bridge	Structure Excavation (Bridge)	171	CY	58.08	9,931	7,945	-20%	12,910	30%	10,870	8,696	14,131
45	Project		Daggett Road Bridge	Prestressed concrete piles, square, 40' long, 24" square,	480	LF	165.17	79,283	63,426	-20%	103,068	30%	86,781	69,425	112,816
45	Project		Daggett Road Bridge	18" Diameter 40' Long Tie Down Anchor Installation	480	LF	101.95	48,937	39,149	-20%	63,618	30%	53,565	42,852	69,634
45	Project		Daggett Road Bridge	Piling special costs, pre-augering for Pile and Tie Down	960	LF	311.56	299,101	239,281	-20%	388,831	30%	327,390	261,912	425,606
45	Project		Daggett Road Bridge	Mobilization, 150 ton, set up and remove crane, with pile	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Daggett Road Bridge	A736 Barrier Wall	530	LF	388.00	205,638	164,510	-20%	267,330	30%	225,087	180,070	292,613
45	Project		Daggett Road Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	46.00	LF	44.09	2,028	1,623	-20%	2,637	30%	2,220	1,776	2,886
45	Project		Daggett Road Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	157	CY	1,953.07	306,633	245,306	-20%	398,622	30%	335,634	268,507	436,324
45	Project		Daggett Road Bridge	Deck Structural concrete, in place, includes forms, Grade 60	167	CY	1,143.38	190,944	152,755	-20%	248,228	30%	209,004	167,203	271,705
45	Project		Daggett Road Bridge	Footer Structural concrete, footing, reinforced, includes	448	CY	421.72	188,929	151,143	-20%	245,608	30%	206,798	165,438	268,837
45	Project		Daggett Road Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	17.00	CY	293.49	4,989	3,992	-20%	6,486	30%	5,461	4,369	7,100
45	Project		Daggett Road Bridge	Precast 36" I-Girder 65'	8.00	EA	29,970.09	239,761	191,809	-20%	311,689	30%	262,437	209,950	341,168
45	Project		Daggett Road Bridge	Precast 36" I-Girder 48'	8.00	EA	35,810.59	286,485	229,188	-20%	372,430	30%	313,580	250,864	407,654
45	Project		Daggett Road Bridge	Bridge Demolition	3,262	SF	60.00	195,720	156,576	-20%	254,436	30%	214,231	171,385	278,500
45	Project		Daggett Road Bridge - Paving	Roadway Excavation	1,500	CY	40.00	60,000	48,000	-20%	75,000	25%	65,675	52,540	82,093
45	Project		Daggett Road Bridge - Paving	Imported Borrow	5,500	CY	45.00	247,500	198,000	-20%	309,375	25%	270,908	216,727	338,635

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction			
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Daggett Road Bridge - Paving	Hot Mix Asphalt (Type A)	1,240	T	130.00	161,200	128,960	-20%	201,500	25%	176,446	141,157	220,558
45	Project		Daggett Road Bridge - Paving	Class 2 Aggregate Base	920	CY	65.00	59,800	47,840	-20%	74,750	25%	65,456	52,365	81,820
45	Project		Daggett Road Bridge - Paving	Remove Base and Surfacing	9,485	SF	6.00	56,910	45,528	-20%	71,138	25%	62,293	49,834	77,866
45	Project		Daggett Road Bridge - Paving	Midwest Guardrail System	200	LF	40.61	8,122	6,498	-20%	10,153	25%	8,890	7,112	11,113
45	Project		Daggett Road Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Daggett Road Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Daggett Road Bridge - Paving	Temporary Reinforced Silt Fence	1,000	LF	7.58	7,580	6,064	-20%	9,475	25%	8,297	6,638	10,371
45	Project		Daggett Road Bridge - Paving	Temporary Fence (Type ESA)	1,000	LF	5.03	5,030	4,024	-20%	6,288	25%	5,506	4,405	6,882
45	Project		Daggett Road Bridge - Paving	Temporary Hydroseed	1,200	SY	9.22	11,064	8,851	-20%	13,830	25%	12,110	9,688	15,138
45	Project		Daggett Road Bridge - Paving	Rolled Erosion Control / Jute Mesh	1,200	SY	16.62	19,944	15,955	-20%	24,930	25%	21,830	17,464	27,288
45	Project		Daggett Road Bridge - Paving	Temporary Fiber Roll	1,100	LF	8.10	8,910	7,128	-20%	11,138	25%	9,753	7,802	12,191
45	Project		Daggett Road Bridge - Paving	Temporary Construction Entrance	1.00	EA	4,303.25	4,303	3,443	-20%	5,379	25%	4,710	3,768	5,888
45	Project		Daggett Road Bridge - Paving	Water Pollution Control	0.10	%	585,410.00	58,541	46,833	-20%	73,176	25%	64,078	51,262	80,097
45	Project		Daggett Road Bridge - Paving	Roadside Sign - One Post	1.00	EA	270.00	270	216	-20%	338	25%	296	236	369
45	Project		Daggett Road Bridge - Paving	Remove Roadside Sign	2.00	EA	100.00	200	160	-20%	250	25%	219	175	274
45	Project		Daggett Road Bridge - Paving	Reset Roadside Sign	2.00	EA	300.00	600	480	-20%	750	25%	657	525	821
45	Project		Daggett Road Bridge - Paving	Construction Area Signs	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Daggett Road Bridge - Paving	Thermoplastic Traffic Stripe	2,020	LF	0.86	1,737	1,390	-20%	2,172	25%	1,902	1,521	2,377
45	Project		Daggett Road Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Daggett Road Bridge - Paving	Traffic Control System	15.00	DA	1,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Daggett Road Bridge - Paving	Temporary Railing (Type K)	120	LF	47.00	5,640	4,512	-20%	7,050	25%	6,173	4,939	7,717
45	Project		Dry Creek Bridge	Temporary Bridge	1,015	SF	210.00	213,150	170,520	-20%	277,095	30%	233,310	186,648	303,302
45	Project		Dry Creek Bridge - Paving	Roadway Excavation	700	CY	40.00	28,000	22,400	-20%	35,000	25%	30,648	24,519	38,310
45	Project		Dry Creek Bridge - Paving	Imported Borrow	1,000	CY	45.00	45,000	36,000	-20%	56,250	25%	49,256	39,405	61,570
45	Project		Dry Creek Bridge - Paving	Hot Mix Asphalt (Type A)	600	T	130.00	78,000	62,400	-20%	97,500	25%	85,377	68,302	106,721
45	Project		Dry Creek Bridge - Paving	Class 2 Aggregate Base	380	CY	65.00	24,700	19,760	-20%	30,875	25%	27,036	21,629	33,795
45	Project		Dry Creek Bridge - Paving	Midwest Guardrail System	100	LF	40.61	4,061	3,249	-20%	5,076	25%	4,445	3,556	5,556
45	Project		Dry Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Dry Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Dry Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Dry Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Dry Creek Bridge - Paving	Temporary Hydroseed	550	SY	9.22	5,071	4,057	-20%	6,339	25%	5,551	4,440	6,938
45	Project		Dry Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	550	SY	16.62	9,141	7,313	-20%	11,426	25%	10,006	8,004	12,507
45	Project		Dry Creek Bridge - Paving	Temporary Fiber Roll	1,000	LF	8.10	8,100	6,480	-20%	10,125	25%	8,866	7,093	11,083
45	Project		Dry Creek Bridge - Paving	Temporary Concrete Washout	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Dry Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Dry Creek Bridge - Paving	Water Pollution Control	0.10	%	175,700.00	17,570	14,056	-20%	21,963	25%	19,232	15,385	24,040
45	Project		Dry Creek Bridge - Paving	Construction Area Signs	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Dry Creek Bridge - Paving	Thermoplastic Traffic Stripe	650	LF	0.86	559	447	-20%	699	25%	612	489	765
45	Project		Dry Creek Bridge - Paving	Portable Changeable Message Signs	2.00	EA	3,000.00	6,000	4,800	-20%	7,500	25%	6,567	5,254	8,209
45	Project		Dry Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Dry Creek Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Dry Creek Bridge - Paving	Temporary Railing (Type K)	200	LF	47.00	9,400	7,520	-20%	11,750	25%	10,289	8,231	12,861
45	Project		Dry Creek Bridge - Temp Detour	Roadway Excavation	1,200	CY	40.00	48,000	38,400	-20%	60,000	25%	52,540	42,032	65,675
45	Project		Dry Creek Bridge - Temp Detour	Ditch Excavation	40.00	CY	35.00	1,400	1,120	-20%	1,750	25%	1,532	1,226	1,916
45	Project		Dry Creek Bridge - Temp Detour	Imported Borrow	1,620	CY	45.00	72,900	58,320	-20%	91,125	25%	79,795	63,836	99,744
45	Project		Dry Creek Bridge - Temp Detour	Hot Mix Asphalt (Type A)	530	T	130.00	68,900	55,120	-20%	86,125	25%	75,417	60,333	94,271
45	Project		Dry Creek Bridge - Temp Detour	Class 2 Aggregate Base	400	CY	65.00	26,000	20,800	-20%	32,500	25%	28,459	22,767	35,574
45	Project		Dry Creek Bridge - Temp Detour	Midwest Guardrail System	100	LF	40.61	4,061	3,249	-20%	5,076	25%	4,445	3,556	5,556
45	Project		Dry Creek Bridge - Temp Detour	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Dry Creek Bridge - Temp Detour	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Dry Creek Bridge - Temp Detour	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Dry Creek Bridge - Temp Detour	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Dry Creek Bridge - Temp Detour	Temporary Hydroseed	320	SY	9.22	2,950	2,360	-20%	3,688	25%	3,229	2,584	4,037
45	Project		Dry Creek Bridge - Temp Detour	Rolled Erosion Control / Jute Mesh	320	SY	16.62	5,318	4,255	-20%	6,648	25%	5,821	4,657	7,277
45	Project		Dry Creek Bridge - Temp Detour	Temporary Fiber Roll	400	LF	8.10	3,240	2,592	-20%	4,050	25%	3,546	2,837	4,433
45	Project		Dry Creek Bridge - Temp Detour	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Dry Creek Bridge - Temp Detour	Water Pollution Control	0.10	%	217,200.00	21,720	17,376	-20%	27,150	25%	23,774	19,019	29,718
45	Project		Dry Creek Bridge - Temp Detour	Construction Area Signs	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Dry Creek Bridge - Temp Detour	Temporary Traffic Stripe	620	LF	0.78	486	389	-20%	608	25%	532	426	665
45	Project		Dry Creek Bridge - Temp Detour	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Dry Creek Bridge - Temp Detour	Traffic Control System	5.00	DA	1,000.00	5,000	4,000	-20%	6,250	25%	5,473	4,378	6,841
45	Project		Dry Creek Bridge - Temp Detour	Temporary Railing (Type K)	160	LF	47.00	7,520	6,016	-20%	9,400	25%	8,231	6,585	10,289
45	Project		Camp Creek Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul,	420	CY	39.77	16,705	13,364	-20%	21,717	30%	18,285	14,628	23,771

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Camp Creek Bridge	Earth Work Coffe Dam Construction for side footers	1,186	CY	15.26	18,097	14,478	-20%	23,526	30%	19,809	15,847	25,752
45	Project		Camp Creek Bridge	Structure Excavation (Bridge)	585	CY	58.08	33,975	27,180	-20%	44,167	30%	37,188	29,750	48,344
45	Project		Camp Creek Bridge	Steel piles, "H" Sections, 50' long, HP14 X 89, excludes	1,400	LF	86.12	120,571	96,457	-20%	156,742	30%	131,974	105,580	171,567
45	Project		Camp Creek Bridge	Piling special costs, pre-augering for Pile	1,400	LF	311.56	436,189	348,951	-20%	567,045	30%	477,443	381,955	620,676
45	Project		Camp Creek Bridge	Mobilization, 150 ton, set up and remove crane, with pile	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259
45	Project		Camp Creek Bridge	A736 Barrier Wall	444	LF	388.00	172,270	137,816	-20%	223,952	30%	188,564	150,851	245,133
45	Project		Camp Creek Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	50.00	LF	44.09	2,205	1,764	-20%	2,866	30%	2,413	1,931	3,137
45	Project		Camp Creek Bridge	Columns Structural Concrete includes forms, Grade 60 rebar.	132	CY	1,953.07	257,806	206,245	-20%	335,148	30%	282,189	225,751	366,846
45	Project		Camp Creek Bridge	Deck Structural concrete, in place, includes forms, Grade 60	139	CY	1,143.38	158,930	127,144	-20%	206,609	30%	173,961	139,169	226,149
45	Project		Camp Creek Bridge	Footer Structural concrete,footing, reinforced, includes	162	CY	421.72	68,318	54,655	-20%	88,814	30%	74,780	59,824	97,214
45	Project		Camp Creek Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	19.00	CY	293.49	5,576	4,461	-20%	7,249	30%	6,104	4,883	7,935
45	Project		Camp Creek Bridge	Precast 36" I-Girder 67'	4.00	EA	29,970.09	119,880	95,904	-20%	155,844	30%	131,219	104,975	170,584
45	Project		Camp Creek Bridge	Precast 36" I-Girder 53'	8.00	EA	35,810.59	286,485	229,188	-20%	372,430	30%	313,580	250,864	407,654
45	Project		Camp Creek Bridge - Paving	Roadway Excavation	12,270	CY	40.00	490,800	392,640	-20%	613,500	25%	537,219	429,776	671,524
45	Project		Camp Creek Bridge - Paving	Ditch Excavation	200	CY	35.00	7,000	5,600	-20%	8,750	25%	7,662	6,130	9,578
45	Project		Camp Creek Bridge - Paving	Imported Borrow	12,550	CY	45.00	564,750	451,800	-20%	705,938	25%	618,164	494,531	772,705
45	Project		Camp Creek Bridge - Paving	Hot Mix Asphalt (Type A)	11,715	T	130.00	92,300	73,840	-20%	115,375	25%	101,030	80,824	126,287
45	Project		Camp Creek Bridge - Paving	Class 2 Aggregate Base	520	CY	65.00	33,800	27,040	-20%	42,250	25%	36,997	29,597	46,246
45	Project		Camp Creek Bridge - Paving	Midwest Guardrail System	400	LF	40.61	16,244	12,995	-20%	20,305	25%	17,780	14,224	22,225
45	Project		Camp Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Camp Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Camp Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Camp Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Camp Creek Bridge - Paving	Temporary Hydroseed	160	SY	9.22	1,475	1,180	-20%	1,844	25%	1,615	1,292	2,018
45	Project		Camp Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	3,620	SY	16.62	2,659	2,127	-20%	3,324	25%	2,911	2,329	3,638
45	Project		Camp Creek Bridge - Paving	Temporary Fiber Roll	225	LF	8.10	1,823	1,458	-20%	2,278	25%	1,995	1,596	2,494
45	Project		Camp Creek Bridge - Paving	Temporary Concrete Washout	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Camp Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Camp Creek Bridge - Paving	Water Pollution Control	0.10	%	497,800.00	49,780	39,824	-20%	62,225	25%	54,488	43,591	68,110
45	Project		Camp Creek Bridge - Paving	Roadside Sign - One Post	8.00	EA	270.00	2,160	1,728	-20%	2,700	25%	2,364	1,891	2,955
45	Project		Camp Creek Bridge - Paving	Construction Area Signs	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Camp Creek Bridge - Paving	Thermoplastic Traffic Stripe	810	LF	0.86	697	557	-20%	871	25%	762	610	953
45	Project		Camp Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Camp Creek Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Camp Creek Bridge - Paving	Temporary Railing (Type K)	300	LF	47.00	14,100	11,280	-20%	17,625	25%	15,434	12,347	19,292
45	Project		Camp Creek Bridge - Temporary Culvert	Roadway Excavation	100	CY	40.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Camp Creek Bridge - Temporary Culvert	Ditch Excavation	150	CY	35.00	5,250	4,200	-20%	6,563	25%	5,747	4,597	7,183
45	Project		Camp Creek Bridge - Temporary Culvert	Imported Borrow	3,500	CY	45.00	157,500	126,000	-20%	196,875	25%	172,396	137,917	215,495
45	Project		Camp Creek Bridge - Temporary Culvert	Clearing & Grubbing	5,000	LS	1.00	5,000	4,000	-20%	6,250	25%	5,473	4,378	6,841
45	Project		Camp Creek Bridge - Temporary Culvert	Hot Mix Asphalt (Type A)	470	T	130.00	61,100	48,880	-20%	76,375	25%	66,879	53,503	83,598
45	Project		Camp Creek Bridge - Temporary Culvert	Class 2 Aggregate Base	235	CY	65.00	15,275	12,220	-20%	19,094	25%	16,720	13,376	20,900
45	Project		Camp Creek Bridge - Temporary Culvert	Rock Slope Protection (Class?) Method B	15.00	CY	100.00	1,500	1,200	-20%	1,875	25%	1,642	1,313	2,052
45	Project		Camp Creek Bridge - Temporary Culvert	Rock Slope Protection Fabric Class 8	45.00	SY	10.13	456	365	-20%	570	25%	499	399	624
45	Project		Camp Creek Bridge - Temporary Culvert	36" Alternative Pipe Culvert	300	LF	261.42	78,426	62,741	-20%	98,033	25%	85,843	68,675	107,304
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Fence (Type ESA)	600	LF	5.03	3,018	2,414	-20%	3,773	25%	3,303	2,643	4,129
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Hydroseed	630	SY	9.22	5,809	4,647	-20%	7,261	25%	6,358	5,086	7,947
45	Project		Camp Creek Bridge - Temporary Culvert	Rolled Erosion Control / Jute Mesh	630	SY	16.62	10,471	8,376	-20%	13,088	25%	11,461	9,169	14,326
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Fiber Roll	1,190	LF	8.10	9,639	7,711	-20%	12,049	25%	10,551	8,441	13,188
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Concrete Washout	2,000	LS	1.50	2,999	2,399	-20%	3,749	25%	3,283	2,626	4,104
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Camp Creek Bridge - Temporary Culvert	Water Pollution Control	0.10	%	328,506.85	32,851	26,281	-20%	41,063	25%	35,958	28,766	44,947
45	Project		Camp Creek Bridge - Temporary Culvert	Construction Area Signs	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Traffic Stripe	650	LF	0.78	510	408	-20%	637	25%	558	446	698
45	Project		Camp Creek Bridge - Temporary Culvert	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Camp Creek Bridge - Temporary Culvert	Traffic Control System	10.00	DA	1,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Camp Creek Bridge - Temporary Culvert	Temporary Railing (Type K)	600	LF	47.00	28,200	22,560	-20%	35,250	25%	30,867	24,694	38,584
45	Project		Jenny Creek Bridge	Sheet Pile Coffe Dam For Center Footer	2,400	SF	38.40	92,161	73,729	-20%	119,809	30%	100,878	80,702	131,141
45	Project		Jenny Creek Bridge	Earth Work Coffe Dam Construction for side footers	1,186	CY	15.26	18,097	14,478	-20%	23,526	30%	19,809	15,847	25,752
45	Project		Jenny Creek Bridge	Backfill, structural, common earth, 105 H.P. dozer, 50' haul,	142	CY	39.77	5,648	4,518	-20%	7,342	30%	6,182	4,946	8,037
45	Project		Jenny Creek Bridge	Structure Excavation (Type D)	320	CY	20.27	6,486	5,189	-20%	8,432	30%	7,099	5,679	9,229
45	Project		Jenny Creek Bridge	Structure Excavation (Bridge)	209	CY	58.08	12,138	9,710	-20%	15,779	30%	13,286	10,629	17,272
45	Project		Jenny Creek Bridge	Steel piles, "H" Sections, 50' long, HP14 X 89, excludes	2,640	LF	86.12	227,362	181,890	-20%	295,571	30%	248,866	199,093	323,526
45	Project		Jenny Creek Bridge	Piling special costs, pre-augering for Pile and Tie Down	2,640	LF	311.56	822,527	658,022	-20%	1,069,286	30%	900,321	720,257	1,170,418
45	Project		Jenny Creek Bridge	Mobilization, 150 ton, set up and remove crane, with pile	2.00	EA	22,228.11	44,456	35,565	-20%	57,793	30%	48,661	38,929	63,259

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Jenny Creek Bridge	A736 Barrier Wall	776	LF	388.00	301,085	240,868	-20%	391,411	30%	329,562	263,649	428,430
45	Project		Jenny Creek Bridge	Expansion joint, neoprene, liquid, 1" x 2", cold applied	58.00	LF	44.09	2,557	2,046	-20%	3,325	30%	2,799	2,239	3,639
45	Project		Jenny Creek Bridge	Columns Structural Concrete includes forms, Grade 60 rebar,	174	CY	1,953.07	339,835	271,868	-20%	441,785	30%	371,976	297,581	483,569
45	Project		Jenny Creek Bridge	Deck Structural concrete, in place, includes forms, Grade 60	317	CY	1,143.38	362,451	289,961	-20%	471,186	30%	396,731	317,385	515,751
45	Project		Jenny Creek Bridge	Footer Structural concrete, footing, reinforced, includes	281	CY	421.72	118,503	94,802	-20%	154,053	30%	129,710	103,768	168,624
45	Project		Jenny Creek Bridge	Approach Slab Structural concrete, in place, 6" thick, includes	22.00	CY	293.49	6,457	5,166	-20%	8,394	30%	7,068	5,654	9,188
45	Project		Jenny Creek Bridge	Precast 61" Bulb Tee 73'	8.00	EA	49,373.69	394,990	315,992	-20%	513,486	30%	432,347	345,878	562,052
45	Project		Jenny Creek Bridge	Precast 61" Bulb Tee 100'	8.00	EA	78,816.06	630,528	504,423	-20%	819,687	30%	690,163	552,131	897,212
45	Project		Jenny Creek Bridge	Bridge Demolition	3,102	SF	60.00	186,120	148,896	-20%	241,956	30%	203,723	162,978	264,840
45	Project		Jenny Creek Bridge - Paving	Roadway Excavation	30,000	CY	40.00	1,200,000	960,000	-20%	1,500,000	25%	1,313,495	1,050,796	1,641,869
45	Project		Jenny Creek Bridge - Paving	Ditch Excavation	210	CY	35.00	7,350	5,880	-20%	9,188	25%	8,045	6,436	10,056
45	Project		Jenny Creek Bridge - Paving	Imported Borrow	35,000	CY	45.00	1,575,000	1,260,000	-20%	1,968,750	25%	1,723,962	1,379,170	2,154,953
45	Project		Jenny Creek Bridge - Paving	Hot Mix Asphalt (Type A)	600	T	130.00	78,000	62,400	-20%	97,500	25%	85,377	68,302	106,721
45	Project		Jenny Creek Bridge - Paving	Class 2 Aggregate Base	30,063	CY	65.00	24,050	19,240	-20%	30,063	25%	26,325	21,060	32,906
45	Project		Jenny Creek Bridge - Paving	Midwest Guardrail System	200	LF	40.61	8,122	6,498	-20%	10,153	25%	8,890	7,112	11,113
45	Project		Jenny Creek Bridge - Paving	Transition Railing (Type WB-31)	4.00	EA	4,000.00	16,000	12,800	-20%	20,000	25%	17,513	14,011	21,892
45	Project		Jenny Creek Bridge - Paving	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Jenny Creek Bridge - Paving	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Jenny Creek Bridge - Paving	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Jenny Creek Bridge - Paving	Temporary Hydroseed	1,770	SY	9.22	16,319	13,056	-20%	20,399	25%	17,863	14,290	22,329
45	Project		Jenny Creek Bridge - Paving	Rolled Erosion Control / Jute Mesh	1,770	SY	16.62	29,417	23,534	-20%	36,772	25%	32,200	25,760	40,250
45	Project		Jenny Creek Bridge - Paving	Temporary Fiber Roll	2,490	LF	8.10	20,169	16,135	-20%	25,211	25%	22,077	17,661	27,596
45	Project		Jenny Creek Bridge - Paving	Temporary Concrete Washout	2,000	LS	1.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Jenny Creek Bridge - Paving	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Jenny Creek Bridge - Paving	Water Pollution Control	0.10	%	2,884,400.00	288,440	230,752	-20%	360,550	25%	315,720	252,576	394,651
45	Project		Jenny Creek Bridge - Paving	Roadside Sign - One Post	8.00	EA	270.00	2,160	1,728	-20%	2,700	25%	2,364	1,891	2,955
45	Project		Jenny Creek Bridge - Paving	Construction Area Signs	2,000	LS	1.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Jenny Creek Bridge - Paving	Thermoplastic Traffic Stripe	1,000	LF	0.86	860	688	-20%	1,075	25%	941	753	1,177
45	Project		Jenny Creek Bridge - Paving	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Jenny Creek Bridge - Paving	Traffic Control System	20.00	DA	1,000.00	20,000	16,000	-20%	25,000	25%	21,892	17,513	27,364
45	Project		Jenny Creek Bridge - Paving	Temporary Railing (Type K)	300	LF	47.00	14,100	11,280	-20%	17,625	25%	15,434	12,347	19,292
45	Project		Other Structures	Pedestrian Bridge Total	800	SF	60.00	48,000	43,200	-10%	62,400	30%	52,540	47,286	68,302
45	Project		Other Structures	Bridge Demolition Ped Bridge Campground	800	SF	60.00	48,000	43,200	-10%	62,400	30%	52,540	47,286	68,302
45	Project		Other Structures	Bridge Demolition Timber JC Boyle	1,800	SF	60.00	108,000	97,200	-10%	140,400	30%	118,215	106,393	153,679
45	Project		Scotch Creek - Temporary Culvert	Roadway Excavation	550	CY	40.00	22,000	17,600	-20%	27,500	25%	24,081	19,265	30,101
45	Project		Scotch Creek - Temporary Culvert	Ditch Excavation	10.00	CY	35.00	350	280	-20%	438	25%	383	306	479
45	Project		Scotch Creek - Temporary Culvert	Imported Borrow	2,300	CY	45.00	103,500	82,800	-20%	129,375	25%	113,289	90,631	141,611
45	Project		Scotch Creek - Temporary Culvert	Clearing & Grubbing	1.00	LS	1.00	-	1	-20%	1	25%	-	-	-
45	Project		Scotch Creek - Temporary Culvert	Hot Mix Asphalt (Type A)	510	T	130.00	66,300	53,040	-20%	82,875	25%	72,571	58,056	90,713
45	Project		Scotch Creek - Temporary Culvert	Class 2 Aggregate Base	380	CY	65.00	24,700	19,760	-20%	30,875	25%	27,036	21,629	33,795
45	Project		Scotch Creek - Temporary Culvert	Rock Slope Protection (Class?) Method B	10.00	CY	100.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Scotch Creek - Temporary Culvert	Rock Slope Protection Fabric Class 8	30.00	SY	10.13	304	243	-20%	380	25%	333	266	416
45	Project		Scotch Creek - Temporary Culvert	36" Alternative Pipe Culvert	250	LF	261.42	65,355	52,284	-20%	81,694	25%	71,536	57,229	89,420
45	Project		Scotch Creek - Temporary Culvert	Temporary Reinforced Silt Fence	300	LF	7.58	2,274	1,819	-20%	2,843	25%	2,489	1,991	3,111
45	Project		Scotch Creek - Temporary Culvert	Temporary Fence (Type ESA)	300	LF	5.03	1,509	1,207	-20%	1,886	25%	1,652	1,321	2,065
45	Project		Scotch Creek - Temporary Culvert	Temporary Hydroseed	590	SY	9.22	5,440	4,352	-20%	6,800	25%	5,954	4,763	7,443
45	Project		Scotch Creek - Temporary Culvert	Rolled Erosion Control / Jute Mesh	590	SY	16.62	9,806	7,845	-20%	12,257	25%	10,733	8,587	13,417
45	Project		Scotch Creek - Temporary Culvert	Temporary Fiber Roll	450	LF	8.10	3,645	2,916	-20%	4,556	25%	3,990	3,192	4,987
45	Project		Scotch Creek - Temporary Culvert	Temporary Concrete Washout	2,000	LS	1.50	2,999	2,399	-20%	3,749	25%	3,283	2,626	4,104
45	Project		Scotch Creek - Temporary Culvert	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Scotch Creek - Temporary Culvert	Water Pollution Control	0.10	%	283,509.90	28,351	22,681	-20%	35,439	25%	31,032	24,826	38,791
45	Project		Scotch Creek - Temporary Culvert	Construction Area Signs	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Scotch Creek - Temporary Culvert	Temporary Traffic Stripe	520	LF	0.78	408	326	-20%	510	25%	446	357	558
45	Project		Scotch Creek - Temporary Culvert	Type III Barricade	2.00	EA	274.29	549	439	-20%	686	25%	600	480	751
45	Project		Scotch Creek - Temporary Culvert	Traffic Control System	10.00	DA	1,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Scotch Creek - Temporary Culvert	Temporary Railing (Type K)	500	LF	47.00	23,500	18,800	-20%	29,375	25%	25,723	20,578	32,153
45	Project		Scotch Creek - Culvert	Roadway Excavation	3,000	CY	40.00	120,000	96,000	-20%	150,000	25%	131,350	105,080	164,187
45	Project		Scotch Creek - Culvert	Ditch Excavation	10.00	CY	35.00	350	280	-20%	438	25%	383	306	479
45	Project		Scotch Creek - Culvert	Imported Borrow	3,000	CY	45.00	135,000	108,000	-20%	168,750	25%	147,768	118,215	184,710
45	Project		Scotch Creek - Culvert	Hot Mix Asphalt (Type A)	170	T	130.00	22,100	17,680	-20%	27,625	25%	24,190	19,352	30,238
45	Project		Scotch Creek - Culvert	Class 2 Aggregate Base	120	CY	65.00	7,800	6,240	-20%	9,750	25%	8,538	6,830	10,672
45	Project		Scotch Creek - Culvert	Rock Slope Protection Class III, Method B	5.00	CY	100.00	500	400	-20%	625	25%	547	438	684
45	Project		Scotch Creek - Culvert	Rock Slope Protection Fabric Class 8	12.00	SY	10.13	122	97	-20%	152	25%	133	106	166
45	Project		Scotch Creek - Culvert	Structural Concrete, Box Culvert	10.00	CY	4,835.00	48,350	38,680	-20%	60,438	25%	52,923	42,338	66,154

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Scotch Creek - Culvert	Midwest Guardrail System	400	LF	34.19	13,676	10,941	-20%	17,095	25%	14,969	11,976	18,712
45	Project		Scotch Creek - Culvert	Alternative Flared Terminal System	2.00	EA	2,000.00	4,000	3,200	-20%	5,000	25%	4,378	3,503	5,473
45	Project		Scotch Creek - Culvert	Temporary Reinforced Silt Fence	400	LF	7.58	3,032	2,426	-20%	3,790	25%	3,319	2,655	4,148
45	Project		Scotch Creek - Culvert	Temporary Fence (Type ESA)	400	LF	5.03	2,012	1,610	-20%	2,515	25%	2,202	1,762	2,753
45	Project		Scotch Creek - Culvert	Temporary Hydroseed	220	SY	9.22	2,028	1,623	-20%	2,536	25%	2,220	1,776	2,775
45	Project		Scotch Creek - Culvert	Rolled Erosion Control / Jute Mesh	220	SY	16.62	3,656	2,925	-20%	4,571	25%	4,002	3,202	5,003
45	Project		Scotch Creek - Culvert	Temporary Fiber Roll	450	LF	8.10	3,645	2,916	-20%	4,556	25%	3,990	3,192	4,987
45	Project		Scotch Creek - Culvert	Temporary Construction Entrance	2.00	EA	4,303.25	8,607	6,885	-20%	10,758	25%	9,420	7,536	11,776
45	Project		Scotch Creek - Culvert	Water Pollution Control	0.10	%	334,221.56	33,422	26,738	-20%	41,778	25%	36,583	29,267	45,729
45	Project		Scotch Creek - Culvert	Construction Area Signs	1.00	LS	2,500.00	2,500	2,000	-20%	3,125	25%	2,736	2,189	3,421
45	Project		Scotch Creek - Culvert	Thermoplastic Traffic Stripe	200	LF	0.86	172	138	-20%	215	25%	188	151	235
45	Project		Scotch Creek - Culvert	Traffic Control System	1.00	LS	10,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Scotch Creek - Culvert	Temporary Railing (Type K)	200	LF	33.57	6,714	5,371	-20%	8,393	25%	7,349	5,879	9,187
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Roadway Excavation	3,000	CY	40.00	120,000	96,000	-20%	150,000	25%	131,350	105,080	164,187
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Imported Borrow	2,500	CY	45.00	112,500	90,000	-20%	140,625	25%	123,140	98,512	153,925
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Rock Slope Protection Class III, Method B	250	CY	100.00	25,000	20,000	-20%	31,250	25%	27,364	21,892	34,206
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Rock Slope Protection Fabric Class 8	700	SY	10.13	7,091	5,673	-20%	8,864	25%	7,762	6,209	9,702
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	60" CORRUGATED STEEL PIPE (.138" THICK)	80.00	LF	270.00	21,600	17,280	-20%	27,000	25%	23,643	18,914	29,554
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Temporary Fence (Type ESA)	600	LF	5.03	3,018	2,414	-20%	3,773	25%	3,303	2,643	4,129
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Water Pollution Control	0.10	%	286,191.00	28,619	22,895	-20%	35,774	25%	31,326	25,061	39,157
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Construction Area Signs	1.00	LS	600.00	600	480	-20%	750	25%	657	525	821
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Traffic Control System	1.00	LS	10,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Temporary Railing (Type K)	80.00	LF	33.57	2,686	2,149	-20%	3,357	25%	2,940	2,352	3,675
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Replace and Reconstruct 60-inch Culvert No.1 at Beaver	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Rd at Beaver Creek Culvert (60 in dia)	Replace and Reconstruct 60-inch Culvert No.2 at Beaver	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Rd at Raymond Gulch Culvert	Rock Slope Protection Class III, Method B	150	CY	100.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Rd at Raymond Gulch Culvert	Rock Slope Protection Fabric Class 8	400	SY	10.13	4,052	3,242	-20%	5,065	25%	4,435	3,548	5,544
45	Project		Copco Rd at Raymond Gulch Culvert	Temporary Reinforced Silt Fence	600	LF	7.58	4,548	3,638	-20%	5,685	25%	4,978	3,983	6,223
45	Project		Copco Rd at Raymond Gulch Culvert	Temporary Fence (Type ESA)	600	LF	5.03	3,018	2,414	-20%	3,773	25%	3,303	2,643	4,129
45	Project		Copco Rd at Raymond Gulch Culvert	Water Pollution Control	1.00	LS	19,052.00	19,052	15,242	-20%	23,815	25%	20,854	16,683	26,067
45	Project		Copco Rd at Raymond Gulch Culvert	Traffic Control System	1.00	LS	1,000.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Copco Rd at Raymond Gulch Culvert	60-inch Culvert at Raymond Gulch	1.00	LS	10,000.00	10,000	8,000	-20%	12,500	25%	10,946	8,757	13,682
45	Project		Patricia Avenue Culverts	Rock Slope Protection Class III, Method B	150	CY	100.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Patricia Avenue Culverts	Rock Slope Protection Fabric Class 8	400	SY	10.13	4,052	3,242	-20%	5,065	25%	4,435	3,548	5,544
45	Project		Patricia Avenue Culverts	Water Pollution Control	0.10	%	19,052.00	1,905	1,524	-20%	2,382	25%	2,085	1,668	2,607
45	Project		Patricia Avenue Culverts	Traffic Control System	1.00	LS	1,000.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Topsy Grade Culverts	Trench Excavation	275	CY	40.00	11,000	8,800	-20%	13,750	25%	12,040	9,632	15,050
45	Project		Topsy Grade Culverts	Clearing & Grubbing	1.00	LS	2,000.00	2,000	1,600	-20%	2,500	25%	2,189	1,751	2,736
45	Project		Topsy Grade Culverts	Rock Slope Protection Class III, Method B	800	CY	100.00	80,000	64,000	-20%	100,000	25%	87,566	70,053	109,458
45	Project		Topsy Grade Culverts	Rock Slope Protection Fabric Class 8	2,350	SY	10.13	23,806	19,044	-20%	29,757	25%	26,057	20,846	32,571
45	Project		Topsy Grade Culverts	24" corrugated steel pipe (.138" thick)	200	LF	137.50	27,500	22,000	-20%	34,375	25%	30,101	24,081	37,626
45	Project		Topsy Grade Culverts	Temporary Reinforced Silt Fence	1,000	LF	7.58	7,580	6,064	-20%	9,475	25%	8,297	6,638	10,371
45	Project		Topsy Grade Culverts	Temporary Fence (Type ESA)	1,000	LF	5.03	5,030	4,024	-20%	6,288	25%	5,506	4,405	6,882
45	Project		Topsy Grade Culverts	Water Pollution Control	0.10	%	144,305.50	14,431	11,544	-20%	18,038	25%	15,795	12,636	19,744
45	Project		Topsy Grade Culverts	Traffic Control System	1.00	LS	5,000.00	5,000	4,000	-20%	6,250	25%	5,473	4,378	6,841
45	Project		JC Boyle Unnamed Culverts	Rock Slope Protection Class III, Method B	115	CY	100.00	11,500	9,200	-20%	14,375	25%	12,588	10,070	15,735
45	Project		JC Boyle Unnamed Culverts	Rock Slope Protection Fabric Class 8	350	SY	10.13	3,546	2,836	-20%	4,432	25%	3,881	3,105	4,851
45	Project		JC Boyle Unnamed Culverts	Water Pollution Control	0.10	%	15,045.50	1,505	1,204	-20%	1,881	25%	1,647	1,317	2,059
45	Project		JC Boyle Unnamed Culverts	Traffic Control System	1.00	LS	1,000.00	1,000	800	-20%	1,250	25%	1,095	876	1,368
45	Project		Copco Road at Unnamed Creek Culvert No. 1	Copco Road at Unnamed Creek Culvert No. 1	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Copco Road at Unnamed Creek Culvert No. 2	Copco Road at Unnamed Creek Culvert No. 2	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		6'x6'x34' Box Culvert installation	6'x6'x34' Box Culvert installation	1.00	LS	15,000.00	15,000	12,000	-20%	18,750	25%	16,419	13,135	20,523
45	Project		Paving - Lakeview Disposal Access Road	Pre: none; Post: 0.7 miles 6" AB overlay (no drainage)	1.00	EA	170,000.00	170,000	-	-20%	340,000	25%	191,227	-	382,454
45	Project		Paving - Copco 1 Dam Access	Pre: 2500CY roadway excavation, 0.9 miles 9" AB overlay (no	1.00	EA	250,000.00	250,000	190,000	-20%	370,000	25%	270,400	205,504	400,192
45	Project		Paving - Copco Rd from Copco 1 access to Copco Bridge	Pre: 1 mile 9" AB repair; Post: 1 mile 9" AB repair, 0.2 mile	1.00	EA	318,000.00	318,000	208,000	-20%	585,000	25%	352,204	230,372	647,922
45	Project		Paving - Copco 1 Ager Beswick Rd Barge Access	Pre: minor excavation and 9" AB section; Post: none	1.00	EA	60,000.00	60,000	-	-20%	120,000	25%	64,896	-	129,792
45	Project		Paving - US 97 Dalles CA Hwy	Pre: none; Post: none (high only)	1.00	EA	966,000.00	-	-	-20%	966,000	25%	-	-	1,086,619
45	Project		Paving - OR 66 Green Springs hwy	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	988,000	25%	-	-	1,111,366
45	Project		Paving - JC Boyle Keno Worden	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	988,000	25%	-	-	1,111,366
45	Project		Paving - Topsy Grade Rd	Pre: 0.9 mile 9" AB repair; Post: 0.9 mile 9" AB repair	1.00	EA	880,000.00	880,000	440,000	-20%	1,320,000	25%	970,844	485,422	1,456,266

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
45	Project		Paving - JC Boyle Dam Access Rd (2,940 ft to dam toe)	Pre: minor excavation; 0.25 mile new 9" AB, 0.7 mile 9" AB	1.00	EA	335,000.00	335,000	212,000	-20%	374,000	25%	368,133	232,968	410,991
45	Project		Paving - JC Boyle Power Canal Access Rd	Pre: 1.5 mile 9" AB repair; post: 1.5 mile 9" AB repair; no	1.00	EA	432,000.00	432,000	216,000	-20%	744,000	25%	476,596	238,298	820,805
45	Project		Paving - JC Boyle Powerhouse Access Rd	Pre: none; Post: none (high only)	1.00	EA	-	-	-	-20%	216,000	25%	-	-	242,971
45	Project		Paving - Copco Rd I5 to Ager Rd	Pre: none; Post: 1 mile new asphalt overlay	1.00	EA	1,090,000.00	1,090,000	545,000	-20%	2,100,000	25%	1,226,102	613,051	2,362,214
45	Project		Paving - Copco Rd Ager Rd to Lakeview Rd	Pre: 0.5 miles crack sealer, 0.75 miles new asphalt; Post: 1	1.00	EA	1,625,000.00	1,625,000	1,185,000	-20%	5,235,000	25%	1,799,782	1,312,457	5,798,068
45	Project		Paving - Copco Rd to Lakeview Rd to Dagget Rd	Pre: 1 mile crack sealer, 1.5 miles new asphalt; Post: 2 miles	1.00	EA	2,980,000.00	2,980,000	2,370,000	-20%	10,470,000	25%	3,300,524	2,624,913	11,596,136
45	Project		Paving - Copco Rd Daggett Rd to Copco 1 Access Rd	Pre: 1.5 mile 9" AB repair; Post: 1.5 mile 9" AB repair, no	1.00	EA	432,000.00	432,000	216,000	-20%	744,000	25%	476,596	238,298	820,805
46			RECREATION IMPROVEMENTS												
46	Project		Campground - Jenny Creek expansion & upgrade	Picnic table	7.00	EA	2,363.80	16,547	10,500	-37%	21,000	27%	18,112	11,493	22,986
46	Project		Campground - Jenny Creek expansion & upgrade	Fire grate	7.00	EA	675.37	4,728	3,000	-37%	6,000	27%	5,175	3,284	6,567
46	Project		Campground - Jenny Creek expansion & upgrade	Trash bins	7.00	EA	1,000.00	7,000	5,000	-29%	10,000	43%	7,662	5,473	10,946
46	Project		Campground - Jenny Creek expansion & upgrade	Parking	7.00	EA	562.81	3,940	2,500	-37%	5,000	27%	4,312	2,736	5,473
46	Project		Campground - Jenny Creek expansion & upgrade	Shade structure	3.00	EA	14,633.07	43,899	26,000	-41%	65,000	48%	48,051	28,459	71,148
46	Project		Campground - Jenny Creek expansion & upgrade	Restroom (single vault toilet)	2.00	EA	57,406.66	114,813	102,000	-11%	204,000	78%	125,672	111,647	223,294
46	Project		Campground - Jenny Creek expansion & upgrade	Assumed earthwork	450	CY	9.00	4,052	2,400	-41%	4,800	18%	4,435	2,627	5,254
46	Project		Campground - Jenny Creek expansion & upgrade	Signage	2.00	EA	5,000.00	10,000	5,000	-50%	15,000	50%	10,946	5,473	16,419
46	Project		Campground - Jenny Creek expansion & upgrade	Operations and maintenance	5.00	YR	33,768.63	168,843	-	0%	600,000	255%	184,812	-	656,748
46	Project		Campground - Topsy upgrade	boat ramp	1.00	EA	10,000.00	10,000	10,000	0%	10,000	0%	10,946	10,946	10,946
46	Project		Campground - Topsy upgrade	trash bins	1.00	EA	1,000.00	1,000	1,000	0%	1,000	0%	1,095	1,095	1,095
46	Project		Campground - Topsy upgrade	Operations and maintenance	5.00	YR	11,256.21	56,281	-	0%	200,000	255%	61,604	-	218,916
46	Project		Campgrounds - New campgrounds	picnic table	20.00	EA	2,363.80	47,276	47,276	0%	47,276	0%	51,747	51,747	51,747
46	Project		Campgrounds - New campgrounds	fire grate	20.00	EA	675.37	13,507	13,507	0%	13,507	0%	14,785	14,785	14,785
46	Project		Campgrounds - New campgrounds	trash bins	20.00	EA	1,000.00	20,000	20,000	0%	20,000	0%	21,892	21,892	21,892
46	Project		Campgrounds - New campgrounds	restroom (single vault toilet)	6.00	EA	57,406.66	344,440	344,440	0%	344,440	0%	377,017	377,017	377,017
46	Project		Campgrounds - New campgrounds	parking	20.00	EA	562.81	11,256	11,256	0%	11,256	0%	12,321	12,321	12,321
46	Project		Campgrounds - New campgrounds	boat ramp	2.00	EA	11,256.21	22,512	14,633	-35%	22,512	0%	24,642	16,017	24,642
46	Project		Campgrounds - New campgrounds	trash bins	2.00	EA	1,000.00	2,000	1,300	-35%	2,000	0%	2,189	1,423	2,189
46	Project		Campgrounds - New campgrounds	picnic table	2.00	EA	2,363.80	4,728	4,255	-10%	4,728	0%	5,175	4,657	5,175
46	Project		Campgrounds - New campgrounds	fire grate	2.00	EA	675.37	1,351	1,216	-10%	1,351	0%	1,478	1,331	1,478
46	Project		Campgrounds - New campgrounds	trash bins	2.00	EA	1,000.00	2,000	2,000	0%	2,000	0%	2,189	2,189	2,189
46	Project		Campgrounds - New campgrounds	assumed earthwork	1,200	CY	9.00	10,806	9,725	-10%	10,806	0%	11,828	10,645	11,828
46	Project		Campgrounds - New campgrounds	signage	4.00	EA	5,000.00	20,000	10,000	-50%	30,000	50%	21,892	10,946	32,837
46	Project		Campgrounds - New campgrounds	Operations and maintenance	5.00	YR	67,537.25	337,686	-	0%	1,200,000	255%	369,624	-	1,313,495
46	Project		Recreation area - Fall Creek upgrade	restroom (single vault toilet)	1.00	EA	57,406.66	57,407	51,666	-10%	103,332	80%	62,836	56,553	113,105
46	Project		Recreation area - Fall Creek upgrade	picnic table	5.00	EA	2,363.80	11,819	8,400	-29%	12,600	7%	12,937	9,194	13,792
46	Project		Recreation area - Fall Creek upgrade	shade structure	2.00	EA	14,633.07	29,266	26,340	-10%	43,899	50%	32,034	28,831	48,051
46	Project		Recreation area - Fall Creek upgrade	fire grate	4.00	EA	675.37	2,701	1,800	-33%	3,000	11%	2,957	1,970	3,284
46	Project		Recreation area - Fall Creek upgrade	trash bins	5.00	EA	1,000.00	5,000	4,000	-20%	6,000	20%	5,473	4,378	6,567
46	Project		Recreation area - Fall Creek upgrade	parking	6.00	EA	562.81	3,377	2,000	-41%	4,000	18%	3,696	2,189	4,378
46	Project		Recreation area - Fall Creek upgrade	reconstructed trail	0.50	MI	35,659.67	17,830	7,920	-56%	31,680	78%	19,516	8,669	34,676
46	Project		Recreation area - Fall Creek upgrade	assumed earthwork	300	CY	9.00	2,701	1,600	-41%	3,200	18%	2,957	1,751	3,503
46	Project		Recreation area - Fall Creek upgrade	signage	2.00	EA	5,000.00	10,000	5,000	-50%	15,000	50%	10,946	5,473	16,419
46	Project		Recreation area - Fall Creek upgrade	Operations and maintenance	5.00	YR	16,884.31	84,422	-	0%	300,000	255%	92,406	-	328,374
46	Project		Recreation area - Iron Gate Hatchery day use site	shade structure	3.00	EA	14,633.07	43,899	26,000	-41%	52,000	18%	48,051	28,459	56,918
46	Project		Recreation area - Iron Gate Hatchery day use site	picnic table	6.00	EA	2,363.80	14,183	8,400	-41%	16,800	18%	15,524	9,194	18,389
46	Project		Recreation area - Iron Gate Hatchery day use site	trash bins	7.00	EA	1,000.00	7,000	5,000	-29%	9,000	29%	7,662	5,473	9,851
46	Project		Recreation area - Iron Gate Hatchery day use site	parking	6.00	EA	562.81	3,377	2,000	-41%	4,000	18%	3,696	2,189	4,378
46	Project		Recreation area - Iron Gate Hatchery day use site	fire grate	6.00	EA	675.37	4,052	2,400	-41%	4,800	18%	4,435	2,627	5,254
46	Project		Recreation area - Iron Gate Hatchery day use site	restroom (single vault toilet)	2.00	EA	57,406.66	114,813	102,000	-11%	204,000	78%	125,672	111,647	223,294
46	Project		Recreation area - Iron Gate Hatchery day use site	boat ramp	1.00	EA	11,256.21	11,256	11,256	0%	11,256	0%	12,321	12,321	12,321
46	Project		Recreation area - Iron Gate Hatchery day use site	assumed earthwork	450	CY	9.00	4,052	2,400	-41%	4,800	18%	4,435	2,627	5,254
46	Project		Recreation area - Iron Gate Hatchery day use site	signage	2.00	EA	5,000.00	10,000	5,000	-50%	15,000	50%	10,946	5,473	16,419
46	Project		Recreation area - Iron Gate Hatchery day use site	Operations and maintenance	5.00	YR	16,884.31	84,422	-	0%	300,000	255%	92,406	-	328,374
46	Project		Recreation area - River fishing access sites	parking	18.00	EA	562.81	10,131	-	0%	12,000	18%	11,089	-	13,135
46	Project		Recreation area - River fishing access sites	portable toilet	6.00	EA	787.93	4,728	4,200	-11%	5,600	18%	5,175	4,597	6,130
46	Project		Recreation area - River fishing access sites	trash bins	6.00	EA	1,000.00	6,000	6,000	0%	8,000	33%	6,567	6,567	8,757
46	Project		Recreation area - River fishing access sites	signage	6.00	EA	5,000.00	30,000	30,000	0%	40,000	33%	32,837	32,837	43,783
46	Project		Recreation area - River fishing access sites	trail refurbishment	7,920	LF	6.75	53,490	47,520	-11%	63,360	18%	58,548	52,014	69,353
46	Project		Recreation area - River fishing access sites	Operations and maintenance	5.00	YR	11,256.21	56,281	-	0%	200,000	255%	61,604	-	218,916
46	Project		Recreation area - New day use sites	picnic table	4.00	EA	2,363.80	9,455	-	0%	12,600	33%	10,349	-	13,792
46	Project		Recreation area - New day use sites	fire grate	4.00	EA	675.37	2,701	-	0%	3,600	33%	2,957	-	3,940

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
46	Project		Recreation area - New day use sites	trash bins	4.00	EA	1,000.00	4,000	-	0%	6,000	50%	4,378	-	6,567
46	Project		Recreation area - New day use sites	shade structure	2.00	EA	14,633.07	29,266	-	0%	39,000	33%	32,034	-	42,689
46	Project		Recreation area - New day use sites	assumed earthwork	200	CY	9.00	1,801	-	0%	2,400	33%	1,971	-	2,627
46	Project		Recreation area - New day use sites	signage	2.00	EA	5,000.00	10,000	-	0%	15,000	50%	10,946	-	16,419
46	Project		Recreation area - New day use sites	Operations and maintenance	5.00	YR	22,512.42	112,562	-	0%	400,000	255%	123,208	-	437,832
46	Project		Recreation area - New boat ramps	New boat ramps	4.00	EA	11,256.21	45,025	20,000	-56%	80,000	78%	49,283	21,892	87,566
46	Project		Non-motorized rec trails - JC Boyle to Iron Gate	Trail	20.00	MI	35,659.67	713,193	-	0%	1,267,200	78%	780,647	-	1,387,051
46	Project		Non-motorized rec trails - JC Boyle to Iron Gate	Signage	2.00	EA	5,000.00	10,000	-	0%	15,000	50%	10,946	-	16,419
46	Project		Non-motorized rec trails	Walking trails for recreation access to river	7.00	MI	35,659.67	249,618	158,400	-37%	316,800	27%	273,226	173,381	346,763
46	Project		Non-motorized rec trails - Walking/wildlife viewing/interpretive	Trail Grading	5.00	MI	35,659.67	178,298	-	0%	316,800	78%	195,162	-	346,763
46	Project		Non-motorized rec trails - Walking/wildlife viewing/interpretive	trash bins	1.00	EA	1,000.00	1,000	-	####	1,000	0%	1,095	-	1,095
46	Project		Non-motorized rec trails - Walking/wildlife viewing/interpretive	Signage	2.00	EA	5,000.00	10,000	-	0%	15,000	0%	10,946	-	16,419
46	Project		General Conditions	Contractor overhead	15%	%	3,337,792.01	500,669	450,772	-10%	651,114	30%	548,022	493,405	712,696
46	Project		General Conditions	Contractor profit	8%	%	3,337,792.01	267,023	240,411	-10%	347,261	30%	292,278	263,149	380,105
46	Project		General Conditions	Insurance	1%	%	4,105,484.17	41,055	36,963	-10%	53,391	30%	44,938	40,459	58,441
46	Project		General Conditions	Bond	1%	%	4,105,484.17	41,055	36,963	-10%	53,391	30%	44,938	40,459	58,441
47			FLOOD PROOFING												
47	Project	10.010	Raise homes	Cost to raise homes and add 2 stairs	45.00	EA	30,187.71	1,358,447	1,086,758	-20%	1,765,981	30%	1,498,682	1,198,946	1,948,287
48			PUBLIC HEALTH AND SAFETY												
48	Project		Public Health and Safety	Cattle exclusion fencing	182,160	LF	11.90	2,167,704	2,489,116	15%	3,042,253	40%	2,363,345	2,713,766	3,316,825
50			MITIGATION MEASURES												
51			GROUNDWATER IMPROVEMENTS												
51	Project		Groundwater improvements	Outreach to well owners	1.00	SUM	55,000.00	55,000	55,000	0%	55,000	0%	59,488	59,488	59,488
51	Project		Groundwater improvements	Drill and install new monitoring wells	5.00	EA	16,000.00	80,000	48,000	-40%	80,000	0%	88,259	52,955	88,259
51	Project		Groundwater improvements	Sentinel water level monitoring of new wells and landowner	36.00	MO	2,800.00	100,800	86,400	-14%	115,200	14%	115,743	99,208	132,278
51	Project		Groundwater improvements	WQ laboratory analytical testing	1.00	SUM	37,500.00	37,500	15,000	-60%	60,000	60%	41,371	16,548	66,194
51	Project		Groundwater improvements	Well replacements	20.00	EA	63,375.00	1,267,500	810,000	-36%	1,725,000	36%	1,483,366	947,950	2,018,782
51	Project		Groundwater improvements	Well abandonment	20.00	EA	2,625.00	52,500	30,000	-43%	75,000	43%	58,488	33,421	83,554
51	Project		Groundwater improvements	Temporary water supply	16.00	EA	3,406.25	54,500	36,000	-34%	73,000	34%	60,716	40,106	81,326
51	Project		Groundwater improvements	Permitting and Reporting	1.00	SUM	66,500.00	66,500	37,000	-44%	96,000	44%	74,084	41,220	106,949
52			WATER SUPPLY/RIGHTS												
52	Project		Water supply rights	Hay production	3,379	T	175.00	591,357	506,877	-14%	675,836	14%	652,403	559,203	745,604
52	Project		Water supply rights	Water supply for domestic use for water rights	1.00	LS	28.01	8,666	8,436	-3%	9,053	4%	9,561	9,306	9,988
52	Project		Water supply rights	Sediment removal at intakes	254	CY	500.00	126,999	63,500	-50%	190,499	50%	140,110	70,055	210,164
52	Project		Water supply rights	Groundwater wells - domestic	9.00	EA	10,000.00	90,000	40,000	-56%	100,000	11%	99,291	44,129	110,323
52	Project		Water supply rights	Groundwater wells - municipal	1.00	EA	100,000.00	100,000	-	####	100,000	0%	110,323	-	110,323
52	Project		Water supply rights	Sediment basin	39.00	EA	1,851.85	72,222	72,222	0%	72,222	0%	79,678	79,678	79,678
53			CULTURAL RESOURCES												
53			2017/18 Support												
53	Project		Cultural Resources Tasks	Generally	12.00	MO	168,958.33	2,027,500	1,824,750	-10%	2,230,250	10%	2,027,500	1,824,750	2,230,250
53			2018/19 Support												
53	Project		Cultural Resources Tasks	Generally	12.00	MO	168,958.33	2,027,500	1,824,750	-10%	2,230,250	10%	2,068,050	1,861,245	2,274,855
53			2019 H2 Support												
53	Project		Task management	Principal Scientist/Planner	208	HR	900.00	187,200	168,480	-10%	205,920	10%	194,688	175,219	214,157
53	Project		Task 1.2A Agency consultation	Principal Scientist/Planner	83.20	HR	180.00	14,976	13,478	-10%	16,474	10%	15,575	14,018	17,133
53	Project		Task 1.2A Agency consultation	Senior Scientist/Planner	41.60	HR	160.00	6,656	5,990	-10%	7,322	10%	6,922	6,230	7,614
53	Project		Task 1.2B Tribal consultation and work plans	Principal Scientist/Planner	256	HR	180.00	46,080	41,472	-10%	50,688	10%	47,923	43,131	52,716
53	Project		Task 1.2B Tribal consultation and work plans	Senior Scientist/Planner	128	HR	160.00	20,480	18,432	-10%	22,528	10%	21,299	19,169	23,429
53	Project		Task 1.2B Tribal consultation and work plans	Technical Editor	16.00	HR	105.00	1,680	1,512	-10%	1,848	10%	1,747	1,572	1,922
53	Project		Task 1.2B Tribal consultation and work plans	GIS/CADD/Graphics	24.00	HR	90.00	2,160	1,944	-10%	2,376	10%	2,246	2,022	2,471
53			2020-2024 Support												
53	Project		Task management	Principal Scientist/Planner	1,040	HR	180.00	187,200	168,480	-10%	205,920	10%	210,795	189,715	231,874
53	Project		Task 1.2A Agency consultation	Principal Scientist/Planner	416	HR	180.00	74,880	67,392	-10%	82,368	10%	84,318	75,866	92,750

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
53	Project		Task 1.2A Agency consultation	Senior Scientist/Planner	208	HR	160.00	33,280	29,952	-10%	36,608	10%	37,475	33,727	41,222
53	Project		Task 1.2B Tribal consultation and work plans	Principal Scientist/Planner	1,280	HR	180.00	230,400	207,360	-10%	253,440	10%	259,440	233,496	285,384
53	Project		Task 1.2B Tribal consultation and work plans	Senior Scientist/Planner	640	HR	160.00	102,400	92,160	-10%	112,640	10%	115,307	103,776	126,837
53	Project		Task 1.2B Tribal consultation and work plans	Technical Editor	80.00	HR	105.00	8,400	7,560	-10%	9,240	10%	9,459	8,513	10,405
53	Project		Task 1.2B Tribal consultation and work plans	GIS/CADD/Graphics	120	HR	90.00	10,800	9,720	-10%	11,880	10%	12,161	10,945	13,377
53	Project		Task 2.6L Curation	Principal Scientist/Planner	80.00	HR	180.00	14,400	12,960	-10%	15,840	10%	16,110	14,499	17,721
53	Project		Task 2.6L Curation	Scientist/Planner	1,640	HR	120.00	196,800	177,120	-10%	216,480	10%	220,165	198,148	242,181
53	Project		Task 2.6L Curation	Curation	410	EA	500.00	205,000	184,500	-10%	225,500	10%	229,338	206,405	252,272
53	Project		Task 2.6L Curation	Other direct costs	1.00	SUM	5,000.00	5,000	4,500	-10%	5,500	10%	5,594	5,034	6,153
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Principal Scientist/Planner	200	HR	180.00	36,000	32,400	-10%	39,600	10%	38,938	35,044	42,831
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Senior Scientist/Planner	290	HR	160.00	46,400	41,760	-10%	51,040	10%	50,186	45,168	55,205
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Scientist/Planner	1,180	HR	120.00	141,600	127,440	-10%	155,760	10%	153,155	137,839	168,470
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	4,543	4,088	4,997
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Junior Scientist/Planner	10.00	HR	95.00	950	855	-10%	1,045	10%	1,028	925	1,130
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	GIS/CADD/Graphics	100	HR	90.00	9,000	8,100	-10%	9,900	10%	9,734	8,761	10,708
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Tribal monitor subcontract	149	DA	617.00	91,933	82,740	-10%	101,126	10%	99,435	89,491	109,378
53	Project		Task 2.6M Arch fieldwork - Drawdown shoreline survey	Travel and perdiem	1.00	SUM	35,858.00	35,858	32,272	-10%	39,444	10%	38,784	34,906	42,662
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Principal Scientist/Planner	200	HR	180.00	36,000	32,400	-10%	39,600	10%	40,495	36,446	44,545
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Senior Scientist/Planner	98.00	HR	160.00	15,680	14,112	-10%	17,248	10%	17,638	15,874	19,402
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Scientist/Planner	972	HR	120.00	116,640	104,976	-10%	128,304	10%	131,204	118,084	144,325
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	4,724	4,252	5,197
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Junior Scientist/Planner	20.00	HR	95.00	1,900	1,710	-10%	2,090	10%	2,137	1,924	2,351
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	GIS/CADD/Graphics	120	HR	90.00	10,800	9,720	-10%	11,880	10%	12,149	10,934	13,363
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Field Technician	768	HR	75.00	57,600	51,840	-10%	63,360	10%	64,792	58,313	71,271
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Tribal monitor subcontract	77.00	DA	647.85	49,884	44,896	-10%	54,873	10%	56,113	50,502	61,725
53	Project		Task 2.6M Arch fieldwork - Post drawdown survey	Travel and perdiem	1.00	SUM	30,900.00	30,900	27,810	-10%	33,990	10%	34,758	31,282	38,234
53	Project		Task 2.6N Discoveries - Burial recovery	Human remains	100	EA	15,000.00	1,500,000	1,350,000	-10%	1,650,000	10%	1,689,061	1,520,155	1,857,968
53	Project		Task 2.6N Discoveries - Burial recovery	Other direct costs	1.00	SUM	500.00	500	450	-10%	550	10%	563	507	619
53	Project		Task 2.6N Discoveries - Arch resources	Archaeological unit cost	60.00	EA	30,000.00	1,800,000	1,620,000	-10%	1,980,000	10%	2,026,874	1,824,186	2,229,561
53	Project		Task 2.6N Discoveries - Arch resources	Other direct costs	1.00	SUM	500.00	500	450	-10%	550	10%	563	507	619
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Principal Scientist/Planner	240	HR	180.00	43,200	38,880	-10%	47,520	10%	47,660	42,894	52,426
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Senior Scientist/Planner	1,808	HR	160.00	289,280	260,352	-10%	318,208	10%	319,143	287,229	351,057
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Scientist/Planner	1,928	HR	120.00	231,360	208,224	-10%	254,496	10%	255,244	229,719	280,768
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	4,634	4,170	5,097
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Junior Scientist/Planner	40.00	HR	95.00	3,800	3,420	-10%	4,180	10%	4,192	3,773	4,612
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	GIS/CADD/Graphics	120	HR	90.00	10,800	9,720	-10%	11,880	10%	11,915	10,723	13,106
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Field Technician	7,680	HR	75.00	576,000	518,400	-10%	633,600	10%	635,462	571,915	699,008
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Tribal monitor subcontract	452	EA	617.00	278,884	250,996	-10%	306,772	10%	307,674	276,906	338,441
53	Project		Task 2.6O Short-term monitoring FY 2021-2022	Other direct costs	1.00	SUM	127,984.00	127,984	115,186	-10%	140,782	10%	141,196	127,076	155,316
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Principal Scientist/Planner	240	HR	180.00	43,200	38,880	-10%	47,520	10%	52,586	47,328	57,845
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Senior Scientist/Planner	1,176	HR	160.00	188,160	169,344	-10%	206,976	10%	229,043	206,139	251,947
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Scientist/Planner	1,536	HR	120.00	184,320	165,888	-10%	202,752	10%	224,368	201,932	246,805
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Technical Editor	40.00	HR	105.00	4,200	3,780	-10%	4,620	10%	5,113	4,601	5,624
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Junior Scientist/Planner	40.00	HR	95.00	3,800	3,420	-10%	4,180	10%	4,626	4,163	5,088
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	GIS/CADD/Graphics	230	HR	90.00	20,700	18,630	-10%	22,770	10%	25,198	22,678	27,117
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Field Technician	7,680	HR	75.00	576,000	518,400	-10%	633,600	10%	701,151	631,036	771,267
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Tribal monitor subcontract	294	EA	647.85	190,468	171,421	-10%	209,515	10%	231,852	208,667	255,037
53	Project		Task 2.6O Short-term monitoring FY 2023-2025	Other direct costs	1.00	SUM	57,448.00	57,448	51,703	-10%	63,193	10%	69,930	62,937	76,923
53	Project		TCP Project allowance	TCP Project allowance	1.00	SUM	1,000,000.00	1,000,000	1,000,000	0%	1,000,000	0%	1,000,000	1,000,000	1,000,000
53	Project		Cultural resources allowance	Allowance for additional discoveries (reconciled with risk log)	1.00	SUM	1,000,000.00	1,000,000	1,000,000	0%	1,000,000	0%	1,000,000	1,000,000	1,000,000
60			MONITORING AND OTHER COSTS												
61			AQUATIC RESOURCES												
61	Project		Mainstem spawning (AR-1)	Tributary confluence monitoring (passage)	960	HR	46.13	44,280	39,852	-10%	66,420	50%	48,866	43,980	73,299
61	Project		Mainstem spawning (AR-1)	Confluence Area Maintenance (downstream tribs)	900	HR	46.13	41,513	37,361	-10%	62,269	50%	45,812	41,231	68,718
61	Project		Mainstem spawning (AR-1)	Confluence Area Maintenance (upstream tribs)	400	HR	102.50	41,000	36,900	-10%	61,500	50%	45,246	40,722	67,870
61	Project		Mainstem spawning (AR-1)	Mainstem Spawning Gravel Survey (45.3 miles)	100	HR	148.63	14,863	13,376	-10%	22,294	50%	16,402	14,762	24,603
61	Project		Mainstem spawning (AR-1)	Tributary Spawning Gravel Survey (13.9 miles)	200	HR	102.50	20,500	18,450	-10%	30,750	50%	22,623	20,361	33,935
61	Project		Mainstem spawning (AR-1)	Reporting and Coordination	1,280	HR	102.50	131,200	118,080	-10%	196,800	50%	144,789	130,310	217,183
61	Project		Mainstem spawning (AR-1)	Spawning Gravel Augmentation	16,132	CY	256.25	4,133,825	3,720,443	-10%	6,200,738	50%	4,561,971	4,105,774	6,842,957
61	Project		Mainstem spawning (AR-1)	Laborer (30 days)	240	HR	35.88	8,610	7,749	-10%	12,915	50%	9,502	8,552	14,253
61	Project		Mainstem spawning (AR-1)	200 Class Excavator (30 days)	240	HR	256.25	61,500	55,350	-10%	92,250	50%	67,870	61,083	101,804

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices						Escalated to Year of Construction				
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High
61	Project		Juvenile outmigration (AR-2)	Tributary Confluence Monitoring (Passage)	960	HR	46.13	44,280	39,852	-10%	66,420	50%	48,866	43,980	73,299
61	Project		Juvenile outmigration (AR-2)	Tributary Confluence Monitoring (WQ)	960	HR	46.13	44,280	39,852	-10%	66,420	50%	48,866	43,980	73,299
61	Project		Juvenile outmigration (AR-2)	2018 Mainstem Winter Seining Recon	400	HR	107.63	43,050	38,745	-10%	64,575	50%	47,509	42,758	71,263
61	Project		Juvenile outmigration (AR-2)	2019 Mainstem Winter Seining	400	HR	153.75	61,500	55,350	-10%	92,250	50%	67,870	61,083	101,804
61	Project		Juvenile outmigration (AR-2)	Fish Transport (1 Truck)	400	HR	46.13	18,450	16,605	-10%	27,675	50%	20,361	18,325	30,541
61	Project		Juvenile outmigration (AR-2)	Fish Rescue and Relocation Crew	1,120	HR	153.75	172,200	154,980	-10%	258,300	50%	190,035	171,032	285,053
61	Project		Juvenile outmigration (AR-2)	Fish Transport (2 Trucks)	3,360	HR	46.13	154,980	139,482	-10%	232,470	50%	171,032	153,928	256,547
61	Project		Juvenile outmigration (AR-2)	Reporting and Coordination	1,280	HR	102.50	131,200	118,080	-10%	196,800	50%	144,789	130,310	217,183
61	Project		Juvenile outmigration (AR-2)	Miscellaneous Equipment	5.00	EA	6,150.00	30,750	27,675	-10%	46,125	50%	33,935	30,541	50,902
61	Project		Juvenile outmigration (AR-2)	H2O Monitoring Equipment	5.00	EA	30,750.00	153,750	138,375	-10%	230,625	50%	169,674	152,707	254,511
61	Project		Juvenile outmigration (AR-2)	H2O Monitoring Equipment	26.00	EA	307.50	7,995	7,196	-10%	11,993	50%	8,823	7,941	13,235
61	Project		Juvenile outmigration (AR-2)	Technician Equipment	14.00	EA	1,230.00	17,220	15,498	-10%	25,830	50%	19,004	17,103	28,505
61	Project		Juvenile outmigration (AR-2)	Transport Vehicle Rental (\$300/day for 21 days)	672	HR	46.13	30,996	27,896	-10%	46,494	50%	34,206	30,786	51,309
61	Project		Juvenile outmigration (AR-2)	Transport Vehicle Operational Cost (\$0.75/mi)	53,760	MI	0.92	49,594	44,634	-10%	74,390	50%	54,730	49,257	82,095
61	Project		Sucker rescue and relocation plan (AR-6)	Sucker Recapture Study (Spring and Fall)	280	HR	307.50	86,100	77,490	-10%	129,150	50%	95,018	85,516	142,526
61	Project		Sucker rescue and relocation plan (AR-6)	Sucker Salvage	280	HR	307.50	86,100	77,490	-10%	129,150	50%	95,018	85,516	142,526
61	Project		Sucker rescue and relocation plan (AR-6)	Sucker Transport (1 Truck)	140	HR	46.13	6,458	5,812	-10%	9,686	50%	7,126	6,414	10,689
61	Project		Sucker rescue and relocation plan (AR-6)	Reporting and Coordination	960	HR	102.50	98,400	88,560	-10%	147,600	50%	108,591	97,732	162,887
61	Project		Sucker rescue and relocation plan (AR-6)	Boat Electrofisher	300	HR	36.90	11,070	9,963	-10%	16,605	50%	12,217	10,995	18,325
61	Project		Sucker rescue and relocation plan (AR-6)	Boats (2 boats)	224	HR	92.25	20,664	18,598	-10%	30,996	50%	22,804	20,524	34,206
61	Project		Sucker rescue and relocation plan (AR-6)	Technician Equipment	12.00	EA	1,230.00	14,760	13,284	-10%	22,140	50%	16,289	14,660	24,433
61	Project		Sucker rescue and relocation plan (AR-6)	Tagging Equipment	1.00	EA	12,300.00	12,300	11,070	-10%	18,450	50%	13,574	12,217	20,361
61	Project		Sucker rescue and relocation plan (AR-6)	Transport Vehicle Rental (\$300/day)	168	HR	46.13	7,749	6,974	-10%	11,624	50%	8,552	7,696	12,827
61	Project		Sucker rescue and relocation plan (AR-6)	Transport Vehicle Operational Cost (\$0.75/mi)	7,200	MI	0.92	6,642	5,978	-10%	9,963	50%	7,330	6,597	10,995
61	Project		Freshwater mussel relocation (AR-7)	Freshwater Mussel Reconnaissance	280	HR	107.63	30,135	27,122	-10%	45,203	50%	33,256	29,931	49,884
61	Project		Freshwater mussel relocation (AR-7)	Mussel Salvage and Relocation	700	HR	107.63	75,338	67,804	-10%	113,006	50%	83,140	74,826	124,710
61	Project		Freshwater mussel relocation (AR-7)	Mussel Transport (1 Truck)	140	HR	46.13	6,458	5,812	-10%	9,686	50%	7,126	6,414	10,689
61	Project		Freshwater mussel relocation (AR-7)	Reporting and Coordination	960	HR	102.50	98,400	88,560	-10%	147,600	50%	108,591	97,732	162,887
61	Project		Freshwater mussel relocation (AR-7)	Miscellaneous Equipment	1.00	EA	6,150.00	6,150	5,535	-10%	9,225	50%	6,787	6,108	10,180
61	Project		Freshwater mussel relocation (AR-7)	Diving Gear	5.00	EA	1,230.00	6,150	5,535	-10%	9,225	50%	6,787	6,108	10,180
61	Project		Freshwater mussel relocation (AR-7)	Technician Equipment	10.00	EA	1,230.00	12,300	11,070	-10%	18,450	50%	13,574	12,217	20,361
61	Project		Freshwater mussel relocation (AR-7)	Transport Vehicle Rental (\$300/day)	8.00	HR	922.50	7,380	6,642	-10%	11,070	50%	8,144	7,330	12,217
61	Project		Freshwater mussel relocation (AR-7)	Transport Vehicle Operational Cost (\$0.75/mi)	14,000	MI	0.92	12,915	11,624	-10%	19,373	50%	14,253	12,827	21,379
62			TERRESTRIAL RESOURCES MEASURES												
62	Project		Habitat restoration plan (TER-1)	Annual maintenance and monitoring	3.00	EA	68,019.00	204,057	122,434	-40%	269,496	32%	248,394	149,036	328,051
62	Project		Habitat restoration plan (TER-1)	Annual reporting	3.00	EA	9,840.00	29,520	17,712	-40%	37,800	28%	35,934	21,560	46,013
62	Project		Habitat restoration plan (TER-1)	Post construction regulatory compliance and reporting	1.00	EA	14,760.00	14,760	8,856	-40%	18,900	28%	18,676	11,206	23,915
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Remove all nest platforms near construction, year 1	1.00	EA	53,640.30	53,640	-	0%	67,848	26%	58,017	-	73,384
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Nest exclusion monitoring, year 1	1.00	EA	110,896.80	110,897	-	0%	188,048	70%	119,946	-	203,393
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Remove all nest platforms near construction, year 2	1.00	EA	33,333.00	33,333	-	0%	46,632	40%	37,495	-	52,455
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Nest exclusion monitoring, year 2	1.00	EA	110,896.80	110,897	-	0%	188,048	70%	124,744	-	211,528
62	Project		Nesting Bird Surveys (TER-2); Osprey nests	Regulatory compliance and reporting, permitting	1.00	EA	9,840.00	9,840	-	0%	12,600	28%	11,069	-	14,173
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Remove nests near construction, year 1	1.00	EA	28,019.40	28,019	-	0%	55,048	96%	30,306	-	59,540
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Nest exclusion monitoring, year 1	1.00	EA	68,839.00	68,839	-	0%	146,600	113%	74,456	-	158,563
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Remove nests near construction, year 2	1.00	EA	22,463.90	22,464	-	0%	27,320	22%	25,269	-	30,731
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Nest exclusion monitoring, year 2	1.00	EA	68,839.00	68,839	-	0%	146,600	113%	77,435	-	164,905
62	Project		Nesting Bird Surveys (TER-2); Cliff swallow nests	Regulatory compliance and reporting, permitting	1.00	EA	7,380.00	7,380	-	0%	12,600	71%	8,301	-	14,173
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Nesting bird surveys prior to vegetation clearing	1.00	EA	59,741.10	59,741	-	0%	212,568	256%	65,908	-	234,512
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Daily biological monitoring throughout construction	3,114	HR	109.47	340,882	-	0%	540,568	59%	376,072	-	596,372
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Regulatory compliance and reporting during construction	1.00	EA	63,960.00	63,960	63,960	0%	63,960	0%	70,563	70,563	70,563
62	Project		Nesting Bird Surveys (TER-2); Biological monitoring	Special status wildlife and habitat monitoring	1.00	EA	61,008.00	61,008	-	0%	107,520	76%	71,371	-	125,783
62	Project		Wetlands at Reservoirs (TER-5)	Wetland Project	10.00	AC	35,875.00	358,750	-	0%	700,000	95%	454,632	-	887,086
62	Project		Wetlands at Reservoirs (TER-5)	Monitoring	960	HR	64.79	62,197	-	0%	73,920	19%	78,820	-	93,676
62	Project		Special Status Bats (TER-6)	Pre-Demolition Exclusion	1.00	SUM	74,536.36	74,536	74,536	0%	74,536	0%	79,068	79,068	79,068
62	Project		Special Status Bats (TER-6)	Bat Exclusion Plan (Draft/Final)	1.00	SUM	8,171.51	8,172	8,172	0%	8,172	0%	8,668	8,668	8,668
62	Project		Special Status Bats (TER-6)	Field Prep/Health and Safety	1.00	SUM	2,882.20	2,882	2,882	0%	2,882	0%	3,057	3,057	3,057
62	Project		Special Status Bats (TER-6)	Biological Monitoring During Demolition	1.00	SUM	96,129.83	96,130	96,130	0%	96,130	0%	106,469	106,469	106,469
62	Project		Special Status Bats (TER-6)	Agency Coordination/Meetings	1.00	SUM	11,233.18	11,233	11,233	0%	11,233	0%	12,109	12,109	12,109
62	Project		Special Status Bats (TER-6)	Design Replacement Roosts	1.00	SUM	11,697.71	11,698	11,698	0%	11,698	0%	12,411	12,411	12,411
62	Project		Special Status Bats (TER-6)	Construct/Install Replacement Roosts	1.00	SUM	14,481.82	14,482	-	0%	25,643	77%	15,611	-	27,642
62	Project		Special Status Bats (TER-6)	Monitor Replacement Roosts (3 years)	1.00	SUM	145,169.93	145,170	-	0%	239,027	65%	170,090	-	280,058

Est Ref	Element	Cost Sheet	Heading	Description	Estimate at 2018 Rates and Prices							Escalated to Year of Construction					
					Qty	Unit	Rate	Estimate	Low	%	High	%	Estimate	Est Low	Est High		
63			WATER QUALITY MONITORING														
63	Project		Field installation & equipment	Keno	1.00	SUM	60,900.00	60,900	38,000	-38%	79,170	30%	63,336	39,520	82,337		
63	Project		Field installation & equipment	JC Boyle	1.00	SUM	158,550.00	158,550	120,000	-24%	206,115	30%	171,488	129,792	222,934		
63	Project		Field installation & equipment	Copco	1.00	SUM	90,300.00	90,300	-	0%	117,390	30%	97,668	-	126,969		
63	Project		Field installation & equipment	Iron Gate	1.00	SUM	77,700.00	77,700	74,000	-5%	101,010	30%	80,808	76,960	105,050		
63	Project		Field installation & equipment	Walker Bridge	1.00	SUM	80,850.00	80,850	77,000	-5%	105,105	30%	87,447	83,283	113,682		
63	Project		Field installation & equipment	Seiad Valley	1.00	SUM	65,100.00	65,100	42,000	-35%	84,630	30%	70,412	45,427	91,536		
63	Project		Field installation & equipment	Orleans	1.00	SUM	67,200.00	67,200	44,000	-35%	87,360	30%	69,888	45,760	90,854		
63	Project		Field installation & equipment	Klamath	1.00	SUM	61,950.00	61,950	59,000	-5%	80,535	30%	64,428	61,360	83,756		
63	Project		Field installation & equipment	Shasta	1.00	SUM	68,250.00	68,250	45,000	-34%	88,725	30%	76,772	50,619	99,804		
63	Project		Field installation & equipment	Scott	1.00	SUM	68,250.00	68,250	45,000	-34%	88,725	30%	76,772	50,619	99,804		
63	Project		Field installation & equipment	Salmon	0.00	SUM	-	-	-	0%	-	0%	-	-	-		
63	Project		Field installation & equipment	Trinity	0.00	SUM	-	-	-	0%	-	0%	-	-	-		
63	Project		Field installation & equipment	Equipment replacement	1.00	SUM	315,000.00	315,000	200,000	-37%	500,000	59%	388,654	246,765	616,912		
63	Project		Operation & Maintenance	Keno	17.00	QTR	16,800.00	285,600	130,000	-54%	464,000	62%	326,120	148,444	529,831		
63	Project		Operation & Maintenance	JC Boyle	21.00	QTR	16,800.00	352,800	170,000	-52%	400,000	13%	427,595	206,041	484,802		
63	Project		Operation & Maintenance	Copco	13.00	QTR	16,800.00	218,400	-	0%	400,000	83%	254,135	-	465,449		
63	Project		Operation & Maintenance	Iron Gate	25.00	QTR	4,200.00	105,000	92,000	-12%	116,000	10%	124,895	109,432	137,979		
63	Project		Operation & Maintenance	Walker Bridge	13.00	QTR	11,550.00	150,150	132,000	-12%	275,000	83%	174,718	153,598	319,996		
63	Project		Operation & Maintenance	Seiad Valley	21.00	QTR	4,200.00	88,200	36,000	-59%	100,000	13%	106,899	43,632	121,201		
63	Project		Operation & Maintenance	Orleans	25.00	QTR	4,200.00	105,000	42,000	-60%	116,000	10%	124,895	49,958	137,979		
63	Project		Operation & Maintenance	Klamath	25.00	QTR	4,200.00	105,000	36,000	-66%	116,000	10%	124,895	42,821	137,979		
63	Project		Operation & Maintenance	Shasta	9.00	QTR	5,250.00	47,250	27,000	-43%	105,000	122%	56,022	32,013	124,494		
63	Project		Operation & Maintenance	Scott	9.00	QTR	5,250.00	47,250	27,000	-43%	105,000	122%	56,022	32,013	124,494		
63	Project		Operation & Maintenance	Salmon	0.00	SUM	-	-	-	0%	45,000	0%	-	-	50,619		
63	Project		Operation & Maintenance	Trinity	0.00	SUM	-	-	-	0%	45,000	0%	-	-	50,619		
63	Project		Sediment, Sampling & Recording	Keno	17.00	QTR	12,600.00	214,200	1,040,000	386%	348,000	62%	244,590	1,187,552	397,373		
63	Project		Sediment, Sampling & Recording	JC Boyle	21.00	QTR	15,750.00	330,750	170,000	-49%	375,000	13%	400,871	206,041	454,502		
63	Project		Sediment, Sampling & Recording	Copco	13.00	QTR	15,750.00	204,750	-	0%	375,000	83%	238,252	-	436,359		
63	Project		Sediment, Sampling & Recording	Iron Gate	25.00	QTR	25,200.00	630,000	552,000	-12%	696,000	10%	749,370	656,591	827,875		
63	Project		Sediment, Sampling & Recording	Walker Bridge	13.00	QTR	25,200.00	327,600	288,000	-12%	600,000	83%	381,203	335,123	698,174		
63	Project		Sediment, Sampling & Recording	Seiad Valley	21.00	QTR	25,200.00	529,200	216,000	-59%	600,000	13%	641,393	261,793	727,203		
63	Project		Sediment, Sampling & Recording	Orleans	25.00	QTR	25,200.00	630,000	252,000	-60%	696,000	10%	749,370	299,748	827,875		
63	Project		Sediment, Sampling & Recording	Klamath	25.00	QTR	16,800.00	420,000	288,000	-31%	464,000	10%	499,580	342,569	551,917		
63	Project		Sediment, Sampling & Recording	Shasta	9.00	QTR	23,100.00	207,900	99,000	-52%	462,000	122%	246,498	117,380	547,773		
63	Project		Sediment, Sampling & Recording	Scott	9.00	QTR	23,100.00	207,900	99,000	-52%	462,000	122%	246,498	117,380	547,773		
63	Project		Sediment, Sampling & Recording	Salmon	0.00	SUM	-	-	-	0%	198,000	0%	-	-	222,723		
63	Project		Sediment, Sampling & Recording	Trinity	0.00	SUM	-	-	-	0%	198,000	0%	-	-	222,723		
63	Project		Sediment, Sampling & Recording	Data Management	1.00	SUM	462,000.00	462,000	293,000	-37%	600,600	30%	567,821	360,112	738,168		
63	Project		Sediment, Sampling & Recording	ODCs	1.00	SUM	163,800.00	163,800	115,000	-30%	372,000	127%	190,635	133,840	432,943		
63	Project		Sediment, Sampling & Recording	Estuary and river sampling for toxins	4.00	SUM	52,500.00	210,000	200,000	-5%	273,000	30%	234,041	222,896	304,253		
63	Project		Sediment, Sampling & Recording	TSS and NTU laboratory relationship study by USGS	1.00	SUM	157,500.00	157,500	150,000	-5%	204,750	30%	175,531	167,172	228,190		
63	Project		Aerial photos & LiDAR	Annual aircraft surveys + 1 after 5 year gap	5.00	EA	63,000.00	315,000	283,500	-10%	472,500	50%	379,026	341,123	568,539		
63	Project		Volitional fish passage monitoring	Annual field survey; 2 wk field survey + study.	5.00	EA	26,250.00	131,250	118,125	-10%	196,875	50%	157,928	142,135	236,891		
63	Project		Drone LiDAR in site specific locations, analysis & reporting	Drone LiDAR in site specific locations, analysis & reporting	4.00	EA	21,000.00	84,000	75,600	-10%	126,000	50%	96,452	86,807	144,679		
63	Project		Surface comparison and analysis of sediment erosion	Surface comparison and analysis of sediment erosion	4.00	EA	21,000.00	84,000	75,600	-10%	126,000	50%	96,452	86,807	144,679		

Attachment B Pay Item Cost Detail Worksheets

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PAY ITEM INFORMATION

PAY ITEM NUMBER :	1.001	Project :	JC Boyle
Description :	Removal of Diversion Conduit Bulkheads		
Quantity :	14.00 CY		
Daily Production :	7.00 CY per	8	hour shift
Work Days :	2.0 Days	Project # :	1
Unit Price :	\$1,323.00 per CY	Estimator :	Eric Jones
Total Cost :	\$18,522	Probable Low Cost Parameter	CY per 7.35 Total Cost \$17,596 Unit Price Per CY \$1,256.85
		Probable High Cost Parameter	6.65 \$19,448 \$1,389.15

CREW COSTS

Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate	\$740.32
Diver, Wet	Active	1.00	2.0	8	16.00	L	\$124.57	incl. in rate	incl. in rate	\$1,993.12
Diver, Tender	Active	1.00	2.0	8	16.00	L	\$79.22	incl. in rate	incl. in rate	\$1,267.52
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	incl. in rate	incl. in rate	\$1,094.56
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Barge Operator	Active	1.00	2.0	8	16.00	L	\$40.30	incl. in rate	incl. in rate	\$644.80
Crawler Crane (130tn)	Active	1.00	2.0	8	16.00	E	\$258.66	incl. in rate	incl. in rate	\$4,138.56
Barge (400T)	Active	1.00	2.0	8	16.00	E	\$99.50	incl. in rate	incl. in rate	\$1,592.00
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.0	8	8.00	E	\$70.35	incl. in rate	incl. in rate	\$562.80
Air Compressor 600 cfm	Active	1.00	2.0	8	16.00	E	\$21.74	incl. in rate	incl. in rate	\$347.82
0	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Air Track Drill 4"	Active	1.00	1.0	8	8.00	E	\$145.14	incl. in rate	incl. in rate	\$1,161.12
Air Hose 100'	Active	1.00	1.0	8	8.00	E	\$2.13	incl. in rate	incl. in rate	\$17.04
			2.0	8	0.00					\$0.00
			2.0	8	0.00					\$0.00
			2.0	8	0.00					\$0.00
Labor Hours					88	TOTAL LABOR				\$6,201.04
Equipment Hours					72	TOTAL EQUIPMENT				\$7,819.34

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Blasting Explosives and Caps	10.00	EA	1.000	10.00	\$12.70	\$127.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$127.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$6,201.04	Labor Burden @	0.0%		\$6,201.04
Material Cost	\$127.00	Material Tax @	7.75%	\$9.84	\$136.84
Equipment Cost	\$7,819.34	Equipment Tax @	7.75%	\$606.00	\$8,425.34
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$14,147			\$616	\$14,763
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$14,763.22
Installing Contractors Profit @	8.0%				\$14,763.22
GC Markup on Subs @	5.0%				\$0.00
		TOTAL MARKUP COSTS			\$3,395.54
General Contractors Insurance @	1.0%		on	\$18,158.77	\$182
Bond @	1.0%		on	\$18,158.77	\$182
Contingency @	0.0%		on	\$18,521.94	\$0
TOTAL COST for pay item					\$18,522

Additional Pay Item Notes :

Crew make up is based on using a diver to drill and set explosive caps to demolish bulkhead. Crane on Barge will then be used to scoop material from water using the diver to guide bucket. Crane will then load material from water into dump truck. Figuring 2 days to set up and blast, remove, and dump debris in scour hole. Trucks will only be used one day.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.006	Project	: JCBOYLE						
Description	: Remove Monorail Structural Steel Components								
Quantity	: 15,000.00 LBS	Project #	: Klamath Dams Removal						
Daily Production	: 18,500.00 LBS per 8 hour shift	Estimator	: Mihaela Tomulescu	LBS per	Total Cost				
Work Days	: 0.8 Days	Probable Low Cost Parameter		20350	\$8,613	Unit Price Per LBS			
Unit Price	: \$0.64 per LBS	Probable High Cost Parameter		12025	\$12,919	\$0.86			
Total Cost	: \$9,570								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.8	8	6.40	L	\$47.23	incl. in rate	incl. in rate	\$302.27
Electrician	Active	1.00	0.8	8	6.40	L	\$45.23	incl. in rate	incl. in rate	\$289.47
Steelworker	Active	4.00	0.8	8	25.60	L	\$65.52	incl. in rate	incl. in rate	\$1,677.31
Laborer	Active	4.00	0.8	8	25.60	L	\$45.80	incl. in rate	incl. in rate	\$1,172.48
Truck Driver (heavy)	Active	1.00	0.8	8	6.40	L	\$57.59	incl. in rate	incl. in rate	\$368.58
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.8	8	6.40	E	\$111.64	incl. in rate	incl. in rate	\$714.50
Hydraulic Crane (120tn)	Active	1.00	0.8	8	6.40	E	\$239.06	incl. in rate	incl. in rate	\$1,529.98
Welder	Active	1.00	0.8	8	6.40	L	\$7.84	incl. in rate	incl. in rate	\$50.16
Gas Welding Machine	Active	1.00	0.8	8	6.40	E	\$2.88	incl. in rate	incl. in rate	\$18.41
Equipment Operator (crane)	Active	1.00	0.8	8	6.40	L	\$68.41	incl. in rate	incl. in rate	\$437.82
Vibratory Hammer & Extractor	Active	1.00	0.8	8	6.40	E	\$94.34	incl. in rate	incl. in rate	\$603.78
					Labor Hours	83.2	TOTAL LABOR			\$4,298.10
					Equipment Hours	25.6	TOTAL EQUIPMENT			\$2,866.67

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$429.81	\$429.81		
							TOTAL MATERIAL	\$429.81

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,298.10	Labor Burden @	49.7%	\$0.00	\$4,298.10	
Material Cost	\$429.81	Material Tax @	7.8%	\$33.31	\$463.12	
Equipment Cost	\$2,866.67	Equipment Tax @	0.0%	\$0.00	\$2,866.67	
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$7,595				\$33	\$7,628
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$7,627.88	\$1,144.18
Installing Contractors Profit@	8.0%				\$7,627.88	\$610.23
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$1,754.41
General Contractors Insurance @	1.0%		on		\$9,382.30	\$94
Bond @	1.0%		on		\$9,382.30	\$94
Contingency @	0.0%		on		\$9,569.94	\$0
					TOTAL COST for pay item	\$9,570

Additional Pay Item Notes :

Includes structure to install steel stop logs in spillway, radial gate opening. Crews: E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. by 13-men crew (4 steelworkers, 4 laborer, 1 electrician, 1 welder and 3 equipment operators). Based on the current production rate 15000lbs= 8.89 cy rmeans we will use 1 truck.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	1.008	Project	:	JC Boyle						
Description	:	Remove Gravity Dam Section Concrete									
Quantity	:	600.00 cy									
Daily Production	:	30.00 cy per	8	hour shift	Project #	:	1				
Work Days	:	20.0 Days	Estimator	:	Felipe Poletto	cy per	34.5	Total Cost	\$173,195	Unit Price Per cy	\$288.66
Unit Price	:	\$339.60 per cy	Probable Low Cost Parameter				24	\$244,511	\$407.52		
Total Cost	:	\$203,759	Probable High Cost Parameter								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	20.0	8	160.00	L	\$48.27	incl. in rate	incl. in rate	\$7,723.20
Laborer	Active	4.00	20.0	8	640.00	L	\$45.80	incl. in rate	incl. in rate	\$29,312.00
Equipment Operator (medium)	Active	1.00	20.0	8	160.00	L	\$66.28	incl. in rate	incl. in rate	\$10,604.80
Truck Driver (heavy)	Active	1.00	20.0	8	160.00	L	\$57.59	incl. in rate	incl. in rate	\$9,214.40
Air Compressor 600 cfm	Active	1.00	20.0	8	160.00	E	\$21.74	incl. in rate	incl. in rate	\$3,478.23
Air Compressor 900 cfm	Active	1.00	20.0	8	160.00	E	\$38.87	incl. in rate	incl. in rate	\$6,219.03
Air Tool, Chipping Hammer	Active	3.00	20.0	8	480.00	E	\$1.64	incl. in rate	incl. in rate	\$786.74
Generator, Small Generator, 10 - 15 kW	Active	2.00	20.0	8	320.00	E	\$7.04	incl. in rate	incl. in rate	\$2,252.80
Hydraulic Excavator (5.0cy)	Active	1.00	20.0	8	160.00	E	\$274.63	incl. in rate	incl. in rate	\$43,940.80
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	20.0	8	160.00	E	\$62.72	incl. in rate	incl. in rate	\$10,035.20
Hydraulic Thumbs/Shear Attachment	Active	1.00	20.0	8	160.00	E	\$16.39	incl. in rate	incl. in rate	\$2,622.40
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	20.0	8	160.00	E	\$111.64	incl. in rate	incl. in rate	\$17,862.40
			20.0	8	0.00					\$0.00
			20.0	8	0.00					\$0.00
			20.0	8	0.00					\$0.00
			20.0	8	0.00					\$0.00
			20.0	8	0.00					\$0.00
Labor Hours					1,120					\$56,854.40
Equipment Hours					1,760					\$87,197.59
TOTAL LABOR										\$56,854.40
TOTAL EQUIPMENT										\$87,197.59

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$2,842.72	\$2,842.72
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$2,842.72

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	4	EA	Cost per Mob	\$2,500.00	\$10,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$10,000.00

SUMMARY OF COSTS						
Labor Cost	\$56,854.40	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$56,854.40
Material Cost	\$2,842.72	Material Tax @	7.75%	\$220.31		\$3,063.03
Equipment Cost	\$87,197.59	Equipment Tax @	7.75%	\$6,757.81		\$93,955.40
Subcontractors	\$10,000.00					\$10,000.00
DIRECT COST SUBTOTALS	\$156,895			\$6,978		\$163,873
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$153,872.84	\$23,080.93
Installing Contractors Profit@	8.0%				\$153,872.84	\$12,309.83
GC Markup on Subs @	5.0%				\$10,000.00	\$500.00
TOTAL MARKUP COSTS						\$35,890.75
General Contractors Insurance @	1.0%		on		\$199,763.59	\$1,998
Bond @	1.0%		on		\$199,763.59	\$1,998
Contingency @	0.0%		on		\$203,758.86	\$0
TOTAL COST for pay item						\$203,759

Additional Pay Item Notes :

The work is done by one 6-men crew (foreman, 4 laborers, and 2 equipment operators). Concrete hauling to scour hole is also included - based on the current production rate only 3 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. This productivity is considerably slower than flume demolition due to access. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 0305110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.009	Project	: JCBOYLE						
Description	: Remove Timber Equipment Ramp on left side of Dam								
Quantity	: 10,500.00 LBS	Project #	: Klamath Dams Removal						
Daily Production	: 15,000.00 LBS per 8 hour shift	Estimator	: Mihaela Tomulescu	LBS per	17250	Total Cost	\$5,924	Unit Price Per LBS	\$0.56
Work Days	: 0.7 Days	Probable Low Cost Parameter		9750	\$9,409	\$0.90			
Unit Price	: \$0.66 per LBS	Probable High Cost Parameter							
Total Cost	: \$6,969								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.7	8	5.60	L	\$47.23	incl. in rate	incl. in rate	\$264.49
Electrician	Active	1.00	0.7	8	5.60	L	\$45.23	incl. in rate	incl. in rate	\$253.29
Carpenters, Journeyman	Active	4.00	0.7	8	22.40	L	\$65.37	incl. in rate	incl. in rate	\$1,464.29
Laborer	Active	4.00	0.7	8	22.40	L	\$45.80	incl. in rate	incl. in rate	\$1,025.92
Truck Driver (heavy)	Active	1.00	0.7	8	5.60	L	\$57.59	incl. in rate	incl. in rate	\$322.50
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.7	8	5.60	E	\$111.64	incl. in rate	incl. in rate	\$625.18
Hydraulic Crane (17tn)	Active	1.00	0.7	8	5.60	E	\$81.52	incl. in rate	incl. in rate	\$456.51
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.7	8	5.60	E	\$64.23	incl. in rate	incl. in rate	\$359.69
Equipment Operator (crane)	Active	1.00	0.7	8	5.60	L	\$68.41	incl. in rate	incl. in rate	\$383.10
					Labor Hours	67.2	TOTAL LABOR			\$3,713.58
					Equipment Hours	16.8	TOTAL EQUIPMENT			\$1,441.38

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$371.36	\$371.36		
							TOTAL MATERIAL	\$371.36

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,713.58	Labor Burden @	49.7%	\$0.00		\$3,713.58
Material Cost	\$371.36	Material Tax @	7.8%	\$28.78		\$400.14
Equipment Cost	\$1,441.38	Equipment Tax @	0.0%	\$0.00		\$1,441.38
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$5,526			\$29	DIRECT COST SUBTOTALS	\$5,555
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$833.27
Installing Contractors Profit@	8.0%	Material				\$444.41
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$1,277.67
General Contractors Insurance @	1.0%		on	\$6,832.78		\$68
Bond @	1.0%		on	\$6,832.78		\$68
Contingency @	0.0%		on	\$6,969.44		\$0
					TOTAL COST for pay item	\$6,969

Additional Pay Item Notes :

Includes structure to install steel stop logs in spillway, radial gate opening. Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. by one 13-men crew (4 steelworkers, 4 laborer, 1 electrician, 1 welder and 3 equipment operators). Based on the current production rate 15000lbs= 8.89 cy means we will use 1 truck.

PAY ITEM COST DETAIL WORKSHEET

1.011 Remove Storage Shed located on access road

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	1.011	Project :	JC Boyle						
Description :	Remove Storage Shed located on access road								
Quantity :	4,480.00 SF								
Daily Production :	900.00 SF per	8	hour shift	Project # :	1				
Work Days :	5.0 Days	Estimator :	Eric Jones	SF per	945	Total Cost	\$118,293	Unit Price Per SF	\$26.40
Unit Price :	\$27.79 per SF	Probable Low Cost Parameter		Probable High Cost Parameter	810	Total Cost	\$136,970	Unit Price Per SF	\$30.57
Total Cost :	\$124,519								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	5.0	8	40.00	L	\$48.27	incl. in rate	incl. in rate	\$1,930.80
Laborer	Active	4.00	5.0	8	160.00	L	\$45.80	incl. in rate	incl. in rate	\$7,328.00
Truck Driver (heavy)	Active	5.00	5.0	8	200.00	L	\$57.59	incl. in rate	incl. in rate	\$11,518.00
Equipment Operator (medium)	Active	4.00	5.0	8	160.00	L	\$66.28	incl. in rate	incl. in rate	\$10,604.80
Equipment Operator (crane)	Active	1.00	5.0	8	40.00	L	\$68.41	incl. in rate	incl. in rate	\$2,736.40
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	5.0	8	80.00	E	\$31.90	incl. in rate	incl. in rate	\$2,552.00
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	5.0	8	120.00	E	\$70.35	incl. in rate	incl. in rate	\$8,442.00
Forklift, Rough Terrain (9,000 lb capacity)	Active	1.00	5.0	8	40.00	E	\$54.70	incl. in rate	incl. in rate	\$2,188.00
Hydraulic Excavator (5.0cy)	Active	2.00	5.0	8	80.00	E	\$274.63	incl. in rate	incl. in rate	\$21,970.40
Loader, FE Rubber Tire (5.25cy)	Active	2.00	5.0	8	80.00	E	\$75.42	incl. in rate	incl. in rate	\$6,033.60
		1.00	5.0	8	40.00	0	\$0.00	\$0.00		\$0.00
		1.00	5.0	8	40.00	0	\$0.00	\$0.00		\$0.00
			5.0	8	0.00					\$0.00
			5.0	8	0.00					\$0.00
			5.0	8	0.00					\$0.00
			5.0	8	0.00					\$0.00
			5.0	8	0.00					\$0.00
Labor Hours					600	TOTAL LABOR				\$34,118.00
Equipment Hours					400	TOTAL EQUIPMENT				\$41,186.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	657	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	328.53	tons	Klamath County LandFill	\$74.00	\$24,311.47
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$24,311.47

SUMMARY OF COSTS						
Labor Cost	\$34,118.00	Labor Burden @	0.0%			\$34,118.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$41,186.00	Equipment Tax @	7.75%	\$3,191.92		\$44,377.92
Subcontractors	\$24,311.47					\$24,311.47
DIRECT COST SUBTOTALS	\$99,615			\$3,192	DIRECT COST SUBTOTALS	\$102,807
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$78,495.92	\$11,774.39
Installing Contractors Profit @	8.0%				\$78,495.92	\$6,279.67
GC Markup on Subs @	5.0%				\$24,311.47	\$1,215.57
						TOTAL MARKUP COSTS
						\$19,269.63
General Contractors Insurance @	1.0%		on		\$122,077.02	\$1,221
Bond @	1.0%		on		\$122,077.02	\$1,221
Contingency @	0.0%		on		\$124,518.56	\$0
TOTAL COST for pay item						\$124,519

Additional Pay Item Notes :

It will take 1 week to complete the demolition of the storage shed. This includes disassembly and material removal. Using 2 excavators to demolish building, using 1 FE loader to keep area clean and maintain haul path for trucks, 1 forklift to load trucks with demo material, Laborers will be used to guide trucks and assist equipment with demolition operation, Foreman will oversee operation.

PAY ITEM COST DETAIL WORKSHEET

1.012 Remove Warehouse located on access road

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	1.012			Project :	JC Boyle				
Description :	Remove Warehouse located on access road								
Quantity :	2,580.00	SF							
Daily Production :	550.00	SF per	8	hour shift	Project # :	1			
Work Days :	4.7 Days			Estimator :	Eric Jones		SF per	Total Cost	Unit Price Per SF
Unit Price :	\$36.49 per SF			Probable Low Cost Parameter	577.5	\$89,441	\$34.67		
Total Cost :	\$94,149			Probable High Cost Parameter	495	\$103,564	\$40.14		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.7	8	37.60	L	\$48.27	incl. in rate	incl. in rate	\$1,814.95
Laborer	Active	4.00	4.7	8	150.40	L	\$45.80	incl. in rate	incl. in rate	\$6,888.32
Truck Driver (heavy)	Active	4.00	4.7	8	150.40	L	\$57.59	incl. in rate	incl. in rate	\$8,661.54
Equipment Operator (medium)	Active	3.00	4.7	8	112.80	L	\$66.28	incl. in rate	incl. in rate	\$7,476.38
Equipment Operator (light)	Active	1.00	4.7	8	37.60	L	\$64.90	incl. in rate	incl. in rate	\$2,440.24
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	4.7	8	75.20	E	\$31.90	incl. in rate	incl. in rate	\$2,398.88
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	4.7	8	75.20	E	\$70.35	incl. in rate	incl. in rate	\$5,290.32
Forklift, Rough Terrain (9,000 lb capacity)	Active	1.00	4.7	8	37.60	E	\$54.70	incl. in rate	incl. in rate	\$2,056.72
Hydraulic Excavator (5.0cy)	Active	2.00	4.7	8	75.20	E	\$274.63	incl. in rate	incl. in rate	\$20,652.18
Loader, FE Rubber Tire (5.25cy)	Active	1.00	4.7	8	37.60	E	\$75.42	incl. in rate	incl. in rate	\$2,835.79
		1.00	4.7	8	37.60	0	\$0.00	\$0.00		\$0.00
		1.00	4.7	8	37.60	0	\$0.00	\$0.00		\$0.00
			4.7	8	0.00					\$0.00
			4.7	8	0.00					\$0.00
			4.7	8	0.00					\$0.00
			4.7	8	0.00					\$0.00
			4.7	8	0.00					\$0.00
Labor Hours					488.8	TOTAL LABOR				\$27,281.43
Equipment Hours					300.8	TOTAL EQUIPMENT				\$33,233.89

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	378	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	189.20	tons	Klamath County LandFill	\$74.00	\$14,000.80
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$14,000.80

SUMMARY OF COSTS						
Labor Cost	\$27,281.43	Labor Burden @	0.0%			\$27,281.43
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$33,233.89	Equipment Tax @	7.75%	\$2,575.63		\$35,809.51
Subcontractors	\$14,000.80					\$14,000.80
DIRECT COST SUBTOTALS	\$74,516			\$2,576	DIRECT COST SUBTOTALS	\$77,092
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$63,090.95	\$9,463.64
Installing Contractors Profit @	8.0%				\$63,090.95	\$5,047.28
GC Markup on Subs @	5.0%				\$14,000.80	\$700.04
						TOTAL MARKUP COSTS
						\$15,210.96
General Contractors Insurance @	1.0%		on		\$92,302.70	\$923
Bond @	1.0%		on		\$92,302.70	\$923
Contingency @	0.0%		on		\$94,148.76	\$0
TOTAL COST for pay item						\$94,149

Additional Pay Item Notes :

It will take 1 week to complete the demolition of the warehouse. This includes disassembly and material removal. Using 2 excavators to demolition building, using 1 FE loader to keep area clean and maintain haul path for trucks, 1 forklift to load trucks with demo material, Laborers will be used to guide trucks and assist equipment with demolition operation, Foreman will oversee operation.

PAY ITEM COST DETAIL WORKSHEET

1.013 Remove Fire System Control Bldg. on left abutment

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	1.013			Project :	JC Boyle				
Description :	Remove Fire System Control Bldg. on left abutment								
Quantity :	520.00	SF							
Daily Production :	520.00	SF per	8	hour shift	Project # :	1			
Work Days :	1.0	Days			Estimator :	Eric Jones	SF per	Total Cost	Unit Price Per SF
Unit Price :	\$26.00	per SF			Probable Low Cost Parameter	546	\$12,845	\$24.70	
Total Cost :	\$13,521				Probable High Cost Parameter	468	\$14,873	\$28.60	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	incl. in rate	incl. in rate	\$386.16
Laborer	Active	3.00	1.0	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Equipment Operator (medium)	Active	2.00	1.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.0	8	8.00	E	\$70.35	incl. in rate	incl. in rate	\$562.80
Forklift, Rough Terrain (9,000 lb capacity)	Active	1.00	1.0	8	8.00	E	\$54.70	incl. in rate	incl. in rate	\$437.60
Hydraulic Excavator (5.0cy)	Active	1.00	1.0	8	8.00	E	\$274.63	incl. in rate	incl. in rate	\$2,197.04
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.0	8	8.00	E	\$75.42	incl. in rate	incl. in rate	\$603.36
		1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
		1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
Labor Hours					72	TOTAL LABOR				\$3,997.52
Equipment Hours					40	TOTAL EQUIPMENT				\$4,056.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	76	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	38.13	tons	Klamath County LandFill	\$74.00	\$2,821.87
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$2,821.87

SUMMARY OF COSTS					
Labor Cost	\$3,997.52	Labor Burden @	0.0%		\$3,997.52
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$4,056.00	Equipment Tax @	7.75%	\$314.34	\$4,370.34
Subcontractors	\$2,821.87				\$2,821.87
DIRECT COST SUBTOTALS	\$10,875			\$314	\$11,190
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$8,367.86
Installing Contractors Profit @	8.0%				\$8,367.86
GC Markup on Subs @	5.0%				\$2,821.87
TOTAL MARKUP COSTS					\$2,065.70
General Contractors Insurance @	1.0%		on	\$13,255.43	\$133
Bond @	1.0%		on	\$13,255.43	\$133
Contingency @	0.0%		on	\$13,520.54	\$0
TOTAL COST for pay item					\$13,521

Additional Pay Item Notes :

It will take 1 day to complete the demolition of the fire control building. This includes disassembly and material removal. Using 1 excavator to demolish building, 1 FE loader to keep area clean and maintain haul path for trucks, 1 forklift to load trucks with demo material, 1 flatbed truck and 1 dump truck to haul off materials, laborers will be used to direct trucks and assist operators with the demolition activity.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.018	Project		:	JC Boyle			
Description	:	Downstream Riprap							
Quantity	:	2,200.00	CY						
Daily Production	:	325.00	CY per	8	hour shift	Project #	:	1	
Work Days	:	6.8	Days			Estimator	:	Eric Jones	
Unit Price	:	\$93.45	per CY	Probable Low Cost Parameter	:	357.5	Total Cost	:	\$185,023
Total Cost	:	\$205,581	Probable High Cost Parameter	:	292.5	Unit Price Per CY	:	\$84.10	
									\$102.79

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	4.00	6.8	8	217.60	E	\$274.63	incl. in rate	incl. in rate	\$59,759.49
Truck, On-Highway Dump (6x4, 12cy)	Active	10.00	6.8	8	544.00	E	\$70.35	incl. in rate	incl. in rate	\$38,270.40
Equipment Operator (medium)	Active	4.00	6.8	8	217.60	L	\$66.28	incl. in rate	incl. in rate	\$14,422.53
Truck Driver (heavy)	Active	10.00	6.8	8	544.00	L	\$57.59	incl. in rate	incl. in rate	\$31,328.96
Labor Foreman (out)	Active	1.00	6.8	8	54.40	L	\$46.27	incl. in rate	incl. in rate	\$2,517.09
Laborer	Active	4.00	6.8	8	217.60	L	\$45.80	incl. in rate	incl. in rate	\$9,966.08
0		1.00	6.8	8	54.40	0	\$0.00	\$0.00		\$0.00
		1.00	6.8	8	54.40	0	\$0.00	\$0.00		\$0.00
		1.00	6.8	8	54.40	0	\$0.00	\$0.00		\$0.00
0		1.00	6.8	8	54.40	0	\$0.00	\$0.00		\$0.00
		1.00	6.8	8	54.40	0	\$0.00	\$0.00		\$0.00
			6.8	8	0.00					\$0.00
			6.8	8	0.00					\$0.00
			6.8	8	0.00					\$0.00
			6.8	8	0.00					\$0.00
			6.8	8	0.00					\$0.00
Labor Hours					1033.6	TOTAL LABOR				\$58,234.66
Equipment Hours					761.6	TOTAL EQUIPMENT				\$98,029.89

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$58,234.66	Labor Burden @	0.0%			\$58,234.66
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$98,029.89	Equipment Tax @	7.75%	\$7,597.32		\$105,627.20
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$156,265			\$7,597	DIRECT COST SUBTOTALS	\$163,862
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$163,861.86	\$24,579.28
Installing Contractors Profit @	8.0%				\$163,861.86	\$13,108.95
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$37,688.23
General Contractors Insurance @	1.0%		on		\$201,550.09	\$2,016
Bond @	1.0%		on		\$201,550.09	\$2,016
Contingency @	0.0%		on		\$205,581.09	\$0
TOTAL COST for pay item						\$205,581

Additional Pay Item Notes :

Trucks will be hauling 10 CY of material at a time, 10 trucks will be 13 loads per truck, truck will be hauling roughly 4 loads per day due to time it takes to load material and potential void space from material. Trucks to haul material to disposal site, 2 excavators used to place material at loading stock pile, 2 excavators used to load trucks, laborers will be used to direct truck traffic, foreman to oversee operation.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	1.019	Project	:	JC Boyle						
Description	:	Upstream Riprap									
Quantity	:	1,300.00	CY								
Daily Production	:	325.00	CY per	8	hour shift	Project #	:	1			
Work Days	:	4.0	Days			Estimator	:	Eric Jones	CY per	Total Cost	Unit Price Per CY
Unit Price	:	\$93.02	per CY			Probable Low Cost Parameter	:	357.5	\$108,837	\$83.72	
Total Cost	:	\$120,930			Probable High Cost Parameter	:	292.5	\$133,023	\$102.33		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	4.00	4.0	8	128.00	E	\$274.63	incl. in rate	incl. in rate	\$35,152.64
Truck, On-Highway Dump (6x4, 12cy)	Active	10.00	4.0	8	320.00	E	\$70.35	incl. in rate	incl. in rate	\$22,512.00
Equipment Operator (medium)	Active	4.00	4.0	8	128.00	L	\$66.28	incl. in rate	incl. in rate	\$8,483.84
Truck Driver (heavy)	Active	10.00	4.0	8	320.00	L	\$57.59	incl. in rate	incl. in rate	\$18,428.80
Labor Foreman (out)	Active	1.00	4.0	8	32.00	L	\$46.27	incl. in rate	incl. in rate	\$1,480.64
Laborer	Active	4.00	4.0	8	128.00	L	\$45.80	incl. in rate	incl. in rate	\$5,862.40
0		1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
0		1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
			4.0	8	0.00					\$0.00
			4.0	8	0.00					\$0.00
			4.0	8	0.00					\$0.00
			4.0	8	0.00					\$0.00
			4.0	8	0.00					\$0.00
Labor Hours					608	TOTAL LABOR				\$34,255.68
Equipment Hours					448	TOTAL EQUIPMENT				\$57,664.64

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$34,255.68	Labor Burden @	0.0%			\$34,255.68
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$57,664.64	Equipment Tax @	7.75%	\$4,469.01		\$62,133.65
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$91,920			\$4,469	DIRECT COST SUBTOTALS	\$96,389
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$96,389.33	\$14,458.40
Installing Contractors Profit @	8.0%				\$96,389.33	\$7,711.15
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$22,169.55
General Contractors Insurance @	1.0%		on		\$118,558.88	\$1,186
Bond @	1.0%		on		\$118,558.88	\$1,186
Contingency @	0.0%		on		\$120,930.05	\$0
TOTAL COST for pay item						\$120,930

Additional Pay Item Notes :

Trucks will be hauling 10 CY of material at a time, 10 trucks will be 22 loads per truck, truck will be hauling roughly 4 loads per day due to time it takes to load material and potential void space from material. Trucks to haul material to scour site, 2 excavators used to place material at loading stock pile, 2 excavators used to load trucks, laborers will be used to direct truck traffic, foreman to oversee operation.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.022	Project	: JCBOYLE
Description	: Cutoff Wall Anchors		
Quantity	: 285.00 EA	Project #	: Klamath Dams Removal
Daily Production	: 285.00 EA per 8 hour shift	Estimator	: Mihaela Tomulescu
Work Days	: 1.0 Days	Probable Low Cost Parameter	EA per 299.25
Unit Price	: \$12.86 per EA	Probable High Cost Parameter	256.5
Total Cost	: \$3,664	Total Cost	\$4,030
		Unit Price Per EA	\$12.21
			\$14.14

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate	\$1,048.32
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	incl. in rate	incl. in rate	\$522.96
Equipment Operator (medium)	Active	1.00	0.5	8	4.00	L	\$66.28	incl. in rate	incl. in rate	\$265.12
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	8	4.00	E	\$221.50	incl. in rate	incl. in rate	\$886.00
Labor Hours					28	TOTAL LABOR				\$1,836.40
Equipment Hours					4	TOTAL EQUIPMENT				\$886.00

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$183.64	\$183.64
TOTAL MATERIAL						\$183.64

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$1,836.40	Labor Burden @	49.7%	\$0.00	\$1,836.40
Material Cost	\$183.64	Material Tax @	7.8%	\$14.23	\$197.87
Equipment Cost	\$886.00	Equipment Tax @	0.0%	\$0.00	\$886.00
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$2,906			\$14	\$2,920
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$438.04
Installing Contractors Profit @	8.0%				\$233.62
GC Markup on Subs @	5.0%				\$0.00
					TOTAL MARKUP COSTS \$671.66
General Contractors Insurance @	1.0%		on	\$3,591.93	\$36
Bond @	1.0%		on	\$3,591.93	\$36
Contingency @	0.0%		on	\$3,663.77	\$0
TOTAL COST for pay item					\$3,664

Additional Pay Item Notes :

Assumed 1 day work and includes cutting anchors at top of bedrock.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.023	Project	: JCBOYLE						
Description	: Remove & Dispose Hand Rails and Light Poles								
Quantity	: 5,000.00 LBS	Project #	: Klamath Dams Removal						
Daily Production	: 18,500.00 LBS per 8 hour shift	Estimator	: Mihaela Tomulescu	LBS per	19425	Total Cost	\$4,016	Unit Price Per LBS	\$0.80
Work Days	: 0.3 Days	Probable Low Cost Parameter		15725	\$4,861	\$0.97			
Unit Price	: \$0.85 per LBS	Probable High Cost Parameter							
Total Cost	: \$4,227								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	1.00	0.3	8	2.40	E	\$190.46	incl. in rate	incl. in rate	\$457.10
Millwright	Active	6.00	0.3	8	14.40	L	\$69.46	incl. in rate	incl. in rate	\$1,000.22
Equipment Operator (crane)	Active	1.00	0.3	8	2.40	L	\$68.41	incl. in rate	incl. in rate	\$164.18
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.3	8	2.40	E	\$221.50	incl. in rate	incl. in rate	\$531.60
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.3	8	2.40	E	\$111.64	incl. in rate	incl. in rate	\$267.94
Truck Driver (heavy)	Active	1.00	0.3	8	2.40	L	\$57.59	incl. in rate	incl. in rate	\$138.22
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	incl. in rate	incl. in rate	\$108.55
Labor Foreman (out)	Active	2.00	0.3	8	4.80	L	\$46.27	incl. in rate	incl. in rate	\$222.10
Equipment Operator (medium)	Active	1.00	0.3	8	2.40	L	\$66.28	incl. in rate	incl. in rate	\$159.07
				Labor Hours	28.8	TOTAL LABOR				\$1,792.34
				Equipment Hours	7.2	TOTAL EQUIPMENT				\$1,256.64

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$179.23	\$179.23	
						TOTAL MATERIAL	\$179.23

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	0.25	ton	1.000	\$595.00	\$148.75		
						TOTAL SUBCONTRACTS	\$148.75

SUMMARY OF COSTS									
Labor Cost	\$1,792.34	Labor Burden @	49.7%	\$0.00	\$1,792.34				
Material Cost	\$179.23	Material Tax @	7.8%	\$13.89	\$193.13				
Equipment Cost	\$1,256.64	Equipment Tax @	0.0%	\$0.00	\$1,256.64				
Subcontractors	\$148.75				\$148.75				
DIRECT COST SUBTOTALS	\$3,377			\$14	\$3,391				
Installing Contractors Overhead @	15.0%			\$3,242.11	\$486.32				
Installing Contractors Profit @	8.0%			\$3,242.11	\$259.37				
GC Markup on Subs @	5.0%			\$148.75	\$7.44				
					TOTAL MARKUP COSTS	\$753.12			
General Contractors Insurance @	1.0%	on		\$4,143.98	\$41				
Bond @	1.0%	on		\$4,143.98	\$41				
Contingency @	0.0%	on		\$4,226.86	\$0				
					TOTAL COST for pay item	\$4,227			

Additional Pay Item Notes :

Assumed 2.40 hours work for a crew formed of 1 Forman, 5 millwright for the handrails and 1 electrician to assure power for tools, etc. Assumed hazardous waste 10% of the total lbs, calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.024			Project	JCBOYLE				
Description	Remove & Dispose Spillway Radial Gates and Hoists								
Quantity	124,000.00	LBS		Project #	Klamath Dams Removal				
Daily Production	8,000.00	LBS per	8	Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Work Days	15.5	Days		Probable Low Cost Parameter	8800	\$238,402		\$1.92	
Unit Price	\$2.14	per LBS		Probable High Cost Parameter	5200	\$357,603		\$2.88	
Total Cost	\$264,891								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	15.5	8	124.00	L	\$47.23	\$0.00		\$5,856.52
Electrician	Active	1.00	15.5	8	124.00	L	\$45.23	\$0.00		\$5,608.52
Steelworker	Active	5.00	15.5	8	620.00	L	\$65.52	\$0.00		\$40,622.40
Loader, FE Rubber Tire (8.6cy)	Active	1.00	15.5	8	124.00	E	\$221.50	\$221.50		\$27,466.00
Truck Driver (heavy)	Active	1.00	15.5	8	124.00	L	\$57.59	\$0.00		\$7,141.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	15.5	8	124.00	E	\$111.64	\$111.64		\$13,843.36
Hydraulic Crane (120tn)	Active	1.00	15.5	8	124.00	E	\$239.06	\$239.06		\$29,643.44
Welder	Active	1.00	15.5	8	124.00	L	\$7.84	\$0.00		\$971.85
Gas Welding Machine	Active	1.00	15.5	8	124.00	E	\$2.88	\$2.88		\$356.75
Equipment Operator (medium)	Active	1.00	15.5	8	124.00	L	\$66.28	\$0.00		\$8,218.72
Equipment Operator (crane)	Active	1.00	15.5	8	124.00	L	\$68.41	\$0.00		\$8,482.84
Laborer	Active	4.00	15.5	8	496.00	L	\$45.80	\$0.00		\$22,716.80
					Labor Hours	1860	TOTAL LABOR			\$99,618.81
					Equipment Hours	496	TOTAL EQUIPMENT			\$71,309.55

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$4,980.94	\$4,980.94
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$7,105.94

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	62.00	ton	1.000	\$595.00	\$36,890.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	171.20	mile	1.000	\$7.25	\$1,241.20	
TOTAL SUBCONTRACTS						\$38,131.20

SUMMARY OF COSTS						
Labor Cost	\$99,618.81	Labor Burden @	49.7%	\$0.00		\$99,618.81
Material Cost	\$7,105.94	Material Tax @	7.8%	\$550.71		\$7,656.65
Equipment Cost	\$71,309.55	Equipment Tax @	0.0%	\$0.00		\$71,309.55
Subcontractors	\$38,131.20					\$38,131.20
DIRECT COST SUBTOTALS	\$216,165			\$551	DIRECT COST SUBTOTALS	\$216,716
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$26,787.75
Installing Contractors Profit @	8.0%	Material				\$14,286.80
GC Markup on Subs @	5.0%	Subs				\$1,906.56
					TOTAL MARKUP COSTS	\$42,981.11
General Contractors Insurance @	1.0%	on			\$259,697.32	\$2,597
Bond @	1.0%	on			\$259,697.32	\$2,597
Contingency @	0.0%	on			\$264,891.27	\$0
TOTAL COST for pay item						\$264,891

Additional Pay Item Notes :
 Production based on crew 1 Foreman, 5 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for disposal to Yreka facility. Production has been reduced due to activity occurring during the winter months.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.025			Project	JBOYLE				
Description	Remove & Dispose Stop Logs and Slots (steel)								
Quantity	92,000.00 LBS								
Daily Production	30,000.00 LBS per		8	hour shift	Project #	Klamath Dams Removal			
Work Days	3.1		Days		Estimator	Mihaela Tomulescu		LBS per	Total Cost
Unit Price	\$0.94 per LBS				Probable Low Cost Parameter	33000	\$78,053	Unit Price Per LBS	
Total Cost	\$86,725				Probable High Cost Parameter	24000	\$104,070	\$1.13	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	3.1	8	24.80	L	\$47.23	\$0.00		\$1,171.30
Electrician	Active	1.00	3.1	8	24.80	L	\$45.23	\$0.00		\$1,121.70
Ironworkers	Active	10.00	3.1	8	248.00	L	\$63.95	\$0.00		\$15,859.60
Vibratory Hammer & Extractor	Active	1.00	3.1	8	24.80	E	\$94.34	\$94.34		\$2,339.63
Truck Driver (heavy)	Active	2.00	3.1	8	49.60	L	\$57.59	\$0.00		\$2,856.46
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	3.1	8	49.60	E	\$111.64	\$111.64		\$5,537.34
Hydraulic Crane (120tn)	Active	2.00	3.1	8	49.60	E	\$239.06	\$239.06		\$11,857.38
Welder	Active	2.00	3.1	8	49.60	L	\$7.84	\$0.00		\$388.74
Gas Welding Machine	Active	2.00	3.1	8	49.60	E	\$2.88	\$2.88		\$142.70
Equipment Operator (medium)	Active	2.00	3.1	8	49.60	L	\$66.28	\$0.00		\$3,287.49
Equipment Operator (crane)	Active	1.00	3.1	8	24.80	L	\$68.41	\$0.00		\$1,696.57
Laborer	Active	10.00	3.1	8	248.00	L	\$45.80	\$0.00		\$11,358.40
					Labor Hours	719.2	TOTAL LABOR			\$37,740.27
					Equipment Hours	173.6	TOTAL EQUIPMENT			\$19,877.05

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,887.01	\$1,887.01	
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	5,000.00	LF	1.000	5,000.00	\$0.85	\$4,250.00	
						TOTAL MATERIAL	\$6,137.01

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (20%)	9.20	ton	1.000	\$595.00	9.20	\$5,474.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	\$7.25	36.00	\$261.00	
						TOTAL SUBCONTRACTS	\$5,735.00

SUMMARY OF COSTS									
Labor Cost	\$37,740.27	Labor Burden @	49.7%	\$0.00	\$37,740.27				
Material Cost	\$6,137.01	Material Tax @	7.8%	\$475.62	\$6,612.63				
Equipment Cost	\$19,877.05	Equipment Tax @	0.0%	\$0.00	\$19,877.05				
Subcontractors	\$5,735.00				\$5,735.00				
DIRECT COST SUBTOTALS	\$69,489			\$476	\$69,965				
Installing Contractors Overhead @	15.0%	Crew			\$9,634.49				
Installing Contractors Profit @	8.0%	Material			\$5,138.40				
GC Markup on Subs @	5.0%	Subs			\$286.75				
					TOTAL MARKUP COSTS	\$15,059.64			
General Contractors Insurance @	1.0%		on	\$85,024.59	\$850				
Bond @	1.0%		on	\$85,024.59	\$850				
Contingency @	0.0%		on	\$86,725.08	\$0				
					TOTAL COST for pay item	\$86,725			

Additional Pay Item Notes :

Production based on crew 1 Foreman, 5 Ironworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings. Electrical crew to provide power for tools, 1 Truck for disposal to Yreka facility. Assuming using a Vibratory Hammer & Extractor for attachments in concrete and 2 cranes for balance when the gates are discharged.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.026			Project			JCBOYLE		
Description	Remove & Dispose of 24" Slide Gate at Entrance to Fish Ladder Structure								
Quantity	4,200.00 LBS								
Daily Production	30,000.00 LBS per		8		hour shift				
Work Days	0.1		Days						
Unit Price	\$0.70 per LBS		Project #		Klamath Dams Removal		LBS per		Total Cost
Total Cost	\$2,919		Estimator		Mihaela Tomulescu		31500		\$2,773
			Probable Low Cost Parameter				16500		\$4,233
			Probable High Cost Parameter						\$1.01

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	1.00	0.1	8	0.80	L	\$47.23	\$0.00		\$37.78	
Electrician	Active	1.00	0.1	8	0.80	L	\$45.23	\$0.00		\$36.18	
Steelworker	Active	5.00	0.1	8	4.00	L	\$65.52	\$0.00		\$262.08	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.1	8	0.80	E	\$221.50	\$221.50		\$177.20	
Truck Driver (heavy)	Active	1.00	0.1	8	0.80	L	\$57.59	\$0.00		\$46.07	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.1	8	0.80	E	\$111.64	\$111.64		\$89.31	
Hydraulic Crane (120tn)	Active	1.00	0.1	8	0.80	E	\$239.06	\$239.06		\$191.25	
Welder	Active	1.00	0.1	8	0.80	L	\$7.84	\$0.00		\$6.27	
Gas Welding Machine	Active	1.00	0.1	8	0.80	E	\$2.88	\$2.88		\$2.30	
Equipment Operator (medium)	Active	1.00	0.1	8	0.80	L	\$66.28	\$0.00		\$53.02	
Equipment Operator (crane)	Active	1.00	0.1	8	0.80	L	\$68.41	\$0.00		\$54.73	
Laborer	Active	4.00	0.1	8	3.20	L	\$45.80	\$0.00		\$146.56	
Labor Hours					12					TOTAL LABOR	\$642.70
Equipment Hours					3.2					TOTAL EQUIPMENT	\$460.06

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$32.14	\$32.14
TOTAL MATERIAL						\$32.14

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	2.10	ton	1.000	2.10	\$595.00	\$1,249.50
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	19.83	mile	1.000	19.83	\$7.25	\$143.79
TOTAL SUBCONTRACTS						\$1,393.29

SUMMARY OF COSTS						
Labor Cost	\$642.70	Labor Burden @	49.7%	\$0.00		\$642.70
Material Cost	\$32.14	Material Tax @	7.8%	\$2.49		\$34.63
Equipment Cost	\$460.06	Equipment Tax @	0.0%	\$0.00		\$460.06
Subcontractors	\$1,393.29					\$1,393.29
DIRECT COST SUBTOTALS	\$2,528			\$2	DIRECT COST SUBTOTALS	\$2,531
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$170.61
Installing Contractors Profit @	8.0%	Material				\$90.99
GC Markup on Subs @	5.0%	Subs				\$69.66
					TOTAL MARKUP COSTS	\$331.26
General Contractors Insurance @	1.0%		on			\$29
Bond @	1.0%		on			\$29
Contingency @	0.0%		on			\$0
TOTAL COST for pay item						\$2,919

Additional Pay Item Notes :

Production based on crew 1 Forman, 5 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for disposal to Yreka facility. Assuming 1 hour of work.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.026a			Project	JCBOYLE				
Description	Remove petroleum products from Red Bam Area								
Quantity	1,600.00 GAL			Project #	Klamath Dams Removal				
Daily Production	550.00 GAL per 8 hour shift			Estimator	Mihaela Tomulescu				
Work Days	2.9 Days			Probable Low Cost Parameter	GAL per	Total Cost	Unit Price Per GAL		
Unit Price	\$13.34 per GAL			Probable High Cost Parameter	632.5	\$18,137	\$11.34		
Total Cost	\$21,338				385	\$27,739	\$17.34		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.9	8	23.20	L	\$46.27	incl. in rate	incl. in rate	\$1,073.46
Electrician	Active	1.00	2.9	8	23.20	L	\$45.23	incl. in rate	incl. in rate	\$1,049.34
Laborer	Active	4.00	2.9	8	92.80	L	\$45.80	incl. in rate	incl. in rate	\$4,250.24
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.9	8	23.20	E	\$221.50	incl. in rate	incl. in rate	\$5,138.80
Truck Driver (heavy)	Active	1.00	2.9	8	23.20	L	\$57.59	incl. in rate	incl. in rate	\$1,336.09
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.9	8	23.20	E	\$111.64	incl. in rate	incl. in rate	\$2,590.05
Equipment Operator (light)	Active	1.00	2.9	8	23.20	L	\$64.90	incl. in rate	incl. in rate	\$1,505.68
Pump, Centrifugal, 3"	Active	1.00	2.9	8	23.20	E	\$2.76	incl. in rate	incl. in rate	\$63.93
Labor Hours					185.6	TOTAL LABOR				\$9,214.81
Equipment Hours					69.6	TOTAL EQUIPMENT				\$7,792.78

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	0.00	LS	1.000	0.00	\$0.00	\$0.00
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$9,214.81	Labor Burden @	49.7%	\$0.00		\$9,214.81
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$7,792.78	Equipment Tax @	0.0%	\$0.00		\$7,792.78
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$17,008			\$0	DIRECT COST SUBTOTALS	\$17,008
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$2,551.14
Installing Contractors Profit @	8.0%	Material				\$1,360.61
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$3,911.75
General Contractors Insurance @	1.0%		on	\$20,919.33		\$209
Bond @	1.0%		on	\$20,919.33		\$209
Contingency @	0.0%		on	\$21,337.72		\$0
TOTAL COST for pay item						\$21,338

Additional Pay Item Notes :

The petroleum waste is saved in drums and send it to recycling or disposal. Used a crew formed of 1 Foreman, 4 Laborers to takeout the petroleum waste from the mech equipment, 1 Electrician to unplug the power and to assure the temporary power at the construction site.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.027	Project	: JCBOYLE						
Description	: Remove & Dispose of Spillway gate motor & control panel								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days								
Unit Price	: \$1,282.33 per EA	Estimator	: Mihaela Tomulescu	EA per	: 1.1	Total Cost	: \$1,154	Unit Price Per EA	: \$1,154.10
Total Cost	: \$1,282	Probable Low Cost Parameter	: 1.1	Probable High Cost Parameter	: 0.8	Total Cost	: \$1,539	Unit Price Per EA	: \$1,538.80

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	\$0.00		\$732.80
					Labor Hours	16	TOTAL LABOR			\$732.80
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor (Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	3.66	LS	1.000	3.66	\$73.28	\$268.50
TOTAL MATERIAL						\$268.50

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$732.80	Labor Burden @	49.7%	\$0.00		\$732.80
Material Cost	\$268.50	Material Tax @	7.8%	\$20.81		\$289.31
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,001			\$21	DIRECT COST SUBTOTALS	\$1,022
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$153.32
Installing Contractors Profit @	8.0%	Material				\$81.77
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$235.08
General Contractors Insurance @	1.0%	on		\$1,257.19		\$13
Bond @	1.0%	on		\$1,257.19		\$13
Contingency @	0.0%	on		\$1,282.33		\$0
					TOTAL COST for pay item	\$1,282

Additional Pay Item Notes :
 Assumed that two workers will work one day to unconnected and remove the control panel and the gate motor. They will discharge the control panel and the gate motor in an available truck used for the other scope of work on the construction site. Assumed weight:500 LBS

PAY ITEM COST DETAIL WORKSHEET

1.028 Remove & Dispose of Distribution equipment, panelboards

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.028	Project	: JCBOYLE						
Description	: Remove & Dispose of Distribution equipment, panelboards								
Quantity	: 1.00 EA								
Daily Production	: 0.50 EA per	8	hour shift	Project #	: Klamath Dams Removal	EA per	Total Cost	Unit Price Per EA	
Work Days	: 2.0 Days								
Unit Price	: \$5,877.55 per EA	Estimator	: Mihaela Tomulescu	Probable Low Cost Parameter	0.55	\$5,290	\$5,289.80		
Total Cost	: \$5,878	Probable High Cost Parameter	0.4	\$7,053	\$7,053.06				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	\$0.00		\$755.68
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	\$0.00		\$723.68
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Hydraulic Crane (17tn)	Active	1.00	2.0	8	16.00	E	\$81.52	\$81.52		\$1,304.32
					Labor Hours	48	TOTAL LABOR			\$2,487.36
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,197.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor (Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	0.00	LS	1.000	0.00	\$124.37	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$2,487.36	Labor Burden @	49.7%	\$0.00		\$2,487.36	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00	
Equipment Cost	\$2,197.44	Equipment Tax @	0.0%	\$0.00		\$2,197.44	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$4,685			\$0	DIRECT COST SUBTOTALS	\$4,685	
Installing Contractors Overhead @	15.0%	Crew				\$702.72	
Installing Contractors Profit @	8.0%	Material				\$374.78	
GC Markup on Subs @	5.0%	Subs				\$0.00	
						TOTAL MARKUP COSTS	\$1,077.50
General Contractors Insurance @	1.0%		on		\$5,762.30	\$58	
Bond @	1.0%		on		\$5,762.30	\$58	
Contingency @	0.0%		on		\$5,877.55	\$0	
TOTAL COST for pay item						\$5,878	

Additional Pay Item Notes :
 Assumed that electrical crew formed of 1 Foreman and 1 Electricians will work two days to unconnected and remove the distribution panels. They are going to use same crane and a truck for disposal of spillway intake, trash rake and radial motor & control panel. Assumed weight:500 LBS

PAY ITEM COST DETAIL WORKSHEET

1.029 Remove Powerhouse Concrete down to Elevation 3324.0

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.029	Project	: JC Boyle						
Description	: Remove Powerhouse Concrete down to Elevation 3324.0								
Quantity	: 1,500.00	cy							
Daily Production	: 50.00	cy per	: 8	hour shift	Project #	: 1			
Work Days	: 30.0	Days			Estimator	: Felipe Poletto	cy per	Total Cost	Unit Price Per cy
Unit Price	: \$546.51	per cy			Probable Low Cost Parameter	55	\$737,786	\$491.86	
Total Cost	: \$819,762			Probable High Cost Parameter	40	\$983,714	\$655.81		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	30.0	8	480.00	L	\$48.27	incl. in rate	incl. in rate	\$23,169.60
Laborer	Active	8.00	30.0	8	1,920.00	L	\$45.80	incl. in rate	incl. in rate	\$87,936.00
Equipment Operator (medium)	Active	4.00	30.0	8	960.00	L	\$66.28	incl. in rate	incl. in rate	\$63,628.80
Truck Driver (heavy)	Active	2.00	30.0	8	480.00	L	\$57.59	incl. in rate	incl. in rate	\$27,643.20
Air Compressor 600 cfm	Active	2.00	30.0	8	480.00	E	\$21.74	incl. in rate	incl. in rate	\$10,434.68
Air Compressor 900 cfm	Active	2.00	30.0	8	480.00	E	\$38.87	incl. in rate	incl. in rate	\$18,657.08
Air Tool, Chipping Hammer	Active	6.00	30.0	8	1,440.00	E	\$1.64	incl. in rate	incl. in rate	\$2,360.21
Generator, Small Generator, 10 - 15 kW	Active	4.00	30.0	8	960.00	E	\$7.04	incl. in rate	incl. in rate	\$6,758.40
Hydraulic Excavator (5.0cy)	Active	4.00	30.0	8	960.00	E	\$274.63	incl. in rate	incl. in rate	\$263,644.80
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	3.00	30.0	8	720.00	E	\$62.72	incl. in rate	incl. in rate	\$45,158.40
Hydraulic Thumbs/Shear Attachment	Active	2.00	30.0	8	480.00	E	\$16.39	incl. in rate	incl. in rate	\$7,867.20
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	30.0	8	480.00	E	\$111.64	incl. in rate	incl. in rate	\$53,587.20
			30.0	8	0.00					\$0.00
			30.0	8	0.00					\$0.00
			30.0	8	0.00					\$0.00
			30.0	8	0.00					\$0.00
			30.0	8	0.00					\$0.00
Labor Hours					3,840	TOTAL LABOR				\$202,377.60
Equipment Hours					6,000	TOTAL EQUIPMENT				\$408,467.97

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$10,118.88	\$10,118.88
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$10,118.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$202,377.60	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$202,377.60
Material Cost	\$10,118.88	Material Tax @	7.75%	\$784.21		\$10,903.09
Equipment Cost	\$408,467.97	Equipment Tax @	7.75%	\$31,656.27		\$440,124.24
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$620,964			\$32,440		\$653,405
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$653,404.93	\$98,010.74
Installing Contractors Profit@	8.0%				\$653,404.93	\$52,272.39
GC Markup on Subs @	5.0%				\$0.00	\$0.00
TOTAL MARKUP COSTS						\$150,283.13
General Contractors Insurance @	1.0%		on		\$803,688.07	\$8,037
Bond @	1.0%		on		\$803,688.07	\$8,037
Contingency @	0.0%		on		\$819,761.83	\$0
TOTAL COST for pay item						\$819,762

Additional Pay Item Notes :

There will be two 5 man demo crews using chipping hammers to support demolition, 3 excavators with breakers breaking material, 1 excavator loading 20 CY off road hauling trucks, expecting for each of the 2 trucks to get 1.5 load per day 50cys per shift.

PAY ITEM COST DETAIL WORKSHEET

1.030 Remove Structural Steel items associated with Powerhouse

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.030			Project	JCBOYLE				
Description	Remove Structural Steel items associated with Powerhouse								
Quantity	94,000.00 lbs			Project #	Klamath Dams Removal				
Daily Production	30,000.00 lbs per 8 hour shift			Estimator	Mihaela Tomulescu				
Work Days	3.1 Days			Probable Low Cost Parameter	lbs per	Total Cost	Unit Price Per lbs		
Unit Price	\$0.63 per lbs			Probable High Cost Parameter	33000	\$53,166	\$0.57		
Total Cost	\$59,073				25500	\$67,935	\$0.72		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	3.1	8	24.80	L	\$47.23	incl. in rate	incl. in rate	\$1,171.30
Electrician	Active	1.00	3.1	8	24.80	L	\$45.23	incl. in rate	incl. in rate	\$1,121.70
Steelworker	Active	5.00	3.1	8	124.00	L	\$65.52	incl. in rate	incl. in rate	\$8,124.48
Loader, FE Rubber Tire (8.6cy)	Active	1.00	3.1	8	24.80	E	\$221.50	incl. in rate	incl. in rate	\$5,493.20
Truck Driver (heavy)	Active	1.00	3.1	8	24.80	L	\$57.59	incl. in rate	incl. in rate	\$1,428.23
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	3.1	8	24.80	E	\$111.64	incl. in rate	incl. in rate	\$2,768.67
Hydraulic Crane (120tn)	Active	1.00	3.1	8	24.80	E	\$239.06	incl. in rate	incl. in rate	\$5,928.69
Welder	Active	2.00	3.1	8	49.60	L	\$7.84	incl. in rate	incl. in rate	\$388.74
Gas Welding Machine	Active	2.00	3.1	8	49.60	E	\$2.88	incl. in rate	incl. in rate	\$142.70
Equipment Operator (medium)	Active	1.00	3.1	8	24.80	L	\$66.28	incl. in rate	incl. in rate	\$1,643.74
Equipment Operator (crane)	Active	1.00	3.1	8	24.80	L	\$68.41	incl. in rate	incl. in rate	\$1,696.57
Laborer	Active	10.00	3.1	8	248.00	L	\$45.80	incl. in rate	incl. in rate	\$11,358.40
Labor Hours					545.6	TOTAL LABOR				\$26,933.17
Equipment Hours					124	TOTAL EQUIPMENT				\$14,333.26

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,693.32	\$2,693.32	
TOTAL MATERIAL						\$2,693.32	

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	4.70	ton	1.000	4.70	\$595.00	\$2,796.50
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60
TOTAL SUBCONTRACTS						\$3,417.10

SUMMARY OF COSTS							
Labor Cost	\$26,933.17	Labor Burden @	49.7%	\$0.00	\$26,933.17		
Material Cost	\$2,693.32	Material Tax @	7.8%	\$208.73	\$2,902.05		
Equipment Cost	\$14,333.26	Equipment Tax @	0.0%	\$0.00	\$14,333.26		
Subcontractors	\$3,417.10				\$3,417.10		
DIRECT COST SUBTOTALS	\$47,377			\$209	DIRECT COST SUBTOTALS	\$47,586	
Installing Contractors Overhead@	15.0%	Crew				\$6,625.27	
Installing Contractors Profit@	8.0%	Material				\$3,533.48	
GC Markup on Subs @	5.0%	Subs				\$170.86	
					TOTAL MARKUP COSTS	\$10,329.61	
General Contractors Insurance @	1.0%		on	\$57,915.19		\$579	
Bond @	1.0%		on	\$57,915.19		\$579	
Contingency @	0.0%		on	\$59,073.49		\$0	
TOTAL COST for pay item						\$59,073	

Additional Pay Item Notes :

Includes columns, beams, crane girders, bracing, misc. shapes, roof trusses, purlins, etc. Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 10% of the total lbs, calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.031	Project		:	Copco 2			
Description	:	Remove Warehouse near Powerhouse							
Quantity	:	5,060.00	SF						
Daily Production	:	500.00	SF per	8	hour shift	Project #	:	1	
Work Days	:	10.1	Days	Estimator	:	Eric Jones		SF per	Total Cost
Unit Price	:	\$32.95	per SF	Probable Low Cost Parameter		525	\$158,369	Unit Price Per SF	\$31.30
Total Cost	:	\$166,704	Probable High Cost Parameter		450	\$183,375	\$36.24		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	10.1	8	80.80	L	\$46.27	incl. in rate	incl. in rate	\$3,738.62
Laborer	Active	6.00	10.1	8	484.80	L	\$45.80	incl. in rate	incl. in rate	\$22,203.84
Equipment Operator (medium)	Active	2.00	10.1	8	161.60	L	\$66.28	incl. in rate	incl. in rate	\$10,710.85
Truck Driver (heavy)	Active	1.00	10.1	8	80.80	L	\$57.59	incl. in rate	incl. in rate	\$4,653.27
Steelworker	Active	2.00	10.1	8	161.60	L	\$65.52	incl. in rate	incl. in rate	\$10,588.03
Hydraulic Excavator (5.0cy)	Active	2.00	10.1	8	161.60	E	\$274.63	incl. in rate	incl. in rate	\$44,380.21
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	10.1	8	80.80	E	\$111.64	incl. in rate	incl. in rate	\$9,020.51
0		2.00	10.1	8	161.60	0	\$0.00	\$0.00		\$0.00
0		1.00	10.1	8	80.80	0	\$0.00	\$0.00		\$0.00
		1.00	10.1	8	80.80	0	\$0.00	\$0.00		\$0.00
		1.00	10.1	8	80.80	0	\$0.00	\$0.00		\$0.00
		1.00	10.1	8	80.80	0	\$0.00	\$0.00		\$0.00
			10.1	8	0.00					\$0.00
			10.1	8	0.00					\$0.00
			10.1	8	0.00					\$0.00
			10.1	8	0.00					\$0.00
			10.1	8	0.00					\$0.00
Labor Hours					969.6	TOTAL LABOR				\$51,894.61
Equipment Hours					242.4	TOTAL EQUIPMENT				\$53,400.72

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	742	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	371.07	tons	lamath County LandFi	\$74.00	\$27,458.93
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$27,458.93

SUMMARY OF COSTS						
Labor Cost	\$51,894.61	Labor Burden @	0.0%			\$51,894.61
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$53,400.72	Equipment Tax @	7.75%	\$4,138.56		\$57,539.28
Subcontractors	\$27,458.93					\$27,458.93
DIRECT COST SUBTOTALS	\$132,754			\$4,139	DIRECT COST SUBTOTALS	\$136,893
Installing Contractors Overhead@	15.0%			\$109,433.88		\$16,415.08
Installing Contractors Profit@	8.0%			\$109,433.88		\$8,754.71
GC Markup on Subs @	5.0%			\$27,458.93		\$1,372.95
					TOTAL MARKUP COSTS	\$26,542.74
General Contractors Insurance @	1.0%	on		\$163,435.56		\$1,634
Bond @	1.0%	on		\$163,435.56		\$1,634
Contingency @	0.0%	on		\$166,704.27		\$0
					TOTAL COST for pay item	\$166,704

Additional Pay Item Notes :

Crew should take 3 weeks to remove building. Assuming the building is a combination of structural steel and sheet metal, 1 labor foreman to run crews 6 laborer for running and cleaning up misc mats, and backing up trucks, 2 equipment operators 2 for the excavators (1 with breaker, 1 with bucket,) excavator will be performing the demolition and the excavator will load trucks, 1 truck driver to drive off road truck, 2 steel works to cut steel members as necessary.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	1.032				Project	JCBOYLE				
Description	Remove & Dispose of 2 - Governor oil systems									
Quantity	52,500.00 lbs									
Daily Production	30,000.00 lbs per		8		hour shift					
Work Days	1.8 Days				Project #	Klamath Dams Removal				
Unit Price	\$0.80 per lbs				Estimator	Mihaela Tomulescu		lbs per	Total Cost	Unit Price Per lbs
Total Cost	\$41,929				Probable Low Cost Parameter	25500		\$39,833	\$0.76	
					Probable High Cost Parameter	25500		\$48,219	\$0.92	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.8	8	14.40	L	\$47.23	incl. in rate	incl. in rate	\$680.11
Electrician	Active	1.00	1.8	8	14.40	L	\$45.23	incl. in rate	incl. in rate	\$651.31
Ironworkers	Active	4.00	1.8	8	57.60	L	\$63.95	incl. in rate	incl. in rate	\$3,683.52
Hydraulic Excavator (6.0cy)	Active	1.00	1.8	8	14.40	E	\$322.48	incl. in rate	incl. in rate	\$4,643.71
Truck Driver (heavy)	Active	1.00	1.8	8	14.40	L	\$57.59	incl. in rate	incl. in rate	\$829.30
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.8	8	14.40	E	\$111.64	incl. in rate	incl. in rate	\$1,607.62
Hydraulic Crane (120tn)	Active	1.00	1.8	8	14.40	E	\$239.06	incl. in rate	incl. in rate	\$3,442.46
Welder	Active	1.00	1.8	8	14.40	L	\$7.84	incl. in rate	incl. in rate	\$112.86
Gas Welding Machine	Active	1.00	1.8	8	14.40	E	\$2.88	incl. in rate	incl. in rate	\$41.43
Equipment Operator (medium)	Active	1.00	1.8	8	14.40	L	\$66.28	incl. in rate	incl. in rate	\$954.43
Equipment Operator (crane)	Active	1.00	1.8	8	14.40	L	\$68.41	incl. in rate	incl. in rate	\$985.10
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	1.00	1.8	8	14.40	E	\$30.85	incl. in rate	incl. in rate	\$444.24
					Labor Hours	144	TOTAL LABOR			\$7,896.64
					Equipment Hours	72	TOTAL EQUIPMENT			\$10,179.46

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$394.83	\$394.83
TOTAL MATERIAL						\$394.83

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	26.25	ton	1.000	\$595.00	\$15,618.75
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	\$7.25	\$620.60
TOTAL SUBCONTRACTS					\$16,239.35

SUMMARY OF COSTS						
Labor Cost	\$7,896.64	Labor Burden @	49.7%	\$0.00		\$7,896.64
Material Cost	\$394.83	Material Tax @	7.8%	\$30.60		\$425.43
Equipment Cost	\$10,179.46	Equipment Tax @	0.0%	\$0.00		\$10,179.46
Subcontractors	\$16,239.35					\$16,239.35
DIRECT COST SUBTOTALS	\$34,710			\$31	DIRECT COST SUBTOTALS	\$34,741
Installing Contractors Overhead @	15.0%	Crew				\$2,775.23
Installing Contractors Profit @	8.0%	Material				\$2,779.27
GC Markup on Subs @	5.0%	Subs				\$811.97
					TOTAL MARKUP COSTS	\$6,366.47
General Contractors Insurance @	1.0%	on				\$411
Bond @	1.0%	on				\$411
Contingency @	0.0%	on				\$0
TOTAL COST for pay item						\$41,929

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Using hydraulic impact breaker because of the systems that are encased in concrete. Assumed hazardous waste 100% of the total lbs, calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM COST DETAIL WORKSHEET

1.033 Remove & Dispose of Cooling water and bearing oil systems

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 1.033	Project	: JCBOYLE								
Description	: Remove & Dispose of Cooling water and bearing oil systems										
Quantity	: 6,500.00 lbs										
Daily Production	: 6,000.00 lbs per	8	hour shift								
Work Days	: 1.1 Days										
Unit Price	: \$1.06 per lbs	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	lbs per	6600	Total Cost	\$6,215	Unit Price Per lbs	\$0.96
Total Cost	: \$6,905	Probable Low Cost Parameter		Probable High Cost Parameter		5100		\$7,941		\$1.22	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.1	8	8.80	L	\$48.27	incl. in rate	incl. in rate	\$424.78
Laborer	Active	1.00	1.1	8	8.80	L	\$45.80	incl. in rate	incl. in rate	\$403.04
Steelworker	Active	1.00	1.1	8	8.80	L	\$65.52	incl. in rate	incl. in rate	\$576.58
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	8	4.00	E	\$221.50	incl. in rate	incl. in rate	\$886.00
Truck Driver (light)	Active	1.00	0.5	8	4.00	L	\$56.29	incl. in rate	incl. in rate	\$225.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
Equipment Operator (light)	Active	1.00	0.5	8	4.00	L	\$64.90	incl. in rate	incl. in rate	\$259.60
Labor Hours					34.4	TOTAL LABOR				\$1,889.15
Equipment Hours					8	TOTAL EQUIPMENT				\$1,332.56

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, et	1.00	LS	1.000	1.00	\$94.46	\$94.46
TOTAL MATERIAL						\$94.46

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	3.25	ton	1.000	3.25	\$595.00	\$1,933.75
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60
TOTAL SUBCONTRACTS						\$2,554.35

SUMMARY OF COSTS						
Labor Cost	\$1,889.15	Labor Burden @	49.7%	\$0.00		\$1,889.15
Material Cost	\$94.46	Material Tax @	7.8%	\$7.32		\$101.78
Equipment Cost	\$1,332.56	Equipment Tax @	0.0%	\$0.00		\$1,332.56
Subcontractors	\$2,554.35					\$2,554.35
DIRECT COST SUBTOTALS	\$5,871			\$7	DIRECT COST SUBTOTALS	\$5,878
Installing Contractors Overhead @	15.0%	Crew		Material	Subs	Cost Basis
Installing Contractors Profit @	8.0%					\$3,323.49
GC Markup on Subs @	5.0%					\$3,323.49
TOTAL MARKUP COSTS						\$892.12
General Contractors Insurance @	1.0%		on			\$6,769.96
Bond @	1.0%		on			\$6,769.96
Contingency @	0.0%		on			\$6,905.36
TOTAL COST for P						\$6,905

Additional Pay Item Notes :

Used RS Means : Assumed " Pipe, metal pipe, to 1-1/2" diam., selective demolition", 2390 LF of 1 1/2" oil pipes at 2.72 Lbs/LF. Used 1 Foreman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment). Assumed hazardous waste 100% of the total lbs

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.034			Project	JC Boyle				
Description	Remove & Dispose of 2 - Francis Turbines								
Quantity	560,000.00 LBS								
Daily Production	30,000.00	LBS per	8	hour shift					
Work Days	18.7 Days			Project #	Klamath Dams Removal				
Unit Price	\$0.75 per LBS			Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Total Cost	\$417,204			Probable Low Cost Parameter	34500		\$354,624	\$0.63	
				Probable High Cost Parameter	22500		\$521,505	\$0.93	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	18.7	8	149.60	L	\$48.27	incl. in rate	incl. in rate	\$7,221.19
Ironworkers	Active	10.00	18.7	8	1,496.00	L	\$63.95	incl. in rate	incl. in rate	\$95,669.20
Crawler Crane (270tn)	Active	1.00	18.7	8	149.60	E	\$399.50	incl. in rate	incl. in rate	\$59,765.20
Equipment Operator (crane)	Active	1.00	18.7	8	149.60	L	\$68.41	incl. in rate	incl. in rate	\$10,234.14
Welder	Active	4.00	18.7	8	598.40	L	\$7.84	incl. in rate	incl. in rate	\$4,689.96
Gas Welding Machine	Active	4.00	18.7	8	598.40	E	\$2.88	incl. in rate	incl. in rate	\$1,721.59
Electrician	Active	2.00	18.7	8	299.20	L	\$45.23	incl. in rate	incl. in rate	\$13,532.82
Electrician Foreman	Active	1.00	18.7	8	149.60	L	\$47.23	incl. in rate	incl. in rate	\$7,065.61
Truck, Flatbed (4x4, 10,000 gww)	Active	2.00	6.0	8	96.00	E	\$31.90	incl. in rate	incl. in rate	\$3,062.40
Loader, FE Rubber Tire (8.6cy)	Active	2.00	18.7	8	299.20	E	\$221.50	incl. in rate	incl. in rate	\$66,272.80
Truck Driver (heavy)	Active	5.00	18.7	8	748.00	L	\$57.59	incl. in rate	incl. in rate	\$43,077.32
Equipment Operator (medium)	Active	1.00	18.7	8	149.60	L	\$66.28	incl. in rate	incl. in rate	\$9,915.49
Labor Hours					3740	TOTAL LABOR				\$191,405.72
Equipment Hours					1143.2	TOTAL EQUIPMENT				\$130,821.99

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$9,570.29	\$9,570.29
TOTAL MATERIAL						\$9,570.29

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$191,405.72	Labor Burden @	49.7%	\$0.00	\$191,405.72
Material Cost	\$9,570.29	Material Tax @	7.8%	\$741.70	\$10,311.98
Equipment Cost	\$130,821.99	Equipment Tax @	0.0%	\$0.00	\$130,821.99
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$331,798			\$742	\$332,540
Installing Contractors Overhead @	15.0%				\$49,880.95
Installing Contractors Profit @	8.0%				\$26,603.18
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$76,484.13
General Contractors Insurance @	1.0%	on		\$409,023.82	\$4,090
Bond @	1.0%	on		\$409,023.82	\$4,090
Contingency @	0.0%	on		\$417,204.30	\$0
TOTAL COST for pay item					\$417,204

Additional Pay Item Notes :

Working with a crew formed of 1 El. Foreman 2 Electrician starting to disconnect power and take care of the temporary electrical power they need at the site. The crew of 10 Ironworker / Millwright open the engine side panels, and remove the nacelle access panels. Disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. Plug all lines as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts. The engine ready to be removed. Move the engine forward, out of the nacelle structure, until it clears the aircraft. Lower the into position on the stand, and secure it prior to removing the engine sling. The crew of 4 Welder are going to cut in pieces the big parts of the turbine to be able to load them in the truck using a loader and dispose.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.035	Project	: JC Boyle						
Description	: Remove & Dispose of 150 Ton crane								
Quantity	: 240,000.00 LBS	Project #	: Klamath Dams Removal						
Daily Production	: 24,000.00 LBS per	Estimator	: Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS			
Work Days	: 10.0 Days	Probable Low Cost Parameter		27600	\$166,937	\$0.70			
Unit Price	: \$0.82 per LBS	Probable High Cost Parameter		19200	\$235,675	\$0.98			
Total Cost	: \$196,396								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (120tn)	Active	2.00	10.0	8	160.00	E	\$239.06	incl. in rate	incl. in rate	\$38,249.60
Equipment Operator (crane)	Active	2.00	10.0	8	160.00	L	\$68.41	incl. in rate	incl. in rate	\$10,945.60
Truck Driver (heavy)	Active	1.00	10.0	8	80.00	L	\$57.59	incl. in rate	incl. in rate	\$4,607.20
Equipment Operator (medium)	Active	1.00	10.0	8	80.00	L	\$66.28	incl. in rate	incl. in rate	\$5,302.40
Loader, FE Rubber Tire (8.6cy)	Active	1.00	10.0	8	80.00	E	\$221.50	incl. in rate	incl. in rate	\$17,720.00
Electrician Foreman	Active	1.00	10.0	8	80.00	L	\$47.23	incl. in rate	incl. in rate	\$3,778.40
Truck, Tractor (400hp)	Active	1.00	10.0	8	80.00	E	\$69.30	incl. in rate	incl. in rate	\$5,544.00
Labor Foreman	Active	1.00	10.0	8	80.00	L	\$48.27	incl. in rate	incl. in rate	\$3,861.60
Welder	Active	2.00	10.0	8	160.00	L	\$7.84	incl. in rate	incl. in rate	\$1,254.00
Gas Welding Machine	Active	2.00	10.0	8	160.00	E	\$2.88	incl. in rate	incl. in rate	\$460.32
Steelworker	Active	8.00	10.0	8	640.00	L	\$65.52	incl. in rate	incl. in rate	\$41,932.80
Laborer	Active	4.00	10.0	8	320.00	L	\$45.80	incl. in rate	incl. in rate	\$14,656.00
					Labor Hours	1600	TOTAL LABOR			\$86,338.00
					Equipment Hours	480	TOTAL EQUIPMENT			\$61,973.92

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$4,316.90	\$4,316.90	
						TOTAL MATERIAL	\$4,316.90

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (5% of total weight)	6.00	ton	1.000	6.00	\$595.00	\$3,570.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60
					TOTAL SUBCONTRACTS	\$4,190.60

SUMMARY OF COSTS						
Labor Cost	\$86,338.00	Labor Burden @	49.7%	\$0.00	\$86,338.00	
Material Cost	\$4,316.90	Material Tax @	7.8%	\$334.56	\$4,651.46	
Equipment Cost	\$61,973.92	Equipment Tax @	0.0%	\$0.00	\$61,973.92	
Subcontractors	\$4,190.60				\$4,190.60	
DIRECT COST SUBTOTALS	\$156,819			\$335	\$157,154	
Installing Contractors Overhead @	15.0%	Crew			\$22,944.51	
Installing Contractors Profit @	8.0%	Material			\$12,237.07	
GC Markup on Subs @	5.0%	Subs			\$209.53	
					TOTAL MARKUP COSTS	\$35,391.11
General Contractors Insurance @	1.0%		on	\$192,545.08	\$1,925	
Bond @	1.0%		on	\$192,545.08	\$1,925	
Contingency @	0.0%		on	\$196,395.99	\$0	
					TOTAL COST for pay item	\$196,396

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 2% of the total lbs, calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 1.036	Project	: JCBOYLE								
Description	: Remove & Dispose of Compressed Air systems										
Quantity	: 1,100.00 lbs										
Daily Production	: 6,000.00 lbs per	8	hour shift								
Work Days	: 0.183 Days										
Unit Price	: \$0.88 per lbs	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	lbs per	6600	Total Cost	\$875	Unit Price Per lbs	\$0.80
Total Cost	: \$973	Probable Low Cost Parameter	4500	Probable High Cost Parameter	4500	Total Cost	\$1,216	Unit Price Per lbs	\$1.11		

CREW COSTS												
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost		
Loader, FE Rubber Tire (5.25cy)	Active	1.00	0.183	8	1.47	E	\$75.42	incl. in rate	incl. in rate		\$110.62	
Laborer	Active	3.00	0.183	8	4.40	L	\$45.80	incl. in rate	incl. in rate		\$201.52	
Steelworker	Active	1.00	0.183	8	1.47	L	\$65.52	incl. in rate	incl. in rate		\$96.10	
Equipment Operator (light)	Active	1.00	0.183	8	1.47	L	\$64.90	incl. in rate	incl. in rate		\$95.19	
Truck Driver (light)	Active	1.00	0.183	8	1.47	L	\$56.29	incl. in rate	incl. in rate		\$82.56	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.183	8	1.47	E	\$111.64	incl. in rate	incl. in rate		\$163.74	
					Labor Hours	8.8					TOTAL LABOR	\$475.36
					Equipment Hours	2.933333333					TOTAL EQUIPMENT	\$274.35

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$23.77	\$23.77	
						TOTAL MATERIAL	\$23.77

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$475.36	Labor Burden @	49.7%	\$0.00		\$475.36
Material Cost	\$23.77	Material Tax @	7.8%	\$1.84		\$25.61
Equipment Cost	\$274.35	Equipment Tax @	0.0%	\$0.00		\$274.35
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$773			\$2	DIRECT COST SUBTOTALS	\$775
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$775.33	\$116.30
Installing Contractors Profit @	8.0%				\$775.33	\$62.03
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$178.33
General Contractors Insurance @	1.0%		on		\$953.65	\$10
Bond @	1.0%		on		\$953.65	\$10
Contingency @	0.0%		on		\$972.72	\$0
					TOTAL COST for pay item	\$973

Additional Pay Item Notes :
 Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 400 LF of 1 1/2" pipes at 2.72 Lbs/LF. Used 1 Steelworkers to cut the pipes and 3 Laborers for hauling.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.037	Project	: JCBOYLE
Description	: Remove & Dispose of 2 - CO2 systems	Project #	: Klamath Dams Removal
Quantity	: 6,600.00 lbs	Estimator	: Mihaela Tomulescu
Daily Production	: 6,000.00 lbs per 8 hour shift	Probable Low Cost Parameter	6600
Work Days	: 1.1 Days	Probable High Cost Parameter	4800
Unit Price	: \$0.99 per lbs	Total Cost	\$5,853
Total Cost	: \$6,504	Unit Price Per lbs	\$0.89

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.1	8	8.80	L	\$48.27	incl. in rate	incl. in rate	\$424.78
Laborer	Active	2.00	1.1	8	17.60	L	\$45.80	incl. in rate	incl. in rate	\$806.08
Steelworker	Active	2.00	1.1	8	17.60	L	\$65.52	incl. in rate	incl. in rate	\$1,153.15
Equipment Operator (light)	Active	1.00	1.1	8	8.80	L	\$64.90	incl. in rate	incl. in rate	\$571.12
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.1	8	8.80	E	\$64.23	incl. in rate	incl. in rate	\$565.22
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.1	8	8.80	E	\$111.64	incl. in rate	incl. in rate	\$982.43
Truck Driver (light)	Active	1.00	1.1	8	8.80	L	\$56.29	incl. in rate	incl. in rate	\$495.35
					Labor Hours	61.6	TOTAL LABOR			\$3,450.48
					Equipment Hours	17.6	TOTAL EQUIPMENT			\$1,547.66

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$172.52	\$172.52
TOTAL MATERIAL						\$172.52

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$3,450.48	Labor Burden @	49.7%	\$0.00	\$3,450.48	
Material Cost	\$172.52	Material Tax @	7.8%	\$13.37	\$185.89	
Equipment Cost	\$1,547.66	Equipment Tax @	0.0%	\$0.00	\$1,547.66	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$5,171			\$13	\$5,184	
Installing Contractors Overhead @	15.0%	Crew			\$777.60	
Installing Contractors Profit @	8.0%	Material			\$414.72	
GC Markup on Subs @	5.0%	Subs			\$0.00	
					TOTAL MARKUP COSTS	\$1,192.33
General Contractors Insurance @	1.0%		on	\$6,376.36	\$64	
Bond @	1.0%		on	\$6,376.36	\$64	
Contingency @	0.0%		on	\$6,503.88	\$0	
					TOTAL COST for pay item	\$6,504

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 2430 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 2 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.038	Project	: JCBOYLE						
Description	: Remove & Dispose of Plant Water and Fire Protection								
Quantity	: 3,100.00 lbs	Project #	: Klamath Dams Removal						
Daily Production	: 6,000.00 lbs per	Estimator	: Mihaela Tomulescu	lbs per	Total Cost	Unit Price Per lbs			
Work Days	: 0.5 Days	Probable Low Cost Parameter		6600	\$2,068	\$0.67			
Unit Price	: \$0.74 per lbs	Probable High Cost Parameter		4800	\$2,757	\$0.89			
Total Cost	: \$2,298								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	8	4.00	L	\$48.27	incl. in rate	incl. in rate	\$193.08
Laborer	Active	2.00	0.5	8	8.00	L	\$45.80	incl. in rate	incl. in rate	\$366.40
Steelworker	Active	2.00	0.5	8	8.00	L	\$65.52	incl. in rate	incl. in rate	\$524.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	incl. in rate	incl. in rate	\$230.36
					Labor Hours	24	TOTAL LABOR			\$1,314.00
					Equipment Hours	4	TOTAL EQUIPMENT			\$446.56

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$65.70	\$65.70		
							TOTAL MATERIAL	\$65.70

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$1,314.00	Labor Burden @	49.7%	\$0.00	\$1,314.00	
Material Cost	\$65.70	Material Tax @	7.8%	\$5.09	\$70.79	
Equipment Cost	\$446.56	Equipment Tax @	0.0%	\$0.00	\$446.56	
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,826			\$5	DIRECT COST SUBTOTALS	\$1,831
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$274.70
Installing Contractors Profit @	8.0%					\$146.51
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$421.21
General Contractors Insurance @	1.0%	on		\$2,252.56	\$23	
Bond @	1.0%	on		\$2,252.56	\$23	
Contingency @	0.0%	on		\$2,297.61	\$0	
					TOTAL COST for pay item	\$2,298

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 1140 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Foreman, 2 Steelworkers to cut the pipes and 2 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 1.039	Project	: JCBOYLE								
Description	: Remove & Dispose of Transformer Oil Fire Protection										
Quantity	: 6,500.00 lbs										
Daily Production	: 6,000.00 lbs per	8	hour shift								
Work Days	: 1.1 Days										
Unit Price	: \$0.80 per lbs	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	lbs per	6900	Total Cost	\$4,426	Unit Price Per lbs	\$0.68
Total Cost	: \$5,207	Probable Low Cost Parameter	4800	Probable High Cost Parameter	4800	Total Cost	\$6,248	Unit Price Per lbs	\$0.96		

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	1.1	8	8.80	L	\$48.27	incl. in rate	incl. in rate		\$424.78
Laborer	Active	2.00	1.1	8	17.60	L	\$45.80	incl. in rate	incl. in rate		\$806.08
Steelworker	Active	2.00	1.1	8	17.60	L	\$65.52	incl. in rate	incl. in rate		\$1,153.15
Pump, Centrifugal, 3"	Active	1.00	1.1	8	8.80	E	\$2.76	incl. in rate	incl. in rate		\$24.25
Truck Driver (light)	Active	1.00	1.1	8	8.80	L	\$56.29	incl. in rate	incl. in rate		\$495.35
Truck, Pickup (4x4, 3/4tn)	Active	1.00	1.1	8	8.80	E	\$16.94	incl. in rate	incl. in rate		\$149.07
					Labor Hours	52.8	TOTAL LABOR			\$2,879.36	
					Equipment Hours	17.6	TOTAL EQUIPMENT			\$173.32	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$143.97	\$143.97	
						TOTAL MATERIAL	\$143.97

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.81	ton	1.000	0.81	\$595.00	\$483.44	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60	
						TOTAL SUBCONTRACTS	\$1,104.04

SUMMARY OF COSTS									
Labor Cost	\$2,879.36	Labor Burden @	49.7%	\$0.00	\$2,879.36				
Material Cost	\$143.97	Material Tax @	7.8%	\$11.16	\$155.13				
Equipment Cost	\$173.32	Equipment Tax @	0.0%	\$0.00	\$173.32				
Subcontractors	\$1,104.04				\$1,104.04				
DIRECT COST SUBTOTALS	\$4,301			\$11	\$4,312				
Installing Contractors Overhead @	15.0%	Crew			\$481.17				
Installing Contractors Profit @	8.0%	Material			\$256.62				
GC Markup on Subs @	5.0%	Subs			\$55.20				
					TOTAL MARKUP COSTS	\$793.00			
General Contractors Insurance @	1.0%		on	\$5,104.84	\$51				
Bond @	1.0%		on	\$5,104.84	\$51				
Contingency @	0.0%		on	\$5,206.94	\$0				
					TOTAL COST for pay item	\$5,207			

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 2390 LF of 1 1/2" fire protection pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. Calculated 58.6 miles from JC Boyle to Yreka Transfer Recycling. Each hydropower facility has at least 150,000 gallons to 250,000 gallon of oil currently in use. This oil would have to be properly disposed of in the event of decommissioning. Oil removed from the turbines and other equipment, including transformer oil, would be either a waste oil or used oil, depending on prior use and contaminants found in the oil. Contaminized oil containing contaminants such as solvents are commonly encountered at hydropower facilities. Oil sludge are common in tanks. Oil disposal would likely be costly due to the large volumes found at hydropower facilities and the ease of contamination with other regulated hazardous wastes.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.040	Project	: JCBOYLE						
Description	: Remove & Dispose of Unwatering Piping								
Quantity	: 33,000.00 lbs	Project #	: Klamath Dams Removal						
Daily Production	: 18,000.00 lbs per 8 hour shift	Estimator	: Mihaela Tomulescu	lbs per	21600	Total Cost	\$19,481	Unit Price Per lbs	\$0.59
Work Days	: 1.8 Days	Probable Low Cost Parameter		13500	\$30,439	\$0.92			
Unit Price	: \$0.74 per lbs	Probable High Cost Parameter							
Total Cost	: \$24,351								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	1.8	8	28.80	L	\$48.27	incl. in rate	incl. in rate	\$1,390.18
Electrician	Active	1.00	1.8	8	14.40	L	\$45.23	incl. in rate	incl. in rate	\$651.31
Steelworker	Active	4.00	1.8	8	57.60	L	\$65.52	incl. in rate	incl. in rate	\$3,773.95
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.8	8	14.40	E	\$221.50	incl. in rate	incl. in rate	\$3,189.60
Truck Driver (heavy)	Active	1.00	1.8	8	14.40	L	\$57.59	incl. in rate	incl. in rate	\$829.30
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.8	8	14.40	E	\$111.64	incl. in rate	incl. in rate	\$1,607.62
Laborer	Active	4.00	1.8	8	57.60	L	\$45.80	incl. in rate	incl. in rate	\$2,638.08
Welder	Active	1.00	1.8	8	14.40	L	\$7.84	incl. in rate	incl. in rate	\$112.86
Gas Welding Machine	Active	1.00	1.8	8	14.40	E	\$2.88	incl. in rate	incl. in rate	\$41.43
Equipment Operator (medium)	Active	1.00	1.8	8	14.40	L	\$66.28	incl. in rate	incl. in rate	\$954.43
Equipment Operator (crane)	Active	1.00	1.8	8	14.40	L	\$68.41	incl. in rate	incl. in rate	\$985.10
					Labor Hours	216	TOTAL LABOR		\$11,335.21	
					Equipment Hours	43.2	TOTAL EQUIPMENT		\$4,838.64	

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$566.76	\$566.76		
							TOTAL MATERIAL	\$566.76

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total weight)	4.13	ton	1.000	4.13	\$595.00	\$2,454.38	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60	
						TOTAL SUBCONTRACTS	\$3,074.98

SUMMARY OF COSTS								
Labor Cost	\$11,335.21	Labor Burden @	49.7%	\$0.00				\$11,335.21
Material Cost	\$566.76	Material Tax @	7.8%	\$43.92				\$610.68
Equipment Cost	\$4,838.64	Equipment Tax @	0.0%	\$0.00				\$4,838.64
Subcontractors	\$3,074.98							\$3,074.98
DIRECT COST SUBTOTALS	\$19,816	\$44						\$19,860
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis			\$2,517.68
Installing Contractors Profit @	8.0%							\$1,342.76
GC Markup on Subs @	5.0%							\$153.75
							TOTAL MARKUP COSTS	\$4,014.19
General Contractors Insurance @	1.0%	on					\$23,873.71	
Bond @	1.0%	on					\$23,873.71	
Contingency @	0.0%	on					\$0	
							TOTAL COST for pay item	\$24,351

Additional Pay Item Notes :
 Used RS Means : Assumed Pipe, metal pipe, to 1-1/2" diam., selective demolition, 12150 LF of 1 1/2" pipes at 2.72 Lbs. Used 2 Crew formed of 1 Foreman, 2 Steelworkers to cut the pipes, 1 Welder to cut steel in inaccessible places, 2 Laborers to haul the pipes in the truck with the loader, 1 electrician to unplug the power and to assure the temporary power at the construction site. Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.041	Project	: JCBOYLE						
Description	: Remove & Dispose of Drainage Piping								
Quantity	: 10,000.00 lbs	Project #	: Klamath Dams Removal						
Daily Production	: 4,450.00 lbs per	Estimator	: Mihaela Tomulescu	lbs per	Total Cost	Unit Price Per lbs			
Work Days	: 2.2 Days	Probable Low Cost Parameter		5117.5	\$7,100	\$0.71			
Unit Price	: \$0.84 per lbs	Probable High Cost Parameter		3560	\$10,024	\$1.00			
Total Cost	: \$8,353								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	1.00	2.2	8	17.60	L	\$48.27	incl. in rate	incl. in rate	\$849.55
Laborer	Active	1.00	2.2	8	17.60	L	\$45.80	incl. in rate	incl. in rate	\$806.08
Steelworker	Active	1.00	2.2	8	17.60	L	\$65.52	incl. in rate	incl. in rate	\$1,153.15
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Equipment Operator (light)	Active	1.00	1.0	8	8.00	L	\$64.90	incl. in rate	incl. in rate	\$519.20
					Labor Hours	68.8	TOTAL LABOR			\$3,788.70
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,665.12

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$189.44	\$189.44	
						TOTAL MATERIAL	\$189.44

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,788.70	Labor Burden @	49.7%	\$0.00		\$3,788.70
Material Cost	\$189.44	Material Tax @	7.8%	\$14.68		\$204.12
Equipment Cost	\$2,665.12	Equipment Tax @	0.0%	\$0.00		\$2,665.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$6,643			\$15	DIRECT COST SUBTOTALS	\$6,658
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$6,657.94	\$998.69
Installing Contractors Profit @	8.0%				\$6,657.94	\$532.64
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,531.33
General Contractors Insurance @	1.0%		on		\$8,189.27	\$82
Bond @	1.0%		on		\$8,189.27	\$82
Contingency @	0.0%		on		\$8,353.05	\$0
TOTAL COST for pay item						\$8,353

Additional Pay Item Notes :

2750 LF of 1 " drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.042	Project	: JCBOYLE						
Description	: Remove & Dispose of 2-Oil Sump pumps								
Quantity	: 2,000.00 lbs	Project #	: Klamath Dams Removal						
Daily Production	: 6,000.00 lbs per 8 hour shift	Estimator	: Mihaela Tomulescu	lbs per	6600	Total Cost	\$2,283	Unit Price Per lbs	\$1.14
Work Days	: 0.3 Days	Probable Low Cost Parameter		5100	\$2,917				
Unit Price	: \$1.27 per lbs	Probable High Cost Parameter							
Total Cost	: \$2,536								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.3	8	2.40	L	\$48.27	incl. in rate	incl. in rate	\$115.85
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	incl. in rate	incl. in rate	\$108.55
Laborer	Active	2.00	0.3	8	4.80	L	\$45.80	incl. in rate	incl. in rate	\$219.84
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	incl. in rate	incl. in rate	\$130.43
Truck Driver (heavy)	Active	1.00	0.2	8	1.60	L	\$57.59	incl. in rate	incl. in rate	\$92.14
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate	\$178.62
Equipment Operator (light)	Active	1.00	0.2	8	1.60	L	\$64.90	incl. in rate	incl. in rate	\$103.84
					Labor Hours	12.8	TOTAL LABOR			\$640.22
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$309.06

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$32.01	\$32.01	
						TOTAL MATERIAL	\$32.01

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (assumed weight)	1.00	ton	1.000	1.00	\$595.00	\$595.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60	
						TOTAL SUBCONTRACTS	\$1,215.60

SUMMARY OF COSTS									
Labor Cost	\$640.22	Labor Burden @	49.7%	\$0.00	\$640.22				
Material Cost	\$32.01	Material Tax @	7.8%	\$2.48	\$34.49				
Equipment Cost	\$309.06	Equipment Tax @	0.0%	\$0.00	\$309.06				
Subcontractors	\$1,215.60				\$1,215.60				
DIRECT COST SUBTOTALS	\$2,197			\$2	\$2,199				
Installing Contractors Overhead @	15.0%	Crew		\$983.77	\$147.57				
Installing Contractors Profit @	8.0%	Material		\$983.77	\$78.70				
GC Markup on Subs @	5.0%	Subs		\$1,215.60	\$60.78				
					TOTAL MARKUP COSTS	\$287.05			
General Contractors Insurance @	1.0%	on		\$2,486.42	\$25				
Bond @	1.0%	on		\$2,486.42	\$25				
Contingency @	0.0%	on		\$2,536.15	\$0				
					TOTAL COST for pay item	\$2,536			

Additional Pay Item Notes :
 Used 1 crane to pick up the oil sump pumps, 1 Foreman and 2 Laborers to remove the pumps. One electrician to unplug the power and assure the temporary power at the construction site. Assumed hazardous waste since we deal with the oil sump pump.

PAY ITEM COST DETAIL WORKSHEET

1.043 Remove & Dispose of Draft Tube Bulk Head Gates and Hoists at the Powerhouse

PAY ITEM INFORMATION

PAY ITEM NUMBER :	1.043	Project :	JCBOYLE
Description :	Remove & Dispose of Draft Tube Bulk Head Gates and Hoists at the Powerhouse		
Quantity :	65,000.00 lbs	Project # :	Klamath Dams Removal
Daily Production :	25,000.00 lbs per	Estimator :	Mihaela Tomulescu
Work Days :	2.6 Days	Probable Low Cost Parameter	28750
Unit Price :	\$0.71 per lbs	Probable High Cost Parameter	18750
Total Cost :	\$46,356	Total Cost	\$39,403
		Unit Price Per lbs	\$0.61
			\$57,946
			\$0.89

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	2.6	8	20.80	L	\$48.27	incl. in rate	incl. in rate	\$1,004.02	
Electrician	Active	1.00	2.6	8	20.80	L	\$45.23	incl. in rate	incl. in rate	\$940.78	
Ironworkers	Active	4.00	2.6	8	83.20	L	\$63.95	incl. in rate	incl. in rate	\$5,320.64	
Millwright	Active	6.00	2.6	8	124.80	L	\$69.46	incl. in rate	incl. in rate	\$8,668.61	
Truck Driver (heavy)	Active	4.00	2.6	8	83.20	L	\$57.59	incl. in rate	incl. in rate	\$4,791.49	
Truck, Flatbed (4x4, 10,000 gvw)	Active	4.00	2.6	8	83.20	E	\$31.90	incl. in rate	incl. in rate	\$2,654.08	
Crawler Crane (270tn)	Active	1.00	2.6	8	20.80	E	\$399.50	incl. in rate	incl. in rate	\$8,309.60	
Welder	Active	2.00	2.6	8	41.60	L	\$7.84	incl. in rate	incl. in rate	\$326.04	
Gas Welding Machine	Active	2.00	2.6	8	41.60	E	\$2.88	incl. in rate	incl. in rate	\$119.68	
Equipment Operator (crane)	Active	1.00	2.6	8	20.80	L	\$68.41	incl. in rate	incl. in rate	\$1,422.93	
Labor Hours					395.2					TOTAL LABOR	\$22,474.50
Equipment Hours					145.6					TOTAL EQUIPMENT	\$11,083.36

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,123.73	\$1,123.73
TOTAL MATERIAL						\$1,123.73

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	3.25	ton	1.000	3.25	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25
TOTAL SUBCONTRACTS					\$2,554.35

SUMMARY OF COSTS

Labor Cost	\$22,474.50	Labor Burden @	49.7%	\$0.00	\$22,474.50
Material Cost	\$1,123.73	Material Tax @	7.8%	\$87.09	\$1,210.81
Equipment Cost	\$11,083.36	Equipment Tax @	0.0%	\$0.00	\$11,083.36
Subcontractors	\$2,554.35				\$2,554.35
DIRECT COST SUBTOTALS	\$37,236			\$87	\$37,323
Installing Contractors Overhead @	15.0%	Crew			\$5,215.30
Installing Contractors Profit @	8.0%	Material			\$2,781.49
GC Markup on Subs @	5.0%	Subs			\$127.72
		Cost Basis			\$8,124.51
TOTAL MARKUP COSTS					\$8,124.51
General Contractors Insurance @	1.0%	on			\$454
Bond @	1.0%	on			\$454
Contingency @	0.0%	on			\$0
					\$46,356
TOTAL COST for pay item					\$46,356

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal. Assumed contains paint with heavy metals 10% of the total lbs., calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.043a			Project	JCBOYLE				
Description	Remove petroleum products from Mechanical Equipment								
Quantity	2,700.00 GAL			Project #	Klamath Dams Removal				
Daily Production	550.00 GAL per 8 hour shift			Estimator	Mihaela Tomulescu		GAL per	Total Cost	Unit Price Per GAL
Work Days	4.9 Days			Probable Low Cost Parameter	632.5		\$23,575	\$8.73	
Unit Price	\$10.27 per GAL			Probable High Cost Parameter	385		\$36,056	\$13.35	
Total Cost	\$27,735								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	4.9	8	39.20	L	\$48.27	incl. in rate	incl. in rate	\$1,892.18
Electrician	Active	1.00	4.9	8	39.20	L	\$45.23	incl. in rate	incl. in rate	\$1,773.02
Laborer	Active	4.00	4.9	8	156.80	L	\$45.80	incl. in rate	incl. in rate	\$7,181.44
Pump, Centrifugal, 3"	Active	3.00	4.9	8	117.60	E	\$2.76	incl. in rate	incl. in rate	\$324.07
Truck Driver (heavy)	Active	1.00	4.9	8	39.20	L	\$57.59	incl. in rate	incl. in rate	\$2,257.53
Truck, Tractor (400hp)	Active	1.00	4.9	8	39.20	E	\$69.30	incl. in rate	incl. in rate	\$2,716.56
Equipment Operator (medium)	Active	1.00	4.9	8	39.20	L	\$66.28	incl. in rate	incl. in rate	\$2,598.18
Loader, FE Rubber Tire (3.5cy)	Active	1.00	4.9	8	39.20	E	\$64.23	incl. in rate	incl. in rate	\$2,517.82
					Labor Hours	313.6	TOTAL LABOR			\$15,702.34
					Equipment Hours	196	TOTAL EQUIPMENT			\$5,558.44

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (filters, pads, etc)	1.00	LS	1.000	1.00	\$785.12	\$785.12		
							TOTAL MATERIAL	\$785.12

SUBCONTRACT COSTS								
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount			
							TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS								
Labor Cost	\$15,702.34	Labor Burden @	49.7%	\$0.00			\$15,702.34	
Material Cost	\$785.12	Material Tax @	7.8%	\$60.85			\$845.96	
Equipment Cost	\$5,558.44	Equipment Tax @	0.0%	\$0.00			\$5,558.44	
Subcontractors	\$0.00						\$0.00	
DIRECT COST SUBTOTALS	\$22,046			\$61	DIRECT COST SUBTOTALS		\$22,107	
Installing Contractors Overhead @	15.0%	Crew			Cost Basis		\$3,316.01	
Installing Contractors Profit @	8.0%						\$1,768.54	
GC Markup on Subs @	5.0%						\$0.00	
							TOTAL MARKUP COSTS	\$5,084.55
General Contractors Insurance @	1.0%		on		\$27,191.30		\$272	
Bond @	1.0%		on		\$27,191.30		\$272	
Contingency @	0.0%		on		\$27,735.13		\$0	
							TOTAL COST for pay item	\$27,735

Additional Pay Item Notes :

The petroleum waste is saved in drums using the loader they are sent to recycling or disposal. Used a crew formed of 1 Foreman, 4 Laborers to takeout the petroleum waste with a pump from the mech equipment, 1 Electrician to unplug the power and to assure the temporary power at the construction site.

PAY ITEM COST DETAIL WORKSHEET

1.044 Remove & Dispose of Outdoor Vertical AC Generator, Unit 1: 53 MVA

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.044	Project	: JC Boyle						
Description	: Remove & Dispose of Outdoor Vertical AC Generator, Unit 1: 53 MVA								
Quantity	: 2.00 EA								
Daily Production	: 0.40 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 5.0 Days								
Unit Price	: \$158,304.56 per EA	Estimator	: Mihaela Tomulescu	EA per	: 0.46	Total Cost	: \$269,118	Unit Price Per EA	: \$134,558.88
Total Cost	: \$316,609	Probable Low Cost Parameter	: 0.34	Probable High Cost Parameter	: 0.34	Total Cost	: \$364,100	Unit Price Per EA	: \$182,050.25

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Crawler Crane (270tn)	Active	2.00	5.0	8	80.00	E	\$399.50	incl. in rate	incl. in rate	\$31,960.00
Electrician	Active	12.00	5.0	8	480.00	L	\$45.23	incl. in rate	incl. in rate	\$21,710.40
Equipment Operator (oiler)	Active	1.00	5.0	8	40.00	L	\$62.94	incl. in rate	incl. in rate	\$2,517.60
Equipment Operator (crane)	Active	2.00	5.0	8	80.00	L	\$68.41	incl. in rate	incl. in rate	\$5,472.80
Steelworker	Active	20.00	5.0	8	800.00	L	\$65.52	incl. in rate	incl. in rate	\$52,416.00
Loader, FE Rubber Tire (8.6cy)	Active	2.00	5.0	8	80.00	E	\$221.50	incl. in rate	incl. in rate	\$17,720.00
Labor Foreman	Active	4.00	5.0	8	160.00	L	\$48.27	incl. in rate	incl. in rate	\$7,723.20
Welder	Active	4.00	5.0	8	160.00	L	\$7.84	incl. in rate	incl. in rate	\$1,254.00
Gas Welding Machine	Active	4.00	5.0	8	160.00	E	\$2.88	incl. in rate	incl. in rate	\$460.32
Truck Driver (heavy)	Active	4.00	5.0	8	160.00	L	\$57.59	incl. in rate	incl. in rate	\$9,214.40
Truck, Flatbed (4x4, 10,000 gvw)	Active	4.00	5.0	8	160.00	E	\$31.90	incl. in rate	incl. in rate	\$5,104.00
Electrician Foreman	Active	4.00	5.0	8	160.00	L	\$47.23	incl. in rate	incl. in rate	\$7,556.80
Labor Hours					2040	TOTAL LABOR				\$107,865.20
Equipment Hours					480	TOTAL EQUIPMENT				\$55,244.32

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$10,786.52	\$10,786.52
TOTAL MATERIAL						\$10,786.52

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee	1	EA	1.000	1.00	\$89,760.00	\$89,760.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	85.60	\$7.25	\$620.60
TOTAL SUBCONTRACTS						\$90,380.60

SUMMARY OF COSTS									
Labor Cost	\$107,865.20	Labor Burden @	49.7%	\$0.00	\$107,865.20				
Material Cost	\$10,786.52	Material Tax @	7.8%	\$835.96	\$11,622.48				
Equipment Cost	\$55,244.32	Equipment Tax @	0.0%	\$0.00	\$55,244.32				
Subcontractors	\$90,380.60				\$90,380.60				
DIRECT COST SUBTOTALS	\$264,277			\$836	\$265,113				
Installing Contractors Overhead @	15.0%	Crew			\$174,731.99				
Installing Contractors Profit @	8.0%	Material			\$13,978.56				
GC Markup on Subs @	5.0%	Subs			\$5,100.15				
TOTAL MARKUP COSTS					\$45,288.51				
General Contractors Insurance @	1.0%	on			\$310,401.11				
Bond @	1.0%	on			\$3,104				
Contingency @	0.0%	on			\$0				
TOTAL COST for pay item					\$316,609				

Additional Pay Item Notes :

Used RS Means, 4-R13 Crew formed of 1 Foreman, 3 Electricians, 1 Oiler, 0.25 Equipment Crane, 5 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes. Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling (back and forth). Total Weight 650,000 LBS; Heaviest lift around: 300,000 LBS.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.045	Project	: JCBOYLE						
Description	: Remove & Dispose of Excitation equipment for 53/50 MVA Generator								
Quantity	: 2.00 EA	Project #	: Klamath Dams Removal						
Daily Production	: 1.00 EA per	Estimator	: Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA		
Work Days	: 2.0 Days	Probable Low Cost Parameter			1.1	\$24,166	\$12,083.07		
Unit Price	: \$13,425.63 per EA	Probable High Cost Parameter			0.9	\$29,536	\$14,768.20		
Total Cost	: \$26,851								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	2.0	8	32.00	L	\$47.23	incl. in rate	incl. in rate	\$1,511.36
Electrician	Active	4.00	2.0	8	64.00	L	\$45.23	incl. in rate	incl. in rate	\$2,894.72
Laborer	Active	4.00	2.0	8	64.00	L	\$45.80	incl. in rate	incl. in rate	\$2,931.20
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	incl. in rate	incl. in rate	\$3,544.00
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Hydraulic Crane (120tn)	Active	1.00	2.0	8	16.00	E	\$239.06	incl. in rate	incl. in rate	\$3,824.96
Welder	Active	2.00	2.0	8	32.00	L	\$7.84	incl. in rate	incl. in rate	\$250.80
Gas Welding Machine	Active	2.00	2.0	8	32.00	E	\$2.88	incl. in rate	incl. in rate	\$92.06
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	incl. in rate	incl. in rate	\$1,094.56
Labor Hours					240	TOTAL LABOR				\$10,664.56
Equipment Hours					80	TOTAL EQUIPMENT				\$9,247.26

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$533.23	\$533.23
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	1,000.00	LF	1.000	1,000.00	\$0.85	\$850.00
TOTAL MATERIAL						\$1,383.23

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$10,664.56	Labor Burden @	49.7%	\$0.00	\$10,664.56
Material Cost	\$1,383.23	Material Tax @	7.8%	\$107.20	\$1,490.43
Equipment Cost	\$9,247.26	Equipment Tax @	0.0%	\$0.00	\$9,247.26
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$21,295			\$107	\$21,402
Installing Contractors Overhead @	15.0%	Crew			\$3,210.34
Installing Contractors Profit @	8.0%	Material			\$1,712.18
GC Markup on Subs @	5.0%	Subs			\$0.00
TOTAL MARKUP COSTS					\$4,922.52
General Contractors Insurance @	1.0%	on		\$26,324.77	\$263
Bond @	1.0%	on		\$26,324.77	\$263
Contingency @	0.0%	on		\$26,851.27	\$0
TOTAL COST for pay item					\$26,851

Additional Pay Item Notes :

2 sections, weight 1000LBS - Used 2 Crew of 1 Foreman, 1 Electrician, 1 Welder to cut to remove the electrical equipment and 1 laborer to haul. Equipment used 1 Loader and 1 Crane for disposal.

PAY ITEM COST DETAIL WORKSHEET

1.046 Remove & Dispose of Surge protection equip. for 53/50 MVA Generator

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.046			Project	JCBOYLE				
Description	Remove & Dispose of Surge protection equip. for 53/50 MVA Generator								
Quantity	2.00 EA			Project #	Klamath Dams Removal				
Daily Production	1.00 EA per 8 hour shift			Estimator	Mihaela Tomulescu				
Work Days	2.0 Days			Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA		
Unit Price	\$8,153.33 per EA			Probable High Cost Parameter	1.1	\$14,676	\$7,337.99		
Total Cost	\$16,307				0.9	\$17,937	\$8,968.66		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	2.0	8	32.00	L	\$47.23	incl. in rate	incl. in rate	\$1,511.36
Electrician	Active	2.00	2.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	incl. in rate	incl. in rate	\$3,544.00
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
					Labor Hours	128	TOTAL LABOR			\$6,406.24
					Equipment Hours	32	TOTAL EQUIPMENT			\$5,330.24

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$320.31	\$320.31
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	1,000.00	LF	1.000	1,000.00	\$0.85	\$850.00
TOTAL MATERIAL						\$1,170.31

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS						
Labor Cost	\$6,406.24	Labor Burden @	49.7%	\$0.00	\$6,406.24	
Material Cost	\$1,170.31	Material Tax @	7.8%	\$90.70	\$1,261.01	
Equipment Cost	\$5,330.24	Equipment Tax @	0.0%	\$0.00	\$5,330.24	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$12,907			\$91	DIRECT COST SUBTOTALS	\$12,997
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$1,949.62
Installing Contractors Profit @	8.0%					\$1,039.80
GC Markup on Subs @	5.0%					\$0.00
TOTAL MARKUP COSTS						\$2,989.42
General Contractors Insurance @	1.0%		on		\$15,986.91	\$160
Bond @	1.0%		on		\$15,986.91	\$160
Contingency @	0.0%		on		\$16,306.65	\$0
TOTAL COST for pay item						\$16,307

Additional Pay Item Notes :

Used 1 Forman, 1 Electrician to remove the electrical equipment and 1 laborer to haul.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.047			Project	JCBOYLE				
Description	Remove & Dispose of Neutral grounding equip. for 53/50 MVA Generator								
Quantity	2.00 EA			Project #	Klamath Dams Removal				
Daily Production	1.00 EA per 8 hour shift			Estimator	Mihaela Tomulescu				
Work Days	2.0 Days			Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA		
Unit Price	\$3,980.33 per EA			Probable High Cost Parameter	1.1	\$7,165	\$3,582.30		
Total Cost	\$7,961				0.9	\$8,757	\$4,378.36		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	incl. in rate	incl. in rate	\$755.68
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Ironworkers	Active	1.00	2.0	8	16.00	L	\$63.95	incl. in rate	incl. in rate	\$1,023.20
Laborer	Active	1.00	2.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Gas Welding Machine	Active	1.00	2.0	8	16.00	E	\$2.88	incl. in rate	incl. in rate	\$46.03
Welder	Active	1.00	2.0	8	16.00	L	\$7.84	incl. in rate	incl. in rate	\$125.40
Labor Hours					96	TOTAL LABOR				\$4,282.20
Equipment Hours					32	TOTAL EQUIPMENT				\$1,832.27

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$214.11	\$214.11
TOTAL MATERIAL						\$214.11

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,282.20	Labor Burden @	49.7%	\$0.00	\$4,282.20	
Material Cost	\$214.11	Material Tax @	7.8%	\$16.59	\$230.70	
Equipment Cost	\$1,832.27	Equipment Tax @	0.0%	\$0.00	\$1,832.27	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$6,329			\$17	DIRECT COST SUBTOTALS	\$6,345
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$951.78
Installing Contractors Profit @	8.0%					\$507.61
GC Markup on Subs @	5.0%					\$0.00
TOTAL MARKUP COSTS						\$1,459.39
General Contractors Insurance @	1.0%		on		\$7,804.57	\$78
Bond @	1.0%		on		\$7,804.57	\$78
Contingency @	0.0%		on		\$7,960.66	\$0
TOTAL COST for pay item						\$7,961

Additional Pay Item Notes :

Used 1 Foreman, 1 Electrician, 1 Ironworker and 1 welder to cut rods, to remove the electrical equipment and 1 laborer to haul in the truck.

PAY ITEM COST DETAIL WORKSHEET

1.048 Remove & Dispose of Generator Switchgear, 15kV - (6 sections)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.048			Project	JCBOYLE				
Description	Remove & Dispose of Generator Switchgear, 15kV - (6 sections)								
Quantity	1.00 EA			Project #	Klamath Dams Removal				
Daily Production	1.00 EA per 8 hour shift			Estimator	Mihaela Tomulescu		EA per	1.15	
Work Days	1.0 Days			Probable Low Cost Parameter			Total Cost	\$16,771	
Unit Price	\$19,730.68 per EA			Probable High Cost Parameter			Unit Price Per EA	\$16,771.08	
Total Cost	\$19,731							\$24,663	
								\$24,663.35	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	1.0	8	24.00	L	\$47.23	incl. in rate	incl. in rate	\$1,133.52
Electrician	Active	9.00	1.0	8	72.00	L	\$45.23	incl. in rate	incl. in rate	\$3,256.56
Laborer	Active	6.00	1.0	8	48.00	L	\$45.80	incl. in rate	incl. in rate	\$2,198.40
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Hydraulic Crane (120tn)	Active	1.00	1.0	8	8.00	E	\$239.06	incl. in rate	incl. in rate	\$1,912.48
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate	\$62.70
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Labor Hours					184	TOTAL LABOR				\$8,650.14
Equipment Hours					40	TOTAL EQUIPMENT				\$5,493.74

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$432.51	\$432.51	
TOTAL MATERIAL							\$432.51

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (assumed qty)	1.00	ton	1.000	1.00	\$595.00	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum (assumed qty)	85.60	mile	1.000	85.60	\$7.25	\$620.60
TOTAL SUBCONTRACTS						\$1,215.60

SUMMARY OF COSTS						
Labor Cost	\$8,650.14	Labor Burden @	49.7%	\$0.00	\$8,650.14	
Material Cost	\$432.51	Material Tax @	7.8%	\$33.52	\$466.03	
Equipment Cost	\$5,493.74	Equipment Tax @	0.0%	\$0.00	\$5,493.74	
Subcontractors	\$1,215.60				\$1,215.60	
DIRECT COST SUBTOTALS	\$15,792			\$34	DIRECT COST SUBTOTALS	\$15,826
Installing Contractors Overhead @	15.0%	Crew				\$2,191.49
Installing Contractors Profit @	8.0%	Material				\$1,266.04
GC Markup on Subs @	5.0%	Subs				\$60.78
TOTAL MARKUP COSTS						\$3,518.31
General Contractors Insurance @	1.0%		on	\$19,343.81		\$193
Bond @	1.0%		on	\$19,343.81		\$193
Contingency @	0.0%		on	\$19,730.68		\$0
TOTAL COST for pay item						\$19,731

Additional Pay Item Notes :

Used 3 Crews (2 sections each) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed containing hazardous waste that will be disposed at 85.6 miles away from the construction site. In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes:
 PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes
 o PCB-based dielectric fluids removed from transformers and other equipment
 o PCB-based heat transfer and hydraulic fluids Metallic solid wastes
 o PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems, etc.
 o Contaminated components removed from electrical equipment such as windings; PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc. Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling

PAY ITEM COST DETAIL WORKSHEET

1.049 Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 1.049	Project	: JCBOYLE								
Description	: Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)										
Quantity	: 1.00 EA										
Daily Production	: 1.00 EA per	8	hour shift								
Work Days	: 1.0 Days										
Unit Price	: \$10,780.56 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	1.1	Total Cost	\$9,703	Unit Price Per EA	\$9,702.50
Total Cost	: \$10,781	Probable Low Cost Parameter		Probable High Cost Parameter			0.9	\$11,859		\$11,858.62	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	1.0	8	24.00	L	\$47.23	incl. in rate	incl. in rate	\$1,133.52
Electrician	Active	4.00	1.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Laborer	Active	4.00	1.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate	\$62.70
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
					Labor Hours	112	TOTAL LABOR			\$5,100.14
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,688.14

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$255.01	\$255.01	
						TOTAL MATERIAL	\$255.01

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum (assumed qty)	85.60	mile	1.000	85.60	\$7.25	\$620.60	
						TOTAL SUBCONTRACTS	\$620.60

SUMMARY OF COSTS							
Labor Cost	\$5,100.14	Labor Burden @	49.7%	\$0.00	\$5,100.14		
Material Cost	\$255.01	Material Tax @	7.8%	\$19.76	\$274.77		
Equipment Cost	\$2,688.14	Equipment Tax @	0.0%	\$0.00	\$2,688.14		
Subcontractors	\$620.60					\$620.60	
DIRECT COST SUBTOTALS	\$8,664	\$20				DIRECT COST SUBTOTALS	\$8,684
Installing Contractors Overhead @	15.0%	Crew			\$8,063.05	\$1,209.46	
Installing Contractors Profit @	8.0%	Material			\$8,063.05	\$645.04	
GC Markup on Subs @	5.0%	Subs			\$620.60	\$31.03	
						TOTAL MARKUP COSTS	\$1,885.53
General Contractors Insurance @	1.0%	on		\$10,569.18	\$106		
Bond @	1.0%	on		\$10,569.18	\$106		
Contingency @	0.0%	on		\$10,780.56	\$0		
						TOTAL COST for pay item	\$10,781

Additional Pay Item Notes :
 Used 3 Crews (2 sections each) formed of 1 Forman, 2 Electrician, 1welder to cut, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed . Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.050	Project	: JCBOYLE						
Description	: Remove & Dispose of Unit and plant control switchboard								
Quantity	: 1.00 EA	Project #	: Klamath Dams Removal						
Daily Production	: 1.00 EA per 8 hour shift	Estimator	: Mihaela Tomulescu	EA per	1.1	Total Cost	\$5,313	Unit Price Per EA	\$5,312.94
Work Days	: 1.0 Days	Probable Low Cost Parameter							
Unit Price	: \$5,903.27 per EA	Probable High Cost Parameter							
Total Cost	: \$5,903								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	2.00	1.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (light)	Active	0.50	1.0	8	4.00	L	\$56.29	incl. in rate	incl. in rate	\$225.16
Truck, Off-Road, Articulated Rear, 20cy	Active	0.50	1.0	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
					Labor Hours	36	TOTAL LABOR			\$1,856.92
					Equipment Hours	12	TOTAL EQUIPMENT			\$2,218.56

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$92.85	\$92.85	
						TOTAL MATERIAL	\$92.85

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum (assumed qty)	85.60	mile	1.000	\$7.25	\$620.60		
						TOTAL SUBCONTRACTS	\$620.60

SUMMARY OF COSTS							
Labor Cost	\$1,856.92	Labor Burden @	49.7%	\$0.00		\$1,856.92	
Material Cost	\$92.85	Material Tax @	7.8%	\$7.20		\$100.04	
Equipment Cost	\$2,218.56	Equipment Tax @	0.0%	\$0.00		\$2,218.56	
Subcontractors	\$620.60					\$620.60	
DIRECT COST SUBTOTALS	\$4,789			\$7	DIRECT COST SUBTOTALS	\$4,796	
Installing Contractors Overhead@	15.0%			\$4,175.52		\$626.33	
Installing Contractors Profit@	8.0%			\$4,175.52		\$334.04	
GC Markup on Subs @	5.0%			\$620.60		\$31.03	
						TOTAL MARKUP COSTS	\$991.40
General Contractors Insurance @	1.0%	on		\$5,787.52		\$58	
Bond @	1.0%	on		\$5,787.52		\$58	
Contingency @	0.0%	on		\$5,903.27		\$0	
						TOTAL COST for pay item	\$5,903

Additional Pay Item Notes :
 Used 1 crew formed of 1 Foreman, 2 Electrician, 1 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed . Calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.051	Project	: JCBOYLE
Description	: Remove & Dispose - Battery system		
Quantity	: 1.00 EA		
Daily Production	: 0.50 EA per 8 hour shift	Project #	: Klamath Dams Removal
Work Days	: 2.0 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$7,430.59 per EA	Probable Low Cost Parameter	: 0.55
Total Cost	: \$7,431	Probable High Cost Parameter	: 0.45
		Total Cost	: \$6,688
		Unit Price Per EA	: \$6,687.53
			: \$8,174
			: \$8,173.65

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	\$0.00		\$740.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	\$0.00		\$723.68
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	\$0.00		\$1,465.60
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.0	8	8.00	E	\$64.23	\$64.23		\$513.84
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Equipment Operator (light)	Active	1.00	1.0	8	8.00	L	\$64.90	\$0.00		\$519.20
Welder	Active	1.00	2.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	1.00	2.0	8	16.00	E	\$2.88	\$2.88		\$46.03
					Labor Hours	96	TOTAL LABOR			\$4,034.92
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,452.99

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$403.49	\$403.49
TOTAL MATERIAL						\$403.49

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$4,034.92	Labor Burden @	49.7%	\$0.00	\$4,034.92
Material Cost	\$403.49	Material Tax @	7.8%	\$31.27	\$434.76
Equipment Cost	\$1,452.99	Equipment Tax @	0.0%	\$0.00	\$1,452.99
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$5,891			\$31	\$5,923
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$888.40
Installing Contractors Profit @	8.0%				\$473.81
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$1,362.22
General Contractors Insurance @	1.0%		on	\$7,284.89	\$73
Bond @	1.0%		on	\$7,284.89	\$73
Contingency @	0.0%		on	\$7,430.59	\$0
TOTAL COST for pay item					\$7,431

Additional Pay Item Notes :

Assuming 2 days of work disposing around 40 batteries, racks and supports. Using Crews E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.052	Project	: JCBOYLE
Description	: Remove & Dispose of Raceways, Conduit and Cable		
Quantity	: 1.00 EA		
Daily Production	: 0.50 EA per	8	hour shift
Work Days	: 2.0	Days	
Unit Price	: \$13,891.88 per EA	Project #	: Klamath Dams Removal
Total Cost	: \$13,892	Estimator	: Mihaela Tomulescu
		Probable Low Cost Parameter	EA per Total Cost Unit Price Per EA
		Probable High Cost Parameter	0.55 \$12,503 \$12,502.69
			0.45 \$15,281 \$15,281.07

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	8	16.00	L	\$48.27	incl. in rate	incl. in rate	\$772.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	incl. in rate	incl. in rate	\$3,544.00
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
					Labor Hours	96	TOTAL LABOR			\$4,943.52
					Equipment Hours	32	TOTAL EQUIPMENT			\$5,330.24

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$741.53	\$741.53
TOTAL MATERIAL						\$741.53

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$4,943.52	Labor Burden @	49.7%	\$0.00	\$4,943.52	
Material Cost	\$741.53	Material Tax @	7.8%	\$57.47	\$799.00	
Equipment Cost	\$5,330.24	Equipment Tax @	0.0%	\$0.00	\$5,330.24	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$11,015			\$57	\$11,073	
Installing Contractors Overhead @	15.0%				\$1,660.91	
Installing Contractors Profit @	8.0%				\$885.82	
GC Markup on Subs @	5.0%				\$0.00	
					TOTAL MARKUP COSTS	\$2,546.73
General Contractors Insurance @	1.0%		on	\$13,619.49	\$136	
Bond @	1.0%		on	\$13,619.49	\$136	
Contingency @	0.0%		on	\$13,891.88	\$0	
TOTAL COST for pay item					\$13,892	

Additional Pay Item Notes :

Used 1 Forman, 2 Electrician, 1 Laborer hauling with the loader in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.053	Project	: JCBOYLE						
Description	: Remove & Dispose of Misc. power & control boards								
Quantity	: 1.00 EA								
Daily Production	: 0.50 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 2.0 Days	Estimator	: Mihaela Tomulescu	EA per		Total Cost		Unit Price Per EA	
Unit Price	: \$7,140.08 per EA	Probable Low Cost Parameter		0.55		\$6,426		\$6,426.07	
Total Cost	: \$7,140	Probable High Cost Parameter		0.45		\$7,854		\$7,854.09	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	8	16.00	L	\$48.27	incl. in rate	incl. in rate	\$772.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Laborer	Active	1.00	2.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	incl. in rate	incl. in rate	\$230.36
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
					Labor Hours	60	TOTAL LABOR			\$2,989.40
					Equipment Hours	12	TOTAL EQUIPMENT			\$2,218.56

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$448.41	\$448.41		
							TOTAL MATERIAL	\$448.41

SUBCONTRACT COSTS								
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount			
							TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS										
Labor Cost	\$2,989.40	Labor Burden @	49.7%	\$0.00						\$2,989.40
Material Cost	\$448.41	Material Tax @	7.8%	\$34.75						\$483.16
Equipment Cost	\$2,218.56	Equipment Tax @	0.0%	\$0.00						\$2,218.56
Subcontractors	\$0.00									\$0.00
DIRECT COST SUBTOTALS	\$5,656			\$35	DIRECT COST SUBTOTALS					\$5,691
		Crew	Material	Subs	Cost Basis					
Installing Contractors Overhead @	15.0%				\$5,691.12					\$853.67
Installing Contractors Profit @	8.0%				\$5,691.12					\$455.29
GC Markup on Subs @	5.0%				\$0.00					\$0.00
					TOTAL MARKUP COSTS					\$1,308.96
General Contractors Insurance @	1.0%	on			\$7,000.08					\$70
Bond @	1.0%	on			\$7,000.08					\$70
Contingency @	0.0%	on			\$7,140.08					\$0
					TOTAL COST for pay item					\$7,140

Additional Pay Item Notes :

Used 1 Forman, 1 Electrician, 1 Laborer hauling with the loader in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.054	Project	: JCBOYLE						
Description	: Remove & Dispose of 5 Gantry Crane motors - hoist (50Hp*), aux hoist								
Quantity	: 1.00 EA								
Daily Production	: 5.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 0.2 Days								
Unit Price	: \$1,729.51 per EA	Estimator	: Mihaela Tomulescu	EA per	: 5.5	Total Cost	: \$1,557	Unit Price Per EA	: \$1,556.56
Total Cost	: \$1,730	Probable Low Cost Parameter		Probable High Cost Parameter	: 4	Total Cost	: \$2,075	Unit Price Per EA	: \$2,075.41

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.2	8	3.20	E	\$111.64	\$111.64		\$357.25	
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	\$81.52		\$130.43	
Laborer	Active	2.00	0.2	8	3.20	L	\$45.80	\$0.00		\$146.56	
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	\$0.00		\$109.46	
Truck Driver (heavy)	Active	2.00	0.2	8	3.20	L	\$57.59	\$0.00		\$184.29	
					Labor Hours	8				TOTAL LABOR	\$440.30
					Equipment Hours	4.8				TOTAL EQUIPMENT	\$487.68

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$22.02	\$22.02	
						TOTAL MATERIAL	\$22.02

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee	1	EA	1.000	1.00	\$500.00	
					TOTAL SUBCONTRACTS	\$500.00

SUMMARY OF COSTS						
Labor Cost	\$440.30	Labor Burden @	49.7%	\$0.00		\$440.30
Material Cost	\$22.02	Material Tax @	7.8%	\$1.71		\$23.72
Equipment Cost	\$487.68	Equipment Tax @	0.0%	\$0.00		\$487.68
Subcontractors	\$500.00					\$500.00
DIRECT COST SUBTOTALS	\$1,450			\$2		\$1,452
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$951.71	\$142.76
Installing Contractors Profit @	8.0%				\$951.71	\$76.14
GC Markup on Subs @	5.0%				\$500.00	\$25.00
						TOTAL MARKUP COSTS
						\$243.89
General Contractors Insurance @	1.0%	on			\$1,695.60	\$17
Bond @	1.0%	on			\$1,695.60	\$17
Contingency @	0.0%	on			\$1,729.51	\$0
						TOTAL COST for pay item
						\$1,730

Additional Pay Item Notes :
 Assumed removal of hoist, hoist trolley, gantry: 2 Laborers to load the overhead crane motors in the truck using the crane.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.055	Project	: JCBOYLE						
Description	: Remove & Dispose of Gantry Crane control equipment (3 cubicles)								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per	8	hour shift	Project #	: Klamath Dams Removal	EA per	Total Cost	Unit Price Per EA	
Work Days	: 1.0	Days		Estimator	: Mihaela Tomulescu	1.1	\$5,282	\$5,282.36	
Unit Price	: \$5,869.29 per EA								
Total Cost	: \$5,869	Probable Low Cost Parameter	0.9	Probable High Cost Parameter	0.9	\$6,456	\$6,456.22		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Hydraulic Crane (80tn)	Active	1.00	1.0	8	8.00	E	\$190.46	\$190.46		\$1,523.68
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	\$0.00		\$732.80
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	32	TOTAL LABOR			\$1,740.80
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,416.80

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$87.04	\$87.04	
						TOTAL MATERIAL	\$87.04

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee	1	EA	1.000	1.00	\$500.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$500.00

SUMMARY OF COSTS									
Labor Cost	\$1,740.80	Labor Burden @	49.7%	\$0.00	\$1,740.80				
Material Cost	\$87.04	Material Tax @	7.8%	\$6.75	\$93.79				
Equipment Cost	\$2,416.80	Equipment Tax @	0.0%	\$0.00	\$2,416.80				
Subcontractors	\$500.00				\$500.00				
DIRECT COST SUBTOTALS	\$4,745			\$7	\$4,751				
Installing Contractors Overhead @	15.0%			\$4,251.39	\$637.71				
Installing Contractors Profit @	8.0%			\$4,251.39	\$340.11				
GC Markup on Subs @	5.0%			\$500.00	\$25.00				
					TOTAL MARKUP COSTS	\$1,002.82			
General Contractors Insurance @	1.0%	on		\$5,754.20	\$58				
Bond @	1.0%	on		\$5,754.20	\$58				
Contingency @	0.0%	on		\$5,869.29	\$0				
					TOTAL COST for pay item	\$5,869			
Additional Pay Item Notes :									
One day work for 3 cubicles: 2 Laborers and 1 Electrician will load in the truck with the crane the control equipment. Assumed weight: 900 LBS									

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 1.056	Project	: COPCO 2								
Description	: Remove & Dispose of Conduit and Cable										
Quantity	: 1.00 EA										
Daily Production	: 0.50 EA per	8	hour shift								
Work Days	: 2.0 Days										
Unit Price	: \$10,561.93 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	: 0.55	Total Cost	: \$9,506	Unit Price Per EA	: \$9,505.74
Total Cost	: \$10,562	Probable Low Cost Parameter		Probable High Cost Parameter		EA per	: 0.4	Total Cost	: \$12,674	Unit Price Per EA	: \$12,674.32

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	4.00	2.0	8	64.00	L	\$45.80	\$0.00		\$2,931.20
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	\$0.00		\$1,060.48
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.0	8	16.00	E	\$64.23	\$64.23		\$1,027.68
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	\$111.64		\$1,786.24
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	\$0.00		\$921.44
					Labor Hours	96	TOTAL LABOR			\$4,913.12
					Equipment Hours	32	TOTAL EQUIPMENT			\$2,813.92

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$245.66	\$245.66	
						TOTAL MATERIAL	\$245.66

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee (Allowance)	1.00	EA	1.000	1.00	\$500.00	
					TOTAL SUBCONTRACTS	\$500.00

SUMMARY OF COSTS							
Labor Cost	\$4,913.12	Labor Burden @	49.7%	\$0.00		\$4,913.12	
Material Cost	\$245.66	Material Tax @	7.8%	\$19.04		\$264.69	
Equipment Cost	\$2,813.92	Equipment Tax @	0.0%	\$0.00		\$2,813.92	
Subcontractors	\$500.00					\$500.00	
DIRECT COST SUBTOTALS	\$8,473			\$19		\$8,492	
Installing Contractors Overhead @	15.0%	Crew			\$7,991.73	\$1,198.76	
Installing Contractors Profit @	8.0%				\$7,991.73	\$639.34	
GC Markup on Subs @	5.0%				\$500.00	\$25.00	
						TOTAL MARKUP COSTS	\$1,863.10
General Contractors Insurance @	1.0%		on		\$10,354.83	\$104	
Bond @	1.0%		on		\$10,354.83	\$104	
Contingency @	0.0%		on		\$10,561.93	\$0	
						TOTAL COST for pay item	\$10,562

Additional Pay Item Notes :
 Around 4000 LF of cable and conduit. 4 Laborers will load in the truck with the loader the overhead crane cable.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.057			Project	JC BOYLE				
Description	Remove & Dispose of Exterior Lighting			Project #	Klamath Dams Removal				
Quantity	1.00 EA			Estimator	Mihaela Tomulescu				
Daily Production	1.00	EA per	8	Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA		
Work Days	1.0 Days			Probable High Cost Parameter	0.85	\$9,577	\$9,576.66	\$12,237	
Unit Price	\$10,640.74 per EA								
Total Cost	\$10,641								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Hydraulic Crane (17tn)	Active	1.00	1.0	8	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Hydraulic Excavator (1.5cy)	Active	1.00	1.0	8	8.00	E	\$141.92	incl. in rate	incl. in rate	\$1,135.36
Truck, Utility, with Man-Basket	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Labor Hours					48	TOTAL LABOR				\$2,455.76
Equipment Hours					32	TOTAL EQUIPMENT				\$2,935.84

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$122.79	\$122.79
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	6.00	CY	1.000	6.00	\$4.74	\$28.44
TOTAL MATERIAL						\$151.23

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
line work - Rent per day	1.00	days		\$3,000.00	\$3,000.00
TOTAL SUBCONTRACTS					\$3,000.00

SUMMARY OF COSTS						
Labor Cost	\$2,455.76	Labor Burden @	49.7%	\$0.00		\$2,455.76
Material Cost	\$151.23	Material Tax @	7.8%	\$11.72		\$162.95
Equipment Cost	\$2,935.84	Equipment Tax @	0.0%	\$0.00		\$2,935.84
Subcontractors	\$3,000.00					\$3,000.00
DIRECT COST SUBTOTALS	\$8,543			\$12	DIRECT COST SUBTOTALS	\$8,555
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$1,283.18
Installing Contractors Profit @	8.0%	Material				\$444.36
GC Markup on Subs @	5.0%	Subs				\$150.00
					TOTAL MARKUP COSTS	\$1,877.55
General Contractors Insurance @	1.0%	on			\$10,432.09	\$104
Bond @	1.0%	on			\$10,432.09	\$104
Contingency @	0.0%	on			\$10,640.74	\$0
TOTAL COST for pay item						\$10,641

Additional Pay Item Notes :

6 Poles with lights, weight 1500 LBS. Production is based of RSMs using Crew R3 (1 Foreman and 1 Electrician,1 Crane and 1 man-basket truck to help untie the line) for one day work. Considered 2 laborer and 1 Excavator for demolish the pole foundation, helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	1.058			Project	JCBOYLE						
Description	Remove & Dispose of Transmission Line No. 59										
Quantity	1.66 Mile										
Daily Production	0.50 Mile per	8	hour shift		Project #	Klamath Dams Removal					
Work Days	3.3 Days		Estimator	Mihaela Tomulescu		Mile per	0.575	Total Cost	\$44,322	Unit Price Per Mile	\$26,700.06
Unit Price	\$31,411.84 per Mile		Probable Low Cost Parameter	0.375		Probable High Cost Parameter	\$65,180		\$39,264.80		
Total Cost	\$52,144										

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active		1.00	3.3	8	26.56	L	\$47.23	\$0.00		\$1,254.43
Electrician	Active		2.00	3.3	8	53.12	L	\$45.23	\$0.00		\$2,402.62
Truck, Utility, with Man-Basket	Active		2.00	3.3	8	53.12	E	\$31.90	\$31.90		\$1,694.53
Truck Driver (heavy)	Active		4.00	3.3	8	106.24	L	\$57.59	\$0.00		\$6,118.36
Laborer	Active		2.00	3.3	8	53.12	L	\$45.80	\$0.00		\$2,432.90
Hydraulic Excavator (2.5cy)	Active		1.00	3.3	8	26.56	E	\$203.63	\$203.63		\$5,408.41
Hydraulic Crane (80tn)	Active		1.00	3.3	8	26.56	E	\$190.46	\$190.46		\$5,058.62
Equipment Operator (crane)	Active		1.00	3.3	8	26.56	L	\$68.41	\$0.00		\$1,816.97
Equipment Operator (light)	Active		1.00	3.3	8	26.56	L	\$64.90	\$0.00		\$1,723.74
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active		1.00	3.3	8	26.56	E	\$62.72	\$62.72		\$1,665.84
Truck, Flatbed (4x4, 10,000 gvw)	Active		3.00	3.3	8	79.68	E	\$31.90	\$31.90		\$2,541.79
						Labor Hours	292.16	TOTAL LABOR			\$15,749.02
						Equipment Hours	212.48	TOTAL EQUIPMENT			\$16,369.19

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$787.45	\$787.45
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	31.00	CY	1.000	31.00	\$4.74	\$146.94
TOTAL MATERIAL						\$934.39

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	3.32	days		\$3,000.00	\$9,960.00	
TOTAL SUBCONTRACTS						\$9,960.00

SUMMARY OF COSTS						
Labor Cost	\$15,749.02	Labor Burden @	49.7%	\$0.00	\$15,749.02	
Material Cost	\$934.39	Material Tax @	7.8%	\$72.42	\$1,006.81	
Equipment Cost	\$16,369.19	Equipment Tax @	0.0%	\$0.00	\$16,369.19	
Subcontractors	\$9,960.00				\$9,960.00	
DIRECT COST SUBTOTALS	\$43,013			\$72	DIRECT COST SUBTOTALS	\$43,085
Installing Contractors Overhead @	15.0%	Crew			\$33,125.02	\$4,968.75
Installing Contractors Profit @	8.0%	Material			\$32,118.21	\$2,569.46
GC Markup on Subs @	5.0%	Subs			\$9,960.00	\$498.00
TOTAL MARKUP COSTS						\$8,036.21
General Contractors Insurance @	1.0%		on		\$51,121.23	\$511
Bond @	1.0%		on		\$51,121.23	\$511
Contingency @	0.0%		on		\$52,143.65	\$0
TOTAL COST for pay item						\$52,144

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo -2 Electrician., 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuted, carrying one set of transmission lines or double-circuted with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.66 miles of overhead transmission we will have approximately 31 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 85.6 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.059			Project	JCBOYLE				
Description	Remove & Dispose of Transmission Line No. 98								
Quantity	0.24 Mile								
Daily Production	0.50 Mile per		8		hour shift		Project #	Klamath Dams Removal	
Work Days	0.5		Days		Estimator	Mihaela Tomulescu		Mile per	Total Cost
Unit Price	\$27,715.54		per Mile		Probable Low Cost Parameter	0.575		\$5,654	Unit Price Per Mile
Total Cost	\$6,652				Probable High Cost Parameter	0.375		\$8,315	\$34,644.42

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active		1.00	0.5	8	3.84	L	\$47.23	\$0.00		\$181.36
Electrician	Active		2.00	0.5	8	7.68	L	\$45.23	\$0.00		\$347.37
Truck, Utility, with Man-Basket	Active		2.00	0.5	8	7.68	E	\$31.90	\$31.90		\$244.99
Truck Driver (heavy)	Active		2.00	0.5	8	7.68	L	\$57.59	\$0.00		\$442.29
Laborer	Active		2.00	0.5	8	7.68	L	\$45.80	\$0.00		\$351.74
Hydraulic Excavator (2.5cy)	Active		1.00	0.5	8	3.84	E	\$203.63	\$203.63		\$781.94
Hydraulic Crane (80tn)	Active		1.00	0.5	8	3.84	E	\$190.46	\$190.46		\$731.37
Equipment Operator (crane)	Active		1.00	0.5	8	3.84	L	\$68.41	\$0.00		\$262.69
Equipment Operator (light)	Active		1.00	0.5	8	3.84	L	\$64.90	\$0.00		\$249.22
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active		1.00	0.5	8	3.84	E	\$62.72	\$62.72		\$240.84
Truck, Flatbed (4x4, 10,000 gvw)	Active		1.00	0.5	8	3.84	E	\$31.90	\$31.90		\$122.50
						Labor Hours	34.56	TOTAL LABOR		\$1,834.68	
						Equipment Hours	23.04	TOTAL EQUIPMENT		\$2,121.64	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$91.73	\$91.73
Topsail placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	5.00	CY	1.000	5.00	\$4.74	\$23.70
TOTAL MATERIAL						\$115.43

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	0.48	days		\$3,000.00	\$1,440.00
TOTAL SUBCONTRACTS					\$1,440.00

SUMMARY OF COSTS						
Labor Cost	\$1,834.68	Labor Burden @	49.7%	\$0.00		\$1,834.68
Material Cost	\$115.43	Material Tax @	7.8%	\$8.95		\$124.38
Equipment Cost	\$2,121.64	Equipment Tax @	0.0%	\$0.00		\$2,121.64
Subcontractors	\$1,440.00					\$1,440.00
DIRECT COST SUBTOTALS	\$5,512			\$9	DIRECT COST SUBTOTALS	\$5,521
Installing Contractors Overhead @	15.0%	Crew			\$4,080.69	\$612.10
Installing Contractors Profit @	8.0%	Material			\$3,956.31	\$316.51
GC Markup on Subs @	5.0%	Subs			\$1,440.00	\$72.00
TOTAL MARKUP COSTS						\$1,000.61
General Contractors Insurance @	1.0%		on		\$6,521.30	\$65
Bond @	1.0%		on		\$6,521.30	\$65
Contingency @	0.0%		on		\$6,651.73	\$0
TOTAL COST for pay item						\$6,652

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood, assumed we have wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 0.24 miles of overhead transmission we will have approximately 5 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 85.6 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.060			Project	JCBOYLE				
Description	Remove & Dispose of Transmission Line No. 58								
Quantity	1.66 Mile								
Daily Production	0.50 Mile per	8	hour shift		Project #	Klamath Dams Removal			
Work Days	3.3 Days		Estimator	Mihaela Tomulescu			Mile per	Total Cost	Unit Price Per Mile
Unit Price	\$31,411.84 per Mile		Probable Low Cost Parameter	0.575		\$44,322	\$26,700.06		
Total Cost	\$52,144		Probable High Cost Parameter	0.375		\$65,180	\$39,264.80		

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active		1.00	3.3	8	26.56	L	\$47.23	\$0.00		\$1,254.43
Electrician	Active		2.00	3.3	8	53.12	L	\$45.23	\$0.00		\$2,402.62
Truck, Utility, with Man-Basket	Active		2.00	3.3	8	53.12	E	\$31.90	\$31.90		\$1,694.53
Truck Driver (heavy)	Active		4.00	3.3	8	106.24	L	\$57.59	\$0.00		\$6,118.36
Laborer	Active		2.00	3.3	8	53.12	L	\$45.80	\$0.00		\$2,432.90
Hydraulic Excavator (2.5cy)	Active		1.00	3.3	8	26.56	E	\$203.63	\$203.63		\$5,408.41
Hydraulic Crane (80tn)	Active		1.00	3.3	8	26.56	E	\$190.46	\$190.46		\$5,058.62
Equipment Operator (crane)	Active		1.00	3.3	8	26.56	L	\$68.41	\$0.00		\$1,816.97
Equipment Operator (light)	Active		1.00	3.3	8	26.56	L	\$64.90	\$0.00		\$1,723.74
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active		1.00	3.3	8	26.56	E	\$62.72	\$62.72		\$1,665.84
Truck, Flatbed (4x4, 10,000 gvw)	Active		3.00	3.3	8	79.68	E	\$31.90	\$31.90		\$2,541.79
						Labor Hours	292.16	TOTAL LABOR		\$15,749.02	
						Equipment Hours	212.48	TOTAL EQUIPMENT		\$16,369.19	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$787.45	\$787.45
Topsail placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	31.00	CY	1.000	31.00	\$4.74	\$146.94
TOTAL MATERIAL						\$934.39

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	3.32	days		\$3,000.00	\$9,960.00
TOTAL SUBCONTRACTS					\$9,960.00

SUMMARY OF COSTS						
Labor Cost	\$15,749.02	Labor Burden @	49.7%	\$0.00		\$15,749.02
Material Cost	\$934.39	Material Tax @	7.8%	\$72.42		\$1,006.81
Equipment Cost	\$16,369.19	Equipment Tax @	0.0%	\$0.00		\$16,369.19
Subcontractors	\$9,960.00					\$9,960.00
DIRECT COST SUBTOTALS	\$43,013			\$72	DIRECT COST SUBTOTALS	\$43,085
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$33,125.02	\$4,968.75
Installing Contractors Profit @	8.0%				\$32,118.21	\$2,569.46
GC Markup on Subs @	5.0%				\$9,960.00	\$498.00
						TOTAL MARKUP COSTS
						\$8,036.21
General Contractors Insurance @	1.0%	on			\$51,121.23	\$511
Bond @	1.0%	on			\$51,121.23	\$511
Contingency @	0.0%	on			\$52,143.65	\$0
TOTAL COST for pay item						\$52,144

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.66 miles of overhead transmission we will have approximately 31 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 85.6 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.061	Project	: JC Boyle						
Description	: Remove Intake Structure Concrete								
Quantity	: 1,600.00 cy	Project #	: 1						
Daily Production	: 60.00 cy per 8 hour shift	Estimator	: Felipe Poletto	cy per	Total Cost	Unit Price Per cy			
Work Days	: 26.7 Days	Probable Low Cost Parameter		66	\$424,508	\$265.32			
Unit Price	: \$294.80 per cy	Probable High Cost Parameter		48	\$566,010	\$353.76			
Total Cost	: \$471,675								

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	2.00	26.7	8	427.20	L	\$48.27	incl. in rate	incl. in rate	\$20,620.94	
Laborer	Active	8.00	26.7	8	1,708.80	L	\$45.80	incl. in rate	incl. in rate	\$78,263.04	
Equipment Operator (medium)	Active	2.00	26.7	8	427.20	L	\$66.28	incl. in rate	incl. in rate	\$28,314.82	
Truck Driver (heavy)	Active	1.00	26.7	8	213.60	L	\$57.59	incl. in rate	incl. in rate	\$12,301.22	
Air Compressor 600 cfm	Active	1.00	26.7	8	213.60	E	\$21.74	incl. in rate	incl. in rate	\$4,643.43	
Air Compressor 900 cfm	Active	1.00	26.7	8	213.60	E	\$38.87	incl. in rate	incl. in rate	\$8,302.40	
Air Tool, Chipping Hammer	Active	5.00	26.7	8	1,068.00	E	\$1.64	incl. in rate	incl. in rate	\$1,750.49	
Generator, Small Generator, 10 - 15 kW	Active	2.00	26.7	8	427.20	E	\$7.04	incl. in rate	incl. in rate	\$3,007.49	
Hydraulic Excavator (5.0cy)	Active	2.00	26.7	8	427.20	E	\$274.63	incl. in rate	incl. in rate	\$117,321.94	
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	2.00	26.7	8	427.20	E	\$62.72	incl. in rate	incl. in rate	\$26,793.98	
Hydraulic Thumbs/Shear Attachment	Active	2.00	26.7	8	427.20	E	\$16.39	incl. in rate	incl. in rate	\$7,001.81	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	26.7	8	213.60	E	\$111.64	incl. in rate	incl. in rate	\$23,846.30	
			26.7	8	0.00					\$0.00	
			26.7	8	0.00					\$0.00	
			26.7	8	0.00					\$0.00	
			26.7	8	0.00					\$0.00	
			26.7	8	0.00					\$0.00	
Labor Hours					2,777					TOTAL LABOR	\$139,500.02
Equipment Hours					3,418					TOTAL EQUIPMENT	\$192,667.84

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$6,975.00	\$6,975.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$6,975.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	10	EA	Cost per Mob	\$2,500.00	\$25,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$25,000.00

SUMMARY OF COSTS						
Labor Cost	\$139,500.02	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$139,500.02
Material Cost	\$6,975.00	Material Tax @	7.75%	\$540.56		\$7,515.56
Equipment Cost	\$192,667.84	Equipment Tax @	7.75%	\$14,931.76		\$207,599.60
Subcontractors	\$25,000.00					\$25,000.00
DIRECT COST SUBTOTALS	\$364,143			\$15,472		\$379,615
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$354,615.19	\$53,192.28
Installing Contractors Profit@	8.0%				\$354,615.19	\$28,369.22
GC Markup on Subs @	5.0%				\$25,000.00	\$1,250.00
TOTAL MARKUP COSTS						\$82,811.49
General Contractors Insurance @	1.0%		on		\$462,426.68	\$4,624
Bond @	1.0%		on		\$462,426.68	\$4,624
Contingency @	0.0%		on		\$471,675.22	\$0
TOTAL COST for pay item						\$471,675

Additional Pay Item Notes :

The work is done by one 6-men crew (foreman, 4 laborers, and 2 equipment operators). Concrete hauling to scour hole is also included - based on the current production rate only 3 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. This productivity is considerably slower than flume demolition due to access. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.062	Project		:	JC Boyle			
Description	:	Remove Fish Screen Building							
Quantity	:	2,010.00	SF						
Daily Production	:	260.00	SF per	8	hour shift	Project #	:	1	
Work Days	:	7.7	Days						
Unit Price	:	\$70.46	per SF	Estimator	:	Eric Jones	SF per	273	Total Cost
Total Cost	:	\$141,616		Probable Low Cost Parameter	:			\$134,535	Unit Price Per SF
				Probable High Cost Parameter	:		234	\$155,777	\$77.50

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	7.7	8	61.60	L	\$48.27	incl. in rate	incl. in rate	\$2,973.43
Laborer	Active	2.00	7.7	8	123.20	L	\$45.80	incl. in rate	incl. in rate	\$5,642.56
Truck Driver (heavy)	Active	4.00	7.7	8	246.40	L	\$57.59	incl. in rate	incl. in rate	\$14,190.18
Equipment Operator (medium)	Active	3.00	7.7	8	184.80	L	\$66.28	incl. in rate	incl. in rate	\$12,248.54
Equipment Operator (crane)	Active	1.00	7.7	8	61.60	L	\$68.41	incl. in rate	incl. in rate	\$4,214.06
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	7.7	8	123.20	E	\$31.90	incl. in rate	incl. in rate	\$3,930.08
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	7.7	8	123.20	E	\$70.35	incl. in rate	incl. in rate	\$8,667.12
Hydraulic Crane (80tn)	Active	1.00	7.7	8	61.60	E	\$190.46	incl. in rate	incl. in rate	\$11,732.34
Hydraulic Excavator (5.0cy)	Active	2.00	7.7	8	123.20	E	\$274.63	incl. in rate	incl. in rate	\$33,834.42
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.5	8	20.00	E	\$75.42	incl. in rate	incl. in rate	\$1,508.40
		1.00	7.7	8	61.60	0	\$0.00	\$0.00		\$0.00
		1.00	7.7	8	61.60	0	\$0.00	\$0.00		\$0.00
			7.7	8	0.00					\$0.00
			7.7	8	0.00					\$0.00
			7.7	8	0.00					\$0.00
			7.7	8	0.00					\$0.00
			7.7	8	0.00					\$0.00
Labor Hours					677.6	TOTAL LABOR				\$39,268.77
Equipment Hours					451.2	TOTAL EQUIPMENT				\$59,672.35

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coversion (SFXH*.33/27)	295	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	147.40	tons	Klamath County LandFill	\$74.00	\$10,907.60
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$10,907.60

SUMMARY OF COSTS						
Labor Cost	\$39,268.77	Labor Burden @	0.0%			\$39,268.77
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$59,672.35	Equipment Tax @	7.75%	\$4,624.61		\$64,296.96
Subcontractors	\$10,907.60					\$10,907.60
DIRECT COST SUBTOTALS	\$109,849			\$4,625	DIRECT COST SUBTOTALS	\$114,473
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$103,565.73	\$15,534.86
Installing Contractors Profit @	8.0%				\$103,565.73	\$8,285.26
GC Markup on Subs @	5.0%				\$10,907.60	\$545.38
						TOTAL MARKUP COSTS
						\$24,365.50
General Contractors Insurance @	1.0%		on		\$138,838.82	\$1,388
Bond @	1.0%		on		\$138,838.82	\$1,388
Contingency @	0.0%		on		\$141,615.60	\$0
TOTAL COST for pay item						\$141,616

Additional Pay Item Notes :

Duration accounts for mobilization and demobilization, crane is to be used for flying material out of the demolition area as the excavator tears building down building, some of the building will need to be taken down by hand with crane support due to excavator not be able to reach certain sections. 1 excavator will be used to load trucks, 1 FE loader will be used half of the time to maintain hauling area. due to the building being near water limiting access the production has been reduced when compared to other buildings being demolished.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 1.063	Project	: JCBOYLE
Description	: Remove 24" Steel Fish Discharge Pipe	Project #	: Klamath Dams Removal
Quantity	: 37,978.00 LBS	Estimator	: Mihaela Tomulescu
Daily Production	: 25,000.00 LBS per 8 hour shift	Probable Low Cost Parameter	28750
Work Days	: 1.5 Days	Probable High Cost Parameter	18750
Unit Price	: \$0.31 per LBS	LBS per	28750
Total Cost	: \$11,804	Total Cost	\$10,033
		Unit Price Per LBS	\$0.26
			\$0.39

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.5	8	12.00	L	\$48.27	incl. in rate	incl. in rate	\$579.24
Laborer	Active	1.00	1.5	8	12.00	L	\$45.80	incl. in rate	incl. in rate	\$549.60
Steelworker	Active	1.00	1.5	8	12.00	L	\$65.52	incl. in rate	incl. in rate	\$786.24
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.5	8	12.00	E	\$221.50	incl. in rate	incl. in rate	\$2,658.00
Truck Driver (heavy)	Active	1.00	1.5	8	12.00	L	\$57.59	incl. in rate	incl. in rate	\$691.08
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.5	8	12.00	E	\$111.64	incl. in rate	incl. in rate	\$1,339.68
Equipment Operator (light)	Active	1.00	1.5	8	12.00	L	\$64.90	incl. in rate	incl. in rate	\$778.80
Hydraulic Crane (17tn)	Active	1.00	1.5	8	12.00	E	\$81.52	incl. in rate	incl. in rate	\$978.24
Equipment Operator (crane)	Active	1.00	1.5	8	12.00	L	\$68.41	incl. in rate	incl. in rate	\$820.92
Labor Hours					72	TOTAL LABOR				\$4,205.88
Equipment Hours					36	TOTAL EQUIPMENT				\$4,975.92

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$210.29	\$210.29
TOTAL MATERIAL						\$210.29

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$4,205.88	Labor Burden @	49.7%	\$0.00	\$4,205.88
Material Cost	\$210.29	Material Tax @	7.8%	\$16.30	\$226.59
Equipment Cost	\$4,975.92	Equipment Tax @	0.0%	\$0.00	\$4,975.92
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$9,392			\$16	\$9,408
Installing Contractors Overhead @	15.0%	Crew			\$1,411.26
Installing Contractors Profit @	8.0%	Material			\$752.67
GC Markup on Subs @	5.0%	Subs			\$0.00
				Cost Basis	
					TOTAL MARKUP COSTS
General Contractors Insurance @	1.0%		on	\$11,572.32	\$116
Bond @	1.0%		on	\$11,572.32	\$116
Contingency @	0.0%		on	\$11,803.77	\$0
TOTAL COST for pay item					\$11,804

Additional Pay Item Notes :

340 LF of 24" iron drainage pipes at 111.7Lbs/LF. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.064	Project	: JC Boyle						
Description	: Remove Concrete Items associated with the 14-ft-diameter Steel Pipe								
Quantity	: 1,100.00 cy								
Daily Production	: 40.00 cy per 8 hour shift	Project #	: 1						
Work Days	: 27.5 Days	Estimator	: Felipe Poletto	cy per	: 46	Total Cost	: \$269,239	Unit Price Per cy	: \$244.76
Unit Price	: \$287.96 per cy	Probable Low Cost Parameter	: 46	Total Cost	: \$269,239	Unit Price Per cy	: \$244.76		
Total Cost	: \$316,752	Probable High Cost Parameter	: 34	Total Cost	: \$364,265	Unit Price Per cy	: \$331.15		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	27.5	8	220.00	L	\$48.27	incl. in rate	incl. in rate	\$10,619.40
Laborer	Active	4.00	27.5	8	880.00	L	\$45.80	incl. in rate	incl. in rate	\$40,304.00
Equipment Operator (medium)	Active	2.00	27.5	8	440.00	L	\$66.28	incl. in rate	incl. in rate	\$29,163.20
Truck Driver (heavy)	Active	1.00	27.5	8	220.00	L	\$57.59	incl. in rate	incl. in rate	\$12,669.80
Air Compressor 900 cfm	Active	1.00	27.5	8	220.00	E	\$38.87	incl. in rate	incl. in rate	\$8,551.16
Air Tool, Chipping Hammer	Active	3.00	27.5	8	660.00	E	\$1.64	incl. in rate	incl. in rate	\$1,081.76
Generator, Small Generator, 10 - 15 KW	Active	2.00	27.5	8	440.00	E	\$7.04	incl. in rate	incl. in rate	\$3,097.60
Hydraulic Excavator (5.0cy)	Active	1.00	27.5	8	220.00	E	\$274.63	incl. in rate	incl. in rate	\$60,418.60
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	27.5	8	220.00	E	\$62.72	incl. in rate	incl. in rate	\$13,798.40
Hydraulic Thumbs/Shear Attachment	Active	1.00	27.5	8	220.00	E	\$16.39	incl. in rate	incl. in rate	\$3,605.80
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	27.5	8	220.00	E	\$111.64	incl. in rate	incl. in rate	\$24,560.80
Loader, FE Rubber Tire (5.25cy)	Active	1.00	27.5	8	220.00	E	\$75.42	incl. in rate	incl. in rate	\$16,592.40
			27.5	8	0.00					\$0.00
			27.5	8	0.00					\$0.00
			27.5	8	0.00					\$0.00
			27.5	8	0.00					\$0.00
			27.5	8	0.00					\$0.00
			27.5	8	0.00					\$0.00
Labor Hours					1,760	TOTAL LABOR				\$92,756.40
Equipment Hours					2,420	TOTAL EQUIPMENT				\$131,706.53

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$4,637.82	\$4,637.82
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$4,637.82

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	6	EA	Cost per Mob	\$2,500.00	\$15,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$15,000.00

SUMMARY OF COSTS									
Labor Cost	\$92,756.40	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$92,756.40			
Material Cost	\$4,637.82	Material Tax @	7.75%	\$359.43		\$4,997.25			
Equipment Cost	\$131,706.53	Equipment Tax @	7.75%	\$10,207.26		\$141,913.78			
Subcontractors	\$15,000.00					\$15,000.00			
DIRECT COST SUBTOTALS	\$244,101			\$10,567	DIRECT COST SUBTOTALS	\$254,667			
Installing Contractors Overhead @	15.0%	Crew				\$35,950.11			
Installing Contractors Profit @	8.0%	Material				\$19,173.39			
GC Markup on Subs @	5.0%	Subs				\$750.00			
		Cost Basis				\$239,667.43			
TOTAL MARKUP COSTS						\$55,873.51			
General Contractors Insurance @	1.0%		on			\$3,105			
Bond @	1.0%		on			\$3,105			
Contingency @	0.0%		on			\$0			
TOTAL COST for pay item						\$316,752			

Additional Pay Item Notes :

The work is done by FOUR 7-men crew (foreman, 4 laborers, and 2 equipment operators). Concrete hauling to scour hole is also included - based on the current production rate only 3 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. This productivity is considerably slower than flume demolition due to access. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM COST DETAIL WORKSHEET

1.066 Remove Structural Steel items associated with Forebay Trash Rack Piers

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.066	Project	: JCBOYLE						
Description	: Remove Structural Steel items associated with Forebay Trash Rack Piers								
Quantity	: 11,500.00 LBS								
Daily Production	: 25,000.00 LBS per	8	hour shift						
Work Days	: 0.5 Days								
Unit Price	: \$0.49 per LBS	Project #	: Klamath Dams Removal	LBS per	Total Cost	Unit Price Per LBS			
Total Cost	: \$5,628	Estimator	: Mihaela Tomulescu	28750	\$4,784	\$0.42			
				Probable Low Cost Parameter	18750	\$7.035			
				Probable High Cost Parameter	18750	\$7.035			

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	8	4.00	L	\$48.27	incl. in rate	incl. in rate	\$193.08
Laborer	Active	2.00	0.5	8	8.00	L	\$45.80	incl. in rate	incl. in rate	\$366.40
Steelworker	Active	1.00	0.5	8	4.00	L	\$65.52	incl. in rate	incl. in rate	\$262.08
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	incl. in rate	incl. in rate	\$1,664.72
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
					Labor Hours	32	TOTAL LABOR			\$1,829.56
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,557.84

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$91.48	\$91.48	
						TOTAL MATERIAL	\$91.48

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$1,829.56	Labor Burden @	49.7%	\$0.00		\$1,829.56	
Material Cost	\$91.48	Material Tax @	7.8%	\$7.09		\$98.57	
Equipment Cost	\$2,557.84	Equipment Tax @	0.0%	\$0.00		\$2,557.84	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$4,479			\$7	DIRECT COST SUBTOTALS	\$4,486	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$4,485.97	\$672.90	
Installing Contractors Profit @	8.0%				\$4,485.97	\$358.88	
GC Markup on Subs @	5.0%				\$0.00	\$0.00	
						TOTAL MARKUP COSTS	\$1,031.77
General Contractors Insurance @	1.0%	on			\$5,517.74	\$55	
Bond @	1.0%	on			\$5,517.74	\$55	
Contingency @	0.0%	on			\$5,628.09	\$0	
						TOTAL COST for pay item	\$5,628

Additional Pay Item Notes :

Used 1 Crane and 1 Foreman, 1 Steelworkers to cut the beams that support the trash rack and 2 Laborers to load the pipes in the truck.

PAY ITEM COST DETAIL WORKSHEET

1.070 Remove Head gate Control Building at Flume Entrance

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	1.070	Project :	JC Boyle						
Description :	Remove Head gate Control Building at Flume Entrance								
Quantity :	500.00	SF							
Daily Production :	165.00	SF per	8	hour shift	Project # :	1			
Work Days :	3.0 Days				Estimator :	Eric Jones	SF per	Total Cost	Unit Price Per SF
Unit Price :	\$99.08 per SF				Probable Low Cost Parameter	181.5	\$44,588	\$89.18	
Total Cost :	\$49,542				Probable High Cost Parameter	140.25	\$56,973	\$113.95	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	8	24.00	L	\$48.27	incl. in rate	incl. in rate	\$1,158.48
Laborer	Active	3.00	3.0	8	72.00	L	\$45.80	incl. in rate	incl. in rate	\$3,297.60
Truck Driver (heavy)	Active	3.00	3.0	8	72.00	L	\$57.59	incl. in rate	incl. in rate	\$4,146.48
Equipment Operator (medium)	Active	3.00	3.0	8	72.00	L	\$66.28	incl. in rate	incl. in rate	\$4,772.16
Equipment Operator (light)	Active	1.00	3.0	8	24.00	L	\$64.90	incl. in rate	incl. in rate	\$1,557.60
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.0	8	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	3.0	8	48.00	E	\$70.35	incl. in rate	incl. in rate	\$3,376.80
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	3.0	8	24.00	E	\$62.72	incl. in rate	incl. in rate	\$1,505.28
Hydraulic Excavator (5.0cy)	Active	2.00	3.0	8	48.00	E	\$274.63	incl. in rate	incl. in rate	\$13,182.24
Loader, FE Rubber Tire (5.25cy)	Active	1.00	3.0	8	24.00	E	\$75.42	incl. in rate	incl. in rate	\$1,810.08
		1.00	3.0	8	24.00	0	\$0.00	\$0.00		\$0.00
		1.00	3.0	8	24.00	0	\$0.00	\$0.00		\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
Labor Hours					264	TOTAL LABOR				\$14,932.32
Equipment Hours					168	TOTAL EQUIPMENT				\$20,640.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coversion (SFXH*.33/27)	73	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	36.67	tons	Klamath County LandFill	\$74.00	\$2,713.33
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$2,713.33

SUMMARY OF COSTS					
Labor Cost	\$14,932.32	Labor Burden @	0.0%		\$14,932.32
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$20,640.00	Equipment Tax @	7.75%	\$1,599.60	\$22,239.60
Subcontractors	\$2,713.33				\$2,713.33
DIRECT COST SUBTOTALS	\$38,286			\$1,600	\$39,885
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$5,575.79
Installing Contractors Profit @	8.0%				\$2,973.75
GC Markup on Subs @	5.0%				\$135.67
					\$8,685.21
					\$8,685.21
General Contractors Insurance @	1.0%		on	\$48,570.46	\$486
Bond @	1.0%		on	\$48,570.46	\$486
Contingency @	0.0%		on	\$49,541.87	\$0
TOTAL COST for pay item					\$49,542

Additional Pay Item Notes :

3 days to demolish concrete block building and demo existing slab, 1 excavator with breaker to demolish structure, 1 excavator loading trucks. 1 FE load maintaining area and loading trucks, expecting rough 50 CY of debris 2 dump trucks will be used to haul concrete material to scour site, 1 flatbed will haul roofing material to disposal site.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	1.071	Project :	JC Boyle		
Description :	Remove Fore bay Spillway Gate House				
Quantity :	610.00 SF	Project # :	1		
Daily Production :	204.00 SF per	8	hour shift	Estimator :	Eric Jones
Work Days :	3.0 Days	Probable Low Cost Parameter	224.4	Total Cost	\$48,988
Unit Price :	\$89.23 per SF	Probable High Cost Parameter	163.2	Unit Price Per SF	\$80.31
Total Cost :	\$54,431				\$65,318

CREW COSTS

Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	8	24.00	L	\$48.27	incl. in rate	incl. in rate	\$1,158.48
Laborer	Active	3.00	3.0	8	72.00	L	\$45.80	incl. in rate	incl. in rate	\$3,297.60
Truck Driver (heavy)	Active	3.00	3.0	8	72.00	L	\$57.59	incl. in rate	incl. in rate	\$4,146.48
Equipment Operator (medium)	Active	3.00	3.0	8	72.00	L	\$66.28	incl. in rate	incl. in rate	\$4,772.16
Equipment Operator (crane)	Active	1.00	3.0	8	24.00	L	\$68.41	incl. in rate	incl. in rate	\$1,641.84
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.0	8	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	3.0	8	48.00	E	\$70.35	incl. in rate	incl. in rate	\$3,376.80
Hydraulic Crane (80tn)	Active	1.00	3.0	8	24.00	E	\$190.46	incl. in rate	incl. in rate	\$4,571.04
Hydraulic Excavator (5.0cy)	Active	2.00	3.0	8	48.00	E	\$274.63	incl. in rate	incl. in rate	\$13,182.24
Loader, FE Rubber Tire (5.25cy)	Active	1.00	3.0	8	24.00	E	\$75.42	incl. in rate	incl. in rate	\$1,810.08
		1.00	3.0	8	24.00	0	\$0.00	\$0.00		\$0.00
		1.00	3.0	8	24.00	0	\$0.00	\$0.00		\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
Labor Hours					264	TOTAL LABOR				\$15,016.56
Equipment Hours					168	TOTAL EQUIPMENT				\$23,705.76

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coverage (SFXH*.33/27)	89	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	44.73	tons	Klamath County LandFill	\$74.00	\$3,310.27
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$3,310.27

SUMMARY OF COSTS

Labor Cost	\$15,016.56	Labor Burden @	0.0%		\$15,016.56
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$23,705.76	Equipment Tax @	7.75%	\$1,837.20	\$25,542.96
Subcontractors	\$3,310.27				\$3,310.27
DIRECT COST SUBTOTALS	\$42,033			\$1,837	DIRECT COST SUBTOTALS \$43,870
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$40,559.52
Installing Contractors Profit@	8.0%				\$40,559.52
GC Markup on Subs @	5.0%				\$3,310.27
					TOTAL MARKUP COSTS \$9,494.20
General Contractors Insurance @	1.0%	on			\$53,363.99
Bond @	1.0%	on			\$53,363.99
Contingency @	0.0%	on			\$54,431.26
TOTAL COST for pay item					\$54,431

Additional Pay Item Notes :

3 days to demolish building which includes set up and break down, 1 excavator to demolish the building, 1 excavator to load dump trucks, 1 crane to load flat bed truck, flat bed truck to haul roofing Material, dump trucks will haul demolish building material, FE load will be used to maintain area for trucks and equipment, laborers will assist with directing trucks and assisting equipment demolition, Foreman will oversee operation. Klamath Falls Dump is roughly 20 miles or 1 hour away from site

PAY ITEM INFORMATION										
PAY ITEM NUMBER	:	1.072	Project		:	JC Boyle				
Description	:	Remove Fore bay Control Building								
Quantity	:	560.00	SF							
Daily Production	:	187.00	SF per	8	hour shift	Project #	:	1		
Work Days	:	3.0 Days			Estimator	:	Eric Jones		SF per	205.7
Unit Price	:	\$96.68 per SF			Probable Low Cost Parameter		Total Cost	\$48,727	Unit Price Per SF	\$87.01
Total Cost	:	\$54,141			Probable High Cost Parameter		Total Cost	\$64,969	Unit Price Per SF	\$116.02

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	8	24.00	L	\$48.27	incl. in rate	incl. in rate	\$1,158.48
Laborer	Active	3.00	3.0	8	72.00	L	\$45.80	incl. in rate	incl. in rate	\$3,297.60
Truck Driver (heavy)	Active	3.00	3.0	8	72.00	L	\$57.59	incl. in rate	incl. in rate	\$4,146.48
Equipment Operator (medium)	Active	3.00	3.0	8	72.00	L	\$66.28	incl. in rate	incl. in rate	\$4,772.16
Equipment Operator (crane)	Active	1.00	3.0	8	24.00	L	\$68.41	incl. in rate	incl. in rate	\$1,641.84
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.0	8	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	3.0	8	48.00	E	\$70.35	incl. in rate	incl. in rate	\$3,376.80
Hydraulic Crane (80tn)	Active	1.00	3.0	8	24.00	E	\$190.46	incl. in rate	incl. in rate	\$4,571.04
Hydraulic Excavator (5.0cy)	Active	2.00	3.0	8	48.00	E	\$274.63	incl. in rate	incl. in rate	\$13,182.24
Loader, FE Rubber Tire (5.25cy)	Active	1.00	3.0	8	24.00	E	\$75.42	incl. in rate	incl. in rate	\$1,810.08
		1.00	3.0	8	24.00	0	\$0.00	\$0.00		\$0.00
		1.00	3.0	8	24.00	0	\$0.00	\$0.00		\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
			3.0	8	0.00					\$0.00
Labor Hours					264	TOTAL LABOR				\$15,016.56
Equipment Hours					168	TOTAL EQUIPMENT				\$23,705.76

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Coversion (SFXH*.33/27)	82	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	41.07	tons	Klamath County LandFill	\$74.00	\$3,038.93
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$3,038.93

SUMMARY OF COSTS						
Labor Cost	\$15,016.56	Labor Burden @	0.0%			\$15,016.56
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$23,705.76	Equipment Tax @	7.75%	\$1,837.20		\$25,542.96
Subcontractors	\$3,038.93					\$3,038.93
DIRECT COST SUBTOTALS	\$41,761			\$1,837	DIRECT COST SUBTOTALS	\$43,598
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$40,559.52	\$6,083.93
Installing Contractors Profit @	8.0%				\$40,559.52	\$3,244.76
GC Markup on Subs @	5.0%				\$3,038.93	\$151.95
						TOTAL MARKUP COSTS
						\$9,480.64
General Contractors Insurance @	1.0%		on		\$53,079.09	\$531
Bond @	1.0%		on		\$53,079.09	\$531
Contingency @	0.0%		on		\$54,140.67	\$0
TOTAL COST for pay item						\$54,141

Additional Pay Item Notes :

3 days to demolish building which includes set up and break down, 1 excavator to demolish the building, 1 excavator to load dump trucks, 1 crane to load flat bed truck, flat bed truck to haul roofing Material, dump trucks will haul demolish building material, FE load will be used to maintain area for trucks and equipment, laborers will assist with directing trucks and assisting equipment demolition, Foreman will oversee operation. Klamath Falls Dump is roughly 20 miles or 1 Hour away from site.

PAY ITEM COST DETAIL WORKSHEET

1.074 Remove Insulated Generator Building next to Fore bay Control Building

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	1.074	Project	:	JC Boyle				
Description	:	Remove Insulated Generator Building next to Fore bay Control Building							
Quantity	:	90.00	SF						
Daily Production	:	60.00	SF per	8	hour shift	Project #	:	1	
Work Days	:	1.5	Days						
Unit Price	:	\$166.30	per SF	Estimator	:	Eric Jones	SF per	66	Total Cost
Total Cost	:	\$14,967		Probable Low Cost Parameter	:	48	\$17,960	Unit Price Per SF	\$199.56

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.5	8	12.00	L	\$48.27	incl. in rate	incl. in rate	\$579.24
Laborer	Active	2.00	1.5	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20
Truck Driver (heavy)	Active	1.00	1.5	8	12.00	L	\$57.59	incl. in rate	incl. in rate	\$691.08
Equipment Operator (medium)	Active	1.00	1.5	8	12.00	L	\$66.28	incl. in rate	incl. in rate	\$795.36
Equipment Operator (light)	Active	1.00	1.5	8	12.00	L	\$64.90	incl. in rate	incl. in rate	\$778.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.5	8	12.00	E	\$31.90	incl. in rate	incl. in rate	\$382.80
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	1.5	8	24.00	E	\$70.35	incl. in rate	incl. in rate	\$1,688.40
Hydraulic Excavator (5.0cy)	Active	1.00	1.5	8	12.00	E	\$274.63	incl. in rate	incl. in rate	\$3,295.56
Loader, FE Rubber Tire (5.25cy)	Active	1.00	1.5	8	12.00	E	\$75.42	incl. in rate	incl. in rate	\$905.04
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	1.5	8	12.00	E	\$62.72	incl. in rate	incl. in rate	\$752.64
		1.00	1.5	8	12.00	0	\$0.00	\$0.00		\$0.00
		1.00	1.5	8	12.00	0	\$0.00	\$0.00		\$0.00
			1.5	8	0.00					\$0.00
			1.5	8	0.00					\$0.00
			1.5	8	0.00					\$0.00
			1.5	8	0.00					\$0.00
			1.5	8	0.00					\$0.00
Labor Hours					72	TOTAL LABOR				\$3,943.68
Equipment Hours					72	TOTAL EQUIPMENT				\$7,024.44

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
		gal	1.000	0.00	\$18.87	\$0.00	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00	\$0.00
TOTAL MATERIAL							\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Dump Fee Conversion (SFXH*.33/27)	13	CY			\$0.00
Dump Fee Conversion (295 CY / 2 Tons)	6.60	tons	Klamath County LandFill	\$74.00	\$488.40
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$488.40

SUMMARY OF COSTS					
Labor Cost	\$3,943.68	Labor Burden @	0.0%		\$3,943.68
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$7,024.44	Equipment Tax @	7.75%	\$544.39	\$7,568.83
Subcontractors	\$488.40				\$488.40
DIRECT COST SUBTOTALS	\$11,457			\$544	\$12,001
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$1,126.88
Installing Contractors Profit @	8.0%				\$921.00
GC Markup on Subs @	5.0%				\$24.42
					\$2,072.30
TOTAL MARKUP COSTS					\$2,072.30
General Contractors Insurance @	1.0%		on		\$147
Bond @	1.0%		on		\$147
Contingency @	0.0%		on		\$0
					\$0
TOTAL COST for pay item					\$14,967

Additional Pay Item Notes :

It will take 1.5 days to set up, demolish, and haul off material, 1 excavator will be demolishing the building, Loader will be loading trucks and maintaining area, dump trucks will haul demolished material to dump/ scour site, flat bed truck will haul material to dump, Laborers will direct truck traffic and assist equipment demolition, Foreman to oversee operation.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.075	Project	: JCBOYLE						
Description	: Remove Fixed Wheel Gate (Gate, Frame, and Hoist)								
Quantity	: 55,000.00 lbs	Project #	: Klamath Dams Removal						
Daily Production	: 30,000.00 lbs per	Estimator	: Mihaela Tomulescu	lbs per	Total Cost	Unit Price Per lbs			
Work Days	: 1.8 Days	Probable Low Cost Parameter		36000	\$23,272	\$0.42			
Unit Price	: \$0.53 per lbs	Probable High Cost Parameter		22500	\$36,363	\$0.66			
Total Cost	: \$29,090								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Electrician Foreman	Active	1.00	1.8	8	14.40	L	\$47.23	incl. in rate	incl. in rate	\$680.11
Electrician	Active	1.00	1.8	8	14.40	L	\$45.23	incl. in rate	incl. in rate	\$651.31
Ironworkers	Active	5.00	1.8	8	72.00	L	\$63.95	incl. in rate	incl. in rate	\$4,604.40
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.8	8	14.40	E	\$221.50	incl. in rate	incl. in rate	\$3,189.60
Truck Driver (heavy)	Active	1.00	1.8	8	14.40	L	\$57.59	incl. in rate	incl. in rate	\$829.30
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.8	8	14.40	E	\$111.64	incl. in rate	incl. in rate	\$1,607.62
Hydraulic Crane (120tn)	Active	1.00	1.8	8	14.40	E	\$239.06	incl. in rate	incl. in rate	\$3,442.46
Welder	Active	1.00	1.8	8	14.40	L	\$7.84	incl. in rate	incl. in rate	\$112.86
Gas Welding Machine	Active	1.00	1.8	8	14.40	E	\$2.88	incl. in rate	incl. in rate	\$41.43
Equipment Operator (medium)	Active	1.00	1.8	8	14.40	L	\$66.28	incl. in rate	incl. in rate	\$954.43
Equipment Operator (crane)	Active	1.00	1.8	8	14.40	L	\$68.41	incl. in rate	incl. in rate	\$985.10
					Labor Hours	158.4	TOTAL LABOR			\$8,817.52
					Equipment Hours	57.6	TOTAL EQUIPMENT			\$8,281.11

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$440.88	\$440.88
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,565.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	5.50	ton	1.000	\$595.00	\$3,272.50
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	\$7.25	\$620.60
TOTAL SUBCONTRACTS					\$3,893.10

SUMMARY OF COSTS						
Labor Cost	\$8,817.52	Labor Burden @	49.7%	\$0.00		\$8,817.52
Material Cost	\$2,565.88	Material Tax @	7.8%	\$198.86		\$2,764.73
Equipment Cost	\$8,281.11	Equipment Tax @	0.0%	\$0.00		\$8,281.11
Subcontractors	\$3,893.10					\$3,893.10
DIRECT COST SUBTOTALS	\$23,558			\$199	DIRECT COST SUBTOTALS	\$23,756
Installing Contractors Overhead @	15.0%	Crew				\$2,979.50
Installing Contractors Profit @	8.0%	Material				\$1,589.07
GC Markup on Subs @	5.0%	Subs				\$194.66
		Cost Basis				
					TOTAL MARKUP COSTS	\$4,763.23
General Contractors Insurance @	1.0%		on	\$28,519.68		\$285
Bond @	1.0%		on	\$28,519.68		\$285
Contingency @	0.0%		on	\$29,090.08		\$0
TOTAL COST for pay item						\$29,090

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 20% of the total lbs, calculated 85.6 miles from JC Boyle to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.076			Project	JBOYLE				
Description	Remove Trash rack and trash rake (steel)								
Quantity	75,000.00 lbs			Project #	Klamath Dams Removal				
Daily Production	30,000.00 lbs per 8 hour shift			Estimator	Mihaela Tomulescu				
Work Days	2.5 Days			Probable Low Cost Parameter	lbs per	Total Cost	Unit Price Per lbs		
Unit Price	\$0.51 per lbs			Probable High Cost Parameter	36000	\$30,438	\$0.41		
Total Cost	\$38,047				22500	\$47,559	\$0.63		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.5	8	20.00	L	\$47.23	incl. in rate	incl. in rate	\$944.60
Electrician	Active	1.00	2.5	8	20.00	L	\$45.23	incl. in rate	incl. in rate	\$904.60
Ironworkers	Active	3.00	2.5	8	60.00	L	\$63.95	incl. in rate	incl. in rate	\$3,837.00
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.5	8	20.00	E	\$221.50	incl. in rate	incl. in rate	\$4,430.00
Truck Driver (heavy)	Active	1.00	2.5	8	20.00	L	\$57.59	incl. in rate	incl. in rate	\$1,151.80
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.5	8	20.00	E	\$111.64	incl. in rate	incl. in rate	\$2,232.80
Hydraulic Crane (120tn)	Active	1.00	2.5	8	20.00	E	\$239.06	incl. in rate	incl. in rate	\$4,781.20
Welder	Active	2.00	2.5	8	40.00	L	\$7.84	incl. in rate	incl. in rate	\$313.50
Gas Welding Machine	Active	2.00	2.5	8	40.00	E	\$2.88	incl. in rate	incl. in rate	\$115.08
Equipment Operator (medium)	Active	1.00	2.5	8	20.00	L	\$66.28	incl. in rate	incl. in rate	\$1,325.60
Equipment Operator (crane)	Active	1.00	2.5	8	20.00	L	\$68.41	incl. in rate	incl. in rate	\$1,368.20
Laborer	Active	3.00	2.5	8	60.00	L	\$45.80	incl. in rate	incl. in rate	\$2,748.00
Labor Hours					260	TOTAL LABOR				\$12,593.30
Equipment Hours					100	TOTAL EQUIPMENT				\$11,559.08

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$629.67	\$629.67
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	6,000.00	LF	1.000	6,000.00	\$0.85	\$5,100.00
TOTAL MATERIAL						\$5,729.67

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$12,593.30	Labor Burden @	49.7%	\$0.00		\$12,593.30
Material Cost	\$5,729.67	Material Tax @	7.8%	\$444.05		\$6,173.71
Equipment Cost	\$11,559.08	Equipment Tax @	0.0%	\$0.00		\$11,559.08
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$29,882			\$444	DIRECT COST SUBTOTALS	\$30,326
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$4,548.91
Installing Contractors Profit @	8.0%					\$2,426.09
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$6,975.00
General Contractors Insurance @	1.0%		on	\$37,301.10		\$373
Bond @	1.0%		on	\$37,301.10		\$373
Contingency @	0.0%		on	\$38,047.12		\$0
					TOTAL COST for pay item	\$38,047

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.078	Project	: JCBOYLE						
Description	: Remove Traveling Water Screen								
Quantity	: 124,000.00 lbs	Project #	: Klamath Dams Removal						
Daily Production	: 30,000.00 lbs per	Estimator	: Mihaela Tomulescu	lbs per	Total Cost	Unit Price Per lbs			
Work Days	: 4.1 Days	Probable Low Cost Parameter		33000	\$56,258	\$0.45			
Unit Price	: \$0.50 per lbs	Probable High Cost Parameter		22500	\$78,136	\$0.63			
Total Cost	: \$62,509								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	4.1	8	65.60	L	\$46.27	incl. in rate	incl. in rate	\$3,035.31
Electrician	Active	1.00	4.1	8	32.80	L	\$45.23	incl. in rate	incl. in rate	\$1,483.54
Ironworkers	Active	6.00	4.1	8	196.80	L	\$63.95	incl. in rate	incl. in rate	\$12,585.36
Loader, FE Rubber Tire (8.6cy)	Active	1.00	4.1	8	32.80	E	\$221.50	incl. in rate	incl. in rate	\$7,265.20
Truck Driver (heavy)	Active	2.00	4.1	8	65.60	L	\$57.59	incl. in rate	incl. in rate	\$3,777.90
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	4.1	8	65.60	E	\$111.64	incl. in rate	incl. in rate	\$7,323.58
Hydraulic Crane (120tn)	Active	1.00	4.1	8	32.80	E	\$239.06	incl. in rate	incl. in rate	\$7,841.17
Welder	Active	2.00	4.1	8	65.60	L	\$7.84	incl. in rate	incl. in rate	\$514.14
Gas Welding Machine	Active	2.00	4.1	8	65.60	E	\$2.88	incl. in rate	incl. in rate	\$188.73
Equipment Operator (medium)	Active	1.00	4.1	8	32.80	L	\$66.28	incl. in rate	incl. in rate	\$2,173.98
Equipment Operator (crane)	Active	1.00	4.1	8	32.80	L	\$68.41	incl. in rate	incl. in rate	\$2,243.85
					Labor Hours	492	TOTAL LABOR			\$25,814.09
					Equipment Hours	196.8	TOTAL EQUIPMENT			\$22,618.68

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,290.70	\$1,290.70	
TOTAL MATERIAL							\$1,290.70

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS							
Labor Cost	\$25,814.09	Labor Burden @	49.7%	\$0.00	\$25,814.09		
Material Cost	\$1,290.70	Material Tax @	7.8%	\$100.03	\$1,390.73		
Equipment Cost	\$22,618.68	Equipment Tax @	0.0%	\$0.00	\$22,618.68		
Subcontractors	\$0.00				\$0.00		
DIRECT COST SUBTOTALS	\$49,723			\$100	DIRECT COST SUBTOTALS	\$49,824	
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$7,473.53	
Installing Contractors Profit @	8.0%					\$3,985.88	
GC Markup on Subs @	5.0%					\$0.00	
TOTAL MARKUP COSTS						\$11,459.41	
General Contractors Insurance @	1.0%		on		\$61,282.92	\$613	
Bond @	1.0%		on		\$61,282.92	\$613	
Contingency @	0.0%		on		\$62,508.57	\$0	
TOTAL COST for pay item						\$62,509	

Additional Pay Item Notes :
 Used RS Means Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal.

PAY ITEM COST DETAIL WORKSHEET

1.079 Remove Fish By-Pass and Supports (steel)

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	1.079	Project :	JC Boyle						
Description :	Remove Fish By-Pass and Supports (steel)								
Quantity :	610,000.00 lb	Project # :	1						
Daily Production :	20,000.00 lb per	8	hour shift	Estimator :	Felipe Poletto		lb per	Total Cost	Unit Price Per lb
Work Days :	30.5	Days		Probable Low Cost Parameter	22000	\$422,080		\$0.69	
Unit Price :	\$0.77	per lb		Probable High Cost Parameter	17000	\$539,325		\$0.88	
Total Cost :	\$468,978								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	30.5	8	244.00	L	\$48.27	incl. in rate	incl. in rate	\$11,777.88
Ironworkers	Active	3.00	30.5	8	732.00	L	\$63.95	incl. in rate	incl. in rate	\$46,811.40
Diver, Tender	Active	2.00	10.0	8	160.00	L	\$79.22	incl. in rate	incl. in rate	\$12,675.20
Diver, Wet	Active	2.00	10.0	8	160.00	L	\$124.57	incl. in rate	incl. in rate	\$19,931.20
Electrician Foreman	Active	1.00	30.5	8	244.00	L	\$47.23	incl. in rate	incl. in rate	\$11,524.12
Tugboat Captain	Active	1.00	30.5	8	244.00	L	\$67.76	incl. in rate	incl. in rate	\$16,533.44
Equipment Operator (crane)	Active	1.00	30.5	8	244.00	L	\$68.41	incl. in rate	incl. in rate	\$16,692.04
Barge Operator	Active	1.00	30.5	8	244.00	L	\$68.11	incl. in rate	incl. in rate	\$16,618.84
Barge (400T)	Active	3.00	30.5	8	732.00	E	\$99.50	incl. in rate	incl. in rate	\$72,834.00
Crawler Crane (270tn)	Active	1.00	30.5	8	244.00	E	\$399.50	incl. in rate	incl. in rate	\$97,478.00
Welder, Portable	Active	3.00	30.5	8	732.00	E	\$7.84	incl. in rate	incl. in rate	\$5,737.05
Tugboat (250hp)	Active	1.00	30.5	8	244.00	E	\$88.74	incl. in rate	incl. in rate	\$21,652.56
			30.5	8	0.00					\$0.00
			30.5	8	0.00					\$0.00
			30.5	8	0.00					\$0.00
			30.5	8	0.00					\$0.00
			30.5	8	0.00					\$0.00
Labor Hours					2,272	TOTAL LABOR				\$152,564.12
Equipment Hours					1,952	TOTAL EQUIPMENT				\$197,701.61

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables (5% labor)	1.00	LS	1.000	1.00	\$7,628.21	\$7,628.21	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
TOTAL MATERIAL							\$7,628.21

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$152,564.12	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$152,564.12
Material Cost	\$7,628.21	Material Tax @	7.75%	\$591.19		\$8,219.39
Equipment Cost	\$197,701.61	Equipment Tax @	7.75%	\$15,321.87		\$213,023.48
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$357,894			\$15,913		\$373,807
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$373,807.00	\$56,071.05
Installing Contractors Profit @	8.0%				\$373,807.00	\$29,904.56
GC Markup on Subs @	5.0%				\$0.00	\$0.00
TOTAL MARKUP COSTS						\$85,975.61
General Contractors Insurance @	1.0%		on		\$459,782.61	\$4,598
Bond @	1.0%		on		\$459,782.61	\$4,598
Contingency @	0.0%		on		\$468,978.26	\$0
TOTAL COST for pay item						\$468,978

Additional Pay Item Notes :

Barge is will be placed near fish bypass area, crane will attach to equipment, Iron workers will disassemble items and crane will load them on to truck for disposal. Production is affected due to the location of the recycling plant.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.080			Project	JCBOYLE				
Description	Remove Gates and Hoists			Project #	Klamath Dams Removal				
Quantity	18,500.00 LBS			Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	25,000.00	LBS per	8	hour shift	Probable Low Cost Parameter	28750	\$7,521	\$0.41	
Work Days	0.7 Days			Probable High Cost Parameter	17500	\$11,503	\$0.62		
Unit Price	\$0.48 per LBS								
Total Cost	\$8,848								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Electrician Foreman	Active	1.00	0.7	8	5.60	L	\$47.23	\$0.00		\$264.49
Electrician	Active	1.00	0.7	8	5.60	L	\$45.23	\$0.00		\$253.29
Steelworker	Active	2.00	0.7	8	11.20	L	\$65.52	\$0.00		\$733.82
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.7	8	5.60	E	\$221.50	\$221.50		\$1,240.40
Truck Driver (heavy)	Active	2.00	0.7	8	11.20	L	\$57.59	\$0.00		\$645.01
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.7	8	11.20	E	\$111.64	\$111.64		\$1,250.37
Crawler Crane (90tn)	Active	1.00	0.7	8	5.60	E	\$208.09	\$208.09		\$1,165.30
Welder	Active	1.00	0.7	8	5.60	L	\$7.84	\$0.00		\$43.89
Gas Welding Machine	Active	1.00	0.7	8	5.60	E	\$2.88	\$2.88		\$16.11
Equipment Operator (medium)	Active	1.00	0.7	8	5.60	L	\$66.28	\$0.00		\$371.17
Equipment Operator (crane)	Active	1.00	0.7	8	5.60	L	\$68.41	\$0.00		\$383.10
Laborer	Active	2.00	0.7	8	11.20	L	\$45.80	\$0.00		\$512.96
					Labor Hours	61.6	TOTAL LABOR			\$3,207.72
					Equipment Hours	28	TOTAL EQUIPMENT			\$3,672.18

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$160.39	\$160.39	
						TOTAL MATERIAL	\$160.39

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote	Amount	
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$3,207.72	Labor Burden @	49.7%	\$0.00		\$3,207.72	
Material Cost	\$160.39	Material Tax @	7.8%	\$12.43		\$172.82	
Equipment Cost	\$3,672.18	Equipment Tax @	0.0%	\$0.00		\$3,672.18	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$7,040			\$12		\$7,053	DIRECT COST SUBTOTALS
Installing Contractors Overhead @	15.0%	Crew				\$7,052.72	\$1,057.91
Installing Contractors Profit @	8.0%					\$7,052.72	\$564.22
GC Markup on Subs @	5.0%					\$0.00	\$0.00
							TOTAL MARKUP COSTS
General Contractors Insurance @	1.0%		on			\$8,674.85	\$87
Bond @	1.0%		on			\$8,674.85	\$87
Contingency @	0.0%		on			\$8,848.34	\$0
							TOTAL COST for pay item
							\$8,848

Additional Pay Item Notes :

Production based on crew 1 Forman, 2 Steelworkers and 1 Welder to cut and attach hooks to 2 gates and 2 hoists for disposal, 2 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for disposal to Yreka facility. Assuming 1/2 days of work;

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.081	Project	: JCBOYLE						
Description	: Remove Trash rack and trash rake (steel)								
Quantity	: 47,249.00 LBS	Project #	: Klamath Dams Removal						
Daily Production	: 30,000.00 LBS per	Estimator	: Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS			
Work Days	: 1.6 Days	Probable Low Cost Parameter		34500	\$24,001	\$0.51			
Unit Price	: \$0.60 per LBS	Probable High Cost Parameter		21000	\$36,707	\$0.78			
Total Cost	: \$28,236								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.6	8	12.80	L	\$46.27	\$0.00		\$592.26
Electrician	Active	1.00	1.6	8	12.80	L	\$45.23	\$0.00		\$578.94
Steelworker	Active	6.00	1.6	8	76.80	L	\$65.52	\$0.00		\$5,031.94
Hydraulic Excavator (6.0cy)	Active	1.00	1.6	8	12.80	E	\$322.48	\$322.48		\$4,127.74
Truck Driver (heavy)	Active	1.00	1.6	8	12.80	L	\$57.59	\$0.00		\$737.15
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.6	8	12.80	E	\$111.64	\$111.64		\$1,428.99
Hydraulic Crane (120tn)	Active	1.00	1.6	8	12.80	E	\$239.06	\$239.06		\$3,059.97
Welder	Active	2.00	1.6	8	25.60	L	\$7.84	\$0.00		\$200.64
Gas Welding Machine	Active	2.00	1.6	8	25.60	E	\$2.88	\$2.88		\$73.65
Equipment Operator (medium)	Active	2.00	1.6	8	25.60	L	\$66.28	\$0.00		\$1,696.77
Equipment Operator (crane)	Active	1.00	1.6	8	12.80	L	\$68.41	\$0.00		\$875.65
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	1.6	8	12.80	E	\$62.72	\$62.72		\$802.82
					Labor Hours	179.2	TOTAL LABOR			\$9,713.34
					Equipment Hours	76.8	TOTAL EQUIPMENT			\$9,493.17

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$1,457.00	\$1,457.00		
							TOTAL MATERIAL	\$1,457.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25%)	2.36	ton	1.000	\$595.00	\$1,405.66	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	\$7.25	\$620.60	
					TOTAL SUBCONTRACTS	\$2,026.26

SUMMARY OF COSTS									
Labor Cost	\$9,713.34	Labor Burden @	49.7%	\$0.00	\$9,713.34				
Material Cost	\$1,457.00	Material Tax @	7.8%	\$112.92	\$1,569.92				
Equipment Cost	\$9,493.17	Equipment Tax @	0.0%	\$0.00	\$9,493.17				
Subcontractors	\$2,026.26				\$2,026.26				
DIRECT COST SUBTOTALS	\$22,690			\$113	\$22,803				
Installing Contractors Overhead @	15.0%	Crew		\$20,776.43	\$3,116.47				
Installing Contractors Profit @	8.0%			\$20,776.43	\$1,662.11				
GC Markup on Subs @	5.0%			\$2,026.26	\$101.31				
					TOTAL MARKUP COSTS	\$4,879.89			
General Contractors Insurance @	1.0%		on	\$27,682.58	\$277				
Bond @	1.0%		on	\$27,682.58	\$277				
Contingency @	0.0%		on	\$28,236.24	\$0				
					TOTAL COST for pay item	\$28,236			

Additional Pay Item Notes :

The removal of gate, frame and hoist is done by one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 1 trucks per day. Assumed hazardous waste cleanup 10% of total weight disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.082				Project	JCBOYLE			
Description	Remove stop Logs and slots (steel)				Project #	Klamath Dams Removal			
Quantity	37,069.00 LBS				Estimator	Mihaela Tomulescu			
Daily Production	30,000.00 LBS per 8 hour shift				Probable Low Cost Parameter	LBS per	Total Cost	Unit Price Per LBS	
Work Days	1.2 Days				Probable High Cost Parameter	34500	\$19,692	\$0.53	
Unit Price	\$0.62 per LBS					21000	\$30,117	\$0.81	
Total Cost	\$23,167								

CREW COSTS										
Description	Active / Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.2	8	9.60	L	\$46.27	\$0.00		\$444.19
Electrician	Active	1.00	1.2	8	9.60	L	\$45.23	\$0.00		\$434.21
Steelworker	Active	6.00	1.2	8	57.60	L	\$65.52	\$0.00		\$3,773.95
Hydraulic Excavator (6.0cy)	Active	1.00	1.2	8	9.60	E	\$322.48	\$322.48		\$3,095.81
Truck Driver (heavy)	Active	1.00	1.2	8	9.60	L	\$57.59	\$0.00		\$552.86
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.2	8	9.60	E	\$111.64	\$111.64		\$1,071.74
Hydraulic Crane (120tn)	Active	1.00	1.2	8	9.60	E	\$239.06	\$239.06		\$2,294.98
Welder	Active	2.00	1.2	8	19.20	L	\$7.84	\$0.00		\$150.48
Gas Welding Machine	Active	2.00	1.2	8	19.20	E	\$2.88	\$2.88		\$55.24
Equipment Operator (medium)	Active	2.00	1.2	8	19.20	L	\$66.28	\$0.00		\$1,272.58
Equipment Operator (crane)	Active	1.00	1.2	8	9.60	L	\$68.41	\$0.00		\$656.74
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	1.2	8	9.60	E	\$62.72	\$62.72		\$602.11
					Labor Hours	134.4	TOTAL LABOR			\$7,285.01
					Equipment Hours	57.6	TOTAL EQUIPMENT			\$7,119.88

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$1,092.75	\$1,092.75		
							TOTAL MATERIAL	\$1,092.75

SUBCONTRACT COSTS								
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount			
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	4.63	ton	1.000	\$595.00	\$2,757.01			
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	\$7.25	\$620.60			
							TOTAL SUBCONTRACTS	\$3,377.61

SUMMARY OF COSTS									
Labor Cost	\$7,285.01	Labor Burden @	49.7%	\$0.00	\$7,285.01				
Material Cost	\$1,092.75	Material Tax @	7.8%	\$84.69	\$1,177.44				
Equipment Cost	\$7,119.88	Equipment Tax @	0.0%	\$0.00	\$7,119.88				
Subcontractors	\$3,377.61				\$3,377.61				
DIRECT COST SUBTOTALS	\$18,875			\$85	\$18,960				
Installing Contractors Overhead @	15.0%	Crew			\$2,337.35				
Installing Contractors Profit @	8.0%	Material			\$1,246.59				
GC Markup on Subs @	5.0%	Subs			\$168.88				
					TOTAL MARKUP COSTS	\$3,752.82			
General Contractors Insurance @	1.0%		on	\$22,712.75	\$227				
Bond @	1.0%		on	\$22,712.75	\$227				
Contingency @	0.0%		on	\$23,167.00	\$0				
					TOTAL COST for pay item	\$23,167			

Additional Pay Item Notes :

The removal of gate, frame and hoist is done by one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 1 trucks per day. Assumed hazardous waste cleanup 25% of total weight disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.083			Project	JC Boyle				
Description	Remove & Dispose Penstocks and bifurcation (steel)								
Quantity	1,600,000.00	LBS							
Daily Production	40,000.00	LBS per	8	hour shift	Project #	Klamath Dams Removal			
Work Days	40.0	Days			Estimator	Mihaela Tomulescu			
Unit Price	\$0.70	per LBS			Probable Low Cost Parameter	LBS per	Total Cost	Unit Price Per LBS	
Total Cost	\$1,112,218				Probable High Cost Parameter	46000	\$945,385	\$0.59	
						32000	\$1,334,661	\$0.83	

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	3.00	40.0	8	960.00	L	\$46.27	incl. in rate	incl. in rate	\$44,419.20	
Steelworker	Active	12.00	40.0	8	3,840.00	L	\$65.52	incl. in rate	incl. in rate	\$251,596.80	
Equipment Operator (crane)	Active	1.00	40.0	8	320.00	L	\$68.41	incl. in rate	incl. in rate	\$21,891.20	
Crawler Crane (130tn)	Active	1.00	40.0	8	320.00	E	\$258.66	incl. in rate	incl. in rate	\$82,771.20	
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	40.0	8	640.00	E	\$111.64	incl. in rate	incl. in rate	\$71,449.60	
Hydraulic Excavator (5.0cy)	Active	1.00	40.0	8	320.00	E	\$274.63	incl. in rate	incl. in rate	\$87,881.60	
Welder	Active	3.00	40.0	8	960.00	L	\$7.84	incl. in rate	incl. in rate	\$7,524.00	
Gas Welding Machine	Active	2.00	40.0	8	640.00	E	\$2.88	incl. in rate	incl. in rate	\$1,841.27	
Carpenters, Journeyman	Active	6.00	40.0	8	1,920.00	L	\$65.37	incl. in rate	incl. in rate	\$125,510.40	
Carpenter Foreman (out)	Active	4.00	40.0	8	1,280.00	L	\$46.40	incl. in rate	incl. in rate	\$59,392.00	
Truck Driver (heavy)	Active	2.00	40.0	8	640.00	L	\$57.59	incl. in rate	incl. in rate	\$36,857.60	
Loader, FE Rubber Tire (3.5cy)	Active	1.00	40.0	8	320.00	E	\$64.23	incl. in rate	incl. in rate	\$20,553.60	
	Active	1.00	40.0	8	320.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
Labor Hours					9920	TOTAL LABOR					\$547,191.20
Equipment Hours					2240	TOTAL EQUIPMENT					\$264,497.27

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$27,359.56	\$27,359.56
TOTAL MATERIAL						\$27,359.56

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10% of total)	80.00	ton	1.000	\$595.00	\$47,600.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	760.89	mile	1.000	\$7.25	\$5,516.44
TOTAL SUBCONTRACTS					\$53,116.44

SUMMARY OF COSTS					
Labor Cost	\$547,191.20	Labor Burden @	49.7%	\$0.00	\$547,191.20
Material Cost	\$27,359.56	Material Tax @	7.8%	\$2,120.37	\$29,479.93
Equipment Cost	\$264,497.27	Equipment Tax @	0.0%	\$0.00	\$264,497.27
Subcontractors	\$53,116.44				\$53,116.44
DIRECT COST SUBTOTALS	\$892,164			\$2,120	DIRECT COST SUBTOTALS \$894,285
Installing Contractors Overhead @	15.0%	Crew		\$841,168.40	\$126,175.26
Installing Contractors Profit @	8.0%	Material		\$841,168.40	\$67,293.47
GC Markup on Subs @	5.0%	Subs		\$53,116.44	\$2,655.82
					TOTAL MARKUP COSTS \$196,124.55
General Contractors Insurance @	1.0%	on		\$1,090,409.40	\$10,904
Bond @	1.0%	on		\$1,090,409.40	\$10,904
Contingency @	0.0%	on		\$1,112,217.58	\$0
					TOTAL COST for pay \$1,112,218

Additional Pay Item Notes :

Removal for pipe, expansion joints and support rings using E-19 crews for demolition. 3 Crews formed from 1 Foreman, 4 steelworker, 1 welder, 2 carpenters. 3 equipment operators 1 for the crane, 1 excavator and 1 loader. 2 truck driver to drive off road truck Assumed that the steel includes exterior coatings containing heavy metals so the scrap metal painted with heavy metals will be sent to Yreka salvage yard for recycling 10% of totals Lbs, average miles 85.6. Fuel charges and consumable for field repair, lubrication, tire, etc are applied.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.084			Project	JCBOYLE				
Description	Remove & Dispose Surge Tank (steel)			Project #	Klamath Dams Removal				
Quantity	79,000.00 LBS			Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	19,750.00	LBS per	8	Probable Low Cost Parameter	21725		\$58,000	\$0.73	
Work Days	4.0 Days			Probable High Cost Parameter	13825		\$83,778	\$1.06	
Unit Price	\$0.82 per LBS								
Total Cost	\$64,445								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	4.0	8	32.00	L	\$46.27	\$0.00		\$1,480.64
Electrician	Active	1.00	4.0	8	32.00	L	\$45.23	\$0.00		\$1,447.36
Steelworker	Active	6.00	4.0	8	192.00	L	\$65.52	\$0.00		\$12,579.84
Equipment Operator (crane)	Active	1.00	4.0	8	32.00	L	\$68.41	\$0.00		\$2,189.12
Truck Driver (heavy)	Active	3.00	4.0	8	96.00	L	\$57.59	\$0.00		\$5,528.64
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	4.0	8	32.00	E	\$111.64	\$111.64		\$3,572.48
Hydraulic Crane (120tn)	Active	1.00	4.0	8	32.00	E	\$239.06	\$239.06		\$7,649.92
Welder	Active	2.00	4.0	8	64.00	L	\$7.84	\$0.00		\$501.60
Gas Welding Machine	Active	2.00	4.0	8	64.00	E	\$2.88	\$2.88		\$184.13
Loader, FE Rubber Tire (5.25cy)	Active	2.00	4.0	8	64.00	E	\$75.42	\$75.42		\$4,826.88
Truck, Utility, with Man-Basket	Active	2.00	4.0	8	64.00	E	\$31.90	\$31.90		\$2,041.60
Equipment Operator (medium)	Active	1.00	4.0	8	32.00	L	\$66.28	\$0.00		\$2,120.96
Labor Hours					480	TOTAL LABOR				\$25,848.16
Equipment Hours					256	TOTAL EQUIPMENT				\$18,275.01

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$3,877.22	\$3,877.22	
TOTAL MATERIAL							\$3,877.22

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	3.95	ton	1.000	\$595.00	\$2,350.25		
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	171.20	mile	1.000	\$7.25	\$1,241.20		
TOTAL SUBCONTRACTS							\$3,591.45

SUMMARY OF COSTS							
Labor Cost	\$25,848.16	Labor Burden @	49.7%	\$0.00	\$25,848.16		
Material Cost	\$3,877.22	Material Tax @	7.8%	\$300.48	\$4,177.71		
Equipment Cost	\$18,275.01	Equipment Tax @	0.0%	\$0.00	\$18,275.01		
Subcontractors	\$3,591.45				\$3,591.45		
DIRECT COST SUBTOTALS	\$51,592			\$300	DIRECT COST SUBTOTALS \$51,892		
Installing Contractors Overhead @	15.0%	Crew			\$7,245.13		
Installing Contractors Profit @	8.0%	Material			\$3,864.07		
GC Markup on Subs @	5.0%	Subs			\$179.57		
					TOTAL MARKUP COSTS \$11,288.77		
General Contractors Insurance @	1.0%		on	\$63,181.10	\$632		
Bond @	1.0%		on	\$63,181.10	\$632		
Contingency @	0.0%		on	\$64,444.72	\$0		
TOTAL COST for pay item							\$64,445

Additional Pay Item Notes :

The removal of surge tank, 79000 LBS is done by one 9-men crew (1 foreman, 6 steelworkers, 2 welders, 1 electrician and 4 equipment operators). Surge tank is high that's why we will use 2 trucks with basket to cut at the top. Assumed hazardous waste cleanup 10% of total weight disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.085	Project	: JCBOYLE						
Description	: Remove & Dispose 2 - 108" Butterfly valves								
Quantity	: 148,000.00 LBS	Project #	: Klamath Dams Removal						
Daily Production	: 25,000.00 LBS per 8 hour shift	Estimator	: Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS			
Work Days	: 5.9 Days	Probable Low Cost Parameter		27500	\$98,855	\$0.67			
Unit Price	: \$0.74 per LBS	Probable High Cost Parameter		17500	\$142,790	\$0.96			
Total Cost	: \$109,839								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	5.9	8	94.40	L	\$46.27	\$0.00		\$4,367.89
Steelworker	Active	4.00	5.9	8	188.80	L	\$65.52	\$0.00		\$12,370.18
Laborer	Active	4.00	5.9	8	188.80	L	\$45.80	\$0.00		\$8,647.04
Crawler Crane (90tn)	Active	1.00	5.9	8	47.20	E	\$208.09	\$208.09		\$9,821.85
Carpenters, Journeyman	Active	4.00	5.9	8	188.80	L	\$65.37	\$0.00		\$12,341.86
Welder	Active	2.00	5.9	8	94.40	L	\$7.84	\$0.00		\$739.86
Gas Welding Machine	Active	2.00	5.9	8	94.40	E	\$2.88	\$2.88		\$271.59
Loader, FE Rubber Tire (3.5cy)	Active	2.00	5.9	8	94.40	E	\$64.23	\$64.23		\$6,063.31
Equipment Operator (crane)	Active	1.00	5.9	8	47.20	L	\$68.41	\$0.00		\$3,228.95
Equipment Operator (medium)	Active	1.00	5.9	8	47.20	L	\$66.28	\$0.00		\$3,128.42
					Labor Hours	849.6	TOTAL LABOR			\$44,824.19
					Equipment Hours	236	TOTAL EQUIPMENT			\$16,156.75

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 15% labor (saw blades, electrodes, drill bits, etc)	1.00	LS	1.000	1.00	\$6,723.63	\$6,723.63	
						TOTAL MATERIAL	\$6,723.63

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (50%)	37.00	ton	1.000	\$595.00	\$22,015.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	85.60	mile	1.000	\$7.25	\$620.60	
					TOTAL SUBCONTRACTS	\$22,635.60

SUMMARY OF COSTS									
Labor Cost	\$44,824.19	Labor Burden @	49.7%	\$0.00	\$44,824.19				
Material Cost	\$6,723.63	Material Tax @	7.8%	\$521.08	\$7,244.71				
Equipment Cost	\$16,156.75	Equipment Tax @	0.0%	\$0.00	\$16,156.75				
Subcontractors	\$22,635.60				\$22,635.60				
DIRECT COST SUBTOTALS	\$90,340			\$521	\$90,861				
Installing Contractors Overhead @	15.0%	Crew			\$10,233.85				
Installing Contractors Profit @	8.0%				\$5,458.05				
GC Markup on Subs @	5.0%				\$1,131.78				
					TOTAL MARKUP COSTS	\$16,823.68			
General Contractors Insurance @	1.0%	on		\$107,684.92	\$1,077				
Bond @	1.0%	on		\$107,684.92	\$1,077				
Contingency @	0.0%	on		\$109,838.62	\$0				
					TOTAL COST for pay item	\$109,839			

Additional Pay Item Notes :

Assumed the process of removing 108" butterfly valves is done in around 6 days by 2 crew formed of 1 foreman, 2 journeymen, 2 steelworkers ;We dispose cradles with 1 trucks per day for each crew. Assumed contains paint with heavy metals 50% of the total lbs, 85.6 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.086	Project	: JCBOYLE						
Description	: Remove & Dispose Gate, Stem and Frame								
Quantity	: 28,000.00 LBS								
Daily Production	: 18,500.00 LBS per	8	hour shift						
Work Days	: 1.5 Days								
Unit Price	: \$0.71 per LBS	Project #	: Klamath Dams Removal	LBS per	Total Cost	Unit Price Per LBS			
Total Cost	: \$19,883	Estimator	: Mihaela Tomulescu	20350	\$17,895	\$0.64			
				Probable Low Cost Parameter	14800	\$23,860	\$0.85		
				Probable High Cost Parameter	14800	\$23,860	\$0.85		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.5	8	12.00	L	\$46.27	\$0.00		\$555.24
Electrician	Active	1.00	1.5	8	12.00	L	\$45.23	\$0.00		\$542.76
Steelworker	Active	6.00	1.5	8	72.00	L	\$65.52	\$0.00		\$4,717.44
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.5	8	12.00	E	\$221.50	\$221.50		\$2,658.00
Truck Driver (heavy)	Active	2.00	1.5	8	24.00	L	\$57.59	\$0.00		\$1,382.16
Truck, Flatbed (4x4, 10,000 gww)	Active	2.00	1.5	8	24.00	E	\$31.90	\$31.90		\$765.60
Hydraulic Crane (120tn)	Active	1.00	1.5	8	12.00	E	\$239.06	\$239.06		\$2,868.72
Welder	Active	2.00	1.5	8	24.00	L	\$7.84	\$0.00		\$188.10
Gas Welding Machine	Active	2.00	1.5	8	24.00	E	\$2.88	\$2.88		\$69.05
Equipment Operator (medium)	Active	1.00	1.5	8	12.00	L	\$66.28	\$0.00		\$795.36
Equipment Operator (crane)	Active	1.00	1.5	8	12.00	L	\$68.41	\$0.00		\$820.92
					Labor Hours	168	TOTAL LABOR			\$9,001.98
					Equipment Hours	72	TOTAL EQUIPMENT			\$6,361.37

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$450.10	\$450.10	
						TOTAL MATERIAL	\$450.10

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$9,001.98	Labor Burden @	49.7%	\$0.00	\$9,001.98				
Material Cost	\$450.10	Material Tax @	7.8%	\$34.88	\$484.98				
Equipment Cost	\$6,361.37	Equipment Tax @	0.0%	\$0.00	\$6,361.37				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$15,813			\$35	\$15,848				
Installing Contractors Overhead @	15.0%	Crew			\$2,377.25				
Installing Contractors Profit @	8.0%	Material			\$1,267.87				
GC Markup on Subs @	5.0%	Subs			\$0.00				
					TOTAL MARKUP COSTS	\$3,645.12			
General Contractors Insurance @	1.0%		on	\$19,493.45	\$195				
Bond @	1.0%		on	\$19,493.45	\$195				
Contingency @	0.0%		on	\$19,883.31	\$0				
					TOTAL COST for pay item	\$19,883			

Additional Pay Item Notes :

The removal of gate, frame and stem is done by one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 2 trucks per day.

PAY ITEM COST DETAIL WORKSHEET

1.087 Remove & Dispose of Steel Transition Manifolds on Upstream and Downstream

PAY ITEM INFORMATION									
PAY ITEM NUMBER	1.087			Project	JC Boyle				
Description	Remove & Dispose of Steel Transition Manifolds on Upstream and Downstream								
Quantity	250,000.00	LBS		Project #	Klamath Dams Removal				
Daily Production	30,000.00	LBS per	8	Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Work Days	8.3	Days		Probable Low Cost Parameter	34500		\$136,734	\$0.55	
Unit Price	\$0.64	per LBS		Probable High Cost Parameter	21000		\$209,122	\$0.84	
Total Cost	\$160,863								

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	2.00	8.3	8	132.80	L	\$48.27	incl. in rate	incl. in rate	\$6,410.26	
Millwright	Active	6.00	8.3	8	398.40	L	\$69.46	incl. in rate	incl. in rate	\$27,672.86	
Equipment Operator (crane)	Active	1.00	8.3	8	66.40	L	\$68.41	incl. in rate	incl. in rate	\$4,542.42	
Crawler Crane (130tn)	Active	1.00	8.3	8	66.40	E	\$258.66	incl. in rate	incl. in rate	\$17,175.02	
Electrician	Active	1.00	8.3	8	66.40	L	\$45.23	incl. in rate	incl. in rate	\$3,003.27	
Equipment Operator (medium)	Active	1.00	8.3	8	66.40	L	\$66.28	incl. in rate	incl. in rate	\$4,400.99	
Hydraulic Excavator (6.0cy)	Active	1.00	8.3	8	66.40	E	\$322.48	incl. in rate	incl. in rate	\$21,412.67	
Truck Driver (heavy)	Active	2.00	8.3	8	132.80	L	\$57.59	incl. in rate	incl. in rate	\$7,647.95	
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	8.3	8	132.80	E	\$111.64	incl. in rate	incl. in rate	\$14,825.79	
Hydraulic Excavator (5.0cy)	Active	1.00	8.3	8	66.40	E	\$274.63	incl. in rate	incl. in rate	\$18,235.43	
					Labor Hours	863.2	TOTAL LABOR			\$53,677.76	
					Equipment Hours	332	TOTAL EQUIPMENT			\$71,648.92	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,683.89	\$2,683.89
TOTAL MATERIAL						\$2,683.89

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$53,677.76	Labor Burden @	49.7%	\$0.00		\$53,677.76
Material Cost	\$2,683.89	Material Tax @	7.8%	\$208.00		\$2,891.89
Equipment Cost	\$71,648.92	Equipment Tax @	0.0%	\$0.00		\$71,648.92
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$128,011			\$208	DIRECT COST SUBTOTALS	\$128,219
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$19,232.79
Installing Contractors Profit@	8.0%					\$10,257.49
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$29,490.27
General Contractors Insurance @	1.0%	on		\$157,708.84		\$1,577
Bond @	1.0%	on		\$157,708.84		\$1,577
Contingency @	0.0%	on		\$160,863.02		\$0
					TOTAL COST for pay item	\$160,863

Additional Pay Item Notes :

Removal of steel transition manifolds using E-19 crews for demolition. 2 Crews formed from 1 Forman, 3 millwright, 3 equipment operators 1 for the crane, 2 excavators. 2 truck driver to drive off road truck

PAY ITEM INFORMATION										
PAY ITEM NUMBER	1.087a			Project : JCBOYLE						
Description	Remove petroleum products from Mechanical Equipment									
Quantity	380.00 GAL									
Daily Production	350.00 GAL per			8 hour shift						
Work Days	1.1 Days			Project # : Klamath Dams Removal						
Unit Price	\$16.54 per GAL			Estimator : Mihaela Tomulescu		GAL per		Total Cost		Unit Price Per GAL
Total Cost	\$6,284			Probable Low Cost Parameter		402.5		\$5,342		\$14.06
				Probable High Cost Parameter		245		\$8,169		\$21.50

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.1	8	8.80	L	\$46.27	incl. in rate	incl. in rate	\$407.18
Electrician	Active	1.00	1.1	8	8.80	L	\$45.23	incl. in rate	incl. in rate	\$398.02
Laborer	Active	5.00	1.1	8	44.00	L	\$45.80	incl. in rate	incl. in rate	\$2,015.20
Truck Driver (heavy)	Active	1.00	1.1	8	8.80	L	\$57.59	incl. in rate	incl. in rate	\$506.79
				Labor Hours	70.4	TOTAL LABOR				\$3,327.19
				Equipment Hours	0	TOTAL EQUIPMENT				\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$166.36	\$166.36
TOTAL MATERIAL						\$166.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	8.80	hour	1.000	\$200.00	\$1,760.00
TOTAL SUBCONTRACTS					\$1,760.00

SUMMARY OF COSTS						
Labor Cost	\$3,327.19	Labor Burden @	49.7%	\$0.00		\$3,327.19
Material Cost	\$166.36	Material Tax @	7.8%	\$12.89		\$179.25
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$1,760.00					\$1,760.00
DIRECT COST SUBTOTALS	\$5,254			\$13	DIRECT COST SUBTOTALS	\$5,266
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$3,506.44	\$525.97
Installing Contractors Profit @	8.0%				\$3,506.44	\$280.52
GC Markup on Subs @	5.0%				\$1,760.00	\$88.00
						TOTAL MARKUP COSTS
						\$894.48
General Contractors Insurance @	1.0%	on			\$6,160.93	\$62
Bond @	1.0%	on			\$6,160.93	\$62
Contingency @	0.0%	on			\$6,284.15	\$0
						TOTAL COST for pay item
						\$6,284

Additional Pay Item Notes :

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil-free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

- Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
 - the costs of the materials themselves
 - the labor costs for ordering, stocking, application, and removal
 - the costs of used-media collection, disposal, or re-processing/recycling.
- Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well. AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Foreman, 5 Laborers to takeout the petroleum waste, 1 Electrician to unplug the power and to assure the temporary power at the construction site. Vacuum-equipped tank trucks are used to remove waste oil from collection points at plants so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 1.118	Project	: JC Boyle						
Description	: Pioneer Park - Regrade to natural contour								
Quantity	: 0.50 AC								
Daily Production	: 0.25 AC per	8	hour shift	Project #	: 1				
Work Days	: 2.0 Days	Estimator	: Eric Jones	AC per		Total Cost		Unit Price Per AC	
Unit Price	: \$17,560.36 per AC	Probable Low Cost Parameter		0.275		\$7,902		\$15,804.33	
Total Cost	: \$8,780	Probable High Cost Parameter		0.225		\$9,658		\$19,316.40	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Dozer (125hp)(CATD6)	Active	1.00	2.0	8	16.00	E	\$82.17	incl. in rate	incl. in rate	\$1,314.72
Roller, Single Drum (steel wheel, 12.0 - 14.9 MTn)	Active	1.00	2.0	8	16.00	E	\$72.79	incl. in rate	incl. in rate	\$1,164.64
Equipment Operator (medium)	Active	2.00	2.0	8	32.00	L	\$66.28	incl. in rate	incl. in rate	\$2,120.96
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate	\$740.32
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
0	Active	0.00	2.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	0.00	2.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		1.00	2.0	8	16.00	0	\$0.00	\$0.00		\$0.00
0		1.00	2.0	8	16.00	0	\$0.00	\$0.00		\$0.00
0		1.00	2.0	8	16.00	0	\$0.00	\$0.00		\$0.00
0		1.00	80.0	8	640.00	0	\$0.00	\$0.00		\$0.00
0		1.00	2.0	8	16.00	0	\$0.00	\$0.00		\$0.00
					Labor Hours	80	TOTAL LABOR			\$4,326.88
					Equipment Hours	32	TOTAL EQUIPMENT			\$2,479.36

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		lbs PLS	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,326.88	Labor Burden @	0.0%			\$4,326.88
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$2,479.36	Equipment Tax @	7.75%	\$192.15		\$2,671.51
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$6,806			\$192		\$6,998
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$6,998.39	\$1,049.76
Installing Contractors Profit @	8.0%				\$6,998.39	\$559.87
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						\$1,609.63
						TOTAL MARKUP COSTS
General Contractors Insurance @	1.0%		on		\$8,608.02	\$86
Bond @	1.0%		on		\$8,608.02	\$86
Contingency @	0.0%		on		\$8,780.18	\$0
						\$0
						TOTAL COST for pay item
						\$8,780

Additional Pay Item Notes :

Duration is based off of grading cut to fill with dozer the first day, using roller to stabilize area.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	2.014	Project :	Copco 1		
Description :	Remove Diversion Tunnel Control Structure Concrete		Estimator :	Eric Jones	
Quantity :	350.00 CY	Project # :	2		
Daily Production :	70.00 CY per	8	Probable Low Cost Parameter	77	Total Cost
Work Days :	5.0 Days	hour shift	Probable High Cost Parameter	56	\$97,074
Unit Price :	\$231.13 per CY				Unit Price Per CY
Total Cost :	\$80,895				\$208.01

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	5.0	8	40.00	L	\$46.27	incl. in rate	incl. in rate	\$1,850.80	
Laborer	Active	3.00	5.0	8	120.00	L	\$45.80	incl. in rate	incl. in rate	\$5,496.00	
Equipment Operator (medium)	Active	3.00	5.0	8	120.00	L	\$66.28	incl. in rate	incl. in rate	\$7,953.60	
Truck Driver (heavy)	Active	4.00	5.0	8	160.00	L	\$57.59	incl. in rate	incl. in rate	\$9,214.40	
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	5.0	8	120.00	E	\$70.35	incl. in rate	incl. in rate	\$8,442.00	
Hydraulic Excavator (5.0cy)	Active	2.00	5.0	8	80.00	E	\$274.63	incl. in rate	incl. in rate	\$21,970.40	
Loader, FE Rubber Tire (5.25cy)	Active	1.00	5.0	8	40.00	E	\$75.42	incl. in rate	incl. in rate	\$3,016.80	
Truck, Pickup (4x4, 3/4tn)	Active	1.00	5.0	8	40.00	E	\$16.94	incl. in rate	incl. in rate	\$677.60	
Water Tanker (5,000gal)	Active	1.00	5.0	8	40.00	E	\$74.56	incl. in rate	incl. in rate	\$2,982.40	
		1.00	5.0	8	40.00	0	\$0.00	\$0.00		\$0.00	
		1.00	5.0	8	40.00	0	\$0.00	\$0.00		\$0.00	
		1.00	5.0	8	40.00	0	\$0.00	\$0.00		\$0.00	
			5.0	8	0.00		\$2.50			\$0.00	
			5.0	8	0.00					\$0.00	
			5.0	8	0.00					\$0.00	
			5.0	8	0.00					\$0.00	
			5.0	8	0.00					\$0.00	
Labor Hours					440					TOTAL LABOR	\$24,514.80
Equipment Hours					320					TOTAL EQUIPMENT	\$37,089.20

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		ea	1.050	0.00	\$150.00	\$0.00
		ea	1.050	0.00	\$1.43	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
		EA			\$0.00
		EA			\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$24,514.80	Labor Burden @	0.0%	\$24,514.80	
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	
Equipment Cost	\$37,089.20	Equipment Tax @	7.75%	\$2,874.41	
Subcontractors	\$0.00			\$0.00	
DIRECT COST SUBTOTALS	\$61,604			\$2,874	
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$64,478.41
Installing Contractors Profit @	8.0%				\$64,478.41
GC Markup on Subs @	5.0%				\$0.00
					TOTAL MARKUP COSTS
					\$14,830.03
General Contractors Insurance @	1.0%	on			\$79,308.45
Bond @	1.0%	on			\$793
Contingency @	0.0%	on			\$0
TOTAL COST for pay item					\$80,895

Additional Pay Item Notes :

1 excavator for demolition operation, 1 excavator for loading trucks/ piling material, 1 Loader at demo site to manage material stockpile, 3 trucks to haul material from demo site to dump site, 3 laborers 2 to flag and 1 to support operators, 1 foreman going back and forth between demo and dump site, 1 water truck to keep dust down during hauling operation. There will be 350 CY of material hauled with three trucks which will equal 12 load per truck. Each truck is expected to haul 3 loads per day for 5 days.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.012			Project	COPCO 1				
Description	Remove Structural Steel from Spillway								
Quantity	55,000.00	LBS							
Daily Production	11,000.00	LBS per	8	hour shift	Project #	2			
Work Days	5.0 Days			Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Unit Price	\$1.27 per LBS			Probable Low Cost Parameter		12650	\$59,210	\$1.08	
Total Cost	\$69,659			Probable High Cost Parameter		8260	\$87,074	\$1.58	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	5.0	8	40.00	L	\$46.27	incl. in rate	incl. in rate	\$1,850.80
Electrician	Active	1.00	5.0	8	40.00	L	\$45.23	incl. in rate	incl. in rate	\$1,809.20
Steelworker	Active	4.00	5.0	8	160.00	L	\$65.52	incl. in rate	incl. in rate	\$10,483.20
Laborer	Active	4.00	5.0	8	160.00	L	\$45.80	incl. in rate	incl. in rate	\$7,328.00
Truck Driver (heavy)	Active	2.00	5.0	8	80.00	L	\$57.59	incl. in rate	incl. in rate	\$4,607.20
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	5.0	8	80.00	E	\$111.64	incl. in rate	incl. in rate	\$8,931.20
Crawler Crane (130tn)	Active	1.00	5.0	8	40.00	E	\$258.66	incl. in rate	incl. in rate	\$10,346.40
Welder	Active	1.00	5.0	8	40.00	L	\$7.84	incl. in rate	incl. in rate	\$313.50
Gas Welding Machine	Active	1.00	5.0	8	40.00	E	\$2.88	incl. in rate	incl. in rate	\$115.08
Equipment Operator (crane)	Active	1.00	5.0	8	40.00	L	\$68.41	incl. in rate	incl. in rate	\$2,736.40
Barge, Deck Engineer, Winch Operator	Active	1.00	5.0	8	40.00	L	\$64.26	incl. in rate	incl. in rate	\$2,570.40
Barge, Sectional, 40x10', includes ramp	Active	1.00	5.0	8	40.00	E	\$16.48	incl. in rate	incl. in rate	\$659.20
					Labor Hours	600	TOTAL LABOR			\$31,698.70
					Equipment Hours	200	TOTAL EQUIPMENT			\$20,051.88

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,584.94	\$1,584.94	
						TOTAL MATERIAL	\$1,584.94

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Mobilization, barge by tug boat, small	30.00	Mile	1.000	\$80.62	\$2,418.60	
					TOTAL SUBCONTRACTS	\$2,418.60

SUMMARY OF COSTS							
Labor Cost	\$31,698.70	Labor Burden @	49.7%	\$0.00		\$31,698.70	
Material Cost	\$1,584.94	Material Tax @	7.8%	\$122.83		\$1,707.77	
Equipment Cost	\$20,051.88	Equipment Tax @	0.0%	\$0.00		\$20,051.88	
Subcontractors	\$2,418.60					\$2,418.60	
DIRECT COST SUBTOTALS	\$55,754			\$123	DIRECT COST SUBTOTALS	\$55,877	
Installing Contractors Overhead @	15.0%					\$8,018.75	
Installing Contractors Profit @	8.0%					\$4,276.67	
GC Markup on Subs @	5.0%					\$120.93	
						TOTAL MARKUP COSTS	\$12,416.35
General Contractors Insurance @	1.0%	on		\$68,293.30		\$683	
Bond @	1.0%	on		\$68,293.30		\$683	
Contingency @	0.0%	on		\$69,659.16		\$0	
						TOTAL COST for pay item	\$69,659

Additional Pay Item Notes :
 Includes rails. Crews: E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal using a barge and a crane.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 015			Project	COPCO 1				
Description	Remove & Dispose of Hand Rails at dam								
Quantity	11,000.00 LBS								
Daily Production	11,000.00 LBS per			8	hour shift				
Work Days	1.0 Days								
Unit Price	\$1.36 per LBS			Project #	2		LBS per	Total Cost	Unit Price Per LBS
Total Cost	\$14,919			Estimator	Mihaela Tomulescu		12650	\$12,681	\$1.15
				Probable Low Cost Parameter			8800	\$17,903	\$1.63
				Probable High Cost Parameter					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	1.00	1.0	8	8.00	E	\$190.46	incl. in rate	incl. in rate	\$1,523.68
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Truck Driver (light)	Active	1.00	1.0	8	8.00	L	\$56.29	incl. in rate	incl. in rate	\$450.32
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Millwright	Active	6.00	1.0	8	48.00	L	\$89.46	incl. in rate	incl. in rate	\$3,334.08
Labor Foreman	Active	2.00	1.0	8	16.00	L	\$48.27	incl. in rate	incl. in rate	\$772.32
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Barge Operator	Active	1.00	1.0	8	8.00	L	\$40.30	incl. in rate	incl. in rate	\$322.40
	Active	1.00	1.0	8	8.00	L	\$64.26	incl. in rate	incl. in rate	\$514.08
					Labor Hours	112			TOTAL LABOR	\$6,832.56
					Equipment Hours	24			TOTAL EQUIPMENT	\$4,188.80

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$341.63	\$341.63	
						TOTAL MATERIAL	\$341.63

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	0.55	ton	1.000	0.55	\$595.00	\$327.25	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	36.00	\$7.25	\$261.00	
						TOTAL SUBCONTRACTS	\$588.25

SUMMARY OF COSTS						
Labor Cost	\$6,832.56	Labor Burden @	49.7%	\$0.00	\$6,832.56	
Material Cost	\$341.63	Material Tax @	7.8%	\$26.48	\$368.10	
Equipment Cost	\$4,188.80	Equipment Tax @	0.0%	\$0.00	\$4,188.80	
Subcontractors	\$588.25				\$588.25	
DIRECT COST SUBTOTALS	\$11,951			\$26	DIRECT COST SUBTOTALS	\$11,978
Installing Contractors Overhead @	15.0%	Crew		\$11,389.48		\$1,708.42
Installing Contractors Profit @	8.0%	Material		\$11,389.48		\$911.16
GC Markup on Subs @	5.0%	Subs		\$588.25		\$29.41
					TOTAL MARKUP COSTS	\$2,648.99
General Contractors Insurance @	1.0%	on		\$14,626.70		\$146
Bond @	1.0%	on		\$14,626.70		\$146
Contingency @	0.0%	on		\$14,919.24		\$0
					TOTAL COST for pay item	\$14,919

Additional Pay Item Notes :

Using a barge and a crane work is done in 1 day by 2 crews (1 forman and 3 millwright) Assumed hazardous waste 10% of the total lbs, calculated 36 miles from Copco1 to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.016			Project	COPCO 1				
Description	Remove & Dispose of Radial Gates								
Quantity	140,500.00	LBS							
Daily Production	15,000.00	LBS per	8	hour shift	Project #	2			
Work Days	9.4	Days			Estimator	Mihaela Tomulescu			
Unit Price	\$1.11	per LBS			Probable Low Cost Parameter	LBS per	Total Cost	Unit Price Per LBS	
Total Cost	\$156,117				Probable High Cost Parameter	11250	\$195,146	\$1.39	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (120tn)	Active	2.00	9.4	8	150.40	E	\$239.06	incl. in rate	incl. in rate	\$35,954.62
Milwright	Active	2.00	9.4	8	150.40	L	\$89.46	incl. in rate	incl. in rate	\$10,446.78
Barge (400T)	Active	1.00	9.4	8	75.20	E	\$99.50	incl. in rate	incl. in rate	\$7,482.40
Barge Operator	Active	1.00	9.4	8	75.20	L	\$40.30	incl. in rate	incl. in rate	\$3,030.56
Loader, FE Rubber Tire (5.25cy)	Active	2.00	9.4	8	150.40	E	\$75.42	incl. in rate	incl. in rate	\$11,343.17
Driver, Wet	Active	2.00	9.4	8	150.40	L	\$124.57	incl. in rate	incl. in rate	\$18,735.33
Truck, Tractor (400hp)	Active	1.00	9.4	8	75.20	E	\$89.30	incl. in rate	incl. in rate	\$5,211.36
Truck Driver (heavy)	Active	1.00	9.4	8	75.20	L	\$57.59	incl. in rate	incl. in rate	\$4,330.77
Equipment Operator (medium)	Active	4.00	9.4	8	300.80	L	\$66.28	incl. in rate	incl. in rate	\$19,937.02
					Labor Hours	752	TOTAL LABOR			\$56,480.46
					Equipment Hours	451.2	TOTAL EQUIPMENT			\$69,991.55

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Anchor Systems	4.00	ea	1.000	4.00	\$215.00	\$860.00	
Tow Brides	4.00	ea	1.000	4.00	\$50.00	\$200.00	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	ls	1.000	1.00	\$2,824.02	\$2,824.02	
						TOTAL MATERIAL	\$3,884.02

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	7.03	ton	1.000	\$595.00	\$4,179.88	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	\$7.25	\$246.50	
					TOTAL SUBCONTRACTS	\$4,426.38

SUMMARY OF COSTS						
Labor Cost	\$56,480.46	Labor Burden @	49.7%	\$0.00	\$56,480.46	
Material Cost	\$3,884.02	Material Tax @	7.8%	\$301.01	\$4,185.03	
Equipment Cost	\$59,991.55	Equipment Tax @	0.0%	\$0.00	\$59,991.55	
Subcontractors	\$4,426.38				\$4,426.38	
DIRECT COST SUBTOTALS	\$124,782			\$301	\$125,083	
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$120,657.05	
Installing Contractors Profit @	8.0%				\$120,657.05	
GC Markup on Subs @	5.0%				\$4,426.38	
					TOTAL MARKUP COSTS	\$27,972.44
General Contractors Insurance @	1.0%	on		\$153,055.87	\$1,531	
Bond @	1.0%	on		\$153,055.87	\$1,531	
Contingency @	0.0%	on		\$156,116.98	\$0	
					TOTAL COST for pay item	\$156,117

Additional Pay Item Notes :

13 radial gales, wall and silplates and 3-hoists, by barge and crane. Assumed contains paint with heavy metals 10% of the total lbs, 34 miles from Copco lake to Yreka transfer recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 017			Project	COPCO 1				
Description	Remove & Dispose Radial Gate Stop logs								
Quantity	18,000.00	LBS							
Daily Production	20,000.00	LBS per	8	hour shift	Project #	2			
Work Days	0.9	Days			Estimator	Mihaela Tomulescu		LBS per	22000
Unit Price	\$1.06	per LBS			Probable Low Cost Parameter		Total Cost	\$17,214	Unit Price Per LBS
Total Cost	\$19,126				Probable High Cost Parameter	15000	Total Cost	\$23,908	Unit Price Per LBS
									\$1.33

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Crawler Crane (90tn)	Active	1.00	0.9	8	7.20	E	\$208.09	incl. in rate	incl. in rate	\$1,498.25
Equipment Operator (medium)	Active	1.00	0.9	8	7.20	L	\$68.28	incl. in rate	incl. in rate	\$477.22
Equipment Operator (sider)	Active	1.00	0.9	8	7.20	L	\$62.94	incl. in rate	incl. in rate	\$453.17
Carpenters, Journeyman	Active	5.00	0.9	8	36.00	L	\$65.37	incl. in rate	incl. in rate	\$2,353.32
Truck Driver (heavy)	Active	2.00	0.9	8	14.40	L	\$57.59	incl. in rate	incl. in rate	\$829.30
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	0.9	8	14.40	E	\$31.90	incl. in rate	incl. in rate	\$459.36
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	0.9	8	7.20	E	\$36.58	incl. in rate	incl. in rate	\$263.38
Hydraulic Excavator (6.0cy)	Active	1.00	0.9	8	7.20	E	\$322.48	incl. in rate	incl. in rate	\$2,321.86
Steelworker	Active	6.00	0.9	8	43.20	L	\$65.52	incl. in rate	incl. in rate	\$2,830.46
Laborer	Active	5.00	0.9	8	36.00	L	\$45.80	incl. in rate	incl. in rate	\$1,648.80
Barge Operator	Active	1.00	0.9	8	7.20	L	\$40.30	incl. in rate	incl. in rate	\$290.16
Barge, Deck Engineer, Winch Operator	Active	1.00	0.9	8	7.20	L	\$64.26	incl. in rate	incl. in rate	\$462.67
					Labor Hours	158.4	TOTAL LABOR			\$9,345.10
					Equipment Hours	36	TOTAL EQUIPMENT			\$4,542.84

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$467.25	\$467.25
TOTAL MATERIAL						\$467.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00
TOTAL SUBCONTRACTS					\$1,000.00

SUMMARY OF COSTS					
Labor Cost	\$9,345.10	Labor Burden @	49.7%	\$0.00	\$9,345.10
Material Cost	\$467.25	Material Tax @	7.8%	\$36.21	\$503.47
Equipment Cost	\$4,542.84	Equipment Tax @	0.0%	\$0.00	\$4,542.84
Subcontractors	\$1,000.00				\$1,000.00
DIRECT COST SUBTOTALS	\$15,355			\$36	\$15,391
Installing Contractors Overhead @	15.0%				\$2,158.71
Installing Contractors Profit @	8.0%				\$1,151.31
GC Markup on Subs @	5.0%				\$50.00
TOTAL MARKUP COSTS					\$3,360.02
General Contractors Insurance @	1.0%		on	\$18,751.43	\$188
Bond @	1.0%		on	\$18,751.43	\$188
Contingency @	0.0%		on	\$19,126.45	\$0
TOTAL COST for pay item					\$19,126

Additional Pay Item Notes :

The process of removing stoplogs is not manual, but done with hydraulic stop log lifters and hoists and is done by one 11-men crew (6 steelworkers, 4 journeymen and 4 equipment operators). Based on the current production rate and the fact that we dispose big pieces of material we use 2 trucks per day. The gate side guides and invert shall have a minimum weight of 4 lbs./ft. for wall mounted and 3 lbs./ft. for embedded in concrete that we assume we have. The gate invert should contain a removable neoprene seal. Including stop log grooves, lifter, 13 set of guides - weight around 18000 lbs.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 018			Project	COPCO 1				
Description	Remove & Dispose Stop log hoist, track and supports								
Quantity	26,000.00	LBS							
Daily Production	13,000.00	LBS per	8	hour shift	Project #	2			
Work Days	2.0	Days			Estimator	Mihaela Tomulescu		LBS per	14300
Unit Price	\$1.03	per LBS			Probable Low Cost Parameter		Total Cost	\$24,158	Unit Price Per LBS
Total Cost	\$26,842				Probable High Cost Parameter		9750	\$33,552	\$1.29

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$48.27	incl. in rate	incl. in rate	\$740.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Steelworker	Active	6.00	2.0	8	96.00	L	\$65.52	incl. in rate	incl. in rate	\$6,289.92
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	incl. in rate	incl. in rate	\$3,544.00
Truck Driver (heavy)	Active	2.00	2.0	8	32.00	L	\$57.59	incl. in rate	incl. in rate	\$1,842.88
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	2.0	8	32.00	E	\$31.90	incl. in rate	incl. in rate	\$1,020.80
Hydraulic Crane (120tn)	Active	1.00	2.0	8	16.00	E	\$239.06	incl. in rate	incl. in rate	\$3,824.96
Welder	Active	2.00	2.0	8	32.00	L	\$7.84	incl. in rate	incl. in rate	\$250.80
Gas Welding Machine	Active	2.00	2.0	8	32.00	E	\$2.88	incl. in rate	incl. in rate	\$92.06
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$68.28	incl. in rate	incl. in rate	\$1,060.48
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$88.41	incl. in rate	incl. in rate	\$1,094.56
Barge, Sectional, 40'x10', includes ramp	Active	1.00	2.0	8	16.00	E	\$16.48	incl. in rate	incl. in rate	\$263.68
					Labor Hours	224	TOTAL LABOR			\$12,002.64
					Equipment Hours	112	TOTAL EQUIPMENT			\$8,745.50

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$600.13	\$600.13	
						TOTAL MATERIAL	\$600.13

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$12,002.64	Labor Burden @	49.7%	\$0.00		\$12,002.64
Material Cost	\$600.13	Material Tax @	7.8%	\$46.51		\$646.64
Equipment Cost	\$8,745.50	Equipment Tax @	0.0%	\$0.00		\$8,745.50
Subcontractors	\$0.00					\$0.00
DIRECT COST SUB TOTALS	\$21,348			\$47	DIRECT COST SUB TOTALS	\$21,395
Installing Contractors Overhead @	15.0%	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE		Cost Basis		\$3,209.22
Installing Contractors Profit @	8.0%	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE				\$1,711.58
GC Markup on Subs @	5.0%	<input type="checkbox"/> TRUE <input type="checkbox"/> FALSE				\$0.00
					TOTAL MARKUP COSTS	\$4,920.80
General Contractors Insurance @	1.0%	on		\$26,315.59		\$263
Bond @	1.0%	on		\$26,315.59		\$263
Contingency @	0.0%	on		\$26,841.90		\$0
					TOTAL COST for pay item	\$26,842

Additional Pay Item Notes :
 The removal of stoplog hoist, track and supports is done by barge and crane with one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 2 trucks per day.

PAY ITEM INFORMATION		Project				
PAY ITEM NUMBER	: 2.019	: COPCO1				
Description	: Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)					
Quantity	: 54,000.00 lbs	Project #	: 2			
Daily Production	: 30,000.00 lbs per 8 hour shift	Estimator	: Mihaela Tomulescu	lbs per	34500	
Work Days	: 1.8 Days	Probable Low Cost Parameter		Total Cost	\$47,906	
Unit Price	: \$1.04 per lbs	Probable High Cost Parameter		Unit Price Per lbs	\$0.89	
Total Cost	: \$56,361				\$1.25	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.8	8	14.40	L	\$47.23	incl. in rate	incl. in rate	\$680.11
Electrician	Active	7.00	1.8	8	100.80	L	\$45.23	incl. in rate	incl. in rate	\$4,559.18
Ironworkers	Active	6.00	1.8	8	86.40	L	\$63.95	incl. in rate	incl. in rate	\$5,525.28
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.8	8	14.40	E	\$221.50	incl. in rate	incl. in rate	\$3,189.00
Truck Driver (heavy)	Active	2.00	1.8	8	28.80	L	\$57.59	incl. in rate	incl. in rate	\$1,658.59
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.8	8	28.80	E	\$111.64	incl. in rate	incl. in rate	\$3,215.23
Hydraulic Crane (120tn)	Active	2.00	1.8	8	28.80	E	\$239.06	incl. in rate	incl. in rate	\$6,884.93
Welder	Active	1.00	1.8	8	14.40	L	\$7.84	incl. in rate	incl. in rate	\$112.86
Gas Welding Machine	Active	1.00	1.8	8	14.40	E	\$2.88	incl. in rate	incl. in rate	\$41.43
Equipment Operator (medium)	Active	1.00	1.8	8	14.40	L	\$66.28	incl. in rate	incl. in rate	\$954.43
Equipment Operator (crane)	Active	2.00	1.8	8	28.80	L	\$68.41	incl. in rate	incl. in rate	\$1,970.21
					Labor Hours	288	TOTAL LABOR			\$15,460.67
					Equipment Hours	86.4	TOTAL EQUIPMENT			\$13,331.19

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$773.03	\$773.03
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	1,000.00	LF	1.000	1,000.00	\$0.85	\$850.00
TOTAL MATERIAL						\$1,623.03

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (100%)	27.00	ton	1.000	27.00	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	108.00	mile	1.000	108.00	\$7.25
TOTAL SUBCONTRACTS					\$16,848.00

SUMMARY OF COSTS						
Labor Cost	\$15,460.67	Labor Burden @	49.7%	\$0.00	\$15,460.67	
Material Cost	\$1,623.03	Material Tax @	7.8%	\$125.79	\$1,748.82	
Equipment Cost	\$13,331.19	Equipment Tax @	0.0%	\$0.00	\$13,331.19	
Subcontractors	\$16,848.00				\$16,848.00	
DIRECT COST SUB TOTALS	\$47,263			\$126	\$47,389	
Installing Contractors Overhead @	15.0%	Crew			\$30,540.68	
Installing Contractors Profit @	8.0%	Material			\$30,540.68	
GC Markup on Subs @	5.0%	Subs			\$16,848.00	
					TOTAL MARKUP COSTS	\$7,866.76
General Contractors Insurance @	1.0%	on			\$55,255.43	
Bond @	1.0%	on			\$55,255.43	
Contingency @	0.0%	on			\$0	
TOTAL COST for pay item					\$56,361	

Additional Pay Item Notes :
 Waste tunnel: Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal Assumed hazardous waste 100% of the total lbs, calculated 34 miles from Copco 1 to Yreka Transfer Recycling

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.020			Project	COPCO 1					
Description	Remove & Dispose of 3 - 72" butterfly valves (embedded)									
Quantity	55,000.00 lbs									
Daily Production	25,000.00	lbs per	8	hour shift	Project #	2				
Work Days	2.2 Days			Estimator	Mihaela Tomulescu					
Unit Price	\$1.10 per lbs			Probable Low Cost Parameter	lbs per	27500	Total Cost	\$54,264	Unit Price Per lbs	\$0.99
Total Cost	\$60,293			Probable High Cost Parameter	21250		\$69,337		\$1.26	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	4.00	2.2	8	70.40	L	\$48.27	incl. in rate	incl. in rate	\$3,398.21
Ironworkers	Active	8.00	2.2	8	140.80	L	\$63.95	incl. in rate	incl. in rate	\$9,004.16
Crawler Crane (270tn)	Active	2.00	2.2	8	35.20	E	\$399.50	incl. in rate	incl. in rate	\$14,062.40
Equipment Operator (medium)	Active	2.00	2.2	8	35.20	L	\$66.28	incl. in rate	incl. in rate	\$2,333.06
Welder	Active	4.00	2.2	8	70.40	L	\$7.84	incl. in rate	incl. in rate	\$551.76
Gas Welding Machine	Active	4.00	2.2	8	70.40	E	\$2.88	incl. in rate	incl. in rate	\$202.54
Electrician	Active	2.00	2.2	8	35.20	L	\$45.23	incl. in rate	incl. in rate	\$1,592.10
Millwright	Active	4.00	2.2	8	70.40	L	\$69.46	incl. in rate	incl. in rate	\$4,889.98
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.2	8	17.60	E	\$111.04	incl. in rate	incl. in rate	\$1,904.00
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.2	8	17.60	E	\$221.50	incl. in rate	incl. in rate	\$3,898.40
Truck Driver (heavy)	Active	1.00	2.2	8	17.60	L	\$57.59	incl. in rate	incl. in rate	\$1,013.58
Equipment Operator (oiler)	Active	1.00	2.2	8	17.60	L	\$62.94	incl. in rate	incl. in rate	\$1,107.74
Labor Hours					467.6	TOTAL LABOR				\$23,890.69
Equipment Hours					140.8	TOTAL EQUIPMENT				\$20,128.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,389.06	\$2,389.06
TOTAL MATERIAL						\$2,389.06

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	2.75	ton	1.000	2.75	\$595.00	\$1,636.25
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	11.00	mile	1.000	11.00	\$7.25	\$79.75
TOTAL SUBCONTRACTS					\$1,716.00	

SUMMARY OF COSTS					
Labor Cost	\$23,890.69	Labor Burden @	49.7%	\$0.00	\$23,890.69
Material Cost	\$2,389.06	Material Tax @	7.8%	\$185.15	\$2,574.21
Equipment Cost	\$20,128.20	Equipment Tax @	0.0%	\$0.00	\$20,128.20
Subcontractors	\$1,716.00				\$1,716.00
DIRECT COST SUBTOTALS	\$48,124			\$185	\$48,309
Installing Contractors Overhead @	15.0%			\$46,593.01	\$6,988.95
Installing Contractors Profit @	8.0%			\$46,593.01	\$3,727.44
GC Markup on Subs @	5.0%			\$1,716.00	\$85.80
TOTAL MARKUP COSTS					\$10,802.19
General Contractors Insurance @	1.0%	on		\$59,111.20	\$591
Bond @	1.0%	on		\$59,111.20	\$591
Contingency @	0.0%	on		\$60,293.42	\$0
TOTAL COST for pay item					\$60,293

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 10% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling. Plan to open valves for diversion tunnel bypass. Once water is drawdown the valves will be removed in the dry.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.021			Project	COPCO 1					
Description	Remove & Dispose of 3 - 72" flapper valves with remote mechanical									
Quantity	78,000.00	LBS								
Daily Production	5,200.00	LBS per	8	hour shift	Project #	2				
Work Days	15.0	Days			Estimator	Mihaela Tomulescu				
Unit Price	\$5.54	per LBS			Probable Low Cost Parameter	5720	Total Cost	\$388,894	Unit Price Per LBS	\$4.99
Total Cost	\$432,104				Probable High Cost Parameter	4420	\$496,920		\$6.37	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	15.0	8	240.00	L	\$48.27	incl. in rate	incl. in rate	\$11,584.80
Crawler Crane (270tn)	Active	2.00	15.0	8	240.00	E	\$399.50	incl. in rate	incl. in rate	\$95,880.00
Equipment Operator (crane)	Active	2.00	15.0	8	240.00	L	\$68.41	incl. in rate	incl. in rate	\$16,418.40
Diver, Wet	Active	6.00	15.0	8	720.00	L	\$124.57	incl. in rate	incl. in rate	\$89,690.40
Diver, Tender	Active	6.00	15.0	8	720.00	L	\$79.22	incl. in rate	incl. in rate	\$57,038.40
Barge, Sectional, 40'x10', includes ramp	Active	1.00	15.0	8	120.00	E	\$16.48	incl. in rate	incl. in rate	\$1,977.60
Barge Operator	Active	1.00	15.0	8	120.00	L	\$40.30	incl. in rate	incl. in rate	\$4,836.00
Truck, Flatbed (4x4, 10,000 gvw)	Active	3.00	15.0	8	360.00	E	\$31.90	incl. in rate	incl. in rate	\$11,484.00
Gas Welding Machine	Active	3.00	15.0	8	360.00	E	\$2.88	incl. in rate	incl. in rate	\$1,035.72
Barge, Deck Engineer, Winch Operator	Active	1.00	15.0	8	120.00	L	\$64.26	incl. in rate	incl. in rate	\$7,711.20
Equipment Operator (oiler)	Active	2.00	15.0	8	240.00	L	\$62.94	incl. in rate	incl. in rate	\$15,105.60
Truck Driver (heavy)	Active	1.00	15.0	8	120.00	L	\$57.59	incl. in rate	incl. in rate	\$6,910.80
Labor Hours					2520	TOTAL LABOR				\$209,295.60
Equipment Hours					1080	TOTAL EQUIPMENT				\$110,377.32

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$20,929.56	\$20,929.56
TOTAL MATERIAL						\$20,929.56

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	3.90	ton	1.000	3.90	\$595.00	\$2,320.50
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	34.00	\$7.25	\$246.50
TOTAL SUBCONTRACTS						\$2,567.00

SUMMARY OF COSTS					
Labor Cost	\$209,295.60	Labor Burden @	49.7%	\$0.00	\$209,295.60
Material Cost	\$20,929.56	Material Tax @	7.8%	\$1,622.04	\$22,551.60
Equipment Cost	\$110,377.32	Equipment Tax @	0.0%	\$0.00	\$110,377.32
Subcontractors	\$2,567.00				\$2,567.00
DIRECT COST SUB TOTALS	\$343,169			\$1,622	\$344,792
Installing Contractors Overhead @	15.0%	Crew			\$342,224.52
Installing Contractors Profit @	8.0%	Material			\$342,224.52
GC Markup on Subs @	5.0%	Subs			\$2,567.00
TOTAL MARKUP COSTS					\$78,839.99
General Contractors Insurance @	1.0%		on	\$423,631.51	\$4,236
Bond @	1.0%		on	\$423,631.51	\$4,236
Contingency @	0.0%		on	\$432,104.14	\$0
TOTAL COST for pay item					\$432,104

Additional Pay Item Notes :
 Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal Assumed hazardous waste 10% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling. Figuring divers will disassemble existing Flap Gates 124' underwater.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.022	Project	: COPCO 1						
Description	: Remove & Dispose of Spillway gate motor & control panel								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per 8 hour shift	Project #	: 2						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	EA per		Total Cost		Unit Price Per EA	
Unit Price	: \$1,318.63 per EA	Probable Low Cost Parameter		1.1	\$1,187	\$1,186.77			
Total Cost	: \$1,319	Probable High Cost Parameter		0.85	\$1,516	\$1,516.43			

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80	
					Labor Hours	16				TOTAL LABOR	\$732.80
					Equipment Hours	0				TOTAL EQUIPMENT	\$0.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 0.5% labor (Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	4.03	LS	1.000	4.03	\$73.28	\$295.35	
						TOTAL MATERIAL	\$295.35

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$732.80	Labor Burden @	49.7%	\$0.00		\$732.80
Material Cost	\$295.35	Material Tax @	7.8%	\$22.89		\$318.24
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,028			\$23	DIRECT COST SUBTOTALS	\$1,051
Installing Contractors Overhead @	15.0%					\$157.66
Installing Contractors Profit @	8.0%					\$84.08
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$241.74
General Contractors Insurance @	1.0%		on			\$13
Bond @	1.0%		on			\$13
Contingency @	0.0%		on			\$0
					TOTAL COST for pay item	\$1,319

Additional Pay Item Notes :

Assumed that two workers will work one day to unconnect and remove the control panel and the gate motor. They will discharge the control panel and the gate motor in an available truck used for the other scope of work on the construction site.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.023	Project	: COPCO 1						
Description	: Remove & Dispose Distribution equipment, panelboards								
Quantity	: 1.00 EA								
Daily Production	: 0.50 EA per 8 hour shift								
Work Days	: 2.0 Days	Project #	: 2						
Unit Price	: \$5,877.55 per EA	Estimator	: Mihaela Tomulescu	EA per	: 0.55	Total Cost	: \$5,290	Unit Price Per EA	: \$5,289.80
Total Cost	: \$5,878	Probable Low Cost Parameter		Probable High Cost Parameter	: 0.4	Total Cost	: \$7,053	Unit Price Per EA	: \$7,053.06

CREW COSTS										
Description	Active	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	incl. in rate	incl. in rate	\$755.68
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Hydraulic Crane (17tn)	Active	1.00	2.0	8	16.00	E	\$81.52	incl. in rate	incl. in rate	\$1,304.32
					Labor Hours	: 48	TOTAL LABOR			\$2,487.36
					Equipment Hours	: 24	TOTAL EQUIPMENT			\$2,197.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor (Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	0.00	LS	1.000	0.00	\$124.37	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,487.36	Labor Burden @	49.7%	\$0.00		\$2,487.36
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,197.44	Equipment Tax @	0.0%	\$0.00		\$2,197.44
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$4,685			\$0	DIRECT COST SUBTOTALS	\$4,685
Installing Contractors Overhead @	15.0%	Crew				\$702.72
Installing Contractors Profit @	8.0%	Material				\$374.78
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$1,077.50
General Contractors Insurance @	1.0%		on			\$57.62
Bond @	1.0%		on			\$57.62
Contingency @	0.0%		on			\$0.00
					TOTAL COST for pay item	\$5,878

Additional Pay Item Notes :
 Assumed that electrical crew formed of 1 Foreman and 1 Electricians will work two days to unconnect and remove the distribution panels. They are going to use same crane and a truck for disposal of spillway intake, trashrake and radial motor & control panel.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.025			Project	COPCO 1					
Description	Remove Powerhouse Structural Steel									
Quantity	110,000.00 lbs									
Daily Production	25,000.00	lbs per	8	hour shift	Project #	2				
Work Days	4.4 Days			Estimator	Mihaela Tomulescu					
Unit Price	\$1.02 per lbs			Probable Low Cost Parameter	lbs per	28750	Total Cost	\$95,360	Unit Price Per lbs	\$0.87
Total Cost	\$112,188			Probable High Cost Parameter	20000	\$134,625			\$1.22	

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active		4.00	4.4	8	140.80	L	\$48.27	incl. in rate	incl. in rate	\$6,796.42
Ironworkers	Active		4.00	4.4	8	140.80	L	\$63.95	incl. in rate	incl. in rate	\$9,004.16
Crawler Crans (270tn)	Active		2.00	4.4	8	70.40	E	\$399.50	incl. in rate	incl. in rate	\$28,124.80
Equipment Operator (medium)	Active		2.00	4.4	8	70.40	L	\$66.28	incl. in rate	incl. in rate	\$4,666.11
Welder	Active		4.00	4.4	8	140.80	L	\$7.84	incl. in rate	incl. in rate	\$1,103.52
Gas Welding Machine	Active		4.00	4.4	8	140.80	E	\$2.88	incl. in rate	incl. in rate	\$405.08
Electrician	Active		2.00	4.4	8	70.40	L	\$45.23	incl. in rate	incl. in rate	\$3,184.19
Millwright	Active		4.00	4.4	8	140.80	L	\$69.46	incl. in rate	incl. in rate	\$9,779.97
Truck, Off-Road, Articulated Rear, 20cy	Active		1.00	4.4	8	35.20	E	\$111.64	incl. in rate	incl. in rate	\$3,929.73
Loader, FE Rubber Tire (8.6cy)	Active		1.00	4.4	8	35.20	E	\$221.50	incl. in rate	incl. in rate	\$7,796.80
Truck Driver (heavy)	Active		1.00	4.4	8	35.20	L	\$57.59	incl. in rate	incl. in rate	\$2,027.17
Equipment Operator (oiler)	Active		1.00	4.4	8	35.20	L	\$62.94	incl. in rate	incl. in rate	\$2,215.49
						Labor Hours	774.4	TOTAL LABOR		\$38,777.02	
						Equipment Hours	281.6	TOTAL EQUIPMENT		\$40,256.41	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$3,877.70	\$3,877.70	
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	3,500.00	LF	1.000	3,500.00	\$0.85	\$2,975.00	
						TOTAL MATERIAL	\$6,852.70

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	5.50	ton	1.000	\$595.00	\$3,272.50	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	\$7.25	\$246.50	
					TOTAL SUBCONTRACTS	\$3,519.00

SUMMARY OF COSTS						
Labor Cost	\$38,777.02	Labor Burden @	49.7%	\$0.00	\$38,777.02	
Material Cost	\$6,852.70	Material Tax @	7.8%	\$531.08	\$7,383.79	
Equipment Cost	\$40,256.41	Equipment Tax @	0.0%	\$0.00	\$40,256.41	
Subcontractors	\$3,519.00				\$3,519.00	
DIRECT COST SUBTOTALS	\$89,405			\$531	\$89,936	
Installing Contractors Overhead @	15.0%				\$12,962.58	
Installing Contractors Profit @	8.0%				\$6,913.38	
GC Markup on Subs @	5.0%				\$175.95	
					TOTAL MARKUP COSTS	\$20,051.91
General Contractors Insurance @	1.0%	on		\$109,988.13	\$1,100	
Bond @	1.0%	on		\$109,988.13	\$1,100	
Contingency @	0.0%	on		\$112,187.89	\$0	
					TOTAL COST for pay item	\$112,188

Additional Pay Item Notes :

Includes columns, beams, crane girders, bracing, misc. shapes, roof trusses, purlins, etc. Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal Assumed hazardous waste 10% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling.

PAY ITEM INFORMATION													
PAY ITEM NUMBER	2 026			Project	COPCO 1								
Description	Remove & Dispose of 2 - Governor Oil Systems												
Quantity	38,000.00 lbs			Project #	2								
Daily Production	25,000.00	lbs per	8	hour shift	Estimator	Mhaela Tomulescu		lbs per	27500	Total Cost	\$36,469	Unit Price Per lbs	\$0.96
Work Days	1.5 Days			Probable Low Cost Parameter			Probable High Cost Parameter	18750	\$50,651	\$1.33			
Unit Price	\$1.07 per lbs												
Total Cost	\$40,521												

CREW COSTS												
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment	Cost	
Labor Foreman	Active	2.00	1.5	8	24.00	L	\$48.27	incl. in rate	incl. in rate		\$1,158.48	
Ironworkers	Active	4.00	1.5	8	48.00	L	\$63.95	incl. in rate	incl. in rate		\$3,069.60	
Crawler Crane (270tn)	Active	1.00	1.5	8	12.00	E	\$399.50	incl. in rate	incl. in rate		\$4,794.00	
Equipment Operator (medium)	Active	1.00	1.5	8	12.00	L	\$66.28	incl. in rate	incl. in rate		\$795.36	
Welder	Active	3.00	1.5	8	36.00	L	\$7.84	incl. in rate	incl. in rate		\$282.15	
Gas Welding Machine	Active	3.00	1.5	8	36.00	E	\$2.88	incl. in rate	incl. in rate		\$103.57	
Electrician	Active	2.00	1.5	8	24.00	L	\$45.23	incl. in rate	incl. in rate		\$1,085.52	
Millwright	Active	4.00	1.5	8	48.00	L	\$69.46	incl. in rate	incl. in rate		\$3,334.08	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.5	8	12.00	E	\$111.64	incl. in rate	incl. in rate		\$1,339.68	
Hydraulic Excavator (6.0cy)	Active	1.00	1.5	8	12.00	E	\$322.48	incl. in rate	incl. in rate		\$3,869.76	
Truck Driver (heavy)	Active	1.00	1.5	8	12.00	L	\$57.59	incl. in rate	incl. in rate		\$691.08	
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	1.00	1.5	8	12.00	E	\$30.85	incl. in rate	incl. in rate		\$370.20	
					Labor Hours	204	TOTAL LABOR					\$10,416.27
					Equipment Hours	84	TOTAL EQUIPMENT					\$10,477.21

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,041.63	\$1,041.63
TOTAL MATERIAL						\$1,041.63

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	19.00	ton	1.000	19.00	\$595.00	\$11,305.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	3.000	102.00	\$7.25	\$739.50
TOTAL SUBCONTRACTS						\$12,044.50

SUMMARY OF COSTS						
Labor Cost	\$10,416.27	Labor Burden @	49.7%	\$0.00		\$10,416.27
Material Cost	\$1,041.63	Material Tax @	7.8%	\$80.73		\$1,122.35
Equipment Cost	\$10,477.21	Equipment Tax @	0.0%	\$0.00		\$10,477.21
Subcontractors	\$12,044.50					\$12,044.50
DIRECT COST SUBTOTALS	\$33,980			\$81	DIRECT COST SUBTOTALS	\$34,060
Installing Contractors Overhead@	15.0%				\$22,015.83	\$3,302.38
Installing Contractors Profit@	8.0%				\$22,015.83	\$1,761.27
GC Markup on Subs @	5.0%				\$12,044.50	\$602.23
TOTAL MARKUP COSTS						\$5,665.87
General Contractors Insurance @	1.0%	on			\$39,726.20	\$397
Bond @	1.0%	on			\$39,726.20	\$397
Contingency @	0.0%	on			\$40,520.73	\$0
TOTAL COST for pay item						\$40,521

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Using hydraulic impact breaker because of the systems that are encased in concrete. Assumed hazardous waste 100% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.027			Project	COPCO 1				
Description	Remove & Dispose of Cooling water and bearing oil systems								
Quantity	11,000.00 lbs			Project #	2				
Daily Production	11,000.00 lbs per 8 hour shift			Estimator	Mihaela Tomulescu		lbs per	Total Cost	Unit Price Per lbs
Work Days	1.0 Days			Probable Low Cost Parameter	12100		\$31,239	\$2.84	
Unit Price	\$3.16 per lbs			Probable High Cost Parameter	8800		\$41,652	\$3.79	
Total Cost	\$34,710								

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active		4.00	1.0	8	32.00	L	\$48.27	incl. in rate	incl. in rate	\$1,544.64
Ironworkers	Active		8.00	1.0	8	64.00	L	\$63.95	incl. in rate	incl. in rate	\$4,092.80
Crawler Crane (270tn)	Active		2.00	1.0	8	16.00	E	\$399.50	incl. in rate	incl. in rate	\$6,392.00
Equipment Operator (medium)	Active		2.00	1.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Welder	Active		4.00	1.0	8	32.00	L	\$7.84	incl. in rate	incl. in rate	\$250.00
Gas Welding Machine	Active		4.00	1.0	8	32.00	E	\$2.88	incl. in rate	incl. in rate	\$92.00
Electrician	Active		2.00	1.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Millwright	Active		6.00	1.0	8	48.00	L	\$69.46	incl. in rate	incl. in rate	\$3,334.08
Truck, Off-Road, Articulated Rear, 20cy	Active		1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Loader, FE Rubber Tire (8.6cy)	Active		1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active		1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Equipment Operator (oiler)	Active		1.00	1.0	8	8.00	L	\$62.94	incl. in rate	incl. in rate	\$503.52
						Labor Hours	224	TOTAL LABOR		\$11,970.72	
						Equipment Hours	64	TOTAL EQUIPMENT		\$9,149.18	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,197.07	\$1,197.07
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
TOTAL MATERIAL						\$2,897.07

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	5.50	ton	1.000	5.50	\$595.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	3.000	102.00	\$739.50	
					\$0.00	
					\$0.00	
TOTAL SUBCONTRACTS						\$4,012.00

SUMMARY OF COSTS					
Labor Cost	\$11,970.72	Labor Burden @	49.7%	\$0.00	\$11,970.72
Material Cost	\$2,897.07	Material Tax @	7.8%	\$224.52	\$3,121.80
Equipment Cost	\$9,149.18	Equipment Tax @	0.0%	\$0.00	\$9,149.18
Subcontractors	\$4,012.00				\$4,012.00
DIRECT COST SUBTOTALS	\$28,029			\$226	\$28,253
Installing Contractors Overhead @	15.0%				\$4,238.22
Installing Contractors Profit @	8.0%				\$2,260.32
GC Markup on Subs @	5.0%				\$1,412.60
TOTAL MARKUP COSTS					\$7,711.14
General Contractors Insurance @	1.0%	on		\$34,029.64	\$340
Bond @	1.0%	on		\$34,029.64	\$340
Contingency @	0.0%	on		\$34,710.24	\$0
TOTAL COST for pay item					\$34,710

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 4040 LF of 1 1/2" oil pipes at 2.72 Lbs. Used 1 Foreman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment)

hazardous materials above assumed hazardous waste 100% of the total lbs

Based on the

PAY ITEM INFORMATION													
PAY ITEM NUMBER	2.028			Project	COPCO 1								
Description	Remove & Dispose of 4 - Horizontal Tandem Francis Turbines												
Quantity	452,000.00/lbs			Project #	2								
Daily Production	30,000.00 lbs per 8 hour shift			Estimator	Mihaela Tomulescu		lbs per	33000		Total Cost	\$325,922	Unit Price Per lbs	\$0.72
Work Days	15.1 Days			Probable Low Cost Parameter			Probable High Cost Parameter	24000		Total Cost	\$434,562	Unit Price Per lbs	\$0.96
Unit Price	\$0.80 per lbs												
Total Cost	\$362,135												

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active		1.00	15.1	8	120.80	L	\$47.23	incl. in rate	incl. in rate	\$5,705.38
Ironworkers	Active		5.00	15.1	8	604.00	L	\$63.95	incl. in rate	incl. in rate	\$38,625.80
Crawler Crane (270tn)	Active		2.00	15.1	8	241.60	E	\$399.50	incl. in rate	incl. in rate	\$96,519.20
Equipment Operator (crane)	Active		2.00	15.1	8	241.60	L	\$68.41	incl. in rate	incl. in rate	\$16,527.86
Welder	Active		4.00	15.1	8	483.20	L	\$7.84	incl. in rate	incl. in rate	\$3,787.08
Gas Welding Machine	Active		4.00	15.1	8	483.20	E	\$2.88	incl. in rate	incl. in rate	\$1,390.16
Electrician	Active		2.00	15.1	8	241.60	L	\$45.23	incl. in rate	incl. in rate	\$10,927.57
Millwright	Active		5.00	15.1	8	604.00	L	\$69.46	incl. in rate	incl. in rate	\$41,953.84
Truck, Flatbed (4x4, 10,000 gvw)	Active		2.00	6.0	8	96.00	E	\$31.90	incl. in rate	incl. in rate	\$3,062.40
Loader, FE Rubber Tire (8.6cy)	Active		1.00	15.1	8	120.80	E	\$221.50	incl. in rate	incl. in rate	\$26,757.20
Truck Driver (heavy)	Active		1.00	15.1	8	120.80	L	\$57.59	incl. in rate	incl. in rate	\$6,956.87
Equipment Operator (medium)	Active		1.00	15.1	8	120.80	L	\$66.28	incl. in rate	incl. in rate	\$8,006.62
						Labor Hours	2536.8			TOTAL LABOR	\$132,491.02
						Equipment Hours	941.6			TOTAL EQUIPMENT	\$127,728.96

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$13,249.10	\$13,249.10	
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00	
						TOTAL MATERIAL	\$14,949.10

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	22.60	ton	1.000	\$595.00	\$13,447.00		
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	90.40	mile	1.500	\$7.25	\$983.10		
					\$0.00		
					\$0.00		
						TOTAL SUBCONTRACTS	\$14,430.10

SUMMARY OF COSTS						
Labor Cost	\$132,491.02	Labor Burden @	49.7%	\$0.00		\$132,491.02
Material Cost	\$14,949.10	Material Tax @	7.8%	\$1,158.56		\$16,107.66
Equipment Cost	\$127,728.96	Equipment Tax @	0.0%	\$0.00		\$127,728.96
Subcontractors	\$14,430.10					\$14,430.10
DIRECT COST SUBTOTALS	\$289,599			\$1,159	DIRECT COST SUBTOTALS	\$290,758
Installing Contractors Overhead @	15.0%	Crew		\$276,327.64		\$41,449.15
Installing Contractors Profit @	8.0%	Material		\$276,327.64		\$22,106.21
GC Markup on Subs @	5.0%	Subs		\$14,430.10		\$721.51
					TOTAL MARKUP COSTS	\$64,276.86
General Contractors Insurance @	1.0%	on		\$355,034.61		\$3,550.35
Bond @	1.0%	on		\$355,034.61		\$3,550.35
Contingency @	0.0%	on		\$362,135.30		\$0
					TOTAL COST for pay item	\$362,135

Additional Pay Item Notes :

Working with a crew formed of 1 E.I. Foreman 2 Electrician starting to disconnect power and take care of the temporary electrical power they need at the site. The crew of 5 Ironworker and 5 Millwright open the engine side panels, and remove the nacelle access panels. Disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. Plug all lines as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts. The engine ready to be removed. Move the engine forward, out of the nacelle structure, until it clears the aircraft. Lower the into position on the stand, and secure it prior to removing the engine sling. The crew of 4 Welder are going to cut in pieces the big parts of the turbine to be able to load them in the truck using a loader and dispose.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.029		Project : COPCO 1						
Description	: Remove & Dispose of 2 - 40 Ton indoor cranes								
Quantity	: 140,000.00 LBS								
Daily Production	: 24,000.00 LBS per		8 hour shift						
Work Days	: 5.8 Days		Project # : 2						
Unit Price	: \$0.74 per LBS		Estimator : Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS		
Total Cost	: \$103,941		Probable Low Cost Parameter		27600	\$88,350	\$0.63		
			Probable High Cost Parameter		19200	\$124,729	\$0.89		

CREW COSTS										
Description	Active / Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	2.00	5.8	8	92.80	E	\$190.46	incl. in rate	incl. in rate	\$17,674.69
Equipment Operator (crane)	Active	2.00	5.8	8	92.80	L	\$68.41	incl. in rate	incl. in rate	\$6,348.45
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	5.8	8	92.80	E	\$31.90	incl. in rate	incl. in rate	\$2,960.32
Equipment Operator (medium)	Active	1.00	5.8	8	46.40	L	\$66.28	incl. in rate	incl. in rate	\$3,075.39
Truck Driver (heavy)	Active	2.00	5.8	8	92.80	L	\$57.59	incl. in rate	incl. in rate	\$5,344.35
Electrician	Active	2.00	5.8	8	92.80	L	\$45.23	incl. in rate	incl. in rate	\$4,197.34
Millwright	Active	8.00	5.8	8	371.20	L	\$69.46	incl. in rate	incl. in rate	\$25,783.55
Labor Foreman	Active	2.00	5.8	8	92.80	L	\$48.27	incl. in rate	incl. in rate	\$4,479.46
Welder	Active	2.00	5.8	8	92.80	L	\$7.84	incl. in rate	incl. in rate	\$727.32
Gas Welding Machine	Active	2.00	5.8	8	92.80	E	\$2.88	incl. in rate	incl. in rate	\$266.98
Carpenters	Active	2.00	5.8	8	92.80	L	\$72.60	incl. in rate	incl. in rate	\$6,737.28
					Labor Hours	974.4	TOTAL LABOR			\$56,693.14
					Equipment Hours	278.4	TOTAL EQUIPMENT			\$20,901.99

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,834.66	\$2,834.66	
						TOTAL MATERIAL	\$2,834.66

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (5% of total weight)	3.50	ton	1.000	3.50	\$595.00	\$2,082.50
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	2.000	68.00	\$7.25	\$493.00
					TOTAL SUBCONTRACTS	\$2,575.50

SUMMARY OF COSTS						
Labor Cost	\$56,693.14	Labor Burden @	49.7%	\$0.00	\$56,693.14	
Material Cost	\$2,834.66	Material Tax @	7.8%	\$219.69	\$3,054.34	
Equipment Cost	\$20,901.99	Equipment Tax @	0.0%	\$0.00	\$20,901.99	
Subcontractors	\$2,575.50				\$2,575.50	
DIRECT COST SUBTOTALS	\$83,005			\$220	\$83,225	
Installing Contractors Overhead @	15.0%	Crew		\$80,649.48	\$12,097.42	
Installing Contractors Profit @	8.0%			\$80,649.48	\$6,451.96	
GC Markup on Subs @	5.0%			\$2,575.50	\$128.78	
					TOTAL MARKUP COSTS	\$18,678.16
General Contractors Insurance @	1.0%		on	\$101,903.14	\$1,019	
Bond @	1.0%		on	\$101,903.14	\$1,019	
Contingency @	0.0%		on	\$103,941.20	\$0	
					TOTAL COST for pay item	\$103,941

Additional Pay Item Notes :
 Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 2% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2 030	Project	: COPCO 1						
Description	: Remove & Dispose of Compressed Air System								
Quantity	: 1,000.00 LBS								
Daily Production	: 6,000.00 LBS per 8 hour shift	Project #	: 2						
Work Days	: 0.2 Days	Estimator	: Mihaela Tomulescu	LBS per	6600	Total Cost	\$897	Unit Price Per LBS	\$0.90
Unit Price	: \$1.00 per LBS	Probable Low Cost Parameter		5100	\$1,147	\$1.15			
Total Cost	: \$997	Probable High Cost Parameter							

CREW COSTS										
Description	Active / Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.2	8	1.60	E	\$64.23	incl. in rate	incl. in rate	\$102.77
Laborer	Active	3.00	0.2	8	4.80	L	\$45.80	incl. in rate	incl. in rate	\$219.84
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate	\$90.06
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate	\$178.62
Steelworker	Active	1.00	0.2	8	1.60	L	\$65.52	incl. in rate	incl. in rate	\$104.83
Electrician	Active	1.00	0.2	8	1.60	L	\$45.23	incl. in rate	incl. in rate	\$72.37
					Labor Hours	9.6	TOTAL LABOR			\$487.10
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$281.39

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$24.36	\$24.36	
						TOTAL MATERIAL	\$24.36

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$487.10	Labor Burden @	49.7%	\$0.00		\$487.10	
Material Cost	\$24.36	Material Tax @	7.8%	\$1.89		\$26.24	
Equipment Cost	\$281.39	Equipment Tax @	0.0%	\$0.00		\$281.39	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$793			\$2	DIRECT COST SUBTOTALS	\$795	
Installing Contractors Overhead @	15.0%					\$119.21	
Installing Contractors Profit @	8.0%					\$63.58	
GC Markup on Subs @	5.0%					\$0.00	
						TOTAL MARKUP COSTS	\$182.79
General Contractors Insurance @	1.0%	on			\$977.53	\$10	
Bond @	1.0%	on			\$977.53	\$10	
Contingency @	0.0%	on			\$997.06	\$0	
						TOTAL COST for pay item	\$997

Additional Pay Item Notes :

Used RS Means , assumption for "Pipe, metal pipe, to 1-1/2" diam., selective demolition, 370 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Steelworkers to cut the pipes and 3 Laborers for hauling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 032			Project	COPCO 1				
Description	Remove & Dispose of Plant Water and Fire Protection								
Quantity	2,600.00 LBS								
Daily Production	6,000.00 LBS per		8	hour shift	Project #	2			
Work Days	0.4		Days		Estimator	Mihaela Tomulescu			
Unit Price	\$1.35 per LBS				Probable Low Cost Parameter	LBS per	Total Cost	\$3,160	
Total Cost	\$3,511				Probable High Cost Parameter	4800	\$4,214	\$1.62	

CREW COSTS										
Description	Active / Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	0.4	8	6.40	L	\$48.27	incl. in rate	incl. in rate	\$308.93
Laborer	Active	4.00	0.4	8	12.80	L	\$45.80	incl. in rate	incl. in rate	\$586.24
Steelworker	Active	4.00	0.4	8	12.80	L	\$65.52	incl. in rate	incl. in rate	\$838.66
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	8	3.20	E	\$111.64	incl. in rate	incl. in rate	\$357.25
Truck Driver (light)	Active	1.00	0.4	8	3.20	L	\$56.29	incl. in rate	incl. in rate	\$180.13
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.4	8	3.20	E	\$64.23	incl. in rate	incl. in rate	\$205.54
Equipment Operator (light)	Active	1.00	0.4	8	3.20	L	\$84.90	incl. in rate	incl. in rate	\$207.88
					Labor Hours	38.4	TOTAL LABOR			\$2,121.63
					Equipment Hours	6.4	TOTAL EQUIPMENT			\$562.78

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$106.08	\$106.08
TOTAL MATERIAL						\$106.08

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$2,121.63	Labor Burden @	49.7%	\$0.00		\$2,121.63	
Material Cost	\$106.08	Material Tax @	7.8%	\$8.22		\$114.30	
Equipment Cost	\$562.78	Equipment Tax @	0.0%	\$0.00		\$562.78	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$2,790			\$8	DIRECT COST SUBTOTALS	\$2,799	
Installing Contractors Overhead @	15.0%	Crew			\$2,798.72	\$419.81	
Installing Contractors Profit @	8.0%	Material			\$2,798.72	\$223.90	
GC Markup on Subs @	5.0%	Subs			\$0.00	\$0.00	
						TOTAL MARKUP COSTS	\$643.71
General Contractors Insurance @	1.0%		on		\$3,442.42	\$34	
Bond @	1.0%		on		\$3,442.42	\$34	
Contingency @	0.0%		on		\$3,511.27	\$0	
TOTAL COST for pay item						\$3,511	
Additional Pay Item Notes :							
Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 960 LF of 1 1/2" pipes at 2.72 Lbs. Used 2 Foreman, 4 Steelworkers to cut the pipes and 4 Laborers to load the pipes in the truck.							

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.033			Project	COPCO 1					
Description	Remove & Dispose of Transformer Oil Fire Protection									
Quantity	5,400.00 LBS									
Daily Production	6,000.00 LBS per		8	hour shift	Project #	2				
Work Days	0.9		Days		Estimator	Mihaela Tomulescu				
Unit Price	\$1.22 per LBS				Probable Low Cost Parameter	6600	Total Cost	\$5,927	Unit Price Per LBS	\$1.10
Total Cost	\$6,586				Probable High Cost Parameter	4800	Total Cost	\$7,903	Unit Price Per LBS	\$1.46

CREW COSTS										
Description	Active / Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Steelworker	Active	2.00	0.9	8	14.40	L	\$65.52	incl. in rate	incl. in rate	\$943.49
Labor Foreman	Active	1.00	0.9	8	7.20	L	\$48.27	incl. in rate	incl. in rate	\$347.54
Laborer	Active	2.00	0.9	8	14.40	L	\$45.80	incl. in rate	incl. in rate	\$659.52
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.9	8	7.20	E	\$31.90	incl. in rate	incl. in rate	\$229.68
Truck Driver (light)	Active	1.00	0.9	8	7.20	L	\$56.29	incl. in rate	incl. in rate	\$405.29
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.9	8	7.20	E	\$64.23	incl. in rate	incl. in rate	\$462.46
Equipment Operator (light)	Active	1.00	0.9	8	7.20	L	\$64.90	incl. in rate	incl. in rate	\$467.28
					Labor Hours	50.4	TOTAL LABOR			\$2,823.12
					Equipment Hours	14.4	TOTAL EQUIPMENT			\$692.14

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$141.16	\$141.16
TOTAL MATERIAL						\$141.16

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	2.70	ton	1.000	2.70	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	34.00	\$7.25
TOTAL SUBCONTRACTS					\$1,853.00

SUMMARY OF COSTS						
Labor Cost	\$2,823.12	Labor Burden @	49.7%	\$0.00	\$2,823.12	
Material Cost	\$141.16	Material Tax @	7.8%	\$10.94	\$152.10	
Equipment Cost	\$692.14	Equipment Tax @	0.0%	\$0.00	\$692.14	
Subcontractors	\$1,853.00				\$1,853.00	
DIRECT COST SUBTOTALS	\$5,509			\$11	\$5,520	
Installing Contractors Overhead @	15.0%				\$3,667.35	
Installing Contractors Profit @	8.0%				\$3,667.35	
GC Markup on Subs @	5.0%				\$1,853.00	
					TOTAL MARKUP COSTS	\$936.14
General Contractors Insurance @	1.0%	on			\$6,456.49	
Bond @	1.0%	on			\$6,456.49	
Contingency @	0.0%	on			\$0	
TOTAL COST for pay item					\$6,586	

Additional Pay Item Notes :

Based on RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 1985 LF of 1 1/2" fire protection pipes at 2.72 Lbs. Used 1 Foreman and 1 Laborers to load in drums and put them in the truck. Calculated 34 miles from Copco 1 to Yreka Transfer Recycling. Each hydropower facility has at least 150,000 gallons to 250,000 gallon of oil currently in use. This oil would have to be properly disposed of in the event of decommissioning. Oil removed from the turbines and other equipment, including transformer oil, would be either a waste oil or used oil, depending on prior use and contaminants found in the oil. Containerized oil containing contaminants such as solvents are commonly encountered at hydropower facilities. Oil sludges are common in tanks. Oil disposal would likely be costly due to the large volumes found at hydropower facilities and the ease of contamination with other regulated hazardous wastes.

PAY ITEM INFORMATION												
PAY ITEM NUMBER	2.034			Project	COPCO 1							
Description	Remove & Dispose of Unwatering Piping											
Quantity	27,000.00 lbs											
Daily Production	18,000.00	lbs per	8	hour shift	Project #	2						
Work Days	1.5 Days			Estimator	Mihaela Tomulescu		lbs per	20700	Total Cost	\$16,777	Unit Price Per lbs	\$0.62
Unit Price	\$0.73 per lbs			Probable Low Cost Parameter			Probable High Cost Parameter	13500	\$24,672	\$0.91		
Total Cost	\$19,738											

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active		1.00	1.5	8	12.00	L	\$48.27	incl. in rate	incl. in rate	\$579.24
Laborer	Active		4.00	1.5	8	48.00	L	\$45.80	incl. in rate	incl. in rate	\$2,198.40
Steelworker	Active		4.00	1.5	8	48.00	L	\$65.52	incl. in rate	incl. in rate	\$3,144.96
Equipment Operator (medium)	Active		1.00	1.5	8	12.00	L	\$66.28	incl. in rate	incl. in rate	\$795.36
Welder	Active		1.00	1.5	8	12.00	L	\$7.84	incl. in rate	incl. in rate	\$94.05
Gas Welding Machine	Active		1.00	1.5	8	12.00	E	\$2.88	incl. in rate	incl. in rate	\$34.52
Electrician	Active		1.00	1.5	8	12.00	L	\$45.23	incl. in rate	incl. in rate	\$542.76
Equipment Operator (light)	Active		1.00	1.5	8	12.00	L	\$64.90	incl. in rate	incl. in rate	\$778.80
Truck, Off-Road, Articulated Rear, 20cy	Active		1.00	1.5	8	12.00	E	\$111.64	incl. in rate	incl. in rate	\$1,339.68
Loader, FE Rubber Tire (8.6cy)	Active		1.00	1.5	8	12.00	E	\$221.50	incl. in rate	incl. in rate	\$2,658.00
Truck Driver (heavy)	Active		1.00	1.5	8	12.00	L	\$57.59	incl. in rate	incl. in rate	\$691.08
						Labor Hours	168	TOTAL LABOR		\$8,824.65	
						Equipment Hours	36	TOTAL EQUIPMENT		\$4,032.20	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$882.47	\$882.47	
						TOTAL MATERIAL	\$882.47

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total weight)	3.38	ton	1.000	3.38	\$595.00	\$2,008.13	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	34.00	\$7.25	\$246.50	
						TOTAL SUBCONTRACTS	\$2,254.63

SUMMARY OF COSTS									
Labor Cost	\$8,824.65	Labor Burden @	49.7%	\$0.00	\$8,824.65				
Material Cost	\$882.47	Material Tax @	7.8%	\$68.39	\$950.86				
Equipment Cost	\$4,032.20	Equipment Tax @	0.0%	\$0.00	\$4,032.20				
Subcontractors	\$2,254.63				\$2,254.63				
DIRECT COST SUBTOTALS	\$16,994			\$68	\$16,062				
Installing Contractors Overhead @	15.0%				\$13,807.71				
Installing Contractors Profit @	8.0%				\$13,807.71				
GC Markup on Subs @	5.0%				\$2,254.63				
					TOTAL MARKUP COSTS	\$3,288.50			
General Contractors Insurance @	1.0%		on		\$19,350.84				
Bond @	1.0%		on		\$19,350.84				
Contingency @	0.0%		on		\$19,737.86				
					TOTAL COST for pay item	\$19,738			

Additional Pay Item Notes :

Used RS Means - Assumed Pipe, metal pipe, to 1-1/2" diam., selective demolition, around 9950 LF of 1 1/2" pipes at 2.72 Lbs. Used Crew formed of 1 Foreman, 2 Steelworkers to cut the pipes, 1 Welder to cut steel in unaccessible places, 2 Laborers to haul the pipes in the truck with the loader, 1 electrician to unplug the power and to assure the temporary power at the construction site. Calculated 34 miles from JC Boyle to Yreka Transfer Recycling

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 035			Project	COPCO 1				
Description	Remove & Dispose of Drainage Piping			Project #	2				
Quantity	5,000.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	4,450.00	LBS per	8	Probable Low Cost Parameter			5117.5	\$4,422	\$0.88
Work Days	1.1 Days			Probable High Cost Parameter			3337.5	\$6,503	\$1.30
Unit Price	\$1.04 per LBS								
Total Cost	\$5,202								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.1	8	8.80	E	\$64.23	incl. in rate	incl. in rate	\$565.22
Equipment Operator (light)	Active	1.00	1.1	8	8.80	L	\$64.90	incl. in rate	incl. in rate	\$571.12
Truck, Off Road, Articulated Rear, 20cy	Active	1.00	1.1	8	8.80	E	\$111.64	incl. in rate	incl. in rate	\$982.43
Truck Driver (light)	Active	1.00	1.1	8	8.80	L	\$56.29	incl. in rate	incl. in rate	\$495.35
Labor Foreman	Active	1.00	1.1	8	8.80	L	\$48.27	incl. in rate	incl. in rate	\$424.78
Electrician	Active	1.00	1.1	8	8.80	L	\$45.23	incl. in rate	incl. in rate	\$398.02
Steelworker	Active	1.00	1.1	8	8.80	L	\$85.52	incl. in rate	incl. in rate	\$576.58
					Labor Hours	44	TOTAL LABOR			\$2,465.85
					Equipment Hours	17.6	TOTAL EQUIPMENT			\$1,547.66

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$123.29	\$123.29		
							TOTAL MATERIAL	\$123.29

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$2,465.85	Labor Burden @	49.7%	\$0.00	\$2,465.85				
Material Cost	\$123.29	Material Tax @	7.8%	\$9.56	\$132.85				
Equipment Cost	\$1,547.66	Equipment Tax @	0.0%	\$0.00	\$1,547.66				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$4,137			\$10	\$4,146				
Installing Contractors Overhead @	15.0%			\$4,146.35	\$621.95				
Installing Contractors Profit @	8.0%			\$4,146.35	\$331.71				
GC Markup on Subs @	5.0%			\$0.00	\$0.00				
					TOTAL MARKUP COSTS	\$953.66			
General Contractors Insurance @	1.0%	on		\$5,100.01	\$51				
Bond @	1.0%	on		\$5,100.01	\$51				
Contingency @	0.0%	on		\$5,202.01	\$0				
					TOTAL COST for pay item	\$5,202			

Additional Pay Item Notes :

1370 LF of 1" drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Forman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.035a			Project	COPCO 1					
Description	Remove petroleum products from mechanical equipment									
Quantity	1,250.00	GAL								
Daily Production	1,100.00	GAL per	8	hour shift	Project #	2				
Work Days	1.1 Days			Estimator	Mihaela Tomulescu					
Unit Price	\$4.39 per GAL			Probable Low Cost Parameter	GAL per	1210	Total Cost	\$4,941	Unit Price Per GAL	\$3.95
Total Cost	\$5,490			Probable High Cost Parameter	GAL per	936	Total Cost	\$6,313	Unit Price Per GAL	\$5.05

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active		1.00	1.1	8	8.80	L	\$46.27	incl. in rate	incl. in rate	\$407.18
Carpenters, Journeyman	Active		2.00	1.1	8	17.60	L	\$65.37	incl. in rate	incl. in rate	\$1,150.51
Laborer	Active		2.00	1.1	8	17.60	L	\$45.80	incl. in rate	incl. in rate	\$806.08
						Labor Hours	44			TOTAL LABOR	\$2,363.77
						Equipment Hours	0			TOTAL EQUIPMENT	\$0.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 20% labor (absorbant materials, drums, etc)	1.00	LS	1.000	1.00	\$472.75	\$472.75	
						TOTAL MATERIAL	\$472.75

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	8.80	hour	1.000	\$200.00	\$1,760.00	
					TOTAL SUBCONTRACTS	\$1,760.00

SUMMARY OF COSTS							
Labor Cost	\$2,363.77	Labor Burden @	49.7%	\$0.00		\$2,363.77	
Material Cost	\$472.75	Material Tax @	7.8%	\$36.64		\$509.39	
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00	
Subcontractors	\$1,760.00					\$1,760.00	
DIRECT COST SUBTOTALS	\$4,697			\$37	DIRECT COST SUBTOTALS	\$4,633	
Installing Contractors Overhead @	15.0%				Cost Basis	\$2,873.16	
Installing Contractors Profit @	8.0%					\$2,873.16	
GC Markup on Subs @	5.0%					\$1,760.00	
						TOTAL MARKUP COSTS	\$748.83
General Contractors Insurance @	1.0%	FALSE		FALSE		\$5,381.99	
Bond @	1.0%	FALSE				\$5,381.99	
Contingency @	0.0%					\$5,489.63	
						TOTAL COST for pay item	\$5,490

Additional Pay Item Notes :

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

- Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
 - the costs of the materials themselves
 - the labor costs for ordering, stocking, application, and removal
 - the costs of used-media collection, disposal, or re-processing/recycling.
- Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well.

AECOM assumed the best is Vacuum truck removal method to remove petroleum from turbines, generator, oil sumps, tanks, etc. Used a crew formed of 1 Foreman, 2 Laborers, and 2 journeymen to takeout the petroleum waste. Vacuum-equipped tank trucks are used to remove waste oil from collection points (assumed existing drums or tanks) so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil - and a significantly higher cost.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.036			Project	COPCO 1				
Description	Remove & Dispose of Horizontal AC Generator, Indoor Open Frame								
Quantity	2.00 EA			Project #	2				
Daily Production	0.40 EA per			Estimator	Mihaela Tomulescu				
Work Days	5.0 Days			Probable Low Cost Parameter	0.46	\$65,776	\$32,888.00		
Unit Price	\$38,691.77 per EA			Probable High Cost Parameter	0.32	\$92,960	\$46,430.12		
Total Cost	\$77,384								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	5.0	8	40.00	L	\$47.23	incl. in rate	incl. in rate	\$1,889.20
Labor Foreman	Active	1.00	5.0	8	40.00	L	\$48.27	incl. in rate	incl. in rate	\$1,930.80
Electrician	Active	6.00	5.0	8	240.00	L	\$45.23	incl. in rate	incl. in rate	\$10,855.20
Steelworker	Active	6.00	5.0	8	240.00	L	\$65.52	incl. in rate	incl. in rate	\$15,724.80
Laborer	Active	2.00	5.0	8	80.00	L	\$45.80	incl. in rate	incl. in rate	\$3,664.00
Truck Driver (heavy)	Active	2.00	5.0	8	80.00	L	\$57.59	incl. in rate	incl. in rate	\$4,607.20
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	5.0	8	80.00	E	\$31.90	incl. in rate	incl. in rate	\$2,552.00
Gas Welding Machine	Active	2.00	5.0	8	80.00	E	\$2.88	incl. in rate	incl. in rate	\$230.16
Welder	Active	2.00	5.0	8	80.00	L	\$7.84	incl. in rate	incl. in rate	\$627.00
Equipment Operator (crane)	Active	1.00	5.0	8	40.00	L	\$68.41	incl. in rate	incl. in rate	\$2,736.40
Crawler Crane (130ln)	Active	1.00	5.0	8	40.00	E	\$258.66	incl. in rate	incl. in rate	\$10,346.40
					Labor Hours	840	TOTAL LABOR			\$42,034.60
					Equipment Hours	200	TOTAL EQUIPMENT			\$13,128.66

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,101.73	\$2,101.73
TOTAL MATERIAL						\$2,101.73

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Disposal fee (for 115 tons)	1	EA	1.000	1.00	\$4,488.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	68.00	mile	1.000	68.00	\$7.25
TOTAL SUBCONTRACTS					\$4,981.00

SUMMARY OF COSTS					
Labor Cost	\$42,034.60	Labor Burden @	49.7%	\$0.00	\$42,034.60
Material Cost	\$2,101.73	Material Tax @	7.8%	\$162.88	\$2,264.61
Equipment Cost	\$13,128.56	Equipment Tax @	0.0%	\$0.00	\$13,128.56
Subcontractors	\$4,981.00				\$4,981.00
DIRECT COST SUB TOTALS	\$62,246			\$163	\$62,409
Installing Contractors Overhead @	15.0%				\$9,361.17
Installing Contractors Profit @	8.0%				\$5,792.77
GC Markup on Subs @	5.0%				\$249.05
TOTAL MARKUP COSTS					\$13,457.44
General Contractors Insurance @	1.0%		on		\$75,866.21
Bond @	1.0%		on		\$75,866.21
Contingency @	0.0%		on		\$0
TOTAL COST for pay item					\$77,384

Additional Pay Item Notes :
 Assumed removal of 2 units, weight per unit around 125000 LBS (stator, rotor, base, exciter assembly) Used RS Means, 2 X R13 Crew formed of 1 Foreman, 3 Electricians, 1 Oiler, 0 25 Equipment Crane, 3 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes. Calculated 34 miles from JC Copco1 to Yreka Transfer Recycling (back and forth).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 037			Project	COPCO1				
Description	Remove & Dispose of Excitation equipment for 12.5 MVA Generator								
Quantity	1.50 EA								
Daily Production	1.50	EA per	8	hour shift	Project #	2			
Work Days	1.0		Days		Estimator	Mihaela Tomulescu			
Unit Price	\$8,472.47		per EA		Probable Low Cost Parameter	EA per	1.725	Total Cost	\$10,802
Total Cost	\$12,709				Probable High Cost Parameter	EA per	1.125	Total Cost	\$16,886
								Unit Price Per EA	\$7,201.60
									\$10,590.59

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Hydraulic Crane (120tn)	Active	1.00	1.0	8	8.00	E	\$239.06	incl. in rate	incl. in rate	\$1,912.48
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate	\$62.70
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
					Labor Hours	64	TOTAL LABOR			\$3,073.42
					Equipment Hours	32	TOTAL EQUIPMENT			\$4,600.82

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$153.67	\$153.67
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,278.67

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.00	ton	1.000	\$595.00	\$0.45
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	0.00	mife	1.000	\$7.25	\$0.00
TOTAL SUBCONTRACTS					\$0.45

SUMMARY OF COSTS						
Labor Cost	\$3,073.42	Labor Burden @	49.7%	\$0.00	\$3,073.42	
Material Cost	\$2,278.67	Material Tax @	7.8%	\$176.60	\$2,455.27	
Equipment Cost	\$4,600.82	Equipment Tax @	0.0%	\$0.00	\$4,600.82	
Subcontractors	\$0.45				\$0.45	
DIRECT COST SUBTOTALS	\$9,953			\$177	\$10,130	
Installing Contractors Overhead @	15.0%	Crew		\$10,129.30	\$1,519.40	
Installing Contractors Profit @	8.0%	Material		\$10,129.30	\$810.34	
GC Markup on Subs @	5.0%	Subs		\$0.45	\$0.02	
					TOTAL MARKUP COSTS	\$2,329.76
General Contractors Insurance @	1.0%		on	\$12,459.51	\$125	
Bond @	1.0%		on	\$12,459.51	\$125	
Contingency @	0.0%		on	\$12,708.70	\$0	
TOTAL COST for pay item					\$12,709	

Additional Pay Item Notes :

Production based on 1 Foreman, 1 Electrician, 1 Welder to cut to remove the electrical equipment and 1 laborer to haul. Equipment used 1 Loader and 1 Crane for disposal. Assumed 2 sections, weight 1000LBS.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.038			Project	COPCO1					
Description	Remove & Dispose of Surge protection equip. for 12.5 MVA Generator									
Quantity	2.00	EA		Project #	2					
Daily Production	2.00	EA per	8	Estimator	Mihaela Tomulescu		EA per	2.3	Total Cost	\$4,258
Work Days	1.0	Days		Probable Low Cost Parameter			Probable High Cost Parameter	1.4	Total Cost	\$6,512
Unit Price	\$2,504.46 per EA								Unit Price Per EA	\$2,128.79
Total Cost	\$5,009									\$3,255.80

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Ironworkers	Active	2.00	1.0	8	16.00	L	\$63.95	incl. in rate	incl. in rate	\$1,023.20
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
					Labor Hours	56	TOTAL LABOR			\$2,940.40
					Equipment Hours	8	TOTAL EQUIPMENT			\$893.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$147.02	\$147.02
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85	\$0.00
TOTAL MATERIAL						\$147.02

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.00	ton	1.000	\$595.00	\$0.60
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	0.00	mile	1.000	\$7.25	\$0.00
TOTAL SUBCONTRACTS					\$0.60

SUMMARY OF COSTS					
Labor Cost	\$2,940.40	Labor Burden @	49.7%	\$0.00	\$2,940.40
Material Cost	\$147.02	Material Tax @	7.8%	\$11.39	\$158.41
Equipment Cost	\$893.12	Equipment Tax @	0.0%	\$0.00	\$893.12
Subcontractors	\$0.60				\$0.60
DIRECT COST SUBTOTALS	\$3,981			\$11	\$3,993
Installing Contractors Overhead @	15.0%	Crew			\$598.79
Installing Contractors Profit @	8.0%	Material			\$319.35
G.C Markup on Subs @	5.0%	Subs			\$0.03
		Cost Basis			\$918.17
General Contractors Insurance @	1.0%			\$4,910.70	\$49
Bond @	1.0%			\$4,910.70	\$49
Contingency @	0.0%			\$5,008.92	\$0
TOTAL MARKUP COSTS					\$918.17
TOTAL COST for pay item					\$5,009

Additional Pay Item Notes :

Assumption for Crew R3. 1 Foreman, 1 Electrician, 1 Ironworker and 1 welder to cut rods, to remove the electrical equipment and 1 laborer to haul in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2039	Project	: COPC01						
Description	: Remove & Dispose of Neutral grounding equip. for 12.5 MVA Generator								
Quantity	: 2.00 EA	Project #	: 2						
Daily Production	: 2.00 EA per 8 hour shift	Estimator	: Mihaela Tomulescu	EA per	: 2.2	Total Cost	: \$4,198	Unit Price Per EA	: \$2,099.01
Work Days	: 1.0 Days	Probable Low Cost Parameter		Probable High Cost Parameter	: 1.7	Total Cost	: \$5,364	Unit Price Per EA	: \$2,682.07
Unit Price	: \$2,332.24 per EA								
Total Cost	: \$4,664								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Loader, FE Rubber Tire (3.5cy)	Active	2.00	0.5	8	8.00	E	\$64.23	incl. in rate	incl. in rate	\$513.84
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Equipment Operator (light)	Active	1.00	0.5	8	4.00	L	\$64.90	incl. in rate	incl. in rate	\$259.00
					Labor Hours	44	TOTAL LABOR			\$2,192.80
					Equipment Hours	16	TOTAL EQUIPMENT			\$1,406.96

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$109.84	\$109.84	
						TOTAL MATERIAL	\$109.84

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$2,192.80	Labor Burden @	49.7%	\$0.00		\$2,192.80	
Material Cost	\$109.84	Material Tax @	7.8%	\$8.50		\$118.14	
Equipment Cost	\$1,406.96	Equipment Tax @	0.0%	\$0.00		\$1,406.96	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$3,709			\$8		\$3,718	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$3,717.90	\$557.68	
Installing Contractors Profit @	8.0%				\$3,717.90	\$297.43	
GC Markup on Subs @	5.0%				\$0.00	\$0.00	
						TOTAL MARKUP COSTS	\$855.12
General Contractors Insurance @	1.0%		on		\$4,573.01	\$46	
Bond @	1.0%		on		\$4,573.01	\$46	
Contingency @	0.0%		on		\$4,664.47	\$0	
						TOTAL COST for pay item	\$4,664

Additional Pay Item Notes :

Assumption for Crew R3: 1 Foreman, 1 Electrician, 1 Ironworker and 1 welder to cut rods, to remove the electrical equipment and 1 laborer to haul in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.040			Project	COPCO1				
Description	Remove & Dispose of Generator Switchgear, 5kV-includes unit breakers								
Quantity	1.00 EA								
Daily Production	1.00 EA per		8	hour shift	Project #	2			
Work Days	1.0		Days		Estimator	Mihaela Tomulescu		EA per	1.1
Unit Price	\$20,666.10		per EA		Probable Low Cost Parameter			Total Cost	\$18,699
Total Cost	\$20,666				Probable High Cost Parameter			Unit Price Per EA	\$18,699.49
								0.85	\$23,766
									\$23,766.01

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	1.0	8	24.00	L	\$47.23	incl. in rate	incl. in rate	\$1,133.52
Electrician	Active	12.00	1.0	8	96.00	L	\$45.23	incl. in rate	incl. in rate	\$4,342.08
Laborer	Active	6.00	1.0	8	48.00	L	\$45.80	incl. in rate	incl. in rate	\$2,198.40
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Hydraulic Crane (120tn)	Active	1.00	1.0	8	8.00	E	\$239.06	incl. in rate	incl. in rate	\$1,912.48
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate	\$62.70
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
					Labor Hours	208	TOTAL LABOR			\$9,735.66
					Equipment Hours	40	TOTAL EQUIPMENT			\$5,493.74

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$486.78	\$486.78
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85	\$0.00
TOTAL MATERIAL						\$486.78

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	\$595.00	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	\$7.25	\$246.50
TOTAL SUBCONTRACTS					\$841.50

SUMMARY OF COSTS					
Labor Cost	\$9,735.66	Labor Burden @	49.7%	\$0.00	\$9,735.66
Material Cost	\$486.78	Material Tax @	7.8%	\$37.73	\$524.51
Equipment Cost	\$5,493.74	Equipment Tax @	0.0%	\$0.00	\$5,493.74
Subcontractors	\$841.50				\$841.50
DIRECT COST SUBTOTALS	\$16,558			\$38	\$16,596
Installing Contractors Overhead @	15.0%			\$15,753.90	\$2,363.09
Installing Contractors Profit @	8.0%			\$15,753.90	\$1,260.31
GC Markup on Subs @	5.0%			\$841.50	\$42.08
TOTAL MARKUP COSTS					\$3,665.47
General Contractors Insurance @	1.0%	on		\$20,260.88	\$203
Bond @	1.0%	on		\$20,260.88	\$203
Contingency @	0.0%	on		\$20,666.10	\$0
TOTAL COST for pay item					\$20,666

Additional Pay Item Notes :

Used 3 Crews (2 sections each weight around 800 LBS per crew) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed containing hazardous waste that will be disposed at 34 miles away from the construction site to Yreka Transfer Recycling. In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contribute to the spread of PCB contamination. Types of PCB Wastes: PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes

- o PCB-based dielectric fluids removed from transformers and other equipment
- o PCB-based heat transfer and hydraulic fluids
- o Metal solid wastes
- o PCB equipment such as capacitors, transformers, switchgears, circuit breakers, heat transfer systems, etc.
- o Contaminated components removed from electrical equipment such as windings;
- o PCB

contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	2.041				Project	COPCO1					
Description	Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)										
Quantity	1.00 EA										
Daily Production	1.00	EA per	8	hour shift	Project #	2					
Work Days	1.0 Days										
Unit Price	\$11,311.14 per EA				Estimator	Mihaela Tomulescu		EA per	1.1		
Total Cost	\$11,311				Probable Low Cost Parameter	1.1		Total Cost	\$10,180	Unit Price Per EA	\$10,180.03
					Probable High Cost Parameter	0.85		Total Cost	\$13,008	Unit Price Per EA	\$13,007.81

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	3.00	1.0	8	24.00	L	\$47.23	incl. in rate	incl. in rate	\$1,133.52	
Electrician	Active	6.00	1.0	8	48.00	L	\$45.23	incl. in rate	incl. in rate	\$2,171.04	
Laborer	Active	4.00	1.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00	
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12	
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24	
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate	\$62.70	
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate	\$23.02	
					Labor Hours	128	TOTAL LABOR			\$5,823.82	
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,688.14	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$291.19	\$291.19	
						TOTAL MATERIAL	\$291.19

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	\$7.25	\$246.50	
					TOTAL SUBCONTRACTS	\$246.50

SUMMARY OF COSTS									
Labor Cost	\$5,823.82	Labor Burden @	49.7%	\$0.00	\$5,823.82				
Material Cost	\$291.19	Material Tax @	7.8%	\$22.57	\$313.76				
Equipment Cost	\$2,688.14	Equipment Tax @	0.0%	\$0.00	\$2,688.14				
Subcontractors	\$246.50				\$246.50				
DIRECT COST SUBTOTALS	\$9,050			\$23	\$9,072				
Installing Contractors Overhead @	15.0%			\$0,825.71	\$1,323.88				
Installing Contractors Profit @	8.0%			\$8,511.96	\$680.96				
GC Markup on Subs @	5.0%			\$246.50	\$12.33				
					TOTAL MARKUP COSTS	\$2,017.14			
General Contractors Insurance @	1.0%	on		\$11,089.35	\$111				
Bond @	1.0%	on		\$11,089.35	\$111				
Contingency @	0.0%	on		\$11,311.14	\$0				
					TOTAL COST for pay item	\$11,311			

Additional Pay Item Notes :
 Used 3 Crews (2 sections each, weight around 800lbs per crew) formed of 1 Foreman, 2 Electrician, 1welder to cut, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed. Calculated 34 miles from Copco 1 to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 042			Project	COPCO1				
Description	Remove & Dispose of Unit and plant control switchboard								
Quantity	1.00 EA								
Daily Production	1.00 EA per		8	hour shift	Project #	2			
Work Days	1.0		Days		Estimator	Mihaela Tomulescu		EA per	1.1
Unit Price	\$6,110.32		per EA		Probable Low Cost Parameter			Total Cost	\$5,499
Total Cost	\$6,110				Probable High Cost Parameter	0.85		\$7,027	Unit Price Per EA \$7,026.87

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	2.00	1.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$86.28	incl. in rate	incl. in rate	\$530.24
Loader, FE Rubber Tires (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
					Labor Hours	40	TOTAL LABOR			\$2,092.48
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,665.12

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$104.62	\$104.62		
							TOTAL MATERIAL	\$104.62

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$2,092.48	Labor Burden @	49.7%	\$0.00		\$2,092.48	
Material Cost	\$104.62	Material Tax @	7.8%	\$8.11		\$112.73	
Equipment Cost	\$2,665.12	Equipment Tax @	0.0%	\$0.00		\$2,665.12	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$4,862			\$8	DIRECT COST SUBTOTALS	\$4,870	
Installing Contractors Overhead@	15.0%					\$730.55	
Installing Contractors Profit@	8.0%					\$389.63	
GC Markup on Subs @	5.0%					\$0.00	
						TOTAL MARKUP COSTS	\$1,120.18
General Contractors Insurance @	1.0%		on		\$5,990.51	\$60	
Bond @	1.0%		on		\$5,990.51	\$60	
Contingency @	0.0%		on		\$6,110.32	\$0	
						TOTAL COST for pay item	\$6,110
Additional Pay Item Notes :							
Assumed 1 day of work to dispose unit and plant control switchboard with R3 electrical crew and laborers for hauling with the loader in the truck.							

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.043			Project	COPCO 1				
Description	Remove & Dispose of Battery System								
Quantity	1.00	EA							
Daily Production	0.33	EA per	8	hour shift	Project #	2			
Work Days	3.0 Days			Estimator	Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA
Unit Price	\$20,638.63 per EA			Probable Low Cost Parameter			0.363	\$18,575	\$18,574.76
Total Cost	\$20,639			Probable High Cost Parameter			0.2805	\$23,734	\$23,734.42

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	8	24.00	L	\$48.27	incl. in rate	incl. in rate	\$1,158.48
Electrician	Active	1.00	3.0	8	24.00	L	\$45.23	incl. in rate	incl. in rate	\$1,085.52
Equipment Operator (light)	Active	1.00	3.0	8	24.00	L	\$84.90	incl. in rate	incl. in rate	\$1,557.60
Loader, FE Rubber Tire (8.6cy)	Active	1.00	3.0	8	24.00	E	\$221.50	incl. in rate	incl. in rate	\$5,316.00
Truck Driver (heavy)	Active	1.00	3.0	8	24.00	L	\$57.59	incl. in rate	incl. in rate	\$1,382.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	3.0	8	24.00	E	\$111.84	incl. in rate	incl. in rate	\$2,679.36
Laborer	Active	2.00	3.0	8	48.00	L	\$45.80	incl. in rate	incl. in rate	\$2,198.40
Welder	Active	1.00	3.0	8	24.00	L	\$7.84	incl. in rate	incl. in rate	\$188.10
Gas Welding Machine	Active	1.00	3.0	8	24.00	E	\$2.88	incl. in rate	incl. in rate	\$69.05
					Labor Hours	168			TOTAL LABOR	\$7,670.26
					Equipment Hours	72			TOTAL EQUIPMENT	\$8,064.41

MATERIAL COSTS							
Description	Item Quantity	Order Unit	conversion factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$757.03	\$757.03	
						TOTAL MATERIAL	\$757.03

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$7,570.26	Labor Burden @	49.7%	\$0.00	\$7,570.26	
Material Cost	\$757.03	Material Tax @	7.8%	\$58.67	\$815.70	
Equipment Cost	\$8,064.41	Equipment Tax @	0.0%	\$0.00	\$8,064.41	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUB TOTALS	\$16,392			\$59	\$16,450	
Installing Contractors Overhead @	15.0%				\$2,467.55	
Installing Contractors Profit @	8.0%				\$1,316.03	
GC Markup on Subs @	5.0%				\$0.00	
					TOTAL MARKUP COSTS	\$3,783.58
General Contractors Insurance @	1.0%		on	\$20,233.95	\$202	
Bond @	1.0%		on	\$20,233.95	\$202	
Contingency @	0.0%		on	\$20,638.63	\$0	
					TOTAL COST for pay item	\$20,639

Additional Pay Item Notes :

Assuming 3 days of work disposing around 60 batteries, racks and supports. Using Crews E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2 044		Project		COPCO1				
Description	Remove & Dispose of Raceways, Conduit and Cable								
Quantity	1.00	EA							
Daily Production	0.50	EA per	8	hour shift	Project # : 2				
Work Days	2.0	Days	Estimator : Mihaela Tomulescu						
Unit Price	\$17,082.48	per EA	Probable Low Cost Parameter		EA per	Total Cost	Unit Price Per EA		
Total Cost	\$17,082	Probable High Cost Parameter		0.425	\$19,645	\$15,374.23			\$19,644.85

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	8	16.00	L	\$48.27	incl. in rate	incl. in rate	\$772.32
Electrician	Active	2.00	2.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Laborer	Active	4.00	2.0	8	64.00	L	\$45.80	incl. in rate	incl. in rate	\$2,931.20
Loader, FE Rubber Tire (8.8cy)	Active	1.00	2.0	8	16.00	E	\$221.50	incl. in rate	incl. in rate	\$3,544.00
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Labor Hours					144	TOTAL LABOR				\$7,132.80
Equipment Hours					32	TOTAL EQUIPMENT				\$5,330.24

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,069.92	\$1,069.92
TOTAL MATERIAL						\$1,069.92

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$7,132.80	Labor Burden @	49.7%	\$0.00	\$7,132.80
Material Cost	\$1,069.92	Material Tax @	7.8%	\$82.92	\$1,152.84
Equipment Cost	\$5,330.24	Equipment Tax @	0.0%	\$0.00	\$5,330.24
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$13,533			\$83	\$13,616
Installing Contractors Overhead @	15.0%				\$2,042.38
Installing Contractors Profit @	8.0%				\$1,089.27
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$3,131.65
General Contractors Insurance @	1.0%		on	\$16,747.53	\$167
Bond @	1.0%		on	\$16,747.53	\$167
Contingency @	0.0%		on	\$17,082.48	\$0
TOTAL COST for pay item					\$17,082

Additional Pay Item Notes :

Assumption for removal of control power cable, conduit (2000 LF) and cable tray (300 LF) - using R3 electrical crew and laborers for hauling with the loader.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	2 045			Project	COPCO1						
Description	Remove & Dispose of Misc. power & control boards										
Quantity	1.00	EA									
Daily Production	1.00	EA per	8	hour shift	Project #	2					
Work Days	1.0	Days			Estimator	Mihaela Tomulescu					
Unit Price	\$6,945.94	per EA			Probable Low Cost Parameter	EA per	1.1	Total Cost	\$6,251.35	Unit Price Per EA	\$6,251.35
Total Cost	\$6,946				Probable High Cost Parameter	0.85	\$7,988	\$7,988	\$7,987.83		

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	incl. in rate	incl. in rate		\$386.16
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate		\$361.84
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate		\$732.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate		\$1,772.00
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate		\$530.24
					Labor Hours	48	TOTAL LABOR				\$2,471.76
					Equipment Hours	16	TOTAL EQUIPMENT				\$2,665.12

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$370.76	\$370.76	
						TOTAL MATERIAL	\$370.76

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$2,471.76	Labor Burden @	49.7%	\$0.00	\$2,471.76				
Material Cost	\$370.76	Material Tax @	7.8%	\$28.73	\$399.50				
Equipment Cost	\$2,665.12	Equipment Tax @	0.0%	\$0.00	\$2,665.12				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$5,508			\$29	\$5,536				
Installing Contractors Overhead @	15.0%	Crew			\$5,536.38				
Installing Contractors Profit @	8.0%				\$5,536.38				
GC Markup on Subs @	5.0%				\$0.00				
					TOTAL MARKUP COSTS	\$1,273.37			
General Contractors Insurance @	1.0%		on	\$6,809.75	\$68				
Bond @	1.0%		on	\$6,809.75	\$68				
Contingency @	0.0%		on	\$6,945.94	\$0				
					TOTAL COST for pay item	\$6,946			

Additional Pay Item Notes :

Assumption for removal of 3' x 2' x 9" boards - 10 each using R3 electrical crew and laborers for hauling with the loader.

PAY ITEM COST DETAIL WORKSHEET

2.046 Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 5000kVA

PAY ITEM INFORMATION		Project				
PAY ITEM NUMBER	2.046	: COPCO 1				
Description	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 5000kVA					
Quantity	3.00 EA	Project #	: 2			
Daily Production	0.25 EA per 8 hour shift	Estimator	: Mihaela Tomulescu			
Work Days	12.0 Days	Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA	
Unit Price	\$64,338.39 per EA	Probable High Cost Parameter	0.275	\$173,714	\$57,904.55	
Total Cost	\$193,015		0.2125	\$221,967	\$73,989.16	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	12.0	8	288.00	L	\$47.23	incl. in rate	incl. in rate	\$13,002.24
Electrician	Active	3.00	12.0	8	288.00	L	\$45.23	incl. in rate	incl. in rate	\$13,026.24
Laborer	Active	6.00	12.0	8	576.00	L	\$45.80	incl. in rate	incl. in rate	\$26,380.80
Hydraulic Excavator (6.0cy)	Active	1.00	12.0	8	96.00	E	\$322.48	incl. in rate	incl. in rate	\$30,958.08
Truck Driver (heavy)	Active	1.00	12.0	8	96.00	L	\$57.59	incl. in rate	incl. in rate	\$5,528.64
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	12.0	8	96.00	E	\$31.90	incl. in rate	incl. in rate	\$3,062.40
Crawler Crane (130tn)	Active	1.00	12.0	8	96.00	E	\$258.66	incl. in rate	incl. in rate	\$24,831.36
Truck, Utility, with Man-Basket	Active	1.00	12.0	8	96.00	E	\$31.90	incl. in rate	incl. in rate	\$3,062.40
Equipment Operator (medium)	Active	1.00	12.0	8	96.00	L	\$66.28	incl. in rate	incl. in rate	\$6,362.88
Equipment Operator (crane)	Active	1.00	12.0	8	96.00	L	\$88.41	incl. in rate	incl. in rate	\$8,587.36
					Labor Hours	1440			TOTAL LABOR	\$71,468.16
					Equipment Hours	384			TOTAL EQUIPMENT	\$81,914.24

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor	1.00	LS	1.000	1.00	\$3,573.41	\$3,573.41	
						TOTAL MATERIAL	\$3,573.41

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Disposal fee	1	EA	1.000	\$500.00	\$500.00		
Remove oil from oil-filled step-up transformer (allowance for oil containers, filters, etc)	1	EA	1.000	\$13,000.00	\$13,000.00		
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	1	week	1.000	\$5,961.23	\$5,961.23		
						TOTAL SUBCONTRACTS	\$19,461.23

SUMMARY OF COSTS							
Labor Cost	\$71,468.16	Labor Burden @	49.7%	\$0.00		\$71,468.16	
Material Cost	\$3,573.41	Material Tax @	7.8%	\$276.94		\$3,850.35	
Equipment Cost	\$81,914.24	Equipment Tax @	0.0%	\$0.00		\$81,914.24	
Subcontractors	\$19,461.23					\$19,461.23	
DIRECT COST SUBTOTALS	\$156,417			\$277		\$156,694	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$137,232.75	\$20,584.91	
Installing Contractors Profit@	8.0%				\$137,232.75	\$10,978.62	
GC Markup on Subs @	5.0%				\$19,461.23	\$973.06	
						TOTAL MARKUP COSTS	\$32,536.59
General Contractors Insurance @	1.0%	on			\$189,230.57	\$1,892	
Bond @	1.0%	on			\$189,230.57	\$1,892	
Contingency @	0.0%	on			\$193,015.18	\$0	
						TOTAL COST for pay item	\$193,015

Additional Pay Item Notes :

Weight and dimensions of the transformers have particular importance so transport vehicles must be adequate. A considerable proportion of the weight is due to the oil, so the direct consequence is that the big transformers have to be transported empty. During transport the transformers are filled either by dry air or nitrogen. Because of transportation, the auxiliaries have to be removed. For this reason the collaboration with all the people involved in the project is essential. AECOM best assumption for a 5000 kVA, 2300/72000 volt transformer removal- - 3 crew R3 formed of 1 Foreman, 1 Electrician, 1 Utility man-basket truck, 1 crane for disposal of each transformer in the truck and 2 laborers to remove the auxiliaries and the pad (1 excavator).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.047			Project	COPCO 1				
Description	Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 4165kVA								
Quantity	3.00	EA							
Daily Production	0.25	EA per	8	hour shift					
Work Days	12.0	Days			Project #	2			
Unit Price	\$57,252.76	per EA			Estimator	Mihaela Tomulescu			
Total Cost	\$171,758				Probable Low Cost Parameter	0.275	\$154,582	\$51,527.49	
					Probable High Cost Parameter	0.2125	\$197,622	\$65,840.68	

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	3.00	12.0	8	288.00	L	\$47.23	incl. in rate	incl. in rate	\$13,802.24	
Electrician	Active	3.00	12.0	8	288.00	L	\$45.23	incl. in rate	incl. in rate	\$13,026.24	
Laborer	Active	6.00	12.0	8	576.00	L	\$45.80	incl. in rate	incl. in rate	\$26,380.80	
Hydraulic Excavator (6.0cy)	Active	1.00	12.0	8	96.00	E	\$322.48	incl. in rate	incl. in rate	\$30,958.08	
Truck Driver (heavy)	Active	3.00	2.0	8	48.00	L	\$57.59	incl. in rate	incl. in rate	\$2,764.32	
Truck, Flatbed (4x4, 10,000 gvw)	Active	3.00	2.0	8	48.00	E	\$31.90	incl. in rate	incl. in rate	\$1,531.20	
Crawler Crane (130tn)	Active	1.00	3.0	8	24.00	E	\$258.66	incl. in rate	incl. in rate	\$6,207.84	
Equipment Operator (medium)	Active	1.00	12.0	8	96.00	L	\$60.28	incl. in rate	incl. in rate	\$6,362.88	
Equipment Operator (crane)	Active	1.00	12.0	8	96.00	L	\$68.41	incl. in rate	incl. in rate	\$6,567.36	
Truck, Utility, with Man-Basket	Active	3.00	12.0	8	288.00	E	\$31.90	incl. in rate	incl. in rate	\$9,187.20	
					Labor Hours	1392			TOTAL LABOR	\$68,703.84	
					Equipment Hours	456			TOTAL EQUIPMENT	\$47,884.32	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor	1.00	LS	1.000	1.00	\$3,435.19	\$3,435.19	
						TOTAL MATERIAL	\$3,435.19

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Disposal fee	1	EA	1.000	1.00	\$500.00		
Remove oil from oil-filled step-up transformer (allowance for oil containers, filters, etc)	1	EA	1.000	1.00	\$13,000.00		
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	1	week	1.000	1.00	\$5,961.23		
						TOTAL SUBCONTRACTS	\$19,461.23

SUMMARY OF COSTS							
Labor Cost	\$68,703.84	Labor Burden @	49.7%	\$0.00		\$68,703.84	
Material Cost	\$3,435.19	Material Tax @	7.8%	\$266.23		\$3,701.42	
Equipment Cost	\$47,884.32	Equipment Tax @	0.0%	\$0.00		\$47,884.32	
Subcontractors	\$19,461.23					\$19,461.23	
DIRECT COST SUBTOTALS	\$139,485			\$266	DIRECT COST SUBTOTALS	\$139,751	
Installing Contractors Overhead@	15.0%					\$18,043.44	
Installing Contractors Profit@	8.0%					\$9,623.17	
GC Markup on Subs @	5.0%					\$973.06	
						TOTAL MARKUP COSTS	\$28,639.66
General Contractors Insurance @	1.0%		on		\$168,390.47	\$1,684	
Bond @	1.0%		on		\$168,390.47	\$1,684	
Contingency @	0.0%		on		\$171,758.28	\$0	
						TOTAL COST for pay item	\$171,758

Additional Pay Item Notes :

Weight and dimensions of the transformers have particular importance so transport vehicles must be adequate. A considerable proportion of the weight is due to the oil, so the direct consequence is that the big transformers have to be transported empty. During transport the transformers are filled either by dry air or nitrogen. Because of transportation, the auxiliaries have to be removed. For this reason the collaboration with all the people involved in the project is essential. AECOM best assumption for a 4165 kVA, 2300/72000 volt transformer removal- 3 crew R3 formed of 1 Foreman, 1 Electricians, 1 Utility man-basket truck, 1 crane for disposal of each transformer in the truck and 2 laboreres to remove the auxiliaries and the pad (1 excavator).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.048	Project	: COPCO 1						
Description	: Remove & Dispose of Seven 40-Ton Travelling Crane motors - hoist								
Quantity	: 1.00 EA	Project #	: 2						
Daily Production	: 2.00 EA per 8 hour shift	Estimator	: Mihaela Tomulescu	EA per	2.2	Total Cost	\$2,976	Unit Price Per EA	\$2,976.02
Work Days	: 0.5 Days	Probable Low Cost Parameter		Probable High Cost Parameter	1.7	Total Cost	\$3,803	Unit Price Per EA	\$3,802.69
Unit Price	: \$3,306.69 per EA								
Total Cost	: \$3,307								

CREW COSTS											
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment	
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate		\$440.56
Hydraulic Crane (80tn)	Active	1.00	0.5	8	4.00	E	\$190.46	incl. in rate	incl. in rate		\$761.84
Laborer	Active	1.00	0.5	8	4.00	L	\$45.80	incl. in rate	incl. in rate		\$183.20
Equipment Operator (crane)	Active	1.00	0.5	8	4.00	L	\$68.41	incl. in rate	incl. in rate		\$273.64
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	incl. in rate	incl. in rate		\$230.36
Steelworker	Active	1.00	0.5	8	4.00	L	\$65.52	incl. in rate	incl. in rate		\$202.00
					Labor Hours	16	TOTAL LABOR				\$949.28
					Equipment Hours	8	TOTAL EQUIPMENT				\$1,208.40

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$47.46	\$47.46	
						TOTAL MATERIAL	\$47.46

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote	
					Amount	
Disposal fee	1	EA	1.000	1.00	\$500.00	\$500.00
					\$0.00	\$0.00
					\$0.00	\$0.00
TOTAL SUBCONTRACTS						\$500.00

SUMMARY OF COSTS									
Labor Cost	\$949.28	Labor Burden @	49.7%	\$0.00	\$949.28				
Material Cost	\$47.46	Material Tax @	7.8%	\$3.68	\$51.14				
Equipment Cost	\$1,208.40	Equipment Tax @	0.0%	\$0.00	\$1,208.40				
Subcontractors	\$500.00				\$500.00				
DIRECT COST SUBTOTALS	\$2,705			\$4	\$2,709				
Installing Contractors Overhead @	15.0%			\$2,208.82	\$331.32				
Installing Contractors Profit @	8.0%			\$2,208.82	\$176.71				
GC Markup on Subs @	5.0%			\$500.00	\$25.00				
					TOTAL MARKUP COSTS	\$533.03			
General Contractors Insurance @	1.0%	on		\$3,241.85	\$32				
Bond @	1.0%	on		\$3,241.85	\$32				
Contingency @	0.0%	on		\$3,306.69	\$0				
					TOTAL COST for pay item	\$3,307			

Additional Pay Item Notes :

Assumed removal of hoist, hoist trolley, gantry: 1 Steelworker and 1 Laborers to load the overhead crane motors in the truck using the crane.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 2.050	Project	: COPCO 1								
Description	: Remove & Dispose of 40-Ton Travelling Crane Festoon Cable										
Quantity	: 1.00 EA										
Daily Production	: 2.00 EA per	8	hour shift								
Work Days	: 0.5 Days										
Unit Price	: \$1,534.84 per EA	Project #	: 2	Estimator	: Mihaela Tomulescu	EA per	2.2	Total Cost	\$1,381	Unit Price Per EA	\$1,381.36
Total Cost	: \$1,535	Probable Low Cost Parameter		Probable High Cost Parameter		EA per	1.6	Total Cost	\$1,842	Unit Price Per EA	\$1,841.81

CREW COSTS											
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hourly oper.	Burden	Labor / Equipment	
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate	\$178.02	
Laborer	Active	2.00	0.2	8	3.20	L	\$45.80	incl. in rate	incl. in rate	\$146.56	
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.5	8	4.00	E	\$64.23	incl. in rate	incl. in rate	\$256.92	
Equipment Operator (light)	Active	1.00	0.2	8	1.60	L	\$64.90	incl. in rate	incl. in rate	\$103.84	
Truck Driver (heavy)	Active	1.00	0.2	8	1.60	L	\$57.59	incl. in rate	incl. in rate	\$92.14	
					Labor Hours	6.4	TOTAL LABOR				\$342.54
					Equipment Hours	5.6	TOTAL EQUIPMENT				\$435.54

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$17.13	\$17.13	
						TOTAL MATERIAL	\$17.13

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes /	Unit	Contract or Quote		
			Company	Price	Amount		
Disposal fee (Allowance)	1	EA	1.000	1.00	\$500.00	\$500.00	
						\$0.00	
						\$0.00	
						TOTAL SUBCONTRACTS	\$500.00

SUMMARY OF COSTS							
Labor Cost	\$342.54	Labor Burden @	49.7%	\$0.00			\$342.54
Material Cost	\$17.13	Material Tax @	7.8%	\$1.33			\$18.45
Equipment Cost	\$435.54	Equipment Tax @	0.0%	\$0.00			\$435.54
Subcontractors	\$500.00						\$500.00
DIRECT COST SUBTOTALS	\$1,295			\$1	DIRECT COST SUBTOTALS		\$1,297
Installing Contractors Overhead @	15.0%	Crew					\$194.25
Installing Contractors Profit @	8.0%	Material					\$63.72
GC Markup on Subs @	5.0%	Subs					\$25.00
						TOTAL MARKUP COSTS	\$282.97
General Contractors Insurance @	1.0%		on		\$1,504.75		\$15
Bond @	1.0%		on		\$1,504.75		\$15
Contingency @	0.0%		on		\$1,534.84		\$0
						TOTAL COST for pay item	\$1,535

Additional Pay Item Notes :

Assumed 200 LF of cable; 2 Laborers will load in the truck with the loader the overhead crane cable.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.051			Project	COPCO 1				
Description	Remove & Dispose of Four 15-Ton Overhead Crane Motors - hoist								
Quantity	1.00 EA			Project #	2				
Daily Production	8.00	EA per	8	hour shift	Estimator	Mihaela Tomulescu			
Work Days	0.1 Days			Probable Low Cost Parameter	8.8	Total Cost	\$864		
Unit Price	\$959.54 per EA			Probable High Cost Parameter	6.4	Total Cost	\$1,161		
Total Cost	\$960					Unit Price Per EA	\$1,161.46		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.1	8	0.80	E	\$111.64	incl. in rate	incl. in rate	\$89.31
Hydraulic Crane (17tn)	Active	1.00	0.1	8	0.80	E	\$81.52	incl. in rate	incl. in rate	\$65.22
Laborer	Active	2.00	0.1	8	1.60	L	\$45.80	incl. in rate	incl. in rate	\$73.28
Equipment Operator (crane)	Active	1.00	0.1	8	0.80	L	\$68.41	incl. in rate	incl. in rate	\$54.73
Truck Driver (heavy)	Active	1.00	0.1	8	0.80	L	\$57.59	incl. in rate	incl. in rate	\$46.07
					Labor Hours	3.2	TOTAL LABOR		\$174.08	
					Equipment Hours	1.6	TOTAL EQUIPMENT		\$154.53	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$8.70	\$8.70
TOTAL MATERIAL						\$8.70

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee	1	EA	1.000	1.00	\$500.00	
TOTAL SUBCONTRACTS						\$500.00

SUMMARY OF COSTS						
Labor Cost	\$174.08	Labor Burden @	49.7%	\$0.00		\$174.08
Material Cost	\$8.70	Material Tax @	7.8%	\$0.67		\$9.38
Equipment Cost	\$154.53	Equipment Tax @	0.0%	\$0.00		\$154.53
Subcontractors	\$500.00					\$500.00
DIRECT COST SUBTOTALS	\$837			\$1	DIRECT COST SUBTOTALS	\$838
Installing Contractors Overhead @	15.0%					\$50.70
Installing Contractors Profit @	8.0%					\$27.04
GC Markup on Subs @	5.0%					\$25.00
TOTAL MARKUP COSTS						\$102.74
General Contractors Insurance @	1.0%		on		\$940.72	\$9
Bond @	1.0%		on		\$940.72	\$9
Contingency @	0.0%		on		\$959.54	\$0
TOTAL COST for pay item						\$960

Additional Pay Item Notes :
 Assumed removal of hoist, hoist trolley, gantry. 2 Laborers to load the overhead crane motors in the truck using the crane.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.052	Project	: COPCO 1						
Description	: Remove & Dispose of 15-Ton Overhead Crane control equipment								
Quantity	: 1.00 EA								
Daily Production	: 3.00 EA per 8 hour shift	Project #	: 2						
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu	EA per	3.3	Total Cost	\$391	Unit Price Per EA	\$390.78
Unit Price	: \$434.20 per EA	Probable Low Cost Parameter		Probable High Cost Parameter	2.55	\$499	\$499.33		
Total Cost	: \$434								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.3	8	4.80	L	\$45.80	incl. in rate	incl. in rate	\$219.84
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	incl. in rate	incl. in rate	\$108.55
					Labor Hours	7.2	TOTAL LABOR			\$328.39
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$16.42	\$16.42	
						TOTAL MATERIAL	\$16.42

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$328.39	Labor Burden @	49.7%	\$0.00		\$328.39
Material Cost	\$16.42	Material Tax @	7.8%	\$1.27		\$17.69
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$346			\$1	DIRECT COST SUBTOTALS	\$346
Installing Contractors Overhead @	15.0%				\$346.08	\$51.91
Installing Contractors Profit @	8.0%				\$346.08	\$27.69
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$79.60
General Contractors Insurance @	1.0%		on		\$425.68	\$4
Bond @	1.0%		on		\$425.68	\$4
Contingency @	0.0%		on		\$434.20	\$0
					TOTAL COST for pay item	\$434

Additional Pay Item Notes :

Assumed 1 cubic: 1 Laborers and 1 Electrician. Using the same truck, loader, crane as the ones used to load at the end of the day the overhead crane cable and motors.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2 053	Project	: COPCO 1						
Description	: Remove & Dispose of 15-Ton Overhead Crane Festoon Cable								
Quantity	: 1.00 EA								
Daily Production	: 2.00 EA per 8 hour shift	Project #	: 2						
Work Days	: 0.5 Days	Estimator	: Mihaela Tomulescu	EA per	2.2	Total Cost	\$574	Unit Price Per EA	\$573.74
Unit Price	: \$637.49 per EA	Probable Low Cost Parameter		Probable High Cost Parameter	1.7	Total Cost	\$733	Unit Price Per EA	\$733.12
Total Cost	: \$637								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.1	8	0.40	E	\$111.64	incl. in rate	incl. in rate	\$44.66
Truck Driver (heavy)	Active	1.00	0.1	8	0.40	L	\$57.59	incl. in rate	incl. in rate	\$23.04
Laborer	Active	2.00	0.5	8	8.00	L	\$45.80	incl. in rate	incl. in rate	\$366.40
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.1	8	0.40	E	\$84.23	incl. in rate	incl. in rate	\$25.69
Equipment Operator (light)	Active	1.00	0.1	8	0.40	L	\$84.90	incl. in rate	incl. in rate	\$25.96
					Labor Hours	8.8	TOTAL LABOR			\$415.40
					Equipment Hours	0.8	TOTAL EQUIPMENT			\$70.35

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$20.77	\$20.77		
							TOTAL MATERIAL	\$20.77

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$415.40	Labor Burden @	49.7%	\$0.00	\$415.40		
Material Cost	\$20.77	Material Tax @	7.8%	\$1.61	\$22.38		
Equipment Cost	\$70.35	Equipment Tax @	0.0%	\$0.00	\$70.35		
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$507	\$2				\$508	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$508.12	\$76.22	
Installing Contractors Profit @	8.0%				\$508.12	\$40.65	
GC Markup on Subs @	5.0%				\$0.00	\$0.00	
						TOTAL MARKUP COSTS	\$116.87
General Contractors Insurance @	1.0%		on		\$624.99	\$6	
Bond @	1.0%		on		\$624.99	\$6	
Contingency @	0.0%		on		\$637.49	\$0	
						TOTAL COST for pay item	\$637

Additional Pay Item Notes :
 Assumed 100 LF of cable will be removed; 2 Laborers will load in the truck with the loader the overhead crane cable.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.053.a			Project	COPCO1				
Description	Remove petroleum products from mechanical equipment								
Quantity	10,500.00 GAL								
Daily Production	550.00	GAL per	8	hour shift	Project #	2			
Work Days	19.1 Days			Estimator	Mihaela Tomulescu		GAL per	Total Cost	Unit Price Per GAL
Unit Price	\$10.39 per GAL			Probable Low Cost Parameter	605		\$98,204	\$9.35	
Total Cost	\$109,116			Probable High Cost Parameter	467.5		\$125,483	\$11.95	

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active		1.00	19.1	8	152.80	L	\$46.27	incl. in rate	incl. in rate	\$7,070.06
Electrician	Active		1.00	19.1	8	152.80	L	\$45.23	incl. in rate	incl. in rate	\$6,911.14
Laborer	Active		5.00	19.1	8	764.00	L	\$45.80	incl. in rate	incl. in rate	\$34,991.20
Truck Driver (heavy)	Active		1.00	19.1	8	152.80	L	\$57.59	incl. in rate	incl. in rate	\$8,799.75
						Labor Hours	1222.4	TOTAL LABOR		\$57,772.15	
						Equipment Hours	0	TOTAL EQUIPMENT		\$0.00	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (filters, pads, etc)	1.00	LS	1.000	1.00	\$2,888.61	\$2,888.61
TOTAL MATERIAL						\$2,888.61

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	152.80	hour	1.000	\$200.00	\$30,560.00
TOTAL SUBCONTRACTS					\$30,560.00

SUMMARY OF COSTS						
Labor Cost	\$57,772.15	Labor Burden @	49.7%	\$0.00		\$57,772.15
Material Cost	\$2,888.61	Material Tax @	7.8%	\$223.87		\$3,112.47
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$30,560.00					\$30,560.00
DIRECT COST SUBTOTALS	\$91,221			\$224	DIRECT COST SUBTOTALS	\$91,445
Installing Contractors Overhead @	15.0%	Crew			\$60,884.63	\$9,132.69
Installing Contractors Profit @	8.0%	Material			\$60,884.63	\$4,870.77
GC Markup on Subs @	5.0%	Subs			\$30,560.00	\$1,528.00
TOTAL MARKUP COSTS						\$15,531.46
General Contractors Insurance @	1.0%		on		\$106,976.09	\$1,070
Bond @	1.0%		on		\$106,976.09	\$1,070
Contingency @	0.0%		on		\$109,115.61	\$0
TOTAL COST for pay item						\$109,116

Additional Pay Item Notes :

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

- Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
 - the costs of the materials themselves
 - the labor costs for ordering, stocking, application, and removal
 - the costs of used-media collection, disposal, or re-processing/recycling.
- Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well. AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Foreman, 5 Laborers to takeout the petroleum waste, 1 Electrician to unplug the power and to assure the temporary power at the construction site. Vacuum-equipped tank trucks are used to remove waste oil from collection points at plants so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.054			Project	COPCO 1				
Description	Remove & Dispose of 69kV circuit breakers, oil filled, PCB								
Quantity	2.00 EA								
Daily Production	2.00 EA per		8	hour shift	Project #	2			
Work Days	1.0		Days		Estimator	Mihaela Tomulescu			
Unit Price	\$861.46		per EA		EA per	2.2		Total Cost	\$1,551
Total Cost	\$1,723				Probable Low Cost Parameter	1.8		Unit Price Per EA	\$775.31
					Probable High Cost Parameter				\$947.61

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Hydraulic Crane (35tn)	Active	1.00	0.2	8	1.60	E	\$116.30	incl. in rate	incl. in rate	\$186.08
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	incl. in rate	incl. in rate	\$109.46
Laborer	Active	2.00	0.2	8	3.20	L	\$45.80	incl. in rate	incl. in rate	\$146.56
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.2	8	1.60	E	\$31.90	incl. in rate	incl. in rate	\$51.04
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate	\$90.06
					Labor Hours	22.4		TOTAL LABOR		\$1,078.08
					Equipment Hours	3.2		TOTAL EQUIPMENT		\$237.12

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$53.90	\$53.90		
							TOTAL MATERIAL	\$53.90

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$1,078.08	Labor Burden @	49.7%	\$0.00		\$1,078.08
Material Cost	\$53.90	Material Tax @	7.8%	\$4.18		\$58.08
Equipment Cost	\$237.12	Equipment Tax @	0.0%	\$0.00		\$237.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,369			\$4	DIRECT COST SUBTOTALS	\$1,373
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$1,373.28	\$205.99
Installing Contractors Profit@	8.0%				\$1,373.28	\$109.86
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$315.85
General Contractors Insurance @	1.0%	on			\$1,689.14	\$17
Bond @	1.0%	on			\$1,689.14	\$17
Contingency @	0.0%	on			\$1,722.92	\$0
					TOTAL COST for pay item	\$1,723

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers from the switchyard in the truck for saving it in the designated place.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.055			Project	COPCO 1					
Description	Remove & Dispose of 69kV disconnect switches, group-operated									
Quantity	2.00 EA									
Daily Production	2.00 EA per		8	hour shift	Project #	2				
Work Days	1.0		Days		Estimator	Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA
Unit Price	\$861.46		per EA		Probable Low Cost Parameter	2.2		\$1,551	\$775.31	
Total Cost	\$1,723				Probable High Cost Parameter	1.8		\$1,895	\$947.61	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Hydraulic Crane (35tn)	Active	1.00	0.2	8	1.60	E	\$116.30	incl. in rate	incl. in rate	\$186.08
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	incl. in rate	incl. in rate	\$109.46
Laborer	Active	2.00	0.2	8	3.20	L	\$45.80	incl. in rate	incl. in rate	\$146.56
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.2	8	1.60	E	\$31.90	incl. in rate	incl. in rate	\$51.04
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate	\$90.06
					Labor Hours	22.4	TOTAL LABOR			\$1,078.08
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$237.12

MATERIAL COSTS									
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost			
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$53.90	\$53.90			
						TOTAL MATERIAL	\$53.90		

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$1,078.08	Labor Burden @	49.7%	\$0.00		\$1,078.08
Material Cost	\$53.90	Material Tax @	7.8%	\$4.18		\$58.08
Equipment Cost	\$237.12	Equipment Tax @	0.0%	\$0.00		\$237.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,369			\$4	DIRECT COST SUBTOTALS	\$1,373
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$1,373.28	\$205.99
Installing Contractors Profit@	8.0%				\$1,373.28	\$109.86
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$315.85
General Contractors Insurance @	1.0%	on			\$1,689.14	\$17
Bond @	1.0%	on			\$1,689.14	\$17
Contingency @	0.0%	on			\$1,722.92	\$0
					TOTAL COST for pay item	\$1,723

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers from the switchyard in the truck for saving it in the designated place.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 2.056	Project	: COPCO 1								
Description	: Remove & Dispose of 60-foot wood poles										
Quantity	: 12.00 EA										
Daily Production	: 5.00 EA per	8	hour shift								
Work Days	: 2.4 Days										
Unit Price	: \$1,296.96 per EA	Project #	: 2	Estimator	: Mihaela Tomulescu	EA per	5.75	Total Cost	\$13,229	Unit Price Per EA	\$1,102.41
Total Cost	: \$15,563	Probable Low Cost Parameter		Probable High Cost Parameter		4	\$18,676	\$1,556.35			

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	2.4	8	19.20	L	\$46.27	incl. in rate	incl. in rate		\$888.38
Electrician	Active	1.00	2.4	8	19.20	L	\$45.23	incl. in rate	incl. in rate		\$868.42
Hydraulic Crane (17tn)	Active	1.00	2.4	8	19.20	E	\$81.52	incl. in rate	incl. in rate		\$1,565.18
Equipment Operator (medium)	Active	1.00	2.4	8	19.20	L	\$66.28	incl. in rate	incl. in rate		\$1,272.58
Truck Driver (heavy)	Active	1.00	2.4	8	19.20	L	\$57.59	incl. in rate	incl. in rate		\$1,105.73
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.4	8	19.20	E	\$111.64	incl. in rate	incl. in rate		\$2,143.49
Laborer	Active	2.00	2.4	8	38.40	L	\$45.80	incl. in rate	incl. in rate		\$1,758.72
Vibratory Hammer & Extractor	Active	1.00	2.4	8	19.20	E	\$94.34	incl. in rate	incl. in rate		\$1,811.33
Truck, Utility, with Man-Basket	Active	1.00	2.4	8	19.20	E	\$31.90	incl. in rate	incl. in rate		\$612.48
					Labor Hours	115.2	TOTAL LABOR				\$5,893.82
					Equipment Hours	76.8	TOTAL EQUIPMENT				\$6,132.48

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$294.69	\$294.69
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	12.00	CY	1.000	12.00	\$4.74	\$56.88
TOTAL MATERIAL						\$351.57

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$5,893.82	Labor Burden @	49.7%	\$0.00		\$5,893.82
Material Cost	\$351.57	Material Tax @	7.8%	\$27.25		\$378.82
Equipment Cost	\$6,132.48	Equipment Tax @	0.0%	\$0.00		\$6,132.48
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$12,378			\$27	DIRECT COST SUBTOTALS	\$12,405
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$1,860.77
Installing Contractors Profit@	8.0%					\$992.41
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$2,853.18
General Contractors Insurance @	1.0%	on		\$15,258.30		\$153
Bond @	1.0%	on		\$15,258.30		\$153
Contingency @	0.0%	on		\$15,563.47		\$0
					TOTAL COST for pay item	\$15,563

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Foreman and 1 Electrician, 1 Crane and 1 man-basket truck to help untie the line. Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation, helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.057	Project	: COPCO 1						
Description	: Remove & Dispose of 30-foot wood cross arms								
Quantity	: 24.00 EA								
Daily Production	: 24.00 EA per	8	hour shift	Project #	: 2				
Work Days	: 1.0 Days								
Unit Price	: \$484.41 per EA	Estimator	: Mihaela Tomulescu	EA per	: 27.6	Total Cost	: \$9,882	Unit Price Per EA	: \$411.75
Total Cost	: \$11,626	Probable Low Cost Parameter		Probable High Cost Parameter	: 19.2	Total Cost	: \$13,951	Unit Price Per EA	: \$581.30

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Hydraulic Crane (17tn)	Active	1.00	1.0	8	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Truck Driver (heavy)	Active	1.00	5.0	8	40.00	L	\$57.59	incl. in rate	incl. in rate	\$2,303.60
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	5.0	8	40.00	E	\$111.64	incl. in rate	incl. in rate	\$4,465.60
					Labor Hours	72	TOTAL LABOR			\$3,936.80
					Equipment Hours	48	TOTAL EQUIPMENT			\$5,117.76

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$196.84	\$196.84		
							TOTAL MATERIAL	\$196.84

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,936.80	Labor Burden @	49.7%	\$0.00	\$3,936.80	
Material Cost	\$196.84	Material Tax @	7.8%	\$15.26	\$212.10	
Equipment Cost	\$5,117.76	Equipment Tax @	0.0%	\$0.00	\$5,117.76	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$9,251			\$15	DIRECT COST SUBTOTALS	\$9,267
Installing Contractors Overhead @	15.0%	Crew		\$9,266.66		\$1,390.00
Installing Contractors Profit @	8.0%	Material		\$9,266.66		\$741.33
GC Markup on Subs @	5.0%	Subs		\$0.00		\$0.00
					TOTAL MARKUP COSTS	\$2,131.33
General Contractors Insurance @	1.0%		on	\$11,397.99		\$114
Bond @	1.0%		on	\$11,397.99		\$114
Contingency @	0.0%		on	\$11,625.95		\$0
					TOTAL COST for pay item	\$11,626

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician, 1 Crane and 1 truck to dispose the cross arms.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.058	Project	: COPCO 1						
Description	: Remove & Dispose of 69-kV insulator strings								
Quantity	: 12.00 EA								
Daily Production	: 6.00 EA per	8	hour shift	Project #	: 2				
Work Days	: 2.0 Days								
Unit Price	: \$372.92 per EA	Estimator	: Mihaela Tomulescu	EA per	: 6.9	Total Cost	: \$3,804	Unit Price Per EA	: \$316.98
Total Cost	: \$4,475	Probable Low Cost Parameter	: 4.8	Probable High Cost Parameter	: 4.8	Total Cost	: \$5,370	Unit Price Per EA	: \$447.50

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate	\$740.32
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Pickup (4x4, 3/4tn)	Active	1.00	2.0	8	16.00	E	\$16.94	incl. in rate	incl. in rate	\$271.04
					Labor Hours	64	TOTAL LABOR			\$3,127.36
					Equipment Hours	16	TOTAL EQUIPMENT			\$271.04

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$156.37	\$156.37		
							TOTAL MATERIAL	\$156.37

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$3,127.36	Labor Burden @	49.7%	\$0.00	\$3,127.36		
Material Cost	\$156.37	Material Tax @	7.8%	\$12.12	\$168.49		
Equipment Cost	\$271.04	Equipment Tax @	0.0%	\$0.00	\$271.04		
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$3,555			\$12	DIRECT COST SUBTOTALS	\$3,567	
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$535.03	
Installing Contractors Profit @	8.0%					\$285.35	
GC Markup on Subs @	5.0%					\$0.00	
						TOTAL MARKUP COSTS	\$820.38
General Contractors Insurance @	1.0%	on		\$4,387.27	\$44		
Bond @	1.0%	on		\$4,387.27	\$44		
Contingency @	0.0%	on		\$4,475.02	\$0		
TOTAL COST for pay item						\$4,475	

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician, 1 Crane and 1 truck to dispose the insulator strings.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.059			Project	COPCO 1					
Description	Remove & Dispose of Transmission Line No. 3									
Quantity	1.66 MILE			Project #	2					
Daily Production	0.50	MILE per	8	hour shift	Estimator	Mihaela Tomulescu		MILE per	Total Cost	Unit Price Per MILE
Work Days	3.3 Days			Probable Low Cost Parameter	0.575	\$44,322	\$26,700.06			
Unit Price	\$31,411.84 per MILE			Probable High Cost Parameter	0.375	\$65,180	\$39,264.80			
Total Cost	\$52,144									

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	3.3	8	26.56	L	\$47.23	incl. in rate	incl. in rate	\$1,254.43
Electrician	Active	2.00	3.3	8	53.12	L	\$45.23	incl. in rate	incl. in rate	\$2,402.62
Truck, Utility, with Man-Basket	Active	2.00	3.3	8	53.12	E	\$31.90	incl. in rate	incl. in rate	\$1,694.53
Truck Driver (heavy)	Active	4.00	3.3	8	106.24	L	\$57.59	incl. in rate	incl. in rate	\$6,118.36
Laborer	Active	2.00	3.3	8	53.12	L	\$45.80	incl. in rate	incl. in rate	\$2,432.90
Hydraulic Excavator (2.5cy)	Active	1.00	3.3	8	26.56	E	\$203.63	incl. in rate	incl. in rate	\$5,408.41
Hydraulic Crane (80tn)	Active	1.00	3.3	8	26.56	E	\$190.46	incl. in rate	incl. in rate	\$5,058.62
Equipment Operator (crane)	Active	1.00	3.3	8	26.56	L	\$68.41	incl. in rate	incl. in rate	\$1,816.97
Equipment Operator (light)	Active	1.00	3.3	8	26.56	L	\$64.90	incl. in rate	incl. in rate	\$1,723.74
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	3.3	8	26.56	E	\$62.72	incl. in rate	incl. in rate	\$1,665.84
Truck, Flatbed (4x4, 10,000 gvw)	Active	3.00	3.3	8	79.68	E	\$31.90	incl. in rate	incl. in rate	\$2,541.79
					Labor Hours	292.16	TOTAL LABOR			\$15,749.02
					Equipment Hours	212.48	TOTAL EQUIPMENT			\$16,369.19

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$787.45	\$787.45
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	31.00	CY	1.000	31.00	\$4.74	\$146.94
TOTAL MATERIAL						\$934.39

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	3.32	days		\$3,000.00	\$9,960.00
TOTAL SUBCONTRACTS					\$9,960.00

SUMMARY OF COSTS					
Labor Cost	\$15,749.02	Labor Burden @	49.7%	\$0.00	\$15,749.02
Material Cost	\$934.39	Material Tax @	7.8%	\$72.42	\$1,006.81
Equipment Cost	\$16,369.19	Equipment Tax @	0.0%	\$0.00	\$16,369.19
Subcontractors	\$9,960.00				\$9,960.00
DIRECT COST SUBTOTALS	\$43,013			\$72	\$43,085
Installing Contractors Overhead @	15.0%			\$33,125.02	\$4,968.75
Installing Contractors Profit @	8.0%			\$32,118.21	\$2,569.46
GC Markup on Subs @	5.0%			\$9,960.00	\$498.00
TOTAL MARKUP COSTS					\$8,036.21
General Contractors Insurance @	1.0%	on		\$51,121.23	\$511
Bond @	1.0%	on		\$51,121.23	\$511
Contingency @	0.0%	on		\$52,143.65	\$0
TOTAL COST for pay item					\$52,144

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.66 miles of overhead transmission we will have approximately 31 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	2.060			Project	COPCO 1					
Description	Remove & Dispose of Transmission Line No. 15									
Quantity	1.33 MILE			Project #	2					
Daily Production	0.50	MILE per	8	hour shift	Estimator	Mihaela Tomulescu		MILE per	Total Cost	Unit Price Per MILE
Work Days	2.7 Days			Probable Low Cost Parameter	0.575	\$35,517	\$26,704.51			
Unit Price	\$31,417.08 per MILE			Probable High Cost Parameter	0.375	\$52,231	\$39,271.34			
Total Cost	\$41,785									

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.7	8	21.28	L	\$47.23	incl. in rate	incl. in rate	\$1,005.05
Electrician	Active	2.00	2.7	8	42.56	L	\$45.23	incl. in rate	incl. in rate	\$1,924.99
Truck, Utility, with Man-Basket	Active	2.00	2.7	8	42.56	E	\$31.90	incl. in rate	incl. in rate	\$1,357.66
Truck Driver (heavy)	Active	4.00	2.7	8	85.12	L	\$57.59	incl. in rate	incl. in rate	\$4,902.06
Laborer	Active	2.00	2.7	8	42.56	L	\$45.80	incl. in rate	incl. in rate	\$1,949.25
Hydraulic Excavator (2.5cy)	Active	1.00	2.7	8	21.28	E	\$203.63	incl. in rate	incl. in rate	\$4,333.25
Hydraulic Crane (80tn)	Active	1.00	2.7	8	21.28	E	\$190.46	incl. in rate	incl. in rate	\$4,052.99
Equipment Operator (crane)	Active	1.00	2.7	8	21.28	L	\$68.41	incl. in rate	incl. in rate	\$1,455.76
Equipment Operator (light)	Active	1.00	2.7	8	21.28	L	\$64.90	incl. in rate	incl. in rate	\$1,381.07
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.7	8	21.28	E	\$62.72	incl. in rate	incl. in rate	\$1,334.68
Truck, Flatbed (4x4, 10,000 gvw)	Active	3.00	2.7	8	63.84	E	\$31.90	incl. in rate	incl. in rate	\$2,036.50
Labor Hours					234.08	TOTAL LABOR				\$12,618.19
Equipment Hours					170.24	TOTAL EQUIPMENT				\$13,115.08

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$630.91	\$630.91	
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	26.00	CY	1.000	26.00	\$4.74	\$123.24	
TOTAL MATERIAL						\$754.15	

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.66	days		\$3,000.00	\$7,980.00
TOTAL SUBCONTRACTS					\$7,980.00

SUMMARY OF COSTS						
Labor Cost	\$12,618.19	Labor Burden @	49.7%	\$0.00		\$12,618.19
Material Cost	\$754.15	Material Tax @	7.8%	\$58.45		\$812.60
Equipment Cost	\$13,115.08	Equipment Tax @	0.0%	\$0.00		\$13,115.08
Subcontractors	\$7,980.00					\$7,980.00
DIRECT COST SUBTOTALS	\$34,467			\$58	DIRECT COST SUBTOTALS	\$34,526
Installing Contractors Overhead@	15.0%			\$26,545.86		\$3,981.88
Installing Contractors Profit@	8.0%			\$25,733.27		\$2,058.66
GC Markup on Subs @	5.0%			\$7,980.00		\$399.00
					TOTAL MARKUP COSTS	\$6,439.54
General Contractors Insurance @	1.0%	on		\$40,965.40		\$410
Bond @	1.0%	on		\$40,965.40		\$0
Contingency @	0.0%	on		\$41,784.71		\$0
					TOTAL COST for pay item	\$41,785

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 1.33 miles of overhead transmission we will have approximately 26 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.061			Project	COPCO 1				
Description	Remove & Dispose of Transmission Line No. 26-1								
Quantity	0.07 MILE			Project #	2				
Daily Production	0.50 MILE per	8	hour shift	Estimator	Mihaela Tomulescu		MILE per	Total Cost	Unit Price Per MILE
Work Days	0.1 Days			Probable Low Cost Parameter	0.575		\$1,995	\$28,496.39	
Unit Price	\$33,525.16 per MILE			Probable High Cost Parameter	0.375		\$2,933	\$41,906.45	
Total Cost	\$2,347								

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	1.00	0.1	8	1.12	L	\$47.23	incl. in rate	incl. in rate	\$52.90	
Electrician	Active	2.00	0.1	8	2.24	L	\$45.23	incl. in rate	incl. in rate	\$101.32	
Truck, Utility, with Man-Basket	Active	2.00	0.1	8	2.24	E	\$31.90	incl. in rate	incl. in rate	\$71.46	
Truck Driver (heavy)	Active	4.00	0.1	8	4.48	L	\$57.59	incl. in rate	incl. in rate	\$258.00	
Laborer	Active	2.00	0.1	8	2.24	L	\$45.80	incl. in rate	incl. in rate	\$102.59	
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	8	1.12	E	\$203.63	incl. in rate	incl. in rate	\$228.07	
Hydraulic Crane (80tn)	Active	1.00	0.1	8	1.12	E	\$190.46	incl. in rate	incl. in rate	\$213.32	
Equipment Operator (crane)	Active	1.00	0.1	8	1.12	L	\$68.41	incl. in rate	incl. in rate	\$76.62	
Equipment Operator (light)	Active	1.00	0.1	8	1.12	L	\$64.90	incl. in rate	incl. in rate	\$72.69	
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	0.1	8	1.12	E	\$62.72	incl. in rate	incl. in rate	\$70.25	
Truck, Flatbed (4x4, 10,000 gvw)	Active	3.00	0.1	8	3.36	E	\$31.90	incl. in rate	incl. in rate	\$107.18	
Labor Hours					12.32	TOTAL LABOR					\$664.12
Equipment Hours					8.96	TOTAL EQUIPMENT					\$690.27

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$33.21	\$33.21
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	26.00	CY	1.000	26.00	\$4.74	\$123.24
TOTAL MATERIAL						\$156.45

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	0.14	days		\$3,000.00	\$420.00
TOTAL SUBCONTRACTS					\$420.00

SUMMARY OF COSTS						
Labor Cost	\$664.12	Labor Burden @	49.7%	\$0.00		\$664.12
Material Cost	\$156.45	Material Tax @	7.8%	\$12.12		\$168.57
Equipment Cost	\$690.27	Equipment Tax @	0.0%	\$0.00		\$690.27
Subcontractors	\$420.00					\$420.00
DIRECT COST SUBTOTALS	\$1,931			\$12	DIRECT COST SUBTOTALS	\$1,943
Installing Contractors Overhead@	15.0%	Crew		\$1,522.95		\$228.44
Installing Contractors Profit@	8.0%	Material		\$1,354.38		\$108.35
GC Markup on Subs @	5.0%	Subs		\$420.00		\$21.00
TOTAL MARKUP COSTS						\$357.79
General Contractors Insurance @	1.0%	on		\$2,300.75		\$23
Bond @	1.0%	on		\$2,300.75		\$23
Contingency @	0.0%	on		\$2,346.76		\$0
TOTAL COST for pay item						\$2,347

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 0.07 miles of overhead transmission we will have approximately 2 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	2.062			Project	COPCO 1				
Description	Remove & Dispose of Transmission Line No. 26-2								
Quantity	0.07 MILE			Project #	2				
Daily Production	0.50 MILE per	8	hour shift	Estimator	Mihaela Tomulescu		MILE per	Total Cost	Unit Price Per MILE
Work Days	0.1 Days			Probable Low Cost Parameter	0.575		\$1,995	\$28,496.39	
Unit Price	\$33,525.16 per MILE			Probable High Cost Parameter	0.375		\$2,933	\$41,906.45	
Total Cost	\$2,347								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.1	8	1.12	L	\$47.23	incl. in rate	incl. in rate	\$52.90
Electrician	Active	2.00	0.1	8	2.24	L	\$45.23	incl. in rate	incl. in rate	\$101.32
Truck, Utility, with Man-Basket	Active	2.00	0.1	8	2.24	E	\$31.90	incl. in rate	incl. in rate	\$71.46
Truck Driver (heavy)	Active	4.00	0.1	8	4.48	L	\$57.59	incl. in rate	incl. in rate	\$258.00
Laborer	Active	2.00	0.1	8	2.24	L	\$45.80	incl. in rate	incl. in rate	\$102.59
Hydraulic Excavator (2.5cy)	Active	1.00	0.1	8	1.12	E	\$203.63	incl. in rate	incl. in rate	\$228.07
Hydraulic Crane (80tn)	Active	1.00	0.1	8	1.12	E	\$190.46	incl. in rate	incl. in rate	\$213.32
Equipment Operator (crane)	Active	1.00	0.1	8	1.12	L	\$68.41	incl. in rate	incl. in rate	\$76.62
Equipment Operator (light)	Active	1.00	0.1	8	1.12	L	\$64.90	incl. in rate	incl. in rate	\$72.69
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	0.1	8	1.12	E	\$62.72	incl. in rate	incl. in rate	\$70.25
Truck, Flatbed (4x4, 10,000 gvw)	Active	3.00	0.1	8	3.36	E	\$31.90	incl. in rate	incl. in rate	\$107.18
Labor Hours					12.32	TOTAL LABOR				\$664.12
Equipment Hours					8.96	TOTAL EQUIPMENT				\$690.27

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$33.21	\$33.21
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	26.00	CY	1.000	26.00	\$4.74	\$123.24
TOTAL MATERIAL						\$156.45

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	0.14	days		\$3,000.00	\$420.00
TOTAL SUBCONTRACTS					\$420.00

SUMMARY OF COSTS						
Labor Cost	\$664.12	Labor Burden @	49.7%	\$0.00		\$664.12
Material Cost	\$156.45	Material Tax @	7.8%	\$12.12		\$168.57
Equipment Cost	\$690.27	Equipment Tax @	0.0%	\$0.00		\$690.27
Subcontractors	\$420.00					\$420.00
DIRECT COST SUBTOTALS	\$1,931			\$12	DIRECT COST SUBTOTALS	\$1,943
Installing Contractors Overhead@	15.0%			\$1,522.95		\$228.44
Installing Contractors Profit@	8.0%			\$1,354.38		\$108.35
GC Markup on Subs @	5.0%			\$420.00		\$21.00
TOTAL MARKUP COSTS						\$357.79
General Contractors Insurance @	1.0%	on		\$2,300.75		\$23
Bond @	1.0%	on		\$2,300.75		\$23
Contingency @	0.0%	on		\$2,346.76		\$0
TOTAL COST for pay item						\$2,347

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are 60 feet tall. There are several different kinds of transmission structures. Transmission structures are constructed of wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 0.07 miles of overhead transmission we will have approximately 2 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 36 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.063	Project	: Copco 1
Description	: Remove gate house #1 from top of dam		
Quantity	: 720.00 SF		
Daily Production	: 250.00 SF per 8 hour shift	Project #	: 2
Work Days	: 2.9 Days	Estimator	: Eric Jones
Unit Price	: \$72.06 per SF	Probable Low Cost Parameter	287.5
Total Cost	: \$51,880	Probable High Cost Parameter	187.5
		Total Cost	\$44,098
		Unit Price Per SF	\$61.25
			\$90.07

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost		
Carpenter Foreman (out)	Active	1.00	2.9	8	23.20	L	\$46.40	incl. in rate	incl. in rate	\$1,076.48		
Carpenters	Active	2.00	2.9	8	46.40	L	\$72.60	incl. in rate	incl. in rate	\$3,368.64		
Laborer	Active	4.00	2.9	8	92.80	L	\$45.80	incl. in rate	incl. in rate	\$4,250.24		
Truck Driver (heavy)	Active	2.00	2.9	8	46.40	L	\$57.59	incl. in rate	incl. in rate	\$2,672.18		
Equipment Operator (medium)	Active	3.00	2.9	8	69.60	L	\$66.28	incl. in rate	incl. in rate	\$4,613.09		
Equipment Operator (crane)	Active	2.00	1.5	8	24.00	L	\$68.41	incl. in rate	incl. in rate	\$1,641.84		
Truck Driver (heavy)	Active	1.00	2.9	8	23.20	L	\$57.59	incl. in rate	incl. in rate	\$1,336.09		
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	2.9	8	46.40	E	\$70.35	incl. in rate	incl. in rate	\$3,264.24		
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	2.9	8	23.20	E	\$31.90	incl. in rate	incl. in rate	\$740.08		
Hydraulic Crane (80tn)	Active	1.00	1.5	8	12.00	E	\$190.46	incl. in rate	incl. in rate	\$2,285.52		
Hydraulic Excavator (5.0cy)	Active	2.00	2.9	8	46.40	E	\$274.63	incl. in rate	incl. in rate	\$12,742.83		
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.9	8	23.20	E	\$75.42	incl. in rate	incl. in rate	\$1,749.74		
			2.9	8	0.00		\$2.50			\$0.00		
			2.9	8	0.00					\$0.00		
			2.9	8	0.00					\$0.00		
			2.9	8	0.00					\$0.00		
			2.9	8	0.00					\$0.00		
Labor Hours					325.6						TOTAL LABOR	\$18,958.55
Equipment Hours					151.2						TOTAL EQUIPMENT	\$20,782.42

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		ea	1.050	0.00	\$150.00	\$0.00
		ea	1.050	0.00	\$1.43	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
		EA			\$0.00
		EA			\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$18,958.55	Labor Burden @	0.0%	\$18,958.55	
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	
Equipment Cost	\$20,782.42	Equipment Tax @	7.75%	\$1,610.64	
Subcontractors	\$0.00			\$0.00	
DIRECT COST SUBTOTALS	\$39,741			\$1,611	
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$41,351.61
Installing Contractors Profit @	8.0%				\$41,351.61
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$9,510.87
General Contractors Insurance @	1.0%	on			\$50,862.47
Bond @	1.0%	on			\$50,862.47
Contingency @	0.0%	on			\$51,879.72
TOTAL COST for pay item					\$51,880
Additional Pay Item Notes :					
Remove Head Gate Building. Assumption the crew can remove 1/3 of the building per day. Crane is used to load items on flat bed figured using it half of the duration.					

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.064	Project	: Copco 1
Description	: Remove gate house #2 from top of dam		
Quantity	: 690.00 SF		
Daily Production	: 250.00 SF per 8 hour shift	Project #	: 2
Work Days	: 2.8 Days	Estimator	: Eric Jones
Unit Price	: \$74.35 per SF	Probable Low Cost Parameter	287.5
Total Cost	: \$51,302	Probable High Cost Parameter	187.5
		Total Cost	\$43,607
		Unit Price Per SF	\$63.20
			\$92.94

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost		
Carpenter Foreman (out)	Active	1.00	2.8	8	22.40	L	\$46.40	incl. in rate	incl. in rate	\$1,039.36		
Carpenters	Active	2.00	2.8	8	44.80	L	\$72.60	incl. in rate	incl. in rate	\$3,252.48		
Laborer	Active	4.00	2.8	8	89.60	L	\$45.80	incl. in rate	incl. in rate	\$4,103.68		
Truck Driver (heavy)	Active	2.00	2.8	8	44.80	L	\$57.59	incl. in rate	incl. in rate	\$2,580.03		
Equipment Operator (medium)	Active	3.00	2.8	8	67.20	L	\$66.28	incl. in rate	incl. in rate	\$4,454.02		
Equipment Operator (crane)	Active	2.00	2.8	8	44.80	L	\$68.41	incl. in rate	incl. in rate	\$3,064.77		
Truck Driver (heavy)	Active	1.00	1.5	8	12.00	L	\$57.59	incl. in rate	incl. in rate	\$691.08		
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	2.8	8	44.80	E	\$70.35	incl. in rate	incl. in rate	\$3,151.68		
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	2.8	8	22.40	E	\$31.90	incl. in rate	incl. in rate	\$714.56		
Hydraulic Crane (80tn)	Active	1.00	1.5	8	12.00	E	\$190.46	incl. in rate	incl. in rate	\$2,285.52		
Hydraulic Excavator (5.0cy)	Active	2.00	2.8	8	44.80	E	\$274.63	incl. in rate	incl. in rate	\$12,303.42		
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.8	8	22.40	E	\$75.42	incl. in rate	incl. in rate	\$1,689.41		
			2.8	8	0.00		\$2.50			\$0.00		
			2.8	8	0.00					\$0.00		
			2.8	8	0.00					\$0.00		
			2.8	8	0.00					\$0.00		
			2.8	8	0.00					\$0.00		
Labor Hours					325.6						TOTAL LABOR	\$19,185.42
Equipment Hours					146.4						TOTAL EQUIPMENT	\$20,144.59

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		ea	1.050	0.00	\$150.00	\$0.00
		ea	1.050	0.00	\$1.43	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
		EA			\$0.00
		EA			\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$19,185.42	Labor Burden @	0.0%	\$19,185.42
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00
Equipment Cost	\$20,144.59	Equipment Tax @	7.75%	\$1,561.21
Subcontractors	\$0.00			\$0.00
DIRECT COST SUBTOTALS	\$39,330			\$1,561
		DIRECT COST SUBTOTALS		\$40,891
Installing Contractors Overhead @	15.0%	Crew		\$40,891.21
Installing Contractors Profit @	8.0%	Material		\$40,891.21
GC Markup on Subs @	5.0%	Subs		\$0.00
		TOTAL MARKUP COSTS		\$9,404.98
General Contractors Insurance @	1.0%	on		\$50,296.19
Bond @	1.0%	on		\$50,296.19
Contingency @	0.0%	on		\$51,302.12
		TOTAL COST for pay item		\$51,302
Additional Pay Item Notes :				
Remove Head Gate Building. Assumption the crew can remove 1/3 of the building per day. Crane is used to load items on flat bed figured using it half of the duration.				

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	2.067	Project	:	COPCO 1						
Description	:	Remove & Dispose of 8 screens									
Quantity	:	18,000.00	lbs								
Daily Production	:	18,000.00	lbs per	8	hour shift	Project #	:	2			
Work Days	:	1.0	Days			Estimator	:	Mihaela Tomulescu	lbs per	19800	
Unit Price	:	\$1.17	per lbs			Probable Low Cost Parameter	:	14400	Total Cost	\$18,913	
Total Cost	:	\$21,014			Probable High Cost Parameter	:	14400	Total Cost	\$25,217	Unit Price Per lbs	\$1.05
									\$1.40		

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	incl. in rate	incl. in rate		\$386.16
Laborer	Active	4.00	1.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate		\$1,465.60
Crawler Crane (270tn)	Active	2.00	1.0	8	16.00	E	\$399.50	incl. in rate	incl. in rate		\$6,392.00
Equipment Operator (medium)	Active	2.00	1.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate		\$1,060.48
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	incl. in rate	incl. in rate		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	incl. in rate	incl. in rate		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate		\$361.84
Steelworker	Active	6.00	1.0	8	48.00	L	\$65.52	incl. in rate	incl. in rate		\$3,144.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	4.00	1.0	8	32.00	E	\$31.90	incl. in rate	incl. in rate		\$1,020.80
Truck Driver (heavy)	Active	4.00	1.0	8	32.00	L	\$57.59	incl. in rate	incl. in rate		\$1,842.88
					Labor Hours	160			TOTAL LABOR		\$8,387.32
					Equipment Hours	64			TOTAL EQUIPMENT		\$7,458.83

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$838.73	\$838.73	
						TOTAL MATERIAL	\$838.73

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$8,387.32	Labor Burden @	49.7%	\$0.00	\$8,387.32				
Material Cost	\$838.73	Material Tax @	7.8%	\$65.00	\$903.73				
Equipment Cost	\$7,458.83	Equipment Tax @	0.0%	\$0.00	\$7,458.83				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$16,685			\$65	\$16,750				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead @	15.0%				\$2,512.48				
Installing Contractors Profit @	8.0%				\$1,339.99				
GC Markup on Subs @	5.0%				\$0.00				
					TOTAL MARKUP COSTS	\$3,852.47			
General Contractors Insurance @	1.0%	on		\$20,602.36	\$206				
Bond @	1.0%	on		\$20,602.36	\$206				
Contingency @	0.0%	on		\$21,014.41	\$0				
					TOTAL COST for pay item	\$21,014			

Additional Pay Item Notes :

Production based on crew 1 Forman, 2 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for 2 screens. Assuming 1 day of work.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	2.068	Project	:	COPCO 1						
Description	:	Remove & Dispose of 8 Water Gates									
Quantity	:	18,000.00 lbs									
Daily Production	:	18,000.00 lbs per	8	hour shift	Project #	:	2				
Work Days	:	1.0 Days	Estimator	:	Mihaela Tomulescu	lbs per	19800	Total Cost	\$17,822	Unit Price Per lbs	\$0.99
Unit Price	:	\$1.10 per lbs	Probable Low Cost Parameter	:	14400	Probable High Cost Parameter	:	14400	\$23,762	\$1.32	
Total Cost	:	\$19,802									

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate		\$370.16
Laborer	Active	4.00	1.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate		\$1,465.60
Crawler Crane (270tn)	Active	2.00	1.0	8	16.00	E	\$399.50	incl. in rate	incl. in rate		\$6,392.00
Equipment Operator (medium)	Active	2.00	1.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate		\$1,060.48
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	incl. in rate	incl. in rate		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	incl. in rate	incl. in rate		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate		\$361.84
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate		\$1,048.32
Truck, Flatbed (4x4, 10,000 gvw)	Active	4.00	1.0	8	32.00	E	\$31.90	incl. in rate	incl. in rate		\$1,020.80
Truck Driver (heavy)	Active	4.00	1.0	8	32.00	L	\$57.59	incl. in rate	incl. in rate		\$1,842.88
					Labor Hours	128			TOTAL LABOR		\$6,274.68
					Equipment Hours	64			TOTAL EQUIPMENT		\$7,458.83

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$627.47	\$627.47
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	1,500.00	LF	1.000	1,500.00	\$0.85	\$1,275.00
TOTAL MATERIAL						\$1,902.47

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$6,274.68	Labor Burden @	49.7%	\$0.00		\$6,274.68
Material Cost	\$1,902.47	Material Tax @	7.8%	\$147.44		\$2,049.91
Equipment Cost	\$7,458.83	Equipment Tax @	0.0%	\$0.00		\$7,458.83
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$15,636			\$147	DIRECT COST SUBTOTALS	\$15,783
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$15,783.42	\$2,367.51
Installing Contractors Profit @	8.0%				\$15,783.42	\$1,262.67
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$3,630.19
General Contractors Insurance @	1.0%		on		\$19,413.61	\$194
Bond @	1.0%		on		\$19,413.61	\$194
Contingency @	0.0%		on		\$19,801.88	\$0
					TOTAL COST for pay item	\$19,802

Additional Pay Item Notes :

Production based on crew 1 Foreman, 2 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for 2 gates. Assuming 1 day of work.

PAY ITEM INFORMATION			
PAY ITEM NUMBER :	2,069	Project :	COPCO 1
Description :	Remove & Dispose of 3 - 30" Dia. x 25' stand pipes	Project # :	2
Quantity :	6,000.00 LBS	Estimator :	Mihaela Tomulescu
Daily Production :	6,000.00 LBS per 8 hour shift	Probable Low Cost Parameter	LBS per 6600
Work Days :	1.0 Days	Probable High Cost Parameter	Total Cost \$4,912
Unit Price :	\$0.91 per LBS		Unit Price Per LBS \$0.82
Total Cost :	\$5,458		\$6,550

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (35tn)	Active	1.00	1.0	8	8.00	E	\$116.30	incl. in rate	incl. in rate	\$930.40
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Truck Driver (light)	Active	1.00	1.0	8	8.00	L	\$56.29	incl. in rate	incl. in rate	\$450.32
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	incl. in rate	incl. in rate	\$386.16
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate	\$1,048.32
					Labor Hours	56	TOTAL LABOR			\$3,164.88
					Equipment Hours	16	TOTAL EQUIPMENT			\$1,185.60

MATERIAL COSTS			
Description	Item	Order	Material
			TOTAL MATERIAL
			\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$3,164.88	Labor Burden @	49.7%	\$0.00	\$3,164.88
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00
Equipment Cost	\$1,185.60	Equipment Tax @	0.0%	\$0.00	\$1,185.60
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$4,350			\$0	\$4,350
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$4,350.48
Installing Contractors Profit@	8.0%				\$4,350.48
GC Markup on Subs @	5.0%				\$0.00
					TOTAL MARKUP COSTS
					\$1,000.61
General Contractors Insurance @	1.0%		on		\$5,351.09
Bond @	1.0%		on		\$5,351.09
Contingency @	0.0%		on		\$5,458.11
					TOTAL COST for pay item
					\$5,458

Additional Pay Item Notes :

Crew formed of 2 Steelworker to cut the pipes and 2 Laborers that will use the crane to load the pipe in the truck.

PAY ITEM INFORMATION												
PAY ITEM NUMBER	2.070			Project	COPCO 1							
Description	Remove & Dispose of 14' Dia. penstock pipe											
Quantity	256,000.00	LBS										
Daily Production	20,000.00	LBS per	8	hour shift	Project #	2						
Work Days	12.8	Days										
Unit Price	\$1.31	per LBS			Estimator	Mihaela Tomulescu	LBS per	23000	Total Cost	\$284,926	Unit Price Per LBS	\$1.11
Total Cost	\$335,207			Probable Low Cost Parameter			Probable High Cost Parameter	15000	\$419,009	\$1.64		

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active		2.00	12.8	8	204.80	L	\$46.27	incl. in rate	incl. in rate	\$9,476.10
Steelworker	Active		8.00	12.8	8	819.20	L	\$65.52	incl. in rate	incl. in rate	\$53,673.98
Equipment Operator (crane)	Active		2.00	12.8	8	204.80	L	\$68.41	incl. in rate	incl. in rate	\$14,010.37
Crawler Crane (130tn)	Active		2.00	12.8	8	204.80	E	\$258.66	incl. in rate	incl. in rate	\$52,973.57
Truck, Off-Road, Articulated Rear, 20cy	Active		2.00	12.8	8	204.80	E	\$111.64	incl. in rate	incl. in rate	\$22,863.87
Hydraulic Excavator (2.5cy)	Active		2.00	12.8	8	204.80	E	\$203.63	incl. in rate	incl. in rate	\$41,703.42
Welder	Active		2.00	12.8	8	204.80	L	\$7.84	incl. in rate	incl. in rate	\$1,605.12
Gas Welding Machine	Active		2.00	12.8	8	204.80	E	\$2.88	incl. in rate	incl. in rate	\$589.21
Carpenters, Journeyman	Active		2.00	12.8	8	204.80	L	\$65.37	incl. in rate	incl. in rate	\$13,387.78
Truck Driver (heavy)	Active		2.00	12.8	8	204.80	L	\$57.59	incl. in rate	incl. in rate	\$11,794.43
Equipment Operator (oilier)	Active		2.00	12.8	8	204.80	L	\$62.94	incl. in rate	incl. in rate	\$12,890.11
Loader, FE Rubber Tire (8.6cy)	Active		1.00	12.8	8	102.40	E	\$221.50	incl. in rate	incl. in rate	\$22,681.60
						Labor Hours	2048	TOTAL LABOR		\$116,837.89	
						Equipment Hours	921.6	TOTAL EQUIPMENT		\$140,811.67	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$5,841.89	\$5,841.89	
Fuel charges and consumable for field repair, lubrication, tire, etc 1% labor	1.00	LS	1.000	1.00	\$1,408.12	\$1,408.12	
						TOTAL MATERIAL	\$7,250.01

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (2% of total)	2.56	ton	1.000	\$595.00	\$1,523.20	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	68.00	mile	1.000	\$7.25	\$493.00	
					TOTAL SUBCONTRACTS	\$2,016.20

SUMMARY OF COSTS									
Labor Cost	\$116,837.89	Labor Burden @	49.7%	\$0.00	\$116,837.89				
Material Cost	\$7,250.01	Material Tax @	7.8%	\$561.88	\$7,811.89				
Equipment Cost	\$140,811.67	Equipment Tax @	0.0%	\$0.00	\$140,811.67				
Subcontractors	\$2,016.20				\$2,016.20				
DIRECT COST SUBTOTALS	\$266,916			\$562	\$267,478				
Installing Contractors Overhead@	15.0%			\$265,461.45	\$39,819.22				
Installing Contractors Profit@	8.0%			\$265,461.45	\$21,236.92				
GC Markup on Subs @	5.0%			\$2,016.20	\$100.81				
					TOTAL MARKUP COSTS	\$61,156.94			
General Contractors Insurance @	1.0%	on		\$328,634.59	\$3,286				
Bond @	1.0%	on		\$328,634.59	\$3,286				
Contingency @	0.0%	on		\$335,207.28	\$0				
					TOTAL COST for pay item	\$335,207			

Additional Pay Item Notes :

Removal for pipe, expansion joints and support rings using E-19 crews for demolition. 2 Crews formed from 1 forman, 2 steelworker, 1 welder, 2 carpenters. 3 equipment operators 1 for the crane, 1 excavator and 1 loader. 2 truck driver to drive off road the rubbish. Assumed that the steel includes exterior coatings containing heavy metals so the scrap metal painted with heavy metals will be sent to Yreka salvage yard for recycling 2% of total lbs, average miles 34. Fuel charges and consumable for field repair, lubrication, tire, etc are applied.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 2.071	Project	: COPCO1								
Description	: Remove & Dispose of 10' Dia. penstock pipe										
Quantity	: 270,000.00 LBS										
Daily Production	: 20,000.00 LBS per	8	hour shift								
Work Days	: 13.5 Days										
Unit Price	: \$1.37 per LBS	Project #	: 2	Estimator	: Mihaela Tomulescu	LBS per	23000	Total Cost	\$315,225	Unit Price Per LBS	\$1.17
Total Cost	: \$370,853	Probable Low Cost Parameter		Probable High Cost Parameter		LBS per	15000	Total Cost	\$463,566	Unit Price Per LBS	\$1.72

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active		2.00	13.5	8	216.00	L	\$46.27	incl. in rate	incl. in rate	\$9,994.32
Steelworker	Active		8.00	13.5	8	864.00	L	\$65.52	incl. in rate	incl. in rate	\$56,609.28
Equipment Operator (crane)	Active		2.00	13.5	8	216.00	L	\$68.41	incl. in rate	incl. in rate	\$14,776.56
Crawler Crane (130tn)	Active		2.00	13.5	8	216.00	E	\$258.66	incl. in rate	incl. in rate	\$55,870.56
Truck, Off-Road, Articulated Rear, 20cy	Active		2.00	13.5	8	216.00	E	\$111.64	incl. in rate	incl. in rate	\$24,114.24
Hydraulic Excavator (5.0cy)	Active		2.00	13.5	8	216.00	E	\$274.63	incl. in rate	incl. in rate	\$59,320.08
Welder	Active		2.00	13.5	8	216.00	L	\$7.84	incl. in rate	incl. in rate	\$1,692.90
Gas Welding Machine	Active		2.00	13.5	8	216.00	E	\$2.88	incl. in rate	incl. in rate	\$621.43
Carpenters, Journeyman	Active		2.00	13.5	8	216.00	L	\$65.37	incl. in rate	incl. in rate	\$14,119.92
Carpenter Foreman (out)	Active		2.00	13.5	8	216.00	L	\$46.40	incl. in rate	incl. in rate	\$10,022.40
Equipment Operator (oilier)	Active		2.00	13.5	8	216.00	L	\$62.94	incl. in rate	incl. in rate	\$13,595.04
Loader, FE Rubber Tire (8.6cy)	Active		1.00	13.5	8	108.00	E	\$221.50	incl. in rate	incl. in rate	\$23,922.00
						Labor Hours	2160	TOTAL LABOR		\$120,810.42	
						Equipment Hours	972	TOTAL EQUIPMENT		\$163,848.31	

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$6,040.52	\$6,040.52		
Fuel charges and consumable for field repair, lubrication, tire, etc 2% labor	1.00	LS	1.000	1.00	\$3,276.97	\$3,276.97		
							TOTAL MATERIAL	\$9,317.49

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (1% of total)	1.35	ton	1.000	\$595.00	\$803.25	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	\$7.25	\$246.50	
					TOTAL SUBCONTRACTS	\$1,049.75

SUMMARY OF COSTS									
Labor Cost	\$120,810.42	Labor Burden @	49.7%	\$0.00	\$120,810.42				
Material Cost	\$9,317.49	Material Tax @	7.8%	\$722.11	\$10,039.59				
Equipment Cost	\$163,848.31	Equipment Tax @	0.0%	\$0.00	\$163,848.31				
Subcontractors	\$1,049.75				\$1,049.75				
DIRECT COST SUBTOTALS	\$295,026			\$722	DIRECT COST SUBTOTALS \$295,748				
Installing Contractors Overhead@	15.0%	Crew		\$294,698.32	\$44,204.75				
Installing Contractors Profit@	8.0%	Material		\$294,698.32	\$23,575.87				
GC Markup on Subs @	5.0%	Subs		\$1,049.75	\$52.49				
					TOTAL MARKUP COSTS \$67,833.10				
General Contractors Insurance @	1.0%	on		\$363,581.17	\$3,636				
Bond @	1.0%	on		\$363,581.17	\$3,636				
Contingency @	0.0%	on		\$370,852.80	\$0				
					TOTAL COST for pay item \$370,853				

Additional Pay Item Notes :

Removal for pipe, expansion joints and support rings using E-19 crews for demolition. 2 Crews formed from 1 forman, 4 steelworker, 1 welder, 2 carpenters. 3 equipment operators 1 for the crane, 1 excavator and 1 loader. 2 truck drivers to drive off road the rubbish. Assumed that the steel includes exterior coatings containing heavy metals so the scrap metal painted with heavy metals will be sent to Yreka salvage yard for recycling 1% of total lbs, average miles 34. Fuel charges and consumable for field repair, lubrication, tire, etc are applied.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.085	Project	: Copco 1						
Description	: Access/Haul Road Improvements - Soil Excavation								
Quantity	: 1,600.00 cy								
Daily Production	: 1,000.00 cy per 8 hour shift	Project #	: 2						
Work Days	: 1.6 Days	Estimator	: Michael Barba	cy per	: 1150	Total Cost	: \$23,805	Unit Price Per cy	: \$14.88
Unit Price	: \$17.50 per cy	Probable Low Cost Parameter	: 800	Total Cost	: \$33,607	Unit Price Per cy	: \$21.00		
Total Cost	: \$28,006	Probable High Cost Parameter	: 800	Total Cost	: \$33,607	Unit Price Per cy	: \$21.00		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Dozer (310hp)(CATD8)	Active	2.00	1.6	8	25.60	E	\$197.60	incl. in rate	incl. in rate	\$5,058.56
Hydraulic Excavator (5.0cy)	Active	1.00	1.6	8	12.80	E	\$274.63	incl. in rate	incl. in rate	\$3,515.26
Loader, FE Rubber Tire (5.25cy)	Active	2.00	1.6	8	25.60	E	\$75.42	incl. in rate	incl. in rate	\$1,930.75
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.6	8	25.60	E	\$111.64	incl. in rate	incl. in rate	\$2,857.98
Equipment Operator (medium)	Active	4.00	1.6	8	51.20	L	\$66.28	incl. in rate	incl. in rate	\$3,393.54
Equipment Operator (light)	Active	1.00	1.6	8	12.80	L	\$64.90	incl. in rate	incl. in rate	\$830.72
Truck Driver (heavy)	Active	1.00	1.6	8	12.80	L	\$57.59	incl. in rate	incl. in rate	\$737.15
Laborer	Active	4.00	1.6	8	51.20	L	\$45.80	incl. in rate	incl. in rate	\$2,344.96
Labor Foreman	Active	1.00	1.6	8	12.80	L	\$48.27	incl. in rate	incl. in rate	\$617.86
		1.00	1.6	8	12.80	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		1.00	1.6	8	12.80	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		1.00	1.6	8	12.80	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	1.6	8	0.00					\$0.00
			1.6	8	0.00					\$0.00
			1.6	8	0.00					\$0.00
			1.6	8	0.00					\$0.00
			1.6	8	0.00					\$0.00
Labor Hours					140.8	TOTAL LABOR				\$7,924.22
Equipment Hours					89.6	TOTAL EQUIPMENT				\$13,362.56

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$7,924.22	Labor Burden @	49.7%	\$0.00	\$7,924.22				
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00				
Equipment Cost	\$13,362.56	Equipment Tax @	7.75%	\$1,035.60	\$14,398.16				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$21,287			\$1,036	\$22,322				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$22,322.38				
Installing Contractors Profit@	8.0%				\$22,322.38				
GC Markup on Subs @	5.0%				\$0.00				
					TOTAL MARKUP COSTS				
					\$5,134.15				
General Contractors Insurance @	1.0%		on	\$27,456.53	\$275				
Bond @	1.0%		on	\$27,456.53	\$275				
Contingency @	0.0%		on	\$28,005.66	\$0				
TOTAL COST for pay item					\$28,006				
Additional Pay Item Notes :									

PAY ITEM INFORMATION										
PAY ITEM NUMBER	: 2.087	Project	: Copco 1							
Description	: County Road Improvements - Asphalt Overlay Repair - Juniper Road									
Quantity	: 3.00	mile								
Daily Production	: 0.25	mile per	8	hour shift	Project #	: 2				
Work Days	: 12.0	Days								
Unit Price	: \$383,087.98	per mile	Estimator	: Michael Barba	mile per	0.2875	Total Cost	\$976,874	Unit Price Per mile	\$325,624.78
Total Cost	: \$1,149,264	Probable Low Cost Parameter		Probable High Cost Parameter		0.2	\$1,379,117	\$459,705.57		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Asphalt Paver (80hp)	Active	1.00	12.0	8	96.00	E	\$180.11	incl. in rate	incl. in rate	\$17,290.56
Roller, Dbl Drum (steel wheel, 5.0 - 7.9 MTn)	Active	1.00	12.0	8	96.00	E	\$64.77	incl. in rate	incl. in rate	\$6,217.92
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	12.0	8	192.00	E	\$70.35	incl. in rate	incl. in rate	\$13,507.20
Equipment Operator (light)	Active	1.00	12.0	8	96.00	L	\$64.90	incl. in rate	incl. in rate	\$6,230.40
Equipment Operator (medium)	Active	2.00	12.0	8	192.00	L	\$66.28	incl. in rate	incl. in rate	\$12,725.76
Truck Driver (light)	Active	1.00	12.0	8	96.00	L	\$56.29	incl. in rate	incl. in rate	\$5,403.84
Laborer	Active	2.00	12.0	8	192.00	L	\$45.80	incl. in rate	incl. in rate	\$8,793.60
		1.00	12.0	8	96.00	0	\$0.00	\$0.00		\$0.00
		1.00	12.0	8	96.00	0	\$0.00	\$0.00		\$0.00
		1.00	12.0	8	96.00	0	\$0.00	\$0.00		\$0.00
		1.00	12.0	8	96.00	0	\$0.00	\$0.00		\$0.00
		1.00	12.0	8	96.00	0	\$0.00	\$0.00		\$0.00
750 HP Pavement Profiler	Active	1.00	12.0	8	96.00	E	\$729.37	incl. in rate	incl. in rate	\$70,019.52
			12.0	8	0.00					\$0.00
			12.0	8	0.00					\$0.00
			12.0	8	0.00					\$0.00
			12.0	8	0.00					\$0.00
Labor Hours					576	TOTAL LABOR				\$33,153.60
Equipment Hours					480	TOTAL EQUIPMENT				\$107,035.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Asphalt for 3" Overlay	6,969.00		1.000	6,969.00	\$100.00	\$696,900.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
TOTAL MATERIAL						\$696,900.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Pavement Markings	3	miles		\$6,500.00	\$19,500.00
TOTAL SUBCONTRACTS					\$19,500.00

SUMMARY OF COSTS						
Labor Cost	\$33,153.60	Labor Burden @	49.7%	\$0.00	\$33,153.60	
Material Cost	\$696,900.00	Material Tax @	7.75%	\$54,009.75	\$750,909.75	
Equipment Cost	\$107,035.20	Equipment Tax @	7.75%	\$8,295.23	\$115,330.43	
Subcontractors	\$19,500.00				\$19,500.00	
DIRECT COST SUBTOTALS		\$856,589	\$62,305	DIRECT COST SUBTOTALS		\$918,894
Installing Contractors Overhead @	15.0%			\$899,393.78	\$134,909.07	
Installing Contractors Profit @	8.0%			\$899,393.78	\$71,951.50	
GC Markup on Subs @	5.0%			\$19,500.00	\$975.00	
TOTAL MARKUP COSTS					\$207,835.57	
General Contractors Insurance @	1.0%	on		\$1,126,729.35	\$11,267	
Bond @	1.0%	on		\$1,126,729.35	\$11,267	
Contingency @	0.0%	on		\$1,149,263.93	\$0	
TOTAL COST for pay item					\$1,149,264	

Additional Pay Item Notes :

As per Page 142 of the Klamath Detailed Plan 3" is thickness of asphalt overlay.

PAY ITEM COST DETAIL WORKSHEET

2.088 County Road Improvements - Asphalt Overlay Repair - Copco Road

PAY ITEM INFORMATION										
PAY ITEM NUMBER	: 2.088	Project		: Copco 1						
Description	: County Road Improvements - Asphalt Overlay Repair - 4									
Quantity	: 19.00	mile								
Daily Production	: 0.50	mile per	8	hour shift	Project #	: 2				
Work Days	: 38.0	Days	Estimator : Michael Barba							
Unit Price	: \$352,027.38	per mile	Probable Low Cost Parameter		0.575	mile per	Total Cost	\$5,685,242	Unit Price Per mile	\$299,223.27
Total Cost	: \$6,688,520	Probable High Cost Parameter		0.4	mile per	Total Cost	\$8,026,224	Unit Price Per mile	\$422,432.85	

CREW COSTS										
Description	Active	# in Idle	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Asphalt Paver (80hp)	Active	2.00	38.0	8	608.00	E	\$180.11	incl. in rate	incl. in rate	\$109,506.88
Roller, Dbl Drum (steel wheel, 5.0 - 7.9 MTn)	Active	3.00	38.0	8	912.00	E	\$64.77	incl. in rate	incl. in rate	\$59,070.24
Truck, On-Highway Dump (6x4, 12cy)	Active	4.00	38.0	8	1,216.00	E	\$70.35	incl. in rate	incl. in rate	\$85,545.60
Equipment Operator (light)	Active	3.00	38.0	8	912.00	L	\$64.90	incl. in rate	incl. in rate	\$59,188.80
Equipment Operator (medium)	Active	2.00	38.0	8	608.00	L	\$66.28	incl. in rate	incl. in rate	\$40,298.24
Truck Driver (light)	Active	4.00	38.0	8	1,216.00	L	\$56.29	incl. in rate	incl. in rate	\$68,448.64
Laborer	Active	2.00	38.0	8	608.00	L	\$45.80	incl. in rate	incl. in rate	\$27,846.40
		1.00	38.0	8	304.00	0	\$0.00	\$0.00		\$0.00
		1.00	38.0	8	304.00	0	\$0.00	\$0.00		\$0.00
		1.00	38.0	8	304.00	0	\$0.00	\$0.00		\$0.00
		1.00	38.0	8	304.00	0	\$0.00	\$0.00		\$0.00
		1.00	38.0	8	304.00	0	\$0.00	\$0.00		\$0.00
750 HP Pavement Profiler		2.00	38.0	8	608.00		\$729.37	incl. in rate	incl. in rate	\$443,456.96
			38.0	8	0.00					\$0.00
			38.0	8	0.00					\$0.00
			38.0	8	0.00					\$0.00
			38.0	8	0.00					\$0.00
Labor Hours					3344	TOTAL LABOR				\$195,782.08
Equipment Hours					2736	TOTAL EQUIPMENT				\$254,122.72

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Asphalt for 3" Overlay	44,140.80		1.000	44,140.80	\$100.00	\$4,414,080.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
			1.000	0.00	\$0.00	\$0.00
TOTAL MATERIAL						\$4,414,080.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Pavement Markings	19	miles		\$6,500.00	\$123,500.00
TOTAL SUBCONTRACTS					\$123,500.00

SUMMARY OF COSTS					
Labor Cost	\$195,782.08	Labor Burden @	49.7%	\$0.00	\$195,782.08
Material Cost	\$4,414,080.00	Material Tax @	7.75%	\$342,091.20	\$4,756,171.20
Equipment Cost	\$254,122.72	Equipment Tax @	7.75%	\$19,694.51	\$273,817.23
Subcontractors	\$123,500.00				\$123,500.00
DIRECT COST SUBTOTALS	\$4,987,485			\$361,786	\$5,349,271
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$5,225,770.51
Installing Contractors Profit @	8.0%				\$5,225,770.51
GC Markup on Subs @	5.0%				\$123,500.00
TOTAL MARKUP COSTS					\$1,208,102.22
General Contractors Insurance @	1.0%		on	\$6,557,372.73	\$65,574
Bond @	1.0%		on	\$6,557,372.73	\$65,574
Contingency @	0.0%		on	\$6,688,520.18	\$0
TOTAL COST for pay item					\$6,688,520

Additional Pay Item Notes :

As per Page 142 of the Klamath Detailed Plan 3" is thickness of asphalt overlay.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	2.089	Project :	Copco 1		
Description :	Mallard Cove - Concrete total		Project # :	2	
Quantity :	106.00 CY	Estimator :	Eric Jones		
Daily Production :	40.00 CY per	Probable Low Cost Parameter	CY per	Total Cost	Unit Price Per CY
Work Days :	2.7 Days	8	46	\$30,462	\$287.38
Unit Price :	\$338.09 per CY	Probable High Cost Parameter	34	\$41,214	\$388.81
Total Cost :	\$35,838				

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Excavator (5.0cy)	Active	2.00	2.7	8	43.20	E	\$274.63	incl. in rate	incl. in rate	\$11,864.02
Loader, FE Rubber Tire (5.25cy)	Active	1.00	2.7	8	21.60	E	\$75.42	incl. in rate	incl. in rate	\$1,629.07
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	2.7	8	43.20	E	\$70.35	incl. in rate	incl. in rate	\$3,039.12
Truck, Pickup (4x4, 3/4tn)	Active	1.00	2.7	8	21.60	E	\$16.94	incl. in rate	incl. in rate	\$365.90
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	2.7	8	21.60	E	\$36.58	incl. in rate	incl. in rate	\$790.13
Truck Driver (heavy)	Active	1.00	2.7	8	21.60	L	\$57.59	incl. in rate	incl. in rate	\$1,243.94
Labor Foreman (out)	Active	1.00	2.7	8	21.60	L	\$46.27	incl. in rate	incl. in rate	\$999.43
Laborer	Active	3.00	2.7	8	64.80	L	\$45.80	incl. in rate	incl. in rate	\$2,967.84
Equipment Operator (medium)	Active	3.00	2.7	8	64.80	L	\$66.28	incl. in rate	incl. in rate	\$4,294.94
0		0.00	2.7	8	0.00	0	\$0.00	\$0.00		\$0.00
0		1.00	2.7	8	21.60	0	\$0.00	\$0.00		\$0.00
		1.00	2.7	8	21.60	0	\$0.00	\$0.00		\$0.00
			2.7	8	0.00					\$0.00
			2.7	8	0.00					\$0.00
			2.7	8	0.00					\$0.00
			2.7	8	0.00					\$0.00
			2.7	8	0.00					\$0.00
Labor Hours					172.8	TOTAL LABOR				\$9,506.16
Equipment Hours					151.2	TOTAL EQUIPMENT				\$17,688.24

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		ea	1.050	0.00	\$144.13	\$0.00
		ea	1.050	0.00	\$1.43	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
		EA			\$0.00
		EA			\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$9,506.16	Labor Burden @	0.0%		\$9,506.16
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$17,688.24	Equipment Tax @	7.75%	\$1,370.84	\$19,059.08
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$27,194			\$1,371	DIRECT COST SUBTOTALS \$28,565
Installing Contractors Overhead @	15.0%	Crew			\$4,284.79
Installing Contractors Profit @	8.0%	Material			\$2,285.22
GC Markup on Subs @	5.0%	Subs			\$0.00
					TOTAL MARKUP COSTS \$6,570.00
General Contractors Insurance @	1.0%		on	\$35,135.24	\$351
Bond @	1.0%		on	\$35,135.24	\$351
Contingency @	0.0%		on	\$35,837.95	\$0
TOTAL COST for pay item					\$35,838

Additional Pay Item Notes :

1 excavator with breaker to perform demolition, 1 excavator to pile material, 1 loader to support loading operation, 1 foreman with truck to oversee operation, 3 laborers to direct trucks and support equipment demolition operations. Production currently shows 2 loads of concrete material per truck and duration of 3 days, the crew output is low due to the items being demolished are small and spaced out.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 2.094	Project	: Copco 1
Description	: Mallard Cove - Parking area to be regraded		
Quantity	: 2.50 AC		
Daily Production	: 1.00 AC per	8	hour shift
Work Days	: 2.5 Days	Project #	: 2
Unit Price	: \$7,451.08 per AC	Estimator	: Eric Jones
Total Cost	: \$18,628	Probable Low Cost Parameter	1.1
		Probable High Cost Parameter	0.85
		AC per	Total Cost
			\$16,765
		Unit Price Per AC	\$6,705.97
			\$8,568.74

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Dozer (125hp)(CATD6)	Active	1.00	2.5	8	20.00	E	\$82.17	incl. in rate	incl. in rate	\$1,643.40
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	2.5	8	20.00	E	\$70.35	incl. in rate	incl. in rate	\$1,407.00
Grader, 180hp, 13' blade	Active	1.00	2.5	8	20.00	E	\$80.79	incl. in rate	incl. in rate	\$1,615.80
Roller, Single Drum (steel wheel, 12.0 - 14.9 MTn)	Active	1.00	2.5	8	20.00	E	\$72.79	incl. in rate	incl. in rate	\$1,455.80
Truck, Pickup (4x4, 3/4tn)	Active	1.00	2.5	8	20.00	E	\$16.94	incl. in rate	incl. in rate	\$338.80
Truck Driver (heavy)	Active	1.00	2.5	8	20.00	L	\$57.59	incl. in rate	incl. in rate	\$1,151.80
Labor Foreman (out)	Active	1.00	2.5	8	20.00	L	\$46.27	incl. in rate	incl. in rate	\$925.40
Laborer	Active	2.00	2.5	8	40.00	L	\$45.80	incl. in rate	incl. in rate	\$1,832.00
Equipment Operator (medium)	Active	3.00	2.5	8	60.00	L	\$66.28	incl. in rate	incl. in rate	\$3,976.80
0	Active	2.00	2.5	8	40.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	3.00	2.5	8	60.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active	1.00	2.5	8	20.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
			2.5	8	0.00					\$0.00
			2.5	8	0.00					\$0.00
			2.5	8	0.00					\$0.00
			2.5	8	0.00					\$0.00
			2.5	8	0.00					\$0.00
				Labor Hours	140				TOTAL LABOR	\$7,886.00
				Equipment Hours	100				TOTAL EQUIPMENT	\$6,460.80

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
		lbs PLS	1.050	0.00	\$10.69	\$0.00	
		lbs PLS	1.050	0.00	\$8.17	\$0.00	
		lbs PLS	1.000	0.00	\$14.40	\$0.00	
		lbs PLS	1.000	0.00	\$8.96	\$0.00	
		lbs PLS	1.000	0.00	\$5.85	\$0.00	
		lbs PLS	1.000	0.00	\$30.24	\$0.00	
		lbs	1.000	0.00	\$34.02	\$0.00	
		lbs	1.000	0.00	\$10.80	\$0.00	
		ea	1.000	0.00	\$18.00	\$0.00	
		ea	1.000	0.00	\$0.09	\$0.00	
		ea	1.000	0.00	\$6.30	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ls	1.000	0.00	\$8,000.00	\$0.00	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
		EA			\$0.00	
		EA			\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS

Labor Cost	\$7,886.00	Labor Burden @	0.0%		\$7,886.00
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$6,460.80	Equipment Tax @	7.75%	\$500.71	\$6,961.51
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$14,347			\$501	DIRECT COST SUBTOTALS \$14,848
Installing Contractors Overhead @	15.0%	Crew			\$2,227.13
Installing Contractors Profit @	8.0%	Material			\$1,187.80
GC Markup on Subs @	5.0%	Subs			\$0.00
					TOTAL MARKUP COSTS \$3,414.93
General Contractors Insurance @	1.0%		on	\$18,262.44	\$183
Bond @	1.0%		on	\$18,262.44	\$183
Contingency @	0.0%		on	\$18,627.69	\$0
					TOTAL COST for pay item \$18,628

Additional Pay Item Notes :

Production is based off of 12 man crew finishing .5 acres a shift, dozers will be regrading area, grader will be used to fine grade, tractors will be used to rip material for seeding, seed sprayers will use Idaho Fescue seed, water truck will continuously water area for 2 weeks.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 2.096	Project	: COPCO 1						
Description	: Copco Cove - Dock abutment railing made of 2.5" dia. steel pipe								
Quantity	: 1.00 EA								
Daily Production	: 2.00 EA per 8 hour shift	Project #	: 2						
Work Days	: 0.5 Days	Estimator	: Mihaela Tomulescu	EA per	: 2.2	Total Cost	: \$1,302	Unit Price Per EA	: \$1,302.03
Unit Price	: \$1,446.70 per EA	Probable Low Cost Parameter		Probable High Cost Parameter	: 1.8	Total Cost	: \$1,591	Unit Price Per EA	: \$1,591.37
Total Cost	: \$1,447								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	1.00	0.5	8	4.00	L	\$45.80	incl. in rate	incl. in rate	\$183.20
Steelworker	Active	1.00	0.5	8	4.00	L	\$65.52	incl. in rate	incl. in rate	\$262.08
Truck Driver (light)	Active	1.00	0.5	8	4.00	L	\$56.29	incl. in rate	incl. in rate	\$225.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
					Labor Hours	12	TOTAL LABOR			\$670.44
					Equipment Hours	4	TOTAL EQUIPMENT			\$446.56

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$33.52	\$33.52	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$33.52

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$670.44	Labor Burden @	49.7%	\$0.00		\$670.44			
Material Cost	\$33.52	Material Tax @	7.8%	\$2.60		\$36.12			
Equipment Cost	\$446.56	Equipment Tax @	0.0%	\$0.00		\$446.56			
Subcontractors	\$0.00					\$0.00			
DIRECT COST SUBTOTALS	\$1,151			\$3	DIRECT COST SUBTOTALS	\$1,153			
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$172.97			
Installing Contractors Profit@	8.0%	Material				\$92.25			
GC Markup on Subs @	5.0%	Subs				\$0.00			
					TOTAL MARKUP COSTS	\$265.22			
General Contractors Insurance @	1.0%	on			\$1,418.34	\$14			
Bond @	1.0%	on			\$1,418.34	\$14			
Contingency @	0.0%	on			\$1,446.70	\$0			
TOTAL COST for pay item						\$1,447			
Additional Pay Item Notes :									
Assumed 1/2 day of work done by 1 Steelman to cut and 1 Laborer to load in the truck.									

PAY ITEM INFORMATION

PAY ITEM NUMBER :	2.100	Project :	Copco 1		
Description :	Diversion Tunnel Lining		Estimator :	Eric Jones	
Quantity :	1.00 LS	Project # :	2		
Daily Production :	0.33 LS per	Probable Low Cost Parameter	0.363	Total Cost	\$220,360
Work Days :	3.0 Days	Probable High Cost Parameter	0.2805	Unit Price Per LS	\$281,570.98
Unit Price :	\$244,844.33 per LS				
Total Cost :	\$244,844				

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	3.00	3.0	8	72.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	1.00	3.0	8	24.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	2.00	3.0	8	48.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	0.00	3.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0	Active	0.00	3.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
			3.0	8	0.00					\$0.00	
			3.0	8	0.00					\$0.00	
			3.0	8	0.00					\$0.00	
			3.0	8	0.00					\$0.00	
			3.0	8	0.00					\$0.00	
Labor Hours					0	TOTAL LABOR					\$0.00
Equipment Hours					0	TOTAL EQUIPMENT					\$0.00

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		lbs PLS	1.050	0.00	\$10.69	\$0.00
		lbs PLS	1.050	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Tunnel Lining (Shotcrete with Reinforcement)	1	LS	RSMs (569 CY @ \$401.78/CY)	\$228,612.82	\$228,612.82
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$228,612.82

SUMMARY OF COSTS

Labor Cost	\$0.00	Labor Burden @	0.0%	\$0.00	
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	
Equipment Cost	\$0.00	Equipment Tax @	7.75%	\$0.00	
Subcontractors	\$228,612.82			\$228,612.82	
DIRECT COST SUBTOTALS	\$228,613			\$0	
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$0.00
Installing Contractors Profit @	8.0%				\$0.00
GC Markup on Subs @	5.0%				\$228,612.82
					\$11,430.64
TOTAL MARKUP COSTS					\$11,430.64
General Contractors Insurance @	1.0%	on			\$240,043.46
Bond @	1.0%	on			\$240,043.46
Contingency @	0.0%	on			\$244,844.33
					\$0
TOTAL COST for pay item					\$244,844

Additional Pay Item Notes :

Subcontract will reinforce and shotcrete diversion tunnels

PAY ITEM COST DETAIL WORKSHEET

3.008 Remove Water from behind Cofferdams

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.008	Project :	Copco 2		
Description :	Remove Water from behind Cofferdams	Project # :	3		
Quantity :	36,000.00 GAL	Estimator :	Eric Jones		
Daily Production :	36,000.00 GAL per 8 hour shift	Probable Low Cost Parameter :	39600	Total Cost	Unit Price Per GAL
Work Days :	1.0 Days	Probable High Cost Parameter :	32400	\$4,817	\$0.13
Unit Price :	\$0.15 per GAL			\$5,887	\$0.16
Total Cost :	\$5,352				

CREW COSTS

Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Submersible Trash Pump, 3" & 4"	Active		1.00	1.0	8	8.00	E	\$3.87	incl. in rate	incl. in rate	\$30.96
Hydraulic Excavator (5.0cy)	Active		1.00	1.0	8	8.00	E	\$274.63	incl. in rate	incl. in rate	\$2,197.04
Truck, Pickup (4x4, 3/4tn)	Active		1.00	1.0	8	8.00	E	\$16.94	incl. in rate	incl. in rate	\$135.52
Labor Foreman (out)	Active		1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Laborer	Active		2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Equipment Operator (medium)	Active		1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
			1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
			2.00	1.0	8	16.00	0	\$0.00	\$0.00		\$0.00
			1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
			1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
			1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
			1.00	1.0	8	8.00	0	\$0.00	\$0.00		\$0.00
Intake and Discharge Hose, 3"			4.00	1.0	8	32.00	E	\$2.50			\$80.00
				1.0	8	0.00					\$0.00
				1.0	8	0.00					\$0.00
				1.0	8	0.00					\$0.00
				1.0	8	0.00					\$0.00
						Labor Hours		32		TOTAL LABOR	\$1,633.20
						Equipment Hours		56		TOTAL EQUIPMENT	\$2,443.52

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
		cy	1.300	0.00	\$65.00	\$0.00	
		lbs PLS	1.000	0.00	\$8.17	\$0.00	
		lbs PLS	1.000	0.00	\$14.40	\$0.00	
		lbs PLS	1.000	0.00	\$8.96	\$0.00	
		lbs PLS	1.000	0.00	\$5.85	\$0.00	
		lbs PLS	1.000	0.00	\$30.24	\$0.00	
		lbs	1.000	0.00	\$34.02	\$0.00	
		lbs	1.000	0.00	\$10.80	\$0.00	
		ea	1.000	0.00	\$18.00	\$0.00	
		ea	1.000	0.00	\$0.09	\$0.00	
		ea	1.000	0.00	\$6.30	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ls	1.000	0.00	\$8,000.00	\$0.00	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS

Labor Cost	\$1,633.20	Labor Burden @	0.0%		\$1,633.20
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$2,443.52	Equipment Tax @	7.75%	\$189.37	\$2,632.89
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$4,077			\$189	DIRECT COST SUBTOTALS \$4,266
Installing Contractors Overhead @	15.0%			\$4,266.09	\$639.91
Installing Contractors Profit @	8.0%			\$4,266.09	\$341.29
GC Markup on Subs @	10.0%			\$0.00	\$0.00
					TOTAL MARKUP COSTS \$981.20
General Contractors Insurance @	1.0%	on		\$5,247.29	\$52
Bond @	1.0%	on		\$5,247.29	\$52
Contingency @	0.0%	on		\$5,352.24	\$0
					TOTAL COST for pay item \$5,352

Additional Pay Item Notes :

3" pump will pump down 36,000 gals in .25 of a shift, It will take a full day to set pump up and to pump down area. Excavator will be used to set pump and hoses, laborers will assist equipment with setting up pump and maintaining the pump, 1 foreman with truck will oversee operation.

PAY ITEM COST DETAIL WORKSHEET

3.009 Remove Water from behind Tailrace Cofferdam

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.009	Project :	Copco 2		
Description :	Remove Water from behind Tailrace Cofferdam				
Quantity :	400,000.00 GAL	Project # :	3		
Daily Production :	100,000.00 GAL per	Estimator :	Eric Jones	GAL per	Total Cost
Work Days :	4.0 Days	Probable Low Cost Parameter	110000	\$9,258	Unit Price Per GAL
Unit Price :	\$0.03 per GAL	Probable High Cost Parameter	90000	\$11,316	\$0.02
Total Cost :	\$10,287				\$0.03

CREW COSTS

Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Submersible Trash Pump, 3" & 4"	Active		1.00	4.0	8	32.00	E	\$3.87	incl. in rate	incl. in rate	\$123.84
Hydraulic Excavator (5.0cy)	Active		1.00	1.0	8	8.00	E	\$274.63	incl. in rate	incl. in rate	\$2,197.04
Truck, Pickup (4x4, 3/4tn)	Active		1.00	4.0	8	32.00	E	\$16.94	incl. in rate	incl. in rate	\$542.08
Labor Foreman (out)	Active		1.00	4.0	8	32.00	L	\$46.27	incl. in rate	incl. in rate	\$1,480.64
Laborer	Active		2.00	4.0	8	64.00	L	\$45.80	incl. in rate	incl. in rate	\$2,931.20
Equipment Operator (medium)	Active		1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
			1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
			2.00	4.0	8	64.00	0	\$0.00	\$0.00		\$0.00
			1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
			1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
			1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
			1.00	4.0	8	32.00	0	\$0.00	\$0.00		\$0.00
Intake and Discharge Hose, 3"			2.00	4.0	8	64.00	E	\$2.50			\$160.00
				4.0	8	0.00					\$0.00
				4.0	8	0.00					\$0.00
				4.0	8	0.00					\$0.00
				4.0	8	0.00					\$0.00
						Labor Hours	104			TOTAL LABOR	\$4,942.08
						Equipment Hours	136			TOTAL EQUIPMENT	\$3,022.96

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
		cy	1.300	0.00	\$65.00	\$0.00	
		lbs PLS	1.000	0.00	\$8.17	\$0.00	
		lbs PLS	1.000	0.00	\$14.40	\$0.00	
		lbs PLS	1.000	0.00	\$8.96	\$0.00	
		lbs PLS	1.000	0.00	\$5.85	\$0.00	
		lbs PLS	1.000	0.00	\$30.24	\$0.00	
		lbs	1.000	0.00	\$34.02	\$0.00	
		lbs	1.000	0.00	\$10.80	\$0.00	
		ea	1.000	0.00	\$18.00	\$0.00	
		ea	1.000	0.00	\$0.09	\$0.00	
		ea	1.000	0.00	\$6.30	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	
		ls	1.000	0.00	\$8,000.00	\$0.00	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS

Labor Cost	\$4,942.08	Labor Burden @	0.0%		\$4,942.08
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$3,022.96	Equipment Tax @	7.75%	\$234.28	\$3,257.24
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$7,965			\$234	DIRECT COST SUBTOTALS \$8,199
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$8,199.32
Installing Contractors Profit @	8.0%				\$8,199.32
GC Markup on Subs @	10.0%				\$0.00
					TOTAL MARKUP COSTS \$1,885.84
General Contractors Insurance @	1.0%		on	\$10,085.16	\$101
Bond @	1.0%		on	\$10,085.16	\$101
Contingency @	0.0%		on	\$10,286.87	\$0
					TOTAL COST for pay item \$10,287

Additional Pay Item Notes :

It will take roughly 3 days to pump 300,000gallons with a 3" pump. 1 day will be need to set up pump and hoses, excavator will be used 1 day to set up pump, laborers will support equipment during set up and maintain the pump through the duration of the dewatering, 1 foreman with truck will oversee operation.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.019			Project :	Copco 2				
Description :	Right Abutment Removal - Gunite Curtain Wall			Project # :	3				
Quantity :	180.00	CY		Estimator :	Eric Jones		CY per	Total Cost	Unit Price Per CY
Daily Production :	40.00	CY per	8	hour shift					
Work Days :	4.5 Days			Probable Low Cost Parameter	44	\$54,064	\$300.35		
Unit Price :	\$333.73 per CY			Probable High Cost Parameter	36	\$66,078	\$367.10		
Total Cost :	\$60,071								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	4.5	8	36.00	L	\$46.27	incl. in rate	incl. in rate	\$1,665.72
Laborer	Active	2.00	4.5	8	72.00	L	\$45.80	incl. in rate	incl. in rate	\$3,297.60
Equipment Operator (medium)	Active	2.00	4.5	8	72.00	L	\$66.28	incl. in rate	incl. in rate	\$4,772.16
Truck Driver (heavy)	Active	3.00	4.5	8	108.00	L	\$57.59	incl. in rate	incl. in rate	\$6,219.72
Hydraulic Excavator (5.0cy)	Active	2.00	4.5	8	72.00	E	\$274.63	incl. in rate	incl. in rate	\$19,773.36
Truck, On-Highway Dump (6x4, 12cy)	Active	3.00	4.5	8	108.00	E	\$70.35	incl. in rate	incl. in rate	\$7,597.80
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	4.5	8	36.00	E	\$62.72	incl. in rate	incl. in rate	\$2,257.92
0		1.00	4.5	8	36.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.5	8	36.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.5	8	36.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.5	8	36.00	0	\$0.00	\$0.00		\$0.00
		1.00	4.5	8	36.00	0	\$0.00	\$0.00		\$0.00
			4.5	8	0.00	E	\$0.00			\$0.00
			4.5	8	0.00					\$0.00
			4.5	8	0.00					\$0.00
			4.5	8	0.00					\$0.00
			4.5	8	0.00					\$0.00
Labor Hours					288	TOTAL LABOR				\$15,955.20
Equipment Hours					216	TOTAL EQUIPMENT				\$29,629.08

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		EA	1.000	0.00	\$235.00	\$0.00
	lbs PLS		1.000	0.00	\$8.17	\$0.00
	lbs PLS		1.000	0.00	\$14.40	\$0.00
	lbs PLS		1.000	0.00	\$8.96	\$0.00
	lbs PLS		1.000	0.00	\$5.85	\$0.00
	lbs PLS		1.000	0.00	\$30.24	\$0.00
	lbs		1.000	0.00	\$34.02	\$0.00
	lbs		1.000	0.00	\$10.80	\$0.00
	ea		1.000	0.00	\$18.00	\$0.00
	ea		1.000	0.00	\$0.09	\$0.00
	ea		1.000	0.00	\$6.30	\$0.00
	ea		1.000	0.00	\$50.00	\$0.00
	ea		1.000	0.00	\$50.00	\$0.00
	ea		1.000	0.00	\$50.00	\$0.00
	ea		1.000	0.00	\$50.00	\$0.00
	ea		1.000	0.00	\$50.00	\$0.00
	ls		1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$15,955.20	Labor Burden @	0.0%			\$15,955.20
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00		\$0.00
Equipment Cost	\$29,629.08	Equipment Tax @	7.75%	\$2,296.25		\$31,925.33
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$45,584			\$2,296	DIRECT COST SUBTOTALS	\$47,881
Installing Contractors Overhead @	15.0%	Crew				\$7,182.08
Installing Contractors Profit @	8.0%	Material				\$3,830.44
GC Markup on Subs @	10.0%	Subs				\$0.00
		Cost Basis				\$0.00
TOTAL MARKUP COSTS						\$11,012.52
General Contractors Insurance @	1.0%		on	\$58,893.06		\$589
Bond @	1.0%		on	\$58,893.06		\$589
Contingency @	0.0%		on	\$60,070.92		\$0
TOTAL COST for pay item						\$60,071

Additional Pay Item Notes :

3 trucks total to be used each truck will haul 6 loads at 10 cy a load, 2 laborers directing trucks, 1 excavator loading trucks and 1 excavator breaking up curtain wall. Foreman will oversee operation.

PAY ITEM COST DETAIL WORKSHEET

3.020 Remove & Dispose - Hand rails and Light Poles

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.020	Project	: COPCO 2						
Description	: Remove & Dispose - Hand rails and Light Poles								
Quantity	: 5,000.00 LBS								
Daily Production	: 18,500.00 LBS per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS			
Unit Price	: \$0.84 per LBS	Probable Low Cost Parameter	20350	\$3,765	\$0.75				
Total Cost	: \$4,183	Probable High Cost Parameter	16650	\$4,602	\$0.92				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	1.00	0.3	8	2.40	E	\$190.46	\$190.46		\$457.10
Equipment Operator (crane)	Active	1.00	0.3	8	2.40	L	\$68.41	\$0.00		\$164.18
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.3	8	2.40	E	\$111.64	\$111.64		\$267.94
Truck Driver (light)	Active	1.00	0.3	8	2.40	L	\$56.29	\$0.00		\$135.10
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.3	8	2.40	E	\$221.50	\$221.50		\$531.60
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	\$0.00		\$108.55
Millwright	Active	6.00	0.3	8	14.40	L	\$69.46	\$0.00		\$1,000.22
Labor Foreman	Active	2.00	0.3	8	4.80	L	\$48.27	\$0.00		\$231.70
					Labor Hours	26.4	TOTAL LABOR			\$1,639.75
					Equipment Hours	7.2	TOTAL EQUIPMENT			\$1,256.64

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$81.99	\$81.99	
						TOTAL MATERIAL	\$81.99

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	0.25	ton	1.000	\$595.00	0.25	\$148.75	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	\$7.25	36.00	\$261.00	
						TOTAL SUBCONTRACTS	\$409.75

SUMMARY OF COSTS							
Labor Cost	\$1,639.75	Labor Burden @	49.7%	\$0.00		\$1,639.75	
Material Cost	\$81.99	Material Tax @	7.8%	\$6.35		\$88.34	
Equipment Cost	\$1,256.64	Equipment Tax @	0.0%	\$0.00		\$1,256.64	
Subcontractors	\$409.75					\$409.75	
DIRECT COST SUBTOTALS	\$3,388			\$6	DIRECT COST SUBTOTALS	\$3,394	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$2,984.73	\$447.71	
Installing Contractors Profit @	8.0%				\$2,984.73	\$238.78	
GC Markup on Subs @	5.0%				\$409.75	\$20.49	
						TOTAL MARKUP COSTS	\$706.98
General Contractors Insurance @	1.0%		on		\$4,101.46	\$41	
Bond @	1.0%		on		\$4,101.46	\$41	
Contingency @	0.0%		on		\$4,183.49	\$0	
						TOTAL COST for pay item	\$4,183

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Assumed hazardous waste 100% of the total lbs, calculated 36 miles from Copco2 to Yreka Transfer Recycling.

PAY ITEM COST DETAIL WORKSHEET

3.021 Remove & Dispose - Radial Gates and Hoists

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.021	Project :	COPCO2		
Description :	Remove & Dispose - Radial Gates and Hoists		Project # :	Klamath Dams Removal	
Quantity :	66,000.00 LBS	Estimator :	Mihaela Tomulescu	LBS per	Total Cost
Daily Production :	30,000.00 LBS per			24000	\$45,434
Work Days :	2.2 Days			Probable Low Cost Parameter	Unit Price Per LBS
Unit Price :	\$0.81 per LBS			34500	\$0.69
Total Cost :	\$53,452			Probable High Cost Parameter	24000
					\$64,142
					\$0.97

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.2	8	17.60	L	\$47.23	\$0.00		\$831.25
Electrician	Active	1.00	2.2	8	17.60	L	\$45.23	\$0.00		\$796.05
Steelworker	Active	5.00	2.2	8	88.00	L	\$65.52	\$0.00		\$5,765.76
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.2	8	17.60	E	\$221.50	\$221.50		\$3,898.40
Truck Driver (heavy)	Active	1.00	2.2	8	17.60	L	\$57.59	\$0.00		\$1,013.58
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.2	8	17.60	E	\$111.64	\$111.64		\$1,964.86
Hydraulic Crane (120tn)	Active	1.00	2.2	8	17.60	E	\$239.06	\$239.06		\$4,207.46
Welder	Active	1.00	2.2	8	17.60	L	\$7.84	\$0.00		\$137.94
Gas Welding Machine	Active	1.00	2.2	8	17.60	E	\$2.88	\$2.88		\$50.64
Equipment Operator (medium)	Active	1.00	2.2	8	17.60	L	\$66.28	\$0.00		\$1,166.53
Equipment Operator (crane)	Active	1.00	2.2	8	17.60	L	\$68.41	\$0.00		\$1,204.02
Labor Hours					193.6					\$10,915.12
Equipment Hours					70.4					\$10,121.36

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$545.76	\$545.76
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,670.76

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	33.00	ton	1.000	\$595.00	\$19,635.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	311.67	mile	1.000	\$7.25	\$2,259.58
TOTAL SUBCONTRACTS					\$21,894.58

SUMMARY OF COSTS

Labor Cost	\$10,915.12	Labor Burden @	49.7%	\$0.00	\$10,915.12
Material Cost	\$2,670.76	Material Tax @	7.8%	\$206.98	\$2,877.74
Equipment Cost	\$10,121.36	Equipment Tax @	0.0%	\$0.00	\$10,121.36
Subcontractors	\$21,894.58				\$21,894.58
DIRECT COST SUBTOTALS	\$45,602			\$207	\$45,809
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$3,587.13
Installing Contractors Profit@	8.0%				\$1,913.14
GC Markup on Subs @	5.0%				\$1,094.73
					TOTAL MARKUP COSTS
					\$6,595.00
General Contractors Insurance @	1.0%		on		\$52,403.80
Bond @	1.0%		on		\$52,403.80
Contingency @	0.0%		on		\$53,451.88
					\$524
					\$0
					TOTAL COST for pay item
					\$53,452

Additional Pay Item Notes :

Production based on crew 1 Forman, 5 Steelworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings, 1 Electrician to provide power for tools, 1 Truck for disposal to Yreka facility. Assuming 2.2 day of work.

PAY ITEM COST DETAIL WORKSHEET

3.022 Remove & Dispose - 5-Radial Gate Stoplogs & Slots (steel)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.022			Project	COPCO2				
Description	Remove & Dispose - 5-Radial Gate Stoplogs & Slots (steel)			Project #	Klamath Dams Removal				
Quantity	95,800.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	30,000.00	LBS per	8	Probable Low Cost Parameter	34500		\$75,974	\$0.79	
Work Days	3.2 Days			Probable High Cost Parameter	24000		\$107,258	\$1.12	
Unit Price	\$0.93 per LBS								
Total Cost	\$89,381								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	3.2	8	25.60	L	\$47.23	\$0.00		\$1,209.09
Electrician	Active	1.00	3.2	8	25.60	L	\$45.23	\$0.00		\$1,157.89
Ironworkers	Active	10.00	3.2	8	256.00	L	\$63.95	\$0.00		\$16,371.20
Vibratory Hammer & Extractor	Active	1.00	3.2	8	25.60	E	\$94.34	\$94.34		\$2,415.10
Truck Driver (heavy)	Active	2.00	3.2	8	51.20	L	\$57.59	\$0.00		\$2,948.61
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	3.2	8	51.20	E	\$111.64	\$111.64		\$5,715.97
Hydraulic Crane (120tn)	Active	2.00	3.2	8	51.20	E	\$239.06	\$239.06		\$12,239.87
Welder	Active	2.00	3.2	8	51.20	L	\$7.84	\$0.00		\$401.28
Gas Welding Machine	Active	2.00	3.2	8	51.20	E	\$2.88	\$2.88		\$147.30
Equipment Operator (medium)	Active	2.00	3.2	8	51.20	L	\$66.28	\$0.00		\$3,393.54
Equipment Operator (crane)	Active	1.00	3.2	8	25.60	L	\$68.41	\$0.00		\$1,751.30
Laborer	Active	10.00	3.2	8	256.00	L	\$45.80	\$0.00		\$11,724.80
Labor Hours					742.4					\$38,957.70
Equipment Hours					179.2					\$20,518.25

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,947.88	\$1,947.88
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	5,000.00	LF	1.000	5,000.00	\$0.85	\$4,250.00
TOTAL MATERIAL						\$6,197.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (20%)	9.58	ton	1.000	\$595.00	\$5,700.10
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	\$7.25	\$261.00
TOTAL SUBCONTRACTS					\$5,961.10

SUMMARY OF COSTS						
Labor Cost	\$38,957.70	Labor Burden @	49.7%	\$0.00		\$38,957.70
Material Cost	\$6,197.88	Material Tax @	7.8%	\$480.34		\$6,678.22
Equipment Cost	\$20,518.25	Equipment Tax @	0.0%	\$0.00		\$20,518.25
Subcontractors	\$5,961.10					\$5,961.10
DIRECT COST SUBTOTALS	\$71,635			\$480	DIRECT COST SUBTOTALS	\$72,115
Installing Contractors Overhead@	15.0%	Crew			\$66,154.16	\$9,923.12
Installing Contractors Profit@	8.0%	Material			\$66,154.16	\$5,292.33
GC Markup on Subs @	5.0%	Subs			\$5,961.10	\$298.06
TOTAL MARKUP COSTS						\$15,513.51
General Contractors Insurance @	1.0%		on		\$87,628.78	\$876
Bond @	1.0%		on		\$87,628.78	\$876
Contingency @	0.0%		on		\$89,381.35	\$0
TOTAL COST for pay item						\$89,381

Additional Pay Item Notes :

Production based on crew 1 Foreman, 5 Ironworkers and 1 Welder to cut and attach hooks to the gate for disposal, 4 Laborers to rigging wire rope slings. Electrical crew to provide power for tools, 1 Truck for disposal to Yreka facility. Assuming using a Vibratory Hammer & Extractor for attachments in concrete and 2 cranes for balance when the gates are discharged.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.023	Project	: COPCO 2						
Description	: Remove & Dispose - Spillway intake gate motor & control panel								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Unit Price	: \$1,297.31 per EA	Probable Low Cost Parameter	1.1	\$1,168	\$1,167.58				
Total Cost	: \$1,297	Probable High Cost Parameter	0.9	\$1,427	\$1,427.04				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician	Active	2.00	1.0	8	16.00	L	\$45.23	\$0.00		\$723.68
					Labor Hours	16	TOTAL LABOR			\$723.68
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor (Side Cutter, Sharp- Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	3.98	LS	1.000	3.98	\$72.37	\$288.04
TOTAL MATERIAL						\$288.04

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$723.68	Labor Burden @	49.7%	\$0.00		\$723.68
Material Cost	\$288.04	Material Tax @	7.8%	\$22.32		\$310.37
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,012			\$22	DIRECT COST SUBTOTALS	\$1,034
Installing Contractors Overhead@	15.0%	Crew				\$155.11
Installing Contractors Profit@	8.0%	Material				\$82.72
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$237.83
General Contractors Insurance @	1.0%		on			\$13
Bond @	1.0%		on			\$13
Contingency @	0.0%		on			\$0
					TOTAL COST for pay item	\$1,297

Additional Pay Item Notes :

Assumed that two electrician will work one day to disconnect and remove the control panel and the gate motor.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.024	Project	: COPCO 2						
Description	: Remove & Dispose - Spillway radial gate motor & control panel								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Unit Price	: \$1,297.31 per EA	Probable Low Cost Parameter	1.1	\$1,168	\$1,167.58				
Total Cost	: \$1,297	Probable High Cost Parameter	0.9	\$1,427	\$1,427.04				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician	Active	2.00	1.0	8	16.00	L	\$45.23	\$0.00		\$723.68
					Labor Hours	16	TOTAL LABOR			\$723.68
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor (Side Cutter, Sharp- Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	3.98	LS	1.000	3.98	\$72.37	\$288.04
TOTAL MATERIAL						\$288.04

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$723.68	Labor Burden @	49.7%	\$0.00		\$723.68
Material Cost	\$288.04	Material Tax @	7.8%	\$22.32		\$310.37
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,012			\$22	DIRECT COST SUBTOTALS	\$1,034
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$1,034.05	\$155.11
Installing Contractors Profit@	8.0%				\$1,034.05	\$82.72
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$237.83
General Contractors Insurance @	1.0%		on		\$1,271.88	\$13
Bond @	1.0%		on		\$1,271.88	\$13
Contingency @	0.0%		on		\$1,297.31	\$0
TOTAL COST for pay item						\$1,297

Additional Pay Item Notes :

Assumed that two electrician will work one day to disconnect and remove the control panel and the gate motor.

PAY ITEM COST DETAIL WORKSHEET

3.025 Remove & Dispose - Spillway trashrake motor, festoon cable & control panel

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.025			Project :	COPCO 2				
Description :	Remove & Dispose - Spillway trashrake motor, festoon cable & control panel								
Quantity :	1.00 EA			Project # :	Klamath Dams Removal				
Daily Production :	1.00 EA per 8 hour shift			Estimator :	Mihaela Tomulescu EA per Total Cost Unit Price Per EA				
Work Days :	1.0 Days			Probable Low Cost Parameter	1.1 \$496		\$496.18		
Unit Price :	\$551.31 per EA			Probable High Cost Parameter	0.9 \$606		\$606.44		
Total Cost :	\$551								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
					Labor Hours	8	TOTAL LABOR			\$361.84
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 0.5% labor (Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	1.99	LS	1.000	1.99	\$36.18	\$72.01
TOTAL MATERIAL						\$72.01

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$361.84	Labor Burden @	49.7%	\$0.00		\$361.84
Material Cost	\$72.01	Material Tax @	7.8%	\$5.58		\$77.59
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$434			\$6	DIRECT COST SUBTOTALS	\$439
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$65.91
Installing Contractors Profit @	8.0%	Material				\$35.15
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$101.07
General Contractors Insurance @	1.0%		on	\$540.50		\$5
Bond @	1.0%		on	\$540.50		\$5
Contingency @	0.0%		on	\$551.31		\$0
TOTAL COST for pay item						\$551

Additional Pay Item Notes :

Assumed that one electrician will work one day to disconnect and remove the festoon cable, control panel and the motor.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.026	Project	: COPCO 2						
Description	: Remove & Dispose - Distribution equipment, panelboards								
Quantity	: 1.00 EA								
Daily Production	: 0.50 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 2.0 Days								
Unit Price	: \$5,877.55 per EA	Estimator	: Mihaela Tomulescu	EA per	: 0.55	Total Cost	: \$5,290	Unit Price Per EA	: \$5,289.80
Total Cost	: \$5,878	Probable Low Cost Parameter	: 0.55	\$2,900					
		Probable High Cost Parameter	: 0.45	\$6,465					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	\$0.00		\$755.68
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	\$0.00		\$723.68
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Hydraulic Crane (17tn)	Active	1.00	2.0	8	16.00	E	\$81.52	\$81.52		\$1,304.32
					Labor Hours	48	TOTAL LABOR			\$2,487.36
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,197.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 0.5% labor (Side Cutter, Sharp-Nose Pliers, Sharp Tip Tweezers PCB Clamp, etc)	0.00	LS	1.000	0.00	\$124.37	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,487.36	Labor Burden @	49.7%	\$0.00		\$2,487.36
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,197.44	Equipment Tax @	0.0%	\$0.00		\$2,197.44
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$4,685			\$0	DIRECT COST SUBTOTALS	\$4,685
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$702.72
Installing Contractors Profit @	8.0%	Material				\$374.78
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$1,077.50
General Contractors Insurance @	1.0%	on				\$58
Bond @	1.0%	on				\$58
Contingency @	0.0%	on				\$0
TOTAL COST for pay item						\$5,878

Additional Pay Item Notes :

Assumed that electrical crew formed of 1 Foreman and 1 Electricians will work two days to unconnect and remove the distribution panels. They are going to use same crane and a truck for disposal of spillway intake, trash rake and radial motor & control panel.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.028	Project	: COPCO 2						
Description	: Remove Powerhouse Concrete down to spring-line of turbine								
Quantity	: 1,110.00 cy								
Daily Production	: 50.00 cy per 8 hour shift	Project #	: 3						
Work Days	: 22.2 Days	Estimator	: Felipe Poletto	cy per	: 57.5	Total Cost	: \$485,097	Unit Price Per cy	: \$437.02
Unit Price	: \$514.15 per cy	Probable Low Cost Parameter	: 57.5			Probable High Cost Parameter	: 40	Total Cost	: \$684,843
Total Cost	: \$570,702							Unit Price Per cy	: \$616.98

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Hydraulic Excavator (5.0cy)	Active	4.00	22.2	8	710.40	E	\$274.63	incl. in rate	incl. in rate	\$195,097.15	
Hydraulic Thumbs/Shear Attachment	Active	1.00	22.2	8	177.60	E	\$16.39	incl. in rate	incl. in rate	\$2,910.86	
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	22.2	8	177.60	E	\$62.72	incl. in rate	incl. in rate	\$11,139.07	
Loader, FE Rubber Tire (5.25cy)	Active	2.00	22.2	8	355.20	E	\$75.42	incl. in rate	incl. in rate	\$26,789.18	
Hydraulic Crane (80tn)	Active	1.00	22.2	8	177.60	E	\$190.46	incl. in rate	incl. in rate	\$33,825.70	
Truck, On-Highway Dump (6x4, 12cy)	Active	4.00	22.2	8	710.40	E	\$70.35	incl. in rate	incl. in rate	\$49,976.64	
Labor Foreman (out)	Active	1.00	22.2	8	177.60	L	\$46.27	incl. in rate	incl. in rate	\$8,217.55	
Laborer	Active	1.00	22.2	8	177.60	L	\$45.80	incl. in rate	incl. in rate	\$8,134.08	
Equipment Operator (medium)	Active	3.00	22.2	8	532.80	L	\$66.28	incl. in rate	incl. in rate	\$35,313.98	
Equipment Operator (crane)	Active	1.00	22.2	8	177.60	L	\$68.41	incl. in rate	incl. in rate	\$12,149.62	
Truck Driver (heavy)	Active	4.00	22.2	8	710.40	L	\$57.59	incl. in rate	incl. in rate	\$40,911.94	
0		1.00	22.2	8	177.60	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
			22.2	8	0.00					\$0.00	
			22.2	8	0.00					\$0.00	
			22.2	8	0.00					\$0.00	
			22.2	8	0.00					\$0.00	
			22.2	8	0.00					\$0.00	
Labor Hours					1,776	TOTAL LABOR				\$104,727.17	
Equipment Hours					2,309	TOTAL EQUIPMENT				\$319,738.61	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables (5% labor)	1.00	LS	1.000	1.00	\$5,236.36	\$5,236.36	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
			1.000	0.00		\$0.00	
TOTAL MATERIAL							\$5,236.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS							
Labor Cost	\$104,727.17	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$104,727.17	
Material Cost	\$5,236.36	Material Tax @	7.75%	\$405.82		\$5,642.18	
Equipment Cost	\$319,738.61	Equipment Tax @	7.75%	\$24,779.74		\$344,518.35	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$429,702			\$25,186		DIRECT COST SUBTOTALS	\$454,888
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$454,887.69		\$68,233.15
Installing Contractors Profit @	8.0%				\$454,887.69		\$36,391.02
GC Markup on Subs @	5.0%				\$0.00		\$0.00
TOTAL MARKUP COSTS							\$104,624.17
General Contractors Insurance @	1.0%	on			\$559,511.86		\$5,595
Bond @	1.0%	on			\$559,511.86		\$5,595
Contingency @	0.0%	on			\$570,702.10		\$0
TOTAL COST for pay item							\$570,702

Additional Pay Item Notes :

There will be 2 excavators managing material and loading trucks, 1 excavator with shear attachment to cut reinforcement, 1 excavator with breaker attachment breaking concrete, 4 trucks will be used to haul material to scour site, each truck will have to make roughly 2 loads per day for the duration of the operation, due to the distance to the dump site location 4 trucks will be the minimum used. Production of the concrete demolition will be reduced due to the amount of items that will need to be demolished.

PAY ITEM COST DETAIL WORKSHEET

3.029 Remove Structural Steel items associated with Powerhouse

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.029	Project	: COPCO 2						
Description	: Remove Structural Steel items associated with Powerhouse								
Quantity	: 220,000.00 LBS								
Daily Production	: 30,000.00 LBS per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 7.3 Days	Estimator	: Mihaela Tomulescu	LBS per		Total Cost		Unit Price Per LBS	
Unit Price	: \$0.96 per LBS	Probable Low Cost Parameter		34500		\$179,995		\$0.82	
Total Cost	: \$211,759	Probable High Cost Parameter		25500		\$243,523		\$1.11	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	7.3	8	58.40	L	\$47.23	\$0.00		\$2,758.23
Electrician	Active	1.00	7.3	8	58.40	L	\$45.23	\$0.00		\$2,641.43
Ironworkers	Active	10.00	7.3	8	584.00	L	\$63.95	\$0.00		\$37,346.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	7.3	8	58.40	E	\$221.50	\$221.50		\$12,935.60
Truck Driver (heavy)	Active	2.00	7.3	8	116.80	L	\$57.59	\$0.00		\$6,726.51
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	7.3	8	116.80	E	\$111.64	\$111.64		\$13,039.55
Hydraulic Crane (120tn)	Active	2.00	7.3	8	116.80	E	\$239.06	\$239.06		\$27,922.21
Welder	Active	4.00	7.3	8	233.60	L	\$7.84	\$0.00		\$1,830.84
Gas Welding Machine	Active	4.00	7.3	8	233.60	E	\$2.88	\$2.88		\$672.06
Equipment Operator (medium)	Active	1.00	7.3	8	58.40	L	\$66.28	\$0.00		\$3,870.75
Equipment Operator (crane)	Active	1.00	7.3	8	58.40	L	\$68.41	\$0.00		\$3,995.14
Laborer	Active	10.00	7.3	8	584.00	L	\$45.80	\$0.00		\$26,747.20
					Labor Hours	1752	TOTAL LABOR			\$85,916.91
					Equipment Hours	525.6	TOTAL EQUIPMENT			\$54,569.42

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, wrenches, electrodes, welding accessories, etc)	1.00	LS	1.000	1.00	\$12,887.54	\$12,887.54
TOTAL MATERIAL						\$12,887.54

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total)	27.50	ton	1.000	27.50	\$595.00	\$16,362.50
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	72.00	\$7.25	\$522.00
TOTAL SUBCONTRACTS					\$16,884.50	

SUMMARY OF COSTS						
Labor Cost	\$85,916.91	Labor Burden @	49.7%	\$0.00		\$85,916.91
Material Cost	\$12,887.54	Material Tax @	7.8%	\$998.78		\$13,886.32
Equipment Cost	\$54,569.42	Equipment Tax @	0.0%	\$0.00		\$54,569.42
Subcontractors	\$16,884.50					\$16,884.50
DIRECT COST SUBTOTALS	\$170,258			\$999	DIRECT COST SUBTOTALS	\$171,257
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$154,372.66	\$23,155.90
Installing Contractors Profit@	8.0%				\$154,372.66	\$12,349.81
GC Markup on Subs @	5.0%				\$16,884.50	\$844.23
					TOTAL MARKUP COSTS	\$36,349.94
General Contractors Insurance @	1.0%	on			\$207,607.09	\$2,076
Bond @	1.0%	on			\$207,607.09	\$2,076
Contingency @	0.0%	on			\$211,759.24	\$0
					TOTAL COST for pay item	\$211,759

Additional Pay Item Notes :

Includes columns, beams, crane girders, bracing, misc. shapes, roof trusses, purlins, etc. Assumed contains paint with heavy metals 25% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Assuming using 2 cranes and 2 trucks for disposal in 7 days.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.031	Project :	COPCO2		
Description :	Remove Control House Structural Steel Items				
Quantity :	3,500.00 LBS				
Daily Production :	18,000.00 LBS per	8	hour shift		
Work Days :	0.2	Days			
Unit Price :	\$0.88 per LBS	Estimator :	Mihaela Tomulescu	LBS per	20700
Total Cost :	\$3,088	Probable Low Cost Parameter	20700	Total Cost	\$2,625
		Probable High Cost Parameter	15300	Unit Price Per LBS	\$0.75
					\$1.01

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	0.2	8	1.60	L	\$48.27	\$0.00		\$77.23	
Electrician	Active	1.00	0.2	8	1.60	L	\$45.23	\$0.00		\$72.37	
Steelworker	Active	2.00	0.2	8	3.20	L	\$65.52	\$0.00		\$209.66	
Welder	Active	1.00	0.2	8	1.60	L	\$7.84	\$0.00		\$12.54	
Truck Driver (heavy)	Active	1.00	0.2	8	1.60	L	\$57.59	\$0.00		\$92.14	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	\$111.64		\$178.62	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.2	8	1.60	E	\$221.50	\$221.50		\$354.40	
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	\$81.52		\$130.43	
Equipment Operator (medium)	Active	2.00	0.2	8	3.20	L	\$66.28	\$0.00		\$212.10	
Gas Welding Machine	Active	1.00	0.2	8	1.60	E	\$2.88	\$2.88		\$4.60	
Laborer	Active	4.00	0.2	8	6.40	L	\$45.80	\$0.00		\$293.12	
Labor Hours					19.2					TOTAL LABOR	\$969.16
Equipment Hours					6.4					TOTAL EQUIPMENT	\$668.06

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, wrenches, electrodes, welding accessories, etc)	1.00	LS	1.000	1.00	\$145.37	\$145.37
TOTAL MATERIAL						\$145.37

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25% from total)	0.44	ton	1.000	\$595.00	\$260.31
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	\$7.25	\$522.00
TOTAL SUBCONTRACTS					\$782.31

SUMMARY OF COSTS

Labor Cost	\$969.16	Labor Burden @	49.7%	\$0.00	\$969.16	
Material Cost	\$145.37	Material Tax @	7.8%	\$11.27	\$156.64	
Equipment Cost	\$668.06	Equipment Tax @	0.0%	\$0.00	\$668.06	
Subcontractors	\$782.31				\$782.31	
DIRECT COST SUBTOTALS	\$2,565			\$11	\$2,576	
Installing Contractors Overhead @	15.0%	Crew		\$1,793.86	\$269.08	
Installing Contractors Profit @	8.0%	Material		\$1,793.86	\$143.51	
GC Markup on Subs @	5.0%	Subs		\$782.31	\$39.12	
					TOTAL MARKUP COSTS	\$451.70
General Contractors Insurance @	1.0%		on	\$3,027.88	\$30	
Bond @	1.0%		on	\$3,027.88	\$30	
Contingency @	0.0%		on	\$3,088.44	\$0	
TOTAL COST for pay item					\$3,088	

Additional Pay Item Notes :

Assumed structural frames contains paint with heavy metals 25% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal. Assuming using 1 cranes, 1 loader and 1 trucks for disposal.

PAY ITEM COST DETAIL WORKSHEET

3.033 Remove & Dispose - 2 - Governor oil systems

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	3.033	Project		:	COPCO 2					
Description	:	Remove & Dispose - 2 - Governor oil systems									
Quantity	:	38,000.00	LBS								
Daily Production	:	25,000.00	LBS per	8	hour shift	Project #	:	Klamath Dams Removal			
Work Days	:	1.5	Days			Estimator	:	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS
Unit Price	:	\$1.06	per LBS			Probable Low Cost Parameter	:	27500	\$36,365	\$0.96	
Total Cost	:	\$40,406					Probable High Cost Parameter	:	20000	\$48,487	\$1.28

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	2.00	1.5	8	24.00	L	\$48.27	\$0.00		\$1,158.48	
Laborer	Active	2.00	1.5	8	24.00	L	\$45.80	\$0.00		\$1,099.20	
Crawler Crane (270tn)	Active	2.00	1.5	8	24.00	E	\$399.50	\$446.84		\$9,588.00	
Equipment Operator (medium)	Active	2.00	1.5	8	24.00	L	\$66.28	\$0.00		\$1,590.72	
Welder	Active	3.00	1.5	8	36.00	L	\$7.84	\$0.00		\$282.15	
Gas Welding Machine	Active	3.00	1.5	8	36.00	E	\$2.88	\$2.88		\$103.57	
Electrician	Active	2.00	1.5	8	24.00	L	\$45.23	\$0.00		\$1,085.52	
Steelworker	Active	2.00	1.5	8	24.00	L	\$65.52	\$0.00		\$1,572.48	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.5	8	12.00	E	\$111.64	\$111.64		\$1,339.68	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.5	8	12.00	E	\$221.50	\$221.50		\$2,658.00	
Truck Driver (heavy)	Active	1.00	1.5	8	12.00	L	\$57.59	\$0.00		\$691.08	
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	1.00	1.5	8	12.00	E	\$30.85	\$30.85		\$370.20	
					Labor Hours	168	TOTAL LABOR			\$7,479.63	
					Equipment Hours	96	TOTAL EQUIPMENT			\$14,059.45	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, wrenches, electrodes, welding accessories, etc)	1.00	LS	1.000	1.00	\$747.96	\$747.96
TOTAL MATERIAL						\$747.96

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	19.00	ton	1.000	19.00	\$595.00	\$11,305.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	34.00	mile	1.000	34.00	\$7.25	\$246.50
TOTAL SUBCONTRACTS					\$11,551.50	

SUMMARY OF COSTS					
Labor Cost	\$7,479.63	Labor Burden @	49.7%	\$0.00	\$7,479.63
Material Cost	\$747.96	Material Tax @	7.8%	\$57.97	\$805.93
Equipment Cost	\$14,059.45	Equipment Tax @	0.0%	\$0.00	\$14,059.45
Subcontractors	\$11,551.50				\$11,551.50
DIRECT COST SUBTOTALS	\$33,839			\$58	\$33,897
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$22,345.01
Installing Contractors Profit @	8.0%				\$1,787.60
GC Markup on Subs @	5.0%				\$577.58
TOTAL MARKUP COSTS					\$5,716.93
General Contractors Insurance @	1.0%		on		\$39,613.44
Bond @	1.0%		on		\$396
Contingency @	0.0%		on		\$0
TOTAL COST for pay item					\$40,406

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-12 for welding, E-25 for cutting steel and A-3H for equipment disposal. Using hydraulic impact breaker because of the systems that are encased in concrete. Assumed hazardous waste 100% of the total lbs, calculated 34 miles from Copco1 to Yreka Transfer Recycling.

PAY ITEM COST DETAIL WORKSHEET

3.034 Remove & Dispose - Cooling water and bearing oil systems

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.034	Project :	COPCO 2							
Description :	Remove & Dispose - Cooling water and bearing oil systems		Project # :	Klamath Dams Removal						
Quantity :	13,300.00	LBS	Estimator :	Mihaela Tomulescu	LBS per	27500	Total Cost	\$11,173	Unit Price Per LBS	\$0.84
Daily Production :	25,000.00	LBS per	8	hour shift	Probable Low Cost Parameter	20000	\$14,897	\$1.12		
Work Days :	0.5	Days	Probable High Cost Parameter	20000	\$14,897	\$1.12				
Unit Price :	\$0.93	per LBS								
Total Cost :	\$12,414									

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	8	4.00	L	\$48.27	\$0.00		\$193.08
Steelworker	Active	2.00	0.5	8	8.00	L	\$65.52	\$0.00		\$524.16
Crawler Crane (270tn)	Active	2.00	0.5	8	8.00	E	\$399.50	\$446.84		\$3,196.00
Equipment Operator (medium)	Active	2.00	0.5	8	8.00	L	\$66.28	\$0.00		\$530.24
Welder	Active	3.00	0.5	8	12.00	L	\$7.84	\$0.00		\$94.05
Gas Welding Machine	Active	3.00	0.5	8	12.00	E	\$2.88	\$2.88		\$34.52
Electrician	Active	2.00	0.5	8	8.00	L	\$45.23	\$0.00		\$361.84
Laborer	Active	3.00	0.5	8	12.00	L	\$45.80	\$0.00		\$549.60
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	0.5	8	8.00	E	\$70.35	\$70.35		\$562.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	8	4.00	E	\$221.50	\$221.50		\$886.00
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	\$0.00		\$230.36
Equipment Operator (oilier)	Active	1.00	0.5	8	4.00	L	\$62.94	\$0.00		\$251.76
					Labor Hours	60	TOTAL LABOR			\$2,735.09
					Equipment Hours	32	TOTAL EQUIPMENT			\$4,679.32

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$273.51	\$273.51	
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00	
						TOTAL MATERIAL	\$1,973.51

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.67	ton	1.000	0.67	\$595.00	\$395.68
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	2.66	mile	1.000	2.66	\$7.25	\$19.29
					TOTAL SUBCONTRACTS	\$414.96

SUMMARY OF COSTS

Labor Cost	\$2,735.09	Labor Burden @	49.7%	\$0.00	\$2,735.09	
Material Cost	\$1,973.51	Material Tax @	7.8%	\$152.95	\$2,126.46	
Equipment Cost	\$4,679.32	Equipment Tax @	0.0%	\$0.00	\$4,679.32	
Subcontractors	\$414.96				\$414.96	
DIRECT COST SUBTOTALS	\$9,803			\$153	\$9,956	
Installing Contractors Overhead @	15.0%				\$1,431.13	
Installing Contractors Profit @	8.0%				\$763.27	
GC Markup on Subs @	5.0%				\$20.75	
					\$414.96	
					TOTAL MARKUP COSTS	\$2,215.15
General Contractors Insurance @	1.0%	on		\$12,170.98	\$122	
Bond @	1.0%	on		\$12,170.98	\$122	
Contingency @	0.0%	on		\$12,414.40	\$0	
					TOTAL COST for pay item	\$12,414

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 4890 LF of 1 1/2" oil pipes at 2.72 Lbs. Used 1 Foreman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment).

Based on the hazardous materials above assumed hazardous waste 100% of the total lbs

PAY ITEM COST DETAIL WORKSHEET

3.035 Remove & Dispose - Oil / Water separator tank and piping

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.035			Project :	COPCO 2				
Description :	Remove & Dispose - Oil / Water separator tank and piping								
Quantity :	2,700.00	LBS							
Daily Production :	15,000.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	0.2	Days							
Unit Price :	\$0.93	per LBS							
Total Cost :	\$2,520								
	Estimator :	Mihaela Tomulescu	LBS per	16500	Total Cost	\$2,268	Unit Price Per LBS	\$0.84	
	Probable Low Cost Parameter			12000	\$3,024	\$1.12			
	Probable High Cost Parameter								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.2	8	1.60	L	\$48.27	\$0.00		\$77.23
Steelworker	Active	4.00	0.2	8	6.40	L	\$65.52	\$0.00		\$419.33
Laborer	Active	4.00	0.2	8	6.40	L	\$45.80	\$0.00		\$293.12
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	\$0.00		\$109.46
Truck Driver (heavy)	Active	1.00	0.2	8	1.60	L	\$57.59	\$0.00		\$92.14
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	\$111.64		\$178.62
Hydraulic Crane (80tn)	Active	1.00	0.2	8	1.60	E	\$190.46	\$190.46		\$304.74
					Labor Hours	17.6	TOTAL LABOR			\$991.28
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$483.36

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$99.13	\$99.13
TOTAL MATERIAL						\$99.13

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Disposal fee	1.00	EA	1.000	1.00	\$500.00
TOTAL SUBCONTRACTS					\$500.00

SUMMARY OF COSTS						
Labor Cost	\$991.28	Labor Burden @	49.7%	\$0.00	\$991.28	
Material Cost	\$99.13	Material Tax @	7.8%	\$7.68	\$106.81	
Equipment Cost	\$483.36	Equipment Tax @	0.0%	\$0.00	\$483.36	
Subcontractors	\$500.00				\$500.00	
DIRECT COST SUBTOTALS	\$2,074			\$8	\$2,081	
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$237.22	
Installing Contractors Profit@	8.0%				\$126.52	
GC Markup on Subs @	5.0%				\$25.00	
		TOTAL MARKUP COSTS			\$388.73	
General Contractors Insurance @	1.0%		on	\$2,470.18	\$25	
Bond @	1.0%		on	\$2,470.18	\$25	
Contingency @	0.0%		on	\$2,519.59	\$0	
TOTAL COST for pay item					\$2,520	

Additional Pay Item Notes :

Crews E-19 for metals demolition, E-25 for cutting steel and A-3H for equipment disposal. Assumed a disposal fee will be required.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.036	Project :	COPCO 2		
Description :	Remove & Dispose - 12 - Cast Iron Columns		Project # :	Klamath Dams Removal	
Quantity :	54,000.00	LBS	Estimator :	Mihaela Tomulescu	LBS per
Daily Production :	25,000.00	LBS per	Probable Low Cost Parameter	28750	Total Cost
Work Days :	2.2	Days	Probable High Cost Parameter	21250	Unit Price Per LBS
Unit Price :	\$0.83	per LBS			\$0.70
Total Cost :	\$44,692				\$0.95

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.2	8	17.60	L	\$48.27	\$0.00		\$849.55
Welder	Active	2.00	2.2	8	35.20	L	\$7.84	\$0.00		\$275.88
Steelworker	Active	10.00	2.2	8	176.00	L	\$65.52	\$0.00		\$11,531.52
Equipment Operator (crane)	Active	2.00	2.2	8	35.20	L	\$68.41	\$0.00		\$2,408.03
Truck Driver (heavy)	Active	2.00	2.2	8	35.20	L	\$57.59	\$0.00		\$2,027.17
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	2.2	8	35.20	E	\$31.90	\$31.90		\$1,122.88
Crawler Crane (90tn)	Active	2.00	2.2	8	35.20	E	\$208.09	\$208.09		\$7,324.77
Gas Welding Machine	Active	2.00	2.2	8	35.20	E	\$2.88	\$2.88		\$101.27
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.2	8	17.60	E	\$221.50	\$221.50		\$3,898.40
Vibratory Hammer & Extractor	Active	2.00	2.2	8	35.20	E	\$94.34	\$94.34		\$3,320.77
					Labor Hours	299.2	TOTAL LABOR			\$17,092.15
					Equipment Hours	158.4	TOTAL EQUIPMENT			\$15,768.09

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,563.82	\$2,563.82
TOTAL MATERIAL						\$2,563.82

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$17,092.15	Labor Burden @	49.7%	\$0.00	\$17,092.15	
Material Cost	\$2,563.82	Material Tax @	7.8%	\$198.70	\$2,762.52	
Equipment Cost	\$15,768.09	Equipment Tax @	0.0%	\$0.00	\$15,768.09	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$35,424			\$199	\$35,623	
Installing Contractors Overhead @	15.0%	Crew		\$35,622.76	\$5,343.41	
Installing Contractors Profit @	8.0%	Material		\$35,622.76	\$2,849.82	
GC Markup on Subs @	5.0%	Subs		\$0.00	\$0.00	
					TOTAL MARKUP COSTS	\$8,193.23
General Contractors Insurance @	1.0%	on		\$43,815.99	\$438	
Bond @	1.0%	on		\$43,815.99	\$438	
Contingency @	0.0%	on		\$44,692.31	\$0	
TOTAL COST for pay item					\$44,692	

Additional Pay Item Notes :

Assumed Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal., B-34A for hauling. Assuming using 2 cranes, 1 loader and 2 trucks for disposal. Using hydraulic impact breaker because columns that are encased in concrete.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.037			Project :	COPCO 2				
Description :	Remove & Dispose - 2 - Francis Turbines								
Quantity :	660,000.00	LBS							
Daily Production :	30,000.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	22.0	Days							
Unit Price :	\$0.83	per LBS							
Total Cost :	\$547,502			Estimator :	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
				Probable Low Cost Parameter	34500	\$465,377	\$0.71		
				Probable High Cost Parameter	24000	\$657,003	\$1.00		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	22.0	8	176.00	L	\$47.23	\$0.00		\$8,312.48
Ironworkers	Active	5.00	22.0	8	880.00	L	\$63.95	\$0.00		\$66,276.00
Crawler Crane (270tn)	Active	2.00	22.0	8	352.00	E	\$399.50	\$446.84		\$140,624.00
Equipment Operator (medium)	Active	2.00	22.0	8	352.00	L	\$66.28	\$0.00		\$23,330.56
Welder	Active	4.00	22.0	8	704.00	L	\$7.84	\$0.00		\$5,517.60
Gas Welding Machine	Active	4.00	22.0	8	704.00	E	\$2.88	\$2.88		\$2,025.40
Electrician	Active	2.00	22.0	8	352.00	L	\$45.23	\$0.00		\$15,920.96
Millwright	Active	5.00	22.0	8	880.00	L	\$69.46	\$0.00		\$61,124.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	22.0	8	352.00	E	\$31.90	\$31.90		\$11,228.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	22.0	8	176.00	E	\$221.50	\$221.50		\$38,984.00
Truck Driver (heavy)	Active	2.00	22.0	8	352.00	L	\$57.59	\$0.00		\$20,271.68
Equipment Operator (oiler)	Active	1.00	22.0	8	176.00	L	\$62.94	\$0.00		\$11,077.44
Labor Hours					3872	TOTAL LABOR				\$201,831.52
Equipment Hours					1584	TOTAL EQUIPMENT				\$192,862.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$20,183.15	\$20,183.15
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	3,000.00	LF	1.000	3,000.00	\$0.85	\$2,550.00
TOTAL MATERIAL						\$22,733.15

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	33.00	ton	1.000	\$595.00	\$19,635.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	\$7.25	\$522.00
TOTAL SUBCONTRACTS					\$20,157.00

SUMMARY OF COSTS						
Labor Cost	\$201,831.52	Labor Burden @	49.7%	\$0.00		\$201,831.52
Material Cost	\$22,733.15	Material Tax @	7.8%	\$1,761.82		\$24,494.97
Equipment Cost	\$192,862.20	Equipment Tax @	0.0%	\$0.00		\$192,862.20
Subcontractors	\$20,157.00					\$20,157.00
DIRECT COST SUBTOTALS		\$437,584		\$1,762	DIRECT COST SUBTOTALS	
						\$439,346
Installing Contractors Overhead @	15.0%				\$419,188.69	\$62,878.30
Installing Contractors Profit @	8.0%				\$419,188.69	\$33,535.10
GC Markup on Subs @	5.0%				\$20,157.00	\$1,007.85
TOTAL MARKUP COSTS						\$97,421.25
General Contractors Insurance @	1.0%		on		\$536,766.94	\$5,368
Bond @	1.0%		on		\$536,766.94	\$5,368
Contingency @	0.0%		on		\$547,502.28	\$0
TOTAL COST for pay item						\$547,502

Additional Pay Item Notes :

Working with a crew formed of 1 EI. Foreman 2 Electrician starting to disconnect power and take care of the temporary electrical power they need at the site. The crew of 5 Ironworker and 5 Millwright. open the engine side panels, and remove the nacelle access panels. Disconnect the engine thermocouple leads at the terminal board. Before disconnecting any lines all fuel, oil, and hydraulic fluid valves are closed. Plug all lines as they are disconnected to prevent entrance of foreign material. Remove the clamps securing the bleed-air ducts at the firewall. Then, disconnect the electrical connector plugs, engine breather and vent lines, and fuel, oil, and hydraulic lines. Disconnect the engine power lever and propeller control rods or cables. Remove the covers from the lift points, attach the sling, and remove slack from the cables using a suitable hoist. The sling must be adjusted to position. Remove the engine mount bolts. The engine ready to be removed. Move the engine forward, out of the nacelle structure, until it clears the aircraft. Lower the into position on the stand, and secure it prior to removing the engine sling. The crew of 4 Welder are going to cut in pieces the big parts of the turbine to be able to load them in the truck using a loader and dispose. Assumed contains paint with heavy metals 10% of the total lbs, 36 miles from Copco2 to Yreka transfer recycling.

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	3.038	Project :	COPCO 2							
Description :	Remove & Dispose - 2 - 40 Ton indoor cranes		Estimator :	Mihaela Tomulescu						
Quantity :	140,000.00	LBS	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Daily Production :	30,000.00	LBS per	4.7	Days	Probable Low Cost Parameter	34500	Total Cost	\$138,781	Unit Price Per LBS	\$0.99
Work Days :	4.7	Days	8	hour shift	Probable High Cost Parameter	24000	\$195,925	\$1.40		
Unit Price :	\$1.17 per LBS									
Total Cost :	\$163,271									

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	2.00	4.7	8	75.20	E	\$190.46	\$190.46		\$14,322.59
Equipment Operator (crane)	Active	2.00	4.7	8	75.20	L	\$68.41	\$0.00		\$5,144.43
Hydraulic Excavator (6.0cy)	Active	2.00	4.7	8	75.20	E	\$322.48	\$322.48		\$24,250.50
Equipment Operator (medium)	Active	3.00	4.7	8	112.80	L	\$66.28	\$0.00		\$7,476.38
Loader, FE Rubber Tire (8.6cy)	Active	1.00	4.7	8	37.60	E	\$221.50	\$221.50		\$8,328.40
Electrician	Active	6.00	4.7	8	225.60	L	\$45.23	\$0.00		\$10,203.89
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	4.7	8	37.60	E	\$111.64	\$111.64		\$4,197.66
Labor Foreman	Active	2.00	4.7	8	75.20	L	\$48.27	\$0.00		\$3,629.90
Welder	Active	2.00	4.7	8	75.20	L	\$7.84	\$0.00		\$589.38
Gas Welding Machine	Active	2.00	4.7	8	75.20	E	\$2.88	\$2.88		\$216.35
Millwright	Active	16.00	4.7	8	601.60	L	\$69.46	\$0.00		\$41,787.14
Truck Driver (heavy)	Active	1.00	4.7	8	37.60	L	\$57.59	\$0.00		\$2,165.38
					Labor Hours	1203.2	TOTAL LABOR			\$70,996.51
					Equipment Hours	300.8	TOTAL EQUIPMENT			\$51,315.50

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$3,549.83	\$3,549.83	
						TOTAL MATERIAL	\$3,549.83

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	7.00	ton	1.000	7.00	\$595.00	\$4,165.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	72.00	\$7.25	\$522.00
					TOTAL SUBCONTRACTS	\$4,687.00

SUMMARY OF COSTS						
Labor Cost	\$70,996.51	Labor Burden @	49.7%	\$0.00		\$70,996.51
Material Cost	\$3,549.83	Material Tax @	7.8%	\$275.11		\$3,824.94
Equipment Cost	\$51,315.50	Equipment Tax @	0.0%	\$0.00		\$51,315.50
Subcontractors	\$4,687.00					\$4,687.00
DIRECT COST SUBTOTALS	\$130,549			\$275	DIRECT COST SUBTOTALS	\$130,824
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$126,136.95	\$18,920.54
Installing Contractors Profit @	8.0%				\$126,136.95	\$10,090.96
GC Markup on Subs @	5.0%				\$4,687.00	\$234.35
					TOTAL MARKUP COSTS	\$29,245.85
General Contractors Insurance @	1.0%		on		\$160,069.79	\$1,601
Bond @	1.0%		on		\$160,069.79	\$1,601
Contingency @	0.0%		on		\$163,271.19	\$0
					TOTAL COST for pay item	\$163,271

Additional Pay Item Notes :

Assumed the crane and the rail will take 5 days to dismantle and contains paint with heavy metals 10% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Crews E-19 for metals demolition, E-12 for welding , E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.039			Project	COPCO 2				
Description	Remove & Dispose - Compressed Air Systems								
Quantity	1,000.00 LBS								
Daily Production	6,000.00 LBS per			8		hour shift			
Work Days	0.167			Days		Project #	0		
Unit Price	\$1.13 per LBS			Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Total Cost	\$1,129			Probable Low Cost Parameter	6600		\$1,016	\$1.02	
				Probable High Cost Parameter	4800		\$1,355	\$1.35	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.167	8	1.33	L	\$47.23	\$0.00		\$62.97
Steelworker	Active	1.00	0.167	8	1.33	L	\$65.52	\$0.00		\$87.36
Laborer	Active	3.00	0.167	8	4.00	L	\$45.80	\$0.00		\$183.20
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.167	8	1.33	E	\$221.50	\$221.50		\$295.33
Truck Driver (heavy)	Active	1.00	0.167	8	1.33	L	\$57.59	\$0.00		\$76.79
Truck Driver (light)	Active	1.00	0.167	8	1.33	L	\$56.29	\$0.00		\$75.05
Equipment Operator (medium)	Active	1.00	0.167	8	1.33	L	\$66.28	\$0.00		\$88.37
					Labor Hours	10.66666667		TOTAL LABOR		\$573.75
					Equipment Hours	1.333333333		TOTAL EQUIPMENT		\$295.33

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$28.69	\$28.69
TOTAL MATERIAL						\$28.69

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$573.75	Labor Burden @	49.7%	\$0.00		\$573.75
Material Cost	\$28.69	Material Tax @	7.8%	\$2.22		\$30.91
Equipment Cost	\$295.33	Equipment Tax @	0.0%	\$0.00		\$295.33
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$898			\$2	DIRECT COST SUBTOTALS	\$900
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$899.99	\$135.00
Installing Contractors Profit@	8.0%				\$899.99	\$72.00
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$207.00
General Contractors Insurance @	1.0%		on		\$1,106.99	\$11
Bond @	1.0%		on		\$1,106.99	\$11
Contingency @	0.0%		on		\$1,129.13	\$0
TOTAL COST for pay item						\$1,129
Additional Pay Item Notes :						
Used RS Means : assumption for "Pipe, metal pipe, to 1-1/2" diam., selective demolition, 370 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Steelworkers to cut the pipes and 3 Laborers for hauling.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.040			Project	COPCO 2				
Description	Remove & Dispose - 2 - CO2 Systems								
Quantity	2,100.00 LBS								
Daily Production	6,000.00 LBS per			8	hour shift	Project #	Klamath Dams Removal		
Work Days	0.4 Days			Estimator	Mihaela Tomulescu				
Unit Price	\$1.23 per LBS			Probable Low Cost Parameter	6600	Total Cost	\$2,316	Unit Price Per LBS	\$1.10
Total Cost	\$2,573			Probable High Cost Parameter	4800	Total Cost	\$3,088	Unit Price Per LBS	\$1.47

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.4	8	3.20	L	\$48.27	\$0.00		\$154.46
Steelworker	Active	2.00	0.4	8	6.40	L	\$65.52	\$0.00		\$419.33
Laborer	Active	2.00	0.4	8	6.40	L	\$45.80	\$0.00		\$293.12
Equipment Operator (medium)	Active	0.00	0.4	8	0.00	L	\$66.28	\$0.00		\$0.00
Loader, FE Rubber Tire (8.6cy)	Active	0.00	0.4	8	0.00	E	\$221.50	\$221.50		\$0.00
Electrician	Active	1.00	0.4	8	3.20	L	\$45.23	\$0.00		\$144.74
Equipment Operator (light)	Active	2.00	0.4	8	6.40	L	\$64.90	\$0.00		\$415.36
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	8	3.20	E	\$111.64	\$111.64		\$357.25
Truck Driver (light)	Active	1.00	0.4	8	3.20	L	\$56.29	\$0.00		\$180.13
					Labor Hours	28.8	TOTAL LABOR			\$1,607.14
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$357.25

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$80.36	\$80.36
TOTAL MATERIAL						\$80.36

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$1,607.14	Labor Burden @	49.7%	\$0.00		\$1,607.14
Material Cost	\$80.36	Material Tax @	7.8%	\$6.23		\$86.58
Equipment Cost	\$357.25	Equipment Tax @	0.0%	\$0.00		\$357.25
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$2,045			\$6		\$2,051
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$2,050.97	\$307.65
Installing Contractors Profit@	8.0%				\$2,050.97	\$164.08
GC Markup on Subs @	5.0%				\$0.00	\$0.00
TOTAL MARKUP COSTS						\$471.72
General Contractors Insurance @	1.0%		on		\$2,522.69	\$25
Bond @	1.0%		on		\$2,522.69	\$25
Contingency @	0.0%		on		\$2,573.15	\$0
TOTAL COST for pay item						\$2,573

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 772 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 2 Laborers to load the pipes in the truck. 1 electrician for tools.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.041			Project	COPCO2				
Description	Remove & Dispose - Plant Water and Fire Protection								
Quantity	3,100.00 LBS			Project #	Klamath Dams Removal				
Daily Production	6,000.00 LBS per 8 hour shift			Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Work Days	0.5 Days			Probable Low Cost Parameter	6600		\$3,936	\$1.27	
Unit Price	\$1.41 per LBS			Probable High Cost Parameter	4800		\$5,248	\$1.69	
Total Cost	\$4,373								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	0.5	8	4.00	L	\$48.27	\$0.00		\$193.08
Steelworker	Active	4.00	0.5	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Truck Driver (light)	Active	1.00	0.5	8	4.00	L	\$56.29	\$0.00		\$225.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	\$111.64		\$446.56
Laborer	Active	4.00	0.5	8	16.00	L	\$45.80	\$0.00		\$732.80
Electrician	Active	1.00	0.5	8	4.00	L	\$45.23	\$0.00		\$180.92
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.5	8	4.00	E	\$64.23	\$64.23		\$256.92
Equipment Operator (light)	Active	1.00	0.5	8	4.00	L	\$64.90	\$0.00		\$259.60
					Labor Hours	48	TOTAL LABOR			\$2,639.88
					Equipment Hours	8	TOTAL EQUIPMENT			\$703.48

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$131.99	\$131.99
TOTAL MATERIAL						\$131.99

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,639.88	Labor Burden @	49.7%	\$0.00		\$2,639.88
Material Cost	\$131.99	Material Tax @	7.8%	\$10.23		\$142.22
Equipment Cost	\$703.48	Equipment Tax @	0.0%	\$0.00		\$703.48
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$3,475			\$10	DIRECT COST SUBTOTALS	\$3,486
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$3,485.58	\$522.84
Installing Contractors Profit@	8.0%				\$3,485.58	\$278.85
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$801.68
General Contractors Insurance @	1.0%		on		\$4,287.27	\$43
Bond @	1.0%		on		\$4,287.27	\$43
Contingency @	0.0%		on		\$4,373.01	\$0
					TOTAL COST for pay item	\$4,373

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 1140 LF of 1 1/2" pipes at 2.72 Lbs. Used 2 Forman, 4 Steelworkers to cut the pipes and 4 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION

PAY ITEM NUMBER	: 3.042	Project	: COPCO2
Description	: Remove & Dispose - Transformr Oil Fire Protection		
Quantity	: 6,500.00 LBS		
Daily Production	: 18,500.00 LBS per 8 hour shift	Project #	: Klamath Dams Removal
Work Days	: 0.4 Days	Estimator	: Mihaela Tomulescu
Unit Price	: \$0.87 per LBS	Probable Low Cost Parameter	LBS per Total Cost Unit Price Per LBS 20350 \$5,070 \$0.78
Total Cost	: \$5,633	Probable High Cost Parameter	14800 \$6,760 \$1.04

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	0.4	8	3.20	L	\$48.27	\$0.00		\$154.46	
Laborer	Active	2.00	0.4	8	6.40	L	\$45.80	\$0.00		\$293.12	
Steelworker	Active	2.00	0.4	8	6.40	L	\$65.52	\$0.00		\$419.33	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	8	3.20	E	\$111.64	\$111.64		\$357.25	
Truck Driver (light)	Active	1.00	0.4	8	3.20	L	\$56.29	\$0.00		\$180.13	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.4	8	3.20	E	\$221.50	\$221.50		\$708.80	
Equipment Operator (medium)	Active	2.00	0.4	8	6.40	L	\$66.28	\$0.00		\$424.19	
					Labor Hours	25.6				TOTAL LABOR	\$1,471.23
					Equipment Hours	6.4				TOTAL EQUIPMENT	\$1,066.05

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$73.56	\$73.56	
						TOTAL MATERIAL	\$73.56

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	3.25	ton	1.000	\$595.00	\$1,933.75	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	\$7.25	\$261.00	
					TOTAL SUBCONTRACTS	\$2,194.75

SUMMARY OF COSTS

Labor Cost	\$1,471.23	Labor Burden @	49.7%	\$0.00	\$1,471.23
Material Cost	\$73.56	Material Tax @	7.8%	\$5.70	\$79.26
Equipment Cost	\$1,066.05	Equipment Tax @	0.0%	\$0.00	\$1,066.05
Subcontractors	\$2,194.75				\$2,194.75
DIRECT COST SUBTOTALS	\$4,806			\$6	DIRECT COST SUBTOTALS \$4,811
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$392.48
Installing Contractors Profit@	8.0%				\$209.32
GC Markup on Subs @	5.0%				\$109.74
					TOTAL MARKUP COSTS \$711.54
General Contractors Insurance @	1.0%		on	\$5,522.83	\$55
Bond @	1.0%		on	\$5,522.83	\$55
Contingency @	0.0%		on	\$5,633.29	\$0
					TOTAL COST for pay item \$5,633

Additional Pay Item Notes :

Based on RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 2390 LF of 1 1/2" fire protection pipes at 2.72 Lbs. Used 1 Forman and 1 Laborers to load in drums and put them in the truck. Calculated 36 miles from Copco 1 to Yreka Transfer Recycling. Each hydropower facility has at least 150,000 gallons to 250,000 gallon of oil currently in use. This oil would have to be properly disposed of in the event of decommissioning. Oil removed from the turbines and other equipment, including transformer oil, would be either a waste oil or used oil, depending on prior use and contaminants found in the oil. Containerized oil containing contaminants such as solvents are commonly encountered at hydropower facilities. Oil sludges are common in tanks. Oil disposal would likely be costly due to the large volumes found at hydropower facilities and the ease of contamination with other regulated hazardous wastes.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.043	Project :	COPCO 2		
Description :	Remove & Dispose - Unwatering Piping		Project # :	Klamath Dams Removal	
Quantity :	32,000.00 LBS	Estimator :	Mihaela Tomulescu	LBS per	
Daily Production :	18,000.00 LBS per	Probable Low Cost Parameter	19800	Total Cost	\$21,704
Work Days :	1.8 Days	Probable High Cost Parameter	14400	Unit Price Per LBS	\$0.68
Unit Price :	\$0.75 per LBS				
Total Cost :	\$24,116				

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	1.8	8	14.40	L	\$48.27	\$0.00		\$695.09	
Laborer	Active	4.00	1.8	8	57.60	L	\$45.80	\$0.00		\$2,638.08	
Steelworker	Active	4.00	1.8	8	57.60	L	\$65.52	\$0.00		\$3,773.95	
Equipment Operator (medium)	Active	1.00	1.8	8	14.40	L	\$66.28	\$0.00		\$954.43	
Welder	Active	1.00	1.8	8	14.40	L	\$7.84	\$0.00		\$112.86	
Gas Welding Machine	Active	1.00	1.8	8	14.40	E	\$2.88	\$2.88		\$41.43	
Electrician	Active	1.00	1.8	8	14.40	L	\$45.23	\$0.00		\$651.31	
Equipment Operator (oiler)	Active	1.00	1.8	8	14.40	L	\$62.94	\$0.00		\$906.34	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.8	8	14.40	E	\$111.64	\$111.64		\$1,607.62	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.8	8	14.40	E	\$221.50	\$221.50		\$3,189.60	
Truck Driver (heavy)	Active	1.00	1.8	8	14.40	L	\$57.59	\$0.00		\$829.30	
					Labor Hours	201.6				TOTAL LABOR	\$10,561.36
					Equipment Hours	43.2				TOTAL EQUIPMENT	\$4,838.64

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,056.14	\$1,056.14	
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00	
						TOTAL MATERIAL	\$2,756.14

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.60	ton	1.000	\$595.00	\$952.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	6.40	mile	1.000	\$7.25	\$46.40	
					TOTAL SUBCONTRACTS	\$998.40

SUMMARY OF COSTS

Labor Cost	\$10,561.36	Labor Burden @	49.7%	\$0.00	\$10,561.36
Material Cost	\$2,756.14	Material Tax @	7.8%	\$213.60	\$2,969.74
Equipment Cost	\$4,838.64	Equipment Tax @	0.0%	\$0.00	\$4,838.64
Subcontractors	\$998.40				\$998.40
DIRECT COST SUBTOTALS	\$19,155			\$214	\$19,369
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$18,369.74
Installing Contractors Profit @	8.0%				\$18,369.74
GC Markup on Subs @	5.0%				\$998.40
					\$49.92
					TOTAL MARKUP COSTS
					\$4,274.96
General Contractors Insurance @	1.0%		on		\$23,643.10
Bond @	1.0%		on		\$23,643.10
Contingency @	0.0%		on		\$24,115.96
					\$236
					\$236
					\$0
					TOTAL COST for pay item
					\$24,116

Additional Pay Item Notes :

Used RS Means : Assumed Pipe, metal pipe, to 1-1/2" diam., selective demolition, around 11765 LF of 1 1/2" pipes at 2.72 Lbs. Used Crew formed of 1 Foreman, 2 Steelworkers to cut the pipes, 1 Welder to cut steel in inaccessible places , 2 Laborers to haul the pipes in the truck with the loader, 1 electrician to unplug the power and to assure the temporary power at the construction site. Calculated 36 miles from Copco to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.044			Project	COPCO 2				
Description	Remove & Dispose - Drainage Piping			Project #	Klamath Dams Removal				
Quantity	10,000.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	4,450.00	LBS per	8	Probable Low Cost Parameter	4895		\$12,489	\$1.25	
Work Days	2.2	Days		Probable High Cost Parameter	3560		\$16,652	\$1.67	
Unit Price	\$1.39 per LBS								
Total Cost	\$13,877								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.2	8	17.60	L	\$48.27	\$0.00		\$849.55
Steelworker	Active	1.00	2.2	8	17.60	L	\$65.52	\$0.00		\$1,153.15
Truck Driver (light)	Active	1.00	2.2	8	17.60	L	\$56.29	\$0.00		\$990.70
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.2	8	17.60	E	\$111.64	\$111.64		\$1,964.86
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.2	8	17.60	E	\$221.50	\$221.50		\$3,898.40
Electrician	Active	1.00	2.2	8	17.60	L	\$45.23	\$0.00		\$796.05
Equipment Operator (light)	Active	1.00	2.2	8	17.60	L	\$64.90	\$0.00		\$1,142.24
					Labor Hours	88	TOTAL LABOR			\$4,931.70
					Equipment Hours	35.2	TOTAL EQUIPMENT			\$5,863.26

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$246.58	\$246.58
TOTAL MATERIAL						\$246.58

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,931.70	Labor Burden @	49.7%	\$0.00		\$4,931.70
Material Cost	\$246.58	Material Tax @	7.8%	\$19.11		\$265.70
Equipment Cost	\$5,863.26	Equipment Tax @	0.0%	\$0.00		\$5,863.26
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$11,042			\$19	DIRECT COST SUBTOTALS	\$11,061
Installing Contractors Overhead@	15.0%	Crew			\$11,060.66	\$1,659.10
Installing Contractors Profit@	8.0%	Material			\$11,060.66	\$884.85
GC Markup on Subs @	5.0%	Subs			\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$2,543.95
General Contractors Insurance @	1.0%		on		\$13,604.61	\$136
Bond @	1.0%		on		\$13,604.61	\$136
Contingency @	0.0%		on		\$13,876.70	\$0
TOTAL COST for pay item						\$13,877

Additional Pay Item Notes :

Assumed 2735 LF of 1" drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Foreman, 1 Steelworkers to cut the pipes and 1 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	3.044a			Project	#REF!					
Description	Remove & Dispose - Petroleum Products from Mechanical Equip.									
Quantity	3,300.00 GAL									
Daily Production	1,100.00 GAL per			8	hour shift	Project #	Klamath Dams Removal			
Work Days	3.0			Days	Estimator	Mihaela Tomulescu				
Unit Price	\$4.54 per GAL				Probable Low Cost Parameter	1210	Total Cost	\$13,475	Unit Price Per GAL	\$4.08
Total Cost	\$14,972				Probable High Cost Parameter	935	Total Cost	\$17,217	Unit Price Per GAL	\$5.22

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	3.0	8	24.00	L	\$46.27	\$0.00		\$1,110.48
Carpenters, Journeyman	Active	2.00	3.0	8	48.00	L	\$65.37	\$0.00		\$3,137.76
Laborer	Active	2.00	3.0	8	48.00	L	\$45.80	\$0.00		\$2,198.40
					Labor Hours	120	TOTAL LABOR			\$6,446.64
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 20% labor (absorbant materials, drums, etc)	1.00	LS	1.000	1.00	\$1,289.33	\$1,289.33	
						TOTAL MATERIAL	\$1,289.33

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	24.00	hour	1.000	\$200.00	\$4,800.00	
					TOTAL SUBCONTRACTS	\$4,800.00

SUMMARY OF COSTS							
Labor Cost	\$6,446.64	Labor Burden @	49.7%	\$0.00		\$6,446.64	
Material Cost	\$1,289.33	Material Tax @	7.8%	\$99.92		\$1,389.25	
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00	
Subcontractors	\$4,800.00					\$4,800.00	
DIRECT COST SUBTOTALS	\$12,536			\$100	DIRECT COST SUBTOTALS	\$12,636	
Installing Contractors Overhead @	15.0%	Crew			\$7,835.89	\$1,175.38	
Installing Contractors Profit @	8.0%	Material			\$7,835.89	\$626.87	
GC Markup on Subs @	5.0%	Subs			\$4,800.00	\$240.00	
						TOTAL MARKUP COSTS	\$2,042.25
General Contractors Insurance @	1.0%		on		\$14,678.15	\$147	
Bond @	1.0%		on		\$14,678.15	\$147	
Contingency @	0.0%		on		\$14,971.71	\$0	
						TOTAL COST for pay item	\$14,972

Additional Pay Item Notes :

Petroleum-based products, ranging from fuel oil and hydraulic fluid to lubricating greases and oils, are found throughout every type of power generating plant or system. Lubrication supports bearings and moving parts in all sorts of equipment: pumps, conveyors, feeders, scrubbers, cranes, turbines, and more. A good oil/water separation system will result in a flow of concentrated waste oil to a collection area and a flow of oil-free water ready for secondary processing or discharge. Once an oil layer has been separated from free water, it must be removed for recycling or disposal. Many plants use one or more of these oil removal methods, but each has costly limitations:

- Absorbent materials. Absorbent mats or materials are frequently used to dam up and absorb excess oils and greases resulting from accidents or the routine operation of machinery. These materials are very effective for preventing the spread of a source leak and very efficient in terms of oil pickup. Yet, their use on large volumes of waste oil results in multiple, recurring costs that can make them impractical as an everyday solution:
 - the costs of the materials themselves
 - the labor costs for ordering, stocking, application, and removal
 - the costs of used-media collection, disposal, or re-processing/recycling.
- Manually operated "slotted pipes." Many separators feature a "slotted pipe," a pipe located near the top of the vessel that has a horizontal opening. Oil is removed by turning the horizontal opening downward until it meets the floating oil layer, which drains through the pipe to a collection receptacle. These pipes work well on thick layers of oil, but cannot drain off a sheen of oil without draining off a large amount of water as well.

AECOM assumed the best is Vacuum truck removal method. Used a crew formed of 1 Foreman, 2 Laborers and 2 journeymen to takeout the petroleum waste, Vacuum-equipped tank trucks are used to remove waste oil from collection points (assumed existing drums or tanks) so that it can be transported to recycling or disposal locations. If the waste oil has been thoroughly separated, highly concentrated, and stored in an appropriate receptacle, this service can be used very efficiently. However, vacuum disposal units are often used to pump oil layers directly off of water. This results in the intake of a significant amount free water along with the waste oil – and a significantly higher cost.

PAY ITEM INFORMATION												
PAY ITEM NUMBER :	3.044b			Project :	#REF!							
Description :	Remove & Dispose - Remove Petroleum Products at or near the Power House											
Quantity :	3,300.00	GAL										
Daily Production :	1,100.00	GAL per	8	hour shift	Project # :	Klamath Dams Removal						
Work Days :	3.0	Days										
Unit Price :	\$4.54	per GAL			Estimator :	Mihaela Tomulescu	GAL per	1210	Total Cost	\$13,475	Unit Price Per GAL	\$4.08
Total Cost :	\$14,972				Probable Low Cost Parameter		935	\$17,217	Probable High Cost Parameter			\$5.22

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	3.0	8	24.00	L	\$46.27	\$0.00			\$1,110.48
Carpenters, Journeyman	Active	2.00	3.0	8	48.00	L	\$65.37	\$0.00			\$3,137.76
Laborer	Active	2.00	3.0	8	48.00	L	\$45.80	\$0.00			\$2,198.40
					Labor Hours	120	TOTAL LABOR				\$6,446.64
					Equipment Hours	0	TOTAL EQUIPMENT				\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 20% labor (absorbant materials, etc)	1.00	LS	1.000	1.00	\$1,289.33	\$1,289.33
TOTAL MATERIAL						\$1,289.33

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	24.00	hour	1.000	\$200.00	\$4,800.00
TOTAL SUBCONTRACTS					\$4,800.00

SUMMARY OF COSTS									
Labor Cost	\$6,446.64	Labor Burden @		49.7%	\$0.00				\$6,446.64
Material Cost	\$1,289.33	Material Tax @		7.8%	\$99.92				\$1,389.25
Equipment Cost	\$0.00	Equipment Tax @		0.0%	\$0.00				\$0.00
Subcontractors	\$4,800.00								\$4,800.00
DIRECT COST SUBTOTALS	\$12,536				\$100			DIRECT COST SUBTOTALS	\$12,636
Installing Contractors Overhead@	15.0%	Crew	Material	Subs	Cost Basis				\$1,175.38
Installing Contractors Profit@	8.0%								\$626.87
GC Markup on Subs @	5.0%								\$240.00
TOTAL MARKUP COSTS									\$2,042.25
General Contractors Insurance @	1.0%			on	\$14,678.15				\$147
Bond @	1.0%			on	\$14,678.15				\$147
Contingency @	0.0%			on	\$14,971.71				\$0
TOTAL COST for pay item									\$14,972

Additional Pay Item Notes :

Used a crew formed of 1 Foreman, 2 journeymen, 2 Laborers to takeout the petroleum waste. Vacuum-equipped tank trucks are used to remove old and new oil and the fuel from collection points so that it can be transported to recycling or disposal locations.

PAY ITEM COST DETAIL WORKSHEET

3.045 Remove & Dispose - AC Generator, Indoor Vertical

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.045	Project	: COPCO 2						
Description	: Remove & Dispose - AC Generator, Indoor Vertical								
Quantity	: 2.00 EA								
Daily Production	: 0.20 EA per	8	hour shift						
Work Days	: 10.0 Days	Project #	: Klamath Dams Removal						
Unit Price	: \$82,295.42 per EA	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Total Cost	: \$164,591	Probable Low Cost Parameter	0.22	\$148,132	\$74,065.87				
		Probable High Cost Parameter	0.18	\$181,050	\$90,524.96				

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	1.00	10.0	8	80.00	L	\$47.23	\$0.00			\$3,778.40
Electrician	Active	6.00	10.0	8	480.00	L	\$45.23	\$0.00			\$21,710.40
Equipment Operator (oiler)	Active	2.00	10.0	8	160.00	L	\$62.94	\$0.00			\$10,070.40
Equipment Operator (crane)	Active	1.00	10.0	8	80.00	L	\$68.41	\$0.00			\$5,472.80
Crawler Crane (130tn)	Active	1.00	10.0	8	80.00	E	\$258.66	\$258.66			\$20,692.80
Steelworker	Active	6.00	10.0	8	480.00	L	\$65.52	\$0.00			\$31,449.60
Labor Foreman	Active	1.00	10.0	8	80.00	L	\$48.27	\$0.00			\$3,861.60
Welder	Active	2.00	10.0	8	160.00	L	\$7.84	\$0.00			\$1,254.00
Gas Welding Machine	Active	2.00	10.0	8	160.00	E	\$2.88	\$2.88			\$460.32
Truck Driver (heavy)	Active	2.00	10.0	8	160.00	L	\$57.59	\$0.00			\$9,214.40
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	10.0	8	160.00	E	\$31.90	\$31.90			\$5,104.00
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	2.00	10.0	8	160.00	E	\$30.85	\$30.85			\$4,936.00
					Labor Hours	1680	TOTAL LABOR				\$86,811.60
					Equipment Hours	560	TOTAL EQUIPMENT				\$31,193.12

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$8,681.16	\$8,681.16	
						TOTAL MATERIAL	\$8,681.16

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Disposal fee (for 115 tons)	1 EA		1.000	1.00	\$4,488.00	\$4,488.00	
						TOTAL SUBCONTRACTS	\$4,488.00

SUMMARY OF COSTS									
Labor Cost	\$86,811.60	Labor Burden @	49.7%	\$0.00	\$86,811.60				
Material Cost	\$8,681.16	Material Tax @	7.8%	\$672.79	\$9,353.95				
Equipment Cost	\$31,193.12	Equipment Tax @	0.0%	\$0.00	\$31,193.12				
Subcontractors	\$4,488.00				\$4,488.00				
DIRECT COST SUBTOTALS	\$131,174			\$673	\$131,847				
Installing Contractors Overhead @	15.0%	Crew			\$127,358.67				
Installing Contractors Profit @	8.0%	Material			\$127,358.67				
GC Markup on Subs @	5.0%	Subs			\$4,488.00				
					TOTAL MARKUP COSTS	\$29,516.89			
General Contractors Insurance @	1.0%	on			\$161,363.56				
Bond @	1.0%	on			\$161,363.56				
Contingency @	0.0%	on			\$164,590.83				
					TOTAL COST for pay item	\$164,591			

Additional Pay Item Notes :

Assumed removal of 2 units in 2 weeks, weight per unit around 230000 LBS (stator, rotor, base, exciter assembly). Used RS Means, 2 X R13 Crew formed of 1 Foreman, 3 Electricians, 1 Oiler, 0.25 Equipment Crane, 3 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes. Calculated 34 miles from JC Copco1 to Yreka Transfer Recycling (back and forth).

PAY ITEM COST DETAIL WORKSHEET

3.046 Remove & Dispose - Excitation equipment for 15 MVA Generator

PAY ITEM INFORMATION										
PAY ITEM NUMBER	3.046			Project	#REF!					
Description	Remove & Dispose - Excitation equipment for 15 MVA Generator									
Quantity	2.00 EA									
Daily Production	1.50 EA per 1.3 Days			Project #	Klamath Dams Removal					
Work Days	8 hour shift			Estimator	Mihaela Tomulescu					
Unit Price	\$8,173.98 per EA			Probable Low Cost Parameter	EA per	1.65	Total Cost	\$14,713	Unit Price Per EA	\$7,356.58
Total Cost	\$16,348			Probable High Cost Parameter	1.35	\$17,983	\$17,983	\$8,991.38		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.3	8	10.40	L	\$47.23	\$0.00		\$491.19
Electrician	Active	2.00	1.3	8	20.80	L	\$45.23	\$0.00		\$940.78
Ironworkers	Active	1.00	1.3	8	10.40	L	\$63.95	\$0.00		\$665.08
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	\$221.50		\$1,772.00
Truck Driver (heavy)	Active	1.00	1.3	8	10.40	L	\$57.59	\$0.00		\$598.94
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.3	8	10.40	E	\$111.64	\$111.64		\$1,161.06
Hydraulic Crane (120tn)	Active	1.00	1.3	8	10.40	E	\$239.06	\$239.06		\$2,486.22
Laborer	Active	2.00	1.3	8	20.80	L	\$45.80	\$0.00		\$952.64
Equipment Operator (crane)	Active	1.00	1.3	8	10.40	L	\$68.41	\$0.00		\$711.46
Equipment Operator (medium)	Active	1.00	1.3	8	10.40	L	\$66.28	\$0.00		\$689.31
					Labor Hours	93.6	TOTAL LABOR			\$5,049.41
					Equipment Hours	28.8	TOTAL EQUIPMENT			\$5,419.28

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$252.47	\$252.47
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00
TOTAL MATERIAL						\$2,377.47

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$5,049.41	Labor Burden @	49.7%	\$0.00		\$5,049.41	
Material Cost	\$2,377.47	Material Tax @	7.8%	\$184.25		\$2,561.72	
Equipment Cost	\$5,419.28	Equipment Tax @	0.0%	\$0.00		\$5,419.28	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$12,846			\$184	DIRECT COST SUBTOTALS	\$13,030	
Installing Contractors Overhead@	15.0%					\$1,954.56	
Installing Contractors Profit@	8.0%					\$1,042.43	
GC Markup on Subs @	5.0%					\$0.00	
						TOTAL MARKUP COSTS	\$2,996.99
General Contractors Insurance @	1.0%		on	\$16,027.41		\$160	
Bond @	1.0%		on	\$16,027.41		\$160	
Contingency @	0.0%		on	\$16,347.96		\$0	
						TOTAL COST for pay item	\$16,348
Additional Pay Item Notes :							
Production based on 1 Forman, 1 Electrician, 1 Welder to cut to remove the electrical equipment and 1 laborer to haul. Equipment used 1 Loader and 1 Crane for disposal. Assumed 2 sections, weight 1000LBS.							

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.047	Project	: COPCO 2						
Description	: Remove & Dispose - Surge protection equip. for 15 MVA Generator								
Quantity	: 2.00 EA								
Daily Production	: 1.50 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.3 Days	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Unit Price	: \$2,582.65 per EA	Probable Low Cost Parameter	1.65	\$4,649	\$2,324.39				
Total Cost	: \$5,165	Probable High Cost Parameter	1.35	\$5,682	\$2,840.92				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.3	8	10.40	L	\$47.23	\$0.00		\$491.19
Electrician	Active	1.00	1.3	8	10.40	L	\$45.23	\$0.00		\$470.39
Truck Driver (heavy)	Active	1.00	1.3	8	10.40	L	\$57.59	\$0.00		\$598.94
Ironworkers	Active	1.00	1.0	8	8.00	L	\$63.95	\$0.00		\$511.60
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	\$0.00		\$732.80
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.3	8	10.40	E	\$111.64	\$111.64		\$1,161.06
					Labor Hours	55.2	TOTAL LABOR			\$2,804.92
					Equipment Hours	10.4	TOTAL EQUIPMENT			\$1,161.06

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$140.25	\$140.25	
						TOTAL MATERIAL	\$140.25

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$2,804.92	Labor Burden @	49.7%	\$0.00	\$2,804.92				
Material Cost	\$140.25	Material Tax @	7.8%	\$10.87	\$151.12				
Equipment Cost	\$1,161.06	Equipment Tax @	0.0%	\$0.00	\$1,161.06				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$4,106			\$11	\$4,117				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$4,117.09				
Installing Contractors Profit@	8.0%				\$329.37				
GC Markup on Subs @	5.0%				\$0.00				
					TOTAL MARKUP COSTS	\$946.93			
General Contractors Insurance @	1.0%		on	\$5,064.02	\$51				
Bond @	1.0%		on	\$5,064.02	\$51				
Contingency @	0.0%		on	\$5,165.30	\$0				
					TOTAL COST for pay item	\$5,165			
Additional Pay Item Notes :									
Assumption for Crew R3: 1 Forman, 1 Electrician, 2 Ironworker to cut rods and 1 laborer to haul in the truck.. Assumed 2 sections, weight 800LBS.									

PAY ITEM COST DETAIL WORKSHEET

3.048 Remove & Dispose - Neutral grounding equip. for 15 MVA Generator

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	3.048			Project :	COPCO 2					
Description :	Remove & Dispose - Neutral grounding equip. for 15 MVA Generator									
Quantity :	2.00	EA								
Daily Production :	2.00	EA per	8	hour shift	Project # :	Klamath Dams Removal				
Work Days :	1.0	Days			Estimator :	Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA
Unit Price :	\$2,514.72 per EA				Probable Low Cost Parameter	2.2	\$4,526	\$2,263.25		
Total Cost :	\$5,029				Probable High Cost Parameter	1.7	\$5,784	\$2,891.93		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	\$0.00		\$377.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Ironworkers	Active	2.00	1.0	8	16.00	L	\$63.95	\$0.00		\$1,023.20
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	\$0.00		\$732.80
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
					Labor Hours	56	TOTAL LABOR			\$2,956.40
					Equipment Hours	8	TOTAL EQUIPMENT			\$893.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$147.82	\$147.82
TOTAL MATERIAL						\$147.82

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,956.40	Labor Burden @	49.7%	\$0.00		\$2,956.40
Material Cost	\$147.82	Material Tax @	7.8%	\$11.46		\$159.28
Equipment Cost	\$893.12	Equipment Tax @	0.0%	\$0.00		\$893.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$3,997			\$11	DIRECT COST SUBTOTALS	\$4,009
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$4,008.80	\$601.32
Installing Contractors Profit@	8.0%				\$4,008.80	\$320.70
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$922.02
General Contractors Insurance @	1.0%		on		\$4,930.82	\$49
Bond @	1.0%		on		\$4,930.82	\$49
Contingency @	0.0%		on		\$5,029.44	\$0
TOTAL COST for pay item						\$5,029
Additional Pay Item Notes :						
Assumption for Crew R3: 1 Forman, 1 Electrician, 2 Ironworker to cut rods and 2 laborer to haul in the truck. (500 lbs)						

PAY ITEM COST DETAIL WORKSHEET

3.049 Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.049				Project	COPCO 2			
Description	Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers								
Quantity	1.00	EA							
Daily Production	0.50	EA per	8	hour shift	Project #	Klamath Dams Removal			
Work Days	2.0	Days			Estimator	Mihaela Tomulescu EA per Total Cost Unit Price Per EA			
Unit Price	\$27,340.22	per EA			Probable Low Cost Parameter	0.55	\$24,606	\$24,606.19	
Total Cost	\$27,340				Probable High Cost Parameter	0.425	\$31,441	\$31,441.25	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	2.0	8	32.00	L	\$47.23	\$0.00		\$1,511.36
Electrician	Active	6.00	2.0	8	96.00	L	\$45.23	\$0.00		\$4,342.08
Laborer	Active	3.00	2.0	8	48.00	L	\$45.80	\$0.00		\$2,198.40
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	\$221.50		\$3,544.00
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	\$0.00		\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	\$111.64		\$1,786.24
Hydraulic Crane (120tn)	Active	1.00	2.0	8	16.00	E	\$239.06	\$239.06		\$3,824.96
Welder	Active	1.00	2.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	1.00	2.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	\$0.00		\$1,060.48
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	\$0.00		\$1,094.56
					Labor Hours	240	TOTAL LABOR			\$11,253.72
					Equipment Hours	64	TOTAL EQUIPMENT			\$9,201.23

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$562.69	\$562.69
TOTAL MATERIAL						\$562.69

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	1.00	\$595.00	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	36.00	\$7.25	\$261.00
TOTAL SUBCONTRACTS						\$856.00

SUMMARY OF COSTS						
Labor Cost	\$11,253.72	Labor Burden @	49.7%	\$0.00		\$11,253.72
Material Cost	\$562.69	Material Tax @	7.8%	\$43.61		\$606.29
Equipment Cost	\$9,201.23	Equipment Tax @	0.0%	\$0.00		\$9,201.23
Subcontractors	\$856.00					\$856.00
DIRECT COST SUBTOTALS	\$21,874			\$44	DIRECT COST SUBTOTALS	\$21,917
Installing Contractors Overhead @	15.0%			\$21,061.25		\$3,159.19
Installing Contractors Profit @	8.0%			\$21,061.25		\$1,684.90
GC Markup on Subs @	5.0%			\$856.00		\$42.80
TOTAL MARKUP COSTS						\$4,886.89
General Contractors Insurance @	1.0%	on		\$26,804.13		\$268
Bond @	1.0%	on		\$26,804.13		\$268
Contingency @	0.0%	on		\$27,340.22		\$0
TOTAL COST for pay item						\$27,340

Additional Pay Item Notes :

Used 2 Crews (2 sections each weight around 2400 LBS per crew) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck. Assumed containing hazardous waste that will be disposed at 36 miles away from the construction site to Yreka Transfer Recycling . In normal circumstances, decontaminated residual components could be accepted at landfill sites but Polychlorinated biphenyl, otherwise known as PCB, is a synthetic chemical that is widely used for industrial and commercial use as dielectric fluid in transformers and capacitors because of its high resistance to decomposition, low electrical conductivity, low flammability and high heat capacity. Transformer repair, reconditioning and retro-filling facilities are the major industry sectors that contributes to the spread of PCB contamination. Types of PCB Wastes:
 PCB wastes are discarded materials that contain PCB or have been contaminated with PCBs and that are without any commercial, industrial, or economic use. For the purpose of this Code of Practice, PCBs wastes are classified as follows: Liquid PCB wastes
 o PCB-based dielectric fluids removed from transformers and other equipment
 o PCB-based heat transfer and hydraulic fluids Metallic solid wastes
 o PCB equipment such as capacitors, transformers, **switchgears**, circuit breakers, heat transfer systems, etc.
 o Contaminated components removed from electrical equipment such as windings;
 o PCB-contaminated containers and equipment such as metal drums, tanks, pumps, metal filters, etc.

PAY ITEM COST DETAIL WORKSHEET

3.050 Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 3.050	Project	: COPCO 2								
Description	: Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)										
Quantity	: 1.00 EA										
Daily Production	: 0.50 EA per	8	hour shift								
Work Days	: 2.0 Days										
Unit Price	: \$24,083.60 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	0.55	Total Cost	\$21,675	Unit Price Per EA	\$21,675.24
Total Cost	: \$24,084	Probable Low Cost Parameter		Probable High Cost Parameter		0.425	\$27,696	\$27,696.15			

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	2.0	8	48.00	L	\$47.23	\$0.00		\$2,267.04
Electrician	Active	6.00	2.0	8	96.00	L	\$45.23	\$0.00		\$4,342.08
Laborer	Active	6.00	2.0	8	96.00	L	\$45.80	\$0.00		\$4,396.80
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	\$221.50		\$3,544.00
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	\$0.00		\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	\$111.64		\$1,786.24
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	\$0.00		\$1,060.48
Welder	Active	1.00	2.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	1.00	2.0	8	16.00	E	\$2.88	\$2.88		\$46.03
					Labor Hours	288	TOTAL LABOR			\$13,113.24
					Equipment Hours	48	TOTAL EQUIPMENT			\$5,376.27

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$655.66	\$655.66
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85	\$0.00
TOTAL MATERIAL						\$655.66

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.00	ton	1.000	\$595.00	\$0.30
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	0.00	mile	1.000	\$7.25	\$0.00
TOTAL SUBCONTRACTS					\$0.30

SUMMARY OF COSTS						
Labor Cost	\$13,113.24	Labor Burden @	49.7%	\$0.00		\$13,113.24
Material Cost	\$655.66	Material Tax @	7.8%	\$50.81		\$706.48
Equipment Cost	\$5,376.27	Equipment Tax @	0.0%	\$0.00		\$5,376.27
Subcontractors	\$0.30					\$0.30
DIRECT COST SUBTOTALS	\$19,145			\$51	DIRECT COST SUBTOTALS	\$19,196
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$2,879.40
Installing Contractors Profit @	8.0%					\$1,535.68
GC Markup on Subs @	5.0%					\$0.01
					TOTAL MARKUP COSTS	\$4,415.09
General Contractors Insurance @	1.0%		on		\$23,611.38	\$236
Bond @	1.0%		on		\$23,611.38	\$236
Contingency @	0.0%		on		\$24,083.60	\$0
					TOTAL COST for pay item	\$24,084

Additional Pay Item Notes :
 Used 3 Crews (2 sections each, weight around 800lbs per crew) formed of 1 Foreman, 2 Electrician, 1 welder to cut, 2 laborer to haul with the loader in the truck. Assumed containing hazardous waste that will be disposed . Calculated 34 miles from Copco 1 to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.051	Project	: COPCO 2						
Description	: Remove & Dispose - Unit and plant control switchboard								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days								
Unit Price	: \$7,551.93 per EA	Estimator	: Mihaela Tomulescu	EA per	: 1.1	Total Cost	: \$6,797	Unit Price Per EA	: \$6,796.74
Total Cost	: \$7,552	Probable Low Cost Parameter	: 0.85	Total Cost	: \$8,685	Unit Price Per EA	: \$8,684.72		
		Probable High Cost Parameter	: 0.85	Total Cost	: \$8,685	Unit Price Per EA	: \$8,684.72		

CREW COSTS												
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost		
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	\$0.00			\$377.84	
Electrician	Active	4.00	1.0	8	32.00	L	\$45.23	\$0.00			\$1,447.36	
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	\$0.00			\$530.24	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	\$221.50			\$1,772.00	
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00			\$460.72	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64			\$893.12	
Laborer	Active	1.00	1.0	8	8.00	L	\$45.80	\$0.00			\$366.40	
					Labor Hours	64					TOTAL LABOR	\$3,182.56
					Equipment Hours	16					TOTAL EQUIPMENT	\$2,665.12

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$159.13	\$159.13	
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85	\$0.00	
						TOTAL MATERIAL	\$159.13

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.00	ton	1.000	\$595.00	\$0.30	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	0.00	mile	1.000	\$7.25	\$0.00	
					TOTAL SUBCONTRACTS	\$0.30

SUMMARY OF COSTS									
Labor Cost	\$3,182.56	Labor Burden @	49.7%	\$0.00	\$3,182.56				
Material Cost	\$159.13	Material Tax @	7.8%	\$12.33	\$171.46				
Equipment Cost	\$2,665.12	Equipment Tax @	0.0%	\$0.00	\$2,665.12				
Subcontractors	\$0.30				\$0.30				
DIRECT COST SUBTOTALS	\$6,007			\$12	\$6,019				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$902.87				
Installing Contractors Profit@	8.0%				\$481.53				
GC Markup on Subs @	5.0%				\$0.01				
					TOTAL MARKUP COSTS	\$1,384.42			
General Contractors Insurance @	1.0%		on	\$7,403.86	\$74				
Bond @	1.0%		on	\$7,403.86	\$74				
Contingency @	0.0%		on	\$7,551.93	\$0				
					TOTAL COST for pay item	\$7,552			

Additional Pay Item Notes :

Assumed 2 day of work to dispose unit and plant control switchboard with R3 electrical crew and laborers for hauling with the loader in the truck.

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	3.052				Project :	COPCO 2				
Description :	Remove & Dispose - Battery system				Project # :	Klamath Dams Removal				
Quantity :	1.00 EA				Estimator :	Mihaela Tomulescu				
Daily Production :	0.50 EA per		8		Probable Low Cost Parameter	0.55	Total Cost	\$9,426	Unit Price Per EA	\$9,425.89
Work Days :	2.0 Days				Probable High Cost Parameter	0.425	\$12,044	\$12,044.19		
Unit Price :	\$10,473.21 per EA									
Total Cost :	\$10,473									

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	\$0.00		\$740.32
Electrician	Active	2.00	2.0	8	32.00	L	\$45.23	\$0.00		\$1,447.36
Laborer	Active	4.00	2.0	8	64.00	L	\$45.80	\$0.00		\$2,931.20
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.0	8	8.00	E	\$64.23	\$64.23		\$513.84
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Equipment Operator (light)	Active	1.00	1.0	8	8.00	L	\$64.90	\$0.00		\$519.20
Welder	Active	1.00	2.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	1.00	2.0	8	16.00	E	\$2.88	\$2.88		\$46.03
					Labor Hours	144	TOTAL LABOR			\$6,224.20
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,452.99

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$622.42	\$622.42	
						TOTAL MATERIAL	\$622.42

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$6,224.20	Labor Burden @	49.7%	\$0.00		\$6,224.20
Material Cost	\$622.42	Material Tax @	7.8%	\$48.24		\$670.66
Equipment Cost	\$1,452.99	Equipment Tax @	0.0%	\$0.00		\$1,452.99
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$8,300			\$48	DIRECT COST SUBTOTALS	\$8,348
Installing Contractors Overhead @	15.0%	Crew		\$8,347.85		\$1,252.18
Installing Contractors Profit @	8.0%	Material		\$8,347.85		\$667.83
GC Markup on Subs @	5.0%	Subs		\$0.00		\$0.00
					TOTAL MARKUP COSTS	\$1,920.01
General Contractors Insurance @	1.0%		on	\$10,267.85		\$103
Bond @	1.0%		on	\$10,267.85		\$103
Contingency @	0.0%		on	\$10,473.21		\$0
					TOTAL COST for pay item	\$10,473

Additional Pay Item Notes :

Assuming 2 days of work disposing around 100 batteries, racks and supports. Using Crews E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.053	Project	: COPCO 2						
Description	: Remove & Dispose - Raceways, Conduit and Cable								
Quantity	: 1.00 EA								
Daily Production	: 0.50 EA per	8	hour shift						
Work Days	: 2.0 Days								
Unit Price	: \$15,384.27 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per		Total Cost	
Total Cost	: \$15,384	Probable Low Cost Parameter		0.55		\$13,846		Unit Price Per EA	\$13,845.84
		Probable High Cost Parameter		0.425		\$17,692			\$17,691.91

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.0	8	16.00	L	\$48.27	\$0.00		\$772.32
Electrician	Active	4.00	2.0	8	64.00	L	\$45.23	\$0.00		\$2,894.72
Laborer	Active	6.00	2.0	8	96.00	L	\$45.80	\$0.00		\$4,396.80
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.0	8	8.00	E	\$64.23	\$64.23		\$513.84
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Equipment Operator (light)	Active	1.00	1.0	8	8.00	L	\$64.90	\$0.00		\$519.20
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	\$0.00		\$755.68
					Labor Hours	208	TOTAL LABOR			\$9,799.44
					Equipment Hours	16	TOTAL EQUIPMENT			\$1,406.96

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$979.94	\$979.94	
						TOTAL MATERIAL	\$979.94

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$9,799.44	Labor Burden @	49.7%	\$0.00		\$9,799.44
Material Cost	\$979.94	Material Tax @	7.8%	\$75.95		\$1,055.89
Equipment Cost	\$1,406.96	Equipment Tax @	0.0%	\$0.00		\$1,406.96
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$12,186			\$76	DIRECT COST SUBTOTALS	\$12,262
Installing Contractors Overhead @	15.0%	Crew			\$12,262.29	\$1,839.34
Installing Contractors Profit @	8.0%	Material			\$12,262.29	\$980.98
GC Markup on Subs @	5.0%	Subs			\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$2,820.33
General Contractors Insurance @	1.0%		on	\$15,082.62		\$151
Bond @	1.0%		on	\$15,082.62		\$151
Contingency @	0.0%		on	\$15,384.27		\$0
					TOTAL COST for pay item	\$15,384

Additional Pay Item Notes :

Assumption for removal of control power cable, conduit (3000 LF) and cable tray (300 LF) - using R3 electrical crew and laborers for hauling with the loader.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 3.054	Project	: COPCO 2								
Description	: Remove & Dispose - Misc. Power & Control Boards										
Quantity	: 1.00 EA										
Daily Production	: 1.00 EA per	8	hour shift								
Work Days	: 1.0 Days										
Unit Price	: \$5,724.44 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	1.1	Total Cost	\$5,152	Unit Price Per EA	\$5,152.00
Total Cost	: \$5,724	Probable Low Cost Parameter	1.1	\$5,152	\$5,152.00	Probable High Cost Parameter	0.85	\$6,583	\$6,583.11		

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	\$0.00		\$370.16
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	\$0.00		\$732.80
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Hydraulic Crane (35tn)	Active	1.00	1.0	8	8.00	E	\$116.30	\$116.30		\$930.40
					Labor Hours	48	TOTAL LABOR			\$2,472.80
					Equipment Hours	16	TOTAL EQUIPMENT			\$1,823.52

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$247.28	\$247.28
TOTAL MATERIAL						\$247.28

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,472.80	Labor Burden @	49.7%	\$0.00		\$2,472.80
Material Cost	\$247.28	Material Tax @	7.8%	\$19.16		\$266.44
Equipment Cost	\$1,823.52	Equipment Tax @	0.0%	\$0.00		\$1,823.52
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$4,544			\$19	DIRECT COST SUBTOTALS	\$4,563
Installing Contractors Overhead @	15.0%	Crew		\$4,562.76		\$684.41
Installing Contractors Profit @	8.0%	Material		\$4,562.76		\$365.02
GC Markup on Subs @	5.0%	Subs		\$0.00		\$0.00
					TOTAL MARKUP COSTS	\$1,049.44
General Contractors Insurance @	1.0%		on	\$5,612.20		\$56
Bond @	1.0%		on	\$5,612.20		\$56
Contingency @	0.0%		on	\$5,724.44		\$0
					TOTAL COST for pay item	\$5,724

Additional Pay Item Notes :

Assumption for removal of 3' x 2' x 9" boards - 10 each using R3 electrical crew and laborers for hauling with the loader.

PAY ITEM COST DETAIL WORKSHEET

3.055 Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist (2-30Hp)

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	3.055			Project :	COPCO 2					
Description :	Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist (2-30Hp)									
Quantity :	1.00	EA								
Daily Production :	2.00	EA per	8	hour shift	Project # :	Klamath Dams Removal				
Work Days :	0.5	Days								
Unit Price :	\$3,548.91	per EA								
Total Cost :	\$3,549								Estimator :	Mihaela Tomulescu
					EA per	2.2	Total Cost	\$3,194	Unit Price Per EA	\$3,194.02
					Probable Low Cost Parameter			\$4,081		
					Probable High Cost Parameter	1.7			\$4,081.25	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	1.00	0.5	8	4.00	E	\$190.46	\$190.46		\$761.84
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	\$111.64		\$446.56
Laborer	Active	2.00	0.5	8	8.00	L	\$45.80	\$0.00		\$366.40
Equipment Operator (crane)	Active	1.00	0.5	8	4.00	L	\$68.41	\$0.00		\$273.64
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	\$0.00		\$230.36
Steelworker	Active	1.00	0.5	8	4.00	L	\$65.52	\$0.00		\$262.08
					Labor Hours	20	TOTAL LABOR			\$1,132.48
					Equipment Hours	8	TOTAL EQUIPMENT			\$1,208.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$56.62	\$56.62
TOTAL MATERIAL						\$56.62

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Disposal fee	1	EA	1	\$1.00	\$500.00
TOTAL SUBCONTRACTS					\$500.00

SUMMARY OF COSTS						
Labor Cost	\$1,132.48	Labor Burden @	49.7%	\$0.00		\$1,132.48
Material Cost	\$56.62	Material Tax @	7.8%	\$4.39		\$61.01
Equipment Cost	\$1,208.40	Equipment Tax @	0.0%	\$0.00		\$1,208.40
Subcontractors	\$500.00					\$500.00
DIRECT COST SUBTOTALS	\$2,898			\$4	DIRECT COST SUBTOTALS	\$2,902
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$360.28
Installing Contractors Profit@	8.0%					\$192.15
GC Markup on Subs @	5.0%					\$25.00
TOTAL MARKUP COSTS						\$577.44
General Contractors Insurance @	1.0%		on	\$3,479.33		\$35
Bond @	1.0%		on	\$3,479.33		\$35
Contingency @	0.0%		on	\$3,548.91		\$0
TOTAL COST for pay item						\$3,549

Additional Pay Item Notes :

Assumed removal of hoist, hoist trolley, gantry: 1 Steelworker and 1 Laborers to load the overhead crane motors in the truck using the crane.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.056	Project	: COPCO 2						
Description	: Remove & Dispose - 40-Ton Travelling Crane control equipment								
Quantity	: 1.00 EA								
Daily Production	: 0.50 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 2.0 Days								
Unit Price	: \$11,203.08 per EA	Estimator	: Mihaela Tomulescu	EA per	: 0.55	Total Cost	: \$10,083	Unit Price Per EA	: \$10,082.77
Total Cost	: \$11,203	Probable Low Cost Parameter	: 0.55	Total Cost	: \$12,884	Unit Price Per EA	: \$12,883.54		
		Probable High Cost Parameter	: 0.425	Total Cost	: \$12,884	Unit Price Per EA	: \$12,883.54		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	\$111.64		\$1,786.24
Hydraulic Crane (80tn)	Active	1.00	2.0	8	16.00	E	\$190.46	\$190.46		\$3,047.36
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	\$0.00		\$1,465.60
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	\$0.00		\$1,094.56
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	\$0.00		\$921.44
					Labor Hours	64	TOTAL LABOR			\$3,481.60
					Equipment Hours	32	TOTAL EQUIPMENT			\$4,833.60

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$174.08	\$174.08		
							TOTAL MATERIAL	\$174.08

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Disposal fee	1 EA		1.000	1.00	\$500.00	\$500.00	
						\$0.00	
						\$0.00	
						TOTAL SUBCONTRACTS	\$500.00

SUMMARY OF COSTS								
Labor Cost	\$3,481.60	Labor Burden @	49.7%	\$0.00			\$3,481.60	
Material Cost	\$174.08	Material Tax @	7.8%	\$13.49			\$187.57	
Equipment Cost	\$4,833.60	Equipment Tax @	0.0%	\$0.00			\$4,833.60	
Subcontractors	\$500.00						\$500.00	
DIRECT COST SUBTOTALS	\$8,989			\$13	DIRECT COST SUBTOTALS		\$9,003	
Installing Contractors Overhead@	15.0%	Crew	Material	Subs	Cost Basis		\$1,275.42	
Installing Contractors Profit@	8.0%						\$680.22	
GC Markup on Subs @	5.0%						\$25.00	
							TOTAL MARKUP COSTS	\$1,980.64
General Contractors Insurance @	1.0%			on	\$10,983.41		\$110	
Bond @	1.0%			on	\$10,983.41		\$110	
Contingency @	0.0%			on	\$11,203.08		\$0	
							TOTAL COST for pay item	\$11,203

Additional Pay Item Notes :

Assumed 5 cubicles: 2 Laborers and 1 Electrician will load in the truck with the crane the control equipment.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.057	Project	: COPCO 2						
Description	: Remove & Dispose - 40-Ton Travelling Crane Festoon Cable								
Quantity	: 1.00 EA								
Daily Production	: 2.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 0.5 Days								
Unit Price	: \$2,557.66 per EA	Estimator	: Mihaela Tomulescu	EA per	: 2.2	Total Cost	: \$2,302	Unit Price Per EA	: \$2,301.89
Total Cost	: \$2,558	Probable Low Cost Parameter	: 1.7	Total Cost	: \$2,941	Unit Price Per EA	: \$2,941.30		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	0.5	8	8.00	L	\$45.80	\$0.00		\$366.40
Equipment Operator (medium)	Active	1.00	0.5	8	4.00	L	\$66.28	\$0.00		\$265.12
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.5	8	4.00	E	\$64.23	\$64.23		\$256.92
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	\$111.64		\$446.56
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	\$0.00		\$230.36
					Labor Hours	16	TOTAL LABOR			\$861.88
					Equipment Hours	8	TOTAL EQUIPMENT			\$703.48

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$43.09	\$43.09	
						TOTAL MATERIAL	\$43.09

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Disposal fee (Allowance)	1.00	EA	1.000	1.00	\$500.00	
					TOTAL SUBCONTRACTS	\$500.00

SUMMARY OF COSTS							
Labor Cost	\$861.88	Labor Burden @	49.7%	\$0.00		\$861.88	
Material Cost	\$43.09	Material Tax @	7.8%	\$3.34		\$46.43	
Equipment Cost	\$703.48	Equipment Tax @	0.0%	\$0.00		\$703.48	
Subcontractors	\$500.00					\$500.00	
DIRECT COST SUBTOTALS	\$2,108			\$3	DIRECT COST SUBTOTALS	\$2,112	
Installing Contractors Overhead@	15.0%	Crew			\$1,611.79	\$241.77	
Installing Contractors Profit@	8.0%	Material			\$1,611.79	\$128.94	
GC Markup on Subs @	5.0%	Subs			\$500.00	\$25.00	
						TOTAL MARKUP COSTS	\$395.71
General Contractors Insurance @	1.0%		on		\$2,507.51	\$25	
Bond @	1.0%		on		\$2,507.51	\$25	
Contingency @	0.0%		on		\$2,557.66	\$0	
						TOTAL COST for pay item	\$2,558

Additional Pay Item Notes :

Assumed 200 LF of cable: 2 Laborers will load in the truck with the loader the overhead crane cable.

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	3.058a	Project :	COPCO 2							
Description :	Remove Oil from Oil-Filled Step-up Transformers		Estimator :	Mihaela Tomulescu						
Quantity :	23,000.00	GAL	Project # :	Klamath Dams Removal						
Daily Production :	10,000.00	GAL per	8	hour shift	Probable Low Cost Parameter	11000	Total Cost	\$219,288	Unit Price Per GAL	\$9.53
Work Days :	2.3	Days	Probable High Cost Parameter	9000	\$268,019	\$11.65				
Unit Price :	\$10.59	per GAL								
Total Cost :	\$243,653									

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.3	8	18.40	L	\$46.27	\$0.00		\$851.37
Electrician	Active	2.00	2.3	8	36.80	L	\$45.23	\$0.00		\$1,664.46
Laborer	Active	2.00	2.3	8	36.80	L	\$45.80	\$0.00		\$1,685.44
					Labor Hours	92	TOTAL LABOR			\$4,201.27
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 20% labor (absorbant materials, etc)	1.00	LS	1.000	1.00	\$840.25	\$840.25
Waste handling equipment, for handling hazardous waste materials, w/charcoal & HEPA filter, 55 gallon drum packer	5.00	EA	1.000	5.00	\$35,100.00	\$175,500.00
TOTAL MATERIAL						\$176,340.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, liquid pickup, vacuum truck, stainless steel tank, 5000 gallons, minimum charge, 4 hours, 2 compartment	18.40	hour	1.000	\$200.00	\$3,680.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,201.27	Labor Burden @	49.7%	\$0.00		\$4,201.27
Material Cost	\$176,340.25	Material Tax @	7.8%	\$13,666.37		\$190,006.62
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$180,542			\$13,666	DIRECT COST SUBTOTALS	\$194,208
Installing Contractors Overhead @	15.0%	Crew				\$29,131.18
Installing Contractors Profit @	8.0%	Material				\$15,536.63
GC Markup on Subs @	5.0%	Subs				\$0.00
		Cost Basis				\$194,207.90
						\$0.00
					TOTAL MARKUP COSTS	\$44,667.82
General Contractors Insurance @	1.0%	on		\$238,875.71		\$2,389
Bond @	1.0%	on		\$238,875.71		\$2,389
Contingency @	0.0%	on		\$243,653.23		\$0
TOTAL COST for pay item						\$243,653

Additional Pay Item Notes :

Used a crew formed of 1 Foreman, 2 Electricians, 2 Laborers to takeout the petroleum waste. Vacuum-equipped tank trucks are used to remove waste oil from collection points at plants so that it can be transported to recycling or disposal locations. Assumed new waste handling equipment, for handling hazardous waste materials, w/charcoal & HEPA filter, 55 gallon drum packer is new to storage the oil from 8 transformers.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	: 3.061	Project	: COPCO 2							
Description	Remove Intake Structure Concrete									
Quantity	: 1,650.00	cy								
Daily Production	: 50.00	cy per	8	hour shift	Project #	: 3				
Work Days	: 33.0	Days								
Unit Price	: \$299.68	per cy	Estimator	: Felipe Poletto	cy per	57.5	Total Cost	\$420,307	Unit Price Per cy	\$254.73
Total Cost	: \$494,479	Probable Low Cost Parameter	57.5	Probable High Cost Parameter	40	Total Cost	\$593,374	Unit Price Per cy	\$359.62	

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	2.00	33.0	8	528.00	L	\$48.27	incl. in rate	incl. in rate	\$25,486.56	
Laborer	Active	8.00	33.0	8	2,112.00	L	\$45.80	incl. in rate	incl. in rate	\$96,729.60	
Equipment Operator (medium)	Active	2.00	33.0	8	528.00	L	\$66.28	incl. in rate	incl. in rate	\$34,995.84	
Truck Driver (heavy)	Active	1.00	33.0	8	264.00	L	\$57.59	incl. in rate	incl. in rate	\$15,203.76	
Air Compressor 900 cfm	Active	1.00	33.0	8	264.00	E	\$38.87	incl. in rate	incl. in rate	\$10,261.40	
Air Compressor 600 cfm	Active	1.00	33.0	8	264.00	E	\$21.74	incl. in rate	incl. in rate	\$5,739.08	
Air Tool, Chipping Hammer	Active	4.00	33.0	8	1,056.00	E	\$1.64	incl. in rate	incl. in rate	\$1,730.82	
Generator, Small Generator, 10 - 15 kW	Active	2.00	33.0	8	528.00	E	\$7.04	incl. in rate	incl. in rate	\$3,717.12	
Hydraulic Excavator (2.5cy)	Active	2.00	33.0	8	528.00	E	\$203.63	incl. in rate	incl. in rate	\$107,516.64	
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	33.0	8	264.00	E	\$62.72	incl. in rate	incl. in rate	\$16,558.08	
Hydraulic Thumbs/Shear Attachment	Active	1.00	33.0	8	264.00	E	\$16.39	incl. in rate	incl. in rate	\$4,326.96	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	33.0	8	264.00	E	\$111.64	incl. in rate	incl. in rate	\$29,472.96	
			33.0	8	0.00					\$0.00	
			33.0	8	0.00					\$0.00	
			33.0	8	0.00					\$0.00	
			33.0	8	0.00					\$0.00	
			33.0	8	0.00					\$0.00	
Labor Hours					3,432	TOTAL LABOR					\$172,415.76
Equipment Hours					3,432	TOTAL EQUIPMENT					\$179,323.05

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$8,620.79	\$8,620.79
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$8,620.79

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	9	EA	Cost per Mob	\$2,500.00	\$22,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$22,500.00

SUMMARY OF COSTS						
Labor Cost	\$172,415.76	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$172,415.76
Material Cost	\$8,620.79	Material Tax @	7.75%	\$668.11		\$9,288.90
Equipment Cost	\$179,323.05	Equipment Tax @	7.75%	\$13,897.54		\$193,220.59
Subcontractors	\$22,500.00					\$22,500.00
DIRECT COST SUBTOTALS	\$382,860			\$14,566		\$397,425
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$374,925.25	\$56,238.79
Installing Contractors Profit @	8.0%				\$374,925.25	\$29,994.02
GC Markup on Subs @	5.0%				\$22,500.00	\$1,125.00
TOTAL MARKUP COSTS						\$87,357.81
General Contractors Insurance @	1.0%		on		\$484,783.05	\$4,848
Bond @	1.0%		on		\$484,783.05	\$4,848
Contingency @	0.0%		on		\$494,478.71	\$0
TOTAL COST for pay item						\$494,479

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposable site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM COST DETAIL WORKSHEET

3.062 Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.062	Project	: COPCO 2						
Description	: Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe								
Quantity	: 1,310.00	cy							
Daily Production	: 50.00	cy per	8	hour shift	Project #	: 3			
Work Days	: 26.2	Days							
Unit Price	: \$299.39	per cy	Estimator	: Felipe Poletto	cy per		Total Cost		Unit Price Per cy
Total Cost	: \$392,197		Probable Low Cost Parameter	: 57.5			\$333,367		\$254.48
			Probable High Cost Parameter	: 40			\$470,636		\$359.26

CREW COSTS											
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment	
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost	
Labor Foreman	Active	2.00	26.2	8	419.20	L	\$48.27	incl. in rate	incl. in rate	\$20,234.78	
Laborer	Active	8.00	26.2	8	1,676.80	L	\$45.80	incl. in rate	incl. in rate	\$76,797.44	
Equipment Operator (medium)	Active	2.00	26.2	8	419.20	L	\$66.28	incl. in rate	incl. in rate	\$27,784.58	
Truck Driver (heavy)	Active	1.00	26.2	8	209.60	L	\$57.59	incl. in rate	incl. in rate	\$12,070.86	
Air Compressor 900 cfm	Active	1.00	26.2	8	209.60	E	\$38.87	incl. in rate	incl. in rate	\$8,146.93	
Air Compressor 600 cfm	Active	1.00	26.2	8	209.60	E	\$21.74	incl. in rate	incl. in rate	\$4,556.48	
Air Tool, Chipping Hammer	Active	4.00	26.2	8	838.40	E	\$1.64	incl. in rate	incl. in rate	\$1,374.17	
Generator, Small Generator, 10 - 15 kW	Active	2.00	26.2	8	419.20	E	\$7.04	incl. in rate	incl. in rate	\$2,951.17	
Hydraulic Excavator (2.5cy)	Active	2.00	26.2	8	419.20	E	\$203.63	incl. in rate	incl. in rate	\$85,361.70	
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	26.2	8	209.60	E	\$62.72	incl. in rate	incl. in rate	\$13,146.11	
Hydraulic Thumbs/Shear Attachment	Active	1.00	26.2	8	209.60	E	\$16.39	incl. in rate	incl. in rate	\$3,435.34	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	26.2	8	209.60	E	\$111.64	incl. in rate	incl. in rate	\$23,399.74	
			26.2	8	0.00					\$0.00	
			26.2	8	0.00					\$0.00	
			26.2	8	0.00					\$0.00	
			26.2	8	0.00					\$0.00	
			26.2	8	0.00					\$0.00	
Labor Hours					2,725	TOTAL LABOR				\$136,887.66	
Equipment Hours					2,725	TOTAL EQUIPMENT				\$142,371.63	

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$6,844.38	\$6,844.38
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$6,844.38

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	7	EA	Cost per Mob	\$2,500.00	\$17,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$17,500.00

SUMMARY OF COSTS						
Labor Cost	\$136,887.66	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$136,887.66
Material Cost	\$6,844.38	Material Tax @	7.75%	\$530.44		\$7,374.82
Equipment Cost	\$142,371.63	Equipment Tax @	7.75%	\$11,033.80		\$153,405.44
Subcontractors	\$17,500.00					\$17,500.00
DIRECT COST SUBTOTALS	\$303,604			\$11,564	DIRECT COST SUBTOTALS	\$315,168
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$297,667.92	\$44,650.19
Installing Contractors Profit @	8.0%				\$297,667.92	\$23,813.43
GC Markup on Subs @	5.0%				\$17,500.00	\$875.00
						TOTAL MARKUP COSTS
						\$69,338.62
General Contractors Insurance @	1.0%		on		\$384,506.54	\$3,845
Bond @	1.0%		on		\$384,506.54	\$3,845
Contingency @	0.0%		on		\$392,196.68	\$0
TOTAL COST for pay item						\$392,197

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposable site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.063	Project	: COPCO 2						
Description	: Place Concrete Plugs for Tunnels								
Quantity	: 100.00 cy	Project #	: 3						
Daily Production	: 11.00 cy per	8	hour shift	Estimator	: Felipe Poletto	cy per		Total Cost	
Work Days	: 9.1 Days	Probable Low Cost Parameter		12.65		\$155,301		Unit Price Per cy	\$1,553.01
Unit Price	: \$1,827.07 per cy	Probable High Cost Parameter		9.35		\$210,113			
Total Cost	: \$182,707								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	2.00	9.1	8	145.60	L	\$74.60	incl. in rate	incl. in rate	\$10,861.76
Carpenters	Active	6.00	9.1	8	436.80	L	\$72.60	incl. in rate	incl. in rate	\$31,711.68
Carpenters, Journeyman	Active	4.00	9.1	8	291.20	L	\$65.37	incl. in rate	incl. in rate	\$19,035.74
Equipment Operator (medium)	Active	1.00	9.1	8	72.80	L	\$66.28	incl. in rate	incl. in rate	\$4,825.18
Truck Driver (heavy)	Active	1.00	9.1	8	72.80	L	\$57.59	incl. in rate	incl. in rate	\$4,192.55
Loader, FE Rubber Tire (5.25cy)	Active	2.00	9.1	8	145.60	E	\$75.42	incl. in rate	incl. in rate	\$10,981.15
Hydraulic Excavator (5.0cy)	Active	1.00	9.1	8	72.80	E	\$274.63	incl. in rate	incl. in rate	\$19,993.06
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	9.1	8	72.80	E	\$31.90	incl. in rate	incl. in rate	\$2,322.32
Truck, Pickup (4x4, 3/4tn)	Active	2.00	9.1	8	145.60	E	\$16.94	incl. in rate	incl. in rate	\$2,466.46
0		0.00	9.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		3.00	9.1	8	218.40	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		1.00	9.1	8	72.80	0	\$0.00	incl. in rate	incl. in rate	\$0.00
			9.1	8.0	0.00					\$0.00
			9.1	8.0	0.00					\$0.00
			9.1	8.0	0.00					\$0.00
			9.1	8.0	0.00					\$0.00
			9.1	8.0	0.00					\$0.00
Labor Hours					1,019	TOTAL LABOR				\$70,626.92
Equipment Hours					437	TOTAL EQUIPMENT				\$35,763.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (25% labor)	1.00	LS	1.000	1.00	\$17,656.73	\$17,656.73
Concrete	100.00	CY	1.200	120.00	\$150.00	\$15,000.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$32,656.73

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Pump	1	LS	1 Mobilization	\$1,500.00	\$1,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$1,500.00

SUMMARY OF COSTS						
Labor Cost	\$70,626.92	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$70,626.92
Material Cost	\$32,656.73	Material Tax @	7.75%	\$2,530.90		\$35,187.63
Equipment Cost	\$35,763.00	Equipment Tax @	7.75%	\$2,771.63		\$38,534.63
Subcontractors	\$1,500.00					\$1,500.00
DIRECT COST SUBTOTALS	\$140,547			\$5,303		\$145,849
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$144,349.18	\$21,652.38
Installing Contractors Profit@	8.0%				\$144,349.18	\$11,547.93
GC Markup on Subs @	5.0%				\$1,500.00	\$75.00
TOTAL MARKUP COSTS						\$33,275.31
General Contractors Insurance @	1.0%		on		\$179,124.49	\$1,791
Bond @	1.0%		on		\$179,124.49	\$1,791
Contingency @	0.0%		on		\$182,706.98	\$0
TOTAL COST for pay item						\$182,707

Additional Pay Item Notes :

There will be 2 crews work in two locations at 1 time. The loaders will support crews for providing materials/ equipment that a pick up truck can not handle. There is a total of 9 plugs and figured roughly 1 day per plug.

PAY ITEM COST DETAIL WORKSHEET

3.065 Remove & Dispose of Caterpillar Gate (steel)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	3.065			Project	COPCO2				
Description	Remove & Dispose of Caterpillar Gate (steel)			Project #	Klamath Dams Removal				
Quantity	50,000.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	25,000.00	LBS per	8	Probable Low Cost Parameter	27500		\$41,287	\$0.83	
Work Days	2.0 Days			Probable High Cost Parameter	22500		\$50,461	\$1.01	
Unit Price	\$0.92 per LBS								
Total Cost	\$45,874								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	\$0.00		\$740.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	\$0.00		\$723.68
Steelworker	Active	6.00	2.0	8	96.00	L	\$65.52	\$0.00		\$6,289.92
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.0	8	16.00	E	\$221.50	\$221.50		\$3,544.00
Truck Driver (heavy)	Active	2.00	2.0	8	32.00	L	\$57.59	\$0.00		\$1,842.88
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	2.0	8	32.00	E	\$31.90	\$31.90		\$1,020.80
Hydraulic Crane (120tn)	Active	1.00	2.0	8	16.00	E	\$239.06	\$239.06		\$3,824.96
Welder	Active	2.00	2.0	8	32.00	L	\$7.84	\$0.00		\$250.80
Gas Welding Machine	Active	2.00	2.0	8	32.00	E	\$2.88	\$2.88		\$92.06
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	\$0.00		\$1,060.48
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	\$0.00		\$1,094.56
					Labor Hours	224	TOTAL LABOR			\$12,002.64
					Equipment Hours	96	TOTAL EQUIPMENT			\$8,481.82

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$600.13	\$600.13	
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	2,500.00	LF	1.000	2,500.00	\$0.85	\$2,125.00	
						TOTAL MATERIAL	\$2,725.13

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	25.00	ton	1.000	\$595.00	\$14,875.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	\$7.25	\$522.00	
					TOTAL SUBCONTRACTS	\$15,397.00

SUMMARY OF COSTS					
Labor Cost	\$12,002.64	Labor Burden @	49.7%	\$0.00	\$12,002.64
Material Cost	\$2,725.13	Material Tax @	7.8%	\$211.20	\$2,936.33
Equipment Cost	\$8,481.82	Equipment Tax @	0.0%	\$0.00	\$8,481.82
Subcontractors	\$15,397.00				\$15,397.00
DIRECT COST SUBTOTALS	\$38,607			\$211	\$38,818
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$3,513.12
Installing Contractors Profit@	8.0%				\$1,873.66
GC Markup on Subs @	5.0%				\$769.85
					TOTAL MARKUP COSTS
					\$6,156.63
General Contractors Insurance @	1.0%		on	\$44,974.43	\$450
Bond @	1.0%		on	\$44,974.43	\$450
Contingency @	0.0%		on	\$45,873.91	\$0
					TOTAL COST for pay item
					\$45,874

Additional Pay Item Notes :

The removal of gate, frame and hoist is done by one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 2 trucks per day. Assumed hazardous waste cleanup 100% disposal because of the engine Oil and Transmission Oil used for cranes .

PAY ITEM COST DETAIL WORKSHEET

3.066 Remove & Dispose of Trash rack and trash rake (steel)

PAY ITEM INFORMATION

PAY ITEM NUMBER :	3.066	Project :	COPCO2		
Description :	Remove & Dispose of Trash rack and trash rake (steel)		Estimator :	Mihaela Tomulescu	LBS per
Quantity :	86,000.00 LBS	Project # :	0	Total Cost	Unit Price Per LBS
Daily Production :	30,000.00 LBS per	Probable Low Cost Parameter	33000	\$48,937	\$0.57
Work Days :	2.9 Days	Probable High Cost Parameter	24000	\$65,250	\$0.76
Unit Price :	\$0.63 per LBS				
Total Cost :	\$54,375				

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.9	8	23.20	L	\$46.27	\$0.00		\$1,073.46
Electrician	Active	1.00	2.9	8	23.20	L	\$45.23	\$0.00		\$1,049.34
Steelworker	Active	6.00	2.9	8	139.20	L	\$65.52	\$0.00		\$9,120.38
Hydraulic Excavator (6.0cy)	Active	1.00	2.9	8	23.20	E	\$322.48	\$322.48		\$7,481.54
Truck Driver (heavy)	Active	1.00	2.9	8	23.20	L	\$57.59	\$0.00		\$1,336.09
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.9	8	23.20	E	\$111.64	\$111.64		\$2,590.05
Hydraulic Crane (120tn)	Active	1.00	2.9	8	23.20	E	\$239.06	\$239.06		\$5,546.19
Welder	Active	2.00	2.9	8	46.40	L	\$7.84	\$0.00		\$363.66
Gas Welding Machine	Active	2.00	2.9	8	46.40	E	\$2.88	\$2.88		\$133.49
Equipment Operator (medium)	Active	2.00	2.9	8	46.40	L	\$66.28	\$0.00		\$3,075.39
Equipment Operator (crane)	Active	1.00	2.9	8	23.20	L	\$68.41	\$0.00		\$1,587.11
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	2.9	8	23.20	E	\$62.72	\$62.72		\$1,455.10
Labor Hours					324.8	TOTAL LABOR				\$17,605.44
Equipment Hours					139.2	TOTAL EQUIPMENT				\$17,206.37

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$2,640.82	\$2,640.82
TOTAL MATERIAL						\$2,640.82

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25%)	10.75	ton	1.000	\$595.00	\$6,396.25
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	\$7.25	\$261.00
TOTAL SUBCONTRACTS					\$6,657.25

SUMMARY OF COSTS

Labor Cost	\$17,605.44	Labor Burden @	49.7%	\$0.00	\$17,605.44
Material Cost	\$2,640.82	Material Tax @	7.8%	\$204.66	\$2,845.48
Equipment Cost	\$17,206.37	Equipment Tax @	0.0%	\$0.00	\$17,206.37
Subcontractors	\$6,657.25				\$6,657.25
DIRECT COST SUBTOTALS	\$44,110		\$205		DIRECT COST SUBTOTALS \$44,315
Installing Contractors Overhead @	15.0%	Crew		\$37,657.29	\$5,648.59
Installing Contractors Profit @	8.0%	Material		\$37,657.29	\$3,012.58
GC Markup on Subs @	5.0%	Subs		\$6,657.25	\$332.86
					TOTAL MARKUP COSTS \$8,994.04
General Contractors Insurance @	1.0%		on	\$53,308.58	\$533
Bond @	1.0%		on	\$53,308.58	\$533
Contingency @	0.0%		on	\$54,374.75	\$0
					TOTAL COST for pay item \$54,375

Additional Pay Item Notes :

The removal of gate, frame and hoist is done by one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 1 trucks per day. Assumed hazardous waste cleanup 25% of total weight disposal.

PAY ITEM COST DETAIL WORKSHEET

3.067 Remove & Dispose of Stop Logs and slots for intake (steel)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.067	Project	: COPCO 2						
Description	: Remove & Dispose of Stop Logs and slots for intake (steel)								
Quantity	: 220,000.00 LBS								
Daily Production	: 20,000.00 LBS per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 11.0 Days	Estimator	: Mihaela Tomulescu	LBS per	22000	Total Cost	\$153,716	Unit Price Per LBS	\$0.70
Unit Price	: \$0.78 per LBS	Probable Low Cost Parameter	16000	Total Cost	\$204,954	Unit Price Per LBS	\$0.93		
Total Cost	: \$170,795	Probable High Cost Parameter	16000	Total Cost	\$204,954	Unit Price Per LBS	\$0.93		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Crawler Crane (90tn)	Active	1.00	11.0	8	88.00	E	\$208.09	\$208.09		\$18,311.92
Equipment Operator (medium)	Active	1.00	11.0	8	88.00	L	\$66.28	\$0.00		\$5,832.64
Equipment Operator (oiler)	Active	1.00	11.0	8	88.00	L	\$62.94	\$0.00		\$5,538.72
Carpenters, Journeyman	Active	4.00	11.0	8	352.00	L	\$65.37	\$0.00		\$23,010.24
Truck Driver (heavy)	Active	2.00	11.0	8	176.00	L	\$57.59	\$0.00		\$10,135.84
Truck, Flatbed (4x4, 10,000 gvwt)	Active	2.00	11.0	8	176.00	E	\$31.90	\$31.90		\$5,614.40
Hydraulic Impact Breaker Attachment (3k-4k ft-lb)	Active	1.00	11.0	8	88.00	E	\$36.58	\$36.58		\$3,219.04
Hydraulic Excavator (6.0cy)	Active	1.00	11.0	8	88.00	E	\$322.48	\$322.48		\$28,378.24
Steelworker	Active	4.00	11.0	8	352.00	L	\$65.52	\$0.00		\$23,063.04
					Labor Hours	1056	TOTAL LABOR			\$67,580.48
					Equipment Hours	440	TOTAL EQUIPMENT			\$55,523.60

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$3,379.02	\$3,379.02	
						TOTAL MATERIAL	\$3,379.02

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Stop log lifter - Rent per day	11.00	day	1.000	11.00	\$1,000.00	
					TOTAL SUBCONTRACTS	\$11,000.00

SUMMARY OF COSTS							
Labor Cost	\$67,580.48	Labor Burden @	49.7%	\$0.00		\$67,580.48	
Material Cost	\$3,379.02	Material Tax @	7.8%	\$261.87		\$3,640.90	
Equipment Cost	\$55,523.60	Equipment Tax @	0.0%	\$0.00		\$55,523.60	
Subcontractors	\$11,000.00					\$11,000.00	
DIRECT COST SUBTOTALS	\$137,483			\$262		\$137,745	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$126,744.98	\$19,011.75	
Installing Contractors Profit@	8.0%				\$126,744.98	\$10,139.60	
GC Markup on Subs @	5.0%				\$11,000.00	\$550.00	
						TOTAL MARKUP COSTS	\$29,701.35
General Contractors Insurance @	1.0%	on			\$167,446.32	\$1,674	
Bond @	1.0%	on			\$167,446.32	\$1,674	
Contingency @	0.0%	on			\$170,795.25	\$0	
						TOTAL COST for pay item	\$170,795

Additional Pay Item Notes :

The process of removing top logs is not manual, but done with hydraulic stop log lifters and hoists is done by one 11-men crew (6 steelworkers, 4 journeymen and 4 equipment operators). Based on the current production rate and the fact that we dispose big pieces of material we use 2 trucks per day. The gate side guides and invert shall have a minimum weight of 4 lbs./ft. for wall mounted and 3 lbs./ft. for embedded in concrete that we assume we have. The gate invert should contain a removable neoprene seal. Including stop log grooves, lifter, guide - weight around 220,000 lbs.

PAY ITEM COST DETAIL WORKSHEET

3.068 Remove & Dispose of Wood Staves Soaked in Creosote

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.068			Project :	COPCO 2				
Description :	Remove & Dispose of Wood Staves Soaked in Creosote								
Quantity :	1,100,000.00	LBS							
Daily Production :	90,000.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	12.2	Days							
Unit Price :	\$0.93 per LBS		Estimator :	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS	
Total Cost :	\$1,021,716		Probable Low Cost Parameter	108000	\$817,373	\$0.74			
			Probable High Cost Parameter	72000	\$1,226,059	\$1.11			

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	7.00	12.2	8	683.20	L	\$46.27	\$0.00		\$31,611.66
Loader, FE Rubber Tire (8.6cy)	Active	7.00	12.2	8	683.20	E	\$221.50	\$221.50		\$151,328.80
Electrician	Active	7.00	12.2	8	683.20	L	\$45.23	\$0.00		\$30,901.14
Carpenters	Active	21.00	12.2	8	2,049.60	L	\$72.60	\$0.00		\$148,800.96
Truck, Off-Road, Articulated Rear, 20cy	Active	3.00	12.2	8	292.80	E	\$111.64	\$111.64		\$32,688.19
Hydraulic Excavator (6.0cy)	Active	3.00	12.2	8	292.80	E	\$322.48	\$322.48		\$94,422.14
Equipment Operator (crane)	Active	3.00	12.2	8	292.80	L	\$68.41	\$0.00		\$20,030.45
Truck Driver (heavy)	Active	3.00	12.2	8	292.80	L	\$57.59	\$0.00		\$16,862.35
Steelworker	Active	7.00	12.2	8	683.20	L	\$65.52	\$0.00		\$44,763.26
Crawler Crane (270tn)	Active	3.00	12.2	8	292.80	E	\$399.50	\$446.84		\$116,973.60
Equipment Operator (medium)	Active	10.00	12.2	8	976.00	L	\$66.28	\$0.00		\$64,689.28
Labor Hours					5660.8	TOTAL LABOR				\$357,659.10
Equipment Hours					1561.6	TOTAL EQUIPMENT				\$395,412.74

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$17,882.96	\$17,882.96
TOTAL MATERIAL						\$17,882.96

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 30 min load/wait/unload, 18 C.Y. 8 wheel truck, cycle 50 miles, 50 MPH, excludes loading equipment	652	L.C.Y.	1.000	652.00	\$13.10	\$8,541.20
Disposal fees -RCRA hazardous waste treated to be a non-RCRA or nonhazardous waste	550	Ton	1.000	550.00	\$74.00	\$40,700.00
TOTAL SUBCONTRACTS					\$49,241.20	

SUMMARY OF COSTS						
Labor Cost	\$357,659.10	Labor Burden @	49.7%	\$0.00		\$357,659.10
Material Cost	\$17,882.96	Material Tax @	7.8%	\$1,385.93		\$19,268.88
Equipment Cost	\$395,412.74	Equipment Tax @	0.0%	\$0.00		\$395,412.74
Subcontractors	\$49,241.20					\$49,241.20
DIRECT COST SUBTOTALS	\$820,196			\$1,386	DIRECT COST SUBTOTALS	\$821,582
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$115,851.11
Installing Contractors Profit@	8.0%	Material				\$61,787.26
GC Markup on Subs @	5.0%	Subs				\$2,462.06
						\$180,100.43
General Contractors Insurance @	1.0%		on	\$1,001,682.35		\$10,017
Bond @	1.0%		on	\$1,001,682.35		\$10,017
Contingency @	0.0%		on	\$1,021,716.00		\$0
TOTAL COST for pay item						\$1,021,716

Additional Pay Item Notes :

Assumed the process of removing around 1,100,000 lbs wood staves is done in 12 days by 7 crew formed of 1 foreman, 1 electrician, 3 carpenters, 1 steelworkers ; 12 equipment operators 3 for the crane, 3 for the excavator and 6 loader. Based on the current production rate and the fact that we dispose big pieces of material we use 3 trucks per day.

PAY ITEM COST DETAIL WORKSHEET

3.069 Remove & Dispose of Cradles (steel)

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.069			Project :	COPCO 2				
Description :	Remove & Dispose of Cradles (steel)								
Quantity :	290,000.00 LBS								
Daily Production :	25,000.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	11.6	Days							
Unit Price :	\$0.94 per LBS			Estimator :	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Total Cost :	\$273,748			Probable Low Cost Parameter	30000	\$218,998	\$0.76		
				Probable High Cost Parameter	20000	\$328,497	\$1.13		

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	2.00	11.6	8	185.60	L	\$46.27	\$0.00		\$8,587.71	
Steelworker	Active	2.00	11.6	8	185.60	L	\$65.52	\$0.00		\$12,160.51	
Equipment Operator (medium)	Active	2.00	11.6	8	185.60	L	\$66.28	\$0.00		\$12,301.57	
Carpenters, Journeyman	Active	10.00	11.6	8	928.00	L	\$65.37	\$0.00		\$60,663.36	
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	11.6	8	185.60	E	\$111.64	\$111.64		\$20,720.38	
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	2.00	11.6	8	185.60	E	\$30.85	\$30.85		\$5,725.76	
Welder	Active	2.00	11.6	8	185.60	L	\$7.84	\$0.00		\$1,454.64	
Gas Welding Machine	Active	2.00	11.6	8	185.60	E	\$2.88	\$2.88		\$533.97	
Hydraulic Excavator (6.0cy)	Active	2.00	11.6	8	185.60	E	\$322.48	\$322.48		\$59,852.29	
Truck Driver (heavy)	Active	2.00	11.6	8	185.60	L	\$57.59	\$0.00		\$10,688.70	
Electrician	Active	2.00	11.6	8	185.60	L	\$45.23	\$0.00		\$8,394.69	
Labor Hours					2041.6					TOTAL LABOR	\$114,251.18
Equipment Hours					742.4					TOTAL EQUIPMENT	\$86,832.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	1,500.00	LF	1.000	1,500.00	\$0.85	\$1,275.00
TOTAL MATERIAL						\$1,275.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	29.00	ton	1.000	29.00	\$595.00	\$17,255.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	115.20	mile	1.000	115.20	\$10.25	\$1,180.80
TOTAL SUBCONTRACTS						\$18,435.80

SUMMARY OF COSTS						
Labor Cost	\$114,251.18	Labor Burden @	49.7%	\$0.00		\$114,251.18
Material Cost	\$1,275.00	Material Tax @	7.8%	\$98.81		\$1,373.81
Equipment Cost	\$86,832.40	Equipment Tax @	0.0%	\$0.00		\$86,832.40
Subcontractors	\$18,435.80					\$18,435.80
DIRECT COST SUBTOTALS	\$220,794			\$99	DIRECT COST SUBTOTALS	\$220,893
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$30,368.61
Installing Contractors Profit @	8.0%	Material				\$16,196.59
GC Markup on Subs @	5.0%	Subs				\$921.79
					TOTAL MARKUP COSTS	\$47,486.99
General Contractors Insurance @	1.0%	on				\$2,684
Bond @	1.0%	on				\$2,684
Contingency @	0.0%	on				\$0
					TOTAL COST for pay item	\$273,748

Additional Pay Item Notes :

Assumed the process of removing steel cradles is done in around 12 days by 2 crew formed of 1 foreman, 1 electrician, 5 journeymen, 1 steelworkers ;2 equipment operators 1 for each excavator. We dispose cradles with 1 trucks per day for each crew.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.070	Project	: COPCO 2						
Description	: Remove & Dispose of Bands (steel)								
Quantity	: 463,000.00 LBS								
Daily Production	: 65,000.00 LBS per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 6.0 Days	Estimator	: Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS			
Unit Price	: \$0.92 per LBS	Probable Low Cost Parameter	78000	\$341,422	\$0.74				
Total Cost	: \$426,777	Probable High Cost Parameter	52000	\$512,133	\$1.11				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	5.00	6.0	8	240.00	L	\$48.27	\$0.00		\$11,584.80
Steelworker	Active	15.00	6.0	8	720.00	L	\$65.52	\$0.00		\$47,174.40
Equipment Operator (crane)	Active	3.00	6.0	8	144.00	L	\$68.41	\$0.00		\$9,851.04
Crawler Crane (130tn)	Active	5.00	6.0	8	240.00	E	\$258.66	\$258.66		\$62,078.40
Welder	Active	5.00	6.0	8	240.00	L	\$7.84	\$0.00		\$1,881.00
Gas Welding Machine	Active	5.00	6.0	8	240.00	E	\$2.88	\$2.88		\$690.48
Hydraulic Excavator (6.0cy)	Active	5.00	6.0	8	240.00	E	\$322.48	\$322.48		\$77,395.20
Truck Driver (heavy)	Active	4.00	6.0	8	192.00	L	\$57.59	\$0.00		\$11,057.28
Truck, Off-Road, Articulated Rear, 20cy	Active	4.00	6.0	8	192.00	E	\$111.64	\$111.64		\$21,434.88
Equipment Operator (medium)	Active	5.00	6.0	8	240.00	L	\$66.28	\$0.00		\$15,907.20
Loader, FE Rubber Tire (8.6cy)	Active	5.00	6.0	8	240.00	E	\$221.50	\$221.50		\$53,160.00
					Labor Hours	1776	TOTAL LABOR			\$97,455.72
					Equipment Hours	1152	TOTAL EQUIPMENT			\$214,758.96

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 15% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$14,618.36	\$14,618.36
TOTAL MATERIAL						\$14,618.36

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (10%)	23.15	ton	1.000	\$595.00	\$13,774.25
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	\$7.25	\$522.00
TOTAL SUBCONTRACTS					\$14,296.25

SUMMARY OF COSTS						
Labor Cost	\$97,455.72	Labor Burden @	49.7%	\$0.00	\$97,455.72	
Material Cost	\$14,618.36	Material Tax @	7.8%	\$1,132.92	\$15,751.28	
Equipment Cost	\$214,758.96	Equipment Tax @	0.0%	\$0.00	\$214,758.96	
Subcontractors	\$14,296.25				\$14,296.25	
DIRECT COST SUBTOTALS	\$341,129			\$1,133	\$342,262	
Installing Contractors Overhead @	15.0%	Crew		\$327,965.96	\$49,194.89	
Installing Contractors Profit @	8.0%	Material		\$327,965.96	\$26,237.28	
GC Markup on Subs @	5.0%	Subs		\$14,296.25	\$714.81	
					TOTAL MARKUP COSTS	\$76,146.98
General Contractors Insurance @	1.0%	on		\$418,409.19	\$4,184	
Bond @	1.0%	on		\$418,409.19	\$4,184	
Contingency @	0.0%	on		\$426,777.37	\$0	
TOTAL COST for pay item					\$426,777	

Additional Pay Item Notes :

Based on RSMean we used Crew E-19 for metals demolition, banding the material into bundles and dispose to the staging area, E-12 for welding cut and E-25 for cutting steel. Assumed contains paint with heavy metals 10% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM COST DETAIL WORKSHEET

3.071 Remove & Dispose of Penstock after bifurcation to butterfly valves

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.071	Project	: COPCO 2						
Description	: Remove & Dispose of Penstock after bifurcation to butterfly valves	Project #	: Klamath Dams Removal						
Quantity	: 860,000.00 LBS	Estimator	: Mihaela Tomulescu	LBS per		Total Cost		Unit Price Per LBS	
Daily Production	: 43,000.00 LBS per 10 hour shift	Probable Low Cost Parameter		51600		\$740,490		\$0.86	
Work Days	: 20.0 Days	Probable High Cost Parameter		34400		\$1,110,734		\$1.29	
Unit Price	: \$1.08 per LBS								
Total Cost	: \$925,612								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	3.00	20.0	10	600.00	L	\$46.27	\$0.00		\$27,762.00
Steelworker	Active	12.00	20.0	10	2,400.00	L	\$65.52	\$0.00		\$157,248.00
Equipment Operator (crane)	Active	2.00	20.0	10	400.00	L	\$68.41	\$0.00		\$27,364.00
Crawler Crane (130tn)	Active	2.00	20.0	10	400.00	E	\$258.66	\$258.66		\$103,464.00
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	20.0	10	400.00	E	\$111.64	\$111.64		\$44,656.00
Hydraulic Excavator (5.0cy)	Active	2.00	20.0	10	400.00	E	\$274.63	\$274.63		\$109,852.00
Welder	Active	3.00	20.0	10	600.00	L	\$7.84	\$0.00		\$4,702.50
Gas Welding Machine	Active	3.00	20.0	10	600.00	E	\$2.88	\$2.88		\$1,726.19
Carpenters, Journeyman	Active	12.00	20.0	10	2,400.00	L	\$65.37	\$0.00		\$156,888.00
Loader, FE Rubber Tire (5.25cy)	Active	2.00	20.0	10	400.00	E	\$75.42	\$75.42		\$30,168.00
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	2.00	20.0	10	400.00	E	\$30.85	\$30.85		\$12,340.00
Truck Driver (heavy)	Active	2.00	20.0	10	400.00	L	\$57.59	\$0.00		\$23,036.00
					Labor Hours	6800	TOTAL LABOR			\$397,000.50
					Equipment Hours	2600	TOTAL EQUIPMENT			\$302,206.19

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$15,110.31	\$15,110.31	
						TOTAL MATERIAL	\$15,110.31

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	43.00	ton	1.000	\$595.00	\$25,585.00		
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	72.00	mile	1.000	\$7.25	\$522.00		
						TOTAL SUBCONTRACTS	\$26,107.00

SUMMARY OF COSTS									
Labor Cost	\$397,000.50	Labor Burden @	49.7%	\$0.00	\$397,000.50				
Material Cost	\$15,110.31	Material Tax @	7.6%	\$1,171.05	\$16,281.36				
Equipment Cost	\$302,206.19	Equipment Tax @	0.0%	\$0.00	\$302,206.19				
Subcontractors	\$26,107.00				\$26,107.00				
DIRECT COST SUBTOTALS	\$740,424			\$1,171	\$741,595				
Installing Contractors Overhead @	15.0%	Crew			\$107,323.21				
Installing Contractors Profit @	8.0%	Material			\$57,239.04				
GC Markup on Subs @	5.0%	Subs			\$1,305.35				
					TOTAL MARKUP COSTS				
					\$165,867.60				
General Contractors Insurance @	1.0%		on	\$907,462.65	\$9,075				
Bond @	1.0%		on	\$907,462.65	\$9,075				
Contingency @	0.0%		on	\$925,611.91	\$0				
					TOTAL COST for pay item				
					\$925,612				

Additional Pay Item Notes :

Assumed the process of removing pipes, expansion joints and support rings encased in concrete is done in around 20 days by 3 crew formed of 1 foreman, 4 journeymen, 4 steelworkers ;6 equipment operators 1 for each excavator, crane and loader. We dispose pipes with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM COST DETAIL WORKSHEET

3.072 Remove & Dispose of Bifurcated vent pipes and support structure

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	3.072			Project :	COPCO 2				
Description :	Remove & Dispose of Bifurcated vent pipes and support structure			Project # :	Klamath Dams Removal				
Quantity :	19,500.00	LBS		Estimator :	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production :	43,000.00	LBS per	8	Probable Low Cost Parameter	51600	\$17,627	\$0.90		
Work Days :	0.5 Days			Probable High Cost Parameter	34400	\$26,440	\$1.36		
Unit Price :	\$1.13 per LBS								
Total Cost :	\$22,033								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	3.00	0.5	8	12.00	L	\$48.27	\$0.00		\$579.24
Steelworker	Active	12.00	0.5	8	48.00	L	\$65.52	\$0.00		\$3,144.96
Crawler Crane (270tn)	Active	2.00	0.5	8	8.00	E	\$399.50	\$446.84		\$3,196.00
Equipment Operator (crane)	Active	2.00	0.5	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	3.00	0.5	8	12.00	L	\$7.84	\$0.00		\$94.05
Gas Welding Machine	Active	3.00	0.5	8	12.00	E	\$2.88	\$2.88		\$34.52
Electrician	Active	1.00	0.5	8	4.00	L	\$45.23	\$0.00		\$180.92
Carpenters, Journeyman	Active	12.00	0.5	8	48.00	L	\$65.37	\$0.00		\$3,137.76
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.5	8	8.00	E	\$111.64	\$111.64		\$893.12
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.5	8	8.00	E	\$221.50	\$221.50		\$1,772.00
Truck Driver (heavy)	Active	2.00	0.5	8	8.00	L	\$57.59	\$0.00		\$460.72
	Active	2.00	0.5	8	8.00	E	\$36.58	\$36.58		\$292.64
					Labor Hours	140	TOTAL LABOR			\$8,144.93
					Equipment Hours	44	TOTAL EQUIPMENT			\$6,188.28

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$814.49	\$814.49
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
TOTAL MATERIAL						\$2,514.49

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.98	ton	1.000	\$595.00	\$580.13
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	3.90	mile	1.000	\$7.25	\$28.28
TOTAL SUBCONTRACTS					\$608.40

SUMMARY OF COSTS						
Labor Cost	\$8,144.93	Labor Burden @	49.7%	\$0.00		\$8,144.93
Material Cost	\$2,514.49	Material Tax @	7.8%	\$194.87		\$2,709.37
Equipment Cost	\$6,188.28	Equipment Tax @	0.0%	\$0.00		\$6,188.28
Subcontractors	\$608.40					\$608.40
DIRECT COST SUBTOTALS	\$17,456			\$195	DIRECT COST SUBTOTALS	\$17,651
Installing Contractors Overhead @	15.0%	Crew				\$2,556.39
Installing Contractors Profit @	8.0%	Material				\$1,363.41
GC Markup on Subs @	5.0%	Subs				\$30.42
				Cost Basis	TOTAL MARKUP COSTS	\$3,950.21
General Contractors Insurance @	1.0%	on		\$21,601.19		\$216
Bond @	1.0%	on		\$21,601.19		\$216
Contingency @	0.0%	on		\$22,033.22		\$0
TOTAL COST for pay item						\$22,033

Additional Pay Item Notes :

Assumed the process of removing pipes, expansion joints and support rings encased in concrete is done in around 20 days by 3 crew formed of 1 foreman, 4 journeymen, 4 steelworkers ;6 equipment operators 1 for each excavator, crane and loader. We dispose pipes with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 3.073	Project	: COPCO 2						
Description	: Remove & Dispose of 2 - 138" Butterfly valves								
Quantity	: 148,000.00 LBS								
Daily Production	: 25,000.00 LBS per	8	hour shift						
Work Days	: 5.9 Days	Project #	: Klamath Dams Removal						
Unit Price	: \$0.88 per LBS	Estimator	: Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS			
Total Cost	: \$129,906	Probable Low Cost Parameter	30000	\$103,925	\$0.70				
		Probable High Cost Parameter	20000	\$155,888	\$1.05				

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman (out)	Active	2.00	5.9	8	94.40	L	\$46.27	\$0.00		\$4,367.89
Steelworker	Active	4.00	5.9	8	188.80	L	\$65.52	\$0.00		\$12,370.18
Laborer	Active	4.00	5.9	8	188.80	L	\$45.80	\$0.00		\$8,647.04
Crawler Crane (90tn)	Active	1.00	5.9	8	47.20	E	\$208.09	\$208.09		\$9,821.85
Carpenters, Journeyman	Active	4.00	5.9	8	188.80	L	\$65.37	\$0.00		\$12,341.86
Welder	Active	2.00	5.9	8	94.40	L	\$7.84	\$0.00		\$739.86
Gas Welding Machine	Active	2.00	5.9	8	94.40	E	\$2.88	\$2.88		\$271.59
Truck Driver (heavy)	Active	2.00	5.9	8	94.40	L	\$57.59	\$0.00		\$5,436.50
Equipment Operator (crane)	Active	1.00	5.9	8	47.20	L	\$68.41	\$0.00		\$3,228.95
					Labor Hours	896.8	TOTAL LABOR			\$47,132.27
					Equipment Hours	141.6	TOTAL EQUIPMENT			\$10,093.44

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 15% labor (saw blades, electrodes, drill bits, etc)	1.00	LS	1.000	1.00	\$7,069.84	\$7,069.84
TOTAL MATERIAL						\$7,069.84

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	74.00	ton	1.000	\$595.00	\$44,030.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	180.00	mile	1.000	\$7.25	\$1,305.00	
TOTAL SUBCONTRACTS						\$45,335.00

SUMMARY OF COSTS							
Labor Cost	\$47,132.27	Labor Burden @	49.7%	\$0.00	\$47,132.27		
Material Cost	\$7,069.84	Material Tax @	7.8%	\$547.91	\$7,617.75		
Equipment Cost	\$10,093.44	Equipment Tax @	0.0%	\$0.00	\$10,093.44		
Subcontractors	\$45,335.00					\$45,335.00	
DIRECT COST SUBTOTALS	\$109,631	\$548				DIRECT COST SUBTOTALS	\$110,178
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$64,843.46	\$9,726.52	
Installing Contractors Profit@	8.0%				\$64,843.46	\$5,187.48	
GC Markup on Subs @	5.0%				\$45,335.00	\$2,266.75	
TOTAL MARKUP COSTS						\$17,180.75	
General Contractors Insurance @	1.0%	on			\$127,359.20	\$1,274	
Bond @	1.0%	on			\$127,359.20	\$1,274	
Contingency @	0.0%	on			\$129,906.39	\$0	
TOTAL COST for pay item						\$129,906	

Additional Pay Item Notes :

Assumed the process of removing 138" butterfly valves is done in around 6 days by 2 crew formed of 1 foreman, 2 journeymen, 2 steelworkers ;We dispose cradles with 1 trucks per day for each crew. Assumed contains paint with heavy metals 100% of the total lbs, 36 miles from Copco lake to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM COST DETAIL WORKSHEET

4.002 Furnish, Install, and Remove Temporary Air Vent Hose from Barge to Diversion Tunnel Intake Structure

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.002	Project :			Iron Gate				
Description :	Furnish, Install, and Remove Temporary Air Vent Hose from Barge to Diversion Tunnel Intake Structure								
Quantity :	50.00	LS							
Daily Production :	50.00	LS per	8	hour shift	Project # :	4			
Work Days :	1.0	Days							
Unit Price :	\$315.45	per LS	Estimator :	Eric Jones		LS per	Total Cost	Unit Price Per LS	
Total Cost :	\$15,773		Probable Low Cost Parameter	57.5		\$13,407	\$268.13		
			Probable High Cost Parameter	40		\$18,927	\$378.54		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	1.0	8.00	16.00	L	\$48.27	incl. in rate	incl. in rate	\$772.32
Laborer	Active	8.00	1.0	8.00	64.00	L	\$45.80	incl. in rate	incl. in rate	\$2,931.20
Equipment Operator (medium)	Active	2.00	1.0	8.00	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Truck Driver (heavy)	Active	1.00	1.0	8.00	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Air Compressor 900 cfm	Active	1.00	1.0	8.00	8.00	E	\$38.87	incl. in rate	incl. in rate	\$310.95
Air Compressor 600 cfm	Active	1.00	1.0	8.00	8.00	E	\$21.74	incl. in rate	incl. in rate	\$173.91
Air Tool, Chipping Hammer	Active	4.00	1.0	8.00	32.00	E	\$1.64	incl. in rate	incl. in rate	\$52.45
Generator, Small Generator, 10 - 15 kW	Active	2.00	1.0	8.00	16.00	E	\$7.04	incl. in rate	incl. in rate	\$112.64
Hydraulic Excavator (2.5cy)	Active	2.00	1.0	8.00	16.00	E	\$203.63	incl. in rate	incl. in rate	\$3,258.08
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	1.0	8.00	8.00	E	\$62.72	incl. in rate	incl. in rate	\$501.76
Hydraulic Thumbs/Shear Attachment	Active	1.00	1.0	8.00	8.00	E	\$16.39	incl. in rate	incl. in rate	\$131.12
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8.00	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
Labor Hours					104	TOTAL LABOR				\$5,224.72
Equipment Hours					104	TOTAL EQUIPMENT				\$5,434.03

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
	1.00	LS	1.000	1.00	\$261.24	\$261.24
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$261.24

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS						
Labor Cost	\$5,224.72	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$5,224.72
Material Cost	\$261.24	Material Tax @	7.75%	\$20.25		\$281.48
Equipment Cost	\$5,434.03	Equipment Tax @	7.75%	\$421.14		\$5,855.17
Subcontractors	\$2,500.00					\$2,500.00
DIRECT COST SUBTOTALS	\$13,420			\$441		\$13,861
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	5.0%				\$11,361.37	\$568.07
Installing Contractors Profit@	8.0%				\$11,361.37	\$908.91
GC Markup on Subs @	5.0%				\$2,500.00	\$125.00
						\$1,601.98
General Contractors Insurance @	1.0%		on		\$15,463.35	\$155
Bond @	1.0%		on		\$15,463.35	\$155
Contingency @	0.0%		on		\$15,772.62	\$0
TOTAL COST for pay item						\$15,773

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposable site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	: 4.004	Project	: Iron Gate							
Description	: Remove Reinforced Concrete Stoplog Structure									
Quantity	: 6.00	CY								
Daily Production	: 6.00	CY per	: 8	hour shift	Project #	: 4				
Work Days	: 1.0	Days								
Unit Price	: \$1,738.55	per CY	Estimator	: Eric Jones	CY per	: 6.6	Total Cost	: \$9,388	Unit Price Per CY	: \$1,564.69
Total Cost	: \$10,431	Probable Low Cost Parameter		Probable High Cost Parameter		: 5.1	: \$11,996	: \$1,999.33		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	incl. in rate	incl. in rate	\$386.16
Laborer	Active	3.00	1.0	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20
Equipment Operator (medium)	Active	2.00	1.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Hydraulic Excavator (5.0cy)	Active	2.00	1.0	8	16.00	E	\$274.63	incl. in rate	incl. in rate	\$4,394.08
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	1.0	8	8.00	E	\$62.72	incl. in rate	incl. in rate	\$501.76
Truck, On-Highway Dump (6x4, 12cy)	Active	1.00	1.0	8	8.00	E	\$70.35	incl. in rate	incl. in rate	\$562.80
0	Active	1.00	1.0	8	8.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	1.00	1.0	8	8.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	4.00	1.0	8	32.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	4.00	1.0	8	32.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0	Active	2.00	1.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
			1.0	8	0.00					\$0.00
Labor Hours					56	TOTAL LABOR				\$3,006.56
Equipment Hours					32	TOTAL EQUIPMENT				\$5,458.64

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$150.33	\$150.33
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$150.33

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
		EA	Cost per Mob	\$2,500.00	\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,006.56	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$3,006.56
Material Cost	\$150.33	Material Tax @	7.75%	\$11.65		\$161.98
Equipment Cost	\$5,458.64	Equipment Tax @	7.75%	\$423.04		\$5,881.68
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$8,616			\$435	DIRECT COST SUBTOTALS	\$9,050
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	5.0%				\$9,050.22	\$452.51
Installing Contractors Profit@	8.0%				\$9,050.22	\$724.02
GC Markup on Subs @	5.0%				\$0.00	\$0.00
TOTAL MARKUP COSTS						\$1,176.53
General Contractors Insurance @	1.0%		on		\$10,226.75	\$102
Bond @	1.0%		on		\$10,226.75	\$102
Contingency @	0.0%		on		\$10,431.29	\$0
TOTAL COST for pay item						\$10,431

Additional Pay Item Notes :

This work will be done using 2 excavators, 1 with a breaker and 1 with a bucket for loading the demolished material. The material will be loaded in 1 12CY dump truck and sent to dump site. Laborers will be used to flag and direct equipment and trucks. Foreman will be running the operation.

PAY ITEM INFORMATION										
PAY ITEM NUMBER	: 4.006	Project	: IRONGATE							
Description	: Provide Dewatering behind Tailrace Cofferdam for removal of Powerhouse in the dry									
Quantity	: 3,000,000.00	GAL								
Daily Production	: 96,000.00	GAL per	: 8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 31.3	Days								
Unit Price	: \$0.01	per GAL	Estimator	: Mihaela Tomulescu	GAL per	110400	Total Cost	\$25,044	Unit Price Per GAL	\$0
Total Cost	: \$29,463	Probable Low Cost Parameter			81600	\$33,882	Probable High Cost Parameter			

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Pump, Centrifugal, 3"	Active	1.00	31.3	8	250.40	E	\$2.76	incl. in rate	incl. in rate	\$690.02
Electrician	Active	1.00	31.3	8	250.40	L	\$45.23	incl. in rate	incl. in rate	\$11,325.59
Laborer	Active	1.00	31.3	8	250.40	L	\$45.80	incl. in rate	incl. in rate	\$11,468.32
					Labor Hours	500.8	TOTAL LABOR			\$22,793.91
					Equipment Hours	250.4	TOTAL EQUIPMENT			\$690.02

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

Labor Cost	\$22,793.91	Labor Burden @	49.7%	\$0.00	\$22,793.91	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00	
Equipment Cost	\$690.02	Equipment Tax @	0.0%	\$0.00	\$690.02	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$23,484			\$0	\$23,484	
Installing Contractors Overhead @	15.0%	Crew		\$23,483.93	\$3,522.59	
Installing Contractors Profit @	8.0%	Material		\$23,483.93	\$1,878.71	
GC Markup on Subs @	5.0%	Subs		\$0.00	\$0.00	
					TOTAL MARKUP COSTS	\$5,401.30
General Contractors Insurance @	1.0%		on	\$28,885.24	\$289	
Bond @	1.0%		on	\$28,885.24	\$289	
Contingency @	0.0%		on	\$29,462.94	\$0	
					TOTAL COST for pay item	\$29,463

Additional Pay Item Notes :
 Assumed 3 Mil gal of water to be pumped out. Dewatering, pumping 8 hours, attended 2 hrs per day, 3" diaphragm pump, includes 20 LF of suction hose and 100 LF of discharge hose. Assumed Maximum Flow 200 GPM

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.011			Project :	IRON GATE				
Description :	Remove 9' dia. hinged blind flange								
Quantity :	19,000.00 lbs								
Daily Production :	2,000.00 lbs per 8 hour shift			Project # :	Klamath Dams Removal				
Work Days :	9.5 Days			Estimator :	Mihaela Tomulescu		lbs per	Total Cost	Unit Price Per lbs
Unit Price :	\$6.49 per lbs			Probable Low Cost Parameter	2300		\$104,866	\$5.52	
Total Cost :	\$123,371			Probable High Cost Parameter	1600		\$148,046	\$7.79	

CREW COSTS										
Description	Active / Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	9.5	8	76.00	L	\$48.27	incl. in rate	incl. in rate	\$3,668.52
Steelworker	Active	4.00	9.5	8	304.00	L	\$65.52	incl. in rate	incl. in rate	\$19,918.08
Loader, FE Rubber Tire (8.6cy)	Active	2.00	9.5	8	152.00	E	\$221.50	incl. in rate	incl. in rate	\$33,668.00
Equipment Operator (medium)	Active	2.00	9.5	8	152.00	L	\$66.28	incl. in rate	incl. in rate	\$10,074.56
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	9.5	8	152.00	E	\$31.90	incl. in rate	incl. in rate	\$4,848.80
Truck Driver (heavy)	Active	2.00	9.5	8	152.00	L	\$57.59	incl. in rate	incl. in rate	\$8,753.68
Hydraulic Crane (17tn)	Active	1.00	9.5	8	76.00	E	\$81.52	incl. in rate	incl. in rate	\$6,195.52
Welder	Active	1.00	9.5	8	76.00	L	\$7.84	incl. in rate	incl. in rate	\$595.65
Gas Welding Machine	Active	1.00	9.5	8	76.00	E	\$2.88	incl. in rate	incl. in rate	\$218.65
Equipment Operator (crane)	Active	1.00	9.5	8	76.00	L	\$68.41	incl. in rate	incl. in rate	\$5,199.16
					Labor Hours	836	TOTAL LABOR			\$48,209.65
					Equipment Hours	456	TOTAL EQUIPMENT			\$44,930.97

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$4,820.97	\$4,820.97
TOTAL MATERIAL						\$4,820.97

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$48,209.65	Labor Burden @	49.7%	\$0.00		\$48,209.65
Material Cost	\$4,820.97	Material Tax @	7.8%	\$373.62		\$5,194.59
Equipment Cost	\$44,930.97	Equipment Tax @	0.0%	\$0.00		\$44,930.97
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$97,962			\$374	DIRECT COST SUBTOTALS	\$98,335
Installing Contractors Overhead @	15.0%	Crew				\$14,750.28
Installing Contractors Profit @	8.0%	Material				\$7,866.82
GC Markup on Subs @	5.0%	Subs				\$0.00
TOTAL MARKUP COSTS						\$22,617.10
General Contractors Insurance @	1.0%		on		\$120,952.31	\$1,210
Bond @	1.0%		on		\$120,952.31	\$1,210
Contingency @	0.0%		on		\$123,371.36	\$0
TOTAL COST for pay item						\$123,371

Additional Pay Item Notes :

Turning of the actuating bolts and nuts - accomplished by steelworker / welder crew using only standard hand tools - spreads the yoke halves until they are fully separated, allowing the head to be swung open on its hinge. Contact surfaces of the clamping yokes, head and hub are tapered and when the head is closed and the yoke bolts are tightened, the head and hub are wedged together, compressing the O-ring and effecting a leakproof seal. Removing flanges is cumbersome and time consuming because of the tunnel work and the rusted fasteners. There is need to tug or hammer at bulky flanges or to struggle with bulky lugs and threads. Using loader, crane to load the flange and associated metal work in the truck. Included 5' of pipe spool.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.012			Project	Iron Gate				
Description	Remove 18" plug valve and 7' of 18" drainage pipe			Project #	4				
Quantity	2,620.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	2,620.00	LBS per	8	Probable Low Cost Parameter	3013		\$6,002	\$2.29	
Work Days	1.0	Days		Probable High Cost Parameter	2096		\$8,473	\$3.23	
Unit Price	\$2.70 per LBS								
Total Cost	\$7,061								

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate		\$460.72
Trencher	Active	2.00	1.0	8	16.00	E	\$4.07	incl. in rate	incl. in rate		\$65.12
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate		\$547.28
Hydraulic Crane (17tn)	Active	1.00	1.0	8	8.00	E	\$81.52	incl. in rate	incl. in rate		\$652.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
Hydraulic Excavator (1.5cy)	Active	1.00	1.0	8	8.00	E	\$141.92	incl. in rate	incl. in rate		\$1,135.36
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate		\$530.24
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate		\$1,048.32
					Labor Hours	40	TOTAL LABOR		\$2,586.56		
					Equipment Hours	40	TOTAL EQUIPMENT		\$2,745.76		

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$274.58	\$274.58	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$274.58

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$2,586.56	Labor Burden @	49.7%	\$0.00		\$2,586.56	
Material Cost	\$274.58	Material Tax @	7.8%	\$21.28		\$295.86	
Equipment Cost	\$2,745.76	Equipment Tax @	0.0%	\$0.00		\$2,745.76	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$5,607			\$21	DIRECT COST SUBTOTALS	\$5,628	
Installing Contractors Overhead @	15.0%	Crew		\$5,628.18		\$844.23	
Installing Contractors Profit @	8.0%	Material		\$5,628.18		\$450.25	
GC Markup on Subs @	5.0%	Subs		\$0.00		\$0.00	
					TOTAL MARKUP COSTS	\$1,294.48	
General Contractors Insurance @	1.0%	on		\$6,922.66		\$69	
Bond @	1.0%	on		\$6,922.66		\$69	
Contingency @	0.0%	on		\$7,061.11		\$0	
						TOTAL COST for pay item	\$7,061

Additional Pay Item Notes :

This is tunnel work. Assumed 7" ductile iron 18" pipe at 78.5LBS /LF= 550 LBS, weight of the valve assumed API 600 gate valve for 18" is 2070 LBS.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.013 (1)			Project :	IRON GATE				
Description :	Furnish and Install 1-16.5'x18' roller gate, stem, and operator in Wet			Project # :	4				
Quantity :	110,000.00 LBS			Estimator :	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Daily Production :	4,400.00	LBS per	8	hour shift	Probable Low Cost Parameter	4840	\$3,381,793	\$31	
Work Days :	25.0 Days			Probable High Cost Parameter	3960	\$4,133,302	\$38		
Unit Price :	\$34.16 per LBS								
Total Cost :	\$3,757,547								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Equipment Operator (crane)	Active	1.00	25.0	8	200.00	L	\$68.41	incl. in rate	incl. in rate	\$13,682.00
Barge Operator	Active	1.00	25.0	8	200.00	L	\$40.30	incl. in rate	incl. in rate	\$8,060.00
Diver, Tender	Active	3.00	25.0	8	600.00	L	\$79.22	incl. in rate	incl. in rate	\$47,532.00
Diver, Wet	Active	3.00	25.0	8	600.00	L	\$124.57	incl. in rate	incl. in rate	\$74,742.00
Loader, FE Rubber Tire (8.6cy)	Active	1.00	25.0	8	200.00	E	\$221.50	incl. in rate	incl. in rate	\$44,300.00
Crawler Crane (270tn)	Active	1.00	25.0	8	200.00	E	\$399.50	incl. in rate	incl. in rate	\$79,900.00
Equipment Operator (medium)	Active	3.00	25.0	8	600.00	L	\$66.28	incl. in rate	incl. in rate	\$39,768.00
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	25.0	8	400.00	E	\$70.35	incl. in rate	incl. in rate	\$28,140.00
Barge (400T)	Active	1.00	25.0	8	200.00	E	\$99.50	incl. in rate	incl. in rate	\$19,900.00
Ironworkers	Active	4.00	25.0	8	800.00	L	\$63.95	incl. in rate	incl. in rate	\$51,160.00
Labor Foreman	Active	1.00	25.0	8	200.00	L	\$48.27	incl. in rate	incl. in rate	\$9,654.00
					Labor Hours	3200	TOTAL LABOR		\$244,598.00	
					Equipment Hours	1000	TOTAL EQUIPMENT		\$172,240.00	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Furnish one-16.5'x18' roller gate (based on quote from JM Works)	1.00	LS	1.000	1.00	\$2,331,511.00	\$2,331,511.00
Welding structural steel in field, cost per welder, 8# per ton, 1/8" dia, type 6011, incl 1 operating engineer	55.00	ton	1.000	55.00	\$18.85	\$1,036.75
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$24,459.80	\$24,459.80
Misc Mats Allowance 1.5% of Gate Material	1.00	LS	1.000	1.00	\$34,972.67	\$34,972.67
						\$0.00
						\$0.00
TOTAL MATERIAL						\$2,391,980.22

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
	2.00	EA	1.000	2.00	\$480.00
					\$960.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$960.00

SUMMARY OF COSTS						
Labor Cost	\$244,598.00	Labor Burden @	49.7%	\$0.00		\$244,598.00
Material Cost	\$2,391,980.22	Material Tax @	7.8%	\$185,378.47		\$2,577,358.68
Equipment Cost	\$172,240.00	Equipment Tax @	0.0%	\$0.00		\$172,240.00
Subcontractors	\$960.00					\$960.00
DIRECT COST SUBTOTALS	\$2,809,778			\$185,378	DIRECT COST SUBTOTALS	\$2,995,157
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	
Installing Contractors Profit@	8.0%	Material			\$2,994,196.68	\$449,129.50
GC Markup on Subs @	5.0%	Subs			\$2,994,196.68	\$239,535.73
					\$960.00	\$48.00
TOTAL MARKUP COSTS						\$688,713.24
General Contractors Insurance @	1.0%		on		\$3,683,869.92	\$36,839
Bond @	1.0%		on		\$3,683,869.92	\$36,839
Contingency @	0.0%		on		\$3,757,547.32	\$0
TOTAL COST for pay item						\$3,757,547

Additional Pay Item Notes :

Based on RSMMeans we used Crew L-5A for installation of the roller gate in 8 days. Added welding inspection technician for the installation of the gate. Price of the gate based on quote by Johnson Machine Works Inc. Amounts based on similar projects from the past and an actual design was not done. JMW also assumes that existing frames will be reused.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.013 (2)	Project	:	IRON GATE				
Description	:	Remove Existing sluice and diversion gates from shaft by divers							
Quantity	:	110,000.00 LBS	Project #	:	4				
Daily Production	:	6,000.00 LBS per 8 hour shift	Estimator	:	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Work Days	:	18.3 Days	Probable Low Cost Parameter	:	6600	\$434,095			
Unit Price	:	\$4.38 per LBS	Probable High Cost Parameter	:	5400	\$530,561			
Total Cost	:	\$482,328							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (80tn)	Active	2.00	18.3	8	292.80	E	\$190.46	incl. in rate	incl. in rate	\$55,766.69
Barge Operator	Active	1.00	18.3	8	146.40	L	\$40.30	incl. in rate	incl. in rate	\$5,899.92
Diver, Tender	Active	2.00	18.3	8	292.80	L	\$79.22	incl. in rate	incl. in rate	\$23,195.62
Diver, Wet	Active	2.00	18.3	8	292.80	L	\$124.57	incl. in rate	incl. in rate	\$36,474.10
Loader, FE Rubber Tire (8.6cy)	Active	1.00	18.3	8	146.40	E	\$221.50	incl. in rate	incl. in rate	\$32,427.60
Crawler Crane (270tn)	Active	2.00	18.3	8	292.80	E	\$399.50	incl. in rate	incl. in rate	\$116,973.60
Equipment Operator (light)	Active	2.00	18.3	8	292.80	L	\$64.90	incl. in rate	incl. in rate	\$19,002.72
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	18.3	8	292.80	E	\$70.35	incl. in rate	incl. in rate	\$20,598.48
Barge (400T)	Active	1.00	18.3	8	146.40	E	\$99.50	incl. in rate	incl. in rate	\$14,566.80
Ironworkers	Active	4.00	18.3	8	585.60	L	\$63.95	incl. in rate	incl. in rate	\$37,449.12
Labor Foreman	Active	1.00	18.3	8	146.40	L	\$48.27	incl. in rate	incl. in rate	\$7,066.73
					Labor Hours	1756.8	TOTAL LABOR		\$129,088.20	
					Equipment Hours	1171.2	TOTAL EQUIPMENT		\$240,333.17	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Welding structural steel in field, cost per welder, 8# per ton, 1/8" dia, type 6011, incl 1 operating engineer	55.00	ton	1.000	55.00	\$18.85	\$1,036.75
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$12,908.82	\$12,908.82
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$13,945.57

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$129,088.20	Labor Burden @		49.7%	\$0.00	\$129,088.20
Material Cost	\$13,945.57	Material Tax @		7.8%	\$1,080.78	\$15,026.35
Equipment Cost	\$240,333.17	Equipment Tax @		0.0%	\$0.00	\$240,333.17
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$383,367				\$1,081	\$384,448
Installing Contractors Overhead@	15.0%	Crew				\$57,667.16
Installing Contractors Profit@	8.0%	Material				\$30,755.82
GC Markup on Subs @	5.0%	Subs				\$0.00
						TOTAL MARKUP COSTS
						\$88,422.98
General Contractors Insurance @	1.0%		on		\$472,870.70	\$4,729
Bond @	1.0%		on		\$472,870.70	\$4,729
Contingency @	0.0%		on		\$482,328.11	\$0
TOTAL COST for pay item						\$482,328

Additional Pay Item Notes :

Remove sluice and diversion gates from shaft by divers, based on RSMeans we used a crew of 4 divers for demolition in 10 days. Hauling to disposable site - based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, a welding machine and barge.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	4.013 (3)	Project	:	IRON GATE						
Description	:	Remove 16.5'X 18' sluice and diversion gates from shaft in Dry			Project #	:	4				
Quantity	:	110,000.00	LBS	Estimator	:	Mihaela Tomulescu	LBS per	13200	Total Cost	:	\$57,794
Daily Production	:	12,000.00	LBS per	Probable Low Cost Parameter	:	10800	Unit Price Per LBS	:	\$1		
Work Days	:	9.2	Days	Probable High Cost Parameter	:	10800	Total Cost	:	\$70,637		
Unit Price	:	\$0.58	per LBS								
Total Cost	:	\$64,216									

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Crawler Crane (130tn)	Active	1.00	9.2	8	73.60	E	\$258.66	incl. in rate	incl. in rate	\$19,037.38	
Ironworkers	Active	4.00	9.2	8	294.40	L	\$63.95	incl. in rate	incl. in rate	\$18,826.88	
Labor Foreman (out)	Active	1.00	9.2	8	73.60	L	\$46.27	incl. in rate	incl. in rate	\$3,405.47	
Equipment Operator (crane)	Active	1.00	9.2	8	73.60	L	\$68.41	incl. in rate	incl. in rate	\$5,034.98	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00	
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72	
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20	
					Labor Hours	449.6	TOTAL LABOR		\$27,728.05		
					Equipment Hours	89.6	TOTAL EQUIPMENT		\$21,064.58		

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Welding structural steel in field, cost per welder, 8# per ton, 1/8" dia, type 6011, incl 1 operating engineer	6.00	ton	1.000	6.00	\$18.85	\$113.10
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,106.46	\$2,106.46
TOTAL MATERIAL						\$2,219.56

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$27,728.05	Labor Burden @	49.7%	\$0.00	\$27,728.05				
Material Cost	\$2,219.56	Material Tax @	7.8%	\$172.02	\$2,391.57				
Equipment Cost	\$21,064.58	Equipment Tax @	0.0%	\$0.00	\$21,064.58				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$51,012			\$172	\$51,184				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead @	15.0%				\$7,677.63				
Installing Contractors Profit @	8.0%				\$4,094.74				
GC Markup on Subs @	5.0%				\$0.00				
TOTAL MARKUP COSTS					\$11,772.37				
General Contractors Insurance @	1.0%	on		\$62,956.56	\$630				
Bond @	1.0%	on		\$62,956.56	\$630				
Contingency @	0.0%	on		\$64,215.69	\$0				
TOTAL COST for pay item					\$64,216				

Additional Pay Item Notes :

Based on RSM means we used Crew L-5A for installation of the roller gate in 8 days. Added welding inspection technician for the installation of the gate. Price of the gate based on quote by Johnson Machine Works Inc. Amounts based on similar projects from the past and an actual design was not done. JMW also assumes that existing frames will be reused.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.015	Project	: Iron Gate						
Description	: Remove Concrete in Diversion Tunnel Intake Structure								
Quantity	: 715.00	cy							
Daily Production	: 50.00	cy per	: 8	hour shift	Project #	: 4			
Work Days	: 14.3	Days			Estimator	: Felipe Poletto	cy per	Total Cost	Unit Price Per cy
Unit Price	: \$300.06	per cy			Probable Low Cost Parameter	55	\$193,088	\$270.05	
Total Cost	: \$214,542			Probable High Cost Parameter	42.5	\$246,723	\$345.07		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	14.3	8	228.80	L	\$48.27	incl. in rate	incl. in rate	\$11,044.18
Laborer	Active	8.00	14.3	8	915.20	L	\$45.80	incl. in rate	incl. in rate	\$41,916.16
Equipment Operator (medium)	Active	2.00	14.3	8	228.80	L	\$66.28	incl. in rate	incl. in rate	\$15,164.86
Truck Driver (heavy)	Active	1.00	14.3	8	114.40	L	\$57.59	incl. in rate	incl. in rate	\$6,588.30
Air Compressor 900 cfm	Active	1.00	14.3	8	114.40	E	\$38.87	incl. in rate	incl. in rate	\$4,446.60
Air Compressor 600 cfm	Active	1.00	14.3	8	114.40	E	\$21.74	incl. in rate	incl. in rate	\$2,486.93
Air Tool, Chipping Hammer	Active	4.00	14.3	8	457.60	E	\$1.64	incl. in rate	incl. in rate	\$750.02
Generator, Small Generator, 10 - 15 kW	Active	2.00	14.3	8	228.80	E	\$7.04	incl. in rate	incl. in rate	\$1,610.75
Hydraulic Excavator (2.5cy)	Active	2.00	14.3	8	228.80	E	\$203.63	incl. in rate	incl. in rate	\$46,590.54
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	14.3	8	114.40	E	\$62.72	incl. in rate	incl. in rate	\$7,175.17
Hydraulic Thumbs/Shear Attachment	Active	1.00	14.3	8	114.40	E	\$16.39	incl. in rate	incl. in rate	\$1,875.02
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	14.3	8	114.40	E	\$111.64	incl. in rate	incl. in rate	\$12,771.62
			14.3	8	0.00					\$0.00
			14.3	8	0.00					\$0.00
			14.3	8	0.00					\$0.00
			14.3	8	0.00					\$0.00
			14.3	8	0.00					\$0.00
Labor Hours					1,487	TOTAL LABOR				\$74,713.50
Equipment Hours					1,487	TOTAL EQUIPMENT				\$77,706.66

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$3,735.67	\$3,735.67
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$3,735.67

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	4	EA	Cost per Mob	\$2,500.00	\$10,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$10,000.00

SUMMARY OF COSTS						
Labor Cost	\$74,713.50	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$74,713.50
Material Cost	\$3,735.67	Material Tax @	7.75%	\$289.51		\$4,025.19
Equipment Cost	\$77,706.66	Equipment Tax @	7.75%	\$6,022.27		\$83,728.92
Subcontractors	\$10,000.00					\$10,000.00
DIRECT COST SUBTOTALS	\$166,156			\$6,312		\$172,468
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$162,467.61	\$24,370.14
Installing Contractors Profit@	8.0%				\$162,467.61	\$12,997.41
GC Markup on Subs @	5.0%				\$10,000.00	\$500.00
TOTAL MARKUP COSTS						\$37,867.55
General Contractors Insurance @	1.0%		on		\$210,335.16	\$2,103
Bond @	1.0%		on		\$210,335.16	\$2,103
Contingency @	0.0%		on		\$214,541.86	\$0
TOTAL COST for pay item						\$214,542

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposal site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.016	Project	: IRONGATE						
Description	: Remove Concrete in Diversion Tunnel Gate Tower								
Quantity	: 650.00 CY								
Daily Production	: 75.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 8.7 Days	Estimator	: Mihaela Tomulescu	CY per	: 86.25	Total Cost	: \$108,637	Unit Price Per CY	: \$167
Unit Price	: \$196.63 per CY	Probable Low Cost Parameter	: 63.75						
Total Cost	: \$127,809	Probable High Cost Parameter	: 63.75						

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	8.7	8	69.60	L	\$46.27	incl. in rate	incl. in rate	\$3,220.39
Equipment Operator (medium)	Active	3.00	8.7	8	208.80	L	\$66.28	incl. in rate	incl. in rate	\$13,839.26
Steelworker	Active	3.00	8.7	8	208.80	L	\$65.52	incl. in rate	incl. in rate	\$13,680.58
Electrician	Active	1.00	8.7	8	69.60	L	\$45.23	incl. in rate	incl. in rate	\$3,148.01
Truck Driver (heavy)	Active	2.00	8.7	8	139.20	L	\$57.59	incl. in rate	incl. in rate	\$8,016.53
Vibratory Hammer & Extractor	Active	1.00	8.7	8	69.60	E	\$94.34	incl. in rate	incl. in rate	\$6,566.06
Hydraulic Excavator (6.0cy)	Active	1.00	8.7	8	69.60	E	\$322.48	incl. in rate	incl. in rate	\$22,444.61
Loader, FE Rubber Tire (8.6cy)	Active	1.00	8.7	8	69.60	E	\$221.50	incl. in rate	incl. in rate	\$15,416.40
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	8.7	8	139.20	E	\$111.64	incl. in rate	incl. in rate	\$15,540.29
					Labor Hours	696	TOTAL LABOR			\$41,904.77
					Equipment Hours	348	TOTAL EQUIPMENT			\$59,967.36

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$41,904.77	Labor Burden @	49.7%	\$0.00		\$41,904.77
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$59,967.36	Equipment Tax @	0.0%	\$0.00		\$59,967.36
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$101,872			\$0	DIRECT COST SUBTOTALS	\$101,872
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$101,872.13	\$15,280.82
Installing Contractors Profit@	8.0%				\$101,872.13	\$8,149.77
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$23,430.59
General Contractors Insurance @	1.0%		on		\$125,302.72	\$1,253
Bond @	1.0%		on		\$125,302.72	\$1,253
Contingency @	0.0%		on		\$127,808.77	\$0
					TOTAL COST for pay item	\$127,809

Additional Pay Item Notes :

Based on RS.Means - Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9 and B34B - Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.017			Project	IRONGATE				
Description	Remove Steel Footbridge to Gate Tower			Project #	Klamath Dams Removal				
Quantity	13,000.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	10,000.00	LBS per	8	Probable Low Cost Parameter			11500	\$12,120	\$0.93
Work Days	1.3 Days			Probable High Cost Parameter			8500	\$16,398	\$1.26
Unit Price	\$1.10 per LBS								
Total Cost	\$14,259								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman (out)	Active	1.00	1.3	8	10.40	L	\$46.27	incl. in rate	incl. in rate	\$481.21
Electrician	Active	1.00	1.3	8	10.40	L	\$45.23	incl. in rate	incl. in rate	\$470.39
Hydraulic Crane (50tn)	Active	1.00	1.3	8	10.40	E	\$134.32	incl. in rate	incl. in rate	\$1,396.93
Equipment Operator (crane)	Active	1.00	1.3	8	10.40	L	\$68.41	incl. in rate	incl. in rate	\$711.46
Vibratory Hammer & Extractor	Active	1.00	1.3	8	10.40	E	\$94.34	incl. in rate	incl. in rate	\$981.14
Laborer	Active	2.00	1.3	8	20.80	L	\$45.80	incl. in rate	incl. in rate	\$952.64
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.3	8	20.80	E	\$111.64	incl. in rate	incl. in rate	\$2,322.11
Truck Driver (heavy)	Active	2.00	1.3	8	20.80	L	\$57.59	incl. in rate	incl. in rate	\$1,197.87
Equipment Operator (light)	Active	1.00	1.3	8	10.40	L	\$64.90	incl. in rate	incl. in rate	\$674.96
Steelworker	Active	2.00	1.3	8	20.80	L	\$65.52	incl. in rate	incl. in rate	\$1,362.82
Labor Hours					104	TOTAL LABOR				\$5,851.35
Equipment Hours					41.6	TOTAL EQUIPMENT				\$4,700.18

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$292.57	\$292.57
TOTAL MATERIAL						\$292.57

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent aerial lift, articulating boom, to 80' high, 500 lb. capacity, diesel - Rent per day (RS Means 01543340)	1.00	days	1.000	1.00	\$584.00
TOTAL SUBCONTRACTS					\$584.00

SUMMARY OF COSTS						
Labor Cost	\$5,851.35	Labor Burden @	49.7%	\$0.00		\$5,851.35
Material Cost	\$292.57	Material Tax @	7.8%	\$22.67		\$315.24
Equipment Cost	\$4,700.18	Equipment Tax @	0.0%	\$0.00		\$4,700.18
Subcontractors	\$584.00					\$584.00
DIRECT COST SUBTOTALS	\$11,428			\$23	DIRECT COST SUBTOTALS	\$11,451
Installing Contractors Overhead @	15.0%					\$1,630.02
Installing Contractors Profit @	8.0%					\$869.34
GC Markup on Subs @	5.0%					\$29.20
TOTAL MARKUP COSTS						\$2,528.56
General Contractors Insurance @	1.0%	on		\$13,979.33		\$140
Bond @	1.0%	on		\$13,979.33		\$140
Contingency @	0.0%	on		\$14,258.91		\$0
TOTAL COST for pay item						\$14,259

Additional Pay Item Notes :

The bridge steel grid, excess steel members and similar materials shall be removed from each span prior to removing the main supporting beams, girders or trusses over land. Assumed crew is formed of 1 Foreman, 1 Electrician (tempoary power for tools), 2 steelworkers to cut steel in the articulated boom and 2 Laborers (Load, Haul, help with the crane rops, etc).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.018	Project	: IRONGATE						
Description	: Remove Concrete in Diversion Tunnel Footbridge Abutment								
Quantity	: 39.00 CY								
Daily Production	: 50.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 0.8 Days	Estimator	: Mihaela Tomulescu	CY per	: 57.5	Total Cost	: \$6,562	Unit Price Per CY	: \$168
Unit Price	: \$197.94 per CY	Probable Low Cost Parameter	: 42.5						
Total Cost	: \$7,720	Probable High Cost Parameter	: 42.5						

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	0.8	8	6.40	L	\$46.27	incl. in rate	incl. in rate	\$296.13
Equipment Operator (medium)	Active	2.00	0.8	8	12.80	L	\$66.28	incl. in rate	incl. in rate	\$848.38
Steelworker	Active	3.00	0.8	8	19.20	L	\$65.52	incl. in rate	incl. in rate	\$1,257.98
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.8	8	6.40	E	\$111.64	incl. in rate	incl. in rate	\$714.50
Truck Driver (heavy)	Active	1.00	0.8	8	6.40	L	\$57.59	incl. in rate	incl. in rate	\$368.58
Vibratory Hammer & Extractor	Active	1.00	0.8	8	6.40	E	\$94.34	incl. in rate	incl. in rate	\$603.78
Hydraulic Excavator (6.0cy)	Active	1.00	0.8	8	6.40	E	\$322.48	incl. in rate	incl. in rate	\$2,063.87
					Labor Hours	44.8	TOTAL LABOR			\$2,771.07
					Equipment Hours	19.2	TOTAL EQUIPMENT			\$3,382.14

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,771.07	Labor Burden @	49.7%	\$0.00		\$2,771.07
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$3,382.14	Equipment Tax @	0.0%	\$0.00		\$3,382.14
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$6,153			\$0	DIRECT COST SUBTOTALS	\$6,153
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$6,153.22	\$922.98
Installing Contractors Profit @	8.0%				\$6,153.22	\$492.26
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$1,415.24
General Contractors Insurance @	1.0%		on		\$7,568.46	\$76
Bond @	1.0%		on		\$7,568.46	\$76
Contingency @	0.0%		on		\$7,719.82	\$0
					TOTAL COST for pay item	\$7,720

Additional Pay Item Notes :

Based on RS.Means - Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9 and B34B - Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.019			Project	IRONGATE				
Description	Place Concrete Plugs for Diversion Tunnel								
Quantity	43.00 CY								
Daily Production	15.00 CY per		8	hour shift	Project #	Klamath Dams Removal			
Work Days	2.9		Days		Estimator	Mihaela Tomulescu		CY per	Total Cost
Unit Price	\$1,672.11		per CY		Probable Low Cost Parameter	16.5	\$64,711	Unit Price Per CY	
Total Cost	\$71,901				Probable High Cost Parameter	13.5	\$79,091	\$1,839	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Carpenter Foreman (out)	Active	1.00	2.9	8	23.20	L	\$46.40	incl. in rate	incl. in rate	\$1,076.48
Equipment Operator (medium)	Active	1.00	2.9	8	23.20	L	\$66.28	incl. in rate	incl. in rate	\$1,537.70
Carpenters	Active	18.00	2.9	8	417.60	L	\$72.60	incl. in rate	incl. in rate	\$30,317.76
Electrician	Active	1.00	2.9	8	23.20	L	\$45.23	incl. in rate	incl. in rate	\$1,049.34
Laborer	Active	2.00	2.9	8	46.40	L	\$45.80	incl. in rate	incl. in rate	\$2,125.12
Ironworkers	Active	2.00	2.9	8	46.40	L	\$63.95	incl. in rate	incl. in rate	\$2,967.28
Equipment Operator (crane)	Active	1.00	2.9	8	23.20	L	\$68.41	incl. in rate	incl. in rate	\$1,587.11
Loader, FE Rubber Tire (8.6cy)	Active	1.00	2.9	8	23.20	E	\$221.50	incl. in rate	incl. in rate	\$5,138.80
Hydraulic Crane (17tn)	Active	1.00	2.9	8	23.20	E	\$81.52	incl. in rate	incl. in rate	\$1,891.26
					Labor Hours	603.2	TOTAL LABOR			\$40,660.78
					Equipment Hours	46.4	TOTAL EQUIPMENT			\$7,030.06

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Structural concrete, ready mix, heavyweight, 4500 psi, includes local aggregate, sand, Portland cement (Type I) and water, delivered, excludes all additives and treatments	43.00	CY	1.000	43.00	\$128.00	\$5,504.00
C.I.P. concrete forms, wall, job built, plywood, over 16' high, 1 use, includes erecting, bracing, stripping and cleaning	232.50	sfca	1.000	232.50	\$2.69	\$625.43
C.I.P. concrete forms, wall, radial, curved, below grade, job built plywood, over 8' to 16' high, 2' chords, 1 use, includes erecting, bracing, stripping and cleaning	1,024.00	sfca	1.000	1,024.00	\$0.94	\$962.56
Reinforcing steel, in place, walls, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories	1.00	ton	1.000	1.00	\$940.00	\$1,835.00
TOTAL MATERIAL						\$8,926.99

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$40,660.78	Labor Burden @	49.7%	\$0.00		\$40,660.78
Material Cost	\$8,926.99	Material Tax @	7.8%	\$691.84		\$9,618.83
Equipment Cost	\$7,030.06	Equipment Tax @	0.0%	\$0.00		\$7,030.06
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$56,618			\$692	DIRECT COST SUBTOTALS	\$57,310
Installing Contractors Overhead @	15.0%	Crew				\$8,596.45
Installing Contractors Profit @	8.0%	Material				\$4,584.77
GC Markup on Subs @	5.0%	Subs				\$0.00
						TOTAL MARKUP COSTS
						\$13,181.23
General Contractors Insurance @	1.0%	on				\$705
Bond @	1.0%	on				\$705
Contingency @	0.0%	on				\$0
TOTAL COST for pay item						\$71,901

Additional Pay Item Notes :

Plugs for openings 15.5' x 16.5' curved formes and 15.5' x 7.5' rectangulare formes is based on RS.Means - Crew C2, Crew RODM4, Crew C7.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.020	Project	: IRONGATE						
Description	: Remove Concrete Closure Gates in Gate Tower								
Quantity	: 85.00 CY								
Daily Production	: 6.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 14.2 Days	Estimator	: Mihaela Tomulescu	CY per	: 6.9	Total Cost	: \$64,598	Unit Price Per CY	: \$760
Unit Price	: \$894.09 per CY	Probable Low Cost Parameter	: 5.1						
Total Cost	: \$75,998	Probable High Cost Parameter	: 5.1						

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	14.2	8	113.60	L	\$46.27	incl. in rate	incl. in rate	\$5,256.27
Equipment Operator (medium)	Active	4.00	14.2	8	454.40	L	\$66.28	incl. in rate	incl. in rate	\$30,117.63
Steelworker	Active	8.00	0.2	8	12.80	L	\$65.52	incl. in rate	incl. in rate	\$838.66
Electrician	Active	1.00	0.2	8	1.60	L	\$45.23	incl. in rate	incl. in rate	\$72.37
Truck Driver (heavy)	Active	1.00	0.2	8	1.60	L	\$57.59	incl. in rate	incl. in rate	\$92.14
Vibratory Hammer & Extractor	Active	2.00	0.2	8	3.20	E	\$94.34	incl. in rate	incl. in rate	\$301.89
Hydraulic Excavator (6.0cy)	Active	1.00	4.0	8	32.00	E	\$322.48	incl. in rate	incl. in rate	\$10,319.36
Loader, FE Rubber Tire (8.6cy)	Active	1.00	4.0	8	32.00	E	\$221.50	incl. in rate	incl. in rate	\$7,088.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Diver, Wet	Active	2.00	2.0	8	32.00	L	\$124.57	incl. in rate	incl. in rate	\$3,986.24
Barge, Sectional, 20'x10'	Active	1.00	2.0	8	16.00	E	\$4.48	incl. in rate	incl. in rate	\$71.68
Barge Operator	Active	1.00	2.0	8	16.00	L	\$40.30	incl. in rate	incl. in rate	\$644.80
Labor Hours					632	TOTAL LABOR				\$41,008.11
Equipment Hours					99.2	TOTAL EQUIPMENT				\$19,567.17

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$41,008.11	Labor Burden @	49.7%	\$0.00		\$41,008.11
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$19,567.17	Equipment Tax @	0.0%	\$0.00		\$19,567.17
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$60,575			\$0		\$60,575
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$60,575.28	\$9,086.29
Installing Contractors Profit@	8.0%				\$60,575.28	\$4,846.02
GC Markup on Subs @	5.0%				\$0.00	\$0.00
TOTAL MARKUP COSTS						\$13,932.31
General Contractors Insurance @	1.0%		on		\$74,507.59	\$745
Bond @	1.0%		on		\$74,507.59	\$745
Contingency @	0.0%		on		\$75,997.75	\$0
TOTAL COST for pay item						\$75,998

Additional Pay Item Notes :

Requires dive depth 150 feet. Based on RS.Means - Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9 and B34B - Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.027	Project	: IRONGATE						
Description	: Remove 5 Reservoir Monitoring Wells								
Quantity	: 5.00 EA								
Daily Production	: 2.00 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 2.5 Days	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Unit Price	: \$2,332.81 per EA	Probable Low Cost Parameter	2.2	\$10,498	\$2,099.53				
Total Cost	: \$11,664	Probable High Cost Parameter	1.7	\$13,414	\$2,682.73				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.5	8	20.00	L	\$46.27	incl. in rate	incl. in rate	\$925.40
Laborer	Active	1.00	2.5	8	20.00	L	\$45.80	incl. in rate	incl. in rate	\$916.00
Hydraulic Excavator (2.5cy)	Active	1.00	2.5	8	20.00	E	\$203.63	incl. in rate	incl. in rate	\$4,072.60
Equipment Operator (medium)	Active	1.00	2.5	8	20.00	L	\$66.28	incl. in rate	incl. in rate	\$1,325.60
Vibratory Hammer & Extractor	Active	1.00	2.5	8	20.00	E	\$94.34	incl. in rate	incl. in rate	\$1,886.80
					Labor Hours	60	TOTAL LABOR		\$3,167.00	
					Equipment Hours	40	TOTAL EQUIPMENT		\$5,959.40	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$158.35	\$158.35
TOTAL MATERIAL						\$158.35

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,167.00	Labor Burden @	49.7%	\$0.00	\$3,167.00	
Material Cost	\$158.35	Material Tax @	7.8%	\$12.27	\$170.62	
Equipment Cost	\$5,959.40	Equipment Tax @	0.0%	\$0.00	\$5,959.40	
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$9,285			\$12	DIRECT COST SUBTOTALS	\$9,297
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$1,394.55
Installing Contractors Profit @	8.0%					\$743.76
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$2,138.32
General Contractors Insurance @	1.0%	on		\$11,435.34	\$114	
Bond @	1.0%	on		\$11,435.34	\$114	
Contingency @	0.0%	on		\$11,664.04	\$0	
					TOTAL COST for pay item	\$11,664

Additional Pay Item Notes :

Assumed 150 length of public water supply wells, wells domestic water, drilled, 4" to 6" diameter, removed in the same time with the regular excavation.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.029			Project :	IRONGATE				
Description :	Remove and Dispose of Intake Structure								
Quantity :	72,000.00	LBS							
Daily Production :	20,000.00	LBS per	8	hour shift					
Work Days :	3.6 Days			Project # :	0				
Unit Price :	\$0.90 per LBS			Estimator :	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Total Cost :	\$64,663			Probable Low Cost Parameter	23000	\$54,964	\$0.76		
				Probable High Cost Parameter	16000	\$77,596	\$1.08		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	3.6	8	28.80	L	\$46.27	\$0.00		\$1,332.58
Electrician	Active	1.00	3.6	8	28.80	L	\$45.23	\$0.00		\$1,302.62
Steelworker	Active	6.00	3.6	8	172.80	L	\$65.52	\$0.00		\$11,321.86
Hydraulic Excavator (6.0cy)	Active	1.00	3.6	8	28.80	E	\$322.48	\$322.48		\$9,287.42
Truck Driver (heavy)	Active	1.00	3.6	8	28.80	L	\$57.59	\$0.00		\$1,658.59
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	3.6	8	28.80	E	\$111.64	\$111.64		\$3,215.23
Hydraulic Crane (120tn)	Active	1.00	3.6	8	28.80	E	\$239.06	\$239.06		\$6,884.93
Welder	Active	2.00	3.6	8	57.60	L	\$7.84	\$0.00		\$451.44
Gas Welding Machine	Active	2.00	3.6	8	57.60	E	\$2.88	\$2.88		\$165.71
Equipment Operator (medium)	Active	2.00	3.6	8	57.60	L	\$66.28	\$0.00		\$3,817.73
Equipment Operator (crane)	Active	1.00	3.6	8	28.80	L	\$68.41	\$0.00		\$1,970.21
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	3.6	8	28.80	E	\$62.72	\$62.72		\$1,806.34
					Labor Hours	403.2	TOTAL LABOR			\$21,855.02
					Equipment Hours	172.8	TOTAL EQUIPMENT			\$21,359.63

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 15% labor (saw blades, drill bits, electrodes, wrenches, hard hats etc)	1.00	LS	1.000	1.00	\$3,278.25	\$3,278.25	
						TOTAL MATERIAL	\$3,278.25

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (25%)	9.00	ton	1.000	\$595.00	\$5,355.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	36.00	mile	1.000	\$7.25	\$261.00	
					TOTAL SUBCONTRACTS	\$5,616.00

SUMMARY OF COSTS						
Labor Cost	\$21,855.02	Labor Burden @	49.7%	\$0.00	\$21,855.02	
Material Cost	\$3,278.25	Material Tax @	7.8%	\$254.06	\$3,532.32	
Equipment Cost	\$21,359.63	Equipment Tax @	0.0%	\$0.00	\$21,359.63	
Subcontractors	\$5,616.00				\$5,616.00	
DIRECT COST SUBTOTALS	\$52,109			\$254	DIRECT COST SUBTOTALS \$52,363	
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	
Installing Contractors Profit @	8.0%				\$46,746.98	
GC Markup on Subs @	5.0%				\$46,746.98	
					\$5,616.00	
					TOTAL MARKUP COSTS	\$11,032.60
General Contractors Insurance @	1.0%		on		\$63,395.58	
Bond @	1.0%		on		\$63,395.58	
Contingency @	0.0%		on		\$64,663.49	
					TOTAL COST for pay item	\$64,663

Additional Pay Item Notes :

The removal trash rack and trash rake is done by one 9-men crew (1 foreman, 6 steelworkers, 1 welder, 1 electrician and 2 equipment operators). Based on the current production rate and the fact that we dispose big pieces of steel we use 1 trucks per day. Assumed hazardous waste cleanup 25% of total weight disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.031			Project	IRONGATE				
Description	Remove and Dispose of Hoist Stem - 6" Dia. Sch 160' x150'								
Quantity	7,500.00	LBS							
Daily Production	12,500.00	LBS per	8	hour shift	Project #	Klamath Dams Removal			
Work Days	0.6	Days			Estimator	Mihaela Tomulesi	LBS per	Total Cost	Unit Price Per LBS
Unit Price	\$1.01	per LBS			Probable Low Cost Parameter	14375	\$6,441	\$0.86	
Total Cost	\$7,578				Probable High Cost Parameter	10000	\$9,093	\$1.21	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	0.6	8	4.80	L	\$46.27	\$0.00		\$222.10
Electrician	Active	1.00	0.6	8	4.80	L	\$45.23	\$0.00		\$217.10
Steelworker	Active	3.00	0.6	8	14.40	L	\$65.52	\$0.00		\$943.49
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.6	8	4.80	E	\$221.50	\$221.50		\$1,063.20
Truck Driver (heavy)	Active	2.00	0.6	8	9.60	L	\$57.59	\$0.00		\$552.86
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	0.6	8	9.60	E	\$31.90	\$31.90		\$306.24
Hydraulic Crane (120tn)	Active	1.00	0.6	8	4.80	E	\$239.06	\$239.06		\$1,147.49
Welder	Active	2.00	0.6	8	9.60	L	\$7.84	\$0.00		\$75.24
Gas Welding Machine	Active	2.00	0.6	8	9.60	E	\$2.88	\$2.88		\$27.62
Equipment Operator (medium)	Active	1.00	0.6	8	4.80	L	\$66.28	\$0.00		\$318.14
Equipment Operator (crane)	Active	1.00	0.6	8	4.80	L	\$68.41	\$0.00		\$328.37
Laborer	Active	3.00	0.6	8	14.40	L	\$45.80	\$0.00		\$659.52
Labor Hours					67.2	TOTAL LABOR				\$3,316.82
Equipment Hours					28.8	TOTAL EQUIPMENT				\$2,544.55

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$165.84	\$165.84
TOTAL MATERIAL						\$165.84

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$3,316.82	Labor Burden @	49.7%	\$0.00	\$3,316.82
Material Cost	\$165.84	Material Tax @	7.8%	\$12.85	\$178.69
Equipment Cost	\$2,544.55	Equipment Tax @	0.0%	\$0.00	\$2,544.55
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$6,027			\$13	\$6,040
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$6,040.06
Installing Contractors Profit @	8.0%				\$6,040.06
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$1,389.21
General Contractors Insurance @	1.0%		on		\$7,429.28
Bond @	1.0%		on		\$74
Contingency @	0.0%		on		\$0
TOTAL COST for pay item					\$7,578
Additional Pay Item Notes :					
The removal hoist stem 150 LF is done by one 9-men crew (1 foreman, 3 steelworkers, 1 welder, 3 laborer, 1 electrician and 2 equipment operators). Based on the fact that we dispose big pieces of steel we use 2 trucks per day. Assumed is not taking around 1/2 day of work.					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.032			Project	Iron Gate				
Description	Remove and Dispose of Air Vent Pipe - 8" Dia. Sch 40 x160'			Project #	4				
Quantity	4,650.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	2,325.00	LBS per	8	Probable Low Cost Parameter	2673.75		\$8,377	\$1.80	
Work Days	2.0 Days			Probable High Cost Parameter	1860		\$11,826	\$2.54	
Unit Price	\$2.12 per LBS								
Total Cost	\$9,855								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (light)	Active	1.00	2.0	8	16.00	L	\$56.29	incl. in rate	incl. in rate	\$900.64
Laborer	Active	1.00	2.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Equipment Operator (light)	Active	1.00	2.0	8	16.00	L	\$64.90	incl. in rate	incl. in rate	\$1,038.40
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.0	8	16.00	E	\$64.23	incl. in rate	incl. in rate	\$1,027.68
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Steelworker	Active	1.00	2.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate	\$1,048.32
					Labor Hours	64	TOTAL LABOR			\$3,720.16
					Equipment Hours	32	TOTAL EQUIPMENT			\$2,813.92

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$281.39	\$281.39	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$281.39

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	0.20	week	1.000	\$5,961.23	\$1,192.25		
					\$0.00		
					\$0.00		
						TOTAL SUBCONTRACTS	\$1,192.25

SUMMARY OF COSTS									
Labor Cost	\$3,720.16	Labor Burden @	49.7%	\$0.00	\$3,720.16				
Material Cost	\$281.39	Material Tax @	7.8%	\$21.81	\$303.20				
Equipment Cost	\$2,813.92	Equipment Tax @	0.0%	\$0.00	\$2,813.92				
Subcontractors	\$1,192.25				\$1,192.25				
DIRECT COST SUBTOTALS	\$8,008			\$22	\$8,030				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$1,025.59				
Installing Contractors Profit@	8.0%				\$546.98				
GC Markup on Subs @	5.0%				\$59.61				
					TOTAL MARKUP COSTS				
					\$1,632.19				
General Contractors Insurance @	1.0%	on		\$9,661.71	\$97				
Bond @	1.0%	on		\$9,661.71	\$97				
Contingency @	0.0%	on		\$9,854.95	\$0				
					TOTAL COST for pay item				
					\$9,855				

Additional Pay Item Notes :

Assumed we need forklift because of work in the tunnel near sluice gate, based on RS Means, Utility removal, pipe, sewer/water, 8" diameter, remove, excludes excavation, B12Z Crew is formed of 2 laborers loading 1 truck with the crane for disposal based on daily production.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.034			Project	Iron Gate				
Description	Remove and Dispose of Air Vent Pipe - 12" Dia. Sch 40 x560'								
Quantity	30,250.00	LBS							
Daily Production	2,500.00	LBS per	8	hour shift	Project #	4			
Work Days	12.1	Days			Estimator	Mihaela Tomulescu		LBS per	2875
Unit Price	\$2.26 per LBS				Probable Low Cost Parameter	2875		Total Cost	\$58,100
Total Cost	\$68,353				Probable High Cost Parameter	2000		Total Cost	\$82,024
								Unit Price Per LBS	\$1.92
									\$2.71

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck Driver (light)	Active	1.00	1.0	8	8.00	L	\$56.29	incl. in rate	incl. in rate		\$450.32
Laborer	Active	2.00	12.1	8	193.60	L	\$45.80	incl. in rate	incl. in rate		\$8,866.88
Equipment Operator (medium)	Active	1.00	12.1	8	96.80	L	\$66.28	incl. in rate	incl. in rate		\$6,415.90
Loader, FE Rubber Tire (5.25cy)	Active	1.00	12.1	8	96.80	E	\$75.42	incl. in rate	incl. in rate		\$7,300.66
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
Steelworker	Active	2.00	12.1	8	193.60	L	\$65.52	incl. in rate	incl. in rate		\$12,684.67
Labor Foreman	Active	1.00	12.1	8	96.80	L	\$48.27	incl. in rate	incl. in rate		\$4,672.54
					Labor Hours	588.8	TOTAL LABOR		\$33,090.31		
					Equipment Hours	104.8	TOTAL EQUIPMENT		\$8,193.78		

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$819.38	\$819.38	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$819.38

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	2.42	week	1.000	2.42	\$5,961.23	\$14,426.18	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL SUBCONTRACTS	\$14,426.18

SUMMARY OF COSTS									
Labor Cost	\$33,090.31	Labor Burden @	49.7%	\$0.00	\$33,090.31				
Material Cost	\$819.38	Material Tax @	7.8%	\$63.50	\$882.88				
Equipment Cost	\$8,193.78	Equipment Tax @	0.0%	\$0.00	\$8,193.78				
Subcontractors	\$14,426.18				\$14,426.18				
DIRECT COST SUBTOTALS	\$56,530			\$64	\$56,593				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$6,325.05				
Installing Contractors Profit@	8.0%				\$3,373.36				
GC Markup on Subs @	5.0%				\$721.31				
					TOTAL MARKUP COSTS				
					\$10,419.71				
General Contractors Insurance @	1.0%	on			\$670				
Bond @	1.0%	on			\$670				
Contingency @	0.0%	on			\$0				
					TOTAL COST for pay item				
					\$68,353				

Additional Pay Item Notes :
 Assumed we need forklift because of work in the tunnel from gate to outlet works, based on RS Means, Utility removal, pipe, sewer/water, 12" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B6 .

PAY ITEM INFORMATION												
PAY ITEM NUMBER	: 4.038	Project			: IRON GATE							
Description	:	Remove and Dispose of Power Cable and 4" Conduit from Penstock Structure										
Quantity	:	800.00	LF									
Daily Production	:	125.00	LF per	8	hour shift	Project #	: 4					
Work Days	:	6.4	Days									
Unit Price	:	\$49.86 per LF			Estimator	: Mihaela Tomulescu	LF per	143.75	Total Cost	\$33,904	Unit Price Per LF	\$42
Total Cost	:	\$39,887			Probable Low Cost Parameter		Probable High Cost Parameter	106.25	\$45,870	\$57		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	6.4	8	51.20	L	\$47.23	incl. in rate	incl. in rate	\$2,418.18
Electrician	Active	4.00	6.4	8	204.80	L	\$45.23	incl. in rate	incl. in rate	\$9,263.10
Laborer	Active	2.00	6.4	8	102.40	L	\$45.80	incl. in rate	incl. in rate	\$4,689.92
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	6.4	8	102.40	E	\$111.64	incl. in rate	incl. in rate	\$11,431.94
Truck Driver (heavy)	Active	1.00	6.4	8	51.20	L	\$57.59	incl. in rate	incl. in rate	\$2,948.61
					Labor Hours	409.6	TOTAL LABOR			\$19,319.81
					Equipment Hours	102.4	TOTAL EQUIPMENT			\$11,431.94

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$965.99	\$965.99
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$965.99

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$19,319.81	Labor Burden @	49.7%	\$0.00		\$19,319.81
Material Cost	\$965.99	Material Tax @	7.8%	\$74.86		\$1,040.85
Equipment Cost	\$11,431.94	Equipment Tax @	0.0%	\$0.00		\$11,431.94
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$31,718			\$75	DIRECT COST SUBTOTALS	\$31,793
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$31,792.60	\$4,768.89
Installing Contractors Profit@	8.0%				\$31,792.60	\$2,543.41
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$7,312.30
General Contractors Insurance @	1.0%		on		\$39,104.90	\$391
Bond @	1.0%		on		\$39,104.90	\$391
Contingency @	0.0%		on		\$39,886.99	\$0
TOTAL COST for pay item						\$39,887
Additional Pay Item Notes :						
Based on RS Means:26050510- Armored cable, (BX), #8, 3 wire, average 50' runs, electrical demolition, remove use crew Elec2 and 26050510 -Conduit, rigid galvanized steel, 4" to 6" diameter, electrical demolition, remove conduit to 10' high, including fittings & hangers						

PAY ITEM INFORMATION												
PAY ITEM NUMBER :	4.044			Project :	IRON GATE							
Description :	Remove and Dispose of Bearing Oil System and Cooling Water System											
Quantity :	9,182.00 lbs											
Daily Production :	6,000.00	lbs per	8	hour shift	Project # :	4						
Work Days :	1.5	Days										
Unit Price :	\$1.06	per lbs			Estimator :	Mihaela Tomulescu	lbs per	6900	Total Cost	\$8,297	Unit Price Per lbs	\$0.90
Total Cost :	\$9,761					Probable Low Cost Parameter	4800	Total Cost	\$11,713	Unit Price Per lbs	\$1.28	

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	1.5	8	12.00	L	\$48.27	incl. in rate	incl. in rate	\$579.24	
Laborer	Active	2.00	1.5	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20	
Steelworker	Active	2.00	1.5	8	24.00	L	\$65.52	incl. in rate	incl. in rate	\$1,572.48	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	8	4.00	E	\$221.50	incl. in rate	incl. in rate	\$886.00	
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	incl. in rate	incl. in rate	\$230.36	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56	
Equipment Operator (light)	Active	1.00	0.5	8	4.00	L	\$64.90	incl. in rate	incl. in rate	\$259.60	
					Labor Hours	68			TOTAL LABOR	\$3,740.88	
					Equipment Hours	8			TOTAL EQUIPMENT	\$1,332.56	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$187.04	\$187.04
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$187.04

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	4.59	ton	1.000	\$595.00	\$2,731.65
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	\$7.25	\$203.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$2,934.65

SUMMARY OF COSTS							
Labor Cost	\$3,740.88	Labor Burden @	49.7%	\$0.00		\$3,740.88	
Material Cost	\$187.04	Material Tax @	7.8%	\$14.50		\$201.54	
Equipment Cost	\$1,332.56	Equipment Tax @	0.0%	\$0.00		\$1,332.56	
Subcontractors	\$2,934.65					\$2,934.65	
DIRECT COST SUBTOTALS	\$8,195			\$14	DIRECT COST SUBTOTALS	\$8,210	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$5,274.98	\$791.25	
Installing Contractors Profit@	8.0%				\$5,274.98	\$422.00	
GC Markup on Subs @	5.0%				\$2,934.65	\$146.73	
						TOTAL MARKUP COSTS	\$1,359.98
General Contractors Insurance @	1.0%	on			\$9,569.60	\$96	
Bond @	1.0%	on			\$9,569.60	\$96	
Contingency @	0.0%	on			\$9,760.99	\$0	
TOTAL COST for pay item						\$9,761	

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 3375 LF of 1 1/2" oil pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. The cooling and lubrication systems for the Hydroelectric Barge turbine, speed increaser and generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. The following is a list of hazardous materials, substances, chemicals, and wastes normally found at a hydropower facility that may require disposal actions if not recycled or reused for their intended purpose:

1. Polychlorinated Biphenyls (PCBs)
2. Asbestos
3. Paint/abrasive blast grit (red lead paint)
4. Oil
5. Mercury
6. Antifreeze
7. Halogenated and non-halogenated solvents
8. Greases
9. Pesticides (includes herbicides, insecticides, and wood preservatives)
10. Petroleum contaminated
11. Chlorinated fluorocarbons (CFCs) Freon/Halon
12. Gasoline/diesel (includes product and sludge in tanks)
13. Batteries (includes acid)
14. Water treatment sludge (septic tanks/wastewater treatment)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4,046	Project	: IRON GATE						
Description	: Remove and Dispose of Plant Water and Fire Protection System								
Quantity	: 9,182.00 lbs								
Daily Production	: 6,000.00 lbs per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.5 Days	Estimator	: Mihaela Tomulescu	lbs per	6600	Total Cost	\$8,636	Unit Price Per lbs	\$0.94
Unit Price	: \$1.05 per lbs	Probable Low Cost Parameter	4800	Probable High Cost Parameter	4800	\$11,515	\$1.25		
Total Cost	: \$9,596								

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	1.5	8	12.00	L	\$48.27	incl. in rate	incl. in rate		\$579.24
Laborer	Active	3.00	1.5	8	36.00	L	\$45.80	incl. in rate	incl. in rate		\$1,648.80
Truck Driver (light)	Active	1.00	1.5	8	12.00	L	\$56.29	incl. in rate	incl. in rate		\$675.48
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.5	8	12.00	E	\$111.64	incl. in rate	incl. in rate		\$1,339.68
Steelworker	Active	2.00	1.5	8	24.00	L	\$65.52	incl. in rate	incl. in rate		\$1,572.48
Loader, FE Rubber Tire (3.5cy)	Active	1.00	1.5	8	12.00	E	\$64.23	incl. in rate	incl. in rate		\$770.76
Equipment Operator (light)	Active	1.00	1.5	8	12.00	L	\$64.90	incl. in rate	incl. in rate		\$778.80
					Labor Hours	96	TOTAL LABOR				\$5,254.80
					Equipment Hours	24	TOTAL EQUIPMENT				\$2,110.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$262.74	\$262.74
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$262.74

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$5,254.80	Labor Burden @	49.7%	\$0.00		\$5,254.80
Material Cost	\$262.74	Material Tax @	7.8%	\$20.36		\$283.10
Equipment Cost	\$2,110.44	Equipment Tax @	0.0%	\$0.00		\$2,110.44
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$7,628			\$20	DIRECT COST SUBTOTALS	\$7,648
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$7,648.34	\$1,147.25
Installing Contractors Profit@	8.0%				\$7,648.34	\$611.87
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,759.12
General Contractors Insurance @	1.0%		on		\$9,407.46	\$94
Bond @	1.0%		on		\$9,407.46	\$94
Contingency @	0.0%		on		\$9,595.61	\$0
TOTAL COST for pay item						\$9,596

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 3375 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Forman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.047	Project	: IRON GATE						
Description	: Remove and Dispose of Oil Sump Pumps								
Quantity	: 2,000.00 lbs								
Daily Production	: 6,000.00 lbs per	8	hour shift	Project #	: 4				
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu	lbs per		Total Cost		Unit Price Per lbs	
Unit Price	: \$1.05 per lbs	Probable Low Cost Parameter		6600		\$1,883		\$0.94	
Total Cost	: \$2,092	Probable High Cost Parameter		4800		\$2,510		\$1.26	

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	1.00	0.3	8	2.40	L	\$48.27	incl. in rate	incl. in rate		\$115.85
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	incl. in rate	incl. in rate		\$108.55
Laborer	Active	2.00	0.3	8	4.80	L	\$45.80	incl. in rate	incl. in rate		\$219.84
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	incl. in rate	incl. in rate		\$130.43
Truck Driver (heavy)	Active	1.00	0.2	8	1.60	L	\$57.59	incl. in rate	incl. in rate		\$92.14
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate		\$178.62
Equipment Operator (medium)	Active	1.00	0.2	8	1.60	L	\$66.28	incl. in rate	incl. in rate		\$106.05
					Labor Hours	12.8	TOTAL LABOR				\$642.43
					Equipment Hours	3.2	TOTAL EQUIPMENT				\$309.06

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$32.12	\$32.12
						\$0.00
TOTAL MATERIAL						\$32.12

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum (assumed weight)	1.00	ton	1.000	1.00	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	28.00	\$7.25
TOTAL SUBCONTRACTS					\$798.00

SUMMARY OF COSTS									
Labor Cost	\$642.43	Labor Burden @	49.7%	\$0.00	\$642.43				
Material Cost	\$32.12	Material Tax @	7.8%	\$2.49	\$34.61				
Equipment Cost	\$309.06	Equipment Tax @	0.0%	\$0.00	\$309.06				
Subcontractors	\$798.00				\$798.00				
DIRECT COST SUBTOTALS	\$1,782			\$2	\$1,784				
Installing Contractors Overhead @	15.0%	Crew		\$986.10	\$147.91				
Installing Contractors Profit @	8.0%	Material		\$986.10	\$78.89				
GC Markup on Subs @	5.0%	Subs		\$798.00	\$39.90				
TOTAL MARKUP COSTS					\$266.70				
General Contractors Insurance @	1.0%	on		\$2,050.80	\$21				
Bond @	1.0%	on		\$2,050.80	\$21				
Contingency @	0.0%	on		\$2,091.82	\$0				
TOTAL COST for pay item					\$2,092				
Additional Pay Item Notes :									
Used 1 crane to pick up the oil sump pumps, 1 Forman and 2 Laborers to remove the pumps. One electrician to unplug the power and assure the temporary power at the construction site. Assumed hazardous waste since we deal with the oil sump pump.									

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	4.049			Project :	IRON GATE					
Description :	Remove and Dispose of Exposed Piping Around the Plant									
Quantity :	19,291.00 lbs									
Daily Production :	14,500.00 lbs per			8		hour shift				
Work Days :	1.3 Days									
Unit Price :	\$1.05 per lbs			Project # :		Klamath Dams Removal				
Total Cost :	\$20,285			Estimator :		Mihaela Tomulescu		lbs per	Total Cost	Unit Price Per lbs
				Probable Low Cost Parameter		15950		\$18,257	\$0.95	
				Probable High Cost Parameter		11600		\$24,342	\$1.26	

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	2.00	1.3	8	20.80	L	\$48.27	incl. in rate	incl. in rate	\$1,004.02	
Laborer	Active	6.00	1.3	8	62.40	L	\$45.80	incl. in rate	incl. in rate	\$2,857.92	
Truck Driver (heavy)	Active	1.00	1.3	8	10.40	L	\$57.59	incl. in rate	incl. in rate	\$598.94	
Equipment Operator (oiler)	Active	1.00	1.3	8	10.40	L	\$62.94	incl. in rate	incl. in rate	\$654.58	
Welder	Active	4.00	1.3	8	41.60	L	\$7.84	incl. in rate	incl. in rate	\$326.04	
Gas Welding Machine	Active	4.00	1.3	8	41.60	E	\$2.88	incl. in rate	incl. in rate	\$119.68	
Electrician	Active	2.00	1.3	8	20.80	L	\$45.23	incl. in rate	incl. in rate	\$940.78	
Steelworker	Active	4.00	1.3	8	41.60	L	\$65.52	incl. in rate	incl. in rate	\$2,725.63	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.3	8	10.40	E	\$111.64	incl. in rate	incl. in rate	\$1,161.06	
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.3	8	10.40	E	\$221.50	incl. in rate	incl. in rate	\$2,303.60	
					Labor Hours	208	TOTAL LABOR			\$9,107.90	
					Equipment Hours	62.4	TOTAL EQUIPMENT			\$3,584.34	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$910.79	\$910.79
Selective demolition, torch cutting, steel, 1" thick plate (assumption)	2,000.00	LF	1.000	2,000.00	\$0.85	\$1,700.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$2,610.79

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.96	ton	1.000	\$595.00	\$573.91	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	\$7.25	\$203.00	
					\$0.00	
					\$0.00	
TOTAL SUBCONTRACTS						\$776.91

SUMMARY OF COSTS						
Labor Cost	\$9,107.90	Labor Burden @	49.7%	\$0.00	\$9,107.90	
Material Cost	\$2,610.79	Material Tax @	7.8%	\$202.34	\$2,813.13	
Equipment Cost	\$3,584.34	Equipment Tax @	0.0%	\$0.00	\$3,584.34	
Subcontractors	\$776.91				\$776.91	
DIRECT COST SUBTOTALS	\$16,080			\$202	DIRECT COST SUBTOTALS	\$16,282
Installing Contractors Overhead @	15.0%	Crew				\$2,325.81
Installing Contractors Profit @	8.0%	Material				\$1,240.43
GC Markup on Subs @	5.0%	Subs				\$38.85
				Cost Basis		
					TOTAL MARKUP COSTS	\$3,605.08
General Contractors Insurance @	1.0%		on	\$19,887.36		\$199
Bond @	1.0%		on	\$19,887.36		\$199
Contingency @	0.0%		on	\$20,285.10		\$0
TOTAL COST for pay item						\$20,285

Additional Pay Item Notes :

Used RS Means : Assumed Pipe, metal pipe, to 1-1/2" diam., selective demolition, 9200 LF of 1 1/2" pipes at 2.72 Lbs. Used 2 Crew formed of 1 Foreman, 2 Steelworkers to cut the pipes, 1 Welder to cut steel in inaccessible places, 3 Laborers to haul the pipes in the truck with the loader, 1 electrician to unplug the power and assure the temporary power at the construction site.. Assumed contains paint with heavy metals 10% of the total lbs. calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.050	Project	: IRON GATE						
Description	: Remove and Dispose of Unwatering Piping								
Quantity	: 19,291.00 lbs								
Daily Production	: 18,000.00 lbs per	8	hour shift	Project #	: 4				
Work Days	: 1.1 Days								
Unit Price	: \$0.88 per lbs	Estimator	: Mihaela Tomulescu	lbs per	19800	Total Cost	\$15,270	Unit Price Per lbs	\$0.79
Total Cost	: \$16,967	Probable Low Cost Parameter	15300	Probable High Cost Parameter	15300	\$19,512	\$0.79	\$1.01	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.1	8	8.80	L	\$48.27	incl. in rate	incl. in rate	\$424.78
Electrician	Active	1.00	1.1	8	8.80	L	\$45.23	incl. in rate	incl. in rate	\$398.02
Steelworker	Active	2.00	1.1	8	17.60	L	\$65.52	incl. in rate	incl. in rate	\$1,153.15
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.1	8	8.80	E	\$221.50	incl. in rate	incl. in rate	\$1,949.20
Truck Driver (heavy)	Active	1.00	1.1	8	8.80	L	\$57.59	incl. in rate	incl. in rate	\$506.79
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.1	8	8.80	E	\$111.64	incl. in rate	incl. in rate	\$982.43
Laborer	Active	3.00	1.1	8	26.40	L	\$45.80	incl. in rate	incl. in rate	\$1,209.12
Welder	Active	1.00	1.1	8	8.80	L	\$7.84	incl. in rate	incl. in rate	\$68.97
Gas Welding Machine	Active	1.00	1.1	8	8.80	E	\$2.88	incl. in rate	incl. in rate	\$25.32
Equipment Operator (medium)	Active	1.00	1.1	8	8.80	L	\$66.28	incl. in rate	incl. in rate	\$583.26
					Labor Hours	88	TOTAL LABOR			\$4,344.10
					Equipment Hours	26.4	TOTAL EQUIPMENT			\$2,956.95

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$217.20	\$217.20
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	1,000.00	LF	1.000	1,000.00	\$0.85	\$850.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$1,067.20

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	9.65	ton	1.000	9.65	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	28.00	\$7.25
					\$203.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$5,942.07

SUMMARY OF COSTS						
Labor Cost	\$4,344.10	Labor Burden @	49.7%	\$0.00		\$4,344.10
Material Cost	\$1,067.20	Material Tax @	7.8%	\$82.71		\$1,149.91
Equipment Cost	\$2,956.95	Equipment Tax @	0.0%	\$0.00		\$2,956.95
Subcontractors	\$5,942.07					\$5,942.07
DIRECT COST SUBTOTALS	\$14,310			\$83	DIRECT COST SUBTOTALS	\$14,393
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$8,450.96	\$1,267.64
Installing Contractors Profit@	8.0%				\$8,450.96	\$676.08
GC Markup on Subs @	5.0%				\$5,942.07	\$297.10
					TOTAL MARKUP COSTS	\$2,240.82
General Contractors Insurance @	1.0%		on		\$16,633.86	\$166
Bond @	1.0%		on		\$16,633.86	\$166
Contingency @	0.0%		on		\$16,966.54	\$0
					TOTAL COST for pay item	\$16,967
Additional Pay Item Notes :						
Used RS Means : Assumed Pipe, metal pipe, to 1-1/2" diam., selective demolition, 7100 LF of 1 1/2" pipes at 2.72 Lbs. Used 1 Crew formed of 1 Foreman, 2 Steelworkers to cut the pipes, 1 Welder to cut steel in inaccessible places , 3 Laborers to haul the pipes in the truck with the loader, 1 electrician to unplug the power and to assure the temporary power at the construction site. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling.						

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.051			Project :	IRON GATE				
Description :	Remove and Dispose of Drainage Piping								
Quantity :	9,518.00 lbs			Project # :	4				
Daily Production :	4,450.00 lbs per			Estimator :	Mihaela Tomulescu		lbs per	Total Cost	Unit Price Per lbs
Work Days :	2.1 Days			8	hour shift		4895	\$9,591	\$1.01
Unit Price :	\$1.12 per lbs			Probable Low Cost Parameter	3782.5		\$12,256	\$1.29	
Total Cost :	\$10,657								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	2.1	8	16.80	L	\$48.27	incl. in rate	incl. in rate	\$810.94
Laborer	Active	2.00	2.1	8	33.60	L	\$45.80	incl. in rate	incl. in rate	\$1,538.88
Steelworker	Active	2.00	2.1	8	33.60	L	\$65.52	incl. in rate	incl. in rate	\$2,201.47
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Equipment Operator (light)	Active	1.00	1.0	8	8.00	L	\$64.90	incl. in rate	incl. in rate	\$519.20
					Labor Hours	100	TOTAL LABOR			\$5,531.21
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,665.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$276.56	\$276.56
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$276.56

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$5,531.21	Labor Burden @	49.7%	\$0.00		\$5,531.21
Material Cost	\$276.56	Material Tax @	7.8%	\$21.43		\$297.99
Equipment Cost	\$2,665.12	Equipment Tax @	0.0%	\$0.00		\$2,665.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$8,473			\$21	DIRECT COST SUBTOTALS	\$8,494
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$8,494.32	\$1,274.15
Installing Contractors Profit @	8.0%				\$8,494.32	\$679.55
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,953.69
General Contractors Insurance @	1.0%		on		\$10,448.02	\$104
Bond @	1.0%		on		\$10,448.02	\$104
Contingency @	0.0%		on		\$10,656.98	\$0
TOTAL COST for pay item						\$10,657

Additional Pay Item Notes :

2600 LF of 1 " drainage pipes at 3.66 Lbs. Used 1 Loader and 1 Forman, 2 Steelworkers to cut the pipes and 2 Laborers to load the pipes in the truck.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4,052			Project	IRON GATE				
Description	Remove and Dispose of Transformer Oil and Fire Protection Pipes								
Quantity	9,182.00 lbs								
Daily Production	6,000.00 lbs per		8	hour shift	Project #	4			
Work Days	1.5		Days		Estimator	Mihaela Tomulescu		lbs per	Total Cost
Unit Price	\$1.00 per lbs				Probable Low Cost Parameter	6300		\$8,739	Unit Price Per lbs
Total Cost	\$9,199				Probable High Cost Parameter	5400		\$10,119	\$1.10

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	1.5	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20
Truck Driver (light)	Active	1.00	1.0	8	8.00	L	\$56.29	incl. in rate	incl. in rate	\$450.32
Steelworker	Active	2.00	1.5	8	24.00	L	\$65.52	incl. in rate	incl. in rate	\$1,572.48
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Pump, Centrifugal, 3"	Active	1.00	1.5	8	12.00	E	\$2.76	incl. in rate	incl. in rate	\$33.07
Labor Foreman	Active	1.00	1.5	8	12.00	L	\$48.27	incl. in rate	incl. in rate	\$579.24
					Labor Hours	68	TOTAL LABOR			\$3,701.24
					Equipment Hours	20	TOTAL EQUIPMENT			\$926.19

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$185.06	\$185.06
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$185.06

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	4.59	ton	1.000	4.59	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	28.00	\$7.25
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$2,934.65

SUMMARY OF COSTS					
Labor Cost	\$3,701.24	Labor Burden @	49.7%	\$0.00	\$3,701.24
Material Cost	\$185.06	Material Tax @	7.8%	\$14.34	\$199.40
Equipment Cost	\$926.19	Equipment Tax @	0.0%	\$0.00	\$926.19
Subcontractors	\$2,934.65				\$2,934.65
DIRECT COST SUBTOTALS	\$7,747			\$14	\$7,761
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$4,826.83
Installing Contractors Profit@	8.0%				\$4,826.83
GC Markup on Subs @	5.0%				\$2,934.65
					TOTAL MARKUP COSTS
					\$1,256.90
General Contractors Insurance @	1.0%		on	\$9,018.38	\$90
Bond @	1.0%		on	\$9,018.38	\$90
Contingency @	0.0%		on	\$9,198.75	\$0
TOTAL COST for pay item					\$9,199

Additional Pay Item Notes :

Used RS Means : Pipe, metal pipe, to 1-1/2" diam., selective demolition, 3375 LF of 1 1/2" fire protection pipes at 2.72 Lbs. Used 1 Foreman, 2 Steelworkers to cut the pipes and 3 Laborers to load the pipes in the truck. Used a pump for the oil disposal. Each hydropower facility has at least 150,000 gallons to 250,000 gallon of oil currently in use. This oil would have to be properly disposed of in the event of decommissioning. Oil removed from the turbines and other equipment, including transformer oil, would be either a waste oil or used oil, depending on prior use and contaminants found in the oil. Contaminated oil containing contaminants such as solvents are commonly encountered at hydropower facilities. Oil sludges are common in tanks. Oil disposal would likely be costly due to the large volumes found at hydropower facilities and the ease of contamination with other regulated hazardous wastes. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.054			Project :	Iron Gate				
Description :	Remove and Dispose of AC Generator, Outdoor Horizontal								
Quantity :	1.00 EA								
Daily Production :	0.10	EA per	8	hour shift	Project # :	4			
Work Days :	10.0	Days							
Unit Price :	\$91,158.88 per EA		Estimator :	Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA	
Total Cost :	\$91,159		Probable Low Cost Parameter	0.11		\$82,043	\$82,043		\$104,833
			Probable High Cost Parameter	0.085		\$104,833	\$104,833		\$104,833

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Hydraulic Crane (120tn)	Active	2.00	2.5	8	40.00	E	\$239.06	incl. in rate	incl. in rate	\$9,562.40
Electrician	Active	3.00	10.0	8	240.00	L	\$45.23	incl. in rate	incl. in rate	\$10,855.20
Equipment Operator (oiler)	Active	2.00	10.0	8	160.00	L	\$62.94	incl. in rate	incl. in rate	\$10,070.40
Equipment Operator (crane)	Active	2.00	2.5	8	40.00	L	\$68.41	incl. in rate	incl. in rate	\$2,736.40
Laborer	Active	5.00	10.0	8	400.00	L	\$45.80	incl. in rate	incl. in rate	\$18,320.00
Loader, FE Rubber Tire (5.25cy)	Active	2.00	10.0	8	160.00	E	\$75.42	incl. in rate	incl. in rate	\$12,067.20
Electrician Foreman	Active	1.00	10.0	8	80.00	L	\$47.23	incl. in rate	incl. in rate	\$3,778.40
Welder	Active	1.00	10.0	8	80.00	L	\$7.84	incl. in rate	incl. in rate	\$627.00
Gas Welding Machine	Active	1.00	10.0	8	80.00	E	\$2.88	incl. in rate	incl. in rate	\$230.16
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	2.0	8	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
					Labor Hours	1016	TOTAL LABOR		\$47,308.84	
					Equipment Hours	296	TOTAL EQUIPMENT		\$22,370.16	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$2,365.44	\$2,365.44
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$2,365.44

SUBCONTRACT COSTS								
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount			
Disposal fee	1	EA	1.000	1.00	\$100.00			\$100.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum (assumed qty)	56.00	mile	1.000	56.00	\$7.25			\$406.00
								\$0.00
TOTAL SUBCONTRACTS								\$506.00

SUMMARY OF COSTS									
Labor Cost	\$47,308.84	Labor Burden @	49.7%	\$0.00	\$47,308.84				
Material Cost	\$2,365.44	Material Tax @	7.8%	\$183.32	\$2,548.76				
Equipment Cost	\$22,370.16	Equipment Tax @	0.0%	\$0.00	\$22,370.16				
Subcontractors	\$506.00				\$506.00				
DIRECT COST SUBTOTALS	\$72,550			\$183	\$72,734				
Installing Contractors Overhead @	15.0%	Crew			\$72,227.76				
Installing Contractors Profit @	8.0%	Material			\$72,227.76				
GC Markup on Subs @	5.0%	Subs			\$506.00				
					TOTAL MARKUP COSTS	\$16,637.69			
General Contractors Insurance @	1.0%	on			\$89,371.45				
Bond @	1.0%	on			\$89,371.45				
Contingency @	0.0%	on			\$91,158.88				
					TOTAL COST for pay item	\$91,159			

Additional Pay Item Notes :

The cooling and lubrication systems for the generator will be a combination of water and oil. These systems will be isolated from the water passages so that no contamination of passing water will occur. Used RS Means, a R13 Crew formed of 1 Foreman, 3 Electricians, 1 Oiler, 0.25 Equipment Crane. 5 Steelworkers to cut adjacent appurtenances and 1 Welder to cut pipes. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling (back and forth).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.055	Project	: IRON GATE						
Description	: Remove and Dispose of Excitation equipment for 18.975 MVA Generator								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per 8 hour shift	Project #	: 4						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	EA per	: 1.1	Total Cost	: \$2,146	Unit Price Per EA	: \$2,146
Unit Price	: \$2,384.74 per EA	Probable Low Cost Parameter	: 0.85	Total Cost	: \$2,742	Unit Price Per EA	: \$2,742		
Total Cost	: \$2,385	Probable High Cost Parameter	: 0.85	Total Cost	: \$2,742	Unit Price Per EA	: \$2,742		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Laborer	Active	1.00	1.0	8	8.00	L	\$45.80	incl. in rate	incl. in rate	\$366.40
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
Truck Driver (heavy)	Active	1.00	0.5	8	4.00	L	\$57.59	incl. in rate	incl. in rate	\$230.36
					Labor Hours	28	TOTAL LABOR			\$1,336.44
					Equipment Hours	4	TOTAL EQUIPMENT			\$446.56

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$66.82	\$66.82
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	50.00	LF	1.000	50.00	\$0.85	\$42.50
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$109.32

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$1,336.44	Labor Burden @	49.7%	\$0.00		\$1,336.44
Material Cost	\$109.32	Material Tax @	7.8%	\$8.47		\$117.79
Equipment Cost	\$446.56	Equipment Tax @	0.0%	\$0.00		\$446.56
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,892			\$8	DIRECT COST SUBTOTALS	\$1,901
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$1,900.79	\$285.12
Installing Contractors Profit @	8.0%				\$1,900.79	\$152.06
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$437.18
General Contractors Insurance @	1.0%	on			\$2,337.98	\$23
Bond @	1.0%	on			\$2,337.98	\$23
Contingency @	0.0%	on			\$2,384.74	\$0
					TOTAL COST for pay item	\$2,385

Additional Pay Item Notes :

Used 1 Foreman, 1 Electrician to remove the electrical equipment and 1 laborer to haul.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.056			Project :	IRON GATE				
Description :	Remove and Dispose of Surge protection equip. for 18.975 MVA Generator								
Quantity :	1.00	EA							
Daily Production :	1.00	EA per	4	hour shift	Project # :	4			
Work Days :	1.0	Days							
Unit Price :	\$1,891.05 per EA		Estimator :	Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA	
Total Cost :	\$1,891		Probable Low Cost Parameter	1.1		\$1,702	\$1,702	\$1,702	
			Probable High Cost Parameter	0.85		\$2,175	\$2,175	\$2,175	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	4	4.00	L	\$47.23	incl. in rate	incl. in rate	\$188.92
Electrician	Active	1.00	1.0	4	4.00	L	\$45.23	incl. in rate	incl. in rate	\$180.92
Laborer	Active	1.00	1.0	4	4.00	L	\$45.80	incl. in rate	incl. in rate	\$183.20
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.5	4	2.00	E	\$221.50	incl. in rate	incl. in rate	\$443.00
Truck Driver (heavy)	Active	1.00	0.5	4	2.00	L	\$57.59	incl. in rate	incl. in rate	\$115.18
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.5	4	2.00	E	\$111.64	incl. in rate	incl. in rate	\$223.28
Equipment Operator (light)	Active	1.00	0.5	4	2.00	L	\$64.90	incl. in rate	incl. in rate	\$129.80
					Labor Hours	16	TOTAL LABOR		\$798.02	
					Equipment Hours	4	TOTAL EQUIPMENT		\$666.28	

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$39.90	\$39.90
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$39.90

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$798.02	Labor Burden @	49.7%	\$0.00		\$798.02
Material Cost	\$39.90	Material Tax @	7.8%	\$3.09		\$42.99
Equipment Cost	\$666.28	Equipment Tax @	0.0%	\$0.00		\$666.28
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,504			\$3	DIRECT COST SUBTOTALS	\$1,507
Installing Contractors Overhead @	15.0%	Crew		\$1,507.29		\$226.09
Installing Contractors Profit @	8.0%	Material		\$1,507.29		\$120.58
GC Markup on Subs @	5.0%	Subs		\$0.00		\$0.00
TOTAL MARKUP COSTS						\$346.68
General Contractors Insurance @	1.0%		on	\$1,853.97		\$19
Bond @	1.0%		on	\$1,853.97		\$19
Contingency @	0.0%		on	\$1,891.05		\$0
TOTAL COST for pay item						\$1,891

Additional Pay Item Notes :

Used 1 Forman, 1 Electrician to remove the electrical equipment and 1 laborer to haul.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.057				Project	IRON GATE			
Description	Remove and Dispose of Neutral grounding equip. for 18.975 MVA Generator								
Quantity	1.00 EA								
Daily Production	1.00 EA per		8		hour shift				
Work Days	1.0		Days		Project #		4		
Unit Price	\$3,980.33 per EA		Estimator		Mihaela Tomulescu		EA per	Total Cost	Unit Price Per EA
Total Cost	\$3,980		Probable Low Cost Parameter		1.1		\$3,582	\$3,582	\$4,577
			Probable High Cost Parameter		0.85		\$4,577	\$4,577	

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate		\$377.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate		\$361.84
Ironworkers	Active	1.00	1.0	8	8.00	L	\$63.95	incl. in rate	incl. in rate		\$511.60
Laborer	Active	1.00	1.0	8	8.00	L	\$45.80	incl. in rate	incl. in rate		\$366.40
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate		\$460.72
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate		\$23.02
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate		\$62.70
					Labor Hours	48	TOTAL LABOR		\$2,141.10		
					Equipment Hours	16	TOTAL EQUIPMENT		\$916.14		

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$107.06	\$107.06
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$107.06

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,141.10	Labor Burden @	49.7%	\$0.00		\$2,141.10
Material Cost	\$107.06	Material Tax @	7.8%	\$8.30		\$115.35
Equipment Cost	\$916.14	Equipment Tax @	0.0%	\$0.00		\$916.14
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$3,164			\$8	DIRECT COST SUBTOTALS	\$3,173
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$3,172.59	\$475.89
Installing Contractors Profit@	8.0%				\$3,172.59	\$253.81
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$729.70
General Contractors Insurance @	1.0%		on		\$3,902.28	\$39
Bond @	1.0%		on		\$3,902.28	\$39
Contingency @	0.0%		on		\$3,980.33	\$0
TOTAL COST for pay item						\$3,980
Additional Pay Item Notes :						
Used 1 Forman, 1 Electrician, 1 Ironworker and 1 welder to cut rods, to remove the electrical equipment and 1 laborer to haul in the truck.						

PAY ITEM COST DETAIL WORKSHEET

4.060 Remove and Dispose of Battery System - assume 60 batteries, charger

PAY ITEM INFORMATION

PAY ITEM NUMBER :	4.060	Project :	IRONGATE			
Description :	Remove and Dispose of Battery System - assume 60 batteries, charger					
Quantity :	1.00 EA	Project # :	2			
Daily Production :	0.33 EA per	Estimator :	Mihaela Tomulesi	EA per	0.363	
Work Days :	3.0 Days	8	hour shift	Total Cost	\$13,815	
Unit Price :	\$15,350.22 per EA	Probable Low Cost Parameter	0.2805	Unit Price Per EA	\$13,815.20	
Total Cost :	\$15,350	Probable High Cost Parameter	0.2805	\$17,653	\$17,652.76	

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	3.0	8	24.00	L	\$48.27	\$0.00		\$1,158.48
Electrician	Active	1.00	3.0	8	24.00	L	\$45.23	\$0.00		\$1,085.52
Equipment Operator (light)	Active	1.00	3.0	8	24.00	L	\$64.90	\$0.00		\$1,557.60
Loader, FE Rubber Tire (3.5cy)	Active	1.00	3.0	8	24.00	E	\$64.23	\$64.23		\$1,541.52
Truck Driver (light)	Active	1.00	3.0	8	24.00	L	\$56.29	\$0.00		\$1,350.96
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	3.0	8	24.00	E	\$111.64	\$111.64		\$2,679.36
Laborer	Active	2.00	3.0	8	48.00	L	\$45.80	\$0.00		\$2,198.40
Welder	Active	1.00	3.0	8	24.00	L	\$7.84	\$0.00		\$188.10
Gas Welding Machine	Active	1.00	3.0	8	24.00	E	\$2.88	\$2.88		\$69.05
					Labor Hours	168	TOTAL LABOR			\$7,539.06
					Equipment Hours	72	TOTAL EQUIPMENT			\$4,289.93

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$376.95	\$376.95	
						TOTAL MATERIAL	\$376.95

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS

Labor Cost	\$7,539.06	Labor Burden @	49.7%	\$0.00	\$7,539.06	
Material Cost	\$376.95	Material Tax @	7.8%	\$29.21	\$406.17	
Equipment Cost	\$4,289.93	Equipment Tax @	0.0%	\$0.00	\$4,289.93	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$12,206			\$29	\$12,235	
DIRECT COST SUBTOTALS						
Installing Contractors Overhead @	15.0%			Cost Basis	\$1,835.27	
Installing Contractors Profit @	8.0%			\$12,235.15	\$978.81	
GC Markup on Subs @	5.0%			\$0.00	\$0.00	
TOTAL MARKUP COSTS						\$2,814.09
General Contractors Insurance @	1.0%	on		\$15,049.24	\$150	
Bond @	1.0%	on		\$15,049.24	\$150	
Contingency @	0.0%	on		\$15,350.22	\$0	
TOTAL COST for pay item						\$15,350

Additional Pay Item Notes :

Assuming 3 days of work disposing around 60 batteries, racks and supports. Using Crews E-19 for metals demolition, E-12 and E-25 for cutting steel and A-3H for equipment disposal, B-34A for hauling.

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	4.061				Project :	IRON GATE				
Description :	Remove and Dispose of Raceways, Bus, Conduit and Cable									
Quantity :	1.00 EA									
Daily Production :	0.20	EA per	8	hour shift	Project # :	4				
Work Days :	5.0 Days				Estimator :	Mihaela Tomulescu				
Unit Price :	\$18,352.70 per EA				Probable Low Cost Parameter	0.22	Total Cost	\$16,517	Unit Price Per EA	\$16,517
Total Cost :	\$18,353				Probable High Cost Parameter	0.17	Total Cost	\$21,106	Unit Price Per EA	\$21,106

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	5.0	8	40.00	L	\$47.23	incl. in rate	incl. in rate	\$1,889.20
Electrician	Active	2.00	5.0	8	80.00	L	\$45.23	incl. in rate	incl. in rate	\$3,618.40
Laborer	Active	1.00	5.0	8	40.00	L	\$45.80	incl. in rate	incl. in rate	\$1,832.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	5.0	8	40.00	E	\$111.64	incl. in rate	incl. in rate	\$4,465.60
Truck Driver (heavy)	Active	1.00	5.0	8	40.00	L	\$57.59	incl. in rate	incl. in rate	\$2,303.60
					Labor Hours	200	TOTAL LABOR			\$9,643.20
					Equipment Hours	40	TOTAL EQUIPMENT			\$4,465.60

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$482.16	\$482.16
						\$0.00
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$482.16

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$9,643.20	Labor Burden @	49.7%	\$0.00	\$9,643.20
Material Cost	\$482.16	Material Tax @	7.8%	\$37.37	\$519.53
Equipment Cost	\$4,465.60	Equipment Tax @	0.0%	\$0.00	\$4,465.60
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$14,591			\$37	\$14,628
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$2,194.25
Installing Contractors Profit @	8.0%				\$1,170.27
GC Markup on Subs @	5.0%				\$0.00
					\$3,364.52
TOTAL MARKUP COSTS					\$3,364.52
General Contractors Insurance @	1.0%	on			\$17,992.84
Bond @	1.0%	on			\$180
Contingency @	0.0%	on			\$0
					\$18,172.84
TOTAL COST for pay item					\$18,353
Additional Pay Item Notes :					
Use 1 Forman, 2 Electrician, 1 Laborer hauling with the loader in the truck.					

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4,064	Project	: IRON GATE						
Description	: Remove and Dispose of Unit and plant control switchboard								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per 8 hour shift	Project #	: 4						
Work Days	: 0.5 Days	Estimator	: Mihaela Tomulescu	EA per	: 1.1	Total Cost	: \$440	Unit Price Per EA	: \$440
Unit Price	: \$489.00 per EA	Probable Low Cost Parameter		Probable High Cost Parameter	: 0.85	Total Cost	: \$562	Unit Price Per EA	: \$562
Total Cost	: \$489								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.5	8	4.00	L	\$47.23	incl. in rate	incl. in rate	\$188.92
Electrician	Active	1.00	0.5	8	4.00	L	\$45.23	incl. in rate	incl. in rate	\$180.92
					Labor Hours	8	TOTAL LABOR			\$369.84
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$18.49	\$18.49	
Selective demolition, torch cutting, steel, 1" thick plate (assumed qty)	0.00	LF	1.000	0.00	\$0.85	\$0.00	
							\$0.00
							\$0.00
							\$0.00
							\$0.00
							\$0.00
TOTAL MATERIAL							\$18.49

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS										
Labor Cost	\$369.84	Labor Burden @	49.7%	\$0.00						\$369.84
Material Cost	\$18.49	Material Tax @	7.8%	\$1.43						\$19.93
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00						\$0.00
Subcontractors	\$0.00									\$0.00
DIRECT COST SUBTOTALS	\$388				\$1	DIRECT COST SUBTOTALS				\$390
		Crew	Material	Subs	Cost Basis					
Installing Contractors Overhead @	15.0%				\$389.77					\$58.46
Installing Contractors Profit @	8.0%				\$389.77					\$31.18
GC Markup on Subs @	5.0%				\$0.00					\$0.00
						TOTAL MARKUP COSTS				\$89.65
General Contractors Insurance @	1.0%		on		\$479.41					\$5
Bond @	1.0%		on		\$479.41					\$5
Contingency @	0.0%		on		\$489.00					\$0
						TOTAL COST for pay item				\$489
Additional Pay Item Notes :										
Crew formed of 1 Foreman and 1 Electrician.										

PAY ITEM COST DETAIL WORKSHEET

4.066 Remove and Dispose of Transformer (3 phase, 300 kVA, 6600/480V est.)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.066	Project	: IRONGATE						
Description	: Remove and Dispose of Transformer (3 phase, 300 kVA, 6600/480V est.)								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days								
Unit Price	: \$10,482.18 per EA	Estimator	: Mihaela Tomulescu	EA per	: 1.1	Total Cost	: \$9,434	Unit Price Per EA	: \$9,434
Total Cost	: \$10,482	Probable Low Cost Parameter	: 0.85	Probable High Cost Parameter	: 1.1	Total Cost	: \$12,055	Unit Price Per EA	: \$12,055

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	2.00	1.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Hydraulic Crane (50tn)	Active	1.00	1.0	8	8.00	E	\$134.32	incl. in rate	incl. in rate	\$1,074.56
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Vibratory Hammer & Extractor	Active	1.00	1.0	8	8.00	E	\$94.34	incl. in rate	incl. in rate	\$754.72
Truck, Utility, with Man-Basket	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Equipment Operator (light)	Active	2.00	1.0	8	16.00	L	\$64.90	incl. in rate	incl. in rate	\$1,038.40
Labor Hours					64	TOTAL LABOR				\$3,608.64
Equipment Hours					40	TOTAL EQUIPMENT				\$3,870.72

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$180.43	\$180.43
TOTAL MATERIAL						\$180.43

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.00	ton	1.000	\$595.00	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	\$7.25	\$203.00
TOTAL SUBCONTRACTS					\$798.00

SUMMARY OF COSTS						
Labor Cost	\$3,608.64	Labor Burden @	49.7%	\$0.00		\$3,608.64
Material Cost	\$180.43	Material Tax @	7.8%	\$13.98		\$194.42
Equipment Cost	\$3,870.72	Equipment Tax @	0.0%	\$0.00		\$3,870.72
Subcontractors	\$798.00					\$798.00
DIRECT COST SUBTOTALS	\$8,458			\$14	DIRECT COST SUBTOTALS	\$8,472
Installing Contractors Overhead@	15.0%	Crew			\$7,673.78	\$1,151.07
Installing Contractors Profit@	8.0%	Material			\$7,673.78	\$613.90
GC Markup on Subs @	5.0%	Subs			\$798.00	\$39.90
					TOTAL MARKUP COSTS	\$1,804.87
General Contractors Insurance @	1.0%		on		\$10,276.64	\$103
Bond @	1.0%		on		\$10,276.64	\$103
Contingency @	0.0%		on		\$10,482.18	\$0
					TOTAL COST for pay item	\$10,482

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane to load the transformer in the truck for disposal. In normal circumstances, decontaminated residual components could be accepted at landfill sites. Transformers of known PCB content over 50 ppm must be handled and disposed of in a manner that adheres to a strict code of Federal regulations (40 CFR Part 761). Transformers and other oil filled equipment that are known to be less than 50 ppm PCB are not regulated. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.067				Project	Iron Gate			
Description	Remove and Dispose of Step-up Transformer, outdoor, oil-filled, 3-phase, 18.947 kVA, 6.600/69.000 volt								
Quantity	1.00	EA							
Daily Production	0.25	EA per	8	hour shift	Project #	4			
Work Days	4.0	Days			Estimator	Mihaela Tomulescu		EA per	0.275
Unit Price	\$85,541.22	per EA			Probable Low Cost Parameter			Total Cost	\$76,987
Total Cost	\$85,541				Probable High Cost Parameter			Unit Price Per EA	\$76,987
									\$98,372

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	2.00	4.0	8	64.00	L	\$47.23	incl. in rate	incl. in rate	\$3,022.72
Electrician	Active	2.00	4.0	8	64.00	L	\$45.23	incl. in rate	incl. in rate	\$2,894.72
Laborer	Active	4.00	4.0	8	128.00	L	\$45.80	incl. in rate	incl. in rate	\$5,862.40
Hydraulic Excavator (6.0cy)	Active	1.00	4.0	8	32.00	E	\$322.48	incl. in rate	incl. in rate	\$10,319.36
Truck Driver (heavy)	Active	1.00	4.0	8	32.00	L	\$57.59	incl. in rate	incl. in rate	\$1,842.88
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	4.0	8	32.00	E	\$31.90	incl. in rate	incl. in rate	\$1,020.80
Crawler Crane (130tn)	Active	2.00	4.0	8	64.00	E	\$258.66	incl. in rate	incl. in rate	\$16,554.24
Truck, Utility, with Man-Basket	Active	2.00	4.0	8	64.00	E	\$31.90	incl. in rate	incl. in rate	\$2,041.60
Equipment Operator (crane)	Active	2.00	4.0	8	64.00	L	\$68.41	incl. in rate	incl. in rate	\$4,378.24
Equipment Operator (medium)	Active	1.00	4.0	8	32.00	L	\$66.28	incl. in rate	incl. in rate	\$2,120.96
					Labor Hours	384	TOTAL LABOR			\$20,121.92
					Equipment Hours	192	TOTAL EQUIPMENT			\$29,936.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,006.10	\$1,006.10
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$1,006.10

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Disposal fee	1	EA	1.000	1.00	\$1,000.00
Remove oil from oil-filled step-up transformer (allowance for oil containers, filters, etc)	1	EA	1.000	1.00	\$13,000.00
Forklift crew, all-terrain forklift, 45' lift, 35' reach, 9000 lb. capacity, weekly use	1	week	1.000	1.00	\$5,961.23
TOTAL SUBCONTRACTS					\$19,961.23

SUMMARY OF COSTS					
Labor Cost	\$20,121.92	Labor Burden @	49.7%	\$0.00	\$20,121.92
Material Cost	\$1,006.10	Material Tax @	7.8%	\$77.97	\$1,084.07
Equipment Cost	\$29,936.00	Equipment Tax @	0.0%	\$0.00	\$29,936.00
Subcontractors	\$19,961.23				\$19,961.23
DIRECT COST SUBTOTALS	\$71,025			\$78	\$71,103
Installing Contractors Overhead @	15.0%			\$51,141.99	\$7,671.30
Installing Contractors Profit @	8.0%			\$51,141.99	\$4,091.36
GC Markup on Subs @	5.0%			\$19,961.23	\$998.06
TOTAL MARKUP COSTS					\$12,760.72
General Contractors Insurance @	1.0%	on		\$83,863.94	\$839
Bond @	1.0%	on		\$83,863.94	\$839
Contingency @	0.0%	on		\$85,541.22	\$0
TOTAL COST for pay item					\$85,541

Additional Pay Item Notes :

Weight and dimensions of the transformers have particular importance so transport vehicles must be adequate. A considerable proportion of the weight is due to the oil, so the direct consequence is that the big transformers have to be transported empty. During transport the transformers are filled either by dry air or nitrogen. Because of transportation, the auxiliaries have to be removed. For this reason the collaboration with all the people involved in the project is essential. AECOM best assumption - 2 crew R3 formed of 1 Foreman, 1 Electricians, 1 utility man-bucket truck to work on the electrical line, 1 crane for disposal of each transformer in the truck and 2 laborers to remove the auxiliaries and the pad (1 excavator).

PAY ITEM COST DETAIL WORKSHEET

4.068 Remove and Dispose of Lattice steel structure, with 69-kV disconnect switches and insulators

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.068				Project	IRONGATE			
Description	Remove and Dispose of Lattice steel structure, with 69-kV disconnect switches and insulators				Project #	Klamath Dams Removal			
Quantity	1.00	EA			Estimator	Mihaela Tomulescu		EA per	
Daily Production	1.00	EA per	8	hour shift	Probable Low Cost Parameter			1.1	\$6,276
Work Days	1.0		Days		Probable High Cost Parameter			0.85	\$8,020
Unit Price	\$6,973.83		per EA						Unit Price Per EA \$6,276.45
Total Cost	\$6,974								\$8,019.91

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	\$0.00		\$370.16
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Hydraulic Crane (35tn)	Active	1.00	1.0	8	8.00	E	\$116.30	\$116.30		\$930.40
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Steelworker	Active	1.00	1.0	8	8.00	L	\$65.52	\$0.00		\$524.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	\$111.64		\$893.12
Truck Driver (light)	Active	1.00	1.0	8	8.00	L	\$56.29	\$0.00		\$450.32
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	\$0.00		\$732.80
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	\$2.88		\$23.02
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	\$0.00		\$62.70
Labor Hours					64	TOTAL LABOR				\$3,049.26
Equipment Hours					24	TOTAL EQUIPMENT				\$1,846.54

MATERIAL COSTS									
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost			
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$152.46	\$152.46			
TOTAL MATERIAL						\$152.46			

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Rent aerial lift, articulating boom, to 80' high, 500 lb. capacity, diesel - Rent per day (RS Means 01543340)	1.00	days	1.000	1.00	\$584.00	
TOTAL SUBCONTRACTS					\$584.00	

SUMMARY OF COSTS									
Labor Cost	\$3,049.26	Labor Burden @	49.7%	\$0.00	\$3,049.26				
Material Cost	\$152.46	Material Tax @	7.8%	\$11.82	\$164.28				
Equipment Cost	\$1,846.54	Equipment Tax @	0.0%	\$0.00	\$1,846.54				
Subcontractors	\$584.00				\$584.00				
DIRECT COST SUBTOTALS	\$5,632			\$12	\$5,644				
Installing Contractors Overhead @	15.0%	TRUE	FALSE	Cost Basis	\$759.01				
Installing Contractors Profit @	8.0%				\$404.81				
GC Markup on Subs @	5.0%				\$29.20				
TOTAL MARKUP COSTS					\$1,193.02				
General Contractors Insurance @	1.0%	on		\$6,837.09	\$68				
Bond @	1.0%	on		\$6,837.09	\$68				
Contingency @	0.0%	on		\$6,973.83	\$0				
TOTAL COST for pay item					\$6,974				

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician disconnect switches and insulators, 2 steelworkers to cut in pieces the structure, 2 laborer to help loading and hauling lattice steel members. It will require the use of steel haul trucks; carry alls, boom cranes. the structure will be dismantle on a basis of top to bottom, thus avoiding any form of collapse or toppling over.

PAY ITEM INFORMATION													
PAY ITEM NUMBER	: 4.069	Project			: IRONGATE								
Description	: Remove and Dispose of Generator Switchgear, outdoor, 7.2kV includes unit breaker (5 sections)												
Quantity	: 1.00 EA												
Daily Production	: 0.50 EA per	8	hour shift										
Work Days	: 2.0 Days												
Unit Price	: \$24,487.62 per EA	Project #		: Klamath Dams Removal	Estimator		: Mihaela Tomules	EA per	: 0.55	Total Cost	: \$22,039	Unit Price Per EA	: \$22,038.86
Total Cost	: \$24,488	Probable Low Cost Parameter		: 0.55	Probable High Cost Parameter		: 0.425	Total Cost	: \$28,161	Unit Price Per EA	: \$28,160.77		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	2.0	8	32.00	L	\$46.27	\$0.00		\$1,480.64
Electrician	Active	6.00	2.0	8	96.00	L	\$45.23	\$0.00		\$4,342.08
Hydraulic Crane (50tn)	Active	1.00	2.0	8	16.00	E	\$134.32	\$134.32		\$2,149.12
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	\$0.00		\$1,094.56
Laborer	Active	4.00	2.0	8	64.00	L	\$45.80	\$0.00		\$2,931.20
Steelworker	Active	2.00	2.0	8	32.00	L	\$65.52	\$0.00		\$2,096.64
					Labor Hours	240	TOTAL LABOR			\$11,945.12
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,149.12

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$597.26	\$597.26	
						TOTAL MATERIAL	\$597.26

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	6.00	ton	1.000	6.00	\$595.00	\$3,570.00	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	280.00	mile	1.000	280.00	\$7.25	\$2,030.00	
						TOTAL SUBCONTRACTS	\$5,600.00

SUMMARY OF COSTS									
Labor Cost	\$11,945.12	Labor Burden @	49.7%	\$0.00	\$11,945.12				
Material Cost	\$597.26	Material Tax @	7.8%	\$46.29	\$643.54				
Equipment Cost	\$2,149.12	Equipment Tax @	0.0%	\$0.00	\$2,149.12				
Subcontractors	\$5,600.00				\$5,600.00				
DIRECT COST SUBTOTALS	\$20,291			\$46	\$20,338				
Installing Contractors Overhead@	15.0%	TRUE	FALSE	Cost Basis	\$2,210.67				
Installing Contractors Profit@	8.0%				\$1,179.02				
GC Markup on Subs @	5.0%				\$280.00				
					TOTAL MARKUP COSTS	\$3,669.69			
General Contractors Insurance @	1.0%	on		\$24,007.47	\$240				
Bond @	1.0%	on		\$24,007.47	\$240				
Contingency @	0.0%	on		\$24,487.62	\$0				
					TOTAL COST for pay item	\$24,488			
Additional Pay Item Notes :									
Used 2 Crews (2 sections each weight around 2400 LBS per crew) formed of 1 Foreman, 3 Electrician, 2 laborer to haul with the crane in the truck considering one way for each section. Assumed containing hazardous waste that will be disposed (12000 LBS) at 28 miles away from the construction site to Yreka Transfer Recycling .									

PAY ITEM COST DETAIL WORKSHEET

4.070 Remove and Dispose of Single Phase Pole Transformers (25 kVA est.)

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.070			Project :	IRONGATE				
Description :	Remove and Dispose of Single Phase Pole Transformers (25 kVA est.)								
Quantity :	3.00	EA							
Daily Production :	3.00	EA per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	1.0	Days							
Unit Price :	\$2,514.24	per EA			Estimator :	Mihaela Tomulesi	EA per	Total Cost	Unit Price Per EA
Total Cost :	\$7,543				Probable Low Cost Parameter	3.3	\$6,788	\$2,262.82	
					Probable High Cost Parameter	2.55	\$8,674	\$2,891.38	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	3.00	1.0	8	24.00	L	\$47.23	incl. in rate	incl. in rate	\$1,133.52
Electrician	Active	3.00	1.0	8	24.00	L	\$45.23	incl. in rate	incl. in rate	\$1,085.52
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Hydraulic Crane (17tn)	Active	1.00	1.0	8	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Truck, Utility, with Man-Basket	Active	3.00	1.0	8	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
					Labor Hours	64	TOTAL LABOR			\$3,227.04
					Equipment Hours	40	TOTAL EQUIPMENT			\$2,310.88

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$161.35	\$161.35
TOTAL MATERIAL						\$161.35

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.25	ton	1.000	\$595.00	\$148.75
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	\$7.25	\$203.00
TOTAL SUBCONTRACTS					\$351.75

SUMMARY OF COSTS					
Labor Cost	\$3,227.04	Labor Burden @	49.7%	\$0.00	\$3,227.04
Material Cost	\$161.35	Material Tax @	7.8%	\$12.50	\$173.86
Equipment Cost	\$2,310.88	Equipment Tax @	0.0%	\$0.00	\$2,310.88
Subcontractors	\$351.75				\$351.75
DIRECT COST SUBTOTALS	\$6,051			\$13	\$6,064
Installing Contractors Overhead@	15.0%			\$5,711.78	\$856.77
Installing Contractors Profit@	8.0%			\$5,711.78	\$456.94
GC Markup on Subs @	5.0%			\$351.75	\$17.59
TOTAL MARKUP COSTS					\$1,331.30
General Contractors Insurance @	1.0%	on		\$7,394.82	\$74
Bond @	1.0%	on		\$7,394.82	\$74
Contingency @	0.0%	on		\$7,542.72	\$0
TOTAL COST for pay item					\$7,543

Additional Pay Item Notes :

Production is based off of RSMS using 3 Crew formed of 1 Foreman, 1 Electrician, 1 Articulated boom for each transformers. In normal circumstances, decontaminated residual components could be accepted at landfill sites. Transformers of known PCB content over 50 ppm must be handled and disposed of in a manner that adheres to a strict code of Federal regulations. Transformers and other oil filled equipment that are known to be less than 50 ppm PCB are not regulated. Calculated 28 miles from Iron Gate Dam to Yreka Transfer Recycling.

PAY ITEM COST DETAIL WORKSHEET

4.073 Remove Concrete in 3 Penstock Anchors and 7 Penstock Supports

PAY ITEM INFORMATION												
PAY ITEM NUMBER	:	4.073	Project	:	Iron Gate							
Description	:	Remove Concrete in 3 Penstock Anchors and 7 Penstock Supports										
Quantity	:	3,110.00	cy									
Daily Production	:	50.00	cy per	8	hour shift	Project #	:	4				
Work Days	:	62.2	Days			Estimator	:	Felipe Poletto				
Unit Price	:	\$298.85	per cy			Probable Low Cost Parameter	:	57.5	Total Cost	\$790,022	Unit Price Per cy	\$254.03
Total Cost	:	\$929,437			Probable High Cost Parameter	:	42.5	Total Cost	\$1,068,853	Unit Price Per cy	\$343.68	

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman	Active	2.00	62.2	8	995.20	L	\$48.27	incl. in rate	incl. in rate	\$48,038.30	
Laborer	Active	8.00	62.2	8	3,980.80	L	\$45.80	incl. in rate	incl. in rate	\$182,320.64	
Equipment Operator (medium)	Active	2.00	62.2	8	995.20	L	\$66.28	incl. in rate	incl. in rate	\$65,961.86	
Truck Driver (heavy)	Active	1.00	62.2	8	497.60	L	\$57.59	incl. in rate	incl. in rate	\$28,656.78	
Air Compressor 900 cfm	Active	1.00	62.2	8	497.60	E	\$38.87	incl. in rate	incl. in rate	\$19,341.17	
Air Compressor 600 cfm	Active	1.00	62.2	8	497.60	E	\$21.74	incl. in rate	incl. in rate	\$10,817.29	
Air Tool, Chipping Hammer	Active	4.00	62.2	8	1,990.40	E	\$1.64	incl. in rate	incl. in rate	\$3,262.33	
Generator, Small Generator, 10 - 15 kW	Active	2.00	62.2	8	995.20	E	\$7.04	incl. in rate	incl. in rate	\$7,006.21	
Hydraulic Excavator (2.5cy)	Active	2.00	62.2	8	995.20	E	\$203.63	incl. in rate	incl. in rate	\$202,652.58	
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	62.2	8	497.60	E	\$62.72	incl. in rate	incl. in rate	\$31,209.47	
Hydraulic Thumbs/Shear Attachment	Active	1.00	62.2	8	497.60	E	\$16.39	incl. in rate	incl. in rate	\$8,155.66	
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	62.2	8	497.60	E	\$111.64	incl. in rate	incl. in rate	\$55,552.06	
			62.2	8	0.00					\$0.00	
			62.2	8	0.00					\$0.00	
			62.2	8	0.00					\$0.00	
			62.2	8	0.00					\$0.00	
			62.2	8	0.00					\$0.00	
Labor Hours					6,469					TOTAL LABOR	\$324,977.58
Equipment Hours					6,469					TOTAL EQUIPMENT	\$337,996.78

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables (5% labor)	1.00	LS	1.00	1.00	\$16,248.88	\$16,248.88	
			1.00	0.00		\$0.00	
			1.00	0.00		\$0.00	
			1.00	0.00		\$0.00	
			1.00	0.00		\$0.00	
			1.00	0.00		\$0.00	
TOTAL MATERIAL							\$16,248.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	16	EA	Cost per Mob	\$2,500.00	\$40,000.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$40,000.00

SUMMARY OF COSTS									
Labor Cost	\$324,977.58	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$324,977.58			
Material Cost	\$16,248.88	Material Tax @	7.75%	\$1,259.29		\$17,508.17			
Equipment Cost	\$337,996.78	Equipment Tax @	7.75%	\$26,194.75		\$364,191.53			
Subcontractors	\$40,000.00					\$40,000.00			
DIRECT COST SUBTOTALS	\$719,223			\$27,454		\$746,677			
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$706,677.28	\$106,001.59			
Installing Contractors Profit@	8.0%				\$706,677.28	\$56,534.18			
GC Markup on Subs @	5.0%				\$40,000.00	\$2,000.00			
						TOTAL MARKUP COSTS	\$164,535.77		
General Contractors Insurance @	1.0%		on		\$911,213.06	\$9,112			
Bond @	1.0%		on		\$911,213.06	\$9,112			
Contingency @	0.0%		on		\$929,437.32	\$0			
TOTAL COST for pay item						\$929,437			

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposal site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM COST DETAIL WORKSHEET

4.075 Remove Concrete in Intake Structure Footbridge Abutment

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.075			Project :	Iron Gate				
Description :	Remove Concrete in Intake Structure Footbridge Abutment								
Quantity :	5.00	cy							
Daily Production :	50.00	cy per	8	hour shift	Project # :	4			
Work Days :	0.1		Days	Estimator :	Felipe Poletto		cy per	Total Cost	Unit Price Per cy
Unit Price :	\$820.58	per cy		Probable Low Cost Parameter	57.5	\$3,487		\$697.49	
Total Cost :	\$4,103			Probable High Cost Parameter	42.5	\$4,718		\$943.67	

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	0.1	8	1.60	L	\$48.27	incl. in rate	incl. in rate	\$77.23
Laborer	Active	8.00	0.1	8	6.40	L	\$45.80	incl. in rate	incl. in rate	\$293.12
Equipment Operator (medium)	Active	2.00	0.1	8	1.60	L	\$66.28	incl. in rate	incl. in rate	\$106.05
Truck Driver (heavy)	Active	1.00	0.1	8	0.80	L	\$57.59	incl. in rate	incl. in rate	\$46.07
Air Compressor 900 cfm	Active	1.00	0.1	8	0.80	E	\$38.87	incl. in rate	incl. in rate	\$31.10
Air Compressor 600 cfm	Active	1.00	0.1	8	0.80	E	\$21.74	incl. in rate	incl. in rate	\$17.39
Air Tool, Chipping Hammer	Active	4.00	0.1	8	3.20	E	\$1.64	incl. in rate	incl. in rate	\$5.24
Generator, Small Generator, 10 - 15 kW	Active	2.00	0.1	8	1.60	E	\$7.04	incl. in rate	incl. in rate	\$11.26
Hydraulic Excavator (2.5cy)	Active	2.00	0.1	8	1.60	E	\$203.63	incl. in rate	incl. in rate	\$325.81
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	0.1	8	0.80	E	\$62.72	incl. in rate	incl. in rate	\$50.18
Hydraulic Thumbs/Shear Attachment	Active	1.00	0.1	8	0.80	E	\$16.39	incl. in rate	incl. in rate	\$13.11
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.1	8	0.80	E	\$111.64	incl. in rate	incl. in rate	\$89.31
			0.1	8	0.00					\$0.00
			0.1	8	0.00					\$0.00
			0.1	8	0.00					\$0.00
			0.1	8	0.00					\$0.00
			0.1	8	0.00					\$0.00
Labor Hours					10	TOTAL LABOR				\$522.47
Equipment Hours					10	TOTAL EQUIPMENT				\$543.40

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$26.12	\$26.12
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$26.12

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS						
Labor Cost	\$522.47	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$522.47
Material Cost	\$26.12	Material Tax @	7.75%	\$2.02		\$28.15
Equipment Cost	\$543.40	Equipment Tax @	7.75%	\$42.11		\$585.52
Subcontractors	\$2,500.00					\$2,500.00
DIRECT COST SUBTOTALS	\$3,592			\$44		\$3,636
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$1,136.14	\$170.42
Installing Contractors Profit@	8.0%				\$1,136.14	\$90.89
GC Markup on Subs @	5.0%				\$2,500.00	\$125.00
						\$386.31
General Contractors Insurance @	1.0%		on		\$4,022.45	\$40
Bond @	1.0%		on		\$4,022.45	\$40
Contingency @	0.0%		on		\$4,102.90	\$0
TOTAL COST for pay item						\$4,103

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposal site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.074			Project :	IRONGATE				
Description :	Remove Steel Footbridge to Intake Structure								
Quantity :	11,000.00	LBS							
Daily Production :	10,000.00	LBS per	8	hour shift					
Work Days :	1.1 Days			Project # :	Klamath Dams Removal				
Unit Price :	\$1.11 per LBS			Estimator :	Mihaela Tomulesi		LBS per	Total Cost	Unit Price Per LBS
Total Cost :	\$12,161			Probable Low Cost Parameter	11500	\$10,337	\$0.94		
				Probable High Cost Parameter	8500	\$13,986	\$1.27		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.1	8	8.80	L	\$46.27	incl. in rate	incl. in rate	\$407.18
Electrician	Active	1.00	1.1	8	8.80	L	\$45.23	incl. in rate	incl. in rate	\$398.02
Hydraulic Crane (50tn)	Active	1.00	1.1	8	8.80	E	\$134.32	incl. in rate	incl. in rate	\$1,182.02
Equipment Operator (crane)	Active	1.00	1.1	8	8.80	L	\$68.41	incl. in rate	incl. in rate	\$602.01
Vibratory Hammer & Extractor	Active	1.00	1.1	8	8.80	E	\$94.34	incl. in rate	incl. in rate	\$830.19
Laborer	Active	2.00	1.1	8	17.60	L	\$45.80	incl. in rate	incl. in rate	\$806.08
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.1	8	17.60	E	\$111.64	incl. in rate	incl. in rate	\$1,964.86
Truck Driver (heavy)	Active	2.00	1.1	8	17.60	L	\$57.59	incl. in rate	incl. in rate	\$1,013.58
Equipment Operator (light)	Active	1.00	1.1	8	8.80	L	\$64.90	incl. in rate	incl. in rate	\$571.12
Steelworker	Active	2.00	1.1	8	17.60	L	\$65.52	incl. in rate	incl. in rate	\$1,153.15
					Labor Hours	88	TOTAL LABOR			\$4,951.14
					Equipment Hours	35.2	TOTAL EQUIPMENT			\$3,977.07

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$247.56	\$247.56
TOTAL MATERIAL						\$247.56

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent aerial lift, articulating boom, to 80' high, 500 lb. capacity, diesel - Rent per day (RS Means 01543340)	1.00	days	1.000	\$584.00	\$584.00
TOTAL SUBCONTRACTS					\$584.00

SUMMARY OF COSTS						
Labor Cost	\$4,951.14	Labor Burden @	49.7%	\$0.00	\$4,951.14	
Material Cost	\$247.56	Material Tax @	7.8%	\$19.19	\$266.74	
Equipment Cost	\$3,977.07	Equipment Tax @	0.0%	\$0.00	\$3,977.07	
Subcontractors	\$584.00				\$584.00	
DIRECT COST SUBTOTALS	\$9,760			\$19	\$9,779	
Installing Contractors Overhead @	15.0%	Crew		\$9,194.96	\$1,379.24	
Installing Contractors Profit @	8.0%	Material		\$9,194.96	\$735.60	
GC Markup on Subs @	5.0%	Subs		\$584.00	\$29.20	
					TOTAL MARKUP COSTS	\$2,144.04
General Contractors Insurance @	1.0%		on	\$11,923.00	\$119	
Bond @	1.0%		on	\$11,923.00	\$119	
Contingency @	0.0%		on	\$12,161.46	\$0	
TOTAL COST for pay item					\$12,161	

Additional Pay Item Notes :

The bridge steel grid, excess steel members and similar materials shall be removed from each span prior to removing the main supporting beams, girders or trusses over land. Assumed crew is formed of 1 Foreman, 1 Electrician (tempoary power for tools), 2 steelworkers to cut steel and 2 Laborers (Load, Haul, help with the crane rops, etc).

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.076			Project :	Iron Gate				
Description :	Remove and Dispose of Intake Structure								
Quantity :	131,630.00	LBS							
Daily Production :	25,000.00	LBS per	8	hour shift	Project # :	4			
Work Days :	5.3	Days			Estimator :	Mihaela Tomulescu		LBS per	Total Cost
Unit Price :	\$1.04	per LBS			Probable Low Cost Parameter	28750	\$115,941	Unit Price Per LBS	
Total Cost :	\$136,401				Probable High Cost Parameter	21250	\$156,862	\$1.19	

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Barge, Bargeman, Deckhand, Fireman, Oiler	Active	1.00	5.3	8	42.40	L	\$60.96	incl. in rate	incl. in rate		\$2,584.70
Carpenter Foreman (out)	Active	1.00	5.3	8	42.40	L	\$46.40	incl. in rate	incl. in rate		\$1,967.36
Carpenters, Journeyman	Active	6.00	5.3	8	254.40	L	\$65.37	incl. in rate	incl. in rate		\$16,630.13
Hydraulic Excavator (6.0cy)	Active	2.00	5.3	8	84.80	E	\$322.48	incl. in rate	incl. in rate		\$27,346.30
Hydraulic Crane (120tn)	Active	1.00	5.3	8	42.40	E	\$239.06	incl. in rate	incl. in rate		\$10,136.14
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	5.3	8	42.40	E	\$62.72	incl. in rate	incl. in rate		\$2,659.33
Truck Driver (heavy)	Active	2.00	5.3	8	84.80	L	\$57.59	incl. in rate	incl. in rate		\$4,883.63
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	5.3	8	84.80	E	\$70.35	incl. in rate	incl. in rate		\$5,965.68
					Labor Hours	424	TOTAL LABOR				\$26,065.82
					Equipment Hours	254.4	TOTAL EQUIPMENT				\$46,107.46

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Permeable Floating Turbidity Barrier	600.00	lf	1.000	600.00	\$38.00	\$22,800.00
Floating Marker Buoy	7.00	ea	1.000	7.00	\$32.00	\$224.00
Anchor Systems	13.00	ea	1.000	13.00	\$215.00	\$2,795.00
Tow Bridles	2.00	ea	1.000	2.00	\$50.00	\$100.00
Pile Template	1.00	ls	1.000	1.00	\$8,000.00	\$8,000.00
TOTAL MATERIAL						\$33,919.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$26,065.82	Labor Burden @	49.7%	\$0.00		\$26,065.82
Material Cost	\$33,919.00	Material Tax @	7.8%	\$2,628.72		\$36,547.72
Equipment Cost	\$46,107.46	Equipment Tax @	0.0%	\$0.00		\$46,107.46
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$106,092			\$2,629	DIRECT COST SUBTOTALS	\$108,721
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$108,721.00	\$16,308.15
Installing Contractors Profit@	8.0%				\$108,721.00	\$8,697.68
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$25,005.83
General Contractors Insurance @	1.0%		on		\$133,726.83	\$1,337
Bond @	1.0%		on		\$133,726.83	\$1,337
Contingency @	0.0%		on		\$136,401.37	\$0
					TOTAL COST for pay item	\$136,401

Additional Pay Item Notes :

AECOM best estimate - the crew is formed of 1 Foreman, 6 journeyman working with 2 excavators, 1 hydraulic breaker and 1 crane. Using 2 trucks per day for disposal based on daily production.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	4.081			Project		Iron Gate					
Description	Remove and Dispose of Penstock Vent - 46" Dia, 0.25" Thick x 60'										
Quantity	7,440.00	LBS									
Daily Production	7,440.00	LBS per	8	hour shift	Project #	4					
Work Days	1.0	Days									
Unit Price	\$2.08 per LBS		Estimator	Mihaela Tomulescu		LBS per	8556	Total Cost	\$13,146	Unit Price Per LBS	\$1.77
Total Cost	\$15,466		Probable Low Cost Parameter			6324	\$17,786	Probable High Cost Parameter			

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate		\$370.16
Steelworker	Active	5.00	1.0	8	40.00	L	\$65.52	incl. in rate	incl. in rate		\$2,620.80
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate		\$547.28
Crawler Crane (130tn)	Active	1.00	1.0	8	8.00	E	\$258.66	incl. in rate	incl. in rate		\$2,069.28
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
Hydraulic Excavator (5.0cy)	Active	1.00	1.0	8	8.00	E	\$274.63	incl. in rate	incl. in rate		\$2,197.04
Welder	Active	1.00	1.0	8	8.00	L	\$7.84	incl. in rate	incl. in rate		\$62.70
Gas Welding Machine	Active	1.00	1.0	8	8.00	E	\$2.88	incl. in rate	incl. in rate		\$23.02
Carpenters, Journeyman	Active	5.00	1.0	8	40.00	L	\$65.37	incl. in rate	incl. in rate		\$2,614.80
Carpenter Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.40	incl. in rate	incl. in rate		\$371.20
					Labor Hours	112	TOTAL LABOR		\$6,586.94		
					Equipment Hours	32	TOTAL EQUIPMENT		\$5,182.46		

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$518.25	\$518.25
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$518.25

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$6,586.94	Labor Burden @	49.7%	\$0.00		\$6,586.94
Material Cost	\$518.25	Material Tax @	7.8%	\$40.16		\$558.41
Equipment Cost	\$5,182.46	Equipment Tax @	0.0%	\$0.00		\$5,182.46
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$12,288			\$40	DIRECT COST SUBTOTALS	\$12,328
Installing Contractors Overhead@	15.0%	Crew				\$1,849.17
Installing Contractors Profit@	8.0%	Material				\$986.22
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$2,835.40
General Contractors Insurance @	1.0%	on		\$15,163.20		\$152
Bond @	1.0%	on		\$15,163.20		\$152
Contingency @	0.0%	on		\$15,466.46		\$0
TOTAL COST for pay item						\$15,466

Additional Pay Item Notes :

AECOM best estimate - the crew is formed of 1 Forman, 5 steelworkers and 1 Welder cutting the steel bends, 1 hydraulic breaker and 1 crane. 5 journeymen loading 1 trucks per day for disposal based on daily production.

PAY ITEM INFORMATION												
PAY ITEM NUMBER :	4.082			Project :	Iron Gate							
Description :	Remove and Dispose of Penstock - 12" Dia, 0.25" Thick x 698'											
Quantity :	294,428.00	LBS										
Daily Production :	10,500.00	LBS per	8	hour shift	Project # :	4						
Work Days :	28.0	Days			Estimator :	Mihaela Tomulescu	LBS per	12075	Total Cost	\$368,102	Unit Price Per LBS	\$1.25
Unit Price :	\$1.47 per LBS				Probable Low Cost Parameter							
Total Cost :	\$433,061				Probable High Cost Parameter		8925	\$498,020		\$1.69		

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	28.0	8	224.00	L	\$46.27	incl. in rate	incl. in rate		\$10,364.48
Steelworker	Active	5.00	28.0	8	1,120.00	L	\$65.52	incl. in rate	incl. in rate		\$73,382.40
Equipment Operator (crane)	Active	1.00	28.0	8	224.00	L	\$68.41	incl. in rate	incl. in rate		\$15,323.84
Crawler Crane (130tn)	Active	1.00	28.0	8	224.00	E	\$258.66	incl. in rate	incl. in rate		\$57,939.84
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	28.0	8	224.00	E	\$111.64	incl. in rate	incl. in rate		\$25,007.36
Hydraulic Excavator (5.0cy)	Active	1.00	28.0	8	224.00	E	\$274.63	incl. in rate	incl. in rate		\$61,517.12
Welder	Active	1.00	28.0	8	224.00	L	\$7.84	incl. in rate	incl. in rate		\$1,755.60
Gas Welding Machine	Active	1.00	28.0	8	224.00	E	\$2.88	incl. in rate	incl. in rate		\$644.45
Carpenters, Journeyman	Active	5.00	28.0	8	1,120.00	L	\$65.37	incl. in rate	incl. in rate		\$73,214.40
Carpenter Foreman (out)	Active	1.00	28.0	8	224.00	L	\$46.40	incl. in rate	incl. in rate		\$10,393.60
					Labor Hours	3136	TOTAL LABOR		\$184,434.32		
					Equipment Hours	896	TOTAL EQUIPMENT		\$145,108.77		

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$14,510.88	\$14,510.88
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$14,510.88

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS							
Labor Cost	\$184,434.32	Labor Burden @	49.7%	\$0.00		\$184,434.32	
Material Cost	\$14,510.88	Material Tax @	7.8%	\$1,124.59		\$15,635.47	
Equipment Cost	\$145,108.77	Equipment Tax @	0.0%	\$0.00		\$145,108.77	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$344,054			\$1,125	DIRECT COST SUBTOTALS	\$345,179	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$345,178.55	\$51,776.78	
Installing Contractors Profit@	8.0%				\$345,178.55	\$27,614.28	
GC Markup on Subs @	5.0%				\$0.00	\$0.00	
						TOTAL MARKUP COSTS	\$79,391.07
General Contractors Insurance @	1.0%	on			\$424,569.62	\$4,246	
Bond @	1.0%	on			\$424,569.62	\$4,246	
Contingency @	0.0%	on			\$433,061.02	\$0	
TOTAL COST for pay item						\$433,061	

Additional Pay Item Notes :

AECOM best estimate - the crew is formed of 1 Forman, 5 steelworkers and 1 Welder cutting the steel bends, 1 hydraulic breaker and 1 crane. 5 journeymen loading 1 trucks per day for disposal based on daily production.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.083			Project : IRONGATE					
Description :	Remove and Dispose of Bypass Outlet - 96" Dia, 0.25" Thick x 50'								
Quantity :	12,800.00	LBS							
Daily Production :	43,000.00	LBS per	8	hour shift					
Work Days :	0.3 Days			Project # :	Klamath Dams Removal				
Unit Price :	\$0.90 per LBS			Estimator :	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS	
Total Cost :	\$11,547			Probable Low Cost Parameter	49450	\$9,815	\$0.77		
				Probable High Cost Parameter	36550	\$13,279	\$1.04		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	3.00	0.3	8	7.20	L	\$48.27	\$0.00		\$347.54
Steelworker	Active	12.00	0.3	8	28.80	L	\$65.52	\$0.00		\$1,886.98
Crawler Crane (270tn)	Active	2.00	0.3	8	4.80	E	\$399.50	\$446.84		\$1,917.60
Equipment Operator (crane)	Active	2.00	0.3	8	4.80	L	\$68.41	\$0.00		\$328.37
Welder	Active	3.00	0.3	8	7.20	L	\$7.84	\$0.00		\$56.43
Gas Welding Machine	Active	3.00	0.3	8	7.20	E	\$2.88	\$2.88		\$20.71
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	\$0.00		\$108.55
Carpenters, Journeyman	Active	12.00	0.3	8	28.80	L	\$65.37	\$0.00		\$1,882.66
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.3	8	2.40	E	\$111.64	\$111.64		\$267.94
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.3	8	4.80	E	\$221.50	\$221.50		\$1,063.20
Truck Driver (heavy)	Active	1.00	0.3	8	2.40	L	\$57.59	\$0.00		\$138.22
	Active	2.00	0.3	8	4.80	E	\$36.58	\$36.58		\$175.58
Labor Hours					81.6	TOTAL LABOR				\$4,748.74
Equipment Hours					24	TOTAL EQUIPMENT				\$3,445.03

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$474.87	\$474.87
TOTAL MATERIAL						\$474.87

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.64	ton	1.000	0.64	\$595.00	\$380.80
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	28.00	\$7.25	\$203.00
TOTAL SUBCONTRACTS						\$583.80

SUMMARY OF COSTS									
Labor Cost	\$4,748.74	Labor Burden @	49.7%	\$0.00	\$4,748.74				
Material Cost	\$474.87	Material Tax @	7.8%	\$36.80	\$511.68				
Equipment Cost	\$3,445.03	Equipment Tax @	0.0%	\$0.00	\$3,445.03				
Subcontractors	\$583.80				\$583.80				
DIRECT COST SUBTOTALS	\$9,252			\$37	\$9,289				
Installing Contractors Overhead @	15.0%	Crew			\$8,705.45				
Installing Contractors Profit @	8.0%	Material			\$696.44				
GC Markup on Subs @	5.0%	Subs			\$29.19				
					TOTAL MARKUP COSTS	\$2,031.44			
General Contractors Insurance @	1.0%		on	\$11,320.70	\$113				
Bond @	1.0%		on	\$11,320.70	\$113				
Contingency @	0.0%		on	\$11,547.11	\$0				
TOTAL COST for pay item					\$11,547				

Additional Pay Item Notes :

Assumed the process of removing and disposing of Bypass Outlet - 96" Dia, 0.25" Thick x 50' (weight: 256 LBS/LF) is done in around 1/2 day by 3 crew formed of 1 forman, 4 journeymen, 4 steelworkers ;6 equipment operators 1 for each excavator, crane and loader. We dispose pipes with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.084	Project		:	IRONGATE			
Description	:	Remove and Dispose of Outlet Valve on bypass outlet - 66" Dia.							
Quantity	:	18,000.00	LBS						
Daily Production	:	9,000.00	LBS per	8	hour shift	Project #	:	Klamath Dams Removal	
Work Days	:	2.0	Days						
Unit Price	:	\$1.62 per LBS		Estimator	:	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS
Total Cost	:	\$29,193		Probable Low Cost Parameter	:	10350	\$24,814	\$1.38	
				Probable High Cost Parameter	:	7650	\$33,572	\$1.87	

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	1.00	2.0	8	16.00	L	\$48.27	\$0.00		\$772.32
Steelworker	Active	2.00	2.0	8	32.00	L	\$65.52	\$0.00		\$2,096.64
Crawler Crane (270tn)	Active	1.00	2.0	8	16.00	E	\$399.50	\$446.84		\$6,392.00
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	\$0.00		\$1,094.56
Welder	Active	1.00	2.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	1.00	2.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	\$0.00		\$723.68
Carpenters, Journeyman	Active	2.00	2.0	8	32.00	L	\$65.37	\$0.00		\$2,091.84
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.0	8	16.00	E	\$111.64	\$111.64		\$1,786.24
Hydraulic Excavator (6.0cy)	Active	1.00	2.0	8	16.00	E	\$322.48	\$322.48		\$5,159.68
Truck Driver (heavy)	Active	1.00	2.0	8	16.00	L	\$57.59	\$0.00		\$921.44
	Active	1.00	2.0	8	16.00	E	\$36.58	\$36.58		\$585.28
					Labor Hours	144	TOTAL LABOR			\$7,825.88
					Equipment Hours	80	TOTAL EQUIPMENT			\$13,969.23

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$782.59	\$782.59
TOTAL MATERIAL						\$782.59

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.90	ton	1.000	0.90	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	28.00	\$7.25
TOTAL SUBCONTRACTS					\$738.50

SUMMARY OF COSTS						
Labor Cost	\$7,825.88	Labor Burden @	49.7%	\$0.00		\$7,825.88
Material Cost	\$782.59	Material Tax @	7.8%	\$60.65		\$843.24
Equipment Cost	\$13,969.23	Equipment Tax @	0.0%	\$0.00		\$13,969.23
Subcontractors	\$738.50					\$738.50
DIRECT COST SUBTOTALS	\$23,316			\$61	DIRECT COST SUBTOTALS	\$23,377
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$3,395.75
Installing Contractors Profit @	8.0%					\$1,811.07
GC Markup on Subs @	5.0%					\$36.93
					TOTAL MARKUP COSTS	\$5,243.75
General Contractors Insurance @	1.0%		on		\$28,620.60	\$286
Bond @	1.0%		on		\$28,620.60	\$286
Contingency @	0.0%		on		\$29,193.01	\$0
					TOTAL COST for pay item	\$29,193

Additional Pay Item Notes :

Assumed the process of removing and disposing of Outlet Valve on bypass outlet - 66" Dia. is done in around 1/2 day by crew formed of 1 forman, 2 journeymen, 2 steelworkers ; 2 equipment operators for excavator, crane. We dispose Outlet Valve with 1 truck. Assumed contains paint with heavy metals 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	4.097	Project :	Iron Gate
Description :	Clear and Grub Disposal Area		
Quantity :	29.00 AC		
Daily Production :	1.25 AC per	10	hour shift
Work Days :	23.2	Days	
Unit Price :	\$6,292.60	per AC	
Total Cost :	\$182,485		
		Estimator :	Eric Jones
		Project # :	4
		Probable Low Cost Parameter	1.4375
		Probable High Cost Parameter	1.0625
		AC per	\$155,113
		Total Cost	\$209,858
		Unit Price Per AC	\$5,348.71
			\$7,236.49

CREW COSTS

Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	23.2	10	232.00	L	\$46.27	incl. in rate	incl. in rate	\$10,734.64
Equipment Operator (medium)	Active	2.00	23.2	10	464.00	L	\$66.28	incl. in rate	incl. in rate	\$30,753.92
Laborer	Active	4.00	23.2	10	928.00	L	\$45.80	incl. in rate	incl. in rate	\$42,502.40
Loader, FE Rubber Tire (5.25cy)	Active	1.00	23.2	10	232.00	E	\$75.42	incl. in rate	incl. in rate	\$17,497.44
0		2.00	23.2	10	464.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		2.00	23.2	10	464.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		2.00	23.2	10	464.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		2.00	23.2	10	464.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		4.00	23.2	10	928.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		1.00	23.2	10	232.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		1.00	23.2	10	232.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		1.00	23.2	10	232.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Brush Chipper	Active	1.00	23.2	10	232.00	E	\$50.55	incl. in rate	incl. in rate	\$11,727.60
Crawler Loader 3CY Bucket	Active	1.00	23.2	10	232.00	E	\$160.13	incl. in rate	incl. in rate	\$37,150.16
Chain Saw, Gas, 36" Long	Active	2.00	23.2	10	464.00	E	\$5.63	incl. in rate	incl. in rate	\$2,612.32
			23.2	10	0.00					\$0.00
			23.2	10	0.00					\$0.00
Labor Hours					1624					\$83,990.96
Equipment Hours					1160					\$68,987.52

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		gal	1.000	0.00	\$18.87	\$0.00
		lbs PLS	1.000	0.00	\$8.17	\$0.00
		lbs PLS	1.000	0.00	\$14.40	\$0.00
		lbs PLS	1.000	0.00	\$8.96	\$0.00
		lbs PLS	1.000	0.00	\$5.85	\$0.00
		lbs PLS	1.000	0.00	\$30.24	\$0.00
		lbs	1.000	0.00	\$34.02	\$0.00
		lbs	1.000	0.00	\$10.80	\$0.00
		ea	1.000	0.00	\$18.00	\$0.00
		ea	1.000	0.00	\$0.09	\$0.00
		ea	1.000	0.00	\$6.30	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS

Labor Cost	\$83,990.96	Labor Burden @	0.0%		\$83,990.96
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$68,987.52	Equipment Tax @	7.75%	\$5,346.53	\$74,334.05
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$152,978			\$5,347	\$158,325
		Crew	Material	Subs	Cost Basis
Install	5.0%				\$158,325.01
Install	8.0%				\$158,325.01
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$20,582.25
General Contractors Insurance @	1.0%		on		\$178,907.26
Bond @	1.0%		on		\$178,907.26
Contingency @	0.0%		on		\$182,485.41
TOTAL COST for pay item					\$182,485

Additional Pay Item Notes :

Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in 1.25 ac per day to clear and process the trees/ shrubs on site. Production was adjust to .75 acres per day, Equipment is B7 off of RSMs no adjustment was made.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.099	Project	: IRONGATE						
Description	: Clear and Grub, 40' width for 1 mile - Prepare Haul Road - 1.25 mi								
Quantity	: 5.00 AC								
Daily Production	: 0.69 AC per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 7.3 Days	Estimator	: Mihaela Tomulescu	AC per	: 0.7935	Total Cost	: \$23,290	Unit Price Per AC	: \$4,658
Unit Price	: \$5,479.92 per AC	Probable Low Cost Parameter							
Total Cost	: \$27,400	Probable High Cost Parameter							

CREW COSTS											
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor /	
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Equipment	
										Cost	
Labor Foreman (out)	Active	1.00	7.3	8	58.00	L	\$46.27	incl. in rate	incl. in rate		\$2,683.66
Equipment Operator (medium)	Active	1.00	7.3	8	58.00	L	\$66.28	incl. in rate	incl. in rate		\$3,844.24
Laborer	Active	4.00	7.3	8	232.00	L	\$45.80	incl. in rate	incl. in rate		\$10,625.60
Grader. 180hp, 13' blade	Active	1.00	7.3	8	58.00	E	\$80.79	incl. in rate	incl. in rate		\$4,685.82
					Labor Hours	348	TOTAL LABOR				\$17,153.50
					Equipment Hours	58	TOTAL EQUIPMENT				\$4,685.82

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes /	Unit	Contract or Quote	
			Company	Price	Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$17,153.50	Labor Burden @	49.7%	\$0.00		\$17,153.50
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$4,685.82	Equipment Tax @	0.0%	\$0.00		\$4,685.82
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$21,839			\$0	DIRECT COST SUBTOTALS	\$21,839
Installing Contractors Overhead @	15.0%	Crew		Cost Basis		\$3,275.90
Installing Contractors Profit @	8.0%	Material				\$1,747.15
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$5,023.04
General Contractors Insurance @	1.0%		on	\$26,862.36		\$269
Bond @	1.0%		on	\$26,862.36		\$269
Contingency @	0.0%		on	\$27,399.61		\$0
					TOTAL COST for pay item	\$27,400

Additional Pay Item Notes :
 Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ strubs on site.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.101	Project	: IRONGATE						
Description	: Remove Building No. 2								
Quantity	: 800.00 SF								
Daily Production	: 150.00 SF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 5.3 Days	Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF			
Unit Price	: \$73.00 per SF	Probable Low Cost Parameter	165	\$52,563	\$66				
Total Cost	: \$58,404	Probable High Cost Parameter	127.5	\$67,164	\$84				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	5.3	8	42.64	L	\$46.27	incl. in rate	incl. in rate	\$1,972.95
Equipment Operator (medium)	Active	2.00	5.3	8	85.28	L	\$66.28	incl. in rate	incl. in rate	\$5,652.36
Laborer	Active	3.00	5.3	8	127.92	L	\$45.80	incl. in rate	incl. in rate	\$5,858.74
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	5.3	8	42.64	E	\$111.64	incl. in rate	incl. in rate	\$4,760.33
Truck Driver (heavy)	Active	1.00	5.3	8	42.64	L	\$57.59	incl. in rate	incl. in rate	\$2,455.64
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	1.00	5.3	8	42.64	E	\$30.85	incl. in rate	incl. in rate	\$1,315.44
Hydraulic Excavator (2.5cy)	Active	2.00	5.3	8	85.28	E	\$203.63	incl. in rate	incl. in rate	\$17,365.57
					Labor Hours	298.48	TOTAL LABOR		\$15,939.68	
					Equipment Hours	170.56	TOTAL EQUIPMENT		\$23,441.34	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste disposal	1	LS		\$8,400.00	\$8,400.00	
					TOTAL SUBCONTRACTS	\$8,400.00

SUMMARY OF COSTS							
Labor Cost	\$15,939.68	Labor Burden @	49.7%	\$0.00		\$15,939.68	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00	
Equipment Cost	\$23,441.34	Equipment Tax @	0.0%	\$0.00		\$23,441.34	
Subcontractors	\$8,400.00					\$8,400.00	
DIRECT COST SUBTOTALS	\$47,781			\$0		\$47,781	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$39,381.02	\$5,907.15	
Installing Contractors Profit @	8.0%				\$39,381.02	\$3,150.48	
GC Markup on Subs @	5.0%				\$8,400.00	\$420.00	
						TOTAL MARKUP COSTS	\$9,477.64
General Contractors Insurance @	1.0%		on		\$57,258.66	\$573	
Bond @	1.0%		on		\$57,258.66	\$573	
Contingency @	0.0%		on		\$58,403.83	\$0	
						TOTAL COST for pay item	\$58,404

Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000.
 The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot.
 Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 3 days, 8 hours per day @ \$350

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.102	Project	: IRONGATE						
Description	: Remove Building No. 3								
Quantity	: 1,088.00 SF								
Daily Production	: 150.00 SF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 7.3 Days	Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF			
Unit Price	: \$75.55 per SF	Probable Low Cost Parameter	165	\$73,979	\$68				
Total Cost	: \$82,199	Probable High Cost Parameter	127.5	\$94,529	\$87				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	7.3	8	58.00	L	\$46.27	incl. in rate	incl. in rate	\$2,683.66
Equipment Operator (medium)	Active	2.00	7.3	8	116.00	L	\$66.28	incl. in rate	incl. in rate	\$7,688.48
Laborer	Active	3.00	7.3	8	174.00	L	\$45.80	incl. in rate	incl. in rate	\$7,969.20
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	7.3	8	58.00	E	\$111.64	incl. in rate	incl. in rate	\$6,475.12
Truck Driver (heavy)	Active	1.00	7.3	8	58.00	L	\$57.59	incl. in rate	incl. in rate	\$3,340.22
Hydraulic Excavator (2.5cy)	Active	2.00	7.3	8	116.00	E	\$203.63	incl. in rate	incl. in rate	\$23,621.08
Hydraulic Impact Breaker Attachment (2k-3k ft-lb)	Active	1.00	7.3	8	58.00	E	\$30.85	incl. in rate	incl. in rate	\$1,789.30
					Labor Hours	406	TOTAL LABOR			\$21,681.56
					Equipment Hours	232	TOTAL EQUIPMENT			\$31,885.50

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste disposal	1	LS		\$14,000.00	\$14,000.00	
					TOTAL SUBCONTRACTS	\$14,000.00

SUMMARY OF COSTS							
Labor Cost	\$21,681.56	Labor Burden @	49.7%	\$0.00		\$21,681.56	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00	
Equipment Cost	\$31,885.50	Equipment Tax @	0.0%	\$0.00		\$31,885.50	
Subcontractors	\$14,000.00					\$14,000.00	
DIRECT COST SUBTOTALS	\$67,567			\$0		\$67,567	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$53,567.06	\$8,035.06	
Installing Contractors Profit @	8.0%				\$53,567.06	\$4,285.36	
GC Markup on Subs @	5.0%				\$14,000.00	\$700.00	
						TOTAL MARKUP COSTS	\$13,020.42
General Contractors Insurance @	1.0%		on		\$80,587.48	\$806	
Bond @	1.0%		on		\$80,587.48	\$806	
Contingency @	0.0%		on		\$82,199.23	\$0	
						TOTAL COST for pay item	\$82,199

Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000. The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot. Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 5 days, 8 hours per day @ \$350

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.103			Project :	Iron Gate				
Description :	Remove Concrete in Fish Ladder								
Quantity :	1,240.00	cy							
Daily Production :	50.00	cy per	8	hour shift	Project # :	4			
Work Days :	24.8	Days			Estimator :	Felipe Poletto		cy per	
Unit Price :	\$300.19	per cy			Probable Low Cost Parameter	57.5	Total Cost	\$316,405	Unit Price Per cy
Total Cost :	\$372,241			Probable High Cost Parameter	42.5	Total Cost	\$428,077	Unit Price Per cy	\$345.22

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	24.8	8	396.80	L	\$48.27	incl. in rate	incl. in rate	\$19,153.54
Laborer	Active	8.00	24.8	8	1,587.20	L	\$45.80	incl. in rate	incl. in rate	\$72,693.76
Equipment Operator (medium)	Active	2.00	24.8	8	396.80	L	\$66.28	incl. in rate	incl. in rate	\$26,299.90
Truck Driver (heavy)	Active	1.00	24.8	8	198.40	L	\$57.59	incl. in rate	incl. in rate	\$11,425.86
Air Compressor 900 cfm	Active	1.00	24.8	8	198.40	E	\$38.87	incl. in rate	incl. in rate	\$7,711.59
Air Compressor 600 cfm	Active	1.00	24.8	8	198.40	E	\$21.74	incl. in rate	incl. in rate	\$4,313.00
Air Tool, Chipping Hammer	Active	4.00	24.8	8	793.60	E	\$1.64	incl. in rate	incl. in rate	\$1,300.74
Generator, Small Generator, 10 - 15 kW	Active	2.00	24.8	8	396.80	E	\$7.04	incl. in rate	incl. in rate	\$2,793.47
Hydraulic Excavator (2.5cy)	Active	2.00	24.8	8	396.80	E	\$203.63	incl. in rate	incl. in rate	\$80,800.38
Hydraulic Impact Breaker Attachment (5k+ ft-lb)	Active	1.00	24.8	8	198.40	E	\$62.72	incl. in rate	incl. in rate	\$12,443.65
Hydraulic Thumbs/Shear Attachment	Active	1.00	24.8	8	198.40	E	\$16.39	incl. in rate	incl. in rate	\$3,251.78
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	24.8	8	198.40	E	\$111.64	incl. in rate	incl. in rate	\$22,149.38
			24.8	8	0.00					\$0.00
			24.8	8	0.00					\$0.00
			24.8	8	0.00					\$0.00
			24.8	8	0.00					\$0.00
			24.8	8	0.00					\$0.00
Labor Hours					2,579	TOTAL LABOR				\$129,573.06
Equipment Hours					2,579	TOTAL EQUIPMENT				\$134,763.99

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables (5% labor)	1.00	LS	1.000	1.00	\$6,478.65	\$6,478.65
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
			1.000	0.00		\$0.00
TOTAL MATERIAL						\$6,478.65

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	7	EA	Cost per Mob	\$2,500.00	\$17,500.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$17,500.00

SUMMARY OF COSTS						
Labor Cost	\$129,573.06	Labor Burden @	0.0%	\$0.00	Included in hourly labor rate.	\$129,573.06
Material Cost	\$6,478.65	Material Tax @	7.75%	\$502.10		\$6,980.75
Equipment Cost	\$134,763.99	Equipment Tax @	7.75%	\$10,444.21		\$145,208.20
Subcontractors	\$17,500.00					\$17,500.00
DIRECT COST SUBTOTALS	\$288,316			\$10,946		\$299,262
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$281,762.00	\$42,264.30
Installing Contractors Profit@	8.0%				\$281,762.00	\$22,540.96
GC Markup on Subs @	5.0%				\$17,500.00	\$875.00
TOTAL MARKUP COSTS						\$65,680.26
General Contractors Insurance @	1.0%		on		\$364,942.26	\$3,649
Bond @	1.0%		on		\$364,942.26	\$3,649
Contingency @	0.0%		on		\$372,241.11	\$0
TOTAL COST for pay item						\$372,241

Additional Pay Item Notes :

The work is done by two 6-men crew (foreman, 4 laborers, and 1 equipment operator). Concrete hauling to disposal site - based on the current production rate, only 5 trips a day would be necessary. Demolition is done using hydraulic chipping hammers and excavator mounted claw. Allowance for saw cutting sub is included at one mobilization a week. Blasting method is not found to be feasible for this work. A check using RS Means was used: reference 03055110 (\$224/CY, excludes hauling, sawing, and dumping) - Selective concrete demolition, reinforcing more than 2% cross-sectional area.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.104	Project	: IRONGATE						
Description	: Remove Concrete in Holding Ponds #1 thru #6								
Quantity	: 1,380.00 CY								
Daily Production	: 80.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 17.3 Days	Estimator	: Mihaela Tomulescu	CY per	: 88	Total Cost	: \$243,476	Unit Price Per CY	: \$176
Unit Price	: \$196.04 per CY	Probable Low Cost Parameter							
Total Cost	: \$270,529	Probable High Cost Parameter							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	17.3	8	138.40	L	\$46.27	incl. in rate	incl. in rate	\$6,403.77
Equipment Operator (medium)	Active	3.00	17.3	8	415.20	L	\$66.28	incl. in rate	incl. in rate	\$27,519.46
Steelworker	Active	3.00	17.3	8	415.20	L	\$65.52	incl. in rate	incl. in rate	\$27,203.90
Electrician	Active	1.00	17.3	8	138.40	L	\$45.23	incl. in rate	incl. in rate	\$6,259.83
Truck Driver (heavy)	Active	2.00	17.3	8	276.80	L	\$57.59	incl. in rate	incl. in rate	\$15,940.91
Vibratory Hammer & Extractor	Active	2.00	17.3	8	276.80	E	\$94.34	incl. in rate	incl. in rate	\$26,113.31
Hydraulic Excavator (6.0cy)	Active	1.00	17.3	8	138.40	E	\$322.48	incl. in rate	incl. in rate	\$44,631.23
Loader, FE Rubber Tire (8.6cy)	Active	1.00	17.3	8	138.40	E	\$221.50	incl. in rate	incl. in rate	\$30,655.60
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	17.3	8	276.80	E	\$111.64	incl. in rate	incl. in rate	\$30,901.95
					Labor Hours	1384	TOTAL LABOR			\$83,327.87
					Equipment Hours	830.4	TOTAL EQUIPMENT			\$132,302.10

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$83,327.87	Labor Burden @	49.7%	\$0.00		\$83,327.87
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$132,302.10	Equipment Tax @	0.0%	\$0.00		\$132,302.10
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$215,630			\$0	DIRECT COST SUBTOTALS	\$215,630
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$32,344.50
Installing Contractors Profit @	8.0%					\$17,250.40
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$49,594.89
General Contractors Insurance @	1.0%		on		\$265,224.86	\$2,652
Bond @	1.0%		on		\$265,224.86	\$2,652
Contingency @	0.0%		on		\$270,529.36	\$0
					TOTAL COST for pay item	\$270,529

Additional Pay Item Notes :

Based on RS.Means - Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9 and B34B - Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.105	Project	: IRONGATE						
Description	: Remove Concrete in Fish Facility Items								
Quantity	: 1,200.00 CY								
Daily Production	: 160.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 7.5 Days	Estimator	: Mihaela Tomulescu	CY per	: 184	Total Cost	: \$197,908	Unit Price Per CY	: \$165
Unit Price	: \$194.03 per CY	Probable Low Cost Parameter							
Total Cost	: \$232,832	Probable High Cost Parameter							

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	2.00	7.5	8	120.00	L	\$46.27	incl. in rate	incl. in rate		\$5,552.40
Equipment Operator (medium)	Active	8.00	7.5	8	480.00	L	\$66.28	incl. in rate	incl. in rate		\$31,814.40
Steelworker	Active	6.00	7.5	8	360.00	L	\$65.52	incl. in rate	incl. in rate		\$23,587.20
Electrician	Active	1.00	7.5	8	60.00	L	\$45.23	incl. in rate	incl. in rate		\$2,713.80
Truck Driver (heavy)	Active	2.00	7.5	8	120.00	L	\$57.59	incl. in rate	incl. in rate		\$6,910.80
Vibratory Hammer & Extractor	Active	3.00	7.5	8	180.00	E	\$94.34	incl. in rate	incl. in rate		\$16,981.20
Hydraulic Excavator (6.0cy)	Active	3.00	7.5	8	180.00	E	\$322.48	incl. in rate	incl. in rate		\$58,046.40
Loader, FE Rubber Tire (8.6cy)	Active	2.00	7.5	8	120.00	E	\$221.50	incl. in rate	incl. in rate		\$26,580.00
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	7.5	8	120.00	E	\$111.64	incl. in rate	incl. in rate		\$13,396.80
					Labor Hours	1140	TOTAL LABOR				\$70,578.60
					Equipment Hours	600	TOTAL EQUIPMENT				\$115,004.40

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$70,578.60	Labor Burden @	49.7%	\$0.00		\$70,578.60
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$115,004.40	Equipment Tax @	0.0%	\$0.00		\$115,004.40
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$185,583			\$0	DIRECT COST SUBTOTALS	\$185,583
Installing Contractors Overhead @	15.0%	Crew				\$27,837.45
Installing Contractors Profit @	8.0%	Material				\$14,846.64
GC Markup on Subs @	5.0%	Subs				\$0.00
		Cost Basis				
					TOTAL MARKUP COSTS	\$42,684.09
General Contractors Insurance @	1.0%		on			\$2,283
Bond @	1.0%		on			\$2,283
Contingency @	0.0%		on			\$0
TOTAL COST for pay item						\$232,832

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.106	Project		:	IRONGATE			
Description	:	Remove Miscellaneous Metalwork in Fish Facilities							
Quantity	:	12,000.00	LBS						
Daily Production	:	43,000.00	LBS per	8	hour shift	Project #	:	Klamath Dams Removal	
Work Days	:	0.3	Days						
Unit Price	:	\$0.95	per LBS	Estimator	:	Mihaela Tomulesc	LBS per	Total Cost	Unit Price Per LBS
Total Cost	:	\$11,351	Probable Low Cost Parameter		:	49450	\$9,648	\$0.80	
				Probable High Cost Parameter		:	34400	\$13,621	\$1.14

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	3.00	0.3	8	7.20	L	\$48.27	\$0.00		\$347.54
Steelworker	Active	12.00	0.3	8	28.80	L	\$65.52	\$0.00		\$1,886.98
Crawler Crane (270tn)	Active	2.00	0.3	8	4.80	E	\$399.50	\$446.84		\$1,917.60
Equipment Operator (crane)	Active	2.00	0.3	8	4.80	L	\$68.41	\$0.00		\$328.37
Welder	Active	3.00	0.3	8	7.20	L	\$7.84	\$0.00		\$56.43
Gas Welding Machine	Active	3.00	0.3	8	7.20	E	\$2.88	\$2.88		\$20.71
Electrician	Active	1.00	0.3	8	2.40	L	\$45.23	\$0.00		\$108.55
Carpenters, Journeyman	Active	12.00	0.3	8	28.80	L	\$65.37	\$0.00		\$1,882.66
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.3	8	2.40	E	\$111.64	\$111.64		\$267.94
Hydraulic Excavator (6.0cy)	Active	1.00	0.3	8	2.40	E	\$322.48	\$322.48		\$773.95
Truck Driver (heavy)	Active	2.00	0.3	8	4.80	L	\$57.59	\$0.00		\$276.43
	Active	2.00	0.3	8	4.80	E	\$36.58	\$36.58		\$175.58
Labor Hours					84	TOTAL LABOR				\$4,886.96
Equipment Hours					21.6	TOTAL EQUIPMENT				\$3,155.79

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$488.70	\$488.70
TOTAL MATERIAL						\$488.70

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.60	ton	1.000	0.60	\$595.00
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	28.00	\$7.25
TOTAL SUBCONTRACTS					\$560.00

SUMMARY OF COSTS									
Labor Cost	\$4,886.96	Labor Burden @	49.7%	\$0.00	\$4,886.96				
Material Cost	\$488.70	Material Tax @	7.8%	\$37.87	\$526.57				
Equipment Cost	\$3,155.79	Equipment Tax @	0.0%	\$0.00	\$3,155.79				
Subcontractors	\$560.00				\$560.00				
DIRECT COST SUBTOTALS	\$9,091			\$38	\$9,129				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead @	15.0%				\$8,569.31				
Installing Contractors Profit @	8.0%				\$685.55				
GC Markup on Subs @	5.0%				\$28.00				
TOTAL MARKUP COSTS					\$1,998.94				
General Contractors Insurance @	1.0%	on			\$11,128.26				
Bond @	1.0%	on			\$111				
Contingency @	0.0%	on			\$0				
TOTAL COST for pay item					\$11,351				

Additional Pay Item Notes :

Assumed the process of removing and disposing of Miscellaneous Metalwork in Fish Facilities (frames, grating, handrails, ladders, mechanical sweeps) is done in around 1/2 day by 3 crew formed of 1 foreman, 4 journeymen, 4 steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary. Demolition is done using one crawler crane, excavator and welding machine.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.107	Project	: IRONGATE						
Description	: Remoce Concrete Associated with 30" Dia. water supply line								
Quantity	: 80.00 CY								
Daily Production	: 150.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 0.5 Days	Estimator	: Mihaela Tomulescu	CY per	: 172.5	Total Cost	: \$13,194	Unit Price Per CY	: \$165
Unit Price	: \$194.03 per CY	Probable Low Cost Parameter							
Total Cost	: \$15,522	Probable High Cost Parameter							

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	2.00	0.5	8	8.00	L	\$46.27	incl. in rate	incl. in rate		\$370.16
Equipment Operator (medium)	Active	8.00	0.5	8	32.00	L	\$66.28	incl. in rate	incl. in rate		\$2,120.96
Steelworker	Active	6.00	0.5	8	24.00	L	\$65.52	incl. in rate	incl. in rate		\$1,572.48
Electrician	Active	1.00	0.5	8	4.00	L	\$45.23	incl. in rate	incl. in rate		\$180.92
Truck Driver (heavy)	Active	2.00	0.5	8	8.00	L	\$57.59	incl. in rate	incl. in rate		\$460.72
Vibratory Hammer & Extractor	Active	3.00	0.5	8	12.00	E	\$94.34	incl. in rate	incl. in rate		\$1,132.08
Hydraulic Excavator (6.0cy)	Active	3.00	0.5	8	12.00	E	\$322.48	incl. in rate	incl. in rate		\$3,869.76
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.5	8	8.00	E	\$221.50	incl. in rate	incl. in rate		\$1,772.00
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.5	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
					Labor Hours	76	TOTAL LABOR				\$4,705.24
					Equipment Hours	40	TOTAL EQUIPMENT				\$7,666.96

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,705.24	Labor Burden @	49.7%	\$0.00		\$4,705.24
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$7,666.96	Equipment Tax @	0.0%	\$0.00		\$7,666.96
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$12,372			\$0	DIRECT COST SUBTOTALS	\$12,372
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$12,372.20	\$1,855.83
Installing Contractors Profit@	8.0%				\$12,372.20	\$989.78
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$2,845.61
General Contractors Insurance @	1.0%		on		\$15,217.81	\$152
Bond @	1.0%		on		\$15,217.81	\$152
Contingency @	0.0%		on		\$15,522.16	\$0
					TOTAL COST for pay item	\$15,522

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.108	Project	: IRONGATE						
Description	: Remove Concrete in Aerator Structure								
Quantity	: 65.00 CY								
Daily Production	: 50.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.3 Days	Estimator	: Mihaela Tomulescu	CY per	: 57.5	Total Cost	: \$10,565	Unit Price Per CY	: \$163
Unit Price	: \$191.23 per CY	Probable Low Cost Parameter							
Total Cost	: \$12,430	Probable High Cost Parameter							

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	1.3	8	10.40	L	\$46.27	incl. in rate	incl. in rate		\$481.21
Equipment Operator (medium)	Active	2.00	1.3	8	20.80	L	\$66.28	incl. in rate	incl. in rate		\$1,378.62
Steelworker	Active	3.00	1.3	8	31.20	L	\$65.52	incl. in rate	incl. in rate		\$2,044.22
Electrician	Active	1.00	1.3	8	10.40	L	\$45.23	incl. in rate	incl. in rate		\$470.39
Truck Driver (heavy)	Active	1.00	1.3	8	10.40	L	\$57.59	incl. in rate	incl. in rate		\$598.94
Vibratory Hammer & Extractor	Active	1.00	1.3	8	10.40	E	\$94.34	incl. in rate	incl. in rate		\$981.14
Hydraulic Excavator (6.0cy)	Active	1.00	1.3	8	10.40	E	\$322.48	incl. in rate	incl. in rate		\$3,353.79
Truck Driver (heavy)	Active	1.00	1.3	8	10.40	L	\$57.59	incl. in rate	incl. in rate		\$598.94
					Labor Hours	93.6	TOTAL LABOR				\$5,572.32
					Equipment Hours	20.8	TOTAL EQUIPMENT				\$4,334.93

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$5,572.32	Labor Burden @	49.7%	\$0.00		\$5,572.32
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$4,334.93	Equipment Tax @	0.0%	\$0.00		\$4,334.93
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$9,907			\$0	DIRECT COST SUBTOTALS	\$9,907
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$9,907.25	\$1,486.09
Installing Contractors Profit @	8.0%				\$9,907.25	\$792.58
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$2,278.67
General Contractors Insurance @	1.0%		on		\$12,185.92	\$122
Bond @	1.0%		on		\$12,185.92	\$122
Contingency @	0.0%		on		\$12,429.63	\$0
					TOTAL COST for pay item	\$12,430

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.112	Project	: IRONGATE						
Description	: Remove Restroom Building near Aerator Structure								
Quantity	: 340.00 SF								
Daily Production	: 205.00 SF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.7 Days	Estimator	: Mihaela Tomulescu	SF per	: 225.5	Total Cost	: \$18,475	Unit Price Per SF	: \$54
Unit Price	: \$60.38 per SF	Probable Low Cost Parameter		Probable High Cost Parameter	: 174.25				
Total Cost	: \$20,528								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.7	8	13.28	L	\$46.27	incl. in rate	incl. in rate	\$614.47
Equipment Operator (medium)	Active	1.00	1.7	8	13.28	L	\$66.28	incl. in rate	incl. in rate	\$880.20
Laborer	Active	2.00	1.7	8	26.56	L	\$45.80	incl. in rate	incl. in rate	\$1,216.45
Electrician	Active	1.00	1.7	8	13.28	L	\$45.23	incl. in rate	incl. in rate	\$600.65
Truck Driver (heavy)	Active	1.00	1.7	8	13.28	L	\$57.59	incl. in rate	incl. in rate	\$764.80
Steelworker	Active	2.00	1.7	8	26.56	L	\$65.52	incl. in rate	incl. in rate	\$1,740.21
Hydraulic Excavator (6.0cy)	Active	1.00	1.7	8	13.28	E	\$322.48	incl. in rate	incl. in rate	\$4,282.53
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.7	8	13.28	E	\$111.64	incl. in rate	incl. in rate	\$1,482.58
					Labor Hours	106.24	TOTAL LABOR			\$5,816.77
					Equipment Hours	26.56	TOTAL EQUIPMENT			\$5,765.11

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste disposal	1	LS		\$5,600.00	\$5,600.00
TOTAL SUBCONTRACTS					\$5,600.00

SUMMARY OF COSTS							
Labor Cost	\$5,816.77	Labor Burden @	49.7%	\$0.00		\$5,816.77	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00	
Equipment Cost	\$5,765.11	Equipment Tax @	0.0%	\$0.00		\$5,765.11	
Subcontractors	\$5,600.00					\$5,600.00	
DIRECT COST SUBTOTALS	\$17,182			\$0		\$17,182	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$11,581.89	\$1,737.28	
Installing Contractors Profit @	8.0%				\$11,581.89	\$926.55	
GC Markup on Subs @	5.0%				\$5,600.00	\$280.00	
						TOTAL MARKUP COSTS	\$2,943.83
General Contractors Insurance @	1.0%		on		\$20,125.72	\$201	
Bond @	1.0%		on		\$20,125.72	\$201	
Contingency @	0.0%		on		\$20,528.23	\$0	
TOTAL COST for pay item						\$20,528	

Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000.

The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot.

Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 2 days, 8 hours per day @\$350

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.113	Project	: IRONGATE						
Description	: Remove Storage Shed near Aerator Structure								
Quantity	: 90.00 SF								
Daily Production	: 160.00 SF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 0.6 Days	Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF			
Unit Price	: \$70.22 per SF	Probable Low Cost Parameter	176	\$5,688	\$63				
Total Cost	: \$6,320	Probable High Cost Parameter	136	\$7,268	\$81				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	0.6	8	4.48	L	\$46.27	incl. in rate	incl. in rate	\$207.29
Equipment Operator (medium)	Active	1.00	0.6	8	4.48	L	\$66.28	incl. in rate	incl. in rate	\$296.93
Laborer	Active	2.00	0.6	8	8.96	L	\$45.80	incl. in rate	incl. in rate	\$410.37
Hydraulic Excavator (5.0cy)	Active	1.00	0.6	8	4.48	E	\$274.63	incl. in rate	incl. in rate	\$1,230.34
Truck Driver (heavy)	Active	1.00	0.6	8	4.48	L	\$57.59	incl. in rate	incl. in rate	\$258.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.6	8	4.48	E	\$111.64	incl. in rate	incl. in rate	\$500.15
					Labor Hours	22.4	TOTAL LABOR			\$1,172.60
					Equipment Hours	8.96	TOTAL EQUIPMENT			\$1,730.49

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00	
					TOTAL SUBCONTRACTS	\$2,500.00

SUMMARY OF COSTS						
Labor Cost	\$1,172.60	Labor Burden @	49.7%	\$0.00	\$1,172.60	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00	
Equipment Cost	\$1,730.49	Equipment Tax @	0.0%	\$0.00	\$1,730.49	
Subcontractors	\$2,500.00				\$2,500.00	
DIRECT COST SUBTOTALS	\$5,403			\$0	\$5,403	
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$2,903.08	
Installing Contractors Profit @	8.0%				\$2,903.08	
GC Markup on Subs @	5.0%				\$2,500.00	
					TOTAL MARKUP COSTS	\$792.71
General Contractors Insurance @	1.0%		on		\$6,195.79	
Bond @	1.0%		on		\$6,195.79	
Contingency @	0.0%		on		\$6,319.71	
					TOTAL COST for pay item	\$6,320

Additional Pay Item Notes :

The cost of removal can vary based on the area lived in and the typical wages in the region. We assumed that we need 1 Forman, 2 Laboreres and 1 Excavator to load the rubbish in the truck in 1/2 day.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.114	Project	: IRONGATE						
Description	: Remove Toe Drain Pipe								
Quantity	: 260.00 LF								
Daily Production	: 225.00 LF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.2 Days	Estimator	: Mihaela Tomulescu	LF per	: 258.75	Total Cost	: \$5,968	Unit Price Per LF	: \$23
Unit Price	: \$27.00 per LF	Probable Low Cost Parameter		Probable High Cost Parameter	: 191.25				
Total Cost	: \$7,021								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.2	8	9.28	L	\$46.27	incl. in rate	incl. in rate	\$429.39
Equipment Operator (medium)	Active	1.00	1.2	8	9.28	L	\$66.28	incl. in rate	incl. in rate	\$615.08
Trencher	Active	2.00	1.2	8	18.56	E	\$4.07	incl. in rate	incl. in rate	\$75.54
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.2	8	9.28	E	\$111.64	incl. in rate	incl. in rate	\$1,036.02
Truck Driver (heavy)	Active	1.00	1.2	8	9.28	L	\$57.59	incl. in rate	incl. in rate	\$534.44
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.2	8	9.28	E	\$221.50	incl. in rate	incl. in rate	\$2,055.52
Laborer	Active	2.00	1.2	8	18.56	L	\$45.80	incl. in rate	incl. in rate	\$850.05
					Labor Hours	46.4	TOTAL LABOR			\$2,428.95
					Equipment Hours	37.12	TOTAL EQUIPMENT			\$3,167.08

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,428.95	Labor Burden @	49.7%	\$0.00		\$2,428.95
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$3,167.08	Equipment Tax @	0.0%	\$0.00		\$3,167.08
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$5,596			\$0	DIRECT COST SUBTOTALS	\$5,596
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$5,596.03	\$839.40
Installing Contractors Profit@	8.0%				\$5,596.03	\$447.68
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$1,287.09
General Contractors Insurance @	1.0%		on		\$6,883.11	\$69
Bond @	1.0%		on		\$6,883.11	\$69
Contingency @	0.0%		on		\$7,020.77	\$0
					TOTAL COST for pay item	\$7,021

Additional Pay Item Notes :

Based on RS-Means (22050510) crew PLUM2 -"Pipe, metal pipe, 8" to 14" diam., selective demolition".

PAY ITEM INFORMATION												
PAY ITEM NUMBER :	4.118				Project :	Iron Gate						
Description :	Remove and Dispose of Pipe Conduit, 30" Dia. x 0.25" Thick x 960'											
Quantity :	76,640.00	LBS										
Daily Production :	2,500.00	LBS per	8	hour shift	Project # :	4						
Work Days :	30.7	Days										
Unit Price :	\$1.03 per LBS				Estimator :	Mihaela Tomulescu	LBS per	2875	Total Cost	\$67,106	Unit Price Per LBS	\$0.88
Total Cost :	\$78,948				Probable Low Cost Parameter			2000	\$94,738		\$1.24	
					Probable High Cost Parameter							

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate		\$460.72
Laborer	Active	2.00	30.7	8	491.20	L	\$45.80	incl. in rate	incl. in rate		\$22,496.96
Equipment Operator (crane)	Active	1.00	30.7	8	245.60	L	\$68.41	incl. in rate	incl. in rate		\$16,801.50
Hydraulic Crane (17tn)	Active	1.00	30.7	8	245.60	E	\$81.52	incl. in rate	incl. in rate		\$20,021.31
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate		\$893.12
					Labor Hours	744.8	TOTAL LABOR		\$39,759.18		
					Equipment Hours	253.6	TOTAL EQUIPMENT		\$20,914.43		

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$2,091.44	\$2,091.44	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$2,091.44

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$39,759.18	Labor Burden @	49.7%	\$0.00		\$39,759.18			
Material Cost	\$2,091.44	Material Tax @	7.8%	\$162.09		\$2,253.53			
Equipment Cost	\$20,914.43	Equipment Tax @	0.0%	\$0.00		\$20,914.43			
Subcontractors	\$0.00					\$0.00			
DIRECT COST SUBTOTALS	\$62,765			\$162	DIRECT COST SUBTOTALS	\$62,927			
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$9,439.07			
Installing Contractors Profit @	8.0%	Material				\$5,034.17			
GC Markup on Subs @	5.0%	Subs				\$0.00			
						TOTAL MARKUP COSTS	\$14,473.24		
General Contractors Insurance @	1.0%	on				\$774			
Bond @	1.0%	on				\$774			
Contingency @	0.0%	on				\$0			
						TOTAL COST for pay item	\$78,948		

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 27" to 36" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.123			Project	Iron Gate				
Description	Remove and Dispose of Piping- 24-in. Dia. x 0.25 Thickness x 248'								
Quantity	15,872.00	LBS							
Daily Production	7,600.00	LBS per	8	hour shift	Project #	4			
Work Days	2.1	Days			Estimator	Mihaela Tomulescu		LBS per	8740
Unit Price	\$0.50 per LBS				Probable Low Cost Parameter		Total Cost	\$6,804	Unit Price Per LBS
Total Cost	\$8,005				Probable High Cost Parameter			\$9,606	\$0.61

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (heavy)	Active	1.00	1.5	8	12.00	L	\$57.59	incl. in rate	incl. in rate	\$691.08
Laborer	Active	2.00	2.1	8	33.60	L	\$45.80	incl. in rate	incl. in rate	\$1,538.88
Equipment Operator (crane)	Active	1.00	2.1	8	16.80	L	\$68.41	incl. in rate	incl. in rate	\$1,149.29
Hydraulic Crane (17tn)	Active	1.00	2.1	8	16.80	E	\$81.52	incl. in rate	incl. in rate	\$1,369.54
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.5	8	12.00	E	\$111.64	incl. in rate	incl. in rate	\$1,339.68
					Labor Hours	62.4	TOTAL LABOR			\$3,379.25
					Equipment Hours	28.8	TOTAL EQUIPMENT			\$2,709.22

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$270.92	\$270.92	\$0.00
						\$0.00	\$0.00
						\$0.00	\$0.00
						TOTAL MATERIAL	\$270.92

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$3,379.25	Labor Burden @	49.7%	\$0.00		\$3,379.25	
Material Cost	\$270.92	Material Tax @	7.8%	\$21.00		\$291.92	
Equipment Cost	\$2,709.22	Equipment Tax @	0.0%	\$0.00		\$2,709.22	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$6,359			\$21	DIRECT COST SUBTOTALS	\$6,380	
Installing Contractors Overhead @	15.0%			\$6,380.38		\$957.06	
Installing Contractors Profit @	8.0%			\$6,380.38		\$510.43	
GC Markup on Subs @	5.0%			\$0.00		\$0.00	
						TOTAL MARKUP COSTS	\$1,467.49
General Contractors Insurance @	1.0%	on		\$7,847.87		\$78	
Bond @	1.0%	on		\$7,847.87		\$78	
Contingency @	0.0%	on		\$8,004.83		\$0	
						TOTAL COST for pay item	\$8,005

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 21" to 24" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.124			Project	Iron Gate				
Description	Remove and Dispose of Piping- 20-in. Dia. x 0.25 Thickness x 85'			Project #	4				
Quantity	4,505.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	7,600.00	LBS per	8	Probable Low Cost Parameter	8740		\$2,209	\$0.49	
Work Days	0.6 Days			Probable High Cost Parameter	6080		\$3,119	\$0.69	
Unit Price	\$0.58 per LBS								
Total Cost	\$2,599								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (heavy)	Active	1.00	0.6	8	4.80	L	\$57.59	incl. in rate	incl. in rate	\$276.43
Laborer	Active	2.00	0.6	8	9.60	L	\$45.80	incl. in rate	incl. in rate	\$439.68
Equipment Operator (crane)	Active	1.00	0.6	8	4.80	L	\$68.41	incl. in rate	incl. in rate	\$328.37
Hydraulic Crane (17tn)	Active	1.00	0.6	8	4.80	E	\$81.52	incl. in rate	incl. in rate	\$391.30
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.6	8	4.80	E	\$111.64	incl. in rate	incl. in rate	\$535.87
					Labor Hours	19.2	TOTAL LABOR			\$1,044.48
					Equipment Hours	9.6	TOTAL EQUIPMENT			\$927.17

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$92.72	\$92.72	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$92.72

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$1,044.48	Labor Burden @	49.7%	\$0.00		\$1,044.48	
Material Cost	\$92.72	Material Tax @	7.8%	\$7.19		\$99.90	
Equipment Cost	\$927.17	Equipment Tax @	0.0%	\$0.00		\$927.17	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$2,064			\$7	DIRECT COST SUBTOTALS	\$2,072	
Installing Contractors Overhead @	15.0%			\$2,071.55		\$310.73	
Installing Contractors Profit @	8.0%			\$2,071.55		\$165.72	
GC Markup on Subs @	5.0%			\$0.00		\$0.00	
					TOTAL MARKUP COSTS	\$476.46	
General Contractors Insurance @	1.0%	on		\$2,548.01		\$25	
Bond @	1.0%	on		\$2,548.01		\$25	
Contingency @	0.0%	on		\$2,598.97		\$0	
						TOTAL COST for pay item	\$2,599

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 21" to 24" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.125			Project :	Iron Gate				
Description :	Remove and Dispose of Piping- 18-in. Dia. x 0.25 Thickness x 432'								
Quantity :	29,088.00	LBS							
Daily Production :	7,900.00	LBS per	8	hour shift	Project # :	4			
Work Days :	3.7	Days			Estimator :	Mihaela Tomulescu		LBS per	9085
Unit Price :	\$0.38 per LBS				Probable Low Cost Parameter			Total Cost	\$9,448
Total Cost :	\$11,115				Probable High Cost Parameter			Unit Price Per LBS	\$0.32
									\$0.46

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Laborer	Active	2.00	3.7	8	59.20	L	\$45.80	incl. in rate	incl. in rate	\$2,711.36
Equipment Operator (crane)	Active	1.00	3.7	8	29.60	L	\$68.41	incl. in rate	incl. in rate	\$2,024.94
Hydraulic Crane (17tn)	Active	1.00	3.7	8	29.60	E	\$81.52	incl. in rate	incl. in rate	\$2,412.99
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
					Labor Hours	96.8	TOTAL LABOR			\$5,197.02
					Equipment Hours	37.6	TOTAL EQUIPMENT			\$3,306.11

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$330.61	\$330.61
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$330.61

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS						
Labor Cost	\$5,197.02	Labor Burden @	49.7%	\$0.00		\$5,197.02
Material Cost	\$330.61	Material Tax @	7.8%	\$25.62		\$356.23
Equipment Cost	\$3,306.11	Equipment Tax @	0.0%	\$0.00		\$3,306.11
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$8,834			\$26	DIRECT COST SUBTOTALS	\$8,859
Installing Contractors Overhead@	15.0%			\$8,859.36		\$1,328.90
Installing Contractors Profit@	8.0%			\$8,859.36		\$708.75
GC Markup on Subs @	5.0%			\$0.00		\$0.00
					TOTAL MARKUP COSTS	\$2,037.65
General Contractors Insurance @	1.0%	on		\$10,897.01		\$109
Bond @	1.0%	on		\$10,897.01		\$109
Contingency @	0.0%	on		\$11,114.96		\$0
TOTAL COST for pay item						\$11,115

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 15" to 18" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .

PAY ITEM INFORMATION												
PAY ITEM NUMBER	4.126			Project	Iron Gate							
Description	Remove and Dispose of Piping- 16-in. Dia. x 0.25 Thickness x 166'											
Quantity	6,972.00	LBS										
Daily Production	7,900.00	LBS per	8	hour shift	Project #	4						
Work Days	0.9	Days			Estimator	Mihaela Tomulescu	LBS per	9085	Total Cost	\$3,314	Unit Price Per LBS	\$0.48
Unit Price	\$0.56 per LBS				Probable Low Cost Parameter							
Total Cost	\$3,898				Probable High Cost Parameter		6320	\$4,678				

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck Driver (heavy)	Active	1.00	0.9	8	7.20	L	\$57.59	incl. in rate	incl. in rate		\$414.65
Laborer	Active	2.00	0.9	8	14.40	L	\$45.80	incl. in rate	incl. in rate		\$659.52
Equipment Operator (crane)	Active	1.00	0.9	8	7.20	L	\$68.41	incl. in rate	incl. in rate		\$492.55
Hydraulic Crane (17tn)	Active	1.00	0.9	8	7.20	E	\$81.52	incl. in rate	incl. in rate		\$586.94
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.9	8	7.20	E	\$111.64	incl. in rate	incl. in rate		\$803.81
					Labor Hours	28.8	TOTAL LABOR		\$1,566.72		
					Equipment Hours	14.4	TOTAL EQUIPMENT		\$1,390.75		

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$139.08	\$139.08	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$139.08

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$1,566.72	Labor Burden @	49.7%	\$0.00	\$1,566.72				
Material Cost	\$139.08	Material Tax @	7.8%	\$10.78	\$149.85				
Equipment Cost	\$1,390.75	Equipment Tax @	0.0%	\$0.00	\$1,390.75				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$3,097			\$11	\$3,107				
Installing Contractors Overhead@	15.0%	Crew			\$466.10				
Installing Contractors Profit@	8.0%	Material			\$248.59				
GC Markup on Subs @	5.0%	Subs			\$0.00				
					\$0.00				
					\$0.00				
General Contractors Insurance @	1.0%	on		\$3,822.01	\$38				
Bond @	1.0%	on		\$3,822.01	\$38				
Contingency @	0.0%	on		\$3,898.45	\$0				
					TOTAL MARKUP COSTS	\$714.68			
					TOTAL COST for pay item	\$3,898			

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 15" to 18" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B12Z .

PAY ITEM INFORMATION												
PAY ITEM NUMBER :	4.127			Project :	Iron Gate							
Description :	Remove and Dispose of Piping- 12-in. Dia. x 0.25 Thickness x 64'											
Quantity :	2,176.00	LBS										
Daily Production :	9,500.00	LBS per	8	hour shift	Project # :	4						
Work Days :	0.2	Days			Estimator :	Mihaela Tomulescu	LBS per	10925	Total Cost	\$843	Unit Price Per LBS	\$0.39
Unit Price :	\$0.46 per LBS				Probable Low Cost Parameter							
Total Cost :	\$992				Probable High Cost Parameter			7600	\$1,190			\$0.55

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck Driver (heavy)	Active	1.00	0.2	8	1.83	L	\$57.59	incl. in rate	incl. in rate		\$105.50
Laborer	Active	2.00	0.2	8	3.66	L	\$45.80	incl. in rate	incl. in rate		\$167.81
Equipment Operator (crane)	Active	1.00	0.2	8	1.83	L	\$68.41	incl. in rate	incl. in rate		\$125.33
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.83	E	\$81.52	incl. in rate	incl. in rate		\$149.34
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.83	E	\$111.64	incl. in rate	incl. in rate		\$204.52
					Labor Hours	7.328	TOTAL LABOR				\$398.64
					Equipment Hours	3.664	TOTAL EQUIPMENT				\$353.87

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$35.39	\$35.39	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$35.39

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$398.64	Labor Burden @	49.7%	\$0.00		\$398.64			
Material Cost	\$35.39	Material Tax @	7.8%	\$2.74		\$38.13			
Equipment Cost	\$353.87	Equipment Tax @	0.0%	\$0.00		\$353.87			
Subcontractors	\$0.00					\$0.00			
DIRECT COST SUBTOTALS	\$788			\$3	DIRECT COST SUBTOTALS	\$791			
Installing Contractors Overhead @	15.0%	Crew				\$118.60			
Installing Contractors Profit @	8.0%	Material				\$63.25			
GC Markup on Subs @	5.0%	Subs				\$0.00			
					TOTAL MARKUP COSTS	\$181.85			
General Contractors Insurance @	1.0%	on				\$10			
Bond @	1.0%	on				\$10			
Contingency @	0.0%	on				\$0			
					TOTAL COST for pay item	\$992			

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 12" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B6 .

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.128			Project :	Iron Gate				
Description :	Remove and Dispose of Piping- 10-in. Dia. x 0.25 Thickness x 69'								
Quantity :	1,932.00	LBS							
Daily Production :	10,000.00	LBS per	8	hour shift	Project # :	4			
Work Days :	0.2	Days			Estimator :	Mihaela Tomulescu		LBS per	11500
Unit Price :	\$0.45 per LBS				Probable Low Cost Parameter			Total Cost	\$734
Total Cost :	\$864				Probable High Cost Parameter			Unit Price Per LBS	\$0.38
									\$0.54

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate	\$90.06
Laborer	Active	2.00	0.2	8	3.20	L	\$45.80	incl. in rate	incl. in rate	\$146.56
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	incl. in rate	incl. in rate	\$109.46
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	incl. in rate	incl. in rate	\$130.43
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate	\$178.62
					Labor Hours	6.4	TOTAL LABOR			\$346.08
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$309.06

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$30.91	\$30.91	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$30.91

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
					\$0.00		
					\$0.00		
					\$0.00		
					\$0.00		
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$346.08	Labor Burden @	49.7%	\$0.00				\$346.08	
Material Cost	\$30.91	Material Tax @	7.8%	\$2.40				\$33.30	
Equipment Cost	\$309.06	Equipment Tax @	0.0%	\$0.00				\$309.06	
Subcontractors	\$0.00							\$0.00	
DIRECT COST SUBTOTALS	\$686			\$2	DIRECT COST SUBTOTALS			\$688	
Installing Contractors Overhead@	15.0%	Crew		\$688.44				\$103.27	
Installing Contractors Profit@	8.0%	Material		\$688.44				\$55.07	
GC Markup on Subs @	5.0%	Subs		\$0.00				\$0.00	
					TOTAL MARKUP COSTS			\$158.34	
General Contractors Insurance @	1.0%		on	\$846.78				\$8	
Bond @	1.0%		on	\$846.78				\$8	
Contingency @	0.0%		on	\$863.71				\$0	
								TOTAL COST for pay item	\$864

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 10" diameter, remove, excludes excavation & Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH. Using CREW B6 .

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.129			Project :	Iron Gate				
Description :	Remove and Dispose of Piping- 8-in. Dia. x 0.25 Thickness x 30'								
Quantity :	3,588.00	LBS							
Daily Production :	18,000.00	LBS per	8	hour shift	Project # :	4			
Work Days :	0.2	Days			Estimator :	Mihaela Tomulescu		LBS per	20700
Unit Price :	\$0.23 per LBS				Probable Low Cost Parameter		Total Cost	\$695	Unit Price Per LBS
Total Cost :	\$818				Probable High Cost Parameter		14400	\$982	\$0.27

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate		\$90.06
Laborer	Active	2.00	0.2	8	3.20	L	\$45.80	incl. in rate	incl. in rate		\$146.56
Equipment Operator (light)	Active	1.00	0.2	8	1.60	L	\$64.90	incl. in rate	incl. in rate		\$103.84
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.2	8	1.60	E	\$64.23	incl. in rate	incl. in rate		\$102.77
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate		\$178.62
					Labor Hours	6.4	TOTAL LABOR		\$340.46		
					Equipment Hours	3.2	TOTAL EQUIPMENT		\$281.39		

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$28.14	\$28.14	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL MATERIAL	\$28.14

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$340.46	Labor Burden @	49.7%	\$0.00		\$340.46	
Material Cost	\$28.14	Material Tax @	7.8%	\$2.18		\$30.32	
Equipment Cost	\$281.39	Equipment Tax @	0.0%	\$0.00		\$281.39	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$650			\$2	DIRECT COST SUBTOTALS	\$652	
Installing Contractors Overhead@	15.0%	Crew		\$652.18		\$97.83	
Installing Contractors Profit@	8.0%	Material		\$652.18		\$52.17	
GC Markup on Subs @	5.0%	Subs		\$0.00		\$0.00	
					TOTAL MARKUP COSTS	\$150.00	
General Contractors Insurance @	1.0%		on	\$802.18		\$8	
Bond @	1.0%		on	\$802.18		\$8	
Contingency @	0.0%		on	\$818.22		\$0	
						TOTAL COST for pay item	\$818

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 8" diameter, remove, excludes excavation, B12Z Crew is formed of 2 laborers loading 1 truck with the crane for disposal based on daily production.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.130			Project	Iron Gate				
Description	Remove and Dispose of Piping- 3-in. Dia. x STD x 30'			Project #	4				
Quantity	1,088.00	LBS		Estimator	Mihaela Tomulescu		LBS per	Total Cost	Unit Price Per LBS
Daily Production	18,000.00	LBS per	8	Probable Low Cost Parameter	20700		\$350	\$0.32	
Work Days	0.1 Days			Probable High Cost Parameter	14400		\$494	\$0.45	
Unit Price	\$0.38 per LBS								
Total Cost	\$412								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Truck Driver (light)	Active	1.00	0.1	8	0.48	L	\$56.29	incl. in rate	incl. in rate	\$27.02
Laborer	Active	2.00	0.1	8	0.96	L	\$45.80	incl. in rate	incl. in rate	\$43.97
Equipment Operator (crane)	Active	1.00	0.1	8	0.48	L	\$68.41	incl. in rate	incl. in rate	\$32.84
Crawler Crane (130tn)	Active	1.00	0.1	8	0.48	E	\$258.66	incl. in rate	incl. in rate	\$124.16
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.1	8	0.48	E	\$111.64	incl. in rate	incl. in rate	\$53.59
Truck Driver (heavy)	Active	1.00	0.1	8	0.48	L	\$57.59	incl. in rate	incl. in rate	\$27.64
					Labor Hours	2.4	TOTAL LABOR			\$131.47
					Equipment Hours	0.96	TOTAL EQUIPMENT			\$177.74

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc	1.00	LS	1.000	1.00	\$17.77	\$17.77
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$17.77

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$131.47	Labor Burden @	49.7%	\$0.00		\$131.47
Material Cost	\$17.77	Material Tax @	7.8%	\$1.38		\$19.15
Equipment Cost	\$177.74	Equipment Tax @	0.0%	\$0.00		\$177.74
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$327			\$1	DIRECT COST SUBTOTALS	\$328
Installing Contractors Overhead @	15.0%	Crew			Cost Basis	\$49.25
Installing Contractors Profit @	8.0%	Material				\$26.27
GC Markup on Subs @	5.0%	Subs				\$0.00
					TOTAL MARKUP COSTS	\$75.52
General Contractors Insurance @	1.0%		on			\$4
Bond @	1.0%		on			\$4
Contingency @	0.0%		on			\$0
					TOTAL COST for pay item	\$412

Additional Pay Item Notes :

Based on RS Means, Utility removal, pipe, sewer/water, 3" diameter, remove, excludes excavation, B12Z Crew is formed of 2 laborers loading 1 truck with the crane for disposal based on daily production.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	4.131			Project : IRONGATE					
Description	Remove and Dispose of Gate Valves								
Quantity	21,792.00	LBS							
Daily Production	10,500.00	LBS per	8	hour shift					
Work Days	2.1 Days			Project #	Klamath Dams Removal				
Unit Price	\$0.98 per LBS			Estimator	Mihaela Tomules		LBS per	Total Cost	Unit Price Per LBS
Total Cost	\$21,312			Probable Low Cost Parameter	12075	\$18,116	\$0.83		
				Probable High Cost Parameter	8400	\$25,575	\$1.17		

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	2.00	2.1	8	33.20	L	\$48.27	\$0.00		\$1,602.56
Steelworker	Active	2.00	2.1	8	33.20	L	\$65.52	\$0.00		\$2,175.26
Crawler Crane (90tn)	Active	1.00	2.1	8	16.60	E	\$208.09	\$208.09		\$3,454.29
Equipment Operator (crane)	Active	1.00	2.1	8	16.60	L	\$68.41	\$0.00		\$1,135.61
Welder	Active	2.00	2.1	8	33.20	L	\$7.84	\$0.00		\$260.21
Gas Welding Machine	Active	2.00	2.1	8	33.20	E	\$2.88	\$2.88		\$95.52
Electrician	Active	2.00	2.1	8	33.20	L	\$45.23	\$0.00		\$1,501.64
Carpenters, Journeyman	Active	2.00	2.1	8	33.20	L	\$65.37	\$0.00		\$2,170.28
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	2.1	8	16.60	E	\$111.64	\$111.64		\$1,853.22
Truck Driver (heavy)	Active	1.00	2.1	8	16.60	L	\$57.59	\$0.00		\$955.99
					Labor Hours	199.2	TOTAL LABOR			\$9,801.55
					Equipment Hours	66.4	TOTAL EQUIPMENT			\$5,403.03

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$980.16	\$980.16
TOTAL MATERIAL						\$980.16

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	1.09	ton	1.000	\$595.00	\$648.31
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	\$7.25	\$203.00
TOTAL SUBCONTRACTS					\$851.31

SUMMARY OF COSTS						
Labor Cost	\$9,801.55	Labor Burden @	49.7%	\$0.00		\$9,801.55
Material Cost	\$980.16	Material Tax @	7.8%	\$75.96		\$1,056.12
Equipment Cost	\$5,403.03	Equipment Tax @	0.0%	\$0.00		\$5,403.03
Subcontractors	\$851.31					\$851.31
DIRECT COST SUBTOTALS	\$17,036			\$76	DIRECT COST SUBTOTALS	\$17,112
Installing Contractors Overhead @	15.0%	Crew		\$16,260.70		\$2,439.11
Installing Contractors Profit @	8.0%	Material		\$16,260.70		\$1,300.86
GC Markup on Subs @	5.0%	Subs		\$851.31		\$42.57
					TOTAL MARKUP COSTS	\$3,782.53
General Contractors Insurance @	1.0%		on	\$20,894.54		\$209
Bond @	1.0%		on	\$20,894.54		\$209
Contingency @	0.0%		on	\$21,312.43		\$0
					TOTAL COST for pay item	\$21,312

Additional Pay Item Notes :

Assumed the process of removing and disposing of 18 Gate Valves between 3" to 24" is done in around 1 day by crews formed of forman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains paint with heavy metals 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	:	4.132	Project		:	IRONGATE			
Description	:	Remove and Dispose of Basin #1							
Quantity	:	2,880.00	LBS						
Daily Production	:	2,880.00	LBS per	8	hour shift				
Work Days	:	1.0	Days						
Unit Price	:	\$2.89	per LBS	Project #	:	Klamath Dams Removal			
Total Cost	:	\$8,336	Estimator		:	Mihaela Tomulesc	LBS per	Total Cost	Unit Price Per LBS
				Probable Low Cost Parameter	:	3312	\$7,086	\$2.46	
				Probable High Cost Parameter	:	2304	\$10,003	\$3.47	

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	\$0.00		\$522.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	72	TOTAL LABOR			\$3,452.68
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.27	\$345.27	
						TOTAL MATERIAL	\$345.27

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00	\$1,000.00	
						TOTAL SUBCONTRACTS	\$1,000.00

SUMMARY OF COSTS									
Labor Cost	\$3,452.68	Labor Burden @	49.7%	\$0.00	\$3,452.68				
Material Cost	\$345.27	Material Tax @	7.8%	\$26.76	\$372.03				
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00	\$1,965.95				
Subcontractors	\$1,000.00				\$1,000.00				
DIRECT COST SUBTOTALS	\$6,764			\$27	\$6,791				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead @	15.0%				\$868.60				
Installing Contractors Profit @	8.0%				\$463.25				
GC Markup on Subs @	5.0%				\$50.00				
		TOTAL MARKUP COSTS			\$1,381.85				
General Contractors Insurance @	1.0%		on	\$8,172.51	\$82				
Bond @	1.0%		on	\$8,172.51	\$82				
Contingency @	0.0%		on	\$8,335.96	\$0				
		TOTAL COST for pay item			\$8,336				

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of forman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.133			Project :		IRONGATE			
Description :	Remove and Dispose of Basin #2								
Quantity :	3,660.00	LBS							
Daily Production :	3,660.00	LBS per	8	hour shift					
Work Days :	1.0	Days			Project # :	Klamath Dams Removal			
Unit Price :	\$2.28	per LBS			Estimator :	Mihaela Tomulescu	LBS per	Total Cost	Unit Price Per LBS
Total Cost :	\$8,336					Probable Low Cost Parameter	4209	\$7,086	\$1.94
					Probable High Cost Parameter	2928	\$10,003	\$2.73	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	\$0.00		\$522.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	72	TOTAL LABOR			\$3,452.68
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.27	\$345.27		
							TOTAL MATERIAL	\$345.27

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00	\$1,000.00	
						TOTAL SUBCONTRACTS	\$1,000.00

SUMMARY OF COSTS									
Labor Cost	\$3,452.68	Labor Burden @	49.7%	\$0.00	\$3,452.68				
Material Cost	\$345.27	Material Tax @	7.8%	\$26.76	\$372.03				
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00	\$1,965.95				
Subcontractors	\$1,000.00				\$1,000.00				
DIRECT COST SUBTOTALS	\$6,764			\$27	\$6,791				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead @	15.0%				\$868.60				
Installing Contractors Profit @	8.0%				\$463.25				
GC Markup on Subs @	5.0%				\$50.00				
					TOTAL MARKUP COSTS	\$1,381.85			
General Contractors Insurance @	1.0%		on	\$8,172.51	\$82				
Bond @	1.0%		on	\$8,172.51	\$82				
Contingency @	0.0%		on	\$8,335.96	\$0				
					TOTAL COST for pay item	\$8,336			

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of forman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.134			Project :	IRONGATE				
Description :	Remove and Dispose of Basin #3								
Quantity :	2,880.00	LBS							
Daily Production :	2,880.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	1.0	Days			Estimator :	Mihaela Tomulesc	LBS per	Total Cost	Unit Price Per LBS
Unit Price :	\$2.89	per LBS			Probable Low Cost Parameter	3312	\$7,086	\$2.46	
Total Cost :	\$8,336				Probable High Cost Parameter	2304	\$10,003	\$3.47	

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	\$0.00		\$522.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	72	TOTAL LABOR			\$3,452.68
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.27	\$345.27
TOTAL MATERIAL						\$345.27

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00	\$1,000.00
TOTAL SUBCONTRACTS						\$1,000.00

SUMMARY OF COSTS						
Labor Cost	\$3,452.68	Labor Burden @	49.7%	\$0.00		\$3,452.68
Material Cost	\$345.27	Material Tax @	7.8%	\$26.76		\$372.03
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00		\$1,965.95
Subcontractors	\$1,000.00					\$1,000.00
DIRECT COST SUBTOTALS	\$6,764			\$27	DIRECT COST SUBTOTALS	\$6,791
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$5,790.66	\$868.60
Installing Contractors Profit @	8.0%				\$5,790.66	\$463.25
GC Markup on Subs @	5.0%				\$1,000.00	\$50.00
					TOTAL MARKUP COSTS	\$1,381.85
General Contractors Insurance @	1.0%		on		\$8,172.51	\$82
Bond @	1.0%		on		\$8,172.51	\$82
Contingency @	0.0%		on		\$8,335.96	\$0
					TOTAL COST for pay item	\$8,336

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of forman, jouneymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.135			Project :	IRONGATE				
Description :	Remove and Dispose of Basin #4								
Quantity :	3,580.00	LBS							
Daily Production :	3,580.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	1.0	Days			Estimator :	Mihaela Tomulesc	LBS per	Total Cost	Unit Price Per LBS
Unit Price :	\$2.33	per LBS			Probable Low Cost Parameter	4117	\$7,086	\$1.98	
Total Cost :	\$8,336				Probable High Cost Parameter	2864	\$10,003	\$2.79	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	\$0.00		\$522.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	72	TOTAL LABOR			\$3,452.68
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.27	\$345.27
TOTAL MATERIAL						\$345.27

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00	\$1,000.00
TOTAL SUBCONTRACTS						\$1,000.00

SUMMARY OF COSTS						
Labor Cost	\$3,452.68	Labor Burden @	49.7%	\$0.00		\$3,452.68
Material Cost	\$345.27	Material Tax @	7.8%	\$26.76		\$372.03
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00		\$1,965.95
Subcontractors	\$1,000.00					\$1,000.00
DIRECT COST SUBTOTALS	\$6,764			\$27	DIRECT COST SUBTOTALS	\$6,791
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$5,790.66	\$868.60
Installing Contractors Profit @	8.0%				\$5,790.66	\$463.25
GC Markup on Subs @	5.0%				\$1,000.00	\$50.00
					TOTAL MARKUP COSTS	\$1,381.85
General Contractors Insurance @	1.0%		on		\$8,172.51	\$82
Bond @	1.0%		on		\$8,172.51	\$82
Contingency @	0.0%		on		\$8,335.96	\$0
TOTAL COST for pay item						\$8,336

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of forman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.136			Project :		IRONGATE			
Description :	Remove and Dispose of Basin #5								
Quantity :	1,440.00	LBS							
Daily Production :	1,440.00	LBS per	8	hour shift					
Work Days :	1.0	Days			Project # :	Klamath Dams Removal			
Unit Price :	\$5.79	per LBS			Estimator :	Mihaela Tomulesc	LBS per	Total Cost	Unit Price Per LBS
Total Cost :	\$8,336					Probable Low Cost Parameter	1656	\$7,086	\$4.92
					Probable High Cost Parameter	1152	\$10,003	\$6.95	

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	\$0.00		\$522.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	72	TOTAL LABOR			\$3,452.68
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.27	\$345.27
TOTAL MATERIAL						\$345.27

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00	\$1,000.00
TOTAL SUBCONTRACTS						\$1,000.00

SUMMARY OF COSTS						
Labor Cost	\$3,452.68	Labor Burden @	49.7%	\$0.00		\$3,452.68
Material Cost	\$345.27	Material Tax @	7.8%	\$26.76		\$372.03
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00		\$1,965.95
Subcontractors	\$1,000.00					\$1,000.00
DIRECT COST SUBTOTALS	\$6,764			\$27	DIRECT COST SUBTOTALS	\$6,791
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$5,790.66	\$868.60
Installing Contractors Profit @	8.0%				\$5,790.66	\$463.25
GC Markup on Subs @	5.0%				\$1,000.00	\$50.00
						TOTAL MARKUP COSTS
						\$1,381.85
General Contractors Insurance @	1.0%		on		\$8,172.51	\$82
Bond @	1.0%		on		\$8,172.51	\$82
Contingency @	0.0%		on		\$8,335.96	\$0
						TOTAL COST for pay item
						\$8,336

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of forman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	4.137			Project :	IRONGATE					
Description :	Remove and Dispose of Basin #6									
Quantity :	1,440.00	LBS								
Daily Production :	1,440.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal				
Work Days :	1.0	Days			Estimator :	Mihaela Tomulescu	LBS per		Total Cost	Unit Price Per LBS
Unit Price :	\$5.79	per LBS			Probable Low Cost Parameter	1656	\$7,086		\$4.92	
Total Cost :	\$8,336				Probable High Cost Parameter	1152	\$10,003		\$6.95	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	\$0.00		\$1,048.32
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	1.00	1.0	8	8.00	L	\$65.37	\$0.00		\$522.96
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	72	TOTAL LABOR			\$3,452.68
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$345.27	\$345.27	
						TOTAL MATERIAL	\$345.27

SUBCONTRACT COSTS							
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount		
Stop log lifter - Rent per day	1.00	day	1.000	1.00	\$1,000.00	\$1,000.00	
						TOTAL SUBCONTRACTS	\$1,000.00

SUMMARY OF COSTS									
Labor Cost	\$3,452.68	Labor Burden @	49.7%	\$0.00		\$3,452.68			
Material Cost	\$345.27	Material Tax @	7.8%	\$26.76		\$372.03			
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00		\$1,965.95			
Subcontractors	\$1,000.00					\$1,000.00			
DIRECT COST SUBTOTALS	\$6,764			\$27	DIRECT COST SUBTOTALS	\$6,791			
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead @	15.0%				\$5,790.66	\$868.60			
Installing Contractors Profit @	8.0%				\$5,790.66	\$463.25			
GC Markup on Subs @	5.0%				\$1,000.00	\$50.00			
						TOTAL MARKUP COSTS	\$1,381.85		
General Contractors Insurance @	1.0%		on		\$8,172.51	\$82			
Bond @	1.0%		on		\$8,172.51	\$82			
Contingency @	0.0%		on		\$8,335.96	\$0			
						TOTAL COST for pay item	\$8,336		

Additional Pay Item Notes :

Assumed the process of removing and disposing of basin#6 (manually operated 18" slide gate and stop logs) is done in around 1 day by crew formed of forman, journeymen, steelworkers. We dispose metal with 1 trucks per day for each crew. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling. Based on the current production rate, only 1 trips a day would be necessary.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.138			Project :	IRONGATE				
Description :	Remove and Dispose of Holding Tank								
Quantity :	7,400.00	LBS							
Daily Production :	7,400.00	LBS per	8	hour shift	Project # :	Klamath Dams Removal			
Work Days :	1.0	Days			Estimator :	Mihaela Tomulesc	LBS per	Total Cost	Unit Price Per LBS
Unit Price :	\$1.53	per LBS			Probable Low Cost Parameter	8510	\$9,652	\$1.30	
Total Cost :	\$11,355				Probable High Cost Parameter	5920	\$13,627	\$1.84	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman	Active	1.00	1.0	8	8.00	L	\$48.27	\$0.00		\$386.16
Steelworker	Active	4.00	1.0	8	32.00	L	\$65.52	\$0.00		\$2,096.64
Crawler Crane (90tn)	Active	1.00	1.0	8	8.00	E	\$208.09	\$208.09		\$1,664.72
Equipment Operator (crane)	Active	1.00	1.0	8	8.00	L	\$68.41	\$0.00		\$547.28
Welder	Active	2.00	1.0	8	16.00	L	\$7.84	\$0.00		\$125.40
Gas Welding Machine	Active	2.00	1.0	8	16.00	E	\$2.88	\$2.88		\$46.03
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	\$0.00		\$361.84
Carpenters, Journeyman	Active	4.00	1.0	8	32.00	L	\$65.37	\$0.00		\$2,091.84
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	\$31.90		\$255.20
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	\$0.00		\$460.72
					Labor Hours	112	TOTAL LABOR			\$6,069.88
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,965.95

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$606.99	\$606.99
TOTAL MATERIAL						\$606.99

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste cleanup/pickup/disposal, solid pickup, bulk material, maximum	0.37	ton	1.000	\$595.00	\$220.15	
Hazardous waste cleanup/pickup/disposal, transportation to disposal site, truckload = 80 drums or 25 C.Y. or 18 tons, maximum	28.00	mile	1.000	\$7.25	\$203.00	
TOTAL SUBCONTRACTS						\$423.15

SUMMARY OF COSTS						
Labor Cost	\$6,069.88	Labor Burden @	49.7%	\$0.00		\$6,069.88
Material Cost	\$606.99	Material Tax @	7.8%	\$47.04		\$654.03
Equipment Cost	\$1,965.95	Equipment Tax @	0.0%	\$0.00		\$1,965.95
Subcontractors	\$423.15					\$423.15
DIRECT COST SUBTOTALS	\$9,066			\$47	DIRECT COST SUBTOTALS	\$9,113
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$8,689.86	\$1,303.48
Installing Contractors Profit @	8.0%				\$8,689.86	\$695.19
GC Markup on Subs @	5.0%				\$423.15	\$21.16
						TOTAL MARKUP COSTS
						\$2,019.83
General Contractors Insurance @	1.0%		on		\$11,132.84	\$111
Bond @	1.0%		on		\$11,132.84	\$111
Contingency @	0.0%		on		\$11,355.49	\$0
TOTAL COST for pay item						\$11,355

Additional Pay Item Notes :

Assumed the process of removing and disposing of holding tank (2 slide gates 42" x 72" with motor and recirculation pumps) is done in around 1 day by crew formed of formen, jouneymen, steelworkers. Assumed contains petroleum products 10% of the total lbs, 28 miles from Iron Gate to Yreka transfer recycling.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.140	Project	: IRONGATE						
Description	: Wanaka Springs - Concrete Total								
Quantity	: 28.00 CY								
Daily Production	: 150.00 CY per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 0.2 Days								
Unit Price	: \$306.28 per CY	Estimator	: Mihaela Tomulescu	CY per	: 172.5	Total Cost	: \$7,290	Unit Price Per CY	: \$260
Total Cost	: \$8,576	Probable Low Cost Parameter	: 127.5	Probable High Cost Parameter	: 127.5	Total Cost	: \$9,862	Unit Price Per CY	: \$352

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	2.00	0.2	8	3.04	L	\$46.27	incl. in rate	incl. in rate		\$140.66
Equipment Operator (medium)	Active	8.00	0.2	8	12.16	L	\$66.28	incl. in rate	incl. in rate		\$805.96
Steelworker	Active	6.00	0.2	8	9.12	L	\$65.52	incl. in rate	incl. in rate		\$597.54
Electrician	Active	1.00	0.2	8	1.52	L	\$45.23	incl. in rate	incl. in rate		\$68.75
Truck Driver (heavy)	Active	2.00	0.2	8	3.04	L	\$57.59	incl. in rate	incl. in rate		\$175.07
Vibratory Hammer & Extractor	Active	3.00	0.2	8	4.56	E	\$94.34	incl. in rate	incl. in rate		\$430.19
Hydraulic Excavator (6.0cy)	Active	3.00	0.2	8	4.56	E	\$322.48	incl. in rate	incl. in rate		\$1,470.51
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.2	8	3.04	E	\$221.50	incl. in rate	incl. in rate		\$673.36
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.2	8	3.04	E	\$111.64	incl. in rate	incl. in rate		\$339.39
					Labor Hours	28.88	TOTAL LABOR				\$1,787.99
					Equipment Hours	15.2	TOTAL EQUIPMENT				\$2,913.44

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS						
Labor Cost	\$1,787.99	Labor Burden @	49.7%	\$0.00		\$1,787.99
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,913.44	Equipment Tax @	0.0%	\$0.00		\$2,913.44
Subcontractors	\$2,500.00					\$2,500.00
DIRECT COST SUBTOTALS	\$7,201			\$0		\$7,201
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$4,701.44	\$705.22
Installing Contractors Profit@	8.0%				\$4,701.44	\$376.11
GC Markup on Subs @	5.0%				\$2,500.00	\$125.00
TOTAL MARKUP COSTS						\$1,206.33
General Contractors Insurance @	1.0%		on		\$8,407.77	\$84
Bond @	1.0%		on		\$8,407.77	\$84
Contingency @	0.0%		on		\$8,575.92	\$0
TOTAL COST for pay item						\$8,576

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B".

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.144	Project	: IRONGATE						
Description	: Wanaka Springs - Regrade								
Quantity	: 2.50 AC								
Daily Production	: 0.69 AC per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 3.6	Days		Estimator	: Mihaela Tomulescu	AC per	Total Cost	Unit Price Per AC	
Unit Price	: \$6,798.10	per AC		Probable Low Cost Parameter	0.7935	\$14,446	\$5,778		
Total Cost	: \$16,995			Probable High Cost Parameter	0.5865	\$19,545	\$7,818		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	3.6	8	28.96	L	\$46.27	incl. in rate	incl. in rate	\$1,339.98
Equipment Operator (medium)	Active	1.00	3.6	8	28.96	L	\$66.28	incl. in rate	incl. in rate	\$1,919.47
Laborer	Active	4.00	3.6	8	115.84	L	\$45.80	incl. in rate	incl. in rate	\$5,305.47
Grader. 180hp, 13' blade	Active	1.00	3.6	8	28.96	E	\$80.79	incl. in rate	incl. in rate	\$2,339.68
Dozer (235hp)(CATD7)	Active	1.00	2.0	8	16.00	E	\$165.11	incl. in rate	incl. in rate	\$2,641.76
	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active		0.0	8		E				\$0.00
	Active		0.0	8		E				\$0.00
	Active		0.0	8		E				\$0.00
Labor Hours					173.76	TOTAL LABOR				\$8,564.92
Equipment Hours					44.96	TOTAL EQUIPMENT				\$4,981.44

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS					
Labor Cost	\$8,564.92	Labor Burden @	49.7%	\$0.00	\$8,564.92
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00
Equipment Cost	\$4,981.44	Equipment Tax @	0.0%	\$0.00	\$4,981.44
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$13,546			\$0	\$13,546
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$2,031.95
Installing Contractors Profit @	8.0%				\$1,083.71
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$3,115.66
General Contractors Insurance @	1.0%	on		\$16,662.02	\$167
Bond @	1.0%	on		\$16,662.02	\$167
Contingency @	0.0%	on		\$16,995.26	\$0
TOTAL COST for pay item					\$16,995

Additional Pay Item Notes :
 Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ strubs on site. Assumed Seeding, mechanical seeding, 215 lb/acre with crew B66. The amount and type of seed are calculated as 215 lbs per acre in total.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.147	Project	: IRONGATE						
Description	: Juniper Point - Concrete Total								
Quantity	: 19.00 CY								
Daily Production	: 60.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 0.3 Days	Estimator	: Mihaela Tomulescu	CY per	Total Cost	Unit Price Per CY			
Unit Price	: \$359.74 per CY	Probable Low Cost Parameter	69	\$5,810	\$306				
Total Cost	: \$6,835	Probable High Cost Parameter	51	\$7,860	\$414				

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	0.3	8	2.56	L	\$46.27	incl. in rate	incl. in rate		\$118.45
Equipment Operator (medium)	Active	3.00	0.3	8	7.68	L	\$66.28	incl. in rate	incl. in rate		\$509.03
Steelworker	Active	3.00	0.3	8	7.68	L	\$65.52	incl. in rate	incl. in rate		\$503.19
Electrician	Active	1.00	0.3	8	2.56	L	\$45.23	incl. in rate	incl. in rate		\$115.79
Truck Driver (heavy)	Active	1.00	0.3	8	2.56	L	\$57.59	incl. in rate	incl. in rate		\$147.43
Vibratory Hammer & Extractor	Active	1.00	0.3	8	2.56	E	\$94.34	incl. in rate	incl. in rate		\$241.51
Hydraulic Excavator (6.0cy)	Active	1.00	0.3	8	2.56	E	\$322.48	incl. in rate	incl. in rate		\$825.55
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.3	8	2.56	E	\$221.50	incl. in rate	incl. in rate		\$567.04
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.3	8	2.56	E	\$111.64	incl. in rate	incl. in rate		\$285.80
					Labor Hours	23.04	TOTAL LABOR				\$1,393.89
					Equipment Hours	10.24	TOTAL EQUIPMENT				\$1,919.90

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS						
Labor Cost	\$1,393.89	Labor Burden @	49.7%	\$0.00		\$1,393.89
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$1,919.90	Equipment Tax @	0.0%	\$0.00		\$1,919.90
Subcontractors	\$2,500.00					\$2,500.00
DIRECT COST SUBTOTALS	\$5,814			\$0	DIRECT COST SUBTOTALS	\$5,814
Installing Contractors Overhead @	15.0%	Crew				\$497.07
Installing Contractors Profit @	8.0%	Material				\$265.10
GC Markup on Subs @	5.0%	Subs				\$125.00
		Cost Basis				\$2,500.00
TOTAL MARKUP COSTS						\$887.17
General Contractors Insurance @	1.0%		on		\$6,700.96	\$67
Bond @	1.0%		on		\$6,700.96	\$67
Contingency @	0.0%		on		\$6,834.98	\$0
TOTAL COST for pay item						\$6,835

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.152	Project	: IRONGATE						
Description	: Juniper Point - 50'x5' Composite dock with poly floats								
Quantity	: 250.00 SF								
Daily Production	: 180.00 SF per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.4 Days			Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF	
Unit Price	: \$31.34 per SF			Probable Low Cost Parameter	198	\$7,051	\$28		
Total Cost	: \$7,834			Probable High Cost Parameter	162	\$8,618	\$34		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.4	8	11.12	L	\$46.27	incl. in rate	incl. in rate	\$514.52
Carpenters, Journeyman	Active	3.00	1.4	8	33.36	L	\$65.37	incl. in rate	incl. in rate	\$2,180.74
Hydraulic Crane (17tn)	Active	1.00	1.4	8	11.12	E	\$81.52	incl. in rate	incl. in rate	\$906.50
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.4	8	11.12	E	\$111.64	incl. in rate	incl. in rate	\$1,241.44
Truck Driver (heavy)	Active	1.00	1.4	8	11.12	L	\$57.59	incl. in rate	incl. in rate	\$640.40
Equipment Operator (crane)	Active	1.00	1.4	8	11.12	L	\$68.41	incl. in rate	incl. in rate	\$760.72
					Labor Hours	66.72	TOTAL LABOR			\$4,096.39
					Equipment Hours	22.24	TOTAL EQUIPMENT			\$2,147.94

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$4,096.39	Labor Burden @	49.7%	\$0.00		\$4,096.39
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,147.94	Equipment Tax @	0.0%	\$0.00		\$2,147.94
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$6,244			\$0	DIRECT COST SUBTOTALS	\$6,244
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$6,244.32	\$936.65
Installing Contractors Profit @	8.0%				\$6,244.32	\$499.55
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,436.19
General Contractors Insurance @	1.0%		on		\$7,680.52	\$77
Bond @	1.0%		on		\$7,680.52	\$77
Contingency @	0.0%		on		\$7,834.13	\$0
						TOTAL COST for pay item
						\$7,834

Additional Pay Item Notes :

Based on RS.Means Crew F3 the Labor and equipment for "Docks, floating, small boat, prefabricated, no shore facilities, excludes pilings, maximum"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.155	Project	: IRONGATE						
Description	: Juniper Point - Regrade to Natural Contour								
Quantity	: 2.00 AC								
Daily Production	: 0.50 AC per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 4.0 Days	Estimator	: Mihaela Tomulescu	AC per	: 0.575	Total Cost	: \$17,928	Unit Price Per AC	: \$8,964
Unit Price	: \$10,546.17 per AC	Probable Low Cost Parameter	: 0.575	Total Cost	: \$17,928	Unit Price Per AC	: \$8,964		
Total Cost	: \$21,092	Probable High Cost Parameter	: 0.425	Total Cost	: \$24,256	Unit Price Per AC	: \$12,128		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	4.0	8	32.00	L	\$46.27	incl. in rate	incl. in rate	\$1,480.64
Equipment Operator (medium)	Active	2.00	4.0	8	64.00	L	\$66.28	incl. in rate	incl. in rate	\$4,241.92
Laborer	Active	4.00	4.0	8	128.00	L	\$45.80	incl. in rate	incl. in rate	\$5,862.40
Grader. 180hp, 13' blade	Active	1.00	4.0	8	32.00	E	\$80.79	incl. in rate	incl. in rate	\$2,585.28
Dozer (235hp)(CATD7)	Active	1.00	2.0	8	16.00	E	\$165.11	incl. in rate	incl. in rate	\$2,641.76
	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active		0.0		16.00	E				\$0.00
	Active		0.0		32.00	E				\$0.00
	Active		0.0		16.00	E				\$0.00
					Labor Hours	224	TOTAL LABOR			\$11,584.96
					Equipment Hours	112	TOTAL EQUIPMENT			\$5,227.04

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS					
Labor Cost	\$11,584.96	Labor Burden @	49.7%	\$0.00	\$11,584.96
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00
Equipment Cost	\$5,227.04	Equipment Tax @	0.0%	\$0.00	\$5,227.04
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$16,812			\$0	\$16,812
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead @	15.0%				\$2,521.80
Installing Contractors Profit @	8.0%				\$1,344.96
GC Markup on Subs @	5.0%				\$0.00
		TOTAL MARKUP COSTS			\$3,866.76
General Contractors Insurance @	1.0%	on		\$20,678.76	\$207
Bond @	1.0%	on		\$20,678.76	\$207
Contingency @	0.0%	on		\$21,092.34	\$0
TOTAL COST for pay item					\$21,092

Additional Pay Item Notes :
 Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ strubs on site. Assumed Seeding, mechanical seeding, 215 lb/acre with crew B66. The amount and type of seed are calculated as 215 lbs per acre in total.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.156	Project	: IRONGATE						
Description	: Camp Creek - Concrete Total								
Quantity	: 110.00 CY								
Daily Production	: 110.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	CY per	: 126.5	Total Cost	: \$28,664	Unit Price Per CY	: \$261
Unit Price	: \$306.56 per CY	Probable Low Cost Parameter	: 93.5	Total Cost	: \$38,780	Unit Price Per CY	: \$353		
Total Cost	: \$33,722	Probable High Cost Parameter	: 93.5	Total Cost	: \$38,780	Unit Price Per CY	: \$353		

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	2.00	1.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate		\$740.32
Equipment Operator (medium)	Active	8.00	1.0	8	64.00	L	\$66.28	incl. in rate	incl. in rate		\$4,241.92
Steelworker	Active	6.00	1.0	8	48.00	L	\$65.52	incl. in rate	incl. in rate		\$3,144.96
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate		\$361.84
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate		\$921.44
Vibratory Hammer & Extractor	Active	3.00	1.0	8	24.00	E	\$94.34	incl. in rate	incl. in rate		\$2,264.16
Hydraulic Excavator (6.0cy)	Active	3.00	1.0	8	24.00	E	\$322.48	incl. in rate	incl. in rate		\$7,739.52
Loader, FE Rubber Tire (8.6cy)	Active	2.00	1.0	8	16.00	E	\$221.50	incl. in rate	incl. in rate		\$3,544.00
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate		\$1,786.24
					Labor Hours	152	TOTAL LABOR				\$9,410.48
					Equipment Hours	80	TOTAL EQUIPMENT				\$15,333.92

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS							
Labor Cost	\$9,410.48	Labor Burden @	49.7%	\$0.00		\$9,410.48	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00	
Equipment Cost	\$15,333.92	Equipment Tax @	0.0%	\$0.00		\$15,333.92	
Subcontractors	\$2,500.00					\$2,500.00	
DIRECT COST SUBTOTALS	\$27,244			\$0		\$27,244	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$24,744.40	\$3,711.66	
Installing Contractors Profit@	8.0%				\$24,744.40	\$1,979.55	
GC Markup on Subs @	5.0%				\$2,500.00	\$125.00	
						TOTAL MARKUP COSTS	\$5,816.21
General Contractors Insurance @	1.0%		on		\$33,060.61	\$331	
Bond @	1.0%		on		\$33,060.61	\$331	
Contingency @	0.0%		on		\$33,721.82	\$0	
TOTAL COST for pay item						\$33,722	

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.157	Project	: IRONGATE						
Description	: Camp Creek - 180'Lx16'Wx8'D Earth jetty to remove and/or regrade								
Quantity	: 855.00 CY								
Daily Production	: 200.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 4.3 Days	Estimator	: Mihaela Tomulescu	CY per	Total Cost	Unit Price Per CY			
Unit Price	: \$73.54 per CY	Probable Low Cost Parameter	230	\$53,445	\$63				
Total Cost	: \$62,876	Probable High Cost Parameter	170	\$72,307	\$85				

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	4.3	8	34.24	L	\$46.27	incl. in rate	incl. in rate		\$1,584.28
Equipment Operator (medium)	Active	3.00	4.3	8	102.72	L	\$66.28	incl. in rate	incl. in rate		\$6,808.28
Steelworker	Active	3.00	4.3	8	102.72	L	\$65.52	incl. in rate	incl. in rate		\$6,730.21
Electrician	Active	1.00	4.3	8	34.24	L	\$45.23	incl. in rate	incl. in rate		\$1,548.68
Truck Driver (heavy)	Active	2.00	4.3	8	68.48	L	\$57.59	incl. in rate	incl. in rate		\$3,943.76
Vibratory Hammer & Extractor	Active	1.00	4.3	8	34.24	E	\$94.34	incl. in rate	incl. in rate		\$3,230.20
Hydraulic Excavator (6.0cy)	Active	1.00	4.3	8	34.24	E	\$322.48	incl. in rate	incl. in rate		\$11,041.72
Loader, FE Rubber Tire (8.6cy)	Active	1.00	4.3	8	34.24	E	\$221.50	incl. in rate	incl. in rate		\$7,584.16
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	4.3	8	68.48	E	\$111.64	incl. in rate	incl. in rate		\$7,645.11
					Labor Hours	342.4	TOTAL LABOR				\$20,615.22
					Equipment Hours	171.2	TOTAL EQUIPMENT				\$29,501.18

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$20,615.22	Labor Burden @	49.7%	\$0.00		\$20,615.22
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$29,501.18	Equipment Tax @	0.0%	\$0.00		\$29,501.18
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$50,116			\$0	DIRECT COST SUBTOTALS	\$50,116
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$50,116.40	\$7,517.46
Installing Contractors Profit @	8.0%				\$50,116.40	\$4,009.31
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$11,526.77
General Contractors Insurance @	1.0%		on		\$61,643.18	\$616
Bond @	1.0%		on		\$61,643.18	\$616
Contingency @	0.0%		on		\$62,876.04	\$0
					TOTAL COST for pay item	\$62,876

Additional Pay Item Notes :

Based on RS.Means - Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9 and B34B - Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.158	Project	: IRONGATE						
Description	: Camp Creek - Well house 10'x16' concrete block building								
Quantity	: 160.00 SF								
Daily Production	: 160.00 SF per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days			Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF	
Unit Price	: \$72.74 per SF			Probable Low Cost Parameter	176	\$10,475	\$65		
Total Cost	: \$11,638			Probable High Cost Parameter	144	\$12,802	\$80		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Hydraulic Excavator (1.5cy)	Active	1.00	1.0	8	8.00	E	\$141.92	incl. in rate	incl. in rate	\$1,135.36
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate	\$1,048.32
					Labor Hours	72	TOTAL LABOR			\$3,964.80
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,921.60

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste disposal	1	LS		\$2,800.00	\$2,800.00	
					TOTAL SUBCONTRACTS	\$2,800.00

SUMMARY OF COSTS							
Labor Cost	\$3,964.80	Labor Burden @	49.7%	\$0.00		\$3,964.80	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00	
Equipment Cost	\$2,921.60	Equipment Tax @	0.0%	\$0.00		\$2,921.60	
Subcontractors	\$2,800.00					\$2,800.00	
DIRECT COST SUBTOTALS	\$9,686			\$0		\$9,686	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead @	15.0%				\$6,886.40	\$1,032.96	
Installing Contractors Profit @	8.0%				\$6,886.40	\$550.91	
GC Markup on Subs @	5.0%				\$2,800.00	\$140.00	
						TOTAL MARKUP COSTS	\$1,723.87
General Contractors Insurance @	1.0%		on		\$11,410.27	\$114	
Bond @	1.0%		on		\$11,410.27	\$114	
Contingency @	0.0%		on		\$11,638.48	\$0	
						TOTAL COST for pay item	\$11,638

Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000.
 The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot.
 Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 1 days, 8 hours per day @ \$350

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.161	Project	: IRONGATE						
Description	: Camp Creek - Concrete block double toilet bldg 10'x16'								
Quantity	: 160.00 SF								
Daily Production	: 160.00 SF per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days			Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF	
Unit Price	: \$72.74 per SF			Probable Low Cost Parameter	176	\$10,475	\$65		
Total Cost	: \$11,638			Probable High Cost Parameter	144	\$12,802	\$80		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Truck Driver (heavy)	Active	2.00	1.0	8	16.00	L	\$57.59	incl. in rate	incl. in rate	\$921.44
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	1.0	8	16.00	E	\$111.64	incl. in rate	incl. in rate	\$1,786.24
Hydraulic Excavator (1.5cy)	Active	1.00	1.0	8	8.00	E	\$141.92	incl. in rate	incl. in rate	\$1,135.36
Steelworker	Active	2.00	1.0	8	16.00	L	\$65.52	incl. in rate	incl. in rate	\$1,048.32
					Labor Hours	72	TOTAL LABOR			\$3,964.80
					Equipment Hours	24	TOTAL EQUIPMENT			\$2,921.60

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Hazardous waste disposal	1	LS		\$2,800.00	\$2,800.00
TOTAL SUBCONTRACTS					\$2,800.00

SUMMARY OF COSTS						
Labor Cost	\$3,964.80	Labor Burden @	49.7%	\$0.00		\$3,964.80
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,921.60	Equipment Tax @	0.0%	\$0.00		\$2,921.60
Subcontractors	\$2,800.00					\$2,800.00
DIRECT COST SUBTOTALS	\$9,686			\$0		\$9,686
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$6,886.40	\$1,032.96
Installing Contractors Profit @	8.0%				\$6,886.40	\$550.91
GC Markup on Subs @	5.0%				\$2,800.00	\$140.00
TOTAL MARKUP COSTS						\$1,723.87
General Contractors Insurance @	1.0%		on		\$11,410.27	\$114
Bond @	1.0%		on		\$11,410.27	\$114
Contingency @	0.0%		on		\$11,638.48	\$0
TOTAL COST for pay item						\$11,638

Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000.
 The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot.
 Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 2 days, 8 hours per day @ \$350

PAY ITEM INFORMATION											
PAY ITEM NUMBER	:	4.162	Project		:	IRONGATE					
Description	:	Camp Creek - Dump stations and approx. 2000 gal buried									
Quantity	:	1.00	EA								
Daily Production	:	1.50	EA per	8	hour shift	Project #	:	Klamath Dams Removal			
Work Days	:	0.7	Days			Estimator	:	Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA
Unit Price	:	\$6,596.62 per EA		Probable Low Cost Parameter	:	1.725	\$5,607	\$5,607.12			
Total Cost	:	\$6,597		Probable High Cost Parameter	:	1.2	\$7,916	\$7,915.94			

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Labor Foreman	Active	1.00	0.7	8	5.60	L	\$48.27	\$0.00		\$270.31
Vibratory Hammer & Extractor	Active	1.00	0.7	8	5.60	E	\$94.34	\$94.34		\$528.30
Backhoe Loader (91hp)	Active	1.00	0.7	8	5.60	E	\$40.35	\$40.35		\$225.96
Equipment Operator (medium)	Active	2.00	0.7	8	11.20	L	\$66.28	\$0.00		\$742.34
Truck Driver (heavy)	Active	2.00	0.7	8	11.20	L	\$57.59	\$0.00		\$645.01
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.7	8	11.20	E	\$111.64	\$111.64		\$1,250.37
Electrician	Active	1.00	0.7	8	5.60	L	\$45.23	\$0.00		\$253.29
Laborer	Active	4.00	0.7	8	22.40	L	\$45.80	\$0.00		\$1,025.92
					Labor Hours	56	TOTAL LABOR		\$2,936.86	
					Equipment Hours	22.4	TOTAL EQUIPMENT		\$2,004.63	

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
Consumables 10% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$293.69	\$293.69
TOTAL MATERIAL						\$293.69

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,936.86	Labor Burden @	49.7%	\$0.00		\$2,936.86
Material Cost	\$293.69	Material Tax @	7.8%	\$22.76		\$316.45
Equipment Cost	\$2,004.63	Equipment Tax @	0.0%	\$0.00		\$2,004.63
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$5,235			\$23	DIRECT COST SUBTOTALS	\$5,258
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$5,257.94	\$788.69
Installing Contractors Profit @	8.0%				\$5,257.94	\$420.64
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,209.33
General Contractors Insurance @	1.0%	on			\$6,467.27	\$65
Bond @	1.0%	on			\$6,467.27	\$65
Contingency @	0.0%	on			\$6,596.62	\$0
						TOTAL COST for pay item
						\$6,597

Additional Pay Item Notes :

Assumed the process dumping stations and removing 2000 gal buried concrete tank is done in around 1/2 day by crew formed of 1 forman, 4 laborers and 2 equipment operators (Backhoe loader and Vibratory hammer). We 2 trucks for hauling and disposal.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 4.163	Project	: IRONGATE								
Description	: Camp Creek - Power poles and lines										
Quantity	: 3.00 EA										
Daily Production	: 2.00 EA per	8	hour shift								
Work Days	: 1.5 Days										
Unit Price	: \$1,818.16 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	2.3	Total Cost	\$4,636	Unit Price Per EA	\$1,545
Total Cost	: \$5,454	Probable Low Cost Parameter	1.6	Probable High Cost Parameter	2.3	Total Cost	\$6,545	Unit Price Per EA	\$2,182		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.5	8	12.00	L	\$46.27	incl. in rate	incl. in rate	\$555.24
Electrician	Active	1.00	1.5	8	12.00	L	\$45.23	incl. in rate	incl. in rate	\$542.76
Hydraulic Crane (17tn)	Active	1.00	1.0	8	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Truck, Flatbed (4x4, 10,000 gww)	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Vibratory Hammer & Extractor	Active	1.00	1.0	8	8.00	E	\$94.34	incl. in rate	incl. in rate	\$754.72
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Utility, with Man-Basket	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
					Labor Hours	48	TOTAL LABOR			\$2,291.52
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,917.28

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$114.58	\$114.58
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	3.00	CY	1.000	3.00	\$4.74	\$14.22
TOTAL MATERIAL						\$128.80

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,291.52	Labor Burden @	49.7%	\$0.00		\$2,291.52
Material Cost	\$128.80	Material Tax @	7.8%	\$9.98		\$138.78
Equipment Cost	\$1,917.28	Equipment Tax @	0.0%	\$0.00		\$1,917.28
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$4,338			\$10	DIRECT COST SUBTOTALS	\$4,348
Installing Contractors Overhead @	15.0%	Crew				\$652.14
Installing Contractors Profit @	8.0%	Material				\$347.81
GC Markup on Subs @	5.0%	Subs				\$0.00
TOTAL MARKUP COSTS						\$999.94
General Contractors Insurance @	1.0%	on				\$53
Bond @	1.0%	on				\$53
Contingency @	0.0%	on				\$0
TOTAL COST for pay item						\$5,454

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Foreman and 1 Electrician, 1 Crane). Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation and helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.170	Project	: IRONGATE						
Description	: Dutch Creek - 50'4'3" Dock Concrete Abutment								
Quantity	: 22.00 CY								
Daily Production	: 148.00 CY per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 0.2 Days	Estimator	: Mihaela Tomulescu	CY per	162.8	Total Cost	\$6,601	Unit Price Per CY	\$300
Unit Price	: \$333.37 per CY	Probable Low Cost Parameter		133.2	\$8,068	\$367			
Total Cost	: \$7,334	Probable High Cost Parameter							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	0.2	8	2.40	L	\$46.27	incl. in rate	incl. in rate	\$111.05
Equipment Operator (medium)	Active	8.00	0.2	8	9.60	L	\$66.28	incl. in rate	incl. in rate	\$636.29
Steelworker	Active	6.00	0.2	8	7.20	L	\$65.52	incl. in rate	incl. in rate	\$471.74
Electrician	Active	1.00	0.2	8	1.20	L	\$45.23	incl. in rate	incl. in rate	\$54.28
Truck Driver (heavy)	Active	2.00	0.2	8	2.40	L	\$57.59	incl. in rate	incl. in rate	\$138.22
Vibratory Hammer & Extractor	Active	3.00	0.2	8	3.60	E	\$94.34	incl. in rate	incl. in rate	\$339.62
Hydraulic Excavator (6.0cy)	Active	3.00	0.2	8	3.60	E	\$322.48	incl. in rate	incl. in rate	\$1,160.93
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.2	8	2.40	E	\$221.50	incl. in rate	incl. in rate	\$531.60
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.2	8	2.40	E	\$111.64	incl. in rate	incl. in rate	\$267.94
					Labor Hours	22.8	TOTAL LABOR			\$1,411.57
					Equipment Hours	12	TOTAL EQUIPMENT			\$2,300.09

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS						
Labor Cost	\$1,411.57	Labor Burden @	49.7%	\$0.00		\$1,411.57
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,300.09	Equipment Tax @	0.0%	\$0.00		\$2,300.09
Subcontractors	\$2,500.00					\$2,500.00
DIRECT COST SUBTOTALS	\$6,212			\$0		\$6,212
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$3,711.66	\$556.75
Installing Contractors Profit @	8.0%				\$3,711.66	\$296.93
GC Markup on Subs @	5.0%				\$2,500.00	\$125.00
TOTAL MARKUP COSTS						\$978.68
General Contractors Insurance @	1.0%		on		\$7,190.34	\$72
Bond @	1.0%		on		\$7,190.34	\$72
Contingency @	0.0%		on		\$7,334.15	\$0
TOTAL COST for pay item						\$7,334

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	4.172				Project :	IRONGATE				
Description :	Mirror Cove - Concrete Total									
Quantity :	89.00 CY									
Daily Production :	150.00 CY per 8 hour shift				Project # :	Klamath Dams Removal				
Work Days :	0.6 Days				Estimator :	Mihaela Tomulescu		CY per	Total Cost	Unit Price Per CY
Unit Price :	\$235.88 per CY				Probable Low Cost Parameter	165		\$18,894	\$212	
Total Cost :	\$20,994				Probable High Cost Parameter	135		\$23,093	\$259	

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	0.6	8	9.44	L	\$46.27	incl. in rate	incl. in rate	\$436.79
Equipment Operator (medium)	Active	8.00	0.6	8	37.76	L	\$66.28	incl. in rate	incl. in rate	\$2,502.73
Steelworker	Active	6.00	0.6	8	28.32	L	\$65.52	incl. in rate	incl. in rate	\$1,855.53
Electrician	Active	1.00	0.6	8	4.72	L	\$45.23	incl. in rate	incl. in rate	\$213.49
Truck Driver (heavy)	Active	2.00	0.6	8	9.44	L	\$57.59	incl. in rate	incl. in rate	\$543.65
Vibratory Hammer & Extractor	Active	3.00	0.6	8	14.16	E	\$94.34	incl. in rate	incl. in rate	\$1,335.85
Hydraulic Excavator (6.0cy)	Active	3.00	0.6	8	14.16	E	\$322.48	incl. in rate	incl. in rate	\$4,566.32
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.6	8	9.44	E	\$221.50	incl. in rate	incl. in rate	\$2,090.96
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.6	8	9.44	E	\$111.64	incl. in rate	incl. in rate	\$1,053.88
					Labor Hours	89.68	TOTAL LABOR			\$5,552.18
					Equipment Hours	47.2	TOTAL EQUIPMENT			\$9,047.01

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Concrete Saw Cutting	1	EA	Cost per Mob	\$2,500.00	\$2,500.00
TOTAL SUBCONTRACTS					\$2,500.00

SUMMARY OF COSTS					
Labor Cost	\$5,552.18	Labor Burden @	49.7%	\$0.00	\$5,552.18
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00
Equipment Cost	\$9,047.01	Equipment Tax @	0.0%	\$0.00	\$9,047.01
Subcontractors	\$2,500.00				\$2,500.00
DIRECT COST SUBTOTALS	\$17,099			\$0	\$17,099
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$14,599.20
Installing Contractors Profit@	8.0%				\$14,599.20
GC Markup on Subs @	5.0%				\$2,500.00
TOTAL MARKUP COSTS					\$3,482.82
General Contractors Insurance @	1.0%		on		\$20,582.01
Bond @	1.0%		on		\$20,582.01
Contingency @	0.0%		on		\$20,993.65
TOTAL COST for pay item					\$20,994

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.173	Project	: IRONGATE						
Description	: Mirror Cove - 10'x16' Toilet Vault								
Quantity	: 160.00 SF								
Daily Production	: 160.00 SF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF			
Unit Price	: \$96.23 per SF	Probable Low Cost Parameter	176	\$13,857	\$87				
Total Cost	: \$15,397	Probable High Cost Parameter	144	\$16,937	\$106				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Equipment Operator (medium)	Active	3.00	1.0	8	24.00	L	\$66.28	incl. in rate	incl. in rate	\$1,590.72
Laborer	Active	3.00	1.0	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Vibratory Hammer & Extractor	Active	1.00	1.0	8	8.00	E	\$94.34	incl. in rate	incl. in rate	\$754.72
Hydraulic Excavator (6.0cy)	Active	1.00	1.0	8	8.00	E	\$322.48	incl. in rate	incl. in rate	\$2,579.84
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
					Labor Hours	72	TOTAL LABOR			\$3,882.64
					Equipment Hours	32	TOTAL EQUIPMENT			\$5,999.68

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Hazardous waste disposal	1	LS		\$2,800.00	\$2,800.00	
					TOTAL SUBCONTRACTS	\$2,800.00

SUMMARY OF COSTS						
Labor Cost	\$3,882.64	Labor Burden @	49.7%	\$0.00		\$3,882.64
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$5,999.68	Equipment Tax @	0.0%	\$0.00		\$5,999.68
Subcontractors	\$2,800.00					\$2,800.00
DIRECT COST SUBTOTALS	\$12,682			\$0	DIRECT COST SUBTOTALS	\$12,682
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$9,882.32	\$1,482.35
Installing Contractors Profit @	8.0%				\$9,882.32	\$790.59
GC Markup on Subs @	5.0%				\$2,800.00	\$140.00
					TOTAL MARKUP COSTS	\$2,412.93
General Contractors Insurance @	1.0%		on		\$15,095.25	\$151
Bond @	1.0%		on		\$15,095.25	\$151
Contingency @	0.0%		on		\$15,397.16	\$0
					TOTAL COST for pay item	\$15,397

Additional Pay Item Notes :

The price of removing a building is based on several factors including the size of the space, structural additions on the property, required permits and waste material clearing. A complete demo of a house and its foundation or basement can cost much as \$25,000.

The cost of removal can vary based on the area lived in and the typical wages in the region. Some estimates put a price tag of \$18,000 on bulldozing a 1,500 square-foot house, while others show that the average estimate is around \$4-\$15 per square foot.

Hazardous waste can greatly impact the cost of clearing debris. Many older homes contain asbestos, and there are special fees and considerations associated with its removal and disposal. The national average cost to eliminate asbestos is about \$200-\$700 per hour. We take in consideration this aspect in our estimate assuming 3 Laborers working 1 days, 8 hours per day @ \$350

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.174	Project	: IRONGATE						
Description	: Mirror Cove - 2, 30'x5' Composite Gangplanks w/ aluminum								
Quantity	: 300.00 SF								
Daily Production	: 300.00 SF per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	SF per	Total Cost	Unit Price Per SF			
Unit Price	: \$21.43 per SF	Probable Low Cost Parameter	330	\$5,787	\$19				
Total Cost	: \$6,430	Probable High Cost Parameter	270	\$7,073	\$24				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Laborer	Active	3.00	1.0	8	24.00	L	\$45.80	incl. in rate	incl. in rate	\$1,099.20
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	1.0	8	8.00	E	\$111.64	incl. in rate	incl. in rate	\$893.12
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Loader, FE Rubber Tire (8.6cy)	Active	1.00	1.0	8	8.00	E	\$221.50	incl. in rate	incl. in rate	\$1,772.00
					Labor Hours	48	TOTAL LABOR			\$2,460.32
					Equipment Hours	16	TOTAL EQUIPMENT			\$2,665.12

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						TOTAL MATERIAL	\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,460.32	Labor Burden @	49.7%	\$0.00		\$2,460.32
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$2,665.12	Equipment Tax @	0.0%	\$0.00		\$2,665.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$5,125			\$0	DIRECT COST SUBTOTALS	\$5,125
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$5,125.44	\$768.82
Installing Contractors Profit @	8.0%				\$5,125.44	\$410.04
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,178.85
General Contractors Insurance @	1.0%		on		\$6,304.29	\$63
Bond @	1.0%		on		\$6,304.29	\$63
Contingency @	0.0%		on		\$6,430.38	\$0
						TOTAL COST for pay item
						\$6,430

Additional Pay Item Notes :

The cost of removal can vary based on the area lived in and the typical wages in the region. We assumed that we need 1 Forman, 3 Laboreres and 1 Loader to load the rubbish in the truck in 1/2 day.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.177	Project :	IRONGATE						
Description :	Mirror Cove - Regrade site	Project # :	Klamath Dams Removal						
Quantity :	3.00 AC	Estimator :	Mihaela Tomulescu						
Daily Production :	0.50 AC per	AC per	0.575	Total Cost	\$31,907	Unit Price Per AC	\$10,636		
Work Days :	6.0 Days	Probable Low Cost Parameter	0.425	\$43,169	\$14,390				
Unit Price :	\$12,512.61 per AC	Probable High Cost Parameter	0.425	\$43,169	\$14,390				
Total Cost :	\$37,538								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	6.0	8	48.00	L	\$46.27	incl. in rate	incl. in rate	\$2,220.96
Equipment Operator (medium)	Active	2.00	6.0	8	96.00	L	\$66.28	incl. in rate	incl. in rate	\$6,362.88
Laborer	Active	4.00	6.0	8	192.00	L	\$45.80	incl. in rate	incl. in rate	\$8,793.60
Grader. 180hp, 13' blade	Active	1.00	6.0	8	48.00	E	\$80.79	incl. in rate	incl. in rate	\$3,877.92
Dozer (235hp)(CATD7)	Active	1.00	2.0	8	16.00	E	\$165.11	incl. in rate	incl. in rate	\$2,641.76
	Active		2.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active		2.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Brush Chipper	Active	1.00	0.0	8	16.00	E	\$50.55			\$808.80
Crawler Loader 3CY Bucket	Active	1.00	0.0	8	32.00	E	\$160.13			\$5,124.16
Chain Saw, Gas, 36" Long	Active	2.00	0.0	8	16.00	E	\$5.63			\$90.08
					Labor Hours	336	TOTAL LABOR			\$17,377.44
					Equipment Hours	128	TOTAL EQUIPMENT			\$12,542.72

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$17,377.44	Labor Burden @	49.7%	\$0.00		\$17,377.44
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$12,542.72	Equipment Tax @	0.0%	\$0.00		\$12,542.72
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$29,920			\$0	DIRECT COST SUBTOTALS	\$29,920
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$29,920.16	\$4,488.02
Installing Contractors Profit @	8.0%				\$29,920.16	\$2,393.61
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$6,881.64
General Contractors Insurance @	1.0%		on		\$36,801.80	\$368
Bond @	1.0%		on		\$36,801.80	\$368
Contingency @	0.0%		on		\$37,537.83	\$0
					TOTAL COST for pay item	\$37,538

Additional Pay Item Notes :
 Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ strubs on site. Assumed Seeding, mechanical seeding, 215 lb/acre with crew B66. The amount and type of seed are assumed and calculated as 215 lbs per acre in total.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.181	Project	: IRONGATE						
Description	: Overlook Point - Regrade steep access road and site to natural contours								
Quantity	: 0.50 AC								
Daily Production	: 0.50 AC per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days								
Unit Price	: \$30,630.71 per AC	Estimator	: Mihaela Tomulescu	AC per	: 0.575	Total Cost	: \$13,018	Unit Price Per AC	: \$26,036
Total Cost	: \$15,315	Probable Low Cost Parameter	: 0.425	Probable High Cost Parameter	: 0.425	Total Cost	: \$17,613	Unit Price Per AC	: \$35,225

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	1.0	8	8.00	L	\$46.27	incl. in rate	incl. in rate	\$370.16
Equipment Operator (medium)	Active	2.00	1.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Laborer	Active	4.00	1.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Grader. 180hp, 13' blade	Active	1.00	1.0	8	8.00	E	\$80.79	incl. in rate	incl. in rate	\$646.32
Dozer (235hp)(CATD7)	Active	1.00	2.0	8	16.00	E	\$165.11	incl. in rate	incl. in rate	\$2,641.76
	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
	Active	1.00	2.0	8	16.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Brush Chipper	Active	1.00	0.0	8	16.00	E	\$50.55			\$808.80
Crawler Loader 3CY Bucket	Active	1.00	0.0	8	32.00	E	\$160.13			\$5,124.16
Chain Saw, Gas, 36" Long	Active	2.00	0.0	8	16.00	E	\$5.63			\$90.08
					Labor Hours	56	TOTAL LABOR			\$2,896.24
					Equipment Hours	88	TOTAL EQUIPMENT			\$9,311.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Idaho fescue (Festuca idahoensis)		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs PLS	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		lbs	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
		ea	1.000	0.00		\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,896.24	Labor Burden @	49.7%	\$0.00	\$2,896.24	
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00	
Equipment Cost	\$9,311.12	Equipment Tax @	0.0%	\$0.00	\$9,311.12	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$12,207			\$0	\$12,207	
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$1,831.10	
Installing Contractors Profit @	8.0%				\$976.59	
GC Markup on Subs @	5.0%				\$0.00	
					TOTAL MARKUP COSTS	\$2,807.69
General Contractors Insurance @	1.0%	on		\$15,015.05	\$150	
Bond @	1.0%	on		\$15,015.05	\$150	
Contingency @	0.0%	on		\$15,315.35	\$0	
					TOTAL COST for pay item	\$15,315

Additional Pay Item Notes :
 Crew is based off clear and grub crew B7 off of RSM means. Production for the crew in .69 ac per day to clear and process the trees/ stubs on site. Assumed Seeding, mechanical seeding, 215 lb/acre with crew B66. The amount and type of seed are calculated as 215 lbs per acre in total.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	4.182			Project :	IRONGATE				
Description :	Long Gulch - 80'x25x4" Concrete boat ramp to be removed								
Quantity :	25.00 CY			Project # :	Klamath Dams Removal				
Daily Production :	100.00	CY per	8	Estimator :	Mihaela Tomulescu		CY per	Total Cost	Unit Price Per CY
Work Days :	0.3 Days			Probable Low Cost Parameter	110		\$6,985	\$279	
Unit Price :	\$310.44 per CY			Probable High Cost Parameter	90		\$8,537	\$341	
Total Cost :	\$7,761								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	0.3	8	4.00	L	\$46.27	incl. in rate	incl. in rate	\$185.08
Equipment Operator (medium)	Active	8.00	0.3	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Steelworker	Active	6.00	0.3	8	12.00	L	\$65.52	incl. in rate	incl. in rate	\$786.24
Electrician	Active	1.00	0.3	8	2.00	L	\$45.23	incl. in rate	incl. in rate	\$90.46
Truck Driver (heavy)	Active	2.00	0.3	8	4.00	L	\$57.59	incl. in rate	incl. in rate	\$230.36
Vibratory Hammer & Extractor	Active	3.00	0.3	8	6.00	E	\$94.34	incl. in rate	incl. in rate	\$566.04
Hydraulic Excavator (6.0cy)	Active	3.00	0.3	8	6.00	E	\$322.48	incl. in rate	incl. in rate	\$1,934.88
Loader, FE Rubber Tire (8.6cy)	Active	2.00	0.3	8	4.00	E	\$221.50	incl. in rate	incl. in rate	\$886.00
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.3	8	4.00	E	\$111.64	incl. in rate	incl. in rate	\$446.56
Labor Hours					38	TOTAL LABOR				\$2,352.62
Equipment Hours					20	TOTAL EQUIPMENT				\$3,833.48

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						TOTAL MATERIAL
						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					TOTAL SUBCONTRACTS
					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,352.62	Labor Burden @	49.7%	\$0.00		\$2,352.62
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$3,833.48	Equipment Tax @	0.0%	\$0.00		\$3,833.48
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$6,186			\$0	DIRECT COST SUBTOTALS	\$6,186
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$6,186.10	\$927.92
Installing Contractors Profit@	8.0%				\$6,186.10	\$494.89
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$1,422.80
General Contractors Insurance @	1.0%		on		\$7,608.90	\$76
Bond @	1.0%		on		\$7,608.90	\$76
Contingency @	0.0%		on		\$7,761.08	\$0
					TOTAL COST for pay item	\$7,761

Additional Pay Item Notes :

Based on RS.Means - "Selective concrete demolition, reinforcing 1% - 2% of cross-sectional area, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping, 650 CY - work done with crew B9" and "Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 50 MPH, excludes loading equipment Crew B34B"

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 4.185	Project	: IRONGATE						
Description	: Concrete Lining Installation for Diversion Tunnel								
Quantity	: 1.00 LS								
Daily Production	: 0.04 LS per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 25.0 Days	Estimator	: Mihaela Tomulescu	LS per	: 0.044	Total Cost	: \$1,076,627	Unit Price Per LS	: \$1,076,627
Unit Price	: \$1,196,251.74 per LS	Probable Low Cost Parameter		Probable High Cost Parameter	: 0.036	Total Cost	: \$1,315,877	Unit Price Per LS	: \$1,315,877
Total Cost	: \$1,196,252								

CREW COSTS												
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment		
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
	Active	1.00	25.0	8	200.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00		
Labor Hours					0						TOTAL LABOR	\$0.00
Equipment Hours					0						TOTAL EQUIPMENT	\$0.00

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
TOTAL MATERIAL						\$0.00	

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Tunnel Lining (Shotcrete with Reinforcement)	1.00	LS	RSMs (2780 CY @ \$401.78/CY)	\$1,116,948.40	\$1,116,948.40
TOTAL SUBCONTRACTS					\$1,116,948.40

SUMMARY OF COSTS						
Labor Cost	\$0.00	Labor Burden @	49.7%	\$0.00		\$0.00
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00		\$0.00
Subcontractors	\$1,116,948.40					\$1,116,948.40
DIRECT COST SUBTOTALS	\$1,116,948			\$0	DIRECT COST SUBTOTALS	\$1,116,948
Installing Contractors Overhead @	15.0%	Crew				\$0.00
Installing Contractors Profit @	8.0%	Material				\$0.00
GC Markup on Subs @	5.0%	Subs				\$55,847.42
					TOTAL MARKUP COSTS	\$55,847.42
General Contractors Insurance @	1.0%		on	\$1,172,795.82		\$11,728
Bond @	1.0%		on	\$1,172,795.82		\$11,728
Contingency @	0.0%		on	\$1,196,251.74		\$0
TOTAL COST for pay item						\$1,196,252

Additional Pay Item Notes :

Subcontractor will install reinforcement and shotcrete concrete lining in diversion tunnel.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.001	Project	: JC BOYLE						
Description	: Remove (incl foundation) and Save Transformers 230KV								
Quantity	: 2.00 EA								
Daily Production	: 1.79 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 1.1 Days	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Unit Price	: \$2,688.70 per EA	Probable Low Cost Parameter		1.969	\$4,840	\$2,419.83			
Total Cost	: \$5,377	Probable High Cost Parameter		1.5215	\$6,184	\$3,092.00			

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.1	8	8.96	L	\$47.23	incl. in rate	incl. in rate	\$423.18
Electrician	Active	1.00	1.1	8	8.96	L	\$45.23	incl. in rate	incl. in rate	\$405.26
Hydraulic Crane (50tn)	Active	1.00	1.1	8	8.96	E	\$134.32	incl. in rate	incl. in rate	\$1,203.51
Equipment Operator (crane)	Active	1.00	1.1	8	8.96	L	\$68.41	incl. in rate	incl. in rate	\$612.95
Vibratory Hammer & Extractor	Active	1.00	1.1	8	8.96	E	\$94.34	incl. in rate	incl. in rate	\$845.29
Truck, Utility, with Man-Basket	Active	1.00	1.1	8	8.96	E	\$31.90	incl. in rate	incl. in rate	\$285.82
Laborer	Active	1.00	1.1	8	8.96	L	\$45.80	incl. in rate	incl. in rate	\$410.37
					Labor Hours	35.84	TOTAL LABOR			\$1,851.76
					Equipment Hours	26.88	TOTAL EQUIPMENT			\$2,334.62

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$92.59	\$92.59		
							TOTAL MATERIAL	\$92.59

SUBCONTRACT COSTS								
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount			
							TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS								
Labor Cost	\$1,851.76	Labor Burden @	49.7%	\$0.00			\$1,851.76	
Material Cost	\$92.59	Material Tax @	7.8%	\$7.18			\$99.76	
Equipment Cost	\$2,334.62	Equipment Tax @	0.0%	\$0.00			\$2,334.62	
Subcontractors	\$0.00						\$0.00	
DIRECT COST SUBTOTALS	\$4,279	Crew	Material	Subs	Cost Basis	DIRECT COST SUBTOTALS	\$4,286	
Installing Contractors Overhead @	15.0%				\$4,286.14		\$642.92	
Installing Contractors Profit @	8.0%				\$4,286.14		\$342.89	
GC Markup on Subs @	5.0%				\$0.00		\$0.00	
							TOTAL MARKUP COSTS	\$985.81
General Contractors Insurance @	1.0%	on			\$5,271.96		\$53	
Bond @	1.0%	on			\$5,271.96		\$53	
Contingency @	0.0%	on			\$5,377.40		\$0	
							TOTAL COST for pay item	\$5,377

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane to load the transformer in the truck for disposal. In normal circumstances, decontaminated residual components could be accepted at landfill sites.

PAY ITEM COST DETAIL WORKSHEET

5.002 Remove (incl foundation) and Save Power Circuit Breakers 230KV

PAY ITEM INFORMATION									
PAY ITEM NUMBER	5.002			Project	JC BOYLE				
Description	Remove (incl foundation) and Save Power Circuit Breakers 230KV								
Quantity	2.00 EA			Project #	Klamath Dams Removal				
Daily Production	1.00 EA per 8 hour shift			Estimator	Mihaela Tomulescu				
Work Days	2.0 Days			Probable Low Cost Parameter	EA per	Total Cost	Unit Price Per EA		
Unit Price	\$3,640.83 per EA			Probable High Cost Parameter	1.05	\$6,918	\$3,458.79		
Total Cost	\$7,282				0.9	\$8,010	\$4,004.91		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate	\$740.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Hydraulic Crane (35tn)	Active	1.00	2.0	8	16.00	E	\$116.30	incl. in rate	incl. in rate	\$1,860.80
Equipment Operator (medium)	Active	1.00	2.0	8	16.00	L	\$66.28	incl. in rate	incl. in rate	\$1,060.48
Laborer	Active	1.00	2.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	2.0	8	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Labor Hours					64	TOTAL LABOR				\$3,257.28
Equipment Hours					32	TOTAL EQUIPMENT				\$2,371.20

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$162.86	\$162.86	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
TOTAL MATERIAL						\$162.86	

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
						\$0.00
						\$0.00
						\$0.00
						\$0.00
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS							
Labor Cost	\$3,257.28	Labor Burden @	49.7%	\$0.00		\$3,257.28	
Material Cost	\$162.86	Material Tax @	7.8%	\$12.62		\$175.49	
Equipment Cost	\$2,371.20	Equipment Tax @	0.0%	\$0.00		\$2,371.20	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$5,791			\$13	DIRECT COST SUBTOTALS	\$5,804	
		Crew	Material	Subs	Cost Basis		
Installing Contractors Overhead@	15.0%				\$5,803.97	\$870.59	
Installing Contractors Profit@	8.0%				\$5,803.97	\$464.32	
GC Markup on Subs @	5.0%				\$0.00	\$0.00	
						TOTAL MARKUP COSTS	
						\$1,334.91	
General Contractors Insurance @	1.0%		on		\$7,138.88	\$71	
Bond @	1.0%		on		\$7,138.88	\$71	
Contingency @	0.0%		on		\$7,281.66	\$0	
						TOTAL COST for pay item	
						\$7,282	

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers in the truck for saving it in the designated place.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 5.003	Project	: JC BOYLE								
Description	: Substation Tie Structure 230KV										
Quantity	: 1.00 EA										
Daily Production	: 0.25 EA per	8	hour shift								
Work Days	: 4.0 Days										
Unit Price	: \$41,482.05 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	: 0.275	Total Cost	: \$37,333.84	Unit Price Per EA	: \$37,333.84
Total Cost	: \$41,482	Probable Low Cost Parameter	: 0.2125	Probable High Cost Parameter	: 0.2125	Total Cost	: \$47,704	Unit Price Per EA	: \$47,704.36		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	4.0	8	64.00	L	\$46.27	incl. in rate	incl. in rate	\$2,961.28
Electrician	Active	4.00	4.0	8	128.00	L	\$45.23	incl. in rate	incl. in rate	\$5,789.44
Hydraulic Crane (35tn)	Active	2.00	4.0	8	64.00	E	\$116.30	incl. in rate	incl. in rate	\$7,443.20
Equipment Operator (medium)	Active	2.00	4.0	8	64.00	L	\$66.28	incl. in rate	incl. in rate	\$4,241.92
Truck, Utility, with Man-Basket	Active	2.00	4.0	8	64.00	E	\$31.90	incl. in rate	incl. in rate	\$2,041.60
Truck, Pickup (4x4, 3/4tn)	Active	2.00	4.0	8	64.00	E	\$16.94	incl. in rate	incl. in rate	\$1,084.16
					Labor Hours	256	TOTAL LABOR			\$12,992.64
					Equipment Hours	192	TOTAL EQUIPMENT			\$10,568.96

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$649.63	\$649.63
Ceramis Insulators	96.00	Bells	1.000	96.00	\$18.00	\$1,728.00
V-String Hardware	3.00	EA	1.000	3.00	\$230.00	\$690.00
Grounding	1.00	EA	1.000	1.00	\$150.00	\$150.00
TOTAL MATERIAL						\$3,217.63

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable tensioning rig, for high voltage line work - Rent per day	2.00	days		\$535.00	\$1,070.00
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days		\$3,000.00	\$6,000.00
TOTAL SUBCONTRACTS					\$7,070.00

SUMMARY OF COSTS					
Labor Cost	\$12,992.64	Labor Burden @	49.7%	\$0.00	\$12,992.64
Material Cost	\$3,217.63	Material Tax @	7.8%	\$249.37	\$3,467.00
Equipment Cost	\$10,568.96	Equipment Tax @	0.0%	\$0.00	\$10,568.96
Subcontractors	\$7,070.00				\$7,070.00
DIRECT COST SUBTOTALS	\$33,849			\$249	\$34,099
Installing Contractors Overhead@	15.0%	Crew	Material	Subs	Cost Basis
Installing Contractors Profit@	8.0%				\$27,028.60
GC Markup on Subs @	5.0%				\$27,028.60
					\$353.50
TOTAL MARKUP COSTS					\$6,570.08
General Contractors Insurance @	1.0%	on			\$40,668.68
Bond @	1.0%	on			\$40,668.68
Contingency @	0.0%	on			\$0
TOTAL COST for pay item					\$41,482

Additional Pay Item Notes :
 Production is based off of RSMs using 2 Crew formed of 1 Foreman, 1 Electrician, 1 Crane.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	5.004			Project	JC BOYLE				
Description	Remove Chain Link Fence			Project #	Klamath Dams Removal				
Quantity	601.00 LF			Estimator	Mihaela Tomulescu		LF per	Total Cost	Unit Price Per LF
Daily Production	300.00	LF per	8	hour shift	Probable Low Cost Parameter	330	\$9,575	\$15.93	
Work Days	2.0 Days			Probable High Cost Parameter	270	\$11,703	\$19.47		
Unit Price	\$17.70 per LF								
Total Cost	\$10,639								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Truck Driver (light)	Active	1.00	2.0	8	16.00	L	\$56.29	incl. in rate	incl. in rate	\$900.64
Hydraulic Excavator (2.5cy)	Active	1.00	2.0	8	16.00	E	\$203.63	incl. in rate	incl. in rate	\$3,258.08
Equipment Operator (light)	Active	1.00	2.0	8	16.00	L	\$64.90	incl. in rate	incl. in rate	\$1,038.40
Truck, Flatbed (4x4, 10,000 gvw)	Active	2.00	2.0	8	32.00	E	\$31.90	incl. in rate	incl. in rate	\$1,020.80
					Labor Hours	64	TOTAL LABOR			\$3,404.64
					Equipment Hours	48	TOTAL EQUIPMENT			\$4,278.88

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$170.23	\$170.23
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	120.00	CY	1.000	120.00	\$4.74	\$568.80
TOTAL MATERIAL						\$739.03

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,404.64	Labor Burden @	49.7%	\$0.00		\$3,404.64
Material Cost	\$739.03	Material Tax @	7.8%	\$57.27		\$796.31
Equipment Cost	\$4,278.88	Equipment Tax @	0.0%	\$0.00		\$4,278.88
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$8,423			\$57	DIRECT COST SUBTOTALS	\$8,480
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$8,479.83	\$1,271.97
Installing Contractors Profit@	8.0%				\$8,479.83	\$678.39
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$1,950.36
General Contractors Insurance @	1.0%		on		\$10,430.19	\$104
Bond @	1.0%		on		\$10,430.19	\$104
Contingency @	0.0%		on		\$10,638.79	\$0
TOTAL COST for pay item						\$10,639

Additional Pay Item Notes :

Production is based off of RSMs using Crew B80c, 2 laborers and 1 truck driver light. Considered using an excavator for the CLF foundation removal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.005	Project	: JC BOYLE						
Description	: Demolish overhead distribution 2.5 miles (30-45 poles)								
Quantity	: 45.00 EA								
Daily Production	: 3.50 EA per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 12.9 Days	Estimator	: Mihaela Tomulescu	EA per	: 3.85	Total Cost	: \$46,980	Unit Price Per EA	: \$1,044.01
Unit Price	: \$1,160.01 per EA	Probable Low Cost Parameter							
Total Cost	: \$52,200	Probable High Cost Parameter							

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	12.9	8	103.20	L	\$46.27	incl. in rate	incl. in rate	\$4,775.06
Electrician	Active	1.00	12.9	8	103.20	L	\$45.23	incl. in rate	incl. in rate	\$4,667.74
Hydraulic Crane (17tn)	Active	1.00	12.9	8	103.20	E	\$81.52	incl. in rate	incl. in rate	\$8,412.86
Equipment Operator (medium)	Active	1.00	12.9	8	103.20	L	\$66.28	incl. in rate	incl. in rate	\$6,840.10
Truck Driver (heavy)	Active	1.00	5.0	8	40.00	L	\$57.59	incl. in rate	incl. in rate	\$2,303.60
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	5.0	8	40.00	E	\$111.64	incl. in rate	incl. in rate	\$4,465.60
Laborer	Active	2.00	5.0	8	80.00	L	\$45.80	incl. in rate	incl. in rate	\$3,664.00
Vibratory Hammer & Extractor	Active	1.00	5.0	8	40.00	E	\$94.34	incl. in rate	incl. in rate	\$3,773.60
Truck, Utility, with Man-Basket	Active	1.00	5.0	8	40.00	E	\$31.90	incl. in rate	incl. in rate	\$1,276.00
					Labor Hours	429.6	TOTAL LABOR			\$22,250.50
					Equipment Hours	223.2	TOTAL EQUIPMENT			\$17,928.06

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,112.52	\$1,112.52
Topsail placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	45.00	CY	1.000	45.00	\$4.74	\$213.30
TOTAL MATERIAL						\$1,325.82

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$22,250.50	Labor Burden @	49.7%	\$0.00		\$22,250.50
Material Cost	\$1,325.82	Material Tax @	7.8%	\$102.75		\$1,428.58
Equipment Cost	\$17,928.06	Equipment Tax @	0.0%	\$0.00		\$17,928.06
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$41,504			\$103	DIRECT COST SUBTOTALS	\$41,607
Installing Contractors Overhead @	15.0%			\$41,607.14		\$6,241.07
Installing Contractors Profit @	8.0%			\$41,607.14		\$3,328.57
GC Markup on Subs @	5.0%			\$0.00		\$0.00
					TOTAL MARKUP COSTS	\$9,569.64
General Contractors Insurance @	1.0%		on	\$51,176.78		\$512
Bond @	1.0%		on	\$51,176.78		\$512
Contingency @	0.0%		on	\$52,200.31		\$0
					TOTAL COST for pay item	\$52,200

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Foreman and 1 Electrician, 1 Crane and 1 man-basket truck to help untie the line). Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation, helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 5.007	Project	: COPCO 1								
Description	: Remove Power Circuit Breakers 69KV @Switchyard										
Quantity	: 2.00 EA										
Daily Production	: 1.00 EA per	8	hour shift								
Work Days	: 2.0 Days										
Unit Price	: \$5,681.20 per EA	Project #	: 2	Estimator	: Mihaela Tomulescu	EA per	: 1.1	Total Cost	: \$10,226	Unit Price Per EA	: \$5,113.08
Total Cost	: \$11,362	Probable Low Cost Parameter	: 0.75	Probable High Cost Parameter	: 0.75	Total Cost	: \$14,203	Unit Price Per EA	: \$7,101.50		

CREW COSTS											
Description	Active	Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active		2.00	2.0	8	32.00	L	\$46.27	incl. in rate	incl. in rate	\$1,480.64
Electrician	Active		2.00	2.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Hydraulic Crane (35tn)	Active		1.00	1.0	8	8.00	E	\$116.30	incl. in rate	incl. in rate	\$930.40
Equipment Operator (crane)	Active		1.00	1.0	8	8.00	L	\$68.41	incl. in rate	incl. in rate	\$547.28
Laborer	Active		2.00	2.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
Truck, Flatbed (4x4, 10,000 gvwt)	Active		1.00	2.0	8	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Truck, Utility, with Man-Basket	Active		1.00	2.0	8	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Truck Driver (light)	Active		2.00	2.0	8	32.00	L	\$56.29	incl. in rate	incl. in rate	\$1,801.28
						Labor Hours	136	TOTAL LABOR		\$6,742.16	
						Equipment Hours	40	TOTAL EQUIPMENT		\$1,951.20	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$337.11	\$337.11	
						TOTAL MATERIAL	\$337.11

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$6,742.16	Labor Burden @	49.7%	\$0.00		\$6,742.16	
Material Cost	\$337.11	Material Tax @	7.8%	\$26.13		\$363.23	
Equipment Cost	\$1,951.20	Equipment Tax @	0.0%	\$0.00		\$1,951.20	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS	\$9,030			\$26	DIRECT COST SUBTOTALS	\$9,057	
Installing Contractors Overhead@	15.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		\$1,358.49	
Installing Contractors Profit@	8.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		\$724.53	
GC Markup on Subs @	5.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		\$0.00	
						TOTAL MARKUP COSTS	\$2,083.02
General Contractors Insurance @	1.0%		on		\$11,139.61	\$111	
Bond @	1.0%		on		\$11,139.61	\$111	
Contingency @	0.0%		on		\$11,362.40	\$0	
						TOTAL COST for pay item	\$11,362

Additional Pay Item Notes :
 Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers in the truck for saving it in the designated place. 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.009	Project	: COPCO 1						
Description	: Remove all associated auxiliary equipment @Switchyard (Allowance)								
Quantity	: 1.00 LS								
Daily Production	: 1.00 LS per	8	hour shift	Project #	: 2				
Work Days	: 3.0 Days								
Unit Price	: \$48,501.71 per LS	Estimator	: Mihaela Tomulescu	LS per	: 1.1	Total Cost	: \$43,652	Unit Price Per LS	: \$43,651.54
Total Cost	: \$48,502	Probable Low Cost Parameter	: 0.75	Probable High Cost Parameter	: 0.75	Total Cost	: \$60,627	Unit Price Per LS	: \$60,627.14

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	3.0	8	24.00	L	\$46.27	incl. in rate	incl. in rate	\$1,110.48
Electrician	Active	4.00	3.0	8	96.00	L	\$45.23	incl. in rate	incl. in rate	\$4,342.08
Hydraulic Excavator (1.5cy)	Active	1.00	3.0	8	24.00	E	\$141.92	incl. in rate	incl. in rate	\$3,406.08
Equipment Operator (medium)	Active	2.00	3.0	8	48.00	L	\$66.28	incl. in rate	incl. in rate	\$3,181.44
Truck, Utility, with Man-Basket	Active	1.00	3.0	8	24.00	E	\$31.90	incl. in rate	incl. in rate	\$765.60
Hydraulic Crane (17tn)	Active	1.00	3.0	8	24.00	E	\$81.52	incl. in rate	incl. in rate	\$1,956.48
Laborer	Active	4.00	3.0	8	96.00	L	\$45.80	incl. in rate	incl. in rate	\$4,396.80
Truck Driver (heavy)	Active	2.00	3.0	8	48.00	L	\$57.59	incl. in rate	incl. in rate	\$2,764.32
Truck, On-Highway Dump (6x4, 12cy)	Active	2.00	3.0	8	48.00	E	\$70.35	incl. in rate	incl. in rate	\$3,376.80
Vibratory Hammer & Extractor	Active	1.00	3.0	8	24.00	E	\$94.34	incl. in rate	incl. in rate	\$2,264.16
					Labor Hours	312	TOTAL LABOR			\$15,795.12
					Equipment Hours	144	TOTAL EQUIPMENT			\$11,769.12

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$789.76	\$789.76	
						TOTAL MATERIAL	\$789.76

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	1.00	days		4.00	\$3,000.00	
					TOTAL SUBCONTRACTS	\$12,000.00

SUMMARY OF COSTS							
Labor Cost	\$15,795.12	Labor Burden @	49.7%	\$0.00		\$15,795.12	
Material Cost	\$789.76	Material Tax @	7.8%	\$61.21		\$850.96	
Equipment Cost	\$11,769.12	Equipment Tax @	0.0%	\$0.00		\$11,769.12	
Subcontractors	\$12,000.00					\$12,000.00	
DIRECT COST SUBTOTALS	\$40,354			\$61		\$40,415	
Installing Contractors Overhead@	15.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		\$4,262.28	
Installing Contractors Profit@	8.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		\$2,273.22	
GC Markup on Subs @	5.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		\$600.00	
						TOTAL MARKUP COSTS	\$7,135.50
General Contractors Insurance @	1.0%		on		\$47,550.70	\$476	
Bond @	1.0%		on		\$47,550.70	\$476	
Contingency @	0.0%		on		\$48,501.71	\$0	
						TOTAL COST for pay item	\$48,502

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 4 Electrician, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 5.011	Project	: COPCO 1								
Description	: Diversion Dam										
Quantity	: 8.00 EA										
Daily Production	: 2.00 EA per	8	hour shift								
Work Days	: 4.0 Days										
Unit Price	: \$1,950.45 per EA	Project #	: 2	Estimator	: Mihaela Tomulescu	EA per	2.2	Total Cost	\$14,043	Unit Price Per EA	\$1,755.41
Total Cost	: \$15,604	Probable Low Cost Parameter		Probable High Cost Parameter		1.5	\$19,505	\$2,438.07			

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	4.0	8	32.00	L	\$46.27	incl. in rate	incl. in rate	\$1,480.64
Electrician	Active	1.00	4.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Hydraulic Crane (17tn)	Active	1.00	4.0	8	32.00	E	\$81.52	incl. in rate	incl. in rate	\$2,608.64
Equipment Operator (medium)	Active	1.00	4.0	8	32.00	L	\$66.28	incl. in rate	incl. in rate	\$2,120.96
Truck Driver (heavy)	Active	1.00	4.0	8	32.00	L	\$57.59	incl. in rate	incl. in rate	\$1,842.88
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	4.0	8	32.00	E	\$31.90	incl. in rate	incl. in rate	\$1,020.80
Laborer	Active	1.00	4.0	8	32.00	L	\$45.80	incl. in rate	incl. in rate	\$1,465.60
					Labor Hours	160	TOTAL LABOR		\$8,357.44	
					Equipment Hours	64	TOTAL EQUIPMENT		\$3,629.44	

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$417.87	\$417.87	
						TOTAL MATERIAL	\$417.87

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$8,357.44	Labor Burden @	49.7%	\$0.00	\$8,357.44				
Material Cost	\$417.87	Material Tax @	7.8%	\$32.39	\$450.26				
Equipment Cost	\$3,629.44	Equipment Tax @	0.0%	\$0.00	\$3,629.44				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$12,405			\$32	\$12,437				
Installing Contractors Overhead@	15.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	\$1,865.57				
Installing Contractors Profit@	8.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	\$994.97				
GC Markup on Subs @	5.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	\$0.00				
					TOTAL MARKUP COSTS	\$2,860.54			
General Contractors Insurance @	1.0%		on		\$153				
Bond @	1.0%		on		\$153				
Contingency @	0.0%		on		\$0				
					TOTAL COST for pay item	\$15,604			
Additional Pay Item Notes :									
Production is based off of RSMs using Crew R3 (1 Foreman and 1 Electrician,1 Crane). Considered one laborer for demolish the pole and helping placing poles in a designated place and loding it in the truck for disposal. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.									

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.012	Project	: COPCO 1						
Description	: Remove "Production Poles" in general area Copco#1								
Quantity	: 7.00 EA								
Daily Production	: 2.00 EA per	8	hour shift	Project #	: 2				
Work Days	: 3.5 Days								
Unit Price	: \$1,956.86 per EA	Estimator	: Mihaela Tomulescu	EA per	: 2.3	Total Cost	: \$11,643	Unit Price Per EA	: \$1,663.33
Total Cost	: \$13,698	Probable Low Cost Parameter	: 1.4	Probable High Cost Parameter	: 1.4	Total Cost	: \$17,807	Unit Price Per EA	: \$2,543.92

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	3.5	8	28.00	L	\$46.27	incl. in rate	incl. in rate	\$1,295.56
Electrician	Active	1.00	3.5	8	28.00	L	\$45.23	incl. in rate	incl. in rate	\$1,266.44
Hydraulic Crane (17tn)	Active	1.00	3.5	8	28.00	E	\$81.52	incl. in rate	incl. in rate	\$2,282.56
Equipment Operator (medium)	Active	1.00	3.5	8	28.00	L	\$66.28	incl. in rate	incl. in rate	\$1,855.84
Laborer	Active	1.00	3.5	8	28.00	L	\$45.80	incl. in rate	incl. in rate	\$1,282.40
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.5	8	28.00	E	\$31.90	incl. in rate	incl. in rate	\$893.20
Truck Driver (heavy)	Active	1.00	3.5	8	28.00	L	\$57.59	incl. in rate	incl. in rate	\$1,612.52
					Labor Hours	: 140	TOTAL LABOR			\$7,312.76
					Equipment Hours	: 56	TOTAL EQUIPMENT			\$3,175.76

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$365.64	\$365.64
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	7.00	CY	1.000	7.00	\$4.74	\$33.18
TOTAL MATERIAL						\$398.82

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$7,312.76	Labor Burden @	49.7%	\$0.00		\$7,312.76
Material Cost	\$398.82	Material Tax @	7.8%	\$30.91		\$429.73
Equipment Cost	\$3,175.76	Equipment Tax @	0.0%	\$0.00		\$3,175.76
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$10,887			\$31	DIRECT COST SUBTOTALS	\$10,918
Installing Contractors Overhead@	15.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cost Basis	\$1,637.74
Installing Contractors Profit@	8.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		\$873.46
GC Markup on Subs @	5.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		\$0.00
					TOTAL MARKUP COSTS	\$2,511.20
General Contractors Insurance @	1.0%		on		\$13,429.44	\$134
Bond @	1.0%		on		\$13,429.44	\$134
Contingency @	0.0%		on		\$13,698.03	\$0
					TOTAL COST for pay item	\$13,698

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane). Considered one laborer for demolish the pole and helping placing poles in a designated place and loding them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.013	Project	: COPCO 1						
Description	: Remove "Village Houses Distribution Poles" near dam (assumed 10)								
Quantity	: 10.00 EA								
Daily Production	: 3.00 EA per	8	hour shift	Project #	: 2				
Work Days	: 3.3 Days								
Unit Price	: \$1,293.71 per EA	Estimator	: Mihaela Tomulescu	EA per	: 3.45	Total Cost	: \$10,997	Unit Price Per EA	: \$1,099.65
Total Cost	: \$12,937	Probable Low Cost Parameter	: 2.1	Probable High Cost Parameter	: 2.1	Total Cost	: \$16,818	Unit Price Per EA	: \$1,681.82

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	3.3	8	26.40	L	\$46.27	incl. in rate	incl. in rate	\$1,221.53
Electrician	Active	1.00	3.3	8	26.40	L	\$45.23	incl. in rate	incl. in rate	\$1,194.07
Hydraulic Crane (17tn)	Active	1.00	3.3	8	26.40	E	\$81.52	incl. in rate	incl. in rate	\$2,152.13
Equipment Operator (medium)	Active	1.00	3.3	8	26.40	L	\$66.28	incl. in rate	incl. in rate	\$1,749.79
Truck Driver (heavy)	Active	1.00	3.3	8	26.40	L	\$57.59	incl. in rate	incl. in rate	\$1,520.38
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.3	8	26.40	E	\$31.90	incl. in rate	incl. in rate	\$842.16
Laborer	Active	1.00	3.3	8	26.40	L	\$45.80	incl. in rate	incl. in rate	\$1,209.12
					Labor Hours	: 132	TOTAL LABOR			\$6,894.89
					Equipment Hours	: 52.8	TOTAL EQUIPMENT			\$2,994.29

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$344.74	\$344.74
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	10.00	CY	1.000	10.00	\$4.74	\$47.40
TOTAL MATERIAL						\$392.14

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$6,894.89	Labor Burden @	49.7%	\$0.00	\$6,894.89	
Material Cost	\$392.14	Material Tax @	7.8%	\$30.39	\$422.54	
Equipment Cost	\$2,994.29	Equipment Tax @	0.0%	\$0.00	\$2,994.29	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$10,281			\$30	\$10,312	
Installing Contractors Overhead@	15.0%				\$1,546.76	
Installing Contractors Profit@	8.0%				\$824.94	
GC Markup on Subs @	5.0%				\$0.00	
					TOTAL MARKUP COSTS	\$2,371.69
General Contractors Insurance @	1.0%	on		\$12,683.41	\$127	
Bond @	1.0%	on		\$12,683.41	\$127	
Contingency @	0.0%	on		\$12,937.07	\$0	
TOTAL COST for pay item					\$12,937	

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Foreman and 1 Electrician, 1 Crane). Considered one laborer for demolish the pole and helping placing poles in a designated place and loding them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.014	Project	: Fall Creek						
Description	: Remove 69 KV Distribution line 1.6 miles (30 poles)								
Quantity	: 30.00 EA								
Daily Production	: 4.00 EA per	8	hour shift	Project #	: 2				
Work Days	: 7.5 Days								
Unit Price	: \$2,096.19 per EA	Estimator	: Mihaela Tomulescu	EA per	: 4.6	Total Cost	: \$53,453	Unit Price Per EA	: \$1,781.76
Total Cost	: \$62,886	Probable Low Cost Parameter	: 2.8	Probable High Cost Parameter	: 2.8	Total Cost	: \$81,761	Unit Price Per EA	: \$2,725.04

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	7.5	8	60.00	L	\$46.27	incl. in rate	incl. in rate	\$2,776.20
Electrician	Active	4.00	7.5	8	240.00	L	\$45.23	incl. in rate	incl. in rate	\$10,855.20
Hydraulic Crane (17tn)	Active	1.00	7.5	8	60.00	E	\$81.52	incl. in rate	incl. in rate	\$4,891.20
Equipment Operator (medium)	Active	1.00	7.5	8	60.00	L	\$66.28	incl. in rate	incl. in rate	\$3,976.80
Truck Driver (heavy)	Active	1.00	7.5	8	60.00	L	\$57.59	incl. in rate	incl. in rate	\$3,455.40
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	7.5	8	60.00	E	\$31.90	incl. in rate	incl. in rate	\$1,914.00
Laborer	Active	4.00	7.5	8	240.00	L	\$45.80	incl. in rate	incl. in rate	\$10,992.00
Truck, Utility, with Man-Basket	Active	4.00	7.5	8	240.00	E	\$31.90	incl. in rate	incl. in rate	\$7,656.00
					Labor Hours	660	TOTAL LABOR			\$32,055.60
					Equipment Hours	360	TOTAL EQUIPMENT			\$14,461.20

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 10% labor (saw blades, drill bits,etc)	1.00	LS	1.000	1.00	\$3,205.56	\$3,205.56
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	30.00	CY	1.000	30.00	\$4.74	\$142.20
TOTAL MATERIAL						\$3,347.76

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$32,055.60	Labor Burden @	49.7%	\$0.00	\$32,055.60	
Material Cost	\$3,347.76	Material Tax @	7.8%	\$259.45	\$3,607.21	
Equipment Cost	\$14,461.20	Equipment Tax @	0.0%	\$0.00	\$14,461.20	
Subcontractors	\$0.00				\$0.00	
DIRECT COST SUBTOTALS	\$49,865			\$259	\$50,124	
Installing Contractors Overhead@	15.0%	<input checked="" type="checkbox"/> Crew	<input checked="" type="checkbox"/> Material	<input checked="" type="checkbox"/> Subs	\$50,124.01	
Installing Contractors Profit@	8.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$50,124.01	
GC Markup on Subs @	5.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	\$0.00	
					TOTAL MARKUP COSTS	\$11,528.62
General Contractors Insurance @	1.0%		on	\$61,652.53	\$617	
Bond @	1.0%		on	\$61,652.53	\$617	
Contingency @	0.0%		on	\$62,885.58	\$0	
TOTAL COST for pay item					\$62,886	

Additional Pay Item Notes :

Production is based off of RSMs using Crew R3 (1 Forman and 1 Electrician,1 Crane). Considered one laborer for demolish the pole foundation and helping placing poles in a designated place and loding them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil. Crews may be working simultaneously along the project alignment and substations, power plant and swtchhyard.

PAY ITEM COST DETAIL WORKSHEET

5.015 Remove Transmission conductors on poles 1X/001 and 2X/001 but keep distribution intact

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.015	Project	: Fall Creek						
Description	: intact								
Quantity	: 2.00 EA								
Daily Production	: 2.00 EA per 8 hour shift	Project #	: 2						
Work Days	: 1.0 Days	Estimator	: Mihaela Tomulescu	EA per	: 2.3	Total Cost	: \$4,567	Unit Price Per EA	: \$2,283.48
Unit Price	: \$2,686.44 per EA	Probable Low Cost Parameter							
Total Cost	: \$5,373	Probable High Cost Parameter							

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	1.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate	\$740.32
Electrician	Active	4.00	1.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Truck, Pickup (4x4, 3/4tn)	Active	1.00	1.0	8	8.00	E	\$16.94	incl. in rate	incl. in rate	\$135.52
Equipment Operator (medium)	Active	1.00	1.0	8	8.00	L	\$66.28	incl. in rate	incl. in rate	\$530.24
Truck, Utility, with Man-Basket	Active	2.00	1.0	8	16.00	E	\$31.90	incl. in rate	incl. in rate	\$510.40
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
					Labor Hours	72	TOTAL LABOR			\$3,450.72
					Equipment Hours	24	TOTAL EQUIPMENT			\$645.92

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$172.54	\$172.54		
							TOTAL MATERIAL	\$172.54

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$3,450.72	Labor Burden @	49.7%	\$0.00	\$3,450.72	
Material Cost	\$172.54	Material Tax @	7.8%	\$13.37	\$185.91	
Equipment Cost	\$645.92	Equipment Tax @	0.0%	\$0.00	\$645.92	
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$4,269			\$13	DIRECT COST SUBTOTALS	\$4,283
Installing Contractors Overhead@	15.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cost Basis	\$642.38
Installing Contractors Profit@	8.0%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		\$342.60
GC Markup on Subs @	5.0%	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		\$0.00
					TOTAL MARKUP COSTS	\$984.99
General Contractors Insurance @	1.0%		on		\$5,267.53	\$53
Bond @	1.0%		on		\$5,267.53	\$53
Contingency @	0.0%		on		\$5,372.88	\$0
					TOTAL COST for pay item	\$5,373

Additional Pay Item Notes :
 Production is based off of RSMs using Crew formed from 2 Foreman and 4 Electrician, 2 Laborer, 2 utility truck access poles, string conductor, modify structure arms, provide guard structures, 2 Laborer to help ground side. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.

PAY ITEM COST DETAIL WORKSHEET

5.016 Remove Transmission conductors 1.3 miles Copco#1 to Copco#2

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 5.016	Project	: COPCO 1								
Description	: Remove Transmission conductors 1.3 miles Copco#1 to Copco#2										
Quantity	: 6,864.00 LF										
Daily Production	: 600.00 LF per	8	hour shift								
Work Days	: 11.4 Days										
Unit Price	: \$7.16 per LF	Project #	: 2	Estimator	: Mihaela Tomulescu	LF per	690	Total Cost	\$41,767	Unit Price Per LF	\$6.09
Total Cost	: \$49,138	Probable Low Cost Parameter	420	Probable High Cost Parameter	420	Total Cost	\$63,880	Unit Price Per LF	\$9.31		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	2.00	11.4	8	182.40	L	\$46.27	incl. in rate	incl. in rate	\$8,439.65
Electrician	Active	2.00	11.4	8	182.40	L	\$45.23	incl. in rate	incl. in rate	\$8,249.95
Truck, Pickup (4x4, 3/4tn)	Active	1.00	11.4	8	91.20	E	\$16.94	incl. in rate	incl. in rate	\$1,544.93
Truck Driver (light)	Active	1.00	11.4	8	91.20	L	\$56.29	incl. in rate	incl. in rate	\$5,133.65
Truck, Utility, with Man-Basket	Active	2.00	11.4	8	182.40	E	\$31.90	incl. in rate	incl. in rate	\$5,818.56
Laborer	Active	2.00	11.4	8	182.40	L	\$45.80	incl. in rate	incl. in rate	\$8,353.92
					Labor Hours	638.4	TOTAL LABOR			\$30,177.17
					Equipment Hours	273.6	TOTAL EQUIPMENT			\$7,363.49

MATERIAL COSTS										
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost				
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$1,508.86	\$1,508.86				
						TOTAL MATERIAL	\$1,508.86			

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS									
Labor Cost	\$30,177.17	Labor Burden @	49.7%	\$0.00	\$30,177.17				
Material Cost	\$1,508.86	Material Tax @	7.8%	\$116.94	\$1,625.79				
Equipment Cost	\$7,363.49	Equipment Tax @	0.0%	\$0.00	\$7,363.49				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$39,050			\$117	\$39,166				
Installing Contractors Overhead @	15.0%				\$5,874.97				
Installing Contractors Profit @	8.0%				\$3,133.32				
GC Markup on Subs @	5.0%				\$0.00				
					TOTAL MARKUP COSTS	\$9,008.28			
General Contractors Insurance @	1.0%		on	\$48,174.73	\$482				
Bond @	1.0%		on	\$48,174.73	\$482				
Contingency @	0.0%		on	\$49,138.23	\$0				
					TOTAL COST for pay item	\$49,138			

Additional Pay Item Notes :
 Production is based off of RSMs using Crew formed from 2 Foreman and 4 Electrician, 4 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, power plant and switchyard.

PAY ITEM INFORMATION											
PAY ITEM NUMBER	: 5.017	Project	: COPCO2								
Description	: Disconnect and remove MV Transformers 115 KV @ Substation										
Quantity	: 2.00 EA										
Daily Production	: 1.79 EA per	8	hour shift								
Work Days	: 1.1 Days										
Unit Price	: \$678.35 per EA	Project #	: Klamath Dams Removal	Estimator	: Mihaela Tomulescu	EA per	1.969	Total Cost	\$1,221	Unit Price Per EA	\$610.51
Total Cost	: \$1,357	Probable Low Cost Parameter		Probable High Cost Parameter		1.432	\$1,628	\$814.02			

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.1	8	8.96	L	\$47.23	\$0.00		\$423.18
Electrician	Active	1.00	1.1	8	8.96	L	\$45.23	\$0.00		\$405.26
Hydraulic Excavator (1.5cy)	Active	1.00	0.2	8	1.20	E	\$141.92	\$141.92		\$170.30
Equipment Operator (light)	Active	0.50	0.2	8	0.60	L	\$64.90	\$0.00		\$38.94
					Labor Hours	18.52	TOTAL LABOR			\$867.38
					Equipment Hours	1.2	TOTAL EQUIPMENT			\$170.30

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$43.37	\$43.37
TOTAL MATERIAL						\$43.37

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$867.38	Labor Burden @	49.7%	\$0.00		\$867.38
Material Cost	\$43.37	Material Tax @	7.8%	\$3.36		\$46.73
Equipment Cost	\$170.30	Equipment Tax @	0.0%	\$0.00		\$170.30
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,081			\$3	DIRECT COST SUBTOTALS	\$1,084
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead @	15.0%				\$1,084.42	\$162.66
Installing Contractors Profit @	8.0%				\$1,037.69	\$83.01
GC Markup on Subs @	5.0%				\$0.00	\$0.00
		TOTAL MARKUP COSTS				\$245.68
General Contractors Insurance @	1.0%		on		\$1,330.09	\$13
Bond @	1.0%		on		\$1,330.09	\$13
Contingency @	0.0%		on		\$1,356.69	\$0
					TOTAL COST for pay item	\$1,357

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Excavator to load the transformer in the truck for disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.018	Project	: COPCO2						
Description	: Disconnect and remove Medium Voltage Circuit Breakers 69KV @ Substation								
Quantity	: 5.00 EA								
Daily Production	: 2.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 2.5 Days								
Unit Price	: \$590.84 per EA	Estimator	: Mihaela Tomulescu	EA per	: 2.2	Total Cost	: \$2,659	Unit Price Per EA	: \$531.76
Total Cost	: \$2,954	Probable Low Cost Parameter	: 1.6	Probable High Cost Parameter	: 1.6	Total Cost	: \$3,545	Unit Price Per EA	: \$709.01

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.5	8	20.00	L	\$46.27	\$0.00		\$925.40
Electrician	Active	1.00	2.5	8	20.00	L	\$45.23	\$0.00		\$904.60
Hydraulic Crane (35tn)	Active	1.00	0.2	8	1.60	E	\$116.30	\$116.30		\$186.08
Equipment Operator (medium)	Active	1.00	0.2	8	1.60	L	\$66.28	\$0.00		\$106.05
Laborer	Active	1.00	0.2	8	1.60	L	\$45.80	\$0.00		\$73.28
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.2	8	1.60	E	\$31.90	\$31.90		\$51.04
					Labor Hours	43.2	TOTAL LABOR			\$2,009.33
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$237.12

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$100.47	\$100.47
TOTAL MATERIAL						\$100.47

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,009.33	Labor Burden @	49.7%	\$0.00		\$2,009.33
Material Cost	\$100.47	Material Tax @	7.8%	\$7.79		\$108.25
Equipment Cost	\$237.12	Equipment Tax @	0.0%	\$0.00		\$237.12
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$2,347			\$8	DIRECT COST SUBTOTALS	\$2,355
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$2,354.70	\$353.21
Installing Contractors Profit@	8.0%				\$2,354.70	\$188.38
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$541.58
General Contractors Insurance @	1.0%		on		\$2,896.28	\$29
Bond @	1.0%		on		\$2,896.28	\$29
Contingency @	0.0%		on		\$2,954.21	\$0
					TOTAL COST for pay item	\$2,954

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Crane. Considered 1 laborer to help loading circuit breakers in the truck for saving it in the designated place.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.019	Project	: COPCO2						
Description	: Disconnect and remove MV Transformers 12 KV @ Substation								
Quantity	: 1.00 EA								
Daily Production	: 4.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 0.3 Days								
Unit Price	: \$816.83 per EA	Estimator	: Mihaela Tomulescu	EA per	: 4.4	Total Cost	: \$735	Unit Price Per EA	: \$735.15
Total Cost	: \$817	Probable Low Cost Parameter	: 3.2	Probable High Cost Parameter	: 3.2	Total Cost	: \$980	Unit Price Per EA	: \$980.20

CREW COSTS										
Description	Active Idle	# In crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.3	8	2.00	L	\$47.23	\$0.00		\$94.46
Electrician	Active	1.00	0.3	8	2.00	L	\$45.23	\$0.00		\$90.46
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.2	8	1.20	E	\$221.50	\$221.50		\$265.80
Equipment Operator (light)	Active	1.00	0.2	8	1.20	L	\$64.90	\$0.00		\$77.88
Truck Driver (light)	Active	1.00	0.2	8	1.20	L	\$56.29	\$0.00		\$67.55
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	0.2	8	1.20	E	\$31.90	\$31.90		\$38.28
					Labor Hours	6.4	TOTAL LABOR			\$330.35
					Equipment Hours	2.4	TOTAL EQUIPMENT			\$304.08

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$16.52	\$16.52
TOTAL MATERIAL						\$16.52

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS						
Labor Cost	\$330.35	Labor Burden @	49.7%	\$0.00		\$330.35
Material Cost	\$16.52	Material Tax @	7.8%	\$1.28		\$17.80
Equipment Cost	\$304.08	Equipment Tax @	0.0%	\$0.00		\$304.08
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$651			\$1	DIRECT COST SUBTOTALS	\$652
Installing Contractors Overhead @	15.0%	Crew	Material	Subs	Cost Basis	\$97.83
Installing Contractors Profit @	8.0%					\$50.75
GC Markup on Subs @	5.0%					\$0.00
					TOTAL MARKUP COSTS	\$148.59
General Contractors Insurance @	1.0%		on		\$800.81	\$8
Bond @	1.0%		on		\$800.81	\$8
Contingency @	0.0%		on		\$816.83	\$0
					TOTAL COST for pay item	\$817

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician, 1 Loader to discharge the transformer in the truck for disposal.

PAY ITEM COST DETAIL WORKSHEET

5.020 Disconnect and remove cable connection between Copco#2 sub and HE plant @ Substation

PAY ITEM INFORMATION

PAY ITEM NUMBER :	5.020	Project :	COPCO2		
Description :	Disconnect and remove cable connection between Copco#2 sub and HE plant @ Substation				
Quantity :	0.10	Mile			
Daily Production :	0.05	Mile per	8	hour shift	
Work Days :	2.0	Days			
Unit Price :	\$94,661.96	per Mile			
Total Cost :	\$9,466				
		Project # :	Klamath Dams Removal		
		Estimator :	Mihaela Tomulescu		
		Probable Low Cost Parameter	Mile per	Total Cost	Unit Price Per Mile
		Probable High Cost Parameter	0.055	\$8,520	\$85,195.77
			0.04	\$11,359	\$113,594.36

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	\$0.00		\$755.68
Electrician	Active	2.00	2.0	8	32.00	L	\$45.23	\$0.00		\$1,447.36
Truck, Utility, with Man-Basket	Active	1.00	0.2	8	1.20	E	\$31.90	\$31.90		\$38.28
Truck Driver (light)	Active	1.00	0.2	8	1.20	L	\$56.29	\$0.00		\$67.55
					Labor Hours	49.2	TOTAL LABOR			\$2,270.59
					Equipment Hours	1.2	TOTAL EQUIPMENT			\$38.28

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$113.53	\$113.53
TOTAL MATERIAL						\$113.53

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days		\$3,000.00	\$6,000.00
TOTAL SUBCONTRACTS					\$6,000.00

SUMMARY OF COSTS

Labor Cost	\$2,270.59	Labor Burden @	49.7%	\$0.00	\$2,270.59
Material Cost	\$113.53	Material Tax @	7.8%	\$8.80	\$122.33
Equipment Cost	\$38.28	Equipment Tax @	0.0%	\$0.00	\$38.28
Subcontractors	\$6,000.00				\$6,000.00
DIRECT COST SUBTOTALS	\$8,422			\$9	\$8,431
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$364.68
Installing Contractors Profit@	8.0%				\$184.71
GC Markup on Subs @	5.0%				\$300.00
		TOTAL MARKUP COSTS			\$849.39
General Contractors Insurance @	1.0%		on	\$9,280.58	\$93
Bond @	1.0%		on	\$9,280.58	\$93
Contingency @	0.0%		on	\$9,466.20	\$0
TOTAL COST for pay item					\$9,466

Additional Pay Item Notes :

Production is based off of RSMs using Crew formed of 1 Foreman, 1 Electrician. Equipment*: 1 Utility Man-Basket Truck, Trailer with cable pulling rig, for high voltage line work.

PAY ITEM COST DETAIL WORKSHEET

5.021 Remove all associated auxiliary equipment @ Substation (Allowance)

PAY ITEM INFORMATION									
PAY ITEM NUMBER	5.021				Project	COPCO2			
Description	Remove all associated auxiliary equipment @ Substation (Allowance)				Estimator	Mihaela Tomulescu			
Quantity	1.00		LS		Project #	Klamath Dams Removal			
Daily Production	1.00		LS per	8	hour shift	LS per	Total Cost	Unit Price Per LS	
Work Days	2.0		Days		Probable Low Cost Parameter	1.1	\$21,766	\$21,766.36	
Unit Price	\$24,184.84 per LS				Probable High Cost Parameter	0.8	\$29,022	\$29,021.81	
Total Cost	\$24,185								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	\$0.00		\$755.68
Electrician	Active	4.00	2.0	8	64.00	L	\$45.23	\$0.00		\$2,894.72
Truck, Utility, with Man-Basket	Active	1.00	2.0	8	16.00	E	\$31.90	\$31.90		\$510.40
Truck Driver (light)	Active	1.00	2.0	8	16.00	L	\$56.29	\$0.00		\$900.64
Laborer	Active	2.00	2.0	8	32.00	L	\$45.80	\$0.00		\$1,465.60
Hydraulic Excavator (1.5cy)	Active	1.00	2.0	8	16.00	E	\$141.92	\$141.92		\$2,270.72
Hydraulic Crane (17tn)	Active	1.00	2.0	8	16.00	E	\$81.52	\$81.52		\$1,304.32
Equipment Operator (crane)	Active	1.00	2.0	8	16.00	L	\$68.41	\$0.00		\$1,094.56
Equipment Operator (light)	Active	1.00	2.0	8	16.00	L	\$64.90	\$0.00		\$1,038.40
Vibratory Hammer & Extractor	Active	1.00	2.0	8	16.00	E	\$94.34	\$94.34		\$1,509.44
					Labor Hours	160	TOTAL LABOR			\$8,149.60
					Equipment Hours	64	TOTAL EQUIPMENT			\$5,594.88

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$407.48	\$407.48
TOTAL MATERIAL						\$407.48

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days		\$3,000.00	\$6,000.00
TOTAL SUBCONTRACTS					\$6,000.00

SUMMARY OF COSTS						
Labor Cost	\$8,149.60	Labor Burden @	49.7%	\$0.00		\$8,149.60
Material Cost	\$407.48	Material Tax @	7.8%	\$31.58		\$439.06
Equipment Cost	\$5,594.88	Equipment Tax @	0.0%	\$0.00		\$5,594.88
Subcontractors	\$6,000.00					\$6,000.00
DIRECT COST SUBTOTALS	\$20,152			\$32	DIRECT COST SUBTOTALS	\$20,184
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$14,183.54	\$2,127.53
Installing Contractors Profit@	8.0%				\$13,744.48	\$1,099.56
GC Markup on Subs @	5.0%				\$6,000.00	\$300.00
						TOTAL MARKUP COSTS
						\$3,527.09
General Contractors Insurance @	1.0%		on		\$23,710.63	\$237
Bond @	1.0%		on		\$23,710.63	\$237
Contingency @	0.0%		on		\$24,184.84	\$0
TOTAL COST for pay item						\$24,185

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator& 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete) for demo ;4 Electrician,, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. .

PAY ITEM INFORMATION									
PAY ITEM NUMBER	5.022			Project	COPCO2				
Description	Demolish overhead transmission line and structure 69 KV Copco#1 to Iron Gate								
Quantity	5.00	Miles							
Daily Production	0.10	Miles per	8	hour shift	Project #	Klamath Dams Removal			
Work Days	50.0	Days			Estimator	Mihaela Tomulescu			
Unit Price	\$118,983.58 per Miles			Probable Low Cost Parameter	0.11	Total Cost	\$535,426	Unit Price Per Miles	\$107,085.22
Total Cost	\$594,918			Probable High Cost Parameter	0.08	Total Cost	\$713,901	Unit Price Per Miles	\$142,780.29

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	50.0	8	400.00	L	\$47.23	\$0.00		\$18,892.00
Electrician	Active	2.00	50.0	8	800.00	L	\$45.23	\$0.00		\$36,184.00
Truck, Utility, with Man-Basket	Active	2.00	50.0	8	800.00	E	\$31.90	\$31.90		\$25,520.00
Truck Driver (heavy)	Active	2.00	50.0	8	800.00	L	\$57.59	\$0.00		\$46,072.00
Laborer	Active	2.00	50.0	8	800.00	L	\$45.80	\$0.00		\$36,640.00
Hydraulic Excavator (1.5cy)	Active	1.00	50.0	8	400.00	E	\$141.92	\$141.92		\$56,768.00
Hydraulic Crane (80tn)	Active	1.00	50.0	8	400.00	E	\$190.46	\$190.46		\$76,184.00
Equipment Operator (crane)	Active	1.00	50.0	8	400.00	L	\$68.41	\$0.00		\$27,364.00
Equipment Operator (light)	Active	1.00	50.0	8	400.00	L	\$64.90	\$0.00		\$25,960.00
Vibratory Hammer & Extractor	Active	1.00	50.0	8	400.00	E	\$94.34	\$94.34		\$37,736.00
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	50.0	8	400.00	E	\$31.90	\$31.90		\$12,760.00
Labor Hours					3600	TOTAL LABOR				\$191,112.00
Equipment Hours					2400	TOTAL EQUIPMENT				\$208,968.00

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$9,555.60	\$9,555.60
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	96.00	CY	1.000	96.00	\$4.74	\$455.04
TOTAL MATERIAL						\$10,010.64

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	25.00	days		\$3,000.00	\$75,000.00
TOTAL SUBCONTRACTS					\$75,000.00

SUMMARY OF COSTS						
Labor Cost	\$191,112.00	Labor Burden @	49.7%	\$0.00		\$191,112.00
Material Cost	\$10,010.64	Material Tax @	7.8%	\$775.82		\$10,786.46
Equipment Cost	\$208,968.00	Equipment Tax @	0.0%	\$0.00		\$208,968.00
Subcontractors	\$75,000.00					\$75,000.00
DIRECT COST SUBTOTALS	\$485,091			\$776	DIRECT COST SUBTOTALS	\$485,866
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$410,866.46	\$61,629.97
Installing Contractors Profit@	8.0%				\$400,080.00	\$32,006.40
GC Markup on Subs @	5.0%				\$75,000.00	\$3,750.00
TOTAL MARKUP COSTS						\$97,386.37
General Contractors Insurance @	1.0%		on		\$583,252.83	\$5,833
Bond @	1.0%		on		\$583,252.83	\$5,833
Contingency @	0.0%		on		\$594,917.89	\$0
TOTAL COST for pay item						\$594,918

Additional Pay Item Notes :

When a transmission line is decommissioned and is not converted to another use, the decommissioning typically includes the removal of all infrastructure if it is no longer required, or has reached end-of-life conditions. Removed parts will be re-used, recycled or disposed. Production is based off of RSMs using Crew B-1C and B-3 (1 Foreman, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :2 Electrician,, 1 utility truck to access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. Transmission line poles or structures are commonly between 60 and 140 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuit, carrying one set of transmission lines or double-circuit with two sets of lines. Assumed based on RSMs we have "Communications transmission tower, radio towers self-supporting, wind load 70 mph basic wind speed, 120' high" (33811310). Pole height and load capacity limitations determine the distance between poles (span length) either on the basis of ground clearance or ability to support heavy wind and ice loads. Assumed average span between structures to be 275 feet so for 5 miles of overhead transmission we will have approximately 96 structures. In areas where single-pole structures are preferred, weak or wet soils may require concrete foundations for support. Where a transmission line must cross a street or slightly change direction, larger angle structures or guy wires may be required. Poles with guy wires impact a much larger area. Angle structures are usually more than double the diameter of other steel poles. They are made of steel, usually five to six feet in diameter, and have a large concrete base. The base may be buried ten or more feet below the ground surface. The diameter of the pole and the depth the base is buried depends on the condition of the soils and the voltage of the line. Assumed the structures are disposed to Yreka recycling, 34 miles away. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION

PAY ITEM NUMBER :	5.023	Project :	COPCO2		
Description :	Demolish transmission conductor from existing structure pole. Structures remain.				
Quantity :	1.50 Miles	Project # :	Klamath Dams Removal		
Daily Production :	0.75 Miles per	Estimator :	Mihaela Tomulescu	Miles per	Total Cost
Work Days :	2.0 Days	Probable Low Cost Parameter	0.825	\$9,549	Unit Price Per Miles
Unit Price :	\$7,073.23 per Miles	Probable High Cost Parameter	0.6	\$12,732	\$8,487.88
Total Cost :	\$10,610				

CREW COSTS

Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	2.0	8	16.00	L	\$47.23	\$0.00		\$755.68
Electrician	Active	2.00	2.0	8	32.00	L	\$45.23	\$0.00		\$1,447.36
Truck, Utility, with Man-Basket	Active	2.00	2.0	8	32.00	E	\$31.90	\$31.90		\$1,020.80
Labor Hours					48	TOTAL LABOR		\$2,203.04		
Equipment Hours					32	TOTAL EQUIPMENT		\$1,020.80		

MATERIAL COSTS

Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$110.15	\$110.15
TOTAL MATERIAL						\$110.15

SUBCONTRACT COSTS

Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	2.00	days		\$3,000.00	\$6,000.00
TOTAL SUBCONTRACTS					\$6,000.00

SUMMARY OF COSTS

Labor Cost	\$2,203.04	Labor Burden @	49.7%	\$0.00	\$2,203.04
Material Cost	\$110.15	Material Tax @	7.8%	\$8.54	\$118.69
Equipment Cost	\$1,020.80	Equipment Tax @	0.0%	\$0.00	\$1,020.80
Subcontractors	\$6,000.00				\$6,000.00
DIRECT COST SUBTOTALS	\$9,334			\$9	\$9,343
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$3,342.53
Installing Contractors Profit@	8.0%				\$3,223.84
GC Markup on Subs @	5.0%				\$6,000.00
					TOTAL MARKUP COSTS
					\$1,059.29
General Contractors Insurance @	1.0%		on		\$10,401.82
Bond @	1.0%		on		\$10,401.82
Contingency @	0.0%		on		\$10,609.85
TOTAL COST for pay item					\$10,610

Additional Pay Item Notes :

Production is based off of RSMs using Crew Elec2: 2 Electrician., 2 utility truck to access poles, string conductor, etc. assumed they need to rent trailer with cable pulling rig, for high voltage line work. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard. This estimate is made as the best AECOM assumption, as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM COST DETAIL WORKSHEET

5.024 Remove structures between pole 2/007 and Iron Gate

PAY ITEM INFORMATION									
PAY ITEM NUMBER	5.024				Project	COPCO2			
Description	Remove structures between pole 2/007 and Iron Gate				Project #	Klamath Dams Removal			
Quantity	6.00 EA				Estimator	Mihaela Tomulescu		EA per	Total Cost
Daily Production	2.00 EA per		8	hour shift	Probable Low Cost Parameter	2.2		\$20,273	\$3,378.88
Work Days	3.0		Days		Probable High Cost Parameter	1.6		\$27,031	\$4,505.17
Unit Price	\$3,754.31 per EA								
Total Cost	\$22,526								

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	3.0	8	24.00	L	\$47.23	\$0.00		\$1,133.52
Electrician	Active	1.00	3.0	8	24.00	L	\$45.23	\$0.00		\$1,085.52
Truck, Utility, with Man-Basket	Active	1.00	3.0	8	24.00	E	\$31.90	\$31.90		\$765.60
Truck Driver (light)	Active	1.00	3.0	8	24.00	L	\$56.29	\$0.00		\$1,350.96
Laborer	Active	2.00	3.0	8	48.00	L	\$45.80	\$0.00		\$2,198.40
Hydraulic Excavator (1.5cy)	Active	1.00	2.0	8	16.00	E	\$141.92	\$141.92		\$2,270.72
Hydraulic Crane (50tn)	Active	1.00	3.0	8	24.00	E	\$134.32	\$134.32		\$3,223.68
Equipment Operator (crane)	Active	1.00	3.0	8	24.00	L	\$68.41	\$0.00		\$1,641.84
Equipment Operator (light)	Active	1.00	3.0	8	24.00	L	\$64.90	\$0.00		\$1,557.60
Vibratory Hammer & Extractor	Active	1.00	2.0	8	16.00	E	\$94.34	\$94.34		\$1,509.44
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	3.0	8	24.00	E	\$31.90	\$31.90		\$765.60
Labor Hours					168	TOTAL LABOR				\$8,967.84
Equipment Hours					104	TOTAL EQUIPMENT				\$8,535.04

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$448.39	\$448.39
TOTAL MATERIAL						\$448.39

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$8,967.84	Labor Burden @	49.7%	\$0.00		\$8,967.84
Material Cost	\$448.39	Material Tax @	7.8%	\$34.75		\$483.14
Equipment Cost	\$8,535.04	Equipment Tax @	0.0%	\$0.00		\$8,535.04
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$17,951			\$35	DIRECT COST SUBTOTALS	\$17,986
Installing Contractors Overhead @	15.0%	Crew				\$2,697.90
Installing Contractors Profit @	8.0%	Material				\$1,402.88
GC Markup on Subs @	5.0%	Subs				\$0.00
TOTAL MARKUP COSTS						\$4,098.13
General Contractors Insurance @	1.0%		on		\$22,084.16	\$221
Bond @	1.0%		on		\$22,084.16	\$221
Contingency @	0.0%		on		\$22,525.84	\$0
TOTAL COST for pay item						\$22,526

Additional Pay Item Notes :

The switchyard site and transmission line rights-of-way will be restored to the natural conditions. Production is based off of RSMs using Crew B-1C and B-3 (1 Forman, 2 laborer, 1 Excavator& 1 crane for lift, position and load in the truck, 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations and concrete for demo :4 Electrician,, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment. Assumed the structures are disposed to Yreka recycling, 34 miles away. These are only estimates as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION										
PAY ITEM NUMBER :	5.025				Project :	IRONGATE				
Description :	Remove Distribution Poles near Iron Gate Hydro Plant									
Quantity :	5.00 EA									
Daily Production :	2.50	EA per	8	hour shift	Project # :	Klamath Dams Removal				
Work Days :	2.0 Days				Estimator :	Mihaela Tomulescu				
Unit Price :	\$1,190.24 per EA				Probable Low Cost Parameter	2.875	EA per	\$5,059	Unit Price Per EA	\$1,012
Total Cost :	\$5,951				Probable High Cost Parameter	2	EA per	\$7,141	Unit Price Per EA	\$1,428

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	2.0	8	16.00	L	\$46.27	incl. in rate	incl. in rate	\$740.32
Electrician	Active	1.00	2.0	8	16.00	L	\$45.23	incl. in rate	incl. in rate	\$723.68
Hydraulic Crane (17tn)	Active	1.00	1.0	8	8.00	E	\$81.52	incl. in rate	incl. in rate	\$652.16
Laborer	Active	2.00	1.0	8	16.00	L	\$45.80	incl. in rate	incl. in rate	\$732.80
Truck, Flatbed (4x4, 10,000 gvw)	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
Vibratory Hammer & Extractor	Active	1.00	1.0	8	8.00	E	\$94.34	incl. in rate	incl. in rate	\$754.72
Truck Driver (heavy)	Active	1.00	1.0	8	8.00	L	\$57.59	incl. in rate	incl. in rate	\$460.72
Truck, Utility, with Man-Basket	Active	1.00	1.0	8	8.00	E	\$31.90	incl. in rate	incl. in rate	\$255.20
					Labor Hours	56	TOTAL LABOR			\$2,657.52
					Equipment Hours	32	TOTAL EQUIPMENT			\$1,917.28

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$132.88	\$132.88
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	5.00	CY	1.000	5.00	\$4.74	\$23.70
TOTAL MATERIAL						\$156.58

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$2,657.52	Labor Burden @	49.7%	\$0.00		\$2,657.52
Material Cost	\$156.58	Material Tax @	7.8%	\$12.13		\$168.71
Equipment Cost	\$1,917.28	Equipment Tax @	0.0%	\$0.00		\$1,917.28
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$4,731			\$12	DIRECT COST SUBTOTALS	\$4,744
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$4,743.51	\$711.53
Installing Contractors Profit@	8.0%				\$4,743.51	\$379.48
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$1,091.01
General Contractors Insurance @	1.0%		on		\$5,834.52	\$58
Bond @	1.0%		on		\$5,834.52	\$58
Contingency @	0.0%		on		\$5,951.21	\$0
					TOTAL COST for pay item	\$5,951

Additional Pay Item Notes :

Production is based off of RSMS using Crew R3 (1 Forman and 1 Electrician, 1 Crane). Considered 2 laborer and 1 Vibratory Hammer for demolish the pole foundation and helping placing poles in a designated place and loading them in the truck for disposal. This process includes filling in pole locations with gravel, clean fill and topsoil.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.026	Project	: IRONGATE						
Description	: Remove 69kV/6.6kV Transformer @Substation								
Quantity	: 1.00 EA								
Daily Production	: 2.50 EA per	8	hour shift	Project #	: Klamath Dams Removal	EA per	Total Cost	Unit Price Per EA	
Work Days	: 0.4	Days		Estimator	: Mihaela Tomulescu	2.875	\$1,932	\$1,932	
Unit Price	: \$2,273.46 per EA			Probable Low Cost Parameter		1.875	\$2,842	\$2,842	
Total Cost	: \$2,273			Probable High Cost Parameter					

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	0.4	8	3.20	L	\$47.23	incl. in rate	incl. in rate	\$151.14
Electrician	Active	1.00	0.4	8	3.20	L	\$45.23	incl. in rate	incl. in rate	\$144.74
Loader, FE Rubber Tire (8.6cy)	Active	1.00	0.4	8	3.20	E	\$221.50	incl. in rate	incl. in rate	\$708.80
Truck Driver (light)	Active	1.00	0.4	8	3.20	L	\$56.29	incl. in rate	incl. in rate	\$180.13
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.4	8	3.20	E	\$111.64	incl. in rate	incl. in rate	\$357.25
Equipment Operator (light)	Active	1.00	0.4	8	3.20	L	\$64.90	incl. in rate	incl. in rate	\$207.68
					Labor Hours	12.8	TOTAL LABOR			\$683.68
					Equipment Hours	6.4	TOTAL EQUIPMENT			\$1,066.05

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$34.18	\$34.18
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	5.00	CY	1.000	5.00	\$4.74	\$23.70
TOTAL MATERIAL						\$57.88

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
						\$0.00
						\$0.00
TOTAL SUBCONTRACTS						\$0.00

SUMMARY OF COSTS						
Labor Cost	\$683.68	Labor Burden @	49.7%	\$0.00		\$683.68
Material Cost	\$57.88	Material Tax @	7.8%	\$4.49		\$62.37
Equipment Cost	\$1,066.05	Equipment Tax @	0.0%	\$0.00		\$1,066.05
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,808			\$4	DIRECT COST SUBTOTALS	\$1,812
Installing Contractors Overhead@	15.0%	Crew				\$271.81
Installing Contractors Profit@	8.0%	Material				\$144.97
GC Markup on Subs @	5.0%	Subs				\$0.00
						TOTAL MARKUP COSTS
						\$416.78
General Contractors Insurance @	1.0%		on	\$2,228.88		\$22
Bond @	1.0%		on	\$2,228.88		\$22
Contingency @	0.0%		on	\$2,273.46		\$0
TOTAL COST for pay item						\$2,273

Additional Pay Item Notes :

Production is based off of RSMs using Crew Elec2 : 1 El. Forman and 1 Electrician, 1 Loader and 1 truck for disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.027	Project	: IRONGATE						
Description	: Remove 6.6kV Power Circuit Breaker @Substation								
Quantity	: 1.00 EA								
Daily Production	: 1.00 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 1.0 Days								
Unit Price	: \$1,524.31 per EA	Estimator	: Mihaela Tomulescu	EA per	1.15	Total Cost	\$1,296	Unit Price Per EA	\$1,296
Total Cost	: \$1,524	Probable Low Cost Parameter		Probable High Cost Parameter	0.75	\$1,905	\$1,905		

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	1.0	8	8.00	L	\$47.23	incl. in rate	incl. in rate	\$377.84
Electrician	Active	1.00	1.0	8	8.00	L	\$45.23	incl. in rate	incl. in rate	\$361.84
Loader, FE Rubber Tire (3.5cy)	Active	1.00	0.2	8	1.60	E	\$64.23	incl. in rate	incl. in rate	\$102.77
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate	\$178.62
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate	\$90.06
Equipment Operator (light)	Active	1.00	0.2	8	1.60	L	\$64.90	incl. in rate	incl. in rate	\$103.84
					Labor Hours	19.2	TOTAL LABOR			\$933.58
					Equipment Hours	3.2	TOTAL EQUIPMENT			\$281.39

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
						\$0.00
						\$0.00
						\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$933.58	Labor Burden @	49.7%	\$0.00		\$933.58
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$281.39	Equipment Tax @	0.0%	\$0.00		\$281.39
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$1,215			\$0	DIRECT COST SUBTOTALS	\$1,215
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$1,214.98	\$182.25
Installing Contractors Profit@	8.0%				\$1,214.98	\$97.20
GC Markup on Subs @	5.0%				\$0.00	\$0.00
						TOTAL MARKUP COSTS
						\$279.44
General Contractors Insurance @	1.0%		on		\$1,494.42	\$15
Bond @	1.0%		on		\$1,494.42	\$15
Contingency @	0.0%		on		\$1,524.31	\$0
						TOTAL COST for pay item
						\$1,524

Additional Pay Item Notes :

Production is based off of RSMs using Crew Elec2 : 1 El. Forman and 1 Electrician, 1 Loader and 1 truck for disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.028	Project	: IRONGATE						
Description	: Remove Generator @Substation								
Quantity	: 1.00 EA								
Daily Production	: 0.25 EA per	8	hour shift	Project #	: Klamath Dams Removal				
Work Days	: 4.0 Days	Estimator	: Mihaela Tomulescu	EA per	Total Cost	Unit Price Per EA			
Unit Price	: \$4,767.78 per EA	Probable Low Cost Parameter	0.2875	\$4,053	\$4,053				
Total Cost	: \$4,768	Probable High Cost Parameter	0.1875	\$5,960	\$5,960				

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Electrician Foreman	Active	1.00	4.0	8	32.00	L	\$47.23	incl. in rate	incl. in rate	\$1,511.36
Electrician	Active	1.00	4.0	8	32.00	L	\$45.23	incl. in rate	incl. in rate	\$1,447.36
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	incl. in rate	incl. in rate	\$130.43
Truck, Off-Road, Articulated Rear, 20cy	Active	1.00	0.2	8	1.60	E	\$111.64	incl. in rate	incl. in rate	\$178.62
Truck Driver (light)	Active	1.00	0.2	8	1.60	L	\$56.29	incl. in rate	incl. in rate	\$90.06
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	incl. in rate	incl. in rate	\$109.46
	Active	1.00	0.2	8	1.60	E	\$208.09	incl. in rate	incl. in rate	\$332.94
Labor Hours					67.2	TOTAL LABOR				\$3,158.24
Equipment Hours					4.8	TOTAL EQUIPMENT				\$642.00

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
						\$0.00	\$0.00
						\$0.00	\$0.00
TOTAL MATERIAL						\$0.00	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS									
Labor Cost	\$3,158.24	Labor Burden @	49.7%	\$0.00	\$3,158.24				
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00	\$0.00				
Equipment Cost	\$642.00	Equipment Tax @	0.0%	\$0.00	\$642.00				
Subcontractors	\$0.00				\$0.00				
DIRECT COST SUBTOTALS	\$3,800			\$0	\$3,800				
		Crew	Material	Subs	Cost Basis				
Installing Contractors Overhead@	15.0%				\$570.04				
Installing Contractors Profit@	8.0%				\$304.02				
GC Markup on Subs @	5.0%				\$0.00				
		TOTAL MARKUP COSTS			\$874.06				
General Contractors Insurance @	1.0%	on			\$47				
Bond @	1.0%	on			\$47				
Contingency @	0.0%	on			\$0				
					\$4,674.30				
					\$4,768				
TOTAL COST for pay item					\$4,768				

Additional Pay Item Notes :

Production is based off of RSMS using Crew Elec2 : 1 El. Forman and 1 Electrician, 1 Crane , 1 Laborer and 1 truck for disposal.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.029	Project	: IRONGATE						
Description	: Remove all auxiliary equipment @Substation (Allowance)								
Quantity	: 1.00 LS								
Daily Production	: 0.25 LS per 8 hour shift	Project #	: Klamath Dams Removal						
Work Days	: 3.0 Days	Estimator	: Mihaela Tomulescu	LS per	: 0.2875	Total Cost	: \$22,836	Unit Price Per LS	: \$22,836
Unit Price	: \$26,865.48 per LS	Probable Low Cost Parameter	: 0.1875	Total Cost	: \$33,582	Unit Price Per LS	: \$33,582		
Total Cost	: \$26,865	Probable High Cost Parameter	: 0.1875	Total Cost	: \$33,582	Unit Price Per LS	: \$33,582		

CREW COSTS											
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Electrician Foreman	Active	1.00	3.0	8	24.00	L	\$47.23	incl. in rate	incl. in rate		\$1,133.52
Electrician	Active	2.00	3.0	8	48.00	L	\$45.23	incl. in rate	incl. in rate		\$2,171.04
Hydraulic Crane (17tn)	Active	1.00	0.2	8	1.60	E	\$81.52	incl. in rate	incl. in rate		\$130.43
Truck, Off-Road, Articulated Rear, 20cy	Active	2.00	0.2	8	3.20	E	\$111.64	incl. in rate	incl. in rate		\$357.25
Truck Driver (light)	Active	2.00	0.2	8	3.20	L	\$56.29	incl. in rate	incl. in rate		\$180.13
Equipment Operator (crane)	Active	1.00	0.2	8	1.60	L	\$68.41	incl. in rate	incl. in rate		\$109.46
Laborer	Active	2.00	4.0	8	64.00	L	\$45.80	incl. in rate	incl. in rate		\$2,931.20
Hydraulic Excavator (2.5cy)	Active	1.00	4.0	8	32.00	E	\$203.63	incl. in rate	incl. in rate		\$6,516.16
Truck, Utility, with Man-Basket	Active	1.00	2.0	8	16.00	E	\$31.90	incl. in rate	incl. in rate		\$510.40
Vibratory Hammer & Extractor	Active	1.00	0.2	8	1.60	E	\$94.34	incl. in rate	incl. in rate		\$150.94
Equipment Operator (light)	Active	1.00	4.0	8	32.00	L	\$64.90	incl. in rate	incl. in rate		\$2,076.80
Grader, 180hp, 13' blade	Active	1.00	4.0	8	32.00	E	\$80.79	incl. in rate	incl. in rate		\$2,585.28
					Labor Hours	172.8	TOTAL LABOR				\$8,602.14
					Equipment Hours	86.4	TOTAL EQUIPMENT				\$10,250.46

MATERIAL COSTS						
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost
Soils for earthwork, common borrow, spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction		CY	1.000	0.00	\$21.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
Rent trailer with cable pulling rig, for high voltage line work - Rent per day	1.00	days		\$3,000.00	\$3,000.00
TOTAL SUBCONTRACTS					\$3,000.00

SUMMARY OF COSTS						
Labor Cost	\$8,602.14	Labor Burden @	49.7%	\$0.00		\$8,602.14
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00		\$0.00
Equipment Cost	\$10,250.46	Equipment Tax @	0.0%	\$0.00		\$10,250.46
Subcontractors	\$3,000.00					\$3,000.00
DIRECT COST SUBTOTALS	\$21,853			\$0	DIRECT COST SUBTOTALS	\$21,853
Installing Contractors Overhead@	15.0%	Crew			Cost Basis	\$2,827.89
Installing Contractors Profit@	8.0%	Material				\$1,508.21
GC Markup on Subs @	5.0%	Subs				\$150.00
						TOTAL MARKUP COSTS
General Contractors Insurance @	1.0%		on	\$26,338.71		\$263
Bond @	1.0%		on	\$26,338.71		\$263
Contingency @	0.0%		on	\$26,865.48		\$0
TOTAL COST for pay item						\$26,865

Additional Pay Item Notes :

Assumed 3 days of work to clean and the substation rights-of-way to be restored to the natural conditions. Production is based off of RSMs using Crew formed of 1 Foreman, 4 Electrician, 2 laborer, 1 Excavator & 1 crane for lift, position and load in the truck., 1 Hydraulic rock-splitting/rock-drilling equipment to break equipment foundations, 1 utility truck access poles, string conductor, modify structure arms, provide guard structures, etc. Crews may be working simultaneously along the project alignment and substations, hydro plant and switchyard.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 5.030	Project	: IRONGATE						
Description	: New Connection @Iron Gate Hatchery from PacifiCorp's Hornbrook Substation (Allowance)								
Quantity	: 1.00 LS	Project #	: Klamath Dams Removal						
Daily Production	: 1.00 LS per	Estimator	: Mihaela Tomulescu		LS per	Total Cost	Unit Price Per LS		
Work Days	: 10.0 Days	Probable Low Cost Parameter			1.1	\$268,928	\$268,928		
Unit Price	: \$298,809.00 per LS	Probable High Cost Parameter			0.9	\$328,690	\$328,690		
Total Cost	: \$298,809								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
					Labor Hours	0	TOTAL LABOR			\$0.00
					Equipment Hours	0	TOTAL EQUIPMENT			\$0.00

MATERIAL COSTS							
Description	Item	Order	Conversion	Order	Order	Material	
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost	
							\$0.00
							\$0.00
							\$0.00
TOTAL MATERIAL							\$0.00

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes /	Unit	Contract or Quote	
			Company	Price	Amount	
New Connection (Allowance)	0.90	miles		310,000.00	\$279,000.00	
TOTAL SUBCONTRACTS					\$279,000.00	

SUMMARY OF COSTS								
Labor Cost	\$0.00	Labor Burden @	49.7%	\$0.00				\$0.00
Material Cost	\$0.00	Material Tax @	7.8%	\$0.00				\$0.00
Equipment Cost	\$0.00	Equipment Tax @	0.0%	\$0.00				\$0.00
Subcontractors	\$279,000.00							\$279,000.00
DIRECT COST SUBTOTALS	\$279,000			\$0	DIRECT COST SUBTOTALS			\$279,000
		Crew	Material	Subs	Cost Basis			
Installing Contractors Overhead @	15.0%							\$0.00
Installing Contractors Profit @	8.0%							\$0.00
GC Markup on Subs @	5.0%							\$13,950.00
							TOTAL MARKUP COSTS	\$13,950.00
General Contractors Insurance @	1.0%		on					\$292,950.00
Bond @	1.0%		on					\$292,950.00
Contingency @	0.0%		on					\$298,809.00
TOTAL COST for pay item							\$298,809	

Additional Pay Item Notes :

Iron Gate Hatchery located near the Klamath River downstream of Iron Gate Dam will require a new connection from PacifiCorp's Hornbrook Substation (5G19). Details for connection requirements are unknown at this stage, this estimate is just an allowance for assumed 0.9 miles of overhead distribution line. Transmission line poles or structures are commonly between 60 and 140 feet tall. Distribution line structures are approximately 40 to 60 feet tall. There are several different kinds of transmission structures. Transmission structures can be constructed of metal or wood. They can be single-poled or multi-poled. They can be single-circuited, carrying one set of transmission lines or double-circuited with two sets of lines. A typical new 69 kV overhead single-circuit transmission line costs approximately \$315,000 per mile as opposed to \$1.6 million per mile for a new 69 kV underground line (without the terminals).

PAY ITEM INFORMATION									
PAY ITEM NUMBER	5.032				Project	JC BOYLE			
Description	Install 230kV strain transmission structures outside JC Boyle Substation								
Quantity	2.00 EA								
Daily Production	0.10 EA per		8	hour shift	Project #	Klamath Dams Removal			
Work Days	20.0		Days		Estimator	Mihaela Tomulescu		EA per	
Unit Price	\$132,241.37		per EA		Probable Low Cost Parameter	0.11		Total Cost	\$238,034
Total Cost	\$264,483				Probable High Cost Parameter	0.08		Total Cost	\$317,379
								Unit Price Per EA	\$119,017.23
									\$158,689.64

CREW COSTS										
Description	Active Idle	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Labor Foreman (out)	Active	1.00	20.0	8	160.00	L	\$46.27	incl. in rate	incl. in rate	\$7,403.20
Electrician	Active	2.00	20.0	8	320.00	L	\$45.23	incl. in rate	incl. in rate	\$14,473.60
Hydraulic Crane (35tn)	Active	2.00	20.0	8	320.00	E	\$116.30	incl. in rate	incl. in rate	\$37,216.00
Equipment Operator (crane)	Active	2.00	20.0	8	320.00	L	\$68.41	incl. in rate	incl. in rate	\$21,891.20
Truck Driver (heavy)	Active	1.00	20.0	8	160.00	L	\$57.59	incl. in rate	incl. in rate	\$9,214.40
Truck, Flatbed (4x4, 10,000 gww)	Active	1.00	20.0	8	160.00	E	\$31.90	incl. in rate	incl. in rate	\$5,104.00
Steelworker	Active	2.00	20.0	8	320.00	L	\$65.52	incl. in rate	incl. in rate	\$20,966.40
Truck, Utility, with Man-Basket	Active	1.00	20.0	8	160.00	E	\$31.90	incl. in rate	incl. in rate	\$5,104.00
Truck, Pickup (4x4, 3/4tn)	Active	1.00	20.0	8	160.00	E	\$16.94	incl. in rate	incl. in rate	\$2,710.40
Grader, 180hp, 13' blade	Active	1.00	1.0	8	8.00	E	\$80.79	incl. in rate	incl. in rate	\$646.32
Leverman	Active	1.00	1.0	8	8.00	L	\$70.34	incl. in rate	incl. in rate	\$562.72
Hydraulic Excavator (2.5cy)	Active	1.00	1.0	8	8.00	E	\$203.63	incl. in rate	incl. in rate	\$1,629.04
Loader, FE Rubber Tire (3.5cy)	Active	1.00	2.0	8	16.00	E	\$64.23	incl. in rate	incl. in rate	\$1,027.68
					Labor Hours	1288	TOTAL LABOR			\$74,511.52
					Equipment Hours	832	TOTAL EQUIPMENT			\$53,437.44

MATERIAL COSTS							
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost	
Consumables 5% labor (saw blades, drill bits, etc)	1.00	LS	1.000	1.00	\$3,725.58	\$3,725.58	
Steel Tower - Large Angle	2.00	EA	1.000	2.00	\$25,500.00	\$51,000.00	
Foundation	48.00	CY	1.000	48.00	\$155.00	\$7,440.00	
Piles	8.00	EA	1.000	8.00	\$1,200.00	\$9,600.00	
Ceramic Insulators	192.00	Bells	1.000	192.00	\$18.00	\$3,456.00	
V-String Hardware	6.00	EA	1.000	6.00	\$230.00	\$1,380.00	
Grounding	2.00	EA	1.000	2.00	\$150.00	\$300.00	
						TOTAL MATERIAL	\$76,901.58

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS					
Labor Cost	\$74,511.52	Labor Burden @	49.7%	\$0.00	\$74,511.52
Material Cost	\$76,901.58	Material Tax @	7.8%	\$5,959.87	\$82,861.45
Equipment Cost	\$53,437.44	Equipment Tax @	0.0%	\$0.00	\$53,437.44
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$204,851			\$5,960	DIRECT COST SUBTOTALS \$210,811
Installing Contractors Overhead @	15.0%	Crew			\$31,621.56
Installing Contractors Profit @	8.0%	Material			\$16,864.83
GC Markup on Subs @	5.0%	Subs			\$0.00
					TOTAL MARKUP COSTS \$48,486.39
General Contractors Insurance @	1.0%		on	\$259,296.80	\$2,593
Bond @	1.0%		on	\$259,296.80	\$2,593
Contin	0.0%		on	\$264,482.74	\$0
					TOTAL COST for pay \$264,483

Additional Pay Item Notes :

Engineering and construction costs only. Environmental, Permitting, and Right of way Acquisition costs are not included. The following is a summary of anticipated equipment to be used for each construction activity. Survey work only requires the use of pickup trucks or ATVs. To dig holes and install the directly embedded structures or install 230-kV foundations it is anticipated that pickup trucks, 2-ton trucks, hole diggers, bulldozers, concrete trucks, carry alls, cranes, hydro crane, wagon drill, dump trucks, and front-end loaders will be used. Hauling lattice steel members, tubular poles, braces and hardware to the structure sites will require the use of steel haul trucks; carry alls, cranes, and forklifts. For assembly and erection of structures it is anticipated that pickup trucks, 2-ton trucks, carry alls, cranes, and a heavy lift helicopter may be used, not included here. Final cleanup, reclamation, and restoration will utilize pickups, 2-ton trucks, bulldozers, motor graders, dump trucks, front-end loaders.. The contractor will mobilize equipment and personnel to the construction site at various stages in the Project schedule depending on operational requirements. Assumed 230KV Single Circuit Tower. Estimate includes just towers and not included the transmission line to tie existing 230KV transmission line north and south of JC Boyle Substation together. The estimated costs can vary due to fluctuations in steel pricing, subsurface conditions, contractor availability and the time of year. Taking into account these fluctuations, the estimates are subject to a contingency of 20%. These are only estimates as actual pricing would occur during the detailed engineering and construction bid process.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	6.003			Project :	Yreka Waterline				
Description :	Yreka Waterline Replacement (Pile and Lagging Wall Installation)			Project # :	6				
Quantity :	13,715.00	SF		Estimator :	Eric Jones		SF per	Total Cost	Unit Price Per SF
Daily Production :	457.17	SF per	8	Probable Low Cost Parameter	548.604		\$801,038	\$62.06	
Work Days :	30.0	Days		Probable High Cost Parameter	274.302		\$1,401,816	\$94.91	
Unit Price :	\$73.01 per SF								
Total Cost :	\$1,001,297								

CREW COSTS										
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost
Equipment Operator (crane)	Active	2.00	30.0	8	480.00	L	\$68.41	incl. in rate	incl. in rate	\$32,836.80
Equipment Operator (oiler)	Active	1.00	30.0	8	240.00	L	\$62.94	incl. in rate	incl. in rate	\$15,105.60
Laborer	Active	3.00	30.0	8	720.00	L	\$45.80	incl. in rate	incl. in rate	\$32,976.00
Crawler Crane (90tn)	Active	1.00	30.0	8	240.00	E	\$208.09	incl. in rate	incl. in rate	\$49,941.60
Air Compressor 600 cfm	Active	1.00	30.0	8	240.00	E	\$21.74	incl. in rate	incl. in rate	\$5,217.34
0		0.00	30.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		0.00	30.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		0.00	30.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		0.00	30.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		0.00	30.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
0		0.00	30.0	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
Pile Driver	Active	4.00	30.0	8	960.00	L	\$49.50	incl. in rate	incl. in rate	\$47,520.00
Pile Driver Foreman	Active	1.00	30.0	8	240.00	L	\$51.50	incl. in rate	incl. in rate	\$12,360.00
Lead 60' High	Active	1.00	30.0	8	240.00	E	\$9.50	incl. in rate	incl. in rate	\$2,280.00
Hammer Diesel 15K ft-lbs	Active	1.00	30.0	8	240.00	E	\$75.72	incl. in rate	incl. in rate	\$18,172.80
50' Air Hoses 3"	Active	2.00	30.0	8	480.00	E	\$1.86	incl. in rate	incl. in rate	\$892.80
Chainsaw Gas, 36"	Active	1.00	30.0	8	240.00	E	\$5.63	incl. in rate	incl. in rate	\$1,351.20
					Labor Hours	2640	TOTAL LABOR			\$140,798.40
					Equipment Hours	1680	TOTAL EQUIPMENT			\$77,855.74

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Pile and Lagging	13,715.00	SF	1.000	13,715.00	\$38.80	\$532,169.43	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ls	1.000	0.00	\$8,000.00	\$0.00	\$0.00	
							TOTAL MATERIAL	\$532,169.43

SUBCONTRACT COSTS						
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount	
					\$0.00	
					\$0.00	
					\$0.00	
					\$0.00	
					TOTAL SUBCONTRACTS	\$0.00

SUMMARY OF COSTS							
Labor Cost	\$140,798.40	Labor Burden @	0.0%			\$140,798.40	
Material Cost	\$532,169.43	Material Tax @	7.75%	\$41,243.13		\$573,412.56	
Equipment Cost	\$77,855.74	Equipment Tax @	7.75%	\$6,033.82		\$83,889.56	
Subcontractors	\$0.00					\$0.00	
DIRECT COST SUBTOTALS		\$750,824		\$47,277		DIRECT COST SUBTOTALS	\$798,101
Installing Contractors Overhead@	15.0%	Crew			\$798,100.52	\$119,715.08	
Installing Contractors Profit@	8.0%	Material			\$798,100.52	\$63,848.04	
GC Markup on Subs @	5.0%	Subs			\$0.00	\$0.00	
						TOTAL MARKUP COSTS	\$183,563.12
General Contractors Insurance @	1.0%		on		\$981,663.64	\$9,817	
Bond @	1.0%		on		\$981,663.64	\$9,817	
Contingency @	0.0%		on		\$1,001,296.91	\$0	
TOTAL COST for pay item						\$1,001,297	

Additional Pay Item Notes :

Adjusted RSM Crew B50 to account for tight work area. Equipment matches Crew B50 from RSM. Figure it will take 3 weeks per side to install wall there will be some equipment downtime due to having to do the pile and lagging wall being built from top down.

PAY ITEM INFORMATION									
PAY ITEM NUMBER :	6.004			Project :	Yreka Waterline				
Description :	Yreka Waterline Replacement (Pipe Installation)								
Quantity :	2,106.00	LF		Project # :	6				
Daily Production :	70.00	LF per	8	Estimator :	Eric Jones		LF per	Total Cost	Unit Price Per LF
Work Days :	30.1	Days		Probable Low Cost Parameter	84	\$225,358	\$113.70		
Unit Price :	\$133.76	per LF		Probable High Cost Parameter	42	\$394,377	\$173.89		
Total Cost :	\$281,698								

CREW COSTS											
Description	Active	# in crew	Days Worked	Hours /day	Total Hours	L/E	Hourly Rate	Hrly oper. Cost	Burden Rate	Labor / Equipment Cost	
Labor Foreman (out)	Active	1.00	30.1	8	240.80	L	\$46.27	incl. in rate	incl. in rate	\$11,141.82	
Laborer	Active	1.00	30.1	8	240.80	L	\$45.80	incl. in rate	incl. in rate	\$11,028.64	
Equipment Operator (crane)	Active	1.00	30.1	8	240.80	L	\$68.41	incl. in rate	incl. in rate	\$16,473.13	
Hydraulic Crane (17tn)	Active	1.00	30.1	8	240.80	E	\$81.52	incl. in rate	incl. in rate	\$19,630.02	
Welder, Portable	Active	1.00	30.1	8	240.80	E	\$7.84	incl. in rate	incl. in rate	\$1,887.27	
Steelworker		0.00	30.1	8	0.00	L	\$65.52	incl. in rate	incl. in rate	\$0.00	
0		0.00	30.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0		0.00	30.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0		0.00	30.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0		0.00	30.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0		0.00	30.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
0		0.00	30.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00	
Plumber	Active	1.00	30.1	8	240.80	L	\$61.80	incl. in rate	incl. in rate	\$14,881.44	
Plumber Apprentice	Active	1.00	30.1	8	240.80	L	\$49.45	incl. in rate	incl. in rate	\$11,907.56	
	Active	0.00	30.1	8	0.00	E	\$9.50	incl. in rate	incl. in rate	\$0.00	
	Active	0.00	30.1	8	0.00	E	\$75.72	incl. in rate	incl. in rate	\$0.00	
	Active	0.00	30.1	8	0.00	E	\$1.86	incl. in rate	incl. in rate	\$0.00	
	Active	0.00	30.1	8	0.00	E	\$5.63	incl. in rate	incl. in rate	\$0.00	
Labor Hours					1204					TOTAL LABOR	\$65,432.58
Equipment Hours					481.6					TOTAL EQUIPMENT	\$21,517.29

MATERIAL COSTS								
Description	Item Quantity	Order Unit	Conversion Factor / Waste	Order Quantity	Order Price	Material Cost		
Pipe Material	1,053.00	LF	1.000	1,053.00	\$119.79	\$126,138.87	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ea	1.000	0.00	\$50.00	\$0.00	\$0.00	
		ls	1.000	0.00	\$50.00	\$0.00	\$0.00	
TOTAL MATERIAL							\$126,138.87	\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS						
Labor Cost	\$65,432.58	Labor Burden @	0.0%			\$65,432.58
Material Cost	\$126,138.87	Material Tax @	7.75%	\$9,775.76		\$135,914.63
Equipment Cost	\$21,517.29	Equipment Tax @	7.75%	\$1,667.59		\$23,184.88
Subcontractors	\$0.00					\$0.00
DIRECT COST SUBTOTALS	\$213,089			\$11,443	DIRECT COST SUBTOTALS	\$224,532
		Crew	Material	Subs	Cost Basis	
Installing Contractors Overhead@	15.0%				\$224,532.09	\$33,679.81
Installing Contractors Profit@	8.0%				\$224,532.09	\$17,962.57
GC Markup on Subs @	5.0%				\$0.00	\$0.00
					TOTAL MARKUP COSTS	\$51,642.38
General Contractors Insurance @	1.0%		on		\$276,174.47	\$2,762
Bond @	1.0%		on		\$276,174.47	\$2,762
Contingency @	0.0%		on		\$281,697.96	\$0
					TOTAL COST for pay item	\$281,698

Additional Pay Item Notes :

Figuring it will take 1 month to install pipe complete including welding joints.

PAY ITEM INFORMATION									
PAY ITEM NUMBER	: 6.005	Project	: Yreka Waterline						
Description	: Yreka Waterline Replacement (Excavation and Backfill)								
Quantity	: 3,653.00 CY	Project #	: 6						
Daily Production	: 91.00 CY per	Estimator	: Eric Jones	CY per	Total Cost	Unit Price Per CY			
Work Days	: 40.1 Days	Probable Low Cost Parameter	109.2	\$258,477	\$75.18				
Unit Price	: \$88.45 per CY	Probable High Cost Parameter	54.6	\$452,335	\$114.98				
Total Cost	: \$323,097								

CREW COSTS										
Description	Active	# in	Days	Hours	Total	L/E	Hourly	Hrly oper.	Burden	Labor / Equipment
	Idle	crew	Worked	/day	Hours		Rate	Cost	Rate	Cost
Equipment Operator (crane)	Active	1.00	30.1	8	240.60	L	\$68.41	incl. in rate	incl. in rate	\$16,459.45
Equipment Operator (oiler)	Active	1.00	30.1	8	240.60	L	\$62.94	incl. in rate	incl. in rate	\$15,143.36
Laborer	Active	5.00	40.1	8	1,604.00	L	\$45.80	incl. in rate	incl. in rate	\$73,463.20
Equipment Operator (medium)	Active	2.00	40.1	8	641.60	L	\$66.28	incl. in rate	incl. in rate	\$42,525.25
Labor Foreman (out)	Active	1.00	40.1	8	320.80	L	\$46.27	incl. in rate	incl. in rate	\$14,843.42
Crawler Crane (90tn)	Active	1.00	30.1	8	240.60	E	\$208.09	incl. in rate	incl. in rate	\$50,066.45
Dozer (235hp)(CATD7)	Active	1.00	20.1	8	160.40	E	\$165.11	incl. in rate	incl. in rate	\$26,483.64
Roller, Dbl Drum (steel wheel, 5.0 - 7.9 MTn)	Active	1.00	20.1	8	160.40	E	\$64.77	incl. in rate	incl. in rate	\$10,389.11
Gas Engine Tamp	Active	1.00	40.1	8	320.80	E	\$4.10	incl. in rate	incl. in rate	\$1,316.01
0		0.00	40.1	8	0.00	0	\$0.00	incl. in rate	incl. in rate	\$0.00
		0.00	40.1	8	0.00	0	\$0.00	\$0.00		\$0.00
		0.00	40.1	8	0.00	0	\$0.00	\$0.00		\$0.00
	Active	0.00	40.1	8	0.00	L	\$49.50	incl. in rate	incl. in rate	\$0.00
	Active	0.00	40.1	8	0.00	L	\$51.50	incl. in rate	incl. in rate	\$0.00
	Active	0.00	40.1	8	0.00	E	\$9.50	incl. in rate	incl. in rate	\$0.00
	Active	0.00	40.1	8	0.00	E	\$75.72	incl. in rate	incl. in rate	\$0.00
	Active	0.00	40.1	8	0.00	E	\$1.86	incl. in rate	incl. in rate	\$0.00
	Active	0.00	40.1	8	0.00	E	\$5.63	incl. in rate	incl. in rate	\$0.00
Labor Hours					3047.6					\$162,434.67
Equipment Hours					882.2					\$88,255.22
									TOTAL LABOR	\$162,434.67
									TOTAL EQUIPMENT	\$88,255.22

MATERIAL COSTS						
Description	Item	Order	Conversion	Order	Order	Material
	Quantity	Unit	Factor / Waste	Quantity	Price	Cost
		SF	1.000	0.00	\$38.80	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ea	1.000	0.00	\$50.00	\$0.00
		ls	1.000	0.00	\$8,000.00	\$0.00
TOTAL MATERIAL						\$0.00

SUBCONTRACT COSTS					
Description	Quantity	Units	Notes / Company	Unit Price	Contract or Quote Amount
					\$0.00
					\$0.00
					\$0.00
					\$0.00
TOTAL SUBCONTRACTS					\$0.00

SUMMARY OF COSTS					
Labor Cost	\$162,434.67	Labor Burden @	0.0%		\$162,434.67
Material Cost	\$0.00	Material Tax @	7.75%	\$0.00	\$0.00
Equipment Cost	\$88,255.22	Equipment Tax @	7.75%	\$6,839.78	\$95,094.99
Subcontractors	\$0.00				\$0.00
DIRECT COST SUBTOTALS	\$250,690			\$6,840	\$257,530
		Crew	Material	Subs	Cost Basis
Installing Contractors Overhead@	15.0%				\$38,629.45
Installing Contractors Profit@	8.0%				\$20,602.37
GC Markup on Subs @	5.0%				\$0.00
TOTAL MARKUP COSTS					\$59,231.82
General Contractors Insurance @	1.0%		on	\$316,761.49	\$3,168
Bond @	1.0%		on	\$316,761.49	\$3,168
Contingency @	0.0%		on	\$323,096.72	\$0
TOTAL COST for pay item					\$323,097

Additional Pay Item Notes :

Figuring material will be piled near excavation due to material needing me reused for backfilling pits and new watermain. Figuring crane will be used 3/4 of the time to backfill pits. Figured dozer and roller will be used 1/2 of the time to backfill open excavation area.

Attachment C Risk Distribution Model Inputs

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Risk Distribution Model Inputs

ENGINEERING & CONSTRUCTION MANAGEMENT

Name	Cell	Graph	Function	Min	Mean	Max
31ProjectDetail attached	U95		RiskPert(S95,R95,T95,RiskName(B95&C95&H95))	1892400	2008600	\$2,191,200.00
32ProjectDetail attached	U98		RiskPert(S98,R98,T98,RiskName(B98&C98&H98))	280250	297458.3	\$324,500.00
32Project	U99		RiskPert(S99,R99,T99,RiskName(B99&C99&H99))	3405750	3614875	\$3,943,500.00
32Project	U100		RiskPert(S100,R100,T100,RiskName(B100&C100&H100))	1852500	1966250	\$2,145,000.00
32Project	U101		RiskPert(S101,R101,T101,RiskName(B101&C101&H101))	270750	287375	\$313,500.00
33ProjectDetail attached	U104		RiskPert(S104,R104,T104,RiskName(B104&C104&H104))	5861700	6730100	\$8,466,900.00
34ProjectDetail attached	U107		RiskPert(S107,R107,T107,RiskName(B107&C107&H107))	960996.1	1020005	\$1,112,732.00
35ProjectDetail attached	U110		RiskPert(S110,R110,T110,RiskName(B110&C110&H110))	10085770	10705070	\$11,678,260.00

CONSTRUCTION

DAM REMOVAL

JC Boyle

Name	Cell	Graph	Function	Min	Mean	Max
41JC BoyleRemoval of Diversion Conduit Bulkheads	U114		RiskPert(S114,R114,T114,RiskName(B114&C114&H114))	19792.93	20834.66	\$21,876.40
41JC BoyleRemove Water from behind Tailrace Cofferdam	U115		RiskPert(S115,R115,T115,RiskName(B115&C115&H115))	5374.84	6021.81	\$6,867.85
41JC BoyleProvide Dewatering behind Tailrace Cofferdam	U116		RiskPert(S116,R116,T116,RiskName(B116&C116&H116))	61791.86	69229.77	\$78,956.27
41JC BoyleConstruct Embankment Cofferdam in Tailrace around Powerhouse	U117		RiskPert(S117,R117,T117,RiskName(B117&C117&H117))	220246.9	248797.4	\$293,662.50
41JC BoyleRemove Spillway Concrete	U118		RiskPert(S118,R118,T118,RiskName(B118&C118&H118))	662853.1	786325.7	\$935,792.60
41JC BoyleRemove Monorail Structural Steel Components	U119		RiskPert(S119,R119,T119,RiskName(B119&C119&H119))	9688.4	11213.42	\$14,532.60
41JC BoyleRemove Fish Ladder Concrete	U120		RiskPert(S120,R120,T120,RiskName(B120&C120&H120))	614464.3	682738.1	\$751,011.90
41JC BoyleRemove Gravity Dam Section Concrete	U121		RiskPert(S121,R121,T121,RiskName(B121&C121&H121))	194820.9	231111	\$275,041.20
41JC BoyleRemove Timber Equipment Ramp on left side of Dam	U122		RiskPert(S122,R122,T122,RiskName(B122&C122&H122))	6663.72	8100.99	\$10,583.55
41JC BoyleRemove Pressure-Treated Lumber from Footbridge around Intake Structure	U123		RiskPert(S123,R123,T123,RiskName(B123&C123&H123))	26206.81	29361.33	\$33,486.48
41JC BoyleRemove Storage Shed located on access road	U124		RiskPert(S124,R124,T124,RiskName(B124&C124&H124))	133063.1	141233.7	\$154,073.10
41JC BoyleRemove Warehouse located on access road	U125		RiskPert(S125,R125,T125,RiskName(B125&C125&H125))	100609.3	106787.1	\$116,495.00

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41JC BoyleRemove Warehouse located on access road	U125		RiskPert(\$I25,R125,T125,RiskName(B125&C125&H125))	100609.3	106787.1	\$116,495.00
41JC BoyleRemove Fire System Control Bldg. on left abutment	U126		RiskPert(\$I26,R126,T126,RiskName(B126&C126&H126))	14448.33	15335.5	\$16,729.64
41JC BoyleRemove Dam Communication Bldg. on left abutment	U127		RiskPert(\$I27,R127,T127,RiskName(B127&C127&H127))	14247.2	15122.03	\$16,496.76
41JC BoyleRemove Concrete Slab on left abutment for former Control House	U128		RiskPert(\$I28,R128,T128,RiskName(B128&C128&H128))	10803.52	12103.94	\$13,804.50
41JC BoyleRemove 4'x5' Metal Hatch on top of Concrete Pull Box on left abutment	U129		RiskPert(\$I29,R129,T129,RiskName(B129&C129&H129))	1791.36	1990.4	\$2,189.44
41JC BoyleRemove Reservoir Level Gauge House on Dam Crest	U130		RiskPert(\$I30,R130,T130,RiskName(B130&C130&H130))	3556.86	3775.26	\$4,118.47
41JC BoyleUpstream Riprap	U131		RiskPert(\$I31,R131,T131,RiskName(B131&C131&H131))	208125.7	231250.8	\$254,375.80
41JC BoyleDownstream Riprap	U132		RiskPert(\$I32,R132,T132,RiskName(B132&C132&H132))	122426.9	136029.9	\$149,632.80
41JC BoyleMiscellaneous Excavation	U133		RiskPert(\$I33,R133,T133,RiskName(B133&C133&H133))	1319586	1565391	\$1,862,945.00
41JC BoyleCutoff Wall Concrete Demolition	U134		RiskPert(\$I34,R134,T134,RiskName(B134&C134&H134))	49044.27	52485.97	\$59,369.37
41JC BoyleCutoff Wall Anchors	U135		RiskPert(\$I35,R135,T135,RiskName(B135&C135&H135))	3915.18	4155.59	\$4,533.37
41JC BoyleRemove & Dispose Hand Rails and Light Poles	U136		RiskPert(\$I36,R136,T136,RiskName(B136&C136&H136))	4516.91	4833.89	\$5,467.84
41JC BoyleRemove & Dispose Spillway Radial Gates and Hoists	U137		RiskPert(\$I37,R137,T137,RiskName(B137&C137&H137))	268170	310381.9	\$402,255.00
41JC BoyleRemove & Dispose Stop Logs and Slots (steel)	U138		RiskPert(\$I38,R138,T138,RiskName(B138&C138&H138))	87798.53	99179.82	\$117,064.70
41JC BoyleRemove & Dispose of 24" Slide Gate at Entrance to Fish Ladder Structure	U139		RiskPert(\$I39,R139,T139,RiskName(B139&C139&H139))	3119.5	3502.6	\$4,761.34
41JC BoyleRemove petroleum products from Red Bam Area	U140		RiskPert(\$I40,R140,T140,RiskName(B140&C140&H140))	20401.73	24602.08	\$31,202.64
41JC BoyleRemove & Dispose of Spillway gate motor & control panel	U141		RiskPert(\$I41,R141,T141,RiskName(B141&C141&H141))	1298.21	1466.49	\$1,730.94
41JC BoyleRemove & Dispose of Distribution equipment, panelboards	U142		RiskPert(\$I42,R142,T142,RiskName(B142&C142&H142))	5950.3	6721.64	\$7,933.73
41JC BoyleRemove Powerhouse Concrete down to Elevation 3324.0	U143		RiskPert(\$I43,R143,T143,RiskName(B143&C143&H143))	829908.5	937489.3	\$1,106,545.00
41JC BoyleRemove Structural Steel Item associated with Powerhouse	U144		RiskPert(\$I44,R144,T144,RiskName(B144&C144&H144))	59804.68	67003.39	\$76,417.09
41JC BoyleRemove Warehouse near Powerhouse	U145		RiskPert(\$I45,R145,T145,RiskName(B145&C145&H145))	178143.7	189082.3	\$206,271.60
41JC BoyleRemove & Dispose of 2 - Governor oil systems	U146		RiskPert(\$I46,R146,T146,RiskName(B146&C146&H146))	44806.73	47951.06	\$54,239.72
41JC BoyleRemove & Dispose of Cooling water and bearing oil systems	U147		RiskPert(\$I47,R147,T147,RiskName(B147&C147&H147))	6990.83	7832.32	\$8,932.73
41JC BoyleRemove & Dispose of 2 - Francis Turbines	U148		RiskPert(\$I48,R148,T148,RiskName(B148&C148&H148))	398903.4	477119.7	\$586,622.60
41JC BoyleRemove & Dispose of 150 Ton crane	U149		RiskPert(\$I49,R149,T149,RiskName(B149&C149&H149))	187781	222759.8	\$265,102.50

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41JC BoyleRemove & Dispose of Compressed Air systems	U150		RiskPert(\$I150,R150,T150,RiskName(B150&C150&H150))	984.76	1121.54	\$1,367.73
41JC BoyleRemove & Dispose of 2 - CO2 systems	U151		RiskPert(\$I151,R151,T151,RiskName(B151&C151&H151))	6584.39	7437.92	\$8,779.18
41JC BoyleRemove & Dispose of Plant Water and Fire Protection	U152		RiskPert(\$I152,R152,T152,RiskName(B152&C152&H152))	2326.05	2627.58	\$3,101.40
41JC BoyleRemove & Dispose of Transformer Oil Fire Protection	U153		RiskPert(\$I153,R153,T153,RiskName(B153&C153&H153))	4978.53	5905.91	\$7,028.52
41JC BoyleRemove & Dispose of Unwatering Piping	U154		RiskPert(\$I154,R154,T154,RiskName(B154&C154&H154))	21913.42	27620.04	\$34,239.71
41JC BoyleRemove & Dispose of Drainage Piping	U155		RiskPert(\$I155,R155,T155,RiskName(B155&C155&H155))	7986.64	9474.35	\$11,275.26
41JC BoyleRemove & Dispose of 2-Oil Sump pumps	U156		RiskPert(\$I156,R156,T156,RiskName(B156&C156&H156))	2567.54	2876.6	\$3,280.75
41JC BoyleRemove & Dispose of Draft Tube Bulk Head Gates and Hoists at the Powerhouse	U157		RiskPert(\$I157,R157,T157,RiskName(B157&C157&H157))	44323.04	53013.83	\$65,180.94
41JC BoyleRemove petroleum products from Mechanical Equipment	U158		RiskPert(\$I158,R158,T158,RiskName(B158&C158&H158))	26518.51	31978.21	\$40,557.73
41JC BoyleRemove & Dispose of Outdoor Vertical AC Generator, Unit 1: 53 MVA	U159		RiskPert(\$I159,R159,T159,RiskName(B159&C159&H159))	302720.9	356142.2	\$409,563.50
41JC BoyleRemove & Dispose of Generator Switchgear, 15kV - (6 sections)	U163		RiskPert(\$I163,R163,T163,RiskName(B163&C163&H163))	18865.19	22564.24	\$27,742.92
41JC BoyleRemove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	U164		RiskPert(\$I164,R164,T164,RiskName(B164&C164&H164))	10914	12126.66	\$13,339.33
41JC BoyleRemove & Dispose of Unit and plant control switchboard	U165		RiskPert(\$I165,R165,T165,RiskName(B165&C165&H165))	5976.34	6640.38	\$7,304.42
41JC BoyleRemove & Dispose of Battery system	U166		RiskPert(\$I166,R166,T166,RiskName(B166&C166&H166))	7522.56	8358.4	\$9,194.24
41JC BoyleRemove & Dispose of Raceways, Conduit and Cable	U167		RiskPert(\$I167,R167,T167,RiskName(B167&C167&H167))	14063.83	15626.48	\$17,189.12
41JC BoyleRemove & Dispose of Misc. power & control boards	U168		RiskPert(\$I168,R168,T168,RiskName(B168&C168&H168))	7228.46	8031.62	\$8,834.78
41JC BoyleRemove & Dispose of 5 Gantry Crane motors - hoist (50Hp*), aux hoist	U169		RiskPert(\$I169,R169,T169,RiskName(B169&C169&H169))	1750.92	1977.89	\$2,334.56
41JC BoyleRemove & Dispose of Gantry Crane control equipment (3 cubicles)	U170		RiskPert(\$I170,R170,T170,RiskName(B170&C170&H170))	5941.94	6602.15	\$7,262.37
41JC BoyleRemove & Dispose of Conduit and Cable	U171		RiskPert(\$I171,R171,T171,RiskName(B171&C171&H171))	10692.66	12078.75	\$14,256.88
41JC BoyleRemove & Dispose of Exterior Lighting	U172		RiskPert(\$I172,R172,T172,RiskName(B172&C172&H172))	10772.44	12069.13	\$13,764.79
41JC BoyleRemove & Dispose of Transmission Line No. 59	U173		RiskPert(\$I173,R173,T173,RiskName(B173&C173&H173))	49856.34	59632.09	\$73,318.15
41JC BoyleRemove & Dispose of Transmission Line No. 98	U174		RiskPert(\$I174,R174,T174,RiskName(B174&C174&H174))	6359.95	7607	\$9,352.86
41JC BoyleRemove & Dispose of Transmission Line No. 58	U175		RiskPert(\$I175,R175,T175,RiskName(B175&C175&H175))	49856.34	59632.09	\$73,318.15
41JC BoyleRemove Intake Structure Concrete	U176		RiskPert(\$I176,R176,T176,RiskName(B176&C176&H176))	477513.4	539413.3	\$636,684.60
41JC BoyleRemove Fish Screen Building	U177		RiskPert(\$I177,R177,T177,RiskName(B177&C177&H177))	151333.4	160625.8	\$175,228.10

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41JC BoyleRemove 24-inch-dia. Steel Fish Discharge Pipe	U178		RiskPert(\$I178,R178,T178,RiskName(B178&C178&H178))	11285.99	13498.93	\$16,597.04
41JC BoyleRemove Concrete Items associated with the 14-ft-diameter Steel Pipe	U179		RiskPert(\$I179,R179,T179,RiskName(B179&C179&H179))	302857.3	356302.7	\$409,748.10
41JC BoyleRemove Open Concrete Flume	U180		RiskPert(\$I180,R180,T180,RiskName(B180&C180&H180))	7014533	7923824	\$9,352,710.00
41JC BoyleRemove Structural Steel Items associated with the Forebay Trash rack Piers	U181		RiskPert(\$I181,R181,T181,RiskName(B181&C181&H181))	5381.22	6436.36	\$7,913.55
41JC BoyleRemove Fore bay Concrete	U182		RiskPert(\$I182,R182,T182,RiskName(B182&C182&H182))	756196.6	854222.1	\$1,008,262.00
41JC BoylePlace Concrete Plugs at Tunnel Portals	U183		RiskPert(\$I183,R183,T183,RiskName(B183&C183&H183))	51815.16	54542.28	\$57,269.39
41JC BoyleRemove Head gate Control Building at Flume Entrance	U185		RiskPert(\$I185,R185,T185,RiskName(B185&C185&H185))	50155.08	56192.27	\$64,087.05
41JC BoyleRemove Fore bay Spillway Gate House	U186		RiskPert(\$I186,R186,T186,RiskName(B186&C186&H186))	55104.99	62248.23	\$73,473.33
41JC BoyleRemove Fore bay Control Building	U187		RiskPert(\$I187,R187,T187,RiskName(B187&C187&H187))	54810.8	61915.9	\$73,081.06
41JC BoyleRemove Insulated Generator Building next to Fore bay Control Building	U188		RiskPert(\$I188,R188,T188,RiskName(B188&C188&H188))	15151.93	17116.07	\$20,202.57
41JC BoyleRemove Fixed Wheel Gate (gate, Frame, and Hoist)	U189		RiskPert(\$I189,R189,T189,RiskName(B189&C189&H189))	26177.9	32995.07	\$40,902.97
41JC BoyleRemove Trash rack and trash rake (steel)	U190		RiskPert(\$I190,R190,T190,RiskName(B190&C190&H190))	34238.27	43154.48	\$53,497.29
41JC BoyleRemove stop Logs and slots (steel)	U191		RiskPert(\$I191,R191,T191,RiskName(B191&C191&H191))	108699.4	123796.5	\$150,971.40
41JC BoyleRemove Traveling Water Screen	U192		RiskPert(\$I192,R192,T192,RiskName(B192&C192&H192))	63282.28	72071.48	\$87,892.05
41JC BoyleRemove Fish By-Pass and Supports (steel)	U193		RiskPert(\$I193,R193,T193,RiskName(B193&C193&H193))	474783.1	531932.9	\$606,667.30
41JC BoyleRemove Gates and Hoists	U194		RiskPert(\$I194,R194,T194,RiskName(B194&C194&H194))	8460.21	10202.01	\$12,939.14
41JC BoyleRemove Trash rack and trash rake (steel)	U195		RiskPert(\$I195,R195,T195,RiskName(B195&C195&H195))	26997.64	32555.97	\$41,290.50
41JC BoyleRemove stop Logs and slots (steel)	U196		RiskPert(\$I196,R196,T196,RiskName(B196&C196&H196))	22150.77	26711.22	\$33,877.64
41JC BoyleRemove & Dispose Penstocks and bifurcation (steel)	U197		RiskPert(\$I197,R197,T197,RiskName(B197&C197&H197))	1063430	1261519	\$1,501,312.00
41JC BoyleRemove & Dispose Surge Tank (steel)	U198		RiskPert(\$I198,R198,T198,RiskName(B198&C198&H198))	65242.39	74907.93	\$94,239.02
41JC BoyleRemove & Dispose 2 - 108" Butterfly valves	U199		RiskPert(\$I199,R199,T199,RiskName(B199&C199&H199))	111198.2	127672	\$160,619.60
41JC BoyleRemove & Dispose Gate, Stem and Frame	U200		RiskPert(\$I200,R200,T200,RiskName(B200&C200&H200))	20129.42	22738.79	\$26,839.23
41JC BoyleRemove & Dispose of Steel Transition Manifolds on Upstream and Downstream	U201		RiskPert(\$I201,R201,T201,RiskName(B201&C201&H201))	153806.7	185472.8	\$235,233.70
41JC BoyleRemove petroleum products from Mechanical Equipment	U202		RiskPert(\$I202,R202,T202,RiskName(B202&C202&H202))	6008.49	7245.53	\$9,189.45

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41JC BoyleRemove petroleum products from Mechanical Equipment	U202		RiskPert(\$S202,R202,T202,RiskName(B202&C202&H202))	6008.49	7245.53	\$9,189.45
41JC BoyleClear and Grub Disposal Area (Embarkment)	U203		RiskPert(\$S203,R203,T203,RiskName(B203&C203&H203))	131152.5	145725	\$160,297.50
41JC BoyleClear and Grub, 40' width	U204		RiskPert(\$S204,R204,T204,RiskName(B204&C204&H204))	31476.6	34974	\$38,471.39
41JC Boyle4" thick gravel surfacing	U205		RiskPert(\$S205,R205,T205,RiskName(B205&C205&H205))	64551.57	71723.96	\$78,896.36
41JC BoyleSoil Cover over Concrete Rubble	U206		RiskPert(\$S206,R206,T206,RiskName(B206&C206&H206))	113738.5	128482.4	\$151,651.40
41JC BoyleEmbarkment Fill in Waste way (Fore bay) Scour Hole	U207		RiskPert(\$S207,R207,T207,RiskName(B207&C207&H207))	4366807	4852008	\$5,337,209.00
41JC BoyleTopsy Recreational Area - Concrete total	U208		RiskPert(\$S208,R208,T208,RiskName(B208&C208&H208))	33039.63	35068.38	\$38,256.42
41JC BoyleTopsy Recreational Area - 6'x80' Floating dock made of lumber and composite decking	U209		RiskPert(\$S209,R209,T209,RiskName(B209&C209&H209))	9421.17	9917.02	\$10,412.88
41JC BoyleTopsy Recreational Area - 5'x20' Walkway leading to hex fishing platform	U210		RiskPert(\$S210,R210,T210,RiskName(B210&C210&H210))	2142.27	2255.02	\$2,367.78
41JC BoyleTopsy Recreational Area - Regrade to natural contour	U211		RiskPert(\$S211,R211,T211,RiskName(B211&C211&H211))	4691.34	4979.41	\$5,432.08
41JC BoylePioneer Park - Picnic tables to be removed and hauled away	U212		RiskPert(\$S212,R212,T212,RiskName(B212&C212&H212))	2008.42	2114.13	\$2,219.84
41JC BoylePioneer Park - 12 Concrete fire rings	U213		RiskPert(\$S213,R213,T213,RiskName(B213&C213&H213))	1890.88	1990.4	\$2,089.92
41JC BoylePioneer Park - Portable toilets to be removed and hauled away	U214		RiskPert(\$S214,R214,T214,RiskName(B214&C214&H214))	2142.27	2255.02	\$2,367.78
41JC BoylePioneer Park - Signs to be removed and hauled away	U215		RiskPert(\$S215,R215,T215,RiskName(B215&C215&H215))	904.8	952.42	\$1,000.04
41JC BoylePioneer Park - Dumpster to be removed and hauled away	U216		RiskPert(\$S216,R216,T216,RiskName(B216&C216&H216))	3007.8	3369.85	\$3,843.30
41JC BoylePioneer Park - Regrade to natural contour	U217		RiskPert(\$S217,R217,T217,RiskName(B217&C217&H217))	8888.86	9876.51	\$10,864.16
41JC BoyleRemove Frame dead end structures 60-80 ft high	U218		RiskPert(\$S218,R218,T218,RiskName(B218&C218&H218))	14378.98	16242.92	\$19,171.97
41JC BoyleRemove (incl foundation) and Save Transformers 230KV	U219		RiskPert(\$S219,R219,T219,RiskName(B219&C219&H219))	5443.96	6099.25	\$6,956.17
41JC BoyleRemove (incl foundation) and Save Power Circuit Breakers 230KV	U220		RiskPert(\$S220,R220,T220,RiskName(B220&C220&H220))	7781.33	8259.13	\$9,009.96
41JC BoyleSubstation Tie Structure 230KV	U221		RiskPert(\$S221,R221,T221,RiskName(B221&C221&H221))	41995.5	47050.51	\$53,660.91
41JC BoyleRemove Chain Link Fence	U222		RiskPert(\$S222,R222,T222,RiskName(B222&C222&H222))	10770.47	11967.19	\$13,163.91
41JC BoyleDemolish overhead distribution 2.5 miles (30-45 poles)	U223		RiskPert(\$S223,R223,T223,RiskName(B223&C223&H223))	52846.43	59696.89	\$70,461.91
41JC BoyleInstall 230KV strain transmission structures outside JC Boyle Substation	U224		RiskPert(\$S224,R224,T224,RiskName(B224&C224&H224))	267756.4	302465.6	\$357,008.50

Risk Distribution Model Inputs

Copco 1

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 1Furnish, Install, and Remove Barge-Mounted Crane in Reservoir for Dam Removal	U226		RiskPert(\$226,R226,T226,RiskName(B226&C226&H226))	194197.5	221169.3	\$269,718.70
41Copco 1Remove Sediment from Diversion Tunnel Intake to provide access	U227		RiskPert(\$227,R227,T227,RiskName(B227&C227&H227))	104315.9	117838.3	\$139,087.80
41Copco 1Furnish, Install, and Remove Large Crane on Right Abutment	U228		RiskPert(\$228,R228,T228,RiskName(B228&C228&H228))	541999.8	637646.8	\$733,293.90
41Copco 1Remove Water from behind Tailrace Cofferdam	U229		RiskPert(\$229,R229,T229,RiskName(B229&C229&H229))	2117.36	2372.23	\$2,705.52
41Copco 1Riprap Protection on Cofferdam	U230		RiskPert(\$230,R230,T230,RiskName(B230&C230&H230))	36869.28	43737.08	\$52,050.74
41Copco 1Provide Dewatering behind Tailrace Cofferdam	U231		RiskPert(\$231,R231,T231,RiskName(B231&C231&H231))	90995.34	102791	\$121,327.10
41Copco 1Remove Current Diversion Tunnel Plug	U232		RiskPert(\$232,R232,T232,RiskName(B232&C232&H232))	274485	310066.4	\$365,980.00
41Copco 1Construct Embankment Cofferdam in Tailrace	U233		RiskPert(\$233,R233,T233,RiskName(B233&C233&H233))	269201	319346.3	\$380,048.50
41Copco 1Installation of 3 each 72" Blind Flanges	U234		RiskPert(\$234,R234,T234,RiskName(B234&C234&H234))	1259357	1518637	\$1,926,076.00
41Copco 1Installation of 16.5 X 18.5 Roller Gate and Gate Structure	U235		RiskPert(\$235,R235,T235,RiskName(B235&C235&H235))	3918386	4725112	\$5,992,825.00
41Copco 1Removal of 16.5 X 18.5 Roller Gate and Gate Structure	U236		RiskPert(\$236,R236,T236,RiskName(B236&C236&H236))	259671.6	313133.4	\$397,144.80
41Copco 1Remove Concrete Dam down to Elev. 2476	U237		RiskPert(\$237,R237,T237,RiskName(B237&C237&H237))	8286845	9361065	\$11,049,130.00
41Copco 1Remove Concrete Intake Structure on Right Abutment	U238		RiskPert(\$238,R238,T238,RiskName(B238&C238&H238))	6957508	8253515	\$9,822,364.00
41Copco 1Remove Structural Steel from Spillway	U239		RiskPert(\$239,R239,T239,RiskName(B239&C239&H239))	66603.52	79663.04	\$97,946.36
41Copco 1Install Diversion Tunnel Plugs	U240		RiskPert(\$240,R240,T240,RiskName(B240&C240&H240))	40401.06	45264.15	\$51,623.58
41Copco 1Remove Diversion Tunnel Control Structure Concrete	U241		RiskPert(\$241,R241,T241,RiskName(B241&C241&H241))	81895.9	92512.03	\$109,194.50
41Copco 1Remove & Dispose of Hand Rails	U242		RiskPert(\$242,R242,T242,RiskName(B242&C242&H242))	14264.8	16921.96	\$20,138.54
41Copco 1Remove & Dispose of Radial Gates	U243		RiskPert(\$243,R243,T243,RiskName(B243&C243&H243))	158049.3	180000.6	\$219,513.00
41Copco 1Remove & Dispose Radial Gate Stop logs	U244		RiskPert(\$244,R244,T244,RiskName(B244&C244&H244))	19363.19	22052.53	\$26,893.32
41Copco 1Remove & Dispose Stop log hoist, track and supports	U245		RiskPert(\$245,R245,T245,RiskName(B245&C245&H245))	27174.14	30948.32	\$37,741.86
41Copco 1Remove & Dispose of 3 sections of 23' of 72" Dia. steel lining (embedded)	U246		RiskPert(\$246,R246,T246,RiskName(B246&C246&H246))	53888.25	63926.26	\$76,077.53
41Copco 1Remove & Dispose of 3 - 72" butterfly valves (embedded)	U247		RiskPert(\$247,R247,T247,RiskName(B247&C247&H247))	61039.71	68387.09	\$77,995.19
41Copco 1Remove & Dispose of 3 - 72" flapper valves with remote mechanical	U248		RiskPert(\$248,R248,T248,RiskName(B248&C248&H248))	437452.6	490108.9	\$558,967.10
41Copco 1Remove & Dispose of Spillway gate motor & control panel	U249		RiskPert(\$249,R249,T249,RiskName(B249&C249&H249))	1334.95	1495.64	\$1,705.77

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 1Remove & Dispose Distribution equipment, panelboards	U250		RiskPert(\$250,R250,T250,RiskName(B250&C250&H250))	5950.3	6721.64	\$7,933.73
41Copco 1Remove Powerhouse Concrete down to top of rock under the Powerhouse	U251		RiskPert(\$251,R251,T251,RiskName(B251&C251&H251))	1148636	1373859	\$1,689,171.00
41Copco 1Remove Powerhouse Structural Steel	U252		RiskPert(\$252,R252,T252,RiskName(B252&C252&H252))	107266.7	127247.8	\$151,435.30
41Copco 1Remove & Dispose of 2 - Governor Oil Systems	U253		RiskPert(\$253,R253,T253,RiskName(B253&C253&H253))	41022.27	46719.81	\$56,975.38
41Copco 1Remove & Dispose of Cooling water and bearing oil systems	U254		RiskPert(\$254,R254,T254,RiskName(B254&C254&H254))	35139.87	39695.04	\$46,853.15
41Copco 1Remove & Dispose of 4 - Horizontal Tandem Francis Turbines	U255		RiskPert(\$255,R255,T255,RiskName(B255&C255&H255))	366617.7	414142.2	\$488,823.60
41Copco 1Remove & Dispose of 2 - 40 Ton indoor cranes	U256		RiskPert(\$256,R256,T256,RiskName(B256&C256&H256))	99381.76	117894	\$140,303.70
41Copco 1Remove & Dispose of Compressed Air System	U257		RiskPert(\$257,R257,T257,RiskName(B257&C257&H257))	1009.42	1130.93	\$1,289.82
41Copco 1Remove & Dispose of 2 - CO2 Systems	U258		RiskPert(\$258,R258,T258,RiskName(B258&C258&H258))	3291.93	3688.18	\$4,206.35
41Copco 1Remove & Dispose of Plant Water and Fire Protection	U259		RiskPert(\$259,R259,T259,RiskName(B259&C259&H259))	3554.73	4015.53	\$4,739.65
41Copco 1Remove & Dispose of Transformer Oil Fire Protection	U260		RiskPert(\$260,R260,T260,RiskName(B260&C260&H260))	6667.14	7531.4	\$8,889.52
41Copco 1Remove & Dispose of Unwatering Piping	U261		RiskPert(\$261,R261,T261,RiskName(B261&C261&H261))	18872.04	22572.44	\$27,753.00
41Copco 1Remove & Dispose of Drainage Piping	U262		RiskPert(\$262,R262,T262,RiskName(B262&C262&H262))	4973.82	5949.08	\$7,314.45
41Copco 1Remove petroleum products from mechanical equipment	U263		RiskPert(\$263,R263,T263,RiskName(B263&C263&H263))	5557.58	6226.54	\$7,101.35
41Copco 1Remove & Dispose of Horizontal AC Generator, Indoor Open Frame	U264		RiskPert(\$264,R264,T264,RiskName(B264&C264&H264))	73989.06	87771.34	\$104,455.10
41Copco 1Remove & Dispose of Excitation equipment for 12.5 MVA Generator	U265		RiskPert(\$265,R265,T265,RiskName(B265&C265&H265))	12151.23	14533.82	\$17,869.45
41Copco 1Remove & Dispose of Surge protection equip. for 12.5 MVA Generator	U266		RiskPert(\$266,R266,T266,RiskName(B266&C266&H266))	4789.2	5775.21	\$7,324.66
41Copco 1Remove & Dispose of Neutral grounding equip. for 12.5 MVA Generator	U267		RiskPert(\$267,R267,T267,RiskName(B267&C267&H267))	4722.21	5290.62	\$6,033.93
41Copco 1Remove & Dispose of Generator Switchgear, 5kV-includes unit breakers	U268		RiskPert(\$268,R268,T268,RiskName(B268&C268&H268))	20921.89	23440.27	\$26,733.53
41Copco 1Remove & Dispose of Station Service Switchgear, 600 volt - (5 sections)	U269		RiskPert(\$269,R269,T269,RiskName(B269&C269&H269))	11451.14	12829.52	\$14,632.02
41Copco 1Remove & Dispose of Unit and plant control switchboard	U270		RiskPert(\$270,R270,T270,RiskName(B270&C270&H270))	6185.95	6930.56	\$7,904.27
41Copco 1Remove & Dispose of Battery System	U271		RiskPert(\$271,R271,T271,RiskName(B271&C271&H271))	20894.08	23409.11	\$26,697.99
41Copco 1Remove & Dispose of Raceways, Conduit and Cable	U272		RiskPert(\$272,R272,T272,RiskName(B272&C272&H272))	17293.92	19375.6	\$22,097.79
41Copco 1Remove & Dispose of Misc. power & control boards	U273		RiskPert(\$273,R273,T273,RiskName(B273&C273&H273))	7031.91	7878.35	\$8,985.22

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 1 Remove & Dispose of Misc. power & control boards	U273		RiskPert(S273,R273,T273,RiskName(B273&C273&H273))	7031.91	7878.35	\$8,985.22
41Copco 1 Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 5000kVA	U274		RiskPert(S274,R274,T274,RiskName(B274&C274&H274))	195404.3	218925.1	\$249,683.20
41Copco 1 Remove & Dispose of Step-up Transformers, indoor, oil-filled, 1-phase, 4165kVA	U275		RiskPert(S275,R275,T275,RiskName(B275&C275&H275))	173884.2	194814.8	\$222,185.40
41Copco 1 Remove & Dispose of Seven 40-Ton Travelling Crane motors - hoist	U276		RiskPert(S276,R276,T276,RiskName(B276&C276&H276))	3347.62	3750.57	\$4,277.51
41Copco 1 Remove & Dispose of 40-Ton Travelling Crane control equipment	U277		RiskPert(S277,R277,T277,RiskName(B277&C277&H277))	4418.64	4950.51	\$5,646.04
41Copco 1 Remove & Dispose of 40-Ton Travelling Crane Festoon Cable	U278		RiskPert(S278,R278,T278,RiskName(B278&C278&H278))	1553.84	1755.26	\$2,071.79
41Copco 1 Remove & Dispose of Four 15-Ton Overhead Crane Motors - hoist	U279		RiskPert(S279,R279,T279,RiskName(B279&C279&H279))	971.41	1097.34	\$1,295.22
41Copco 1 Remove & Dispose of 15-Ton Overhead Crane control equipment	U280		RiskPert(S280,R280,T280,RiskName(B280&C280&H280))	439.57	492.48	\$561.67
41Copco 1 Remove & Dispose of 15-Ton Overhead Crane Festoon Cable	U281		RiskPert(S281,R281,T281,RiskName(B281&C281&H281))	645.38	723.07	\$824.66
41Copco 1 Remove petroleum products from mechanical equipment	U282		RiskPert(S282,R282,T282,RiskName(B282&C282&H282))	110466.2	123763.1	\$141,151.30
41Copco 1 Remove & Dispose of 69kV circuit breakers, oil filled, PCB	U283		RiskPert(S283,R283,T283,RiskName(B283&C283&H283))	1744.25	1938.05	\$2,131.85
41Copco 1 Remove & Dispose of 69kV disconnect switches, group-operated	U284		RiskPert(S284,R284,T284,RiskName(B284&C284&H284))	1744.25	1938.05	\$2,131.85
41Copco 1 Remove & Dispose of 60-foot wood poles	U285		RiskPert(S285,R285,T285,RiskName(B285&C285&H285))	14880.77	17652.67	\$21,008.14
41Copco 1 Remove & Dispose of 30-foot wood cross arms	U286		RiskPert(S286,R286,T286,RiskName(B286&C286&H286))	11115.97	13186.59	\$15,693.13
41Copco 1 Remove & Dispose of 69-kV insulator strings	U287		RiskPert(S287,R287,T287,RiskName(B287&C287&H287))	4278.72	5075.73	\$6,040.54
41Copco 1 Remove & Dispose of Transmission Line No. 3	U288		RiskPert(S288,R288,T288,RiskName(B288&C288&H288))	49856.34	59632.09	\$73,318.15
41Copco 1 Remove & Dispose of Transmission Line No. 15	U289		RiskPert(S289,R289,T289,RiskName(B289&C289&H289))	39951.8	47785.48	\$58,752.64
41Copco 1 Remove & Dispose of Transmission Line No. 26-1	U290		RiskPert(S290,R290,T290,RiskName(B290&C290&H290))	2243.82	2683.78	\$3,299.73
41Copco 1 Remove & Dispose of Transmission Line No. 26-2	U291		RiskPert(S291,R291,T291,RiskName(B291&C291&H291))	2243.82	2683.78	\$3,299.73

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 1Remove gate house #1 from top of dam	U292		RiskPert(\$292,R292,T292,RiskName(B292&C292&H292))	49603.99	59330.26	\$72,947.04
41Copco 1Remove gate house #2 from top of dam	U293		RiskPert(\$293,R293,T293,RiskName(B293&C293&H293))	49051.72	58669.7	\$72,134.88
41Copco 1Remove Concrete Items associated with 10 ft. diam. Penstocks, reinf. Concrete	U294		RiskPert(\$294,R294,T294,RiskName(B294&C294&H294))	301563.3	360693.4	\$443,475.50
41Copco 1Plug 14-foot diameter penstock with concrete	U295		RiskPert(\$295,R295,T295,RiskName(B295&C295&H295))	78546.57	88001.25	\$100,365.10
41Copco 1Remove & Dispose of 8 screens	U296		RiskPert(\$296,R296,T296,RiskName(B296&C296&H296))	21274.51	24032.32	\$28,366.02
41Copco 1Remove & Dispose of 8 Water Gates	U297		RiskPert(\$297,R297,T297,RiskName(B297&C297&H297))	20046.98	22645.66	\$26,729.31
41Copco 1Remove & Dispose of 3 - 30" Dia. x 25' stand pipes	U298		RiskPert(\$298,R298,T298,RiskName(B298&C298&H298))	5525.67	6241.96	\$7,367.56
41Copco 1Remove & Dispose of 14' Dia. penstock pipe	U299		RiskPert(\$299,R299,T299,RiskName(B299&C299&H299))	320503.2	383347	\$471,328.30
41Copco 1Remove & Dispose of 10' Dia. penstock pipe	U300		RiskPert(\$300,R300,T300,RiskName(B300&C300&H300))	354585.1	424111.6	\$521,448.70
41Copco 1Site work - Clear and Grub Disposal Area	U301		RiskPert(\$301,R301,T301,RiskName(B301&C301&H301))	52519.39	62302.41	\$74,145.02
41Copco 1Site work - Soil Cover for Disposal Area	U302		RiskPert(\$302,R302,T302,RiskName(B302&C302&H302))	78505.42	93128.98	\$110,831.20
41Copco 1Mallard Cove - Concrete total	U303		RiskPert(\$303,R303,T303,RiskName(B303&C303&H303))	34265.89	40312.82	\$46,359.74
41Copco 1Mallard Cove - 25'x5' Dock made of composite decking and poly floats	U304		RiskPert(\$304,R304,T304,RiskName(B304&C304&H304))	2877.15	3384.88	\$3,892.61
41Copco 1Mallard Cove - Signs to be removed and hauled away	U306		RiskPert(\$306,R306,T306,RiskName(B306&C306&H306))	925.67	1028.53	\$1,131.38
41Copco 1Mallard Cove - Wood plank tables to be removed and hauled away	U307		RiskPert(\$307,R307,T307,RiskName(B307&C307&H307))	925.67	1028.53	\$1,131.38
41Copco 1Mallard Cove - Parking area to be regraded	U308		RiskPert(\$308,R308,T308,RiskName(B308&C308&H308))	18858.25	21128.23	\$24,096.66
41Copco 1Copco Cove - Concrete Total	U309		RiskPert(\$309,R309,T309,RiskName(B309&C309&H309))	26651.25	31354.41	\$36,057.57
41Copco 1Copco Cove - Dock abutment railing made of 2.5" dia. steel pipe	U310		RiskPert(\$310,R310,T310,RiskName(B310&C310&H310))	1464.61	1627.35	\$1,790.08
41Copco 1Copco Cove - Signs to be removed and hauled away	U311		RiskPert(\$311,R311,T311,RiskName(B311&C311&H311))	2477.22	2752.47	\$3,027.71
41Copco 1Copco Cove - Wood plank tables to be removed and hauled away	U312		RiskPert(\$312,R312,T312,RiskName(B312&C312&H312))	308.56	342.84	\$377.13
41Copco 1Copco Cove - Regrade	U313		RiskPert(\$313,R313,T313,RiskName(B313&C313&H313))	15208.87	17039.56	\$19,433.55

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41 Copco 1 Diversion Tunnel Lining	U314		RiskPert(\$S314,R314,T314,RiskName(B314&C314&H314))	247874.9	277711.7	\$316,729.10
41 Copco 1 Remove Frame Dead End Structures 60-80ft High @ Switch Yard	U315		RiskPert(\$S315,R315,T315,RiskName(B315&C315&H315))	24615.28	29683.13	\$37,646.90
41 Copco 1 Remove Power Circuit Breakers 69KV @ Switch Yard	U316		RiskPert(\$S316,R316,T316,RiskName(B316&C316&H316))	11503.04	13100.69	\$15,976.45
41 Copco 1 Remove Disconnect Switches @ Switch Yard	U317		RiskPert(\$S317,R317,T317,RiskName(B317&C317&H317))	39407.41	44880.66	\$54,732.52
41 Copco 1 Remove All Associated AUX Equipment @ Switch Yard (allowance)	U318		RiskPert(\$S318,R318,T318,RiskName(B318&C318&H318))	49102.05	55921.78	\$68,197.29
41 Copco 1 Remove Distribution Lines 69 KV Copco 1 Switch Yard and HE Plant (6 poles)	U319		RiskPert(\$S319,R319,T319,RiskName(B319&C319&H319))	8518.82	9701.98	\$11,831.69
41 Copco 1 Remove Production Poles in General Area of Copco 1	U321		RiskPert(\$S321,R321,T321,RiskName(B321&C321&H321))	13097.16	15793.63	\$20,030.95
41 Copco 1 Remove Village House Distribution Poles Near Dam (Est 10 each)	U322		RiskPert(\$S322,R322,T322,RiskName(B322&C322&H322))	12369.58	14916.26	\$18,918.18
41 Copco 1 Remove 69 KV Distribution Line 1.6 Miles (30 Poles)	U323		RiskPert(\$S323,R323,T323,RiskName(B323&C323&H323))	60127.07	72506.17	\$91,959.05
41 Copco 1 Remove Transmission Conductors 1.3 Miles Copco 1 to Copco 2	U325		RiskPert(\$S325,R325,T325,RiskName(B325&C325&H325))	46982.75	56655.67	\$71,855.98

Copco 2

Name	Cell	Graph	Function	Min	Mean	Max
41 Copco 2 Construct and Remove Embankment Cofferdam-Right Side of Dam	U327		RiskPert(\$S327,R327,T327,RiskName(B327&C327&H327))	166544.1	215119.4	\$291,452.20
41 Copco 2 Furnish, Install, and Remove RipRap	U328		RiskPert(\$S328,R328,T328,RiskName(B328&C328&H328))	54346.52	70197.59	\$95,106.42
41 Copco 2 Provide Dewatering behind Cofferdams	U329		RiskPert(\$S329,R329,T329,RiskName(B329&C329&H329))	144983.6	166462.7	\$209,420.80
41 Copco 2 Remove Water from behind Cofferdams	U330		RiskPert(\$S330,R330,T330,RiskName(B330&C330&H330))	5906.41	6781.43	\$8,531.48
41 Copco 2 Construct and Remove Embankment Cofferdam-Left Side of Dam	U331		RiskPert(\$S331,R331,T331,RiskName(B331&C331&H331))	166296.6	218546.9	\$291,019.10
41 Copco 2 Furnish, Install, and Remove RipRap	U332		RiskPert(\$S332,R332,T332,RiskName(B332&C332&H332))	41832.31	54033.4	\$73,206.55
41 Copco 2 Provide Dewatering behind left Side Cofferdam	U333		RiskPert(\$S333,R333,T333,RiskName(B333&C333&H333))	80598.08	92538.54	\$116,419.40
41 Copco 2 Remove Water from behind Cofferdams	U334		RiskPert(\$S334,R334,T334,RiskName(B334&C334&H334))	5418.49	6221.23	\$7,826.71
41 Copco 2 Remove Water from behind Tailrace Cofferdam	U335		RiskPert(\$S335,R335,T335,RiskName(B335&C335&H335))	10414.19	11957.04	\$15,042.72
41 Copco 2 Provide Dewatering behind Tailrace Cofferdam	U336		RiskPert(\$S336,R336,T336,RiskName(B336&C336&H336))	50556.99	58046.91	\$73,026.76
41 Copco 2 Construct Embankment Cofferdam across Tailrace	U337		RiskPert(\$S337,R337,T337,RiskName(B337&C337&H337))	176448.3	227912.3	\$308,784.40
41 Copco 2 Remove Concrete in Dam	U338		RiskPert(\$S338,R338,T338,RiskName(B338&C338&H338))	1071700	1323865	\$1,828,195.00
41 Copco 2 Remove concrete equipment slab from top of embankment wing dam on right abutment	U339		RiskPert(\$S339,R339,T339,RiskName(B339&C339&H339))	1691.84	2040.16	\$2,587.52
41 Copco 2 Remove Concrete Wing wall	U340		RiskPert(\$S340,R340,T340,RiskName(B340&C340&H340))	49897.74	60170.81	\$76,314.20

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 2Right Abutment Removal - Random Fill	U341		RiskPert(S341,R341,T341,RiskName(B341&C341&H341))	75573.55	90391.89	\$111,137.60
41Copco 2Right Abutment Removal - Remove Hand Placed Riprap	U342		RiskPert(S342,R342,T342,RiskName(B342&C342&H342))	11675.46	13964.77	\$17,169.80
41Copco 2Right Abutment Removal - Gunite Curtain Wall	U343		RiskPert(S343,R343,T343,RiskName(B343&C343&H343))	57435.87	68697.8	\$84,464.52
41Copco 2Remove & Dispose - Hand rails and Light Poles	U344		RiskPert(S344,R344,T344,RiskName(B344&C344&H344))	3999.98	4745.07	\$5,647.03
41Copco 2Remove & Dispose - Radial Gates and Hoists	U345		RiskPert(S345,R345,T345,RiskName(B345&C345&H345))	51107.18	62130.3	\$81,170.23
41Copco 2Remove & Dispose - 5-Radial Gate Stop logs & Slots (steel)	U346		RiskPert(S346,R346,T346,RiskName(B346&C346&H346))	85460.59	103893.3	\$135,731.50
41Copco 2Remove & Dispose - Spillway intake gate motor & control panel	U347		RiskPert(S347,R347,T347,RiskName(B347&C347&H347))	1313.37	1471.46	\$1,678.20
41Copco 2Remove & Dispose - Spillway radial gate motor & control panel	U348		RiskPert(S348,R348,T348,RiskName(B348&C348&H348))	1313.37	1471.46	\$1,678.20
41Copco 2Remove & Dispose - Spillway trash rake motor, festoon cable & control panel	U349		RiskPert(S349,R349,T349,RiskName(B349&C349&H349))	558.13	625.32	\$713.17
41Copco 2Remove & Dispose - Distribution equipment, panelboards	U350		RiskPert(S350,R350,T350,RiskName(B350&C350&H350))	5950.3	6666.54	\$7,603.16
41Copco 2Remove Copper Shingles from Roof of Powerhouse	U351		RiskPert(S351,R351,T351,RiskName(B351&C351&H351))	13838.26	16280.31	\$18,722.36
41Copco 2Remove Powerhouse Concrete down to spring-line of turbine	U352		RiskPert(S352,R352,T352,RiskName(B352&C352&H352))	545667.9	674060.4	\$930,845.30
41Copco 2Remove Structural Steel items associated with Powerhouse	U353		RiskPert(S353,R353,T353,RiskName(B353&C353&H353))	190560.3	246140.4	\$333,480.50
41Copco 2Remove Control House Concrete	U354		RiskPert(S354,R354,T354,RiskName(B354&C354&H354))	8579.07	10991.93	\$14,477.18
41Copco 2Remove Control House Structural Steel Items	U355		RiskPert(S355,R355,T355,RiskName(B355&C355&H355))	2779.26	3589.88	\$4,863.70
41Copco 2Remove Shop Building	U356		RiskPert(S356,R356,T356,RiskName(B356&C356&H356))	268728.1	341508.7	\$436,683.20
41Copco 2Remove & Dispose - 2 - Governor oil systems	U357		RiskPert(S357,R357,T357,RiskName(B357&C357&H357))	38633.29	46208.44	\$56,813.66
41Copco 2Remove & Dispose - Cooling water and bearing oil systems	U358		RiskPert(S358,R358,T358,RiskName(B358&C358&H358))	11869.83	14197.25	\$17,455.64
41Copco 2Remove & Dispose - 12 - Cast Iron Columns	U360		RiskPert(S360,R360,T360,RiskName(B360&C360&H360))	40218.22	50272.77	\$60,327.32
41Copco 2Remove & Dispose - 2 - Francis Turbines	U361		RiskPert(S361,R361,T361,RiskName(B361&C361&H361))	492692.5	626130	\$800,625.30
41Copco 2Remove & Dispose - 2 - 40 Ton indoor cranes	U362		RiskPert(S362,R362,T362,RiskName(B362&C362&H362))	146926.3	186718.8	\$238,755.30
41Copco 2Remove & Dispose - Compressed Air Systems	U363		RiskPert(S363,R363,T363,RiskName(B363&C363&H363))	1079.6	1291.28	\$1,587.65
41Copco 2Remove & Dispose - 2 - CO2 Systems	U364		RiskPert(S364,R364,T364,RiskName(B364&C364&H364))	2460.27	2942.68	\$3,618.05
41Copco 2Remove & Dispose - Plant Water and Fire Protection	U365		RiskPert(S365,R365,T365,RiskName(B365&C365&H365))	4181.19	5001.03	\$6,148.81
41Copco 2Remove & Dispose - Transformer Oil Fire Protection	U366		RiskPert(S366,R366,T366,RiskName(B366&C366&H366))	5386.18	6442.3	\$7,920.86

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 2Remove & Dispose - Unwatering Piping	U367		RiskPert(S367,R367,T367,RiskName(B367&C367&H367))	23058.1	27579.29	\$33,908.96
41Copco 2Remove & Dispose - Drainage Piping	U368		RiskPert(S368,R368,T368,RiskName(B368&C368&H368))	13267.99	15869.55	\$19,511.75
41Copco 2Remove & Dispose - Petroleum Products from Mechanical Equip.	U369		RiskPert(S369,R369,T369,RiskName(B369&C369&H369))	15157.02	16981.48	\$19,367.31
41Copco 2Remove & Dispose - Remove Petroleum Products at or near the Power House	U370		RiskPert(S370,R370,T370,RiskName(B370&C370&H370))	15157.02	16981.48	\$19,367.31
41Copco 2Remove & Dispose - AC Generator, Indoor Vertical	U371		RiskPert(S371,R371,T371,RiskName(B371&C371&H371))	166628.1	186685.2	\$212,913.60
41Copco 2Remove & Dispose - Excitation equipment for 15 MVA Generator	U372		RiskPert(S372,R372,T372,RiskName(B372&C372&H372))	16550.3	18542.47	\$21,147.61
41Copco 2Remove & Dispose - Surge protection equip. for 15 MVA Generator	U373		RiskPert(S373,R373,T373,RiskName(B373&C373&H373))	5229.24	5858.68	\$6,681.80
41Copco 2Remove & Dispose - Neutral grounding equip. for 15 MVA Generator	U374		RiskPert(S374,R374,T374,RiskName(B374&C374&H374))	5091.69	5704.58	\$6,506.05
41Copco 2Remove & Dispose - Generator Switchgear, 7.2kV-includes unit breakers	U375		RiskPert(S375,R375,T375,RiskName(B375&C375&H375))	27678.62	31010.31	\$35,367.13
41Copco 2Remove & Dispose - Station Service Switchgear, 600-volt (5 sections)	U376		RiskPert(S376,R376,T376,RiskName(B376&C376&H376))	24381.7	27316.54	\$31,154.40
41Copco 2Remove & Dispose - Unit and plant control switchboard	U377		RiskPert(S377,R377,T377,RiskName(B377&C377&H377))	7645.41	8565.69	\$9,769.13
41Copco 2Remove & Dispose - Battery system	U378		RiskPert(S378,R378,T378,RiskName(B378&C378&H378))	10602.84	11879.11	\$13,548.08
41Copco 2Remove & Dispose - Raceways, Conduit and Cable	U379		RiskPert(S379,R379,T379,RiskName(B379&C379&H379))	15574.69	17449.42	\$19,900.99
41Copco 2Remove & Dispose - Misc. Power & Control Boards	U380		RiskPert(S380,R380,T380,RiskName(B380&C380&H380))	5795.3	6492.88	\$7,405.10
41Copco 2Remove & Dispose - 7 - 40-Ton Travelling Crane motors-hoist (2-30Hp)	U381		RiskPert(S381,R381,T381,RiskName(B381&C381&H381))	3592.84	4058.58	\$4,790.46
41Copco 2Remove & Dispose - 40-Ton Travelling Crane control equipment	U382		RiskPert(S382,R382,T382,RiskName(B382&C382&H382))	11341.74	12811.97	\$15,122.33
41Copco 2Remove & Dispose - 40-Ton Travelling Crane Festoon Cable	U383		RiskPert(S383,R383,T383,RiskName(B383&C383&H383))	2589.31	2924.97	\$3,452.42
41Copco 2Remove Oil from Oil-Filled Step-up Transformers	U384		RiskPert(S384,R384,T384,RiskName(B384&C384&H384))	232965.2	274076.8	\$315,188.30
41Copco 2Remove Intake Structure Concrete	U385		RiskPert(S385,R385,T385,RiskName(B385&C385&H385))	472788.1	588667.6	\$834,331.90
41Copco 2Remove Concrete Items associated with 16-foot I.D. Wood Stave Pipe	U386		RiskPert(S386,R386,T386,RiskName(B386&C386&H386))	374992.7	463226.3	\$639,693.50
41Copco 2Place Concrete Plugs for Tunnels	U387		RiskPert(S387,R387,T387,RiskName(B387&C387&H387))	174692.4	210658.5	\$267,176.70
41Copco 2Remove & Dispose of Caterpillar Gate (steel)	U389		RiskPert(S389,R389,T389,RiskName(B389&C389&H389))	43861.63	51601.91	\$59,342.20
41Copco 2Remove & Dispose of Trash rack and trash rake (steel)	U390		RiskPert(S390,R390,T390,RiskName(B390&C390&H390))	51989.57	62693.3	\$79,513.45
41Copco 2Remove & Dispose of Stop Logs and slots for intake (steel)	U391		RiskPert(S391,R391,T391,RiskName(B391&C391&H391))	163303.2	196924.5	\$249,757.90

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Copco 2Remove & Dispose of Bands (steel)	U394		RiskPert(\$394,R394,T394,RiskName(B394&C394&H394))	336046.6	480066.5	\$624,086.40
41Copco 2Remove & Dispose of Penstock after bifurcation to butterfly valves	U395		RiskPert(\$395,R395,T395,RiskName(B395&C395&H395))	728831.3	1041188	\$1,353,544.00
41Copco 2Remove & Dispose of Bifurcated vent pipes and support structure	U396		RiskPert(\$396,R396,T396,RiskName(B396&C396&H396))	17349.06	24784.37	\$32,219.69
41Copco 2Remove & Dispose of 2 - 138" Butterfly Valves	U397		RiskPert(\$397,R397,T397,RiskName(B397&C397&H397))	102288.9	146127	\$189,965.10
41Copco 2Disconnect and Remove Medium Voltage Circuit Breakers 115KV @ Substation	U398		RiskPert(\$398,R398,T398,RiskName(B398&C398&H398))	1297.18	1589.69	\$2,136.54
41Copco 2Disconnect and Remove Medium Voltage Circuit Breakers 69KV @ Substation	U399		RiskPert(\$399,R399,T399,RiskName(B399&C399&H399))	2824.62	3461.54	\$4,652.31
41Copco 2Disconnect and Remove Transformers 12KV @ substation	U400		RiskPert(\$400,R400,T400,RiskName(B400&C400&H400))	781	957.11	\$1,286.35
41Copco 2Disconnect and Remove cable connection between Copco 2 and HE plant At substation	U401		RiskPert(\$401,R401,T401,RiskName(B401&C401&H401))	9050.96	11091.86	\$14,907.46
41Copco 2Remove All associated Aux Equipment @ substation (allowance)	U402		RiskPert(\$402,R402,T402,RiskName(B402&C402&H402))	23123.96	28338.19	\$38,086.52
41Copco 2Demolish overhead transmission line and structure 69KV Copco #1 to Iron Gate	U403		RiskPert(\$403,R403,T403,RiskName(B403&C403&H403))	568821.4	697085.1	\$936,882.40
41Copco 2Demolish transmission conductor from existing structure pole. Structures to Remain	U404		RiskPert(\$404,R404,T404,RiskName(B404&C404&H404))	10144.44	12431.92	\$16,708.50

Iron Gate

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateFurnish, Install, and Remove Barge-Mounted Crane in Reservoir	U407		RiskPert(\$407,R407,T407,RiskName(B407&C407&H407))	194197.5	217573.1	\$248,141.20
41Iron GateFurnish, Install, and Remove Temporary Air Vent Hose from Barge to Diversion Tunnel Intake Structure	U408		RiskPert(\$408,R408,T408,RiskName(B408&C408&H408))	15080.74	17889.9	\$21,290.46
41Iron GateRemove Reinforced Concrete Stoplog Structure	U410		RiskPert(\$410,R410,T410,RiskName(B410&C410&H410))	10560.4	11831.56	\$13,493.85
41Iron GateRemove Water from behind Tailrace Cofferdam	U411		RiskPert(\$411,R411,T411,RiskName(B411&C411&H411))	2994.52	3522.97	\$4,051.41
41Iron GateProvide Dewatering behind Tailrace Cofferdam for removal of Powerhouse in the dry	U412		RiskPert(\$412,R412,T412,RiskName(B412&C412&H412))	28170.54	33141.8	\$38,113.08
41Iron GateConstruct Embankment Cofferdam across Tailrace to remove Powerhouse in dry	U413		RiskPert(\$413,R413,T413,RiskName(B413&C413&H413))	187234.8	209772.3	\$239,244.40
41Iron GateUpstream Cofferdam to be Removed in the Wet	U414		RiskPert(\$414,R414,T414,RiskName(B414&C414&H414))	281114.9	330723.4	\$380,332.00
41Iron GateRemove 9' dia. hinged blind flange	U415		RiskPert(\$415,R415,T415,RiskName(B415&C415&H415))	117959.6	139932.5	\$166,531.20
41Iron GateRemove 18" plug valve and 7" of 18" drainage pipe	U416		RiskPert(\$416,R416,T416,RiskName(B416&C416&H416))	6751.37	8008.98	\$9,531.35
41Iron GateFurnish and Install 1-16.5'x18" roller gate, stem, and operator in Wet	U417		RiskPert(\$417,R417,T417,RiskName(B417&C417&H417))	3804057	4226730	\$4,649,403.00
41Iron GateRemove Existing sluice and diversion gates from shaft by divers	U418		RiskPert(\$418,R418,T418,RiskName(B418&C418&H418))	488298.2	542553.5	\$596,808.90
41Iron GateRemove 16.5'X 18' sluice and diversion gates from shaft in Dry	U419		RiskPert(\$419,R419,T419,RiskName(B419&C419&H419))	65010.53	72233.92	\$79,457.31
41Iron GateRemove Concrete in Observation Platform, Crest Wall and Wall Extension	U420		RiskPert(\$420,R420,T420,RiskName(B420&C420&H420))	235956.9	262174.3	\$288,391.80

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateRemove Concrete in Diversion Tunnel Intake Structure	U421		RiskPert(\$A21,R421,T421,RiskName(B421&C421&H421))	217197.4	243341.5	\$277,530.00
41Iron GateRemove Concrete in Diversion Tunnel Gate Tower	U422		RiskPert(\$A22,R422,T422,RiskName(B422&C422&H422))	122202.4	143767.5	\$165,332.60
41Iron GateRemove Steel Footbridge to Gate Tower	U423		RiskPert(\$A23,R423,T423,RiskName(B423&C423&H423))	13633.44	16039.34	\$18,445.24
41Iron GateRemove Concrete in Diversion Tunnel Footbridge Abutment	U424		RiskPert(\$A24,R424,T424,RiskName(B424&C424&H424))	7381.19	8683.75	\$9,986.32
41Iron GatePlace Concrete Plugs for Diversion Tunnel	U425		RiskPert(\$A25,R425,T425,RiskName(B425&C425&H425))	72790.67	80878.53	\$88,966.38
41Iron GateRemove Concrete Closure Gates in Gate Tower	U426		RiskPert(\$A26,R426,T426,RiskName(B426&C426&H426))	72664.06	85487.13	\$98,310.20
41Iron GateRemove Upstream Riprap	U427		RiskPert(\$A27,R427,T427,RiskName(B427&C427&H427))	1859375	2205729	\$2,625,000.00
41Iron GateRemove Downstream Riprap	U428		RiskPert(\$A28,R428,T428,RiskName(B428&C428&H428))	349829.1	414993.4	\$493,876.40
41Iron GateMiscellaneous Excavation	U429		RiskPert(\$A29,R429,T429,RiskName(B429&C429&H429))	1735814	2059152	\$2,450,561.00
41Iron GateMiscellaneous Excavation	U430		RiskPert(\$A30,R430,T430,RiskName(B430&C430&H430))	11317570	13425740	\$15,977,740.00
41Iron GateCutoff Wall Concrete Demolition	U431		RiskPert(\$A31,R431,T431,RiskName(B431&C431&H431))	278744.4	312297	\$356,173.40
41Iron GateEarth Fill Crest Raise	U432		RiskPert(\$A32,R432,T432,RiskName(B432&C432&H432))	194899	229293	\$263,687.00
41Iron GateSheet pile Crest Raise	U433		RiskPert(\$A33,R433,T433,RiskName(B433&C433&H433))	215078.8	253033.8	\$290,988.90
41Iron GateRemove 5 Monitoring Wells	U434		RiskPert(\$A34,R434,T434,RiskName(B434&C434&H434))	11808.42	13229.8	\$15,088.53
41Iron GateRemove and Dispose of Trash Sluice Gate - 10 ft x 9 ft H	U435		RiskPert(\$A35,R435,T435,RiskName(B435&C435&H435))	3833.76	5111.68	\$6,389.60
41Iron GateRemove and Dispose of Intake Structure	U436		RiskPert(\$A36,R436,T436,RiskName(B436&C436&H436))	61826.99	73343.78	\$87,285.16
41Iron GateRemove and Dispose of Sluice and Diversion Tunnel Gate	U437		RiskPert(\$A37,R437,T437,RiskName(B437&C437&H437))	29304.43	34763.09	\$41,370.96
41Iron GateRemove and Dispose of Hoist Stem - 6" Dia. Sch 160x150'	U438		RiskPert(\$A38,R438,T438,RiskName(B438&C438&H438))	7245.46	8595.1	\$10,228.88
41Iron GateRemove and Dispose of Air Vent Pipe - 8" Dia. Sch 40 x160'	U439		RiskPert(\$A39,R439,T439,RiskName(B439&C439&H439))	9422.65	11177.85	\$13,302.57
41Iron GateRemove and Dispose of Air Vent Pipe - 12" Dia. Sch 40 x560'	U440		RiskPert(\$A40,R440,T440,RiskName(B440&C440&H440))	65354.76	77528.69	\$92,265.55
41Iron GateRemove and Dispose of Outlet Works Stop Logs	U441		RiskPert(\$A41,R441,T441,RiskName(B441&C441&H441))	2274.7	3032.93	\$3,791.16
41Iron GateRemove and Dispose of Hydraulic Pump Motor (10 HP est) & control panel	U442		RiskPert(\$A42,R442,T442,RiskName(B442&C442&H442))	350.8	467.74	\$584.67
41Iron GateRemove and Dispose of Distribution Equipment, Junction Boxes	U443		RiskPert(\$A43,R443,T443,RiskName(B443&C443&H443))	1703.89	2271.86	\$2,839.82
41Iron GateRemove and Dispose of Power Cable and 4" Conduit from Penstock Structure	U444		RiskPert(\$A44,R444,T444,RiskName(B444&C444&H444))	38137.33	44867.45	\$51,597.56

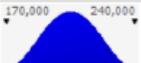
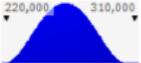
Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateRemove Powerhouse Concrete	U445		RiskPert(\$445,R445,T445,RiskName(B445&C445&H445))	2118164	2373128	\$2,706,543.00
41Iron GateRemove and Dispose of Turbine Unit	U446		RiskPert(\$446,R446,T446,RiskName(B446&C446&H446))	313213.6	368486.6	\$423,759.50
41Iron GateRemove and Dispose of Draft Tube Bulkheads	U447		RiskPert(\$447,R447,T447,RiskName(B447&C447&H447))	15523.22	18414.8	\$21,915.13
41Iron GateRemove and Dispose of Crane	U448		RiskPert(\$448,R448,T448,RiskName(B448&C448&H448))	24494.88	29297.8	\$36,021.89
41Iron GateRemove and Dispose of Governor	U449		RiskPert(\$449,R449,T449,RiskName(B449&C449&H449))	20110.76	23856.88	\$28,391.66
41Iron GateRemove and Dispose of Bearing Oil System and Cooling Water System	U450		RiskPert(\$450,R450,T450,RiskName(B450&C450&H450))	9332.82	11071.29	\$13,175.75
41Iron GateRemove and Dispose of CO2 Systems	U451		RiskPert(\$451,R451,T451,RiskName(B451&C451&H451))	2635.77	2977.44	\$3,514.35
41Iron GateRemove and Dispose of Plant Water and Fire Protection System	U452		RiskPert(\$452,R452,T452,RiskName(B452&C452&H452))	9714.38	10973.65	\$12,952.51
41Iron GateRemove and Dispose of Sump Pumps	U453		RiskPert(\$453,R453,T453,RiskName(B453&C453&H453))	2117.71	2392.23	\$2,823.61
41Iron GateRemove and Dispose of Pumps	U454		RiskPert(\$454,R454,T454,RiskName(B454&C454&H454))	24382.46	27543.15	\$32,509.94
41Iron GateRemove and Dispose of Exposed Piping Around the Plant	U455		RiskPert(\$455,R455,T455,RiskName(B455&C455&H455))	20536.19	23198.28	\$27,381.58
41Iron GateRemove and Dispose of Unwatering Piping	U456		RiskPert(\$456,R456,T456,RiskName(B456&C456&H456))	17176.54	19244.09	\$21,947.80
41Iron GateRemove and Dispose of Drainage Piping	U457		RiskPert(\$457,R457,T457,RiskName(B457&C457&H457))	10788.88	12087.55	\$13,785.80
41Iron GateRemove and Dispose of Transformer Oil and Fire Protection	U458		RiskPert(\$458,R458,T458,RiskName(B458&C458&H458))	9829.98	10433.57	\$11,382.08
41Iron GateRemove and Dispose of Compressed Air System	U459		RiskPert(\$459,R459,T459,RiskName(B459&C459&H459))	1329.06	1489.04	\$1,698.25
41Iron GateRemove & Dispose - Petroleum Products from Mechanical Equip.	U460		RiskPert(\$460,R460,T460,RiskName(B460&C460&H460))	11815.71	12541.24	\$13,681.35
41Iron GateRemove and Dispose of AC Generator, Outdoor Horizontal	U461		RiskPert(\$461,R461,T461,RiskName(B461&C461&H461))	92287.2	103395.9	\$117,922.50
41Iron GateRemove and Dispose of Excitation equipment for 18.975 MVA Generator	U462		RiskPert(\$462,R462,T462,RiskName(B462&C462&H462))	2414.25	2704.86	\$3,084.88
41Iron GateRemove and Dispose of Surge protection equip. for 18.975 MVA Generator	U463		RiskPert(\$463,R463,T463,RiskName(B463&C463&H463))	1914.46	2144.9	\$2,446.25
41Iron GateRemove and Dispose of Neutral grounding equip. for 18.975 MVA Generator	U464		RiskPert(\$464,R464,T464,RiskName(B464&C464&H464))	4029.6	4514.64	\$5,148.93
41Iron GateRemove and Dispose of Station Service Switchgear, 600 volt - (5 sections)	U465		RiskPert(\$465,R465,T465,RiskName(B465&C465&H465))	7470.29	8369.5	\$9,545.38
41Iron GateRemove and Dispose of Unit and plant control switchboard	U466		RiskPert(\$466,R466,T466,RiskName(B466&C466&H466))	24245.35	27163.77	\$30,980.17
41Iron GateRemove and Dispose of Battery System - assume 60 batteries, charger	U467		RiskPert(\$467,R467,T467,RiskName(B467&C467&H467))	15540.22	17410.81	\$19,856.95
41Iron GateRemove and Dispose of Raceways, Bus, Conduit and Cable	U468		RiskPert(\$468,R468,T468,RiskName(B468&C468&H468))	18579.86	20816.33	\$23,740.94

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateRemove and Dispose of Misc. power & control boards	U469		RiskPert(S469,R469,T469,RiskName(B469&C469&H469))	5712.68	6400.32	\$7,299.54
41Iron GateRemove and Dispose of Governor Oil Pump Motors (10 hp and 20 hp est.)	U471		RiskPert(S471,R471,T471,RiskName(B471&C471&H471))	495.05	554.64	\$632.57
41Iron GateRemove and Dispose of Vertical Motors, outdoor, (480V, 100 HP est.)	U472		RiskPert(S472,R472,T472,RiskName(B472&C472&H472))	2405.5	3207.33	\$4,009.16
41Iron GateRemove and Dispose of Step-up Transformer, outdoor, oil-filled, 3-phase	U474		RiskPert(S474,R474,T474,RiskName(B474&C474&H474))	86600.01	97024.09	\$110,655.60
41Iron GateRemove and Dispose of Lattice steel structure, with 69-kV disconnect	U475		RiskPert(S475,R475,T475,RiskName(B475&C475&H475))	7060.15	7909.99	\$9,021.31
41Iron GateRemove and Dispose of Generator Switchgear, outdoor, 7.2kV	U476		RiskPert(S476,R476,T476,RiskName(B476&C476&H476))	24790.72	27774.79	\$31,677.03
41Iron GateRemove and Dispose of Single Phase Pole Transformers (25 kVA est.)	U477		RiskPert(S477,R477,T477,RiskName(B477&C477&H477))	7636.08	8555.24	\$9,757.21
41Iron GateRemove Concrete in Penstock Intake Structure	U478		RiskPert(S478,R478,T478,RiskName(B478&C478&H478))	133064.3	156546.3	\$180,028.20
41Iron GateRemove Concrete in Penstock Encasement	U479		RiskPert(S479,R479,T479,RiskName(B479&C479&H479))	215754.3	241724.8	\$275,686.10
41Iron GateRemove Concrete in 3 Penstock Anchors and 7 Penstock Supports	U480		RiskPert(S480,R480,T480,RiskName(B480&C480&H480))	888667	1045491	\$1,202,314.00
41Iron GateRemove Steel Footbridge to Intake Structure	U481		RiskPert(S481,R481,T481,RiskName(B481&C481&H481))	11627.99	13679.99	\$15,731.99
41Iron GateRemove Concrete in Intake Structure Footbridge Abutment	U482		RiskPert(S482,R482,T482,RiskName(B482&C482&H482))	3922.92	4615.2	\$5,307.48
41Iron GateRemove and Dispose of Intake Structure	U483		RiskPert(S483,R483,T483,RiskName(B483&C483&H483))	130418	153433	\$176,447.90
41Iron GateRemove and Dispose of Gate Hoist Stem - 6" Sch160x40'	U484		RiskPert(S484,R484,T484,RiskName(B484&C484&H484))	1533.5	2044.67	\$2,555.84
41Iron GateRemove and Dispose of Water Fill line- 12" Dia STD x 27'	U485		RiskPert(S485,R485,T485,RiskName(B485&C485&H485))	1150.13	1533.5	\$1,916.88
41Iron GateRemove and Dispose of Air Vent - 12" Dia STD x 32'	U486		RiskPert(S486,R486,T486,RiskName(B486&C486&H486))	1363.11	1817.49	\$2,271.86
41Iron GateRemove and Dispose of Gage Wells	U487		RiskPert(S487,R487,T487,RiskName(B487&C487&H487))	2225.28	2967.05	\$3,708.81
41Iron GateRemove and Dispose of Penstock Vent - 46" Dia, 0.25" Thick x 60'	U488		RiskPert(S488,R488,T488,RiskName(B488&C488&H488))	14788.02	17397.67	\$20,007.32
41Iron GateRemove and Dispose of Penstock - 12" Dia, 0.25" Thick x 698'	U489		RiskPert(S489,R489,T489,RiskName(B489&C489&H489))	414064.5	487134.8	\$560,204.90
41Iron GateRemove and Dispose of Bypass Outlet - 96" Dia, 0.25" Thick x 50'	U490		RiskPert(S490,R490,T490,RiskName(B490&C490&H490))	11040.59	12988.93	\$14,937.27
41Iron GateRemove and Dispose of Outlet Valve on bypass outlet - 66" Dia.	U491		RiskPert(S491,R491,T491,RiskName(B491&C491&H491))	27912.44	32838.16	\$37,763.89
41Iron GateRemove and Dispose Overhead trolley Crane Motor (4hp est) & Controls	U492		RiskPert(S492,R492,T492,RiskName(B492&C492&H492))	1002.29	1336.39	\$1,670.48
41Iron GateRemove and Dispose Distribution equipment, Junction Boxes	U493		RiskPert(S493,R493,T493,RiskName(B493&C493&H493))	2505.73	3340.97	\$4,176.21
41Iron GateRemove and Dispose Power Cable and Conduit	U494		RiskPert(S494,R494,T494,RiskName(B494&C494&H494))	87710.75	103189.1	\$118,667.50

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateClear and Grub Disposal Area	U495		RiskPert(\$A95,R495,T495,RiskName(B495&C495&H495))	174480.6	205271.3	\$236,062.00
41Iron GateRemove Building No. 2	U496		RiskPert(\$A96,R496,T496,RiskName(B496&C496&H496))	59126.73	66243.84	\$75,550.83
41Iron GateRemove Building No. 3	U497		RiskPert(\$A97,R497,T497,RiskName(B497&C497&H497))	83216.66	93233.48	\$106,332.40
41Iron GateRemove Concrete in Fish Ladder	U498		RiskPert(\$A98,R498,T498,RiskName(B498&C498&H498))	355912.5	418720.6	\$481,528.70
41Iron GateRemove Concrete in Holding Ponds #1 thru #6	U499		RiskPert(\$A99,R499,T499,RiskName(B499&C499&H499))	273877.9	306844.7	\$349,955.00
41Iron GateRemove Concrete in Fish Facility Items	U500		RiskPert(\$500,R500,T500,RiskName(B500&C500&H500))	222619.1	261904.8	\$301,190.50
41Iron GateRemove Miscellaneous Metalwork in Fish Facilities	U501		RiskPert(\$501,R501,T501,RiskName(B501&C501&H501))	10852.91	12874.53	\$15,321.76
41Iron GateRemove Concrete Associated with 30" Dia. water supply line	U502		RiskPert(\$502,R502,T502,RiskName(B502&C502&H502))	14841.27	17460.32	\$20,079.37
41Iron GateRemove Concrete in Aerator Structure	U503		RiskPert(\$503,R503,T503,RiskName(B503&C503&H503))	11884.4	13981.65	\$16,078.89
41Iron GateRemove Wood in Aerator Structure	U504		RiskPert(\$504,R504,T504,RiskName(B504&C504&H504))	4209.62	5612.82	\$7,016.03
41Iron GateRemove Structural Steel in Aerator Structure	U505		RiskPert(\$505,R505,T505,RiskName(B505&C505&H505))	2129.87	2839.82	\$3,549.78
41Iron GateRemove Asphalt Pavement	U506		RiskPert(\$506,R506,T506,RiskName(B506&C506&H506))	24370.47	28671.15	\$32,971.82
41Iron GateRemove Restroom Building near Aerator Structure	U507		RiskPert(\$507,R507,T507,RiskName(B507&C507&H507))	20782.32	23283.9	\$26,555.19
41Iron GateRemove Storage Shed near Aerator Structure	U508		RiskPert(\$508,R508,T508,RiskName(B508&C508&H508))	6397.93	7168.06	\$8,175.14
41Iron GateRemove Toe Drain Pipe	U509		RiskPert(\$509,R509,T509,RiskName(B509&C509&H509))	6712.8	7897.42	\$9,082.03
41Iron GateRemove Toe Drain Manhole	U510		RiskPert(\$510,R510,T510,RiskName(B510&C510&H510))	1252.86	1670.48	\$2,088.10
41Iron GateBerm Removal	U511		RiskPert(\$511,R511,T511,RiskName(B511&C511&H511))	741625.5	830895.3	\$947,632.60
41Iron GateRemove and Dispose of Intake Structures Trashracks	U512		RiskPert(\$512,R512,T512,RiskName(B512&C512&H512))	3758.59	5011.45	\$6,264.31
41Iron GateRemove and Dispose of Pipe Conduit, 30" Dia. x 0.25" Thick x 960'	U513		RiskPert(\$513,R513,T513,RiskName(B513&C513&H513))	75485.27	89546.25	\$106,567.40
41Iron GateRemove and Dispose of Sluice Gate Valve, 30" Dia.	U514		RiskPert(\$514,R514,T514,RiskName(B514&C514&H514))	2555.84	3407.79	\$4,259.73
41Iron GateRemove and Dispose of Sluice Gate Stem, 2" Dia. Sch160x45'	U515		RiskPert(\$515,R515,T515,RiskName(B515&C515&H515))	306.7	408.93	\$511.17
41Iron GateRemove and Dispose of Butterfly Valve, 30" Dia.	U516		RiskPert(\$516,R516,T516,RiskName(B516&C516&H516))	2074.49	2765.99	\$3,457.48
41Iron GateRemove and Dispose of Piping- 30-in. Dia. x 0.25 Thickness x 90'	U517		RiskPert(\$517,R517,T517,RiskName(B517&C517&H517))	4141.6	4913.08	\$5,846.97
41Iron GateRemove and Dispose of Piping- 24-in. Dia. x 0.25 Thickness x 248'	U518		RiskPert(\$518,R518,T518,RiskName(B518&C518&H518))	7653.69	9079.38	\$10,805.21

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateRemove and Dispose of Piping- 20-in. Dia. x 0.25 Thickness x 85'	U519		RiskPert(\$S519,R519,T519,RiskName(B519&C519&H519))	2484.96	2947.85	\$3,508.18
41Iron GateRemove and Dispose of Piping- 18-in. Dia. x 0.25 Thickness x 432'	U520		RiskPert(\$S520,R520,T520,RiskName(B520&C520&H520))	10627.39	12607	\$15,003.38
41Iron GateRemove and Dispose of Piping- 16-in. Dia. x 0.25 Thickness x 166'	U521		RiskPert(\$S521,R521,T521,RiskName(B521&C521&H521))	3727.44	4421.77	\$5,262.27
41Iron GateRemove and Dispose of Piping- 12-in. Dia. x 0.25 Thickness x 64'	U522		RiskPert(\$S522,R522,T522,RiskName(B522&C522&H522))	948.43	1125.1	\$1,338.96
41Iron GateRemove and Dispose of Piping- 10-in. Dia. x 0.25 Thickness x 69'	U523		RiskPert(\$S523,R523,T523,RiskName(B523&C523&H523))	825.83	979.66	\$1,165.87
41Iron GateRemove and Dispose of Piping- 8-in. Dia. x 0.25 Thickness x 30'	U524		RiskPert(\$S524,R524,T524,RiskName(B524&C524&H524))	782.33	928.06	\$1,104.46
41Iron GateRemove and Dispose of Piping- 3-in. Dia. x STD x 30'	U525		RiskPert(\$S525,R525,T525,RiskName(B525&C525&H525))	393.89	467.27	\$556.08
41Iron GateRemove and Dispose of Gate Valves	U526		RiskPert(\$S526,R526,T526,RiskName(B526&C526&H526))	20377.55	24173.37	\$28,768.31
41Iron GateRemove and Dispose of Basin #1	U527		RiskPert(\$S527,R527,T527,RiskName(B527&C527&H527))	7970.3	9454.96	\$11,252.19
41Iron GateRemove and Dispose of Basin #2	U528		RiskPert(\$S528,R528,T528,RiskName(B528&C528&H528))	7970.3	9454.96	\$11,252.19
41Iron GateRemove and Dispose of Basin #3	U529		RiskPert(\$S529,R529,T529,RiskName(B529&C529&H529))	7970.3	9454.96	\$11,252.19
41Iron GateRemove and Dispose of Basin #4	U530		RiskPert(\$S530,R530,T530,RiskName(B530&C530&H530))	7970.3	9454.96	\$11,252.19
41Iron GateRemove and Dispose of Basin #5	U531		RiskPert(\$S531,R531,T531,RiskName(B531&C531&H531))	7970.3	9454.96	\$11,252.19
41Iron GateRemove and Dispose of Basin #6	U532		RiskPert(\$S532,R532,T532,RiskName(B532&C532&H532))	7970.3	9454.96	\$11,252.19
41Iron GateRemove and Dispose of Holding Tank	U533		RiskPert(\$S533,R533,T533,RiskName(B533&C533&H533))	10857.38	12879.83	\$15,328.06
41Iron GateRemove and Dispose of Misc.: Motors, control panels, cables, conduit	U534		RiskPert(\$S534,R534,T534,RiskName(B534&C534&H534))	1503.44	2004.58	\$2,505.73
41Iron GateWanaka Springs - Concrete Total	U535		RiskPert(\$S535,R535,T535,RiskName(B535&C535&H535))	8199.73	9646.75	\$11,093.76
41Iron GateWanaka Springs - Double Pipe Railings	U536		RiskPert(\$S536,R536,T536,RiskName(B536&C536&H536))	2405.5	3207.33	\$4,009.16
41Iron GateWanaka Springs - Wood picnic tables to be removed and hauled	U537		RiskPert(\$S537,R537,T537,RiskName(B537&C537&H537))	501.15	668.19	\$835.24
41Iron GateWanaka Springs - 25'x5' Wooden floating dock	U538		RiskPert(\$S538,R538,T538,RiskName(B538&C538&H538))	2505.73	3340.97	\$4,176.21
41Iron GateWanaka Springs - Rip and reseed site and access road	U539		RiskPert(\$S539,R539,T539,RiskName(B539&C539&H539))	16249.75	19117.36	\$21,984.96
41Iron GateWanaka Springs - Signs to be removed and hauled away	U540		RiskPert(\$S540,R540,T540,RiskName(B540&C540&H540))	902.06	1202.75	\$1,503.44
41Iron GateWanaka Springs - 15'x5' Gangplank with Railings	U541		RiskPert(\$S541,R541,T541,RiskName(B541&C541&H541))	1503.44	2004.58	\$2,505.73
41Iron GateJuniper Point - Concrete Total	U542		RiskPert(\$S542,R542,T542,RiskName(B542&C542&H542))	6535.16	7688.43	\$8,841.69

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateJuniper Point - 2, 4x4 Toilet Vaults	U543		RiskPert(\$543,R543,T543,RiskName(B543&C543&H543))	3207.33	4276.44	\$5,345.55
41Iron GateJuniper Point - Wood picnic tables to be removed and hauled	U544		RiskPert(\$544,R544,T544,RiskName(B544&C544&H544))	801.83	1069.11	\$1,336.39
41Iron GateJuniper Point - Signs to be removed and hauled away	U545		RiskPert(\$545,R545,T545,RiskName(B545&C545&H545))	1202.75	1603.66	\$2,004.58
41Iron GateJuniper Point - Dock pile railing	U546		RiskPert(\$546,R546,T546,RiskName(B546&C546&H546))	2004.58	2672.77	\$3,340.97
41Iron GateJuniper Point - 50'x5' Composite dock with poly floats	U547		RiskPert(\$547,R547,T547,RiskName(B547&C547&H547))	7931.1	8812.33	\$9,693.56
41Iron GateJuniper Point - 20'x5' Composite gangplank with railings	U548		RiskPert(\$548,R548,T548,RiskName(B548&C548&H548))	2004.58	2672.77	\$3,340.97
41Iron GateJuniper Point - Regrade to Natural Contour, rip, and reseed	U549		RiskPert(\$549,R549,T549,RiskName(B549&C549&H549))	20167.11	23726.01	\$27,284.91
41Iron GateCamp Creek - Concrete Total	U550		RiskPert(\$550,R550,T550,RiskName(B550&C550&H550))	32242.6	37932.46	\$43,622.34
41Iron GateCamp Creek - Well house 10'x16' concrete block building	U552		RiskPert(\$552,R552,T552,RiskName(B552&C552&H552))	11782.53	13091.7	\$14,400.88
41Iron GateCamp Creek - 2, 20'x5' Composite decking gangplanks	U553		RiskPert(\$553,R553,T553,RiskName(B553&C553&H553))	4009.16	5345.55	\$6,681.93
41Iron GateCamp Creek - Concrete block double toilet bldg 10'x16'	U555		RiskPert(\$555,R555,T555,RiskName(B555&C555&H555))	11782.53	13091.7	\$14,400.88
41Iron GateCamp Creek - Dump stations and approx. 2000 gal buried	U556		RiskPert(\$556,R556,T556,RiskName(B556&C556&H556))	6307.25	7482.13	\$8,904.35
41Iron GateCamp Creek - Power poles and lines	U557		RiskPert(\$557,R557,T557,RiskName(B557&C557&H557))	5215.21	6186.67	\$7,362.65
41Iron GateCamp Creek - Remove waterlines and 3 faucets and regrade	U558		RiskPert(\$558,R558,T558,RiskName(B558&C558&H558))	3006.87	4009.16	\$5,011.45
41Iron GateCamp Creek - Relocate concrete tables	U560		RiskPert(\$560,R560,T560,RiskName(B560&C560&H560))	1202.75	1603.66	\$2,004.58
41Iron GateCamp Creek - Regrade, rip, and reseed	U561		RiskPert(\$561,R561,T561,RiskName(B561&C561&H561))	33890.32	39870.96	\$45,851.61
41Iron GateCamp Creek - Signs to be removed and hauled away	U562		RiskPert(\$562,R562,T562,RiskName(B562&C562&H562))	2104.81	2806.41	\$3,508.02
41Iron GateDutch Creek - 50'4'3' Dock Concrete Abutment	U563		RiskPert(\$563,R563,T563,RiskName(B563&C563&H563))	7424.93	8249.92	\$9,074.91
41Iron GateDutch Creek - Double Pipe Railing	U564		RiskPert(\$564,R564,T564,RiskName(B564&C564&H564))	4009.16	5345.55	\$6,681.93
41Iron GateMirror Cove - Concrete Total	U565		RiskPert(\$565,R565,T565,RiskName(B565&C565&H565))	21253.5	23615	\$25,976.50
41Iron GateMirror Cove - 10'x16' Toilet Vault	U566		RiskPert(\$566,R566,T566,RiskName(B566&C566&H566))	15587.74	17319.71	\$19,051.68
41Iron GateMirror Cove - Double pipe railings on dock	U568		RiskPert(\$568,R568,T568,RiskName(B568&C568&H568))	3207.33	4276.44	\$5,345.55
41Iron GateMirror Cove - Regrade site	U569		RiskPert(\$569,R569,T569,RiskName(B569&C569&H569))	35891.21	42224.96	\$48,558.70
41Iron GateMirror Cove - Signs to be removed and hauled away	U570		RiskPert(\$570,R570,T570,RiskName(B570&C570&H570))	2104.81	2806.41	\$3,508.02

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
41Iron GateOverlook Point - 1 concrete picnic table base	U571		RiskPert(\$S571,R571,T571,RiskName(B571&C571&H571))	300.69	400.92	\$501.15
41Iron GateOverlook Point - Steel frame table to be removed and hauled away	U572		RiskPert(\$S572,R572,T572,RiskName(B572&C572&H572))	100.23	133.64	\$167.05
41Iron GateOverlook Point - Regrade steep access road and site to natural contours	U573		RiskPert(\$S573,R573,T573,RiskName(B573&C573&H573))	14643.54	17227.69	\$19,811.84
41Iron GateLong Gulch - 80'x25x4" Concrete boat ramp to be removed	U574		RiskPert(\$S574,R574,T574,RiskName(B574&C574&H574))	7857.15	8730.16	\$9,603.18
41Iron GateLong Gulch - Remove picnic tables (steel frames with planks) and haul away	U575		RiskPert(\$S575,R575,T575,RiskName(B575&C575&H575))	200.46	267.28	\$334.10
41Iron GateLong Gulch - Regrade ramp area to natural contours, rip, reseed	U576		RiskPert(\$S576,R576,T576,RiskName(B576&C576&H576))	1252.86	1670.48	\$2,088.10
41Iron GateConcrete Lining Installation for Diversion Tunnel	U577		RiskPert(\$S577,R577,T577,RiskName(B577&C577&H577))	1211059	1345621	\$1,480,183.00
41Iron GateRemove Distribution Poles near Iron Gate Hydro Plant	U578		RiskPert(\$S578,R578,T578,RiskName(B578&C578&H578))	5690.16	6750.09	\$8,033.16
41Iron GateRemove 6.6kV Power Circuit Breaker @Substation	U580		RiskPert(\$S580,R580,T580,RiskName(B580&C580&H580))	1457.44	1743.22	\$2,143.30
41Iron GateRemove Generator @Substation	U581		RiskPert(\$S581,R581,T581,RiskName(B581&C581&H581))	4558.64	5452.49	\$6,703.88
41Iron GateRemove all auxiliary equipment @Substation (Allowance)	U582		RiskPert(\$S582,R582,T582,RiskName(B582&C582&H582))	25687.01	30723.68	\$37,775.02
41Iron GateNew Connection @Iron Gate Hatchery from PacifiCorp's Hornbrook Substation (Allowance)	U583		RiskPert(\$S583,R583,T583,RiskName(B583&C583&H583))	302507.5	336119.5	\$369,731.40

RESTORATION EARTHWORKS & HABITAT

Copco 1 & 2

Name	Cell	Graph	Function	Min	Mean	Max
42Copco 1 & 2Removal of sediment and similar obstructions to ensure volitional fish passage + wood habitat structures	U586		RiskPert(\$S586,R586,T586,RiskName(B586&C586&H586))	860176.8	995574.9	\$1,290,265.00
42Copco 1 & 2Equipment & road access into site	U587		RiskPert(\$S587,R587,T587,RiskName(B587&C587&H587))	75928.32	87880	\$113,892.50
42Copco 1 & 2Grading and shaping of floodplain sediments (no export)	U588		RiskPert(\$S588,R588,T588,RiskName(B588&C588&H588))	658993	762723.4	\$988,489.60
42Copco 1 & 2Floodplain roughness for 50% of area	U589		RiskPert(\$S589,R589,T589,RiskName(B589&C589&H589))	170079.4	196851.2	\$255,119.20
42Copco 1 & 2Equipment & road access into site	U590		RiskPert(\$S590,R590,T590,RiskName(B590&C590&H590))	75928.32	87880	\$113,892.50
42Copco 1 & 2Grading and shaping of floodplain sediments (no export)	U591		RiskPert(\$S591,R591,T591,RiskName(B591&C591&H591))	1330280	1539676	\$1,995,421.00
42Copco 1 & 2Floodplain roughness for 50% of area	U592		RiskPert(\$S592,R592,T592,RiskName(B592&C592&H592))	387234.4	448188	\$580,851.60
42Copco 1 & 2Equipment & road access into site	U593		RiskPert(\$S593,R593,T593,RiskName(B593&C593&H593))	75928.32	87880	\$113,892.50
42Copco 1 & 2Grading and shaping of floodplain sediments (no export)	U594		RiskPert(\$S594,R594,T594,RiskName(B594&C594&H594))	636226.7	736373.5	\$954,340.00
42Copco 1 & 2Floodplain roughness for 50% of area	U595		RiskPert(\$S595,R595,T595,RiskName(B595&C595&H595))	211080.7	244306.4	\$316,621.10

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
42Copco 1 & 2Equipment & road access into site	U596		RiskPert(\$S596,R596,T596,RiskName(B596&C596&H596))	75928.32	87880	\$113,892.50
42Copco 1 & 2Grading and shaping of floodplain sediments (no export)	U597		RiskPert(\$S597,R597,T597,RiskName(B597&C597&H597))	409810.4	474317.7	\$614,715.70
42Copco 1 & 2Floodplain roughness for 50% of area	U598		RiskPert(\$S598,R598,T598,RiskName(B598&C598&H598))	159449.5	184548	\$239,174.20
42Copco 1 & 2Equipment & road access into site	U599		RiskPert(\$S599,R599,T599,RiskName(B599&C599&H599))	75928.32	87880	\$113,892.50
42Copco 1 & 2Grading and shaping of floodplain sediments (no export)	U600		RiskPert(\$600,R600,T600,RiskName(B600&C600&H600))	164142.9	189980.2	\$246,214.30
42Copco 1 & 2Floodplain roughness for 50% of area	U601		RiskPert(\$601,R601,T601,RiskName(B601&C601&H601))	63779.79	73819.2	\$95,669.68
42Copco 1 & 2Equipment & road access into site	U602		RiskPert(\$602,R602,T602,RiskName(B602&C602&H602))	75928.32	87880	\$113,892.50
42Copco 1 & 2Grading and shaping of floodplain sediments (no export)	U603		RiskPert(\$603,R603,T603,RiskName(B603&C603&H603))	138882	160743.1	\$208,323.00
42Copco 1 & 2Floodplain roughness for 50% of area	U604		RiskPert(\$604,R604,T604,RiskName(B604&C604&H604))	80484.02	93152.8	\$120,726.00
42Copco 1 & 2Bank stability and channel fringe Complexity Develop process-based restoration and velocity variations along bankline by adding logwood	U605		RiskPert(\$605,R605,T605,RiskName(B605&C605&H605))	653135.4	755943.8	\$979,703.10
42Copco 1 & 2Ground-Based Placement	U606		RiskPert(\$606,R606,T606,RiskName(B606&C606&H606))	578063.6	669055.1	\$867,095.30
42Copco 1 & 2Helicopter Placement (@ 50 members staged and placed per site)	U607		RiskPert(\$607,R607,T607,RiskName(B607&C607&H607))	470877.1	544996.6	\$706,315.60
42Copco 1 & 2Contractor overhead	U608		RiskPert(\$608,R608,T608,RiskName(B608&C608&H608))	1110728	1285565	\$1,666,092.00
42Copco 1 & 2Contractor profit (included in rates & prices)	U609		RiskPert(\$609,R609,T609,RiskName(B609&C609&H609))	0	0	\$0.00
42Copco 1 & 2Insurance	U610		RiskPert(\$610,R610,T610,RiskName(B610&C610&H610))	85155.83	98559.99	\$127,733.80
42Copco 1 & 2Bond	U611		RiskPert(\$611,R611,T611,RiskName(B611&C611&H611))	85155.83	98559.99	\$127,733.80

Iron Gate

Name	Cell	Graph	Function	Min	Mean	Max
42Iron GateRemoval of sediment and similar obstructions to ensure volitional fish passage + wood habitat structures	U613		RiskPert(\$613,R613,T613,RiskName(B613&C613&H613))	614411.9	711124.9	\$921,617.90
42Iron GateEquipment & road access into site	U614		RiskPert(\$614,R614,T614,RiskName(B614&C614&H614))	75928.32	87880	\$113,892.50
42Iron GateGrading and shaping of floodplain sediments (no export)	U615		RiskPert(\$615,R615,T615,RiskName(B615&C615&H615))	485941.3	562432	\$728,911.90
42Iron GateFloodplain roughness for 50% of area	U616		RiskPert(\$616,R616,T616,RiskName(B616&C616&H616))	215636.4	249579.2	\$323,454.70
42Iron GateEquipment & road access into site	U617		RiskPert(\$617,R617,T617,RiskName(B617&C617&H617))	75928.32	87880	\$113,892.50
42Iron GateGrading and shaping of floodplain sediments (no export)	U618		RiskPert(\$618,R618,T618,RiskName(B618&C618&H618))	153881.4	178103.5	\$230,822.10
42Iron GateFloodplain roughness for 50% of area	U619		RiskPert(\$619,R619,T619,RiskName(B619&C619&H619))	88076.85	101940.8	\$132,115.30
42Iron GateEquipment & road access into site	U620		RiskPert(\$620,R620,T620,RiskName(B620&C620&H620))	50618.88	58586.67	\$75,928.32

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
42Iron GateGrading and shaping of floodplain sediments (no export)	U621		RiskPert(S621,R621,T621,RiskName(B621&C621&H621))	769407	890517.3	\$1,154,111.00
42Iron GateFloodplain roughness for 75% of area	U622		RiskPert(S622,R622,T622,RiskName(B622&C622&H622))	525424	608129.6	\$788,135.90
42Iron GateDevelop process-based restoration and velocity variations along bankline by adding large wood complexity for resting zone, feeding seams, snags and velocity refugia	U623		RiskPert(S623,R623,T623,RiskName(B623&C623&H623))	261254.2	302377.5	\$391,881.30
42Iron GateGround-Based Placement	U624		RiskPert(S624,R624,T624,RiskName(B624&C624&H624))	578063.6	669055.1	\$867,095.30
42Iron GateHelicopter Placement (@ 50 members staged and placed per site)	U625		RiskPert(S625,R625,T625,RiskName(B625&C625&H625))	235438.5	272498.3	\$353,157.80
42Iron GateContractor overhead	U626		RiskPert(S626,R626,T626,RiskName(B626&C626&H626))	618315.2	715642.6	\$927,472.80
42Iron GateContractor profit (included in rates & prices)	U627		RiskPert(S627,R627,T627,RiskName(B627&C627&H627))	0	0	\$0.00
42Iron GateInsurance	U628		RiskPert(S628,R628,T628,RiskName(B628&C628&H628))	47404.16	54865.93	\$71,106.25
42Iron GateBond	U629		RiskPert(S629,R629,T629,RiskName(B629&C629&H629))	47404.16	54865.93	\$71,106.25

JC Boyle

Name	Cell	Graph	Function	Min	Mean	Max
42JC BoyleRemoval of sediment and similar obstructions to ensure volitional fish passage + wood habitat structures	U631		RiskPert(S631,R631,T631,RiskName(B631&C631&H631))	245764.8	284450	\$368,647.20
42JC BoyleEquipment & road access into site	U632		RiskPert(S632,R632,T632,RiskName(B632&C632&H632))	12654.72	14646.67	\$18,982.08
42JC BoyleGrading and shaping of floodplain sediments (no export)	U633		RiskPert(S633,R633,T633,RiskName(B633&C633&H633))	299663.8	346833.1	\$449,495.70
42JC BoyleFloodplain roughness for 50% of area	U634		RiskPert(S634,R634,T634,RiskName(B634&C634&H634))	50112.69	58000.8	\$75,169.04
42JC BoyleEquipment & road access into site	U635		RiskPert(S635,R635,T635,RiskName(B635&C635&H635))	12654.72	14646.67	\$18,982.08
42JC BoyleGrading and shaping of floodplain sediments (no export)	U636		RiskPert(S636,R636,T636,RiskName(B636&C636&H636))	283465.7	328085.3	\$425,198.60
42JC BoyleFloodplain roughness for 50% of area	U637		RiskPert(S637,R637,T637,RiskName(B637&C637&H637))	665132.1	769828.8	\$997,698.10
42JC BoyleEquipment & road access into site	U638		RiskPert(S638,R638,T638,RiskName(B638&C638&H638))	12654.72	14646.67	\$18,982.08
42JC BoyleGrading and shaping of floodplain sediments (no export)	U639		RiskPert(S639,R639,T639,RiskName(B639&C639&H639))	429248.1	496814.9	\$643,872.10
42JC BoyleFloodplain roughness for 30% of area	U640		RiskPert(S640,R640,T640,RiskName(B640&C640&H640))	607426.6	703040	\$911,139.80
42JC BoyleEquipment & road access into site	U641		RiskPert(S641,R641,T641,RiskName(B641&C641&H641))	12654.72	14646.67	\$18,982.08
42JC BoyleGrading and shaping of floodplain sediments (no export)	U642		RiskPert(S642,R642,T642,RiskName(B642&C642&H642))	137683.4	159355.7	\$206,525.00
42JC BoyleFloodplain roughness for 50% of area	U643		RiskPert(S643,R643,T643,RiskName(B643&C643&H643))	323454.7	374368.8	\$485,182.00
42JC BoyleDevelop process-based restoration and velocity variations along bankline by adding large wood complexity for resting zone, feeding seams, snags and velocity refugia	U644		RiskPert(S644,R644,T644,RiskName(B644&C644&H644))	522508.3	604755	\$783,762.50
42JC BoyleGround-Based Placement	U645		RiskPert(S645,R645,T645,RiskName(B645&C645&H645))	867095.3	1003583	\$1,300,643.00

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
42JC BoyleContractor profit (included in rates & prices)	U648		RiskPert(\$648,R648,T648,RiskName(B648&C648&H648))	0	0	\$0.00
42JC BoyleInsurance	U649		RiskPert(\$649,R649,T649,RiskName(B649&C649&H649))	52765.99	61071.75	\$79,148.98
42JC BoyleBond	U650		RiskPert(\$650,R650,T650,RiskName(B650&C650&H650))	52765.99	61071.75	\$79,148.98

RESTORATION OF VEGETATION

JC Boyle

Name	Cell	Graph	Function	Min	Mean	Max
42JC BoyleContractor profit (included in rates & prices)	U648		RiskPert(\$648,R648,T648,RiskName(B648&C648&H648))	0	0	\$0.00
42JC BoyleInsurance	U649		RiskPert(\$649,R649,T649,RiskName(B649&C649&H649))	52765.99	61071.75	\$79,148.98
42JC BoyleBond	U650		RiskPert(\$650,R650,T650,RiskName(B650&C650&H650))	52765.99	61071.75	\$79,148.98
43JC BoyleOn-Site Pilot Growing Experiment	U653		RiskPert(\$653,R653,T653,RiskName(B653&C653&H653))	101733.8	116567.2	\$134,281.90
43JC BoyleSeed Collection	U654		RiskPert(\$654,R654,T654,RiskName(B654&C654&H654))	167775.5	221301.2	\$275,180.60
43JC BoyleSeed Propagation	U655		RiskPert(\$655,R655,T655,RiskName(B655&C655&H655))	208731.7	52394.9	\$713,733.00
43JC BoyleWeed Eradication	U656		RiskPert(\$656,R656,T656,RiskName(B656&C656&H656))	478981.8	60661.8	\$734,251.80
43JC BoylePioneer Seeding	U657		RiskPert(\$657,R657,T657,RiskName(B657&C657&H657))	283465.7	44882.08	\$668,169.20
43JC BoyleContainer Plant Growing	U658		RiskPert(\$658,R658,T658,RiskName(B658&C658&H658))	79389.05	21708.1	\$354,787.10
43JC BoyleEstabl. Prd. Maint. & Monitor'g	U659		RiskPert(\$659,R659,T659,RiskName(B659&C659&H659))	944557.2	1777640	\$2,675,395.00
43JC BoyleLong-Term Maint. & Monitor'g	U660		RiskPert(\$660,R660,T660,RiskName(B660&C660&H660))	872285.8	1969922	\$3,253,352.00
43JC BoyleEmergent Wetland	U661		RiskPert(\$661,R661,T661,RiskName(B661&C661&H661))	23651.35	34702.09	\$47,519.24
43JC BoyleBank Wetland	U662		RiskPert(\$662,R662,T662,RiskName(B662&C662&H662))	62033.59	101403.6	\$133,596.50
43JC BoyleBank Riparian	U663		RiskPert(\$663,R663,T663,RiskName(B663&C663&H663))	741466.4	114787.9	\$1,569,618.00
43JC BoyleFloodplain Riparian	U664		RiskPert(\$664,R664,T664,RiskName(B664&C664&H664))	583878.6	881705.6	\$1,201,866.00
43JC BoyleUplands below RW	U665		RiskPert(\$665,R665,T665,RiskName(B665&C665&H665))	204169.5	27765.06	\$369,607.50
43JC BoyleRocky Wake Zone	U666		RiskPert(\$666,R666,T666,RiskName(B666&C666&H666))	138113.8	18901.7	\$256,825.10
43JC BoyleDisturbed Uplands above RWZ	U667		RiskPert(\$667,R667,T667,RiskName(B667&C667&H667))	350982.4	47788.6	\$650,192.10
43JC BoyleUplands Stockpiles	U668		RiskPert(\$668,R668,T668,RiskName(B668&C668&H668))	48826.25	66416.49	\$90,343.84
43JC BoyleUndisturbed Uplands	U669		RiskPert(\$669,R669,T669,RiskName(B669&C669&H669))	43015.37	56288.13	\$69,173.37

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
43JC BoyleContractor overhead	U670		RiskPert(\$S670,R670,T670,RiskName(B670&C670&H670))	1030506	1663701	\$2,379,157.00

Iron Gate

Name	Cell	Graph	Function	Min	Mean	Max
43Iron GateOn-Site Pilot Growing Experiment	U672		RiskPert(\$S672,R672,T672,RiskName(B672&C672&H672))	237491.8	272119.7	\$313,473.50
43Iron GateSeed Collection	U673		RiskPert(\$S673,R673,T673,RiskName(B673&C673&H673))	391662.5	516615.4	\$642,393.70
43Iron GateSeed Propagation	U674		RiskPert(\$S674,R674,T674,RiskName(B674&C674&H674))	487272.5	1223120	\$1,666,170.00
43Iron GateWeed Eradication	U675		RiskPert(\$S675,R675,T675,RiskName(B675&C675&H675))	1118156	1416113	\$1,714,070.00
43Iron GatePioneer Seeding	U676		RiskPert(\$S676,R676,T676,RiskName(B676&C676&H676))	661735	1047747	\$1,559,804.00
43Iron GateContainer Plant Growing	U677		RiskPert(\$S677,R677,T677,RiskName(B677&C677&H677))	185329.3	506780	\$828,230.70
43Iron GateEstabl. Prd. Maint. & Monitor'g	U678		RiskPert(\$S678,R678,T678,RiskName(B678&C678&H678))	2205016	4149801	\$6,245,560.00
43Iron GateLong-Term Maint. & Monitor'g	U679		RiskPert(\$S679,R679,T679,RiskName(B679&C679&H679))	2036303	4598673	\$7,594,770.00
43Iron GateEmergent Wetland	U680		RiskPert(\$S680,R680,T680,RiskName(B680&C680&H680))	49772.4	73027.82	\$100,000.50
43Iron GateBank Wetland	U681		RiskPert(\$S681,R681,T681,RiskName(B681&C681&H681))	111888.4	182899	\$240,964.50
43Iron GateBank Riparian	U682		RiskPert(\$S682,R682,T682,RiskName(B682&C682&H682))	537537.8	832172.8	\$1,137,920.00
43Iron GateFloodplain Riparian	U683		RiskPert(\$S683,R683,T683,RiskName(B683&C683&H683))	369143.2	557437.2	\$759,851.10
43Iron GateUplands below RW	U684		RiskPert(\$S684,R684,T684,RiskName(B684&C684&H684))	2806068	3815979	\$5,079,817.00
43Iron GateRocky Wake Zone	U685		RiskPert(\$S685,R685,T685,RiskName(B685&C685&H685))	94494.99	129322.5	\$175,715.20
43Iron GateDisturbed Uplands above RWZ	U686		RiskPert(\$S686,R686,T686,RiskName(B686&C686&H686))	585424.3	797095.4	\$1,084,494.00
43Iron GateUplands Stockpiles	U687		RiskPert(\$S687,R687,T687,RiskName(B687&C687&H687))	281252	382576.3	\$520,404.10
43Iron GateUndisturbed Uplands	U688		RiskPert(\$S688,R688,T688,RiskName(B688&C688&H688))	89687.52	117361.4	\$144,227.20
43Iron GateContractor overhead	U689		RiskPert(\$S689,R689,T689,RiskName(B689&C689&H689))	2354359	3715968	\$5,298,931.00

Copco 1

Name	Cell	Graph	Function	Min	Mean	Max
43Copco 1On-Site Pilot Growing Experiment	U691		RiskPert(\$S691,R691,T691,RiskName(B691&C691&H691))	225340.3	258196.4	\$297,434.30
43Copco 1Seed Collection	U692		RiskPert(\$S692,R692,T692,RiskName(B692&C692&H692))	371622.7	490182.2	\$609,524.90
43Copco 1Seed Propagation	U693		RiskPert(\$S693,R693,T693,RiskName(B693&C693&H693))	462340.7	1160538	\$1,580,919.00

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
43Copco 1Weed Eradication	U694		RiskPert(S694,R694,T694,RiskName(B694&C694&H694))	1060945	1343656	\$1,626,368.00
43Copco 1Pioneer Seeding	U695		RiskPert(S695,R695,T695,RiskName(B695&C695&H695))	627876.6	994137.9	\$1,479,995.00
43Copco 1Container Plant Growing	U696		RiskPert(S696,R696,T696,RiskName(B696&C696&H696))	175846.8	480850.1	\$785,853.40
43Copco 1Establ. Prd. Maint. & Monitor'g	U697		RiskPert(S697,R697,T697,RiskName(B697&C697&H697))	2092194	3937472	\$5,925,999.00
43Copco 1Long-Term Maint. & Monitor'g	U698		RiskPert(S698,R698,T698,RiskName(B698&C698&H698))	1932113	4363377	\$7,206,175.00
43Copco 1Emergent Wetland	U699		RiskPert(S699,R699,T699,RiskName(B699&C699&H699))	50057.63	73446.31	\$100,573.60
43Copco 1Bank Wetland	U700		RiskPert(S700,R700,T700,RiskName(B700&C700&H700))	112892.6	184540.6	\$243,127.30
43Copco 1Bank Riparian	U701		RiskPert(S701,R701,T701,RiskName(B701&C701&H701))	1081229	1673872	\$2,288,865.00
43Copco 1Floodplain Riparian	U702		RiskPert(S702,R702,T702,RiskName(B702&C702&H702))	617264	932120.4	\$1,270,588.00
43Copco 1Uplands below RW	U703		RiskPert(S703,R703,T703,RiskName(B703&C703&H703))	2577989	3505815	\$4,666,927.00
43Copco 1Rocky Wake Zone	U704		RiskPert(S704,R704,T704,RiskName(B704&C704&H704))	127052.8	173880	\$236,256.90
43Copco 1Disturbed Uplands above RWZ	U705		RiskPert(S705,R705,T705,RiskName(B705&C705&H705))	66582.32	90656.4	\$123,343.20
43Copco 1Uplands Stockpiles	U706		RiskPert(S706,R706,T706,RiskName(B706&C706&H706))	24450.96	33259.71	\$45,241.93
43Copco 1Undisturbed Uplands	U707		RiskPert(S707,R707,T707,RiskName(B707&C707&H707))	57222.34	74878.79	\$92,019.71
43Copco 1Contractor overhead	U708		RiskPert(S708,R708,T708,RiskName(B708&C708&H708))	2244456	3578544	\$5,103,293.00

Copco 2

Name	Cell	Graph	Function	Min	Mean	Max
43Copco 2On-Site Pilot Growing Experiment	U710		RiskPert(S710,R710,T710,RiskName(B710&C710&H710))	621.71	712.36	\$820.61
43Copco 2Seed Collection	U711		RiskPert(S711,R711,T711,RiskName(B711&C711&H711))	1025.29	1352.4	\$1,681.66
43Copco 2Seed Propagation	U712		RiskPert(S712,R712,T712,RiskName(B712&C712&H712))	1275.58	3201.89	\$4,361.70
43Copco 2Weed Eradication	U713		RiskPert(S713,R713,T713,RiskName(B713&C713&H713))	2927.11	3707.1	\$4,487.09
43Copco 2Pioneer Seeding	U714		RiskPert(S714,R714,T714,RiskName(B714&C714&H714))	1732.29	2742.79	\$4,083.26
43Copco 2Container Plant Growing	U715		RiskPert(S715,R715,T715,RiskName(B715&C715&H715))	485.16	1326.65	\$2,168.14
43Copco 2Establ. Prd. Maint. & Monitor'g	U716		RiskPert(S716,R716,T716,RiskName(B716&C716&H716))	5772.29	10863.35	\$16,349.63
43Copco 2Long-Term Maint. & Monitor'g	U717		RiskPert(S717,R717,T717,RiskName(B717&C717&H717))	5330.64	12038.41	\$19,881.60
43Copco 2Emergent Wetland	U718		RiskPert(S718,R718,T718,RiskName(B718&C718&H718))	0	0	\$0.00

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
43Copco 2On-Site Pilot Growing Experiment	U710		RiskPert(\$710,R710,T710,RiskName(B710&C710&H710))	621.71	712.36	\$820.61
43Copco 2Seed Collection	U711		RiskPert(\$711,R711,T711,RiskName(B711&C711&H711))	1025.29	1352.4	\$1,681.66
43Copco 2Seed Propagation	U712		RiskPert(\$712,R712,T712,RiskName(B712&C712&H712))	1275.58	3201.89	\$4,361.70
43Copco 2Weed Eradication	U713		RiskPert(\$713,R713,T713,RiskName(B713&C713&H713))	2927.11	3707.1	\$4,487.09
43Copco 2Pioneer Seeding	U714		RiskPert(\$714,R714,T714,RiskName(B714&C714&H714))	1732.29	2742.79	\$4,083.26
43Copco 2Container Plant Growing	U715		RiskPert(\$715,R715,T715,RiskName(B715&C715&H715))	485.16	1326.65	\$2,168.14
43Copco 2Establ. Prd. Maint. & Monitor'g	U716		RiskPert(\$716,R716,T716,RiskName(B716&C716&H716))	5772.29	10863.35	\$16,349.63
43Copco 2Long-Term Maint. & Monitor'g	U717		RiskPert(\$717,R717,T717,RiskName(B717&C717&H717))	5330.64	12038.41	\$19,881.60
43Copco 2Emergent Wetland	U718		RiskPert(\$718,R718,T718,RiskName(B718&C718&H718))	0	0	\$0.00
43Copco 2Bank Wetland	U719		RiskPert(\$719,R719,T719,RiskName(B719&C719&H719))	0	0	\$0.00
43Copco 2Bank Riparian	U720		RiskPert(\$720,R720,T720,RiskName(B720&C720&H720))	0	0	\$0.00
43Copco 2Floodplain Riparian	U721		RiskPert(\$721,R721,T721,RiskName(B721&C721&H721))	8559.58	12925.68	\$17,619.19
43Copco 2Uplands below RW	U722		RiskPert(\$722,R722,T722,RiskName(B722&C722&H722))	0	0	\$0.00
43Copco 2Rocky Wake Zone	U723		RiskPert(\$723,R723,T723,RiskName(B723&C723&H723))	0	0	\$0.00
43Copco 2Disturbed Uplands above RWZ	U724		RiskPert(\$724,R724,T724,RiskName(B724&C724&H724))	9853.08	13415.64	\$18,252.75
43Copco 2Uplands Stockpiles	U725		RiskPert(\$725,R725,T725,RiskName(B725&C725&H725))	0	0	\$0.00
43Copco 2Undisturbed Uplands	U726		RiskPert(\$726,R726,T726,RiskName(B726&C726&H726))	3.25	4.25	\$5.23
43Copco 2Contractor overhead	U727		RiskPert(\$727,R727,T727,RiskName(B727&C727&H727))	7569.28	11844.54	\$16,845.22

YREKA WATER LINE REPLACEMENT

Name	Cell	Graph	Function	Min	Mean	Max
44ProjectMicrotunneling	U730		RiskPert(\$730,R730,T730,RiskName(B730&C730&H730))	894330.8	1078458	\$1,367,800.00
44ProjectPile and Lagging Pre Drilling	U731		RiskPert(\$731,R731,T731,RiskName(B731&C731&H731))	64713.55	78036.92	\$98,973.66
44ProjectPile and Lagging Wall InstallatiN	U732		RiskPert(\$732,R732,T732,RiskName(B732&C732&H732))	938963.4	1132279	\$1,436,062.00
44ProjectPipe Installation	U733		RiskPert(\$733,R733,T733,RiskName(B733&C733&H733))	264161.5	318547.7	\$404,011.70
44ProjectExcavation and Backfill	U734		RiskPert(\$734,R734,T734,RiskName(B734&C734&H734))	302983	365361.9	\$463,385.80

TRANSPORTATION (BRIDGES, CULVERTS, ROADS)

Lakeview Bridge

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectSheet Pile Cofferdam For Center Footer	U737		RiskPert(S737,R737,T737,RiskName(B737&C737&H737))	80702.01	102558.8	\$131,140.80
45ProjectBackfill, structural, common earth, 105 H.P. dozer, 50' haul, from existing stockpile, excludes compaction	U738		RiskPert(S738,R738,T738,RiskName(B738&C738&H738))	3099.77	3939.29	\$5,037.13
45ProjectEarth Work Cofferdam Construction for side footers	U739		RiskPert(S739,R739,T739,RiskName(B739&C739&H739))	15847.14	20139.08	\$25,751.61
45ProjectStructure Excavation (Type D)	U741		RiskPert(S741,R741,T741,RiskName(B741&C741&H741))	19913.47	25306.7	\$32,359.39
45ProjectStructure Excavation (Bridge)	U742		RiskPert(S742,R742,T742,RiskName(B742&C742&H742))	8085.96	10275.91	\$13,139.69
45ProjectPrestressed concrete piles, square, 40' long, 24" square, priced using 200 piles, excludes pile cap or mobilization	U743		RiskPert(S743,R743,T743,RiskName(B743&C743&H743))	69425.02	88227.63	\$112,815.60
45Project18" Diameter 40' Long Tie Down Anchor Installation	U744		RiskPert(S744,R744,T744,RiskName(B744&C744&H744))	42851.99	54457.73	\$69,634.48
45ProjectPiling special costs, pre-augering for Pile and Tie Down Anchor	U745		RiskPert(S745,R745,T745,RiskName(B745&C745&H745))	261911.7	332846.1	\$425,606.40
45ProjectMobilization, 150 ton, set up and remove crane, with pile leads and pile hammer	U746		RiskPert(S746,R746,T746,RiskName(B746&C746&H746))	38928.68	49471.87	\$63,259.11
45ProjectA736 Barrier Wall	U747		RiskPert(S747,R747,T747,RiskName(B747&C747&H747))	182108.3	231429.3	\$295,925.90
45ProjectExpansion joint, neoprene, liquid, 1" x 2", cold applied	U748		RiskPert(S748,R748,T748,RiskName(B748&C748&H748))	1776.1	2257.13	\$2,886.16
45ProjectColumns Structural Concrete includes forms, Grade 60 rebar, concrete, placing and finishing	U749		RiskPert(S749,R749,T749,RiskName(B749&C749&H749))	294160.5	373829	\$478,010.80
45ProjectDeck Structural concrete, in place, includes forms, Grade 60 rebar, concrete, placing and finishing	U750		RiskPert(S750,R750,T750,RiskName(B750&C750&H750))	168204.1	213759.4	\$273,331.70
45ProjectFooter Structural concrete, footing, reinforced, includes forms(4 uses), Grade 60 rebar, concrete, placing and finishing	U751		RiskPert(S751,R751,T751,RiskName(B751&C751&H751))	165438.5	210244.7	\$268,837.50
45ProjectApproach Slab Structural concrete, in place, 6" thick, includes forms, Grade 60 rebar, concrete, and placing, excludes finishing	U752		RiskPert(S752,R752,T752,RiskName(B752&C752&H752))	4369.04	5552.32	\$7,099.68
45ProjectPrecast 36" I-Girder 65'	U753		RiskPert(S753,R753,T753,RiskName(B753&C753&H753))	209949.7	266811	\$341,168.20
45ProjectPrecast 36" I-Girder 48'	U754		RiskPert(S754,R754,T754,RiskName(B754&C754&H754))	250864.2	318806.5	\$407,654.30
45ProjectBridge Demolition	U755		RiskPert(S755,R755,T755,RiskName(B755&C755&H755))	205798.4	261535.5	\$334,422.40
45ProjectRoadway Excavation	U757		RiskPert(S757,R757,T757,RiskName(B757&C757&H757))	17863.53	22515.49	\$27,911.77
45ProjectImported Borrow	U758		RiskPert(S758,R758,T758,RiskName(B758&C758&H758))	98906.18	124663	\$154,540.90
45ProjectHot Mix Asphalt (Type A)	U759		RiskPert(S759,R759,T759,RiskName(B759&C759&H759))	51226.3	64566.49	\$80,041.10
45ProjectClass 2 Aggregate Base	U760		RiskPert(S760,R760,T760,RiskName(B760&C760&H760))	18782.98	23674.38	\$29,348.40
45ProjectRemove Base and Surfacing	U761		RiskPert(S761,R761,T761,RiskName(B761&C761&H761))	0	0	\$0.00
45ProjectMidwest Guardrail System	U762		RiskPert(S762,R762,T762,RiskName(B762&C762&H762))	7112.14	8964.26	\$11,112.71

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectTransition Railing (Type WB-31)	U763		RiskPert(S763,R763,T763,RiskName(B763&C763&H763))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U764		RiskPert(S764,R764,T764,RiskName(B764&C764&H764))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U765		RiskPert(S765,R765,T765,RiskName(B765&C765&H765))	3982.52	5019.63	\$6,222.68
45ProjectTemporary Fence (Type ESA)	U766		RiskPert(S766,R766,T766,RiskName(B766&C766&H766))	1321.38	1665.48	\$2,064.65
45ProjectTemporary Concrete Washout	U767		RiskPert(S767,R767,T767,RiskName(B767&C767&H767))	0.88	1.1	\$1.37
45ProjectTemporary Construction Entrance	U768		RiskPert(S768,R768,T768,RiskName(B768&C768&H768))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U769		RiskPert(S769,R769,T769,RiskName(B769&C769&H769))	18677.9	23541.94	\$29,184.22
45ProjectRoadside Sign - One Post	U770		RiskPert(S770,R770,T770,RiskName(B770&C770&H770))	472.86	596	\$738.84
45ProjectReset Roadside Sign	U771		RiskPert(S771,R771,T771,RiskName(B771&C771&H771))	1050.8	1324.44	\$1,641.87
45ProjectRelocate Roadside Sign	U772		RiskPert(S772,R772,T772,RiskName(B772&C772&H772))	175.13	220.74	\$273.64
45ProjectConstruction Area Signs	U773		RiskPert(S773,R773,T773,RiskName(B773&C773&H773))	0.88	1.1	\$1.37
45ProjectThermoplastic Traffic Stripe	U774		RiskPert(S774,R774,T774,RiskName(B774&C774&H774))	497.03	626.46	\$776.60
45ProjectType III Barricade	U775		RiskPert(S775,R775,T775,RiskName(B775&C775&H775))	960.74	1210.94	\$1,501.16
45ProjectTraffic Control System	U776		RiskPert(S776,R776,T776,RiskName(B776&C776&H776))	17513.27	22074.01	\$27,364.48
45ProjectTemporary Railing (Type K)	U777		RiskPert(S777,R777,T777,RiskName(B777&C777&H777))	12346.85	15562.18	\$19,291.96

Fall Creek Bridge

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectStructure Excavation (Bridge)	U779		RiskPert(S779,R779,T779,RiskName(B779&C779&H779))	25376.7	32249.55	\$41,237.13
45ProjectA736 Barrier Wall	U780		RiskPert(S780,R780,T780,RiskName(B780&C780&H780))	33975.42	43177.1	\$55,210.06
45ProjectDeck Structural concrete, in place, includes forms, Grade 60 rebar, concrete, placing and finishing	U782		RiskPert(S782,R782,T782,RiskName(B782&C782&H782))	31037.66	39443.69	\$50,436.20
45ProjectFooter Structural concrete, footing, reinforced, includes forms(4 uses), Grade 60 rebar, concrete, placing and finishing	U783		RiskPert(S783,R783,T783,RiskName(B783&C783&H783))	31758.28	40359.48	\$51,607.20
45ProjectApproach Slab Structural concrete, in place, 6" thick, includes forms, Grade 60 rebar, concrete, and placing, excludes finishing	U784		RiskPert(S784,R784,T784,RiskName(B784&C784&H784))	5654.05	7185.36	\$9,187.84
45ProjectBridge Demolition	U785		RiskPert(S785,R785,T785,RiskName(B785&C785&H785))	37828.66	48073.92	\$61,471.57
45ProjectRoadway Excavation	U787		RiskPert(S787,R787,T787,RiskName(B787&C787&H787))	25219.11	31786.58	\$39,404.85
45ProjectImported Borrow	U788		RiskPert(S788,R788,T788,RiskName(B788&C788&H788))	93783.55	118206.3	\$146,536.80
45ProjectHot Mix Asphalt (Type A)	U789		RiskPert(S789,R789,T789,RiskName(B789&C789&H789))	26182.33	33000.65	\$40,909.90

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectClass 2 Aggregate Base	U790		RiskPert(\$790,R790,T790,RiskName(B790&C790&H790))	9676.08	12195.89	\$15,118.88
45ProjectMidwest Guardrail System	U791		RiskPert(\$791,R791,T791,RiskName(B791&C791&H791))	3556.07	4482.13	\$5,556.36
45ProjectTransition Railing (Type WB-31)	U792		RiskPert(\$792,R792,T792,RiskName(B792&C792&H792))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U793		RiskPert(\$793,R793,T793,RiskName(B793&C793&H793))	3502.65	4414.8	\$5,472.90
45ProjectRelocate Gate	U794		RiskPert(\$794,R794,T794,RiskName(B794&C794&H794))	87.57	110.37	\$136.82
45ProjectTemporary Reinforced Silt Fence	U795		RiskPert(\$795,R795,T795,RiskName(B795&C795&H795))	2655.01	3346.42	\$4,148.46
45ProjectTemporary Fence (Type ESA)	U796		RiskPert(\$796,R796,T796,RiskName(B796&C796&H796))	1761.84	2220.65	\$2,752.87
45ProjectTemporary Hydroseed	U797		RiskPert(\$797,R797,T797,RiskName(B797&C797&H797))	2260.61	2849.31	\$3,532.21
45ProjectTemporary Fiber Roll	U799		RiskPert(\$799,R799,T799,RiskName(B799&C799&H799))	2659.83	3352.49	\$4,155.98
45ProjectTemporary Concrete Washout	U800		RiskPert(\$800,R800,T800,RiskName(B800&C800&H800))	0.88	1.1	\$1.37
45ProjectTemporary Construction Entrance	U801		RiskPert(\$801,R801,T801,RiskName(B801&C801&H801))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U802		RiskPert(\$802,R802,T802,RiskName(B802&C802&H802))	15486.11	19518.95	\$24,197.04
45ProjectConstruction Area Signs	U803		RiskPert(\$803,R803,T803,RiskName(B803&C803&H803))	0.88	1.1	\$1.37
45ProjectTemporary Traffic Stripe	U804		RiskPert(\$804,R804,T804,RiskName(B804&C804&H804))	525.4	662.22	\$820.93
45ProjectThermoplastic Traffic Stripe	U805		RiskPert(\$805,R805,T805,RiskName(B805&C805&H805))	207.09	261.03	\$323.59
45ProjectType III Barricade	U806		RiskPert(\$806,R806,T806,RiskName(B806&C806&H806))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U807		RiskPert(\$807,R807,T807,RiskName(B807&C807&H807))	43783.17	55185.04	\$68,411.20
45ProjectTemporary Railing (Type K)	U808		RiskPert(\$808,R808,T808,RiskName(B808&C808&H808))	8231.24	10374.79	\$12,861.31

Daggett Road Bridge

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectSheet Pile Cofferdam For Footers	U810		RiskPert(\$810,R810,T810,RiskName(B810&C810&H810))	242106	307676.4	\$393,422.30
45ProjectBackfill, structural, common earth, 105 H.P. dozer, 50' haul, from existing stockpile, excludes compaction	U811		RiskPert(\$811,R811,T811,RiskName(B811&C811&H811))	3169.43	4027.82	\$5,150.32
45ProjectStructure Excavation (Type D)	U813		RiskPert(\$813,R813,T813,RiskName(B813&C813&H813))	27243.47	34621.91	\$44,270.64
45ProjectStructure Excavation (Bridge)	U814		RiskPert(\$814,R814,T814,RiskName(B814&C814&H814))	8696.22	11051.45	\$14,131.36
45ProjectPrestressed concrete piles, square, 40' long, 24" square, priced using 200 piles, excludes pile caps or mobilization	U815		RiskPert(\$815,R815,T815,RiskName(B815&C815&H815))	69425.02	88227.63	\$112,815.60
45Project18" Diameter 40' Long Tie Down Anchor Installation	U816		RiskPert(\$816,R816,T816,RiskName(B816&C816&H816))	42851.99	54457.73	\$69,634.48

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectPiling special costs, pre-augering for Pile and Tie Down Anchor	U817		RiskPert(S817,R817,T817,RiskName(B817&C817&H817))	261911.7	332846.1	\$425,606.40
45ProjectMobilization, 150 ton, set up and remove crane, with pile leads and pile hammer	U818		RiskPert(S818,R818,T818,RiskName(B818&C818&H818))	38928.68	49471.87	\$63,259.11
45ProjectA736 Barrier Wall	U819		RiskPert(S819,R819,T819,RiskName(B819&C819&H819))	180069.8	228838.6	\$292,613.30
45ProjectExpansion joint, neoprene, liquid, 1' x 2', cold applied	U820		RiskPert(S820,R820,T820,RiskName(B820&C820&H820))	1776.1	2257.13	\$2,886.16
45ProjectColumns Structural Concrete includes forms, Grade 60 rebar, concrete, placing and finishing	U821		RiskPert(S821,R821,T821,RiskName(B821&C821&H821))	268507	341227.6	\$436,323.80
45ProjectDeck Structural concrete, in place, includes forms, Grade 60 rebar, concrete, placing and finishing	U822		RiskPert(S822,R822,T822,RiskName(B822&C822&H822))	167202.9	212487	\$271,704.70
45ProjectFooter Structural concrete,footing, reinforced, includes forms(4 uses), Grade 60 rebar, concrete, placing and finishing	U823		RiskPert(S823,R823,T823,RiskName(B823&C823&H823))	165438.5	210244.7	\$268,837.50
45ProjectApproach Slab Structural concrete, in place, 6" thick, includes forms, Grade 60 rebar, concrete, and placing, excludes finishing	U824		RiskPert(S824,R824,T824,RiskName(B824&C824&H824))	4369.04	5552.32	\$7,099.68
45ProjectPrecast 36" I-Girder 65'	U825		RiskPert(S825,R825,T825,RiskName(B825&C825&H825))	209949.7	266811	\$341,168.20
45ProjectPrecast 36" I-Girder 48'	U826		RiskPert(S826,R826,T826,RiskName(B826&C826&H826))	250864.2	318806.5	\$407,654.30
45ProjectBridge Demolition	U827		RiskPert(S827,R827,T827,RiskName(B827&C827&H827))	171384.8	217801.6	\$278,500.30
45ProjectRoadway Excavation	U829		RiskPert(S829,R829,T829,RiskName(B829&C829&H829))	52539.8	66222.04	\$82,093.44
45ProjectImported Borrow	U830		RiskPert(S830,R830,T830,RiskName(B830&C830&H830))	216726.7	273165.9	\$338,635.40
45ProjectHot Mix Asphalt (Type A)	U831		RiskPert(S831,R831,T831,RiskName(B831&C831&H831))	141156.9	177916.5	\$220,557.70
45ProjectClass 2 Aggregate Base	U832		RiskPert(S832,R832,T832,RiskName(B832&C832&H832))	52364.67	66001.3	\$81,819.80
45ProjectRemove Base and Surfacing	U833		RiskPert(S833,R833,T833,RiskName(B833&C833&H833))	49834	62811.61	\$77,865.63
45ProjectMidwest Guardrail System	U834		RiskPert(S834,R834,T834,RiskName(B834&C834&H834))	7112.14	8964.26	\$11,112.71
45ProjectTransition Railing (Type WB-31)	U835		RiskPert(S835,R835,T835,RiskName(B835&C835&H835))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U836		RiskPert(S836,R836,T836,RiskName(B836&C836&H836))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U837		RiskPert(S837,R837,T837,RiskName(B837&C837&H837))	6637.53	8366.05	\$10,371.14
45ProjectTemporary Fence (Type ESA)	U838		RiskPert(S838,R838,T838,RiskName(B838&C838&H838))	4404.59	5551.61	\$6,882.17
45ProjectTemporary Hydroseed	U839		RiskPert(S839,R839,T839,RiskName(B839&C839&H839))	9688.34	12211.34	\$15,138.03
45ProjectTemporary Fiber Roll	U841		RiskPert(S841,R841,T841,RiskName(B841&C841&H841))	7802.16	9833.97	\$12,190.88
45ProjectTemporary Construction Entrance	U842		RiskPert(S842,R842,T842,RiskName(B842&C842&H842))	3768.2	4749.5	\$5,887.81
45ProjectWater Pollution Control	U843		RiskPert(S843,R843,T843,RiskName(B843&C843&H843))	51262.21	64611.74	\$80,097.20

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectRoadside Sign - One Post	U844		RiskPert(\$B844,R844,T844,RiskName(B844&C844&H844))	236.43	298	\$369.42
45ProjectRemove Roadside Sign	U845		RiskPert(\$B845,R845,T845,RiskName(B845&C845&H845))	175.13	220.74	\$273.64
45ProjectReset Roadside Sign	U846		RiskPert(\$B846,R846,T846,RiskName(B846&C846&H846))	525.4	662.22	\$820.93
45ProjectConstruction Area Signs	U847		RiskPert(\$B847,R847,T847,RiskName(B847&C847&H847))	0.88	1.1	\$1.37
45ProjectThermoplastic Traffic Stripe	U848		RiskPert(\$B848,R848,T848,RiskName(B848&C848&H848))	1521.2	1917.35	\$2,376.88
45ProjectType III Barricade	U849		RiskPert(\$B849,R849,T849,RiskName(B849&C849&H849))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U850		RiskPert(\$B850,R850,T850,RiskName(B850&C850&H850))	13134.95	16555.51	\$20,523.36
45ProjectTemporary Railing (Type K)	U851		RiskPert(\$B851,R851,T851,RiskName(B851&C851&H851))	4938.74	6224.87	\$7,716.78

Dry Creek Bridge

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectStructure Excavation (Bridge)	U853		RiskPert(\$B853,R853,T853,RiskName(B853&C853&H853))	0	0	\$0.00
45ProjectA736 Barrier Wall	U854		RiskPert(\$B854,R854,T854,RiskName(B854&C854&H854))	0	0	\$0.00
45ProjectDeck Structural concrete, in place, includes forms, Grade 60 rebar, concrete, placing and finishing	U856		RiskPert(\$B856,R856,T856,RiskName(B856&C856&H856))	0	0	\$0.00
45ProjectFooter Structural concrete,footing, reinforced, includes forms(4 uses), Grade 60 rebar, concrete, placing and finishing	U857		RiskPert(\$B857,R857,T857,RiskName(B857&C857&H857))	0	0	\$0.00
45ProjectApproach Slab Structural concrete, in place, 6" thick, includes forms, Grade 60 rebar, concrete, and placing, excludes finishing	U858		RiskPert(\$B858,R858,T858,RiskName(B858&C858&H858))	0	0	\$0.00
45ProjectTemporary Bridge	U859		RiskPert(\$B859,R859,T859,RiskName(B859&C859&H859))	186647.6	237198	\$303,302.40
45ProjectBridge Demolition	U860		RiskPert(\$B860,R860,T860,RiskName(B860&C860&H860))	0	0	\$0.00
45ProjectRoadway Excavation	U862		RiskPert(\$B862,R862,T862,RiskName(B862&C862&H862))	24518.57	30903.62	\$38,310.27
45ProjectImported Borrow	U863		RiskPert(\$B863,R863,T863,RiskName(B863&C863&H863))	39404.85	49666.53	\$61,570.08
45ProjectHot Mix Asphalt (Type A)	U864		RiskPert(\$B864,R864,T864,RiskName(B864&C864&H864))	68301.74	86088.66	\$106,721.50
45ProjectClass 2 Aggregate Base	U865		RiskPert(\$B865,R865,T865,RiskName(B865&C865&H865))	21628.88	27261.41	\$33,795.13
45ProjectMidwest Guardrail System	U866		RiskPert(\$B866,R866,T866,RiskName(B866&C866&H866))	3556.07	4482.13	\$5,556.36
45ProjectTransition Railing (Type WB-31)	U867		RiskPert(\$B867,R867,T867,RiskName(B867&C867&H867))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U868		RiskPert(\$B868,R868,T868,RiskName(B868&C868&H868))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U869		RiskPert(\$B869,R869,T869,RiskName(B869&C869&H869))	2655.01	3346.42	\$4,148.46
45ProjectTemporary Fence (Type ESA)	U870		RiskPert(\$B870,R870,T870,RiskName(B870&C870&H870))	1761.84	2220.65	\$2,752.87

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectTemporary Hydroseed	U871		RiskPert(\$B71,R871,T871,RiskName(B871&C871&H871))	4440.49	5596.87	\$6,938.26
45ProjectTemporary Fiber Roll	U873		RiskPert(\$B73,R873,T873,RiskName(B873&C873&H873))	7092.87	8939.98	\$11,082.61
45ProjectTemporary Concrete Washout	U874		RiskPert(\$B74,R874,T874,RiskName(B874&C874&H874))	0.88	1.1	\$1.37
45ProjectTemporary Construction Entrance	U875		RiskPert(\$B75,R875,T875,RiskName(B875&C875&H875))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U876		RiskPert(\$B76,R876,T876,RiskName(B876&C876&H876))	15385.41	19392.02	\$24,039.70
45ProjectConstruction Area Signs	U877		RiskPert(\$B77,R877,T877,RiskName(B877&C877&H877))	0.88	1.1	\$1.37
45ProjectThermoplastic Traffic Stripe	U878		RiskPert(\$B78,R878,T878,RiskName(B878&C878&H878))	489.5	616.97	\$764.84
45ProjectPortable Changeable Message Signs	U879		RiskPert(\$B79,R879,T879,RiskName(B879&C879&H879))	5253.98	6622.2	\$8,209.34
45ProjectType III Barricade	U880		RiskPert(\$B80,R880,T880,RiskName(B880&C880&H880))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U881		RiskPert(\$B81,R881,T881,RiskName(B881&C881&H881))	17513.27	22074.01	\$27,364.48
45ProjectTemporary Railing (Type K)	U882		RiskPert(\$B82,R882,T882,RiskName(B882&C882&H882))	8231.24	10374.79	\$12,861.31
45ProjectRoadway Excavation	U884		RiskPert(\$B84,R884,T884,RiskName(B884&C884&H884))	42031.84	52977.63	\$65,674.75
45ProjectDitch Excavation	U885		RiskPert(\$B85,R885,T885,RiskName(B885&C885&H885))	1225.93	1545.18	\$1,915.51
45ProjectImported Borrow	U886		RiskPert(\$B86,R886,T886,RiskName(B886&C886&H886))	63835.86	80459.78	\$99,743.53
45ProjectHot Mix Asphalt (Type A)	U887		RiskPert(\$B87,R887,T887,RiskName(B887&C887&H887))	60333.21	76044.98	\$94,270.63
45ProjectClass 2 Aggregate Base	U888		RiskPert(\$B88,R888,T888,RiskName(B888&C888&H888))	22767.25	28696.22	\$35,573.82
45ProjectMidwest Guardrail System	U889		RiskPert(\$B89,R889,T889,RiskName(B889&C889&H889))	3556.07	4482.13	\$5,556.36
45ProjectTransition Railing (Type WB-31)	U890		RiskPert(\$B90,R890,T890,RiskName(B890&C890&H890))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U891		RiskPert(\$B91,R891,T891,RiskName(B891&C891&H891))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U892		RiskPert(\$B92,R892,T892,RiskName(B892&C892&H892))	2655.01	3346.42	\$4,148.46
45ProjectTemporary Fence (Type ESA)	U893		RiskPert(\$B93,R893,T893,RiskName(B893&C893&H893))	1761.84	2220.65	\$2,752.87
45ProjectTemporary Hydroseed	U894		RiskPert(\$B94,R894,T894,RiskName(B894&C894&H894))	2583.56	3256.36	\$4,036.81
45ProjectTemporary Fiber Roll	U896		RiskPert(\$B96,R896,T896,RiskName(B896&C896&H896))	2837.15	3575.99	\$4,433.05
45ProjectTemporary Concrete Washout	U897		RiskPert(\$B97,R897,T897,RiskName(B897&C897&H897))	1.31	1.66	\$2.05
45ProjectTemporary Construction Entrance	U898		RiskPert(\$B98,R898,T898,RiskName(B898&C898&H898))	7536.4	9499	\$11,775.62

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectWater Pollution Control	U899		RiskPert(S899,R899,T899,RiskName(B899&C899&H899))	19019.41	23972.38	\$29,717.83
45ProjectConstruction Area Signs	U900		RiskPert(S900,R900,T900,RiskName(B900&C900&H900))	1751.33	2207.4	\$2,736.45
45ProjectTemporary Traffic Stripe	U901		RiskPert(S901,R901,T901,RiskName(B901&C901&H901))	425.84	536.73	\$665.37
45ProjectType III Barricade	U902		RiskPert(S902,R902,T902,RiskName(B902&C902&H902))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U903		RiskPert(S903,R903,T903,RiskName(B903&C903&H903))	4378.32	5518.5	\$6,841.12
45ProjectTemporary Railing (Type K)	U904		RiskPert(S904,R904,T904,RiskName(B904&C904&H904))	6584.99	8299.83	\$10,289.04

Camp Creek Bridge

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectBackfill, structural, common earth, 105 H.P. dozer, 50' haul, from existing stockpile, excludes compaction	U906		RiskPert(S906,R906,T906,RiskName(B906&C906&H906))	14628.13	18589.92	\$23,770.71
45ProjectEarth Work Cofferdam Construction for side footers	U907		RiskPert(S907,R907,T907,RiskName(B907&C907&H907))	15847.14	20139.08	\$25,751.61
45ProjectStructure Excavation (Bridge)	U908		RiskPert(S908,R908,T908,RiskName(B908&C908&H908))	29750.24	37807.6	\$48,344.14
45ProjectSteel piles, "H" Sections, 50' long, HP14 X 89, excludes mobilization or demobilization	U909		RiskPert(S909,R909,T909,RiskName(B909&C909&H909))	105579.5	134174	\$171,566.80
45ProjectPiling special costs, pre-augering for Pile	U910		RiskPert(S910,R910,T910,RiskName(B910&C910&H910))	381954.5	485400.5	\$620,676.10
45ProjectMobilization, 150 ton, set up and remove crane, with pile leads and pile hammer	U911		RiskPert(S911,R911,T911,RiskName(B911&C911&H911))	38928.68	49471.87	\$63,259.11
45ProjectA736 Barrier Wall	U912		RiskPert(S912,R912,T912,RiskName(B912&C912&H912))	150850.9	191706.3	\$245,132.70
45ProjectExpansion joint, neoprene, liquid, 1" x 2", cold applied	U913		RiskPert(S913,R913,T913,RiskName(B913&C913&H913))	1930.55	2453.41	\$3,137.14
45ProjectColumns Structural Concrete includes forms, Grade 60 rebar, concrete, placing and finishing	U914		RiskPert(S914,R914,T914,RiskName(B914&C914&H914))	225751.1	286892	\$366,845.50
45ProjectDeck Structural concrete, in place, includes forms, Grade 60 rebar, concrete, placing and finishing	U915		RiskPert(S915,R915,T915,RiskName(B915&C915&H915))	139168.9	176860.4	\$226,149.40
45ProjectFooter Structural concrete, footing, reinforced, includes forms(4 uses), Grade 60 rebar, concrete, placing and finishing	U916		RiskPert(S916,R916,T916,RiskName(B916&C916&H916))	59823.73	76025.98	\$97,213.55
45ProjectApproach Slab Structural concrete, in place, 6" thick, includes forms, Grade 60 rebar, concrete, and placing, excludes finishing	U917		RiskPert(S917,R917,T917,RiskName(B917&C917&H917))	4883.04	6205.53	\$7,934.94
45ProjectPrecast 36" I-Girder 67'	U918		RiskPert(S918,R918,T918,RiskName(B918&C918&H918))	104974.8	133405.5	\$170,584.10
45ProjectPrecast 36" I-Girder 53'	U919		RiskPert(S919,R919,T919,RiskName(B919&C919&H919))	250864.2	318806.5	\$407,654.30
45ProjectRoadway Excavation	U921		RiskPert(S921,R921,T921,RiskName(B921&C921&H921))	429775.6	541696.3	\$671,524.30
45ProjectDitch Excavation	U922		RiskPert(S922,R922,T922,RiskName(B922&C922&H922))	6129.64	7725.91	\$9,577.57
45ProjectImported Borrow	U923		RiskPert(S923,R923,T923,RiskName(B923&C923&H923))	494530.9	623314.9	\$772,704.50
45ProjectHot Mix Asphalt (Type A)	U924		RiskPert(S924,R924,T924,RiskName(B924&C924&H924))	80823.73	101871.6	\$126,287.10

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectClass 2 Aggregate Base	U925		RiskPert(S925,R925,T925,RiskName(B925&C925&H925))	29597.42	37305.08	\$46,245.97
45ProjectMidwest Guardrail System	U926		RiskPert(S926,R926,T926,RiskName(B926&C926&H926))	14224.28	17928.51	\$22,225.43
45ProjectTransition Railing (Type WB-31)	U927		RiskPert(S927,R927,T927,RiskName(B927&C927&H927))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U928		RiskPert(S928,R928,T928,RiskName(B928&C928&H928))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U929		RiskPert(S929,R929,T929,RiskName(B929&C929&H929))	2655.01	3346.42	\$4,148.46
45ProjectTemporary Fence (Type ESA)	U930		RiskPert(S930,R930,T930,RiskName(B930&C930&H930))	1761.84	2220.65	\$2,752.87
45ProjectTemporary Hydroseed	U931		RiskPert(S931,R931,T931,RiskName(B931&C931&H931))	1291.78	1628.18	\$2,018.40
45ProjectTemporary Fiber Roll	U933		RiskPert(S933,R933,T933,RiskName(B933&C933&H933))	1595.9	2011.5	\$2,493.59
45ProjectTemporary Concrete Washout	U934		RiskPert(S934,R934,T934,RiskName(B934&C934&H934))	0.88	1.1	\$1.37
45ProjectTemporary Construction Entrance	U935		RiskPert(S935,R935,T935,RiskName(B935&C935&H935))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U936		RiskPert(S936,R936,T936,RiskName(B936&C936&H936))	43590.52	54942.22	\$68,110.19
45ProjectRoadside Sign - One Post	U937		RiskPert(S937,R937,T937,RiskName(B937&C937&H937))	1891.43	2383.99	\$2,955.36
45ProjectConstruction Area Signs	U938		RiskPert(S938,R938,T938,RiskName(B938&C938&H938))	0.88	1.1	\$1.37
45ProjectThermoplastic Traffic Stripe	U939		RiskPert(S939,R939,T939,RiskName(B939&C939&H939))	609.99	768.84	\$953.10
45ProjectType III Barricade	U940		RiskPert(S940,R940,T940,RiskName(B940&C940&H940))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U941		RiskPert(S941,R941,T941,RiskName(B941&C941&H941))	17513.27	22074.01	\$27,364.48
45ProjectTemporary Railing (Type K)	U942		RiskPert(S942,R942,T942,RiskName(B942&C942&H942))	12346.85	15562.18	\$19,291.96
45ProjectRoadway Excavation	U944		RiskPert(S944,R944,T944,RiskName(B944&C944&H944))	3502.65	4414.8	\$5,472.90
45ProjectDitch Excavation	U945		RiskPert(S945,R945,T945,RiskName(B945&C945&H945))	4597.23	5794.43	\$7,183.18
45ProjectImported Borrow	U946		RiskPert(S946,R946,T946,RiskName(B946&C946&H946))	137917	173832.9	\$215,495.30
45ProjectClearing & Grubbing	U947		RiskPert(S947,R947,T947,RiskName(B947&C947&H947))	4378.32	5518.5	\$6,841.12
45ProjectHot Mix Asphalt (Type A)	U948		RiskPert(S948,R948,T948,RiskName(B948&C948&H948))	53503.03	67436.11	\$83,598.48
45ProjectClass 2 Aggregate Base	U949		RiskPert(S949,R949,T949,RiskName(B949&C949&H949))	13375.76	16859.03	\$20,899.62
45ProjectRock Slope Protection (Class?) Method B	U950		RiskPert(S950,R950,T950,RiskName(B950&C950&H950))	1313.5	1655.55	\$2,052.34
45ProjectRock Slope Protection Fabric Class B	U951		RiskPert(S951,R951,T951,RiskName(B951&C951&H951))	399.17	503.12	\$623.70

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45Project36" Alternative Pipe Culvert	U952		RiskPert(S952,R952,T952,RiskName(B952&C952&H952))	68674.77	86558.83	\$107,304.30
45ProjectTemporary Reinforced Silt Fence	U953		RiskPert(S953,R953,T953,RiskName(B953&C953&H953))	3982.52	5019.63	\$6,222.68
45ProjectTemporary Fence (Type ESA)	U954		RiskPert(S954,R954,T954,RiskName(B954&C954&H954))	2642.75	3330.97	\$4,129.30
45ProjectTemporary Hydroseed	U955		RiskPert(S955,R955,T955,RiskName(B955&C955&H955))	5086.38	6410.96	\$7,947.47
45ProjectTemporary Fiber Roll	U957		RiskPert(S957,R957,T957,RiskName(B957&C957&H957))	8440.52	10638.57	\$13,188.31
45ProjectTemporary Concrete Washout	U958		RiskPert(S958,R958,T958,RiskName(B958&C958&H958))	2626.33	3310.27	\$4,103.65
45ProjectTemporary Construction Entrance	U959		RiskPert(S959,R959,T959,RiskName(B959&C959&H959))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U960		RiskPert(S960,R960,T960,RiskName(B960&C960&H960))	28766.14	36257.32	\$44,947.09
45ProjectConstruction Area Signs	U961		RiskPert(S961,R961,T961,RiskName(B961&C961&H961))	1751.33	2207.4	\$2,736.45
45ProjectTemporary Traffic Stripe	U962		RiskPert(S962,R962,T962,RiskName(B962&C962&H962))	446.44	562.7	\$697.56
45ProjectType III Barricade	U963		RiskPert(S963,R963,T963,RiskName(B963&C963&H963))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U964		RiskPert(S964,R964,T964,RiskName(B964&C964&H964))	8756.63	11037.01	\$13,682.24
45ProjectTemporary Railing (Type K)	U965		RiskPert(S965,R965,T965,RiskName(B965&C965&H965))	24693.71	31124.36	\$38,583.92

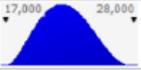
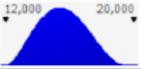
Jenny Creek Bridge

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectSheet Pile Cofferdam For Center Footer	U967		RiskPert(S967,R967,T967,RiskName(B967&C967&H967))	80702.01	102558.8	\$131,140.80
45ProjectEarth Work Cofferdam Construction for side footers	U968		RiskPert(S968,R968,T968,RiskName(B968&C968&H968))	15847.14	20139.08	\$25,751.61
45ProjectBackfill, structural, common earth, 105 H.P. dozer, 50' haul, from existing stockpile, excludes compaction	U969		RiskPert(S969,R969,T969,RiskName(B969&C969&H969))	4945.7	6285.16	\$8,036.77
45ProjectStructure Excavation (Type D)	U970		RiskPert(S970,R970,T970,RiskName(B970&C970&H970))	5679.42	7217.6	\$9,229.06
45ProjectStructure Excavation (Bridge)	U971		RiskPert(S971,R971,T971,RiskName(B971&C971&H971))	10628.72	13507.34	\$17,271.68
45ProjectSteel piles, "H" Sections, 50' long, HP14 X 89, excludes mobilization or demobilization	U972		RiskPert(S972,R972,T972,RiskName(B972&C972&H972))	199092.8	253013.8	\$323,525.80
45ProjectPiling special costs, pre-augering for Pile and Tie Down Anchor	U973		RiskPert(S973,R973,T973,RiskName(B973&C973&H973))	720257.1	915326.7	\$1,170,418.00
45ProjectMobilization, 150 ton, set up and remove crane, with pile leads and pile hammer	U974		RiskPert(S974,R974,T974,RiskName(B974&C974&H974))	38928.68	49471.87	\$63,259.11
45ProjectA736 Barrier Wall	U975		RiskPert(S975,R975,T975,RiskName(B975&C975&H975))	263649.3	335054.3	\$428,430.10
45ProjectExpansion joint, neoprene, liquid, 1" x 2", cold applied	U976		RiskPert(S976,R976,T976,RiskName(B976&C976&H976))	2239.43	2845.94	\$3,639.07
45ProjectColumns Structural Concrete includes forms, Grade 60 rebar, concrete, placing and finishing	U977		RiskPert(S977,R977,T977,RiskName(B977&C977&H977))	297581	378175.8	\$483,569.10

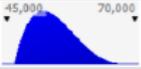
Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectDeck Structural concrete, in place, includes forms, Grade 60 rebar, concrete, placing and finishing	U978		RiskPert(S978,R978,T978,RiskName(B978&C978&H978))	317385.1	403343.6	\$515,750.80
45ProjectFooter Structural concrete,footing, reinforced, includes forms(4 uses), Grade 60 rebar, concrete, placing and finishing	U979		RiskPert(S979,R979,T979,RiskName(B979&C979&H979))	103768.3	131872.2	\$168,623.50
45ProjectApproach Slab Structural concrete, in place, 6" thick, includes forms, Grade 60 rebar, concrete, and placing, excludes finishing	U980		RiskPert(S980,R980,T980,RiskName(B980&C980&H980))	5654.05	7185.36	\$9,187.84
45ProjectPrecast 61" Bulb Tee 73'	U981		RiskPert(S981,R981,T981,RiskName(B981&C981&H981))	345877.8	439553.1	\$562,051.50
45ProjectPrecast 61" Bulb Tee 100'	U982		RiskPert(S982,R982,T982,RiskName(B982&C982&H982))	552130.7	701666.1	\$897,212.40
45ProjectBridge Demolition	U983		RiskPert(S983,R983,T983,RiskName(B983&C983&H983))	162978.5	207118.5	\$264,840.00
45ProjectRoadway Excavation	U985		RiskPert(S985,R985,T985,RiskName(B985&C985&H985))	1050796	1324441	\$1,641,869.00
45ProjectDitch Excavation	U986		RiskPert(S986,R986,T986,RiskName(B986&C986&H986))	6436.13	8112.2	\$10,056.45
45ProjectImported Borrow	U987		RiskPert(S987,R987,T987,RiskName(B987&C987&H987))	1379170	1738329	\$2,154,953.00
45ProjectHot Mix Asphalt (Type A)	U988		RiskPert(S988,R988,T988,RiskName(B988&C988&H988))	68301.74	86088.66	\$106,721.50
45ProjectClass 2 Aggregate Base	U989		RiskPert(S989,R989,T989,RiskName(B989&C989&H989))	21059.7	26544	\$32,905.79
45ProjectMidwest Guardrail System	U990		RiskPert(S990,R990,T990,RiskName(B990&C990&H990))	7112.14	8964.26	\$11,112.71
45ProjectTransition Railing (Type WB-31)	U991		RiskPert(S991,R991,T991,RiskName(B991&C991&H991))	14010.61	17659.21	\$21,891.58
45ProjectAlternative Flared Terminal System	U992		RiskPert(S992,R992,T992,RiskName(B992&C992&H992))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U993		RiskPert(S993,R993,T993,RiskName(B993&C993&H993))	2655.01	3346.42	\$4,148.46
45ProjectTemporary Fence (Type ESA)	U994		RiskPert(S994,R994,T994,RiskName(B994&C994&H994))	1761.84	2220.65	\$2,752.87
45ProjectTemporary Hydroseed	U995		RiskPert(S995,R995,T995,RiskName(B995&C995&H995))	14290.3	18011.73	\$22,328.60
45ProjectTemporary Fiber Roll	U997		RiskPert(S997,R997,T997,RiskName(B997&C997&H997))	17661.25	22260.54	\$27,595.71
45ProjectTemporary Concrete Washout	U998		RiskPert(S998,R998,T998,RiskName(B998&C998&H998))	1751.33	2207.4	\$2,736.45
45ProjectTemporary Construction Entrance	U999		RiskPert(S999,R999,T999,RiskName(B999&C999&H999))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U1000		RiskPert(S1000,R1000,T1000,RiskName(B1000&C1000&H1000))	252576.3	318351.4	\$394,650.50
45ProjectRoadside Sign - One Post	U1001		RiskPert(S1001,R1001,T1001,RiskName(B1001&C1001&H1001))	1891.43	2383.99	\$2,955.36
45ProjectConstruction Area Signs	U1002		RiskPert(S1002,R1002,T1002,RiskName(B1002&C1002&H1002))	1751.33	2207.4	\$2,736.45
45ProjectThermoplastic Traffic Stripe	U1003		RiskPert(S1003,R1003,T1003,RiskName(B1003&C1003&H1003))	753.07	949.18	\$1,176.67
45ProjectType III Barricade	U1004		RiskPert(S1004,R1004,T1004,RiskName(B1004&C1004&H1004))	480.37	605.47	\$750.58

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectTraffic Control System	U1005		RiskPert(S1005,R1005,T1005,RiskName(B1005&C1005&H1005))	17513.27	22074.01	\$27,364.48
45ProjectTemporary Railing (Type K)	U1006		RiskPert(S1006,R1006,T1006,RiskName(B1006&C1006&H1006))	12346.85	15562.18	\$19,291.96

Other Structures

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectPedestrian Bridge Total	U1008		RiskPert(S1008,R1008,T1008,RiskName(B1008&C1008&H1008))	47285.82	54291.13	\$68,301.74
45ProjectBridge Demolition Ped Bridge Campground	U1009		RiskPert(S1009,R1009,T1009,RiskName(B1009&C1009&H1009))	47285.82	54291.13	\$68,301.74
45ProjectBridge Demolition Timber JC Boyle	U1010		RiskPert(S1010,R1010,T1010,RiskName(B1010&C1010&H1010))	106393.1	122155	\$153,678.90

Scotch Creek

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectRoadway Excavation	U1012		RiskPert(S1012,R1012,T1012,RiskName(B1012&C1012&H1012))	19264.59	24281.42	\$30,100.93
45ProjectDitch Excavation	U1013		RiskPert(S1013,R1013,T1013,RiskName(B1013&C1013&H1013))	306.48	386.3	\$478.88
45ProjectImported Borrow	U1014		RiskPert(S1014,R1014,T1014,RiskName(B1014&C1014&H1014))	90631.16	114233	\$141,611.20
45ProjectClearing & Grubbing	U1015		RiskPert(S1015,R1015,T1015,RiskName(B1015&C1015&H1015))	0.88	1.1	\$1.37
45ProjectHot Mix Asphalt (Type A)	U1016		RiskPert(S1016,R1016,T1016,RiskName(B1016&C1016&H1016))	58056.48	73175.36	\$90,713.25
45ProjectClass 2 Aggregate Base	U1017		RiskPert(S1017,R1017,T1017,RiskName(B1017&C1017&H1017))	21628.88	27261.41	\$33,795.13
45ProjectRock Slope Protection (Class?) Method B	U1018		RiskPert(S1018,R1018,T1018,RiskName(B1018&C1018&H1018))	875.66	1103.7	\$1,368.22
45ProjectRock Slope Protection Fabric Class B	U1019		RiskPert(S1019,R1019,T1019,RiskName(B1019&C1019&H1019))	266.11	335.41	\$415.80
45Project36" Alternative Pipe Culvert	U1020		RiskPert(S1020,R1020,T1020,RiskName(B1020&C1020&H1020))	57228.98	72132.36	\$89,420.28
45ProjectTemporary Reinforced Silt Fence	U1021		RiskPert(S1021,R1021,T1021,RiskName(B1021&C1021&H1021))	1991.26	2509.82	\$3,111.34
45ProjectTemporary Fence (Type ESA)	U1022		RiskPert(S1022,R1022,T1022,RiskName(B1022&C1022&H1022))	1321.38	1665.48	\$2,064.65
45ProjectTemporary Hydroseed	U1023		RiskPert(S1023,R1023,T1023,RiskName(B1023&C1023&H1023))	4763.43	6003.91	\$7,442.87
45ProjectTemporary Fiber Roll	U1025		RiskPert(S1025,R1025,T1025,RiskName(B1025&C1025&H1025))	3191.79	4022.99	\$4,987.18
45ProjectTemporary Concrete Washout	U1026		RiskPert(S1026,R1026,T1026,RiskName(B1026&C1026&H1026))	2626.33	3310.27	\$4,103.65
45ProjectTemporary Construction Entrance	U1027		RiskPert(S1027,R1027,T1027,RiskName(B1027&C1027&H1027))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U1028		RiskPert(S1028,R1028,T1028,RiskName(B1028&C1028&H1028))	24825.92	31291.01	\$38,790.50
45ProjectConstruction Area Signs	U1029		RiskPert(S1029,R1029,T1029,RiskName(B1029&C1029&H1029))	1751.33	2207.4	\$2,736.45

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectTemporary Traffic Stripe	U1030		RiskPert(\$I1030,R1030,T1030,RiskName(B1030&C1030&H1030))	357.15	450.16	\$558.05
45ProjectType III Barricade	U1031		RiskPert(\$I1031,R1031,T1031,RiskName(B1031&C1031&H1031))	480.37	605.47	\$750.58
45ProjectTraffic Control System	U1032		RiskPert(\$I1032,R1032,T1032,RiskName(B1032&C1032&H1032))	8756.63	11037.01	\$13,682.24
45ProjectTemporary Railing (Type K)	U1033		RiskPert(\$I1033,R1033,T1033,RiskName(B1033&C1033&H1033))	20578.09	25936.97	\$32,153.26
45ProjectRoadway Excavation	U1035		RiskPert(\$I1035,R1035,T1035,RiskName(B1035&C1035&H1035))	105079.6	132444.1	\$164,186.90
45ProjectDitch Excavation	U1036		RiskPert(\$I1036,R1036,T1036,RiskName(B1036&C1036&H1036))	306.48	386.3	\$478.88
45ProjectImported Borrow	U1037		RiskPert(\$I1037,R1037,T1037,RiskName(B1037&C1037&H1037))	118214.6	148999.6	\$184,710.20
45ProjectHot Mix Asphalt (Type A)	U1038		RiskPert(\$I1038,R1038,T1038,RiskName(B1038&C1038&H1038))	19352.16	24391.79	\$30,237.75
45ProjectClass 2 Aggregate Base	U1039		RiskPert(\$I1039,R1039,T1039,RiskName(B1039&C1039&H1039))	6830.17	8608.87	\$10,672.15
45ProjectRock Slope Protection Class III, Method B	U1040		RiskPert(\$I1040,R1040,T1040,RiskName(B1040&C1040&H1040))	437.83	551.85	\$684.11
45ProjectRock Slope Protection Fabric Class B	U1041		RiskPert(\$I1041,R1041,T1041,RiskName(B1041&C1041&H1041))	106.45	134.17	\$166.32
45ProjectStructural Concrete, Box Culvert	U1042		RiskPert(\$I1042,R1042,T1042,RiskName(B1042&C1042&H1042))	42338.32	53363.93	\$66,153.63
45ProjectMidwest Guardrail System	U1043		RiskPert(\$I1043,R1043,T1043,RiskName(B1043&C1043&H1043))	11975.57	15094.21	\$18,711.83
45ProjectAlternative Flared Terminal System	U1044		RiskPert(\$I1044,R1044,T1044,RiskName(B1044&C1044&H1044))	3502.65	4414.8	\$5,472.90
45ProjectTemporary Reinforced Silt Fence	U1045		RiskPert(\$I1045,R1045,T1045,RiskName(B1045&C1045&H1045))	2655.01	3346.42	\$4,148.46
45ProjectTemporary Fence (Type ESA)	U1046		RiskPert(\$I1046,R1046,T1046,RiskName(B1046&C1046&H1046))	1761.84	2220.65	\$2,752.87
45ProjectTemporary Hydroseed	U1047		RiskPert(\$I1047,R1047,T1047,RiskName(B1047&C1047&H1047))	1776.2	2238.75	\$2,775.31
45ProjectTemporary Fiber Roll	U1049		RiskPert(\$I1049,R1049,T1049,RiskName(B1049&C1049&H1049))	3191.79	4022.99	\$4,987.18
45ProjectTemporary Construction Entrance	U1050		RiskPert(\$I1050,R1050,T1050,RiskName(B1050&C1050&H1050))	7536.4	9499	\$11,775.62
45ProjectWater Pollution Control	U1051		RiskPert(\$I1051,R1051,T1051,RiskName(B1051&C1051&H1051))	29266.56	36888.06	\$45,729.00
45ProjectConstruction Area Signs	U1052		RiskPert(\$I1052,R1052,T1052,RiskName(B1052&C1052&H1052))	2189.16	2759.25	\$3,420.56
45ProjectThermoplastic Traffic Stripe	U1053		RiskPert(\$I1053,R1053,T1053,RiskName(B1053&C1053&H1053))	150.61	189.84	\$235.33
45ProjectTraffic Control System	U1054		RiskPert(\$I1054,R1054,T1054,RiskName(B1054&C1054&H1054))	8756.63	11037.01	\$13,682.24
45ProjectTemporary Railing (Type K)	U1055		RiskPert(\$I1055,R1055,T1055,RiskName(B1055&C1055&H1055))	5879.45	7410.56	\$9,186.65

Risk Distribution Model Inputs

Copco Rd at Beaver Creek

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectRoadway Excavation	U1057		RiskPert(S1057,R1057,T1057,RiskName(B1057&C1057&H1057))	105079.6	132444.1	\$164,186.90
45ProjectImported Borrow	U1058		RiskPert(S1058,R1058,T1058,RiskName(B1058&C1058&H1058))	98512.13	124166.3	\$153,925.20
45ProjectRock Slope Protection Class III, Method B	U1059		RiskPert(S1059,R1059,T1059,RiskName(B1059&C1059&H1059))	21891.58	27592.52	\$34,205.60
45ProjectRock Slope Protection Fabric Class 8	U1060		RiskPert(S1060,R1060,T1060,RiskName(B1060&C1060&H1060))	6209.33	7826.34	\$9,702.08
45Project60" CORRUGATED STEEL PIPE (.138" THICK)	U1061		RiskPert(S1061,R1061,T1061,RiskName(B1061&C1061&H1061))	18914.33	23839.94	\$29,553.64
45ProjectTemporary Reinforced Silt Fence	U1062		RiskPert(S1062,R1062,T1062,RiskName(B1062&C1062&H1062))	3982.52	5019.63	\$6,222.68
45ProjectTemporary Fence (Type ESA)	U1063		RiskPert(S1063,R1063,T1063,RiskName(B1063&C1063&H1063))	2642.75	3330.97	\$4,129.30
45ProjectWater Pollution Control	U1064		RiskPert(S1064,R1064,T1064,RiskName(B1064&C1064&H1064))	25060.7	31586.92	\$39,157.34
45ProjectConstruction Area Signs	U1065		RiskPert(S1065,R1065,T1065,RiskName(B1065&C1065&H1065))	525.4	662.22	\$820.93
45ProjectTraffic Control System	U1066		RiskPert(S1066,R1066,T1066,RiskName(B1066&C1066&H1066))	8756.63	11037.01	\$13,682.24
45ProjectTemporary Railing (Type K)	U1067		RiskPert(S1067,R1067,T1067,RiskName(B1067&C1067&H1067))	2351.78	2964.23	\$3,674.66
45ProjectReplace and Reconstruct 60-inch Culvert No.1 at Beaver Creek	U1068		RiskPert(S1068,R1068,T1068,RiskName(B1068&C1068&H1068))	13134.95	16555.51	\$20,523.36
45ProjectReplace and Reconstruct 60-inch Culvert No.2 at Beaver Creek	U1069		RiskPert(S1069,R1069,T1069,RiskName(B1069&C1069&H1069))	13134.95	16555.51	\$20,523.36

Copco Rd at Raymond Gulch

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectRock Slope Protection Class III, Method B	U1071		RiskPert(S1071,R1071,T1071,RiskName(B1071&C1071&H1071))	13134.95	16555.51	\$20,523.36
45ProjectRock Slope Protection Fabric Class 8	U1072		RiskPert(S1072,R1072,T1072,RiskName(B1072&C1072&H1072))	3548.19	4472.2	\$5,544.04
45ProjectTemporary Reinforced Silt Fence	U1073		RiskPert(S1073,R1073,T1073,RiskName(B1073&C1073&H1073))	3982.52	5019.63	\$6,222.68
45ProjectTemporary Fence (Type ESA)	U1074		RiskPert(S1074,R1074,T1074,RiskName(B1074&C1074&H1074))	2642.75	3330.97	\$4,129.30
45ProjectWater Pollution Control	U1075		RiskPert(S1075,R1075,T1075,RiskName(B1075&C1075&H1075))	16683.14	21027.71	\$26,067.40
45ProjectTraffic Control System	U1076		RiskPert(S1076,R1076,T1076,RiskName(B1076&C1076&H1076))	875.66	1103.7	\$1,368.22
45Project60-inch Culvert at Raymond Gulch	U1077		RiskPert(S1077,R1077,T1077,RiskName(B1077&C1077&H1077))	8756.63	11037.01	\$13,682.24

Patricia Avenue Culverts

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectRock Slope Protection Class III, Method B	U1079		RiskPert(S1079,R1079,T1079,RiskName(B1079&C1079&H1079))	13134.95	16555.51	\$20,523.36
45ProjectRock Slope Protection Fabric Class 8	U1080		RiskPert(S1080,R1080,T1080,RiskName(B1080&C1080&H1080))	3548.19	4472.2	\$5,544.04

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectWater Pollution Control	U1081		RiskPert(\$I081,R1081,T1081,RiskName(B1081&C1081&H1081))	1668.31	2102.77	\$2,606.74
45ProjectTraffic Control System	U1082		RiskPert(\$I082,R1082,T1082,RiskName(B1082&C1082&H1082))	875.66	1103.7	\$1,368.22

Topsy Grade Culverts

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectTrench Excavation	U1084		RiskPert(\$I084,R1084,T1084,RiskName(B1084&C1084&H1084))	9632.3	12140.71	\$15,050.46
45ProjectClearing & Grubbing	U1085		RiskPert(\$I085,R1085,T1085,RiskName(B1085&C1085&H1085))	1751.33	2207.4	\$2,736.45
45ProjectRock Slope Protection Class III, Method B	U1086		RiskPert(\$I086,R1086,T1086,RiskName(B1086&C1086&H1086))	70053.07	88296.05	\$109,457.90
45ProjectRock Slope Protection Fabric Class 8	U1087		RiskPert(\$I087,R1087,T1087,RiskName(B1087&C1087&H1087))	20845.6	26274.15	\$32,571.26
45Project24" corrugated steel pipe (.138" thick)	U1088		RiskPert(\$I088,R1088,T1088,RiskName(B1088&C1088&H1088))	24080.74	30351.77	\$37,626.16
45ProjectTemporary Reinforced Silt Fence	U1089		RiskPert(\$I089,R1089,T1089,RiskName(B1089&C1089&H1089))	6637.53	8366.05	\$10,371.14
45ProjectTemporary Fence (Type ESA)	U1090		RiskPert(\$I090,R1090,T1090,RiskName(B1090&C1090&H1090))	4404.59	5551.61	\$6,882.17
45ProjectWater Pollution Control	U1091		RiskPert(\$I091,R1091,T1091,RiskName(B1091&C1091&H1091))	12636.3	15927.01	\$19,744.22
45ProjectTraffic Control System	U1092		RiskPert(\$I092,R1092,T1092,RiskName(B1092&C1092&H1092))	4378.32	5518.5	\$6,841.12

JC Boyle Unnamed Culverts

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectRock Slope Protection Class III, Method B	U1094		RiskPert(\$I094,R1094,T1094,RiskName(B1094&C1094&H1094))	10070.13	12692.56	\$15,734.58
45ProjectRock Slope Protection Fabric Class 8	U1095		RiskPert(\$I095,R1095,T1095,RiskName(B1095&C1095&H1095))	3104.67	3913.17	\$4,851.04
45ProjectWater Pollution Control %	U1096		RiskPert(\$I096,R1096,T1096,RiskName(B1096&C1096&H1096))	1317.48	1660.57	\$2,058.56
45ProjectTraffic Control System	U1097		RiskPert(\$I097,R1097,T1097,RiskName(B1097&C1097&H1097))	875.66	1103.7	\$1,368.22

Other Structures

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectCapco Road at Unnamed Creek Culvert No. 1	U1099		RiskPert(\$I099,R1099,T1099,RiskName(B1099&C1099&H1099))	13134.95	16555.51	\$20,523.36
45ProjectCapco Road at Unnamed Creek Culvert No. 2	U1100		RiskPert(\$I100,R1100,T1100,RiskName(B1100&C1100&H1100))	13134.95	16555.51	\$20,523.36
45Project6'x6'x34' Box Culvert installation	U1101		RiskPert(\$I101,R1101,T1101,RiskName(B1101&C1101&H1101))	13134.95	16555.51	\$20,523.36

Paving

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectPre: none; Post: 0.7 miles 6" AB overlay (no drainage improvements, but some BMPs)	U1103		RiskPert(\$I103,R1103,T1103,RiskName(B1103&C1103&H1103))	0	191226.9	\$382,453.80
45ProjectPre: 2500CY roadway excavation, 0.9 miles 9" AB overlay (no drainage improvements, but some BMPs); Post: none	U1104		RiskPert(\$I104,R1104,T1104,RiskName(B1104&C1104&H1104))	205504	281216	\$400,192.00

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
45ProjectPre: 1 mile 9" AB repair; Post: 1 mile 9" AB repair, 0.2 mile HMA overlay, RSP	U1105		RiskPert(S1105,R1105,T1105,RiskName(B1105&C1105&H1105))	230372.1	381184.7	\$647,921.70
45ProjectPre: minor excavation and 9" AB section; Post: none	U1106		RiskPert(S1106,R1106,T1106,RiskName(B1106&C1106&H1106))	0	64896	\$129,792.00
45ProjectPre: none; Post: none	U1107		RiskPert(S1107,R1107,T1107,RiskName(B1107&C1107&H1107))	0	181103.1	\$1,086,619.00
45ProjectPre: none; Post: none	U1108		RiskPert(S1108,R1108,T1108,RiskName(B1108&C1108&H1108))	0	185227.6	\$1,111,366.00
45ProjectPre: none; Post: none	U1109		RiskPert(S1109,R1109,T1109,RiskName(B1109&C1109&H1109))	0	185227.6	\$1,111,366.00
45ProjectPre: 0.9 mile 9" AB repair; Post: 0.9 mile 9" AB repair	U1110		RiskPert(S1110,R1110,T1110,RiskName(B1110&C1110&H1110))	485422.1	970844.2	\$1,456,266.00
45ProjectPre: minor excavation; 0.25 mile new 9" AB, 0.7 mile 9" AB repair; post: no excavation; 0.6 mile 9" AB repair	U1111		RiskPert(S1111,R1111,T1111,RiskName(B1111&C1111&H1111))	232968	352748.7	\$410,990.70
45ProjectPre: 1.5 mile 9" AB repair; post: 1.5 mile 9" AB repair; no guardrail	U1112		RiskPert(S1112,R1112,T1112,RiskName(B1112&C1112&H1112))	238298.1	494247.9	\$820,804.60
45ProjectPre: none; Post: none	U1113		RiskPert(S1113,R1113,T1113,RiskName(B1113&C1113&H1113))	0	40495.11	\$242,970.60
45ProjectPre: none; Post: 1 mile new asphalt overlay	U1114		RiskPert(S1114,R1114,T1114,RiskName(B1114&C1114&H1114))	613050.9	1313279	\$2,362,215.00
45ProjectPre: 0.5 miles crack sealer, 0.75 miles new asphalt; Post: 1 miles new asphalt overlay	U1115		RiskPert(S1115,R1115,T1115,RiskName(B1115&C1115&H1115))	1312457	2384943	\$5,798,068.00
45ProjectPre: 1 mile crack sealer, 1.5 miles new asphalt; Post: 2 miles new asphalt overlay	U1116		RiskPert(S1116,R1116,T1116,RiskName(B1116&C1116&H1116))	2624914	4570525	\$11,596,140.00
45ProjectPre: 1.5 mile 9" AB repair; Post: 1.5 mile 9" AB repair, no guardrail	U1117		RiskPert(S1117,R1117,T1117,RiskName(B1117&C1117&H1117))	238298.1	494247.9	\$820,804.60

RECREATION

Campground - Jenny Creek

Name	Cell	Graph	Function	Min	Mean	Max
46ProjectPicnic table	U1120		RiskPert(S1120,R1120,T1120,RiskName(B1120&C1120&H1120))	11493.08	17820.94	\$22,986.16
46ProjectFire grate	U1121		RiskPert(S1121,R1121,T1121,RiskName(B1121&C1121&H1121))	3283.74	5091.7	\$6,567.48
46ProjectTrash bins	U1122		RiskPert(S1122,R1122,T1122,RiskName(B1122&C1122&H1122))	5472.9	7844.48	\$10,945.79
46ProjectParking	U1123		RiskPert(S1123,R1123,T1123,RiskName(B1123&C1123&H1123))	2736.45	4243.08	\$5,472.90
46ProjectShade structure	U1124		RiskPert(S1124,R1124,T1124,RiskName(B1124&C1124&H1124))	28459.06	48635.23	\$71,147.65
46ProjectRestroom (single vault toilet)	U1125		RiskPert(S1125,R1125,T1125,RiskName(B1125&C1125&H1125))	111647.1	139605.1	\$223,294.20
46ProjectAssumed earthwork	U1126		RiskPert(S1126,R1126,T1126,RiskName(B1126&C1126&H1126))	2626.99	4270.49	\$5,253.98
46ProjectSignage	U1127		RiskPert(S1127,R1127,T1127,RiskName(B1127&C1127&H1127))	5472.9	10945.79	\$16,418.69
46ProjectOperations and maintenance	U1128		RiskPert(S1128,R1128,T1128,RiskName(B1128&C1128&H1128))	0	232666	\$656,747.50

Risk Distribution Model Inputs

Campground - Topsy Upgrade

Name	Cell	Graph	Function	Min	Mean	Max
46Projectboat ramp	U1130		RiskPert(S1130,R1130,T1130,RiskName(B1130&C1130&H1130))	10945	10945.33	\$10,947.00
46Projecttrash bins	U1131		RiskPert(S1131,R1131,T1131,RiskName(B1131&C1131&H1131))	1094.58	1094.58	\$1,094.58
46ProjectOperations and maintenance	U1132		RiskPert(S1132,R1132,T1132,RiskName(B1132&C1132&H1132))	0	77555.34	\$218,915.80

Campground - New Campground

Name	Cell	Graph	Function	Min	Mean	Max
46Projectpicnic table	U1134		RiskPert(S1134,R1134,T1134,RiskName(B1134&C1134&H1134))	45972.33	50785	\$51,748.00
46Projectfire grate	U1135		RiskPert(S1135,R1135,T1135,RiskName(B1135&C1135&H1135))	13134.95	14510.14	\$14,786.00
46Projecttrash bins	U1136		RiskPert(S1136,R1136,T1136,RiskName(B1136&C1136&H1136))	21891.58	21891.58	\$21,891.58
46Projectrestroom (single vault toilet)	U1137		RiskPert(S1137,R1137,T1137,RiskName(B1137&C1137&H1137))	334941.3	371670.9	\$387,017.00
46Projectparking	U1138		RiskPert(S1138,R1138,T1138,RiskName(B1138&C1138&H1138))	10945.79	12091.84	\$12,322.00
46Projectboat ramp	U1139		RiskPert(S1139,R1139,T1139,RiskName(B1139&C1139&H1139))	10945.79	22359.21	\$24,643.00
46Projecttrash bins	U1140		RiskPert(S1140,R1140,T1140,RiskName(B1140&C1140&H1140))	1094.58	2056.7	\$2,489.00
46Projectpicnic table	U1141		RiskPert(S1141,R1141,T1141,RiskName(B1141&C1141&H1141))	4597.23	5095.2	\$5,275.00
46Projectfire grate	U1142		RiskPert(S1142,R1142,T1142,RiskName(B1142&C1142&H1142))	1313.5	1467.58	\$1,578.00
46Projecttrash bins	U1143		RiskPert(S1143,R1143,T1143,RiskName(B1143&C1143&H1143))	2189.16	2189.16	\$2,189.16
46Projectassumed earthwork	U1144		RiskPert(S1144,R1144,T1144,RiskName(B1144&C1144&H1144))	10507.96	11633.65	\$11,982.00
46Projectsignage	U1145		RiskPert(S1145,R1145,T1145,RiskName(B1145&C1145&H1145))	10945.79	21891.58	\$32,837.38
46ProjectOperations and maintenance	U1146		RiskPert(S1146,R1146,T1146,RiskName(B1146&C1146&H1146))	0	465332.1	\$1,313,495.00

Recreation Area - Fall Creek

Name	Cell	Graph	Function	Min	Mean	Max
46Projectrestroom (single vault toilet)	U1148		RiskPert(S1148,R1148,T1148,RiskName(B1148&C1148&H1148))	55823.54	69802.53	\$111,647.10
46Projectpicnic table	U1149		RiskPert(S1149,R1149,T1149,RiskName(B1149&C1149&H1149))	9194.47	12455.6	\$13,791.70
46Projectshade structure	U1150		RiskPert(S1150,R1150,T1150,RiskName(B1150&C1150&H1150))	28459.06	33214.02	\$42,688.59
46Projectfire grate	U1151		RiskPert(S1151,R1151,T1151,RiskName(B1151&C1151&H1151))	1970.24	2846.99	\$3,283.74
46Projecttrash bins	U1152		RiskPert(S1152,R1152,T1152,RiskName(B1152&C1152&H1152))	4378.32	5472.9	\$6,567.48
46Projectparking	U1153		RiskPert(S1153,R1153,T1153,RiskName(B1153&C1153&H1153))	2189.16	3558.74	\$4,378.32

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
46Projectreconstructed trail	U1154		RiskPert(\$I1154,R1154,T1154,RiskName(B1154&C1154&H1154))	8669.07	20235	\$34,676.27
46Projectassumed earthwork	U1155		RiskPert(\$I1155,R1155,T1155,RiskName(B1155&C1155&H1155))	1751.33	2846.99	\$3,502.65
46Projectsignage	U1156		RiskPert(\$I1156,R1156,T1156,RiskName(B1156&C1156&H1156))	5472.9	10945.79	\$16,418.69
46ProjectOperations and maintenance	U1157		RiskPert(\$I1157,R1157,T1157,RiskName(B1157&C1157&H1157))	0	116333	\$328,373.80

Recreation Area - Iron Gate

Name	Cell	Graph	Function	Min	Mean	Max
46Projectshade structure	U1159		RiskPert(\$I1159,R1159,T1159,RiskName(B1159&C1159&H1159))	28459.06	46263.64	\$56,918.12
46Projectpicnic table	U1160		RiskPert(\$I1160,R1160,T1160,RiskName(B1160&C1160&H1160))	9194.47	14946.71	\$18,388.93
46Projecttrash bins	U1161		RiskPert(\$I1161,R1161,T1161,RiskName(B1161&C1161&H1161))	5472.9	7662.05	\$9,851.21
46Projectparking	U1162		RiskPert(\$I1162,R1162,T1162,RiskName(B1162&C1162&H1162))	2189.16	3558.74	\$4,378.32
46Projectfire grate	U1163		RiskPert(\$I1163,R1163,T1163,RiskName(B1163&C1163&H1163))	2626.99	4270.49	\$5,253.98
46Projectrestroom (single vault toilet)	U1164		RiskPert(\$I1164,R1164,T1164,RiskName(B1164&C1164&H1164))	111647.1	139605.1	\$223,294.20
46Projectboat ramp	U1165		RiskPert(\$I1165,R1165,T1165,RiskName(B1165&C1165&H1165))	10945.79	12093.67	\$12,333.00
46Projectassumed earthwork	U1166		RiskPert(\$I1166,R1166,T1166,RiskName(B1166&C1166&H1166))	2626.99	4270.49	\$5,253.98
46Projectsignage	U1167		RiskPert(\$I1167,R1167,T1167,RiskName(B1167&C1167&H1167))	5472.9	10945.79	\$16,418.69
46ProjectOperations and maintenance	U1168		RiskPert(\$I1168,R1168,T1168,RiskName(B1168&C1168&H1168))	0	116333	\$328,373.80

Recreation Area - River Fishing Access Sites

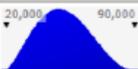
Name	Cell	Graph	Function	Min	Mean	Max
46Projectparking	U1170		RiskPert(\$I1170,R1170,T1170,RiskName(B1170&C1170&H1170))	0	9581.65	\$13,134.95
46Projectportable toilet	U1171		RiskPert(\$I1171,R1171,T1171,RiskName(B1171&C1171&H1171))	4597.23	5237.64	\$6,129.64
46Projecttrash bins	U1172		RiskPert(\$I1172,R1172,T1172,RiskName(B1172&C1172&H1172))	6567.48	6932.34	\$8,756.63
46Projectsignage	U1173		RiskPert(\$I1173,R1173,T1173,RiskName(B1173&C1173&H1173))	32837.38	34661.68	\$43,783.17
46Projecttrail refurbishment	U1174		RiskPert(\$I1174,R1174,T1174,RiskName(B1174&C1174&H1174))	52014.4	59260.16	\$69,352.54
46ProjectOperations and maintenance	U1175		RiskPert(\$I1175,R1175,T1175,RiskName(B1175&C1175&H1175))	0	77555.34	\$218,915.80

Risk Distribution Model Inputs

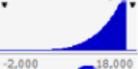
Recreation Area - New Day Use Sites

Name	Cell	Graph	Function	Min	Mean	Max
46Projectpicnic table	U1177		RiskPert(S1177,R1177,T1177,RiskName(B1177&C1177&H1177))	0	9198.27	\$13,791.70
46Projectfire grate	U1178		RiskPert(S1178,R1178,T1178,RiskName(B1178&C1178&H1178))	0	2628.08	\$3,940.49
46Projecttrash bins	U1179		RiskPert(S1179,R1179,T1179,RiskName(B1179&C1179&H1179))	0	4013.46	\$6,567.48
46Projectshade structure	U1180		RiskPert(S1180,R1180,T1180,RiskName(B1180&C1180&H1180))	0	28470.84	\$42,688.59
46Projectassumed earthwork	U1181		RiskPert(S1181,R1181,T1181,RiskName(B1181&C1181&H1181))	0	1752.05	\$2,626.99
46Projectsignage	U1182		RiskPert(S1182,R1182,T1182,RiskName(B1182&C1182&H1182))	0	10033.64	\$16,418.69
46ProjectOperations and maintenance	U1183		RiskPert(S1183,R1183,T1183,RiskName(B1183&C1183&H1183))	0	155110.7	\$437,831.70

Recreation Area - New Boat Ramps

Name	Cell	Graph	Function	Min	Mean	Max
46ProjectNew boat ramps	U1185		RiskPert(S1185,R1185,T1185,RiskName(B1185&C1185&H1185))	21891.58	51098.48	\$87,566.34

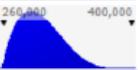
Non-motorized Recreation Trails

Name	Cell	Graph	Function	Min	Mean	Max
46ProjectTrail	U1207		RiskPert(S1207,R1207,T1207,RiskName(B1207&C1207&H1207))	0	751606.2	\$1,387,051.00
46ProjectSignage	U1208		RiskPert(S1208,R1208,T1208,RiskName(B1208&C1208&H1208))	0	10033.64	\$16,418.69
46ProjectWalking trails for recreation access to river	U1210		RiskPert(S1210,R1210,T1210,RiskName(B1210&C1210&H1210))	173381.3	268841.6	\$346,762.70
46ProjectTrail Grading	U1212		RiskPert(S1212,R1212,T1212,RiskName(B1212&C1212&H1212))	0	187901.5	\$346,762.70
46Projecttrash bins	U1213		RiskPert(S1213,R1213,T1213,RiskName(B1213&C1213&H1213))	0	912.15	\$1,094.58
46ProjectSignage	U1214		RiskPert(S1214,R1214,T1214,RiskName(B1214&C1214&H1214))	0	10033.64	\$16,418.69

Motorized Recreation Trails

Name	Cell	Graph	Function	Min	Mean	Max
46ProjectDirt Road Improvements	U1216		RiskPert(S1216,R1216,T1216,RiskName(B1216&C1216&H1216))	0	0	\$0.00
46ProjectUpgrade Topsy Grade Road	U1217		RiskPert(S1217,R1217,T1217,RiskName(B1217&C1217&H1217))	0	0	\$0.00
46ProjectNew Bridge over Klamath River at Frain Ranch	U1218		RiskPert(S1218,R1218,T1218,RiskName(B1218&C1218&H1218))	0	0	\$0.00

Recreation, General Conditions

Name	Cell	Graph	Function	Min	Mean	Max
46ProjectContractor overhead	U1220		RiskPert(S1220,R1220,T1220,RiskName(B1220&C1220&H1220))	493405.1	566502.2	\$712,696.30
46ProjectContractor profit	U1221		RiskPert(S1221,R1221,T1221,RiskName(B1221&C1221&H1221))	263149.4	302134.5	\$380,104.70

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
46ProjectInsurance	U1222		RiskPert(\$I1222,R1222,T1222,RiskName(B1222&C1222&H1222))	40459.22	46453.18	\$58,441.09
46ProjectBond	U1223		RiskPert(\$I1223,R1223,T1223,RiskName(B1223&C1223&H1223))	40459.22	46453.18	\$58,441.09

FLOOD PROOFING

Name	Cell	Graph	Function	Min	Mean	Max
47ProjectCost to raise homes and add 2 stairs	U1226		RiskPert(\$I1226,R1226,T1226,RiskName(B1226&C1226&H1226))	1198946	1523660	\$1,948,287.00

PUBLIC HEALTH AND SAFETY

Name	Cell	Graph	Function	Min	Mean	Max
48ProjectCattle exclusion fencing	U1231		RiskPert(\$I1231,R1231,T1231,RiskName(B1231&C1231&H1231))	2363345	2755872	\$3,316,825.00

MITIGATION MEASURES

Groundwater Improvements

Name	Cell	Graph	Function	Min	Mean	Max
51ProjectOutreach to well owners	U1235		RiskPert(\$I1235,R1235,T1235,RiskName(B1235&C1235&H1235))	59488	59488	\$59,488.00
51ProjectDrill and install new monitoring wells	U1236		RiskPert(\$I1236,R1236,T1236,RiskName(B1236&C1236&H1236))	35855	80790.7	\$95,855.00
51ProjectSentinel water level monitoring of new wells and landowner for 3 years	U1237		RiskPert(\$I1237,R1237,T1237,RiskName(B1237&C1237&H1237))	99208.27	115743	\$132,277.70
51ProjectWQ laboratory analytical testing	U1238		RiskPert(\$I1238,R1238,T1238,RiskName(B1238&C1238&H1238))	16548.48	41371.2	\$66,193.92
51ProjectWell replacements	U1239		RiskPert(\$I1239,R1239,T1239,RiskName(B1239&C1239&H1239))	947949.9	1483366	\$2,018,782.00
51ProjectWell abandonment	U1240		RiskPert(\$I1240,R1240,T1240,RiskName(B1240&C1240&H1240))	33421.44	58487.52	\$83,553.60
51ProjectTemporary water supply	U1241		RiskPert(\$I1241,R1241,T1241,RiskName(B1241&C1241&H1241))	40105.73	60715.62	\$81,325.51
51ProjectPermitting and Reporting	U1242		RiskPert(\$I1242,R1242,T1242,RiskName(B1242&C1242&H1242))	41219.78	74084.2	\$106,948.60

Water Supply/Rights

Name	Cell	Graph	Function	Min	Mean	Max
52ProjectHay production	U1245		RiskPert(\$I1245,R1245,T1245,RiskName(B1245&C1245&H1245))	559202.9	652403.4	\$745,603.90
52ProjectWater supply for domestic use for water rights	U1246		RiskPert(\$I1246,R1246,T1246,RiskName(B1246&C1246&H1246))	9306.48	9589.69	\$9,988.07
52ProjectSediment removal at intakes	U1247		RiskPert(\$I1247,R1247,T1247,RiskName(B1247&C1247&H1247))	70054.8	140109.6	\$210,164.40
52ProjectGroundwater wells - domestic	U1248		RiskPert(\$I1248,R1248,T1248,RiskName(B1248&C1248&H1248))	44129.28	91936	\$110,323.20
52ProjectGroundwater wells - municipal	U1249		RiskPert(\$I1249,R1249,T1249,RiskName(B1249&C1249&H1249))	100323	110323.1	\$120,323.00
52ProjectSediment basin	U1250		RiskPert(\$I1250,R1250,T1250,RiskName(B1250&C1250&H1250))	79677.87	79677.87	\$79,677.87

CULTURAL RESOURCES

Name	Cell	Graph	Function	Min	Mean	Max
53ProjectGenerally	U1255		RiskPert(S1255,R1255,T1255,RiskName(B1255&C1255&H1255))	1824750	2027500	\$2,230,250.00
53ProjectGenerally	U1258		RiskPert(S1258,R1258,T1258,RiskName(B1258&C1258&H1258))	1861245	2068050	\$2,274,855.00
53ProjectTechnical Editor	U1266		RiskPert(S1266,R1266,T1266,RiskName(B1266&C1266&H1266))	1572.48	1747.2	\$1,921.92
53ProjectTechnical Editor	U1277		RiskPert(S1277,R1277,T1277,RiskName(B1277&C1277&H1277))	8512.87	9458.74	\$10,404.62
53ProjectCuration	U1282		RiskPert(S1282,R1282,T1282,RiskName(B1282&C1282&H1282))	206404.6	229338.4	\$252,272.30
53ProjectOther direct costs	U1283		RiskPert(S1283,R1283,T1283,RiskName(B1283&C1283&H1283))	5034.26	5593.62	\$6,152.98
53ProjectTechnical Editor	U1288		RiskPert(S1288,R1288,T1288,RiskName(B1288&C1288&H1288))	4088.45	4542.72	\$4,996.99

Name	Cell	Graph	Function	Min	Mean	Max
53ProjectTribal monitor subcontract	U1291		RiskPert(S1291,R1291,T1291,RiskName(B1291&C1291&H1291))	89491.26	99434.73	\$109,378.20
53ProjectTravel and perdiem	U1292		RiskPert(S1292,R1292,T1292,RiskName(B1292&C1292&H1292))	34905.61	38784.01	\$42,662.41
53ProjectTechnical Editor	U1296		RiskPert(S1296,R1296,T1296,RiskName(B1296&C1296&H1296))	4251.99	4724.43	\$5,196.87
53ProjectField Technician	U1299		RiskPert(S1299,R1299,T1299,RiskName(B1299&C1299&H1299))	58312.95	64792.17	\$71,271.38
53ProjectTribal monitor subcontract	U1300		RiskPert(S1300,R1300,T1300,RiskName(B1300&C1300&H1300))	50501.9	56113.22	\$61,724.54
53ProjectTravel and perdiem	U1301		RiskPert(S1301,R1301,T1301,RiskName(B1301&C1301&H1301))	31282.47	34758.3	\$38,234.13
53ProjectHuman remains	U1303		RiskPert(S1303,R1303,T1303,RiskName(B1303&C1303&H1303))	1520155	1689062	\$1,857,968.00
53ProjectOther direct costs	U1304		RiskPert(S1304,R1304,T1304,RiskName(B1304&C1304&H1304))	506.72	563.02	\$619.32
53ProjectArchaeological unit cost	U1305		RiskPert(S1305,R1305,T1305,RiskName(B1305&C1305&H1305))	1824186	2026874	\$2,229,561.00
53ProjectOther direct costs	U1306		RiskPert(S1306,R1306,T1306,RiskName(B1306&C1306&H1306))	506.72	563.02	\$619.32
53ProjectTechnical Editor	U1311		RiskPert(S1311,R1311,T1311,RiskName(B1311&C1311&H1311))	4170.22	4633.57	\$5,096.93
53ProjectField Technician	U1314		RiskPert(S1314,R1314,T1314,RiskName(B1314&C1314&H1314))	571915.5	635461.6	\$699,007.80
53ProjectTribal monitor subcontract	U1315		RiskPert(S1315,R1315,T1315,RiskName(B1315&C1315&H1315))	276906.4	307673.8	\$338,441.10
53ProjectOther direct costs	U1316		RiskPert(S1316,R1316,T1316,RiskName(B1316&C1316&H1316))	127076.4	141196	\$155,315.70

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
53ProjectTechnical Editor	U1320		RiskPert(\$I320,R1320,T1320,RiskName(B1320&C1320&H1320))	4601.31	5112.56	\$5,623.82
53ProjectField Technician	U1323		RiskPert(\$I323,R1323,T1323,RiskName(B1323&C1323&H1323))	631036.3	701151.4	\$771,266.60
53ProjectTribal monitor subcontract	U1324		RiskPert(\$I324,R1324,T1324,RiskName(B1324&C1324&H1324))	208666.9	231852.2	\$255,037.40
53ProjectOther direct costs	U1325		RiskPert(\$I325,R1325,T1325,RiskName(B1325&C1325&H1325))	62937.11	69930.12	\$76,923.13
53ProjectTCP Project allowance	U1327		RiskPert(\$I327,R1327,T1327,RiskName(B1327&C1327&H1327))	1000000	1000000	\$1,000,000.00
53ProjectAllowance for additional discoveries (reconciled with risk log)	U1328		RiskPert(\$I328,R1328,T1328,RiskName(B1328&C1328&H1328))	1000000	1000000	\$1,000,000.00

GHG/Climate Change

Name	Cell	Graph	Function	Min	Mean	Max
54ProjectGenerated by construction work	U1331		RiskPert(\$I331,R1331,T1331,RiskName(B1331&C1331&H1331))	110622.7	148726.1	\$191,746.00

MONITORING AND OTHER COSTS

AQUATIC RESOURCES

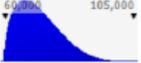
Mainstem spawning (AR-1)

Name	Cell	Graph	Function	Min	Mean	Max
61ProjectTributary confluence monitoring (passage)	U1338		RiskPert(\$I338,R1338,T1338,RiskName(B1338&C1338&H1338))	43979.53	52123.89	\$73,299.22
61ProjectConfluence Area Maintenance (downstream tribs)	U1339		RiskPert(\$I339,R1339,T1339,RiskName(B1339&C1339&H1339))	41230.81	48866.14	\$68,718.02
61ProjectConfluence Area Maintenance (upstream tribs)	U1340		RiskPert(\$I340,R1340,T1340,RiskName(B1340&C1340&H1340))	40721.79	48262.86	\$67,869.65
61ProjectMainstem Spawning Gravel Survey (45.3 miles)	U1341		RiskPert(\$I341,R1341,T1341,RiskName(B1341&C1341&H1341))	14761.65	17495.29	\$24,602.75
61ProjectTributary Spawning Gravel Survey (13.9 miles)	U1342		RiskPert(\$I342,R1342,T1342,RiskName(B1342&C1342&H1342))	20360.89	24131.43	\$33,934.82
61ProjectReporting and Coordination	U1343		RiskPert(\$I343,R1343,T1343,RiskName(B1343&C1343&H1343))	130309.7	154441.1	\$217,182.90
61ProjectSpawning Gravel Augmentation	U1344		RiskPert(\$I344,R1344,T1344,RiskName(B1344&C1344&H1344))	4105774	4866103	\$6,842,957.00
61ProjectLaborer (30 days)	U1345		RiskPert(\$I345,R1345,T1345,RiskName(B1345&C1345&H1345))	8551.58	10135.2	\$14,252.63
61Project20Q Class Excavator (30 days)	U1346		RiskPert(\$I346,R1346,T1346,RiskName(B1346&C1346&H1346))	61082.68	72394.29	\$101,804.50

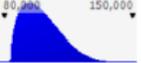
Juvenile outmigration (AR-2)

Name	Cell	Graph	Function	Min	Mean	Max
61ProjectTributary Confluence Monitoring (Passage)	U1348		RiskPert(\$I348,R1348,T1348,RiskName(B1348&C1348&H1348))	43979.53	52123.89	\$73,299.22
61ProjectTributary Confluence Monitoring (WQ)	U1349		RiskPert(\$I349,R1349,T1349,RiskName(B1349&C1349&H1349))	43979.53	52123.89	\$73,299.22
61Project2018 Mainstem Winter Seining Recon	U1350		RiskPert(\$I350,R1350,T1350,RiskName(B1350&C1350&H1350))	42757.88	50676	\$71,263.13

Risk Distribution Model Inputs

Name	Cell	Graph	Function	Min	Mean	Max
61Project2019 Mainstem Winter Seining	U1351		RiskPert(\$I1351,R1351,T1351,RiskName(B1351&C1351&H1351))	61082.68	72394.29	\$101,804.50
61ProjectFish Transport (1 Truck)	U1352		RiskPert(\$I1352,R1352,T1352,RiskName(B1352&C1352&H1352))	18324.8	21718.29	\$30,541.34
61ProjectFish Rescue and Relocation Crew	U1353		RiskPert(\$I1353,R1353,T1353,RiskName(B1353&C1353&H1353))	171031.5	202704	\$285,052.50
61ProjectFish Transport (2 Trucks)	U1354		RiskPert(\$I1354,R1354,T1354,RiskName(B1354&C1354&H1354))	153928.4	182433.6	\$256,547.30
61ProjectReporting and Coordination	U1355		RiskPert(\$I1355,R1355,T1355,RiskName(B1355&C1355&H1355))	130309.7	154441.1	\$217,182.90
61ProjectMiscellaneous Equipment	U1356		RiskPert(\$I1356,R1356,T1356,RiskName(B1356&C1356&H1356))	30541.34	36197.14	\$50,902.23
61ProjectH2O Monitoring Equipment	U1357		RiskPert(\$I1357,R1357,T1357,RiskName(B1357&C1357&H1357))	152706.7	180985.7	\$254,511.20
61ProjectH2O Monitoring Equipment	U1358		RiskPert(\$I1358,R1358,T1358,RiskName(B1358&C1358&H1358))	7940.75	9411.26	\$13,234.58
61ProjectTechnician Equipment	U1359		RiskPert(\$I1359,R1359,T1359,RiskName(B1359&C1359&H1359))	17103.15	20270.4	\$28,505.25

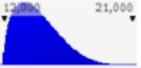
Sucker rescue and relocation plan (AR-6)

Name	Cell	Graph	Function	Min	Mean	Max
61ProjectSucker Recapture Study (Spring and Fall)	U1363		RiskPert(\$I1363,R1363,T1363,RiskName(B1363&C1363&H1363))	85515.75	101352	\$142,526.30
61ProjectSucker Salvage	U1364		RiskPert(\$I1364,R1364,T1364,RiskName(B1364&C1364&H1364))	85515.75	101352	\$142,526.30
61ProjectSucker Transport (1 Truck)	U1365		RiskPert(\$I1365,R1365,T1365,RiskName(B1365&C1365&H1365))	6413.68	7601.4	\$10,689.47
61ProjectReporting and Coordination	U1366		RiskPert(\$I1366,R1366,T1366,RiskName(B1366&C1366&H1366))	97732.29	115830.9	\$162,887.10
61ProjectBoat Electrofisher	U1367		RiskPert(\$I1367,R1367,T1367,RiskName(B1367&C1367&H1367))	10994.88	13030.97	\$18,324.80
61ProjectBoats (2 boats)	U1368		RiskPert(\$I1368,R1368,T1368,RiskName(B1368&C1368&H1368))	20523.78	24324.48	\$34,206.30
61ProjectTechnician Equipment	U1369		RiskPert(\$I1369,R1369,T1369,RiskName(B1369&C1369&H1369))	14659.84	17374.63	\$24,433.07
61ProjectTagging Equipment	U1370		RiskPert(\$I1370,R1370,T1370,RiskName(B1370&C1370&H1370))	12216.54	14478.86	\$20,360.89

Freshwater mussel relocation (AR-7)

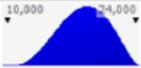
Name	Cell	Graph	Function	Min	Mean	Max
61ProjectFreshwater Mussel Reconnaissance	U1374		RiskPert(\$I1374,R1374,T1374,RiskName(B1374&C1374&H1374))	29930.51	35473.2	\$49,884.19
61ProjectMussel Salvage and Relocation	U1375		RiskPert(\$I1375,R1375,T1375,RiskName(B1375&C1375&H1375))	74826.28	88683	\$124,710.50
61ProjectMussel Transport (1 Truck)	U1376		RiskPert(\$I1376,R1376,T1376,RiskName(B1376&C1376&H1376))	6413.68	7601.4	\$10,689.47
61ProjectReporting and Coordination	U1377		RiskPert(\$I1377,R1377,T1377,RiskName(B1377&C1377&H1377))	97732.29	115830.9	\$162,887.10
61ProjectMiscellaneous Equipment	U1378		RiskPert(\$I1378,R1378,T1378,RiskName(B1378&C1378&H1378))	6108.27	7239.43	\$10,180.45
61ProjectDiving Gear	U1379		RiskPert(\$I1379,R1379,T1379,RiskName(B1379&C1379&H1379))	6108.27	7239.43	\$10,180.45

Risk Distribution Model Inputs

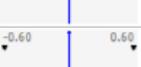
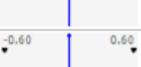
Name	Cell	Graph	Function	Min	Mean	Max
61ProjectTechnician Equipment	U1380		RiskPert(\$I1380,R1380,T1380,RiskName(B1380 &C1380&H1380))	12216.54	14478.86	\$20,360.89

TERRESTRIAL RESOURCES MEASURES

Habitat restoration plan (TER-1)

Name	Cell	Graph	Function	Min	Mean	Max
62ProjectAnnual maintenance and monitoring	U1385		RiskPert(\$I1385,R1385,T1385,RiskName(B1385 &C1385&H1385))	149036.3	245110.5	\$328,051.30
62ProjectAnnual reporting	U1386		RiskPert(\$I1386,R1386,T1386,RiskName(B1386 &C1386&H1386))	21560.41	35218.25	\$46,013.06
62ProjectPost construction regulatory compliance and reporting	U1387		RiskPert(\$I1387,R1387,T1387,RiskName(B1387 &C1387&H1387))	11205.67	18304.11	\$23,914.53

Nesting Bird Surveys (TER-2); Osprey nests

Name	Cell	Graph	Function	Min	Mean	Max
62ProjectRemove all nest platforms near construction, year 1	U1389		RiskPert(\$I1389,R1389,T1389,RiskName(B1389 &C1389&H1389))	0	50908.96	\$73,384.40
62ProjectNest exclusion monitoring, year 1	U1390		RiskPert(\$I1390,R1390,T1390,RiskName(B1390 &C1390&H1390))	0	113862.8	\$203,392.70
62ProjectRemove all nest platforms near construction, year 2	U1391		RiskPert(\$I1391,R1391,T1391,RiskName(B1391 &C1391&H1391))	0	33739.17	\$52,454.66
62ProjectNest exclusion monitoring, year 2	U1392		RiskPert(\$I1392,R1392,T1392,RiskName(B1392 &C1392&H1392))	0	118417.3	\$211,528.40
62ProjectRegulatory compliance and reporting, permitting	U1393		RiskPert(\$I1393,R1393,T1393,RiskName(B1393 &C1393&H1393))	0	9741.32	\$14,173.29
62ProjectRemove nests near construction, year 1	U1394		RiskPert(\$I1394,R1394,T1394,RiskName(B1394 &C1394&H1394))	0	30127.18	\$59,539.92
62ProjectNest exclusion monitoring, year 1	U1395		RiskPert(\$I1395,R1395,T1395,RiskName(B1395 &C1395&H1395))	0	76064.6	\$158,562.60
62ProjectRemove nests near construction, year 2	U1396		RiskPert(\$I1396,R1396,T1396,RiskName(B1396 &C1396&H1396))	0	21967.77	\$30,731.29
62ProjectNest exclusion monitoring, year 2	U1397		RiskPert(\$I1397,R1397,T1397,RiskName(B1397 &C1397&H1397))	0	79107.19	\$164,905.10
62ProjectRegulatory compliance and reporting, permitting	U1398		RiskPert(\$I1398,R1398,T1398,RiskName(B1398 &C1398&H1398))	0	7896.55	\$14,173.29
62ProjectNesting bird surveys prior to vegetation clearing	U1399		RiskPert(\$I1399,R1399,T1399,RiskName(B1399 &C1399&H1399))	0	83024.16	\$234,511.80
62ProjectDaily biological monitoring throughout construction	U1400		RiskPert(\$I1400,R1400,T1400,RiskName(B1400 &C1400&H1400))	0	350110.1	\$596,371.90
62ProjectRegulatory compliance and reporting during construction	U1401		RiskPert(\$I1401,R1401,T1401,RiskName(B1401 &C1401&H1401))	0	57633.33	\$70,432.00
62ProjectSpecial status wildlife and habitat monitoring	U1402		RiskPert(\$I1402,R1402,T1402,RiskName(B1402 &C1402&H1402))	0	68544.35	\$125,783.20
62ProjectConstruction timing and activity restrictions (if nest present)	U1403		RiskPert(\$I1403,R1403,T1403,RiskName(B1403 &C1403&H1403))	0	0	\$0.00
62ProjectSecond year of protocol studies (if nest present)	U1404		RiskPert(\$I1404,R1404,T1404,RiskName(B1404 &C1404&H1404))	0	0	\$0.00
62ProjectMonitoring nest during breeding season (if nest present)	U1405		RiskPert(\$I1405,R1405,T1405,RiskName(B1405 &C1405&H1405))	0	0	\$0.00

Risk Distribution Model Inputs

Wetlands at Reservoirs (TER-5)

Name	Cell	Graph	Function	Min	Mean	Max
62ProjectWetland Project	U1414		RiskPert(S1414,R1414,T1414,RiskName(B1414&C1414&H1414))	0	450935.6	\$887,086.40
62ProjectMonitoring	U1415		RiskPert(S1415,R1415,T1415,RiskName(B1415&C1415&H1415))	0	681594.9	\$93,676.32

Special Status Bats (TER-6)

Name	Cell	Graph	Function	Min	Mean	Max
62ProjectPre-Demolition Exclusion	U1417		RiskPert(S1417,R1417,T1417,RiskName(B1417&C1417&H1417))	43310.77	71501.52	\$77,139.68
62ProjectBiological Monitoring During Demolition	U1420		RiskPert(S1420,R1420,T1420,RiskName(B1420&C1420&H1420))	54925.15	95714.68	\$103,872.60
62ProjectDesign Replacement Roosts	U1422		RiskPert(S1422,R1422,T1422,RiskName(B1422&C1422&H1422))	0	10090.14	\$12,108.17
62ProjectMonitor Replacement Roosts (3 years)	U1424		RiskPert(S1424,R1424,T1424,RiskName(B1424&C1424&H1424))	0	233382	\$280,058.30

WATER QUALITY MONITORING

Field installation & equipment

Name	Cell	Graph	Function	Min	Mean	Max
63ProjectKeno	U1427		RiskPert(S1427,R1427,T1427,RiskName(B1427&C1427&H1427))	39520	62533.46	\$82,336.80
63ProjectCapco	U1429		RiskPert(S1429,R1429,T1429,RiskName(B1429&C1429&H1429))	0	86273.82	\$126,969.00
63ProjectWalker Bridge	U1431		RiskPert(S1431,R1431,T1431,RiskName(B1431&C1431&H1431))	83283.2	91125.7	\$113,681.60
63ProjectSeiad Valley	U1432		RiskPert(S1432,R1432,T1432,RiskName(B1432&C1432&H1432))	45427.2	6976.61	\$91,535.80
63ProjectOrleans	U1433		RiskPert(S1433,R1433,T1433,RiskName(B1433&C1433&H1433))	45760	69361.07	\$90,854.40
63ProjectShasta	U1435		RiskPert(S1435,R1435,T1435,RiskName(B1435&C1435&H1435))	50618.88	76251.72	\$99,803.55
63ProjectScott	U1436		RiskPert(S1436,R1436,T1436,RiskName(B1436&C1436&H1436))	50618.88	76251.72	\$99,803.55
Trinity	U1438		RiskPert(S1438,R1438,T1438,RiskName(H1438))	0	0	\$0.00
63ProjectEquipment replacement	U1439		RiskPert(S1439,R1439,T1439,RiskName(B1439&C1439&H1439))	246764.7	403048.9	\$616,911.60

Operation & Maintenance

Name	Cell	Graph	Function	Min	Mean	Max
63ProjectKeno	U1441		RiskPert(S1441,R1441,T1441,RiskName(B1441&C1441&H1441))	148444	330459.1	\$529,830.80
63ProjectJC Boyle	U1442		RiskPert(S1442,R1442,T1442,RiskName(B1442&C1442&H1442))	206040.8	400204.1	\$484,802.00
63ProjectCapco	U1443		RiskPert(S1443,R1443,T1443,RiskName(B1443&C1443&H1443))	0	246998.4	\$465,449.30
63ProjectIron Gate	U1444		RiskPert(S1444,R1444,T1444,RiskName(B1444&C1444&H1444))	109431.8	124498.5	\$137,979.20

Risk Distribution Model Inputs

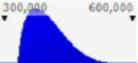
Name	Cell	Graph	Function	Min	Mean	Max
63ProjectWalker Bridge	U1445		RiskPert(S1445,R1445,T1445,RiskName(B1445&C1445&H1445))	153598.3	195411.1	\$319,996.40
63ProjectSeiad Valley	U1446		RiskPert(S1446,R1446,T1446,RiskName(B1446&C1446&H1446))	43632.18	98738.01	\$121,200.50
63ProjectOrleans	U1447		RiskPert(S1447,R1447,T1447,RiskName(B1447&C1447&H1447))	49958	114586.2	\$137,979.20
63ProjectKlamath	U1448		RiskPert(S1448,R1448,T1448,RiskName(B1448&C1448&H1448))	42821.14	113396.7	\$137,979.20
63ProjectShasta	U1449		RiskPert(S1449,R1449,T1449,RiskName(B1449&C1449&H1449))	32012.73	63432.63	\$124,493.90
63ProjectScott	U1450		RiskPert(S1450,R1450,T1450,RiskName(B1450&C1450&H1450))	32012.73	63432.63	\$124,493.90
63ProjectSalmon	U1451		RiskPert(S1451,R1451,T1451,RiskName(B1451&C1451&H1451))	0	8436.5	\$50,619.00
63ProjectTrinity	U1452		RiskPert(S1452,R1452,T1452,RiskName(B1452&C1452&H1452))	0	8436.5	\$50,619.00

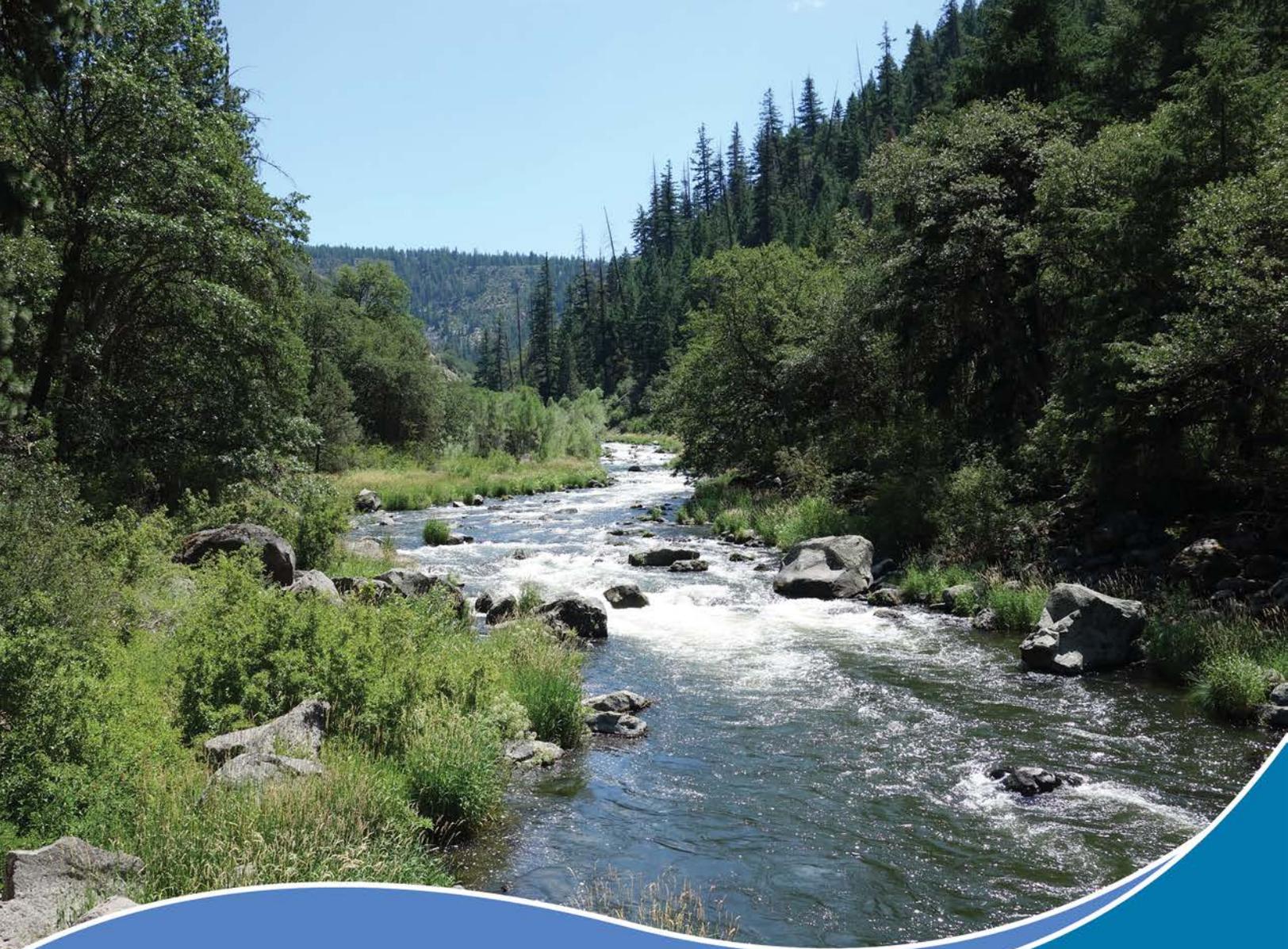
Sediment, Sampling & Recording

Name	Cell	Graph	Function	Min	Mean	Max
63ProjectKeno	U1454		RiskPert(S1454,R1454,T1454,RiskName(B1454&C1454&H1454))	187552	260547.5	\$397,373.10
63ProjectJC Boyle	U1455		RiskPert(S1455,R1455,T1455,RiskName(B1455&C1455&H1455))	206040.8	377337.6	\$454,501.90
63ProjectCapco	U1456		RiskPert(S1456,R1456,T1456,RiskName(B1456&C1456&H1456))	0	231561	\$436,358.70
63ProjectIron Gate	U1457		RiskPert(S1457,R1457,T1457,RiskName(B1457&C1457&H1457))	656590.9	746991.1	\$827,875.40
63ProjectWalker Bridge	U1458		RiskPert(S1458,R1458,T1458,RiskName(B1458&C1458&H1458))	335123.5	426351.6	\$698,173.90
63ProjectSeiad Valley	U1459		RiskPert(S1459,R1459,T1459,RiskName(B1459&C1459&H1459))	261793.1	592428.1	\$727,203.00
63ProjectOrleans	U1460		RiskPert(S1460,R1460,T1460,RiskName(B1460&C1460&H1460))	299748	687517.3	\$827,875.40
63ProjectKlamath	U1461		RiskPert(S1461,R1461,T1461,RiskName(B1461&C1461&H1461))	342569.2	482134.3	\$551,916.90
63ProjectShasta	U1462		RiskPert(S1462,R1462,T1462,RiskName(B1462&C1462&H1462))	117380	275190.9	\$547,773.40
63ProjectScott	U1463		RiskPert(S1463,R1463,T1463,RiskName(B1463&C1463&H1463))	117380	275190.9	\$547,773.40
63ProjectSalmon	U1464		RiskPert(S1464,R1464,T1464,RiskName(B1464&C1464&H1464))	0	37120.5	\$222,723.00
63ProjectTrinity	U1465		RiskPert(S1465,R1465,T1465,RiskName(B1465&C1465&H1465))	0	37120.5	\$222,723.00
63ProjectData Management	U1466		RiskPert(S1466,R1466,T1466,RiskName(B1466&C1466&H1466))	360111.8	561594.1	\$738,167.60
63ProjectODCs	U1467		RiskPert(S1467,R1467,T1467,RiskName(B1467&C1467&H1467))	133840	221553.7	\$432,943.30
63ProjectEstuary and river sampling for toxins	U1468		RiskPert(S1468,R1468,T1468,RiskName(B1468&C1468&H1468))	222896.1	243885.5	\$304,253.20
63ProjectTSS and NTU laboratory relationship study by USGS	U1469		RiskPert(S1469,R1469,T1469,RiskName(B1469&C1469&H1469))	167172.1	182914.1	\$228,189.90

Risk Distribution Model Inputs

Other

Name	Cell	Graph	Function	Min	Mean	Max
63ProjectAnnual aircraft surveys + 1 after 5 year gap	U1471		RiskPert(S1471,R1471,T1471,RiskName(B1471&C1471&H1471))	341123.5	404294.5	\$568,539.10
63ProjectAnnual field survey; 2 wk field survey + study.	U1472		RiskPert(S1472,R1472,T1472,RiskName(B1472&C1472&H1472))	142134.8	168456	\$236,891.30
63ProjectDrone LiDAR in site specific locations, analysis & reporting	U1473		RiskPert(S1473,R1473,T1473,RiskName(B1473&C1473&H1473))	86807.23	102882.6	\$144,678.70
63ProjectSurface comparison and analysis of sediment erosion	U1474		RiskPert(S1474,R1474,T1474,RiskName(B1474&C1474&H1474))	86807.23	102882.6	\$144,678.70



Definite Plan for the Lower Klamath Project

Appendix Q – Draft Recreation Plan

June 2018

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Prepared for:

Klamath River Renewal Corporation

Prepared by:

KRRC Technical Representative:

AECOM Technical Services, Inc.
300 Lakeside Drive, Suite 400
Oakland, California 94612

CDM Smith
1755 Creekside Oaks Drive, Suite 200
Sacramento, California 95833

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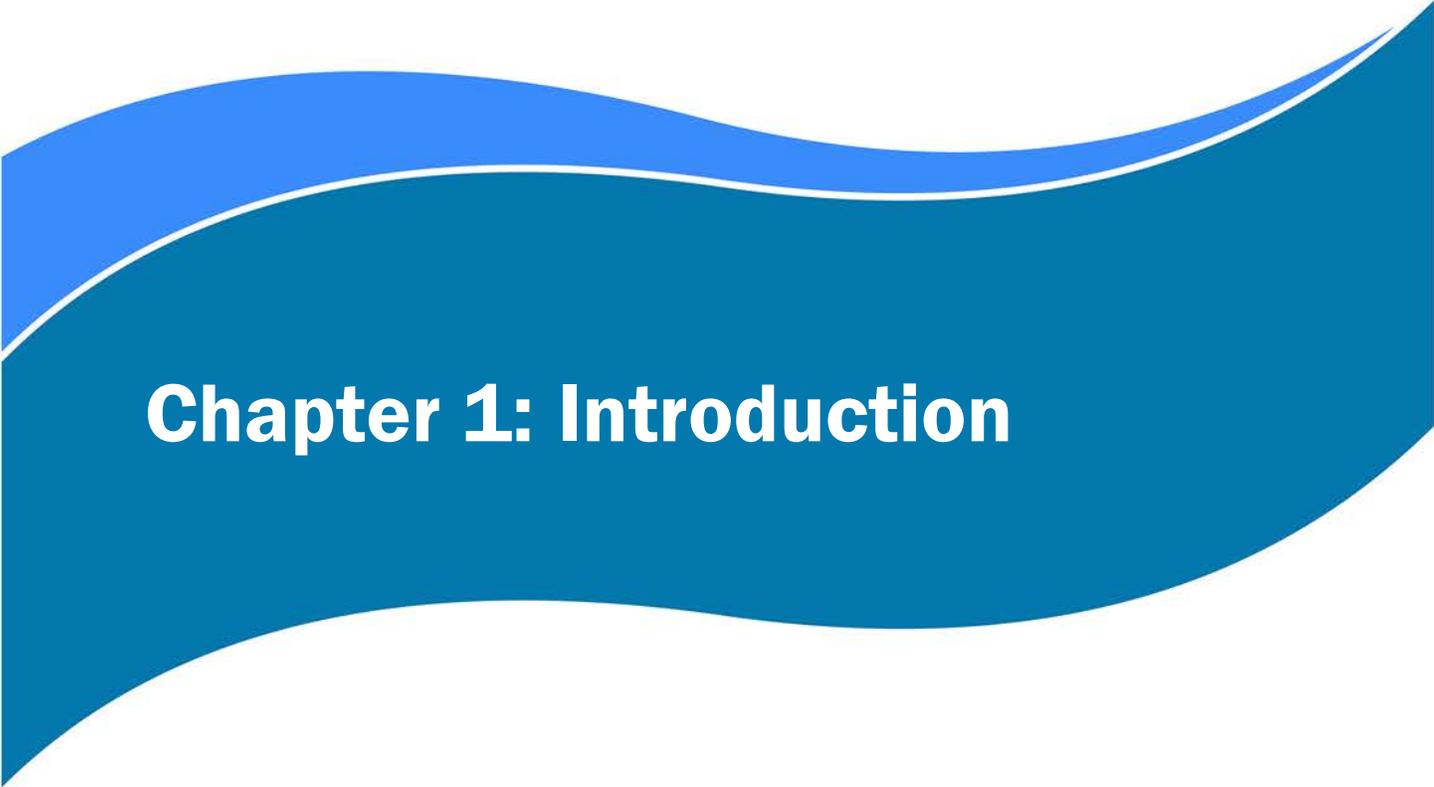
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Acronyms

BLM Bureau of Land Management
CDFW California Fish and Wildlife



Chapter 1: Introduction

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1. INTRODUCTION

KRRC developed this Draft Recreation Plan to provide information on the changes to existing recreation sites that will occur as part of the decommissioning and removal of the Lower Klamath Project consistent with the terms of the KHSA (the Project) and to provide a programmatic level of detail on proposed recreation opportunities and facilities that are consistent with pre-hydropower development conditions. KRRC developed this Draft Recreation Plan with input from a variety of stakeholders including tribes, state and federal agencies, county agencies and chambers of commerce, local residents, and public interest groups.

1.1 Existing Recreation Sites

Recreation sites are located throughout the project area from J.C. Boyle Reservoir to the Iron Gate fish hatchery. The existing recreation facilities and their planned disposition as part of the Project is presented in Tables 1-1 and 1-2.

Table 1-1 Existing PacifiCorp Recreation Facilities in the Project Area and Proposed Actions

Site	Property Type ¹	Facilities	Proposed Action	Estimated Annual Use ²
J.C. Boyle Reservoir Recreation				40 – 65%
Pioneer Park (East and West)	Parcel A	Picnic areas, boat launches, shoreline fishing, interpretive signs, restrooms	Remove	
Stateline Take-out	Parcel A	Boat put-in/take-out, shoreline fishing access, restrooms. Upstream of Copco Lake	Unknown	
Fishing Access Sites 1-6	Parcel A	Shoreline fishing access, parking. Upstream of Copco Lake	Unknown	
Copco Lake Recreation				5 – 15%
Mallard Cove	Parcel B	Day use/picnic area, restrooms, boat launch with boarding dock, interpretive signs	Remove	
Copco Cove	Parcel B	Picnic area, restrooms, boat launch with boarding dock, interpretive signs	Remove	
Iron Gate Reservoir Recreation				5 – 25%

Site	Property Type ¹	Facilities	Proposed Action	Estimated Annual Use ²
Fall Creek Day Use Area and Fall Creek Trail	Parcel B	Picnic areas, boat launch, restroom, hiking trail	Retain / modify	
Overlook Point	Parcel B	Picnic area, restrooms	Remove	
Wanaka Springs Day Use Area	Parcel B	Day use/ camping areas, fishing dock, restrooms, interpretive signs	Remove	
Jenny Creek Day Use Area and Campground	Parcel B	Campsites/day use areas (6), hiking trails, shoreline fishing, restrooms	Retain / modify	
Camp Creek Day Use Area and Campground (including Dutch or Scotch Creek)	Parcel B	Campsites (22), boat launch, boarding and fishing docks (3), swimming area, a RV dump station, interpretive display, restrooms	Remove	
Juniper Point Day Use Area and Campground	Parcel B	Campsites (9), a fishing dock, interpretive signs, restroom	Remove	
Mirror Cove Day Use Area and Campground	Parcel B	Campsites (10), a boat launch, fishing dock, interpretive signs, restroom	Remove	
Long Gulch Day Use Area and Campground	Parcel B	Picnic sites, boat launch, restrooms	Remove	
Iron Gate Fish Hatchery Day Use Area	Parcel B	Picnic areas, picnic shelter, visitor center, interpretive kiosks, restrooms, trail to river, fishing dock, boat launch (3)	Retain / Modify	

Notes

1. Parcel A lands will remain with PacifiCorp because these parcels are not directly related to the hydroelectric facilities to be transferred to KRRC (J.C. Boyle, Copco 1&2, and Iron Gate). Parcel B lands are directly related to these four hydroelectric facilities. According to the 2016 Amended KHSA, Parcel B lands are to be transferred to through KRRC to the states or other entities they designate and are intended for the public interest. There are over 8,000 acres of Parcel B land.
2. Data from 2015 PacifiCorp Licensed Hydropower Development Recreation Reports for J.C. Boyle, Copco 1, Copco 2, and Iron Gate.

Table 1-2 Other Existing Recreation Facilities in the Project Area and Proposed Actions

Site	Ownership	Facilities	Reservoir	Proposed Action
Topsy Campground	BLM	Campsites (15), an RV dump, day use areas (2), a boat launch with boarding dock, an accessible fishing pier, restrooms	J.C. Boyle	Modify / Retain
Sportsman’s Park	Klamath County	Shooting ranges, dirt racetracks, archery courses, a model aircraft flying field, OHV area, restrooms	J.C. Boyle	Unchanged
Spring Island Boater Access	BLM	Boat launch, shoreline fishing access, interpretive signs, restrooms. Located downstream of J.C. Boyle	J.C. Boyle	Unknown
Klamath River Campground	BLM	Campsites (3), shoreline fishing and boating access, restrooms. Located downstream of J.C. Boyle	J.C. Boyle	Unknown
Turtle Camp	BLM	Primitive camping site downstream of J.C. Boyle	J.C. Boyle	Unknown
Dispersed Site	BLM	Primitive camping site downstream of J.C. Boyle	J.C. Boyle	Unknown

As shown in Tables 1-1 and 1-2, the Project will result in the removal of up to 9 recreation sites that are FERC license requirements along the Klamath River between J.C. Boyle Reservoir and Iron Gate Dam. This will include three separate recreation sites with campgrounds that provide a total of 41 campsites, 5 boat launches, 9 fishing docs, 9 recreation sites with restrooms, and 9 sites that support fishing access.

1.2 Existing Recreation Activities

The existing recreation sites described above primarily provide fishing, boating, and day use access to the three reservoirs. Some sites provide camping facilities for overnight use. In addition, whitewater rafting and associated put-ins, take-outs, and camping occurs in the Hell’s Corner Reach between J.C. Boyle powerhouse and Copco Lake. Release flows from J.C. Boyle powerhouse supports whitewater rafting, which operates on a regular schedule and provides consistent flows during daylight hours.

The Project includes permanent removal of recreation sites associated with the reservoirs and the reduction in the number of days with acceptable flows associated with the FERC licensed hydropower facilities for whitewater boating in the Hell’s Corner Reach, due to the removal of the J.C. Boyle development. Specifically, at the four developments, KRRC will completely remove a number of recreational facilities and the former recreation areas, parking areas, and access trails will be regraded and revegetated. In the Hell’s Corner

Reach of the Klamath River, there will be a loss of flows acceptable for whitewater boating in the only Class IV+ rapids in the region that occur during the late summer.

1.3 Recreation Objectives

This Draft Recreation Plan seeks to identify recreation opportunities that will offset the removal of reservoir recreation sites and the reduction in whitewater boating days associated with the Project. The goal of the plan is to provide new riverine opportunities and facilities that are consistent with pre-hydropower development conditions. The recreation opportunities identified in this plan will need to be implementable by KRRC, offset the removal of reservoir recreation facilities and river access, and represent durable solutions – with parties responsible for maintenance and upkeep identified.

A decorative banner with a wavy, ribbon-like shape. It features a light blue outer layer and a darker blue inner layer. The text is centered within the darker blue section.

Chapter 2: Recreation Option Identification

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2. RECREATION OPPORTUNITY IDENTIFICATION

2.1 Recreation Opportunity Identification Process

KRRC has implemented a comprehensive recreation opportunity survey to support development of a Recreation Plan that will be included in the Project. KRRC has considered opportunities identified in the 2011 *Detailed Plan for Dam Removal – Klamath River Dams* (Detailed Plan) by Reclamation. In addition, KRRC has started an on-going stakeholder outreach process seeking input from potentially impacted recreation users, operators, managers and administrators, including Tribes, state and federal agencies, county agencies and chambers of commerce, local residents, recreation businesses, and public interest groups. This stakeholder outreach process will continue through the development of the Final Recreation Plan scheduled for completion in June of 2019.

The recreation opportunities identified in this plan are all presented at a programmatic or planning level of detail with some opportunities including more detail than others depending on their level development as a part of earlier studies or review by stakeholders. The descriptions presented in Sections 2.2 and 2.3 provide at a minimum, sufficient detail to give reviewers an indication of the specific type of recreation condition they will offset or improve, their general location, the source that identified the opportunity, and in the case of new facilities, their future potential owner/operator if known and in the cases of existing facilities their current owner/operator.

2.1.1 Detailed Plan

The 2011 Detailed Plan was developed by staff from the Bureau of Reclamation's Technical Services Center consistent with the requirements outlined in the 2010 KHSA to inform the Secretarial Determination process with details on the proposed physical methods for removal of the four lower PacifiCorp dams, including plans for waste disposal, reservoir drawdown, reservoir restoration, existing recreation facility modification or removal, and recreation impact mitigation.

The Detailed Plan identified multiple new recreation facilities and river access points for camping and hiking, and river access for boating and fishing along the river channel between J.C. Boyle Reservoir and Iron Gate Dam to replace the function of the existing facilities to be removed or modified due to reservoir drawdown; these new facilities are detailed in Section 2.2.

2.1.2 Stakeholder Outreach

KRRC initiated a stakeholder outreach process to seek input on the recreation opportunities previously identified during development of the 2011 Detailed Plan as well as support with the identification of new opportunities that had not previously been identified. This ongoing outreach effort has included coordination with California and Oregon state officials, Siskiyou County, Klamath County, the Bureau of Land Management (BLM), PacifiCorp, economic development organizations including chambers of commerce, tourism organizations, recreation businesses, local communities (e.g., Copco, Hornbrook), and the general public. Section 2.3 presents recreation opportunities identified during this outreach effort. Table 2-1 identifies the stakeholders that participated in this outreach effort.

KRRC will continue the stakeholder outreach process through the development of the Final Recreation Plan. KRRC will also work with regulators to determine any requirements for the final plan.

Table 2-1 Stakeholder Outreach Participants

Name	Name	Name
All-Outdoors	Hornbrook Residents ¹	Oregon Parks and Recreation Department
American Whitewater	Indigo Creek Outfitters ²	PacifiCorp
Bruce Kinseth (R-Ranch)	Jack Trout ³	Quartz Valley Indian Tribe
Bureau of Land Management	Jeff Stone	River Dancers
California Department of Fish and Wildlife	John Jacques (Klamathon Lodge)	Rogue Riverkeeper
California Natural Resources Agency	K. Bermel	Shasta Indian Nation
California Trout	Karuk Tribe	Shasta Nation
Carl and Linda Ebert (Copco Village Residents)	Klamath County Chamber of Commerce	Siskiyou Economic Development Council
Copco Village Residents ¹	Klamath County Economic Development	SWCA ⁴
Discover Klamath	Momentum River Expeditions ²	Trout Unlimited
Discover Siskiyou	Noah's Rafting Adventures ²	
Fly Fishers International - Oregon Council	Oregon Fish and Wildlife	

Notes

1. Participants at public meetings held by KRRC in Copco Village and Hornbrook in June 2018 to seek input on recreation opportunities to be considered in the Recreation Plan
2. Member of the Upper Klamath Outfitters Association
3. Unaffiliated representatives from local (Klamath River Basin) recreational fishing industry
4. Consultant for Siskiyou County

The outreach effort also focused on the identification of evaluation criteria for these recreation opportunities to refine the list of opportunities identified for potential implementation by KRRC. The results of this feedback are described in greater detail in Section 3 of this plan.

2.2 Recreation Opportunities Identified in the Detailed Plan

This section presents descriptions of recreation features identified in the 2011 Detailed Plan. The Detailed Plan identified a list of potential recreation facilities and access areas that could be implemented under Mitigation Measure REC-1. These features were assumed to support cost estimates developed for the Detailed Plan. The Detailed Plan indicated that these opportunities were not assumed to be the only opportunities that would be considered. KRRC is presenting these opportunities from the Detailed Plan, along with stakeholder-suggested opportunities (see Section 2.3), as opportunities to consider in the development of the Final Recreation Plan. Like all opportunities presented in this draft, those described below will be subject to screening through the process described in Section 3.

Topsy Campground

Topsy Campground is an existing facility located on the southeastern shoreline of J.C. Boyle reservoir (shown on Figure 2-1 as Site 1). It is owned and operated by BLM. The Detailed Plan proposed modifications to accommodate river-based recreation as opposed to its current reservoir-based recreation use. This would include removal and replacement of the current boat ramp to support river access. In addition, the Detailed Plan proposed revegetation of the area around the existing campground. These modifications were identified to provide continued recreational access to the area for camping, hiking, boating, and fishing. BLM would continue to be the owner and operator of this modified facility. In addition to the proposed changes identified in the Detailed Plan, BLM suggested during initial stakeholder outreach completed during the development of this draft Recreation Plan that new camping areas and restrooms be developed next to the new water's edge. Development of additional campsites and parking would provide additional opportunities for camping, fishing, and hiking in this reach. The Detailed Plan proposed completion of these modifications for the year following dam removal and reservoir/river restoration.

Fall Creek Day Use Area

Fall Creek Day Use Area is an existing facility located on the far northeast shore of Iron Gate Reservoir (shown on Figure 2-1 as Site 14). The facility is currently owned and operated by PacifiCorp on Parcel B land. The Detailed Plan proposed that the site be retained and modified to support day use activities and hiking at Fall Creek. Upgrades identified in the plan included the reconstruction of the trail leading to the waterfall and other upgrades to support continued and improved recreational access in the area. The future owner and operator of the Fall Creek Facility is unknown. The Detailed Plan proposed completion of these modifications for the year following dam removal and reservoir/river restoration.

In addition to PacifiCorp's continued operations at Fall Creek, the Project includes development in close proximity to Fall Creek Day Use Area, including the Fall Creek Hatchery and changes to the Yreka water supply line. The area may become unsupportive of additional recreation opportunities.

Jenny Creek Day Use Area and Campground

The existing recreation site at Jenny Creek is located on the northern shoreline of Iron Gate Reservoir, between Copco Road and Jenny Creek (shown on Figure 2-1 as Site 15). This facility includes six campsites/day use sites and several user-defined trails. The Jenny Creek facilities are currently owned and operated by PacifiCorp on Parcel B land. The Detailed Plan proposed the site be expanded and upgraded to accommodate additional campsites and improved amenities. These modifications and upgrades to the Jenny Creek Day Use Area and Campground were proposed to increase recreation activities such as camping, hiking, and fishing at this location. The future owner and operator of the Jenny Creek Facility is unknown. The Detailed Plan proposed completion of these modifications for the year following dam removal and reservoir/river restoration.

Iron Gate Hatchery Day Use Area

The Iron Gate Hatchery Day Use Area is located just downstream of Iron Gate Dam, adjacent to Iron Gate Fish Hatchery (shown on Figure 2-1 as Site 16). The day use site is owned by PacifiCorp on Parcel B land and operated by California Fish and Wildlife (CDFW). The facility currently includes a covered picnic area, a visitor center/interpretive kiosk, and an ADA-accessible to the river shoreline. There is also a boat launch on the river shoreline across from the hatchery. The Detail Plan proposed that the site be retained and modified to provide additional facilities and a reconstructed boat ramp to support continued and improved recreational access in the area. The KHSR includes funding by PacifiCorp for the continued operation of the Iron Gate Fish Hatchery by CDFW for up to 8 years following facility removal, this included the transfer of ownership of the facility to CDFW. Future ownership and plans for operation of the recreation facilities at the Iron Gate Hatchery Day Use Area following facilities removal are however unknown. The Detailed Plan proposed completion of these modifications for the year following dam removal and reservoir/river restoration.

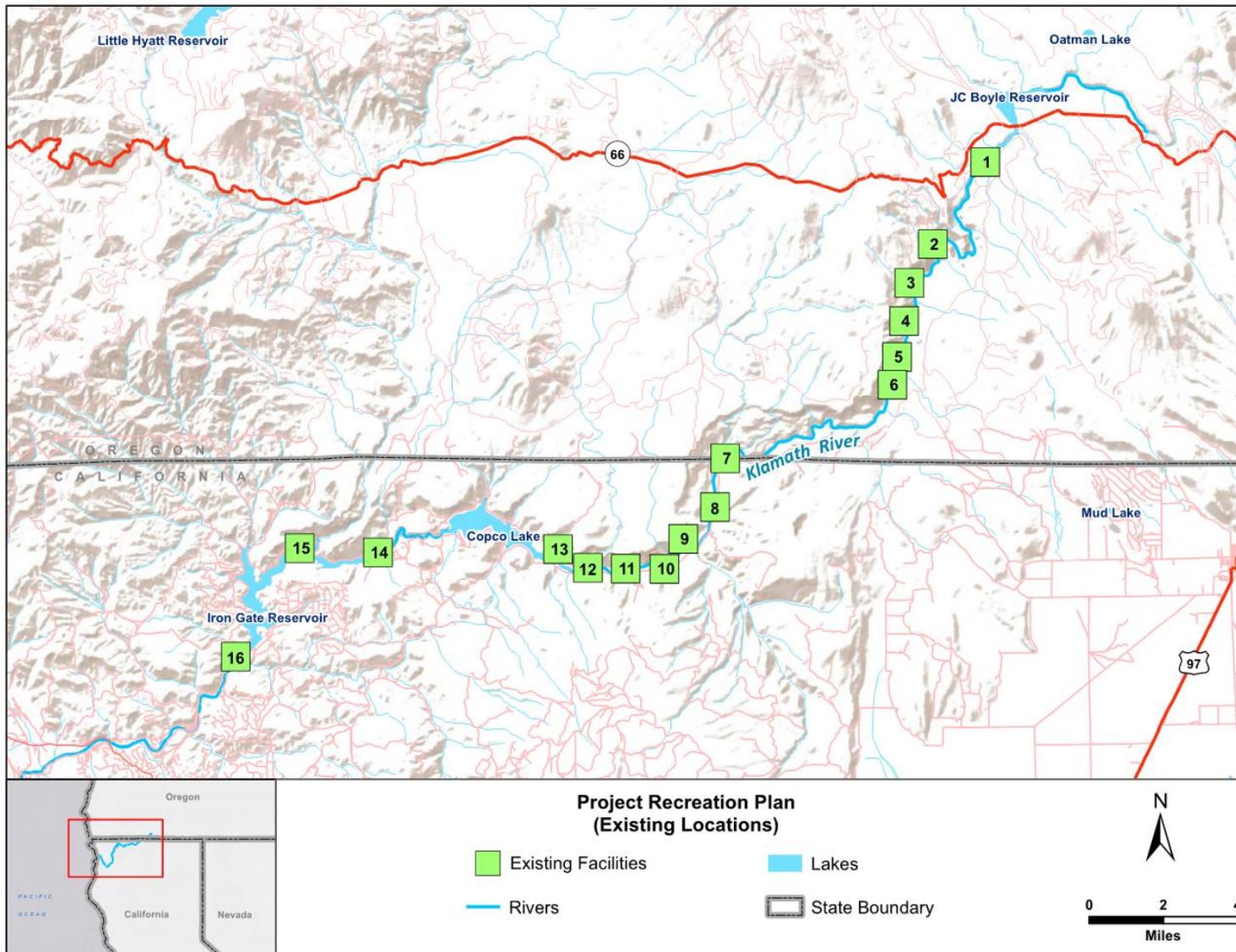


Figure 2-1 Existing Recreation Facility Locations That Could Be Retained or Modified

New Campgrounds

Two small to medium campgrounds were identified for development in the Detailed Plan. These campgrounds would accommodate a total of 20 campsites and include parking, day use facilities and a boat launch. If implemented, these newly developed campgrounds would provide river access, parking, day use amenities, essentially offsetting the loss of campgrounds at other locations post-dam removal. The specific location of these facilities was not identified in the Detailed Plan. The future owner and operator of these facilities is also unknown. The Detailed Plan proposed completion of these developments for the year following dam removal and reservoir/river restoration.

New Routes and Roads

The Detailed Plan identified as a potential recreation opportunity, the development of two potential routes/roads, with one route on each side of the river to provide public recreation access to existing and newly developed facilities on the river. These routes would be developed in coordination with the appropriate federal, state, and local agencies along with any private landowners because of their need to cross land held by multiple owners. These new roadways were identified in the Detailed Plan as permanent features. These roads were proposed in the Detailed Plan given their potential to improve access for recreational uses as well as improve law enforcement's ability to police the area. The specific configuration/layout of these proposed roadways was not provided in the Detailed Plan and no proposed owner/operator for the roadways was identified. The Detailed Plan proposed development of these new roadways would be incorporated into the overall reservoir/river restoration design as appropriate to complement its success.

Non-motorized Trail

The Detailed Plan also identified as a potential recreation opportunity, the development of a new non-motorized trail to provide fishing, biking, and hiking access along the river bank from the current J.C. Boyle dam site to Iron Gate Fish Hatchery. This new trail would be developed in coordination with the appropriate federal, state, and local agencies along with any private landowners because of its need to cross land held by multiple owners. This new trail was identified in the Detailed Plan as a permanent feature. The specific configuration/layout of this new trail was not provided in the Detailed Plan and no proposed owner/operator for the trail was identified. This trail would be developed in a way to be connected to any existing and developed recreation facilities developed as part of the Final Recreation Plan or in coordination with other regional efforts. The Detailed Plan proposed completion of this new trail for the year following dam removal and reservoir/river restoration.

2.3 Recreation Opportunities Identified through Stakeholder Outreach

This section presents descriptions of the recreation features identified during the initial stakeholder outreach effort described above in Section 2.1.2. The recreation opportunities identified during this process varied in levels of detail depending on what was provided by the stakeholders at the outreach meetings they participated in and in some cases in follow up submittals provided to KRRC in writing. In some cases, stakeholders identified opportunities that had already been evaluated as a part of the Detailed Plan effort described above in Section 2.2, those opportunities are not described again in this section. The opportunities identified ranged from the establishment of additional river access points, the funding of tourism campaigns, promoting regional recreation, and the development of commercial recreation establishments on the river. Suggestions were made the retention and/or improvement of existing facilities as well as the development of new facilities. KRRC is presenting these opportunities, along with those included in the Detailed Plan (see Section 2.2), as opportunities to consider in the development of the Final Recreation Plan. Like all opportunities presented in this draft, those described below would be subject to screening through the evaluation process described in Section 3.

2.3.1 Existing Facilities

Stakeholders suggested several potential recreation opportunities and features that could be developed at existing recreation sites in the project area that were not proposed for modification in the Detailed Plan.

Spring Island Boater Access

Spring Island Boater Access is located downstream of J.C. Boyle (shown on Figure 2-1 as Site 2). This site is owned and operated by BLM. The facility currently provides river access for boating. Stakeholders requested that the site be retained and enhanced to improve the site's conditions, if possible. Suggested enhancements could include an improved boat launch, access road, day use area, and/or restrooms and additional parking. Stakeholders indicated that Spring Island Boater Access is important to boaters as a location that would break up the whitewater rafting run upstream and downstream of the point where a clear shift in difficulty would occur. Retention of this site would allow the continued use of an established boater access site. BLM would continue to be the owner and operator of the access. If included in the Final Recreation Plan, completion of any enhancements to the site would be scheduled for the year following facility removal and reservoir/river restoration.

Campground South of J.C. Boyle Powerhouse

Stakeholders requested a campground be developed south of J.C. Boyle Powerhouse or enhancements be made to the campgrounds at one of the three existing river-side campgrounds operated by BLM (BLM Dispersed Site 1, Klamath River Campground, and Turtle Camp shown on Figure 2-1 as Sites 3, 4, 5). Klamath River Campground and Turtle Camp currently allow campfires and access for kayaks and small rafts. These existing sites could be enhanced to include defined campsites and improved boat launches,

access roads, day use facilities, and/or restrooms. Enhancements to these sites or the development of a new site that would provide improved river access and river-side camping would provide additional opportunities for camping, boating, and hiking in this reach. BLM would continue to be the owner and operator of this modified facility. If included in the Final Recreation Plan, completion of these modifications would be scheduled for the year following facility removal and reservoir/river restoration.

Klamath River Campground and Turtle Camp

Klamath River Campground and Turtle Camp, shown on Figure 2-1 as Sites 4 and 5, are located south of J.C. Boyle Powerhouse. Klamath River Campground and Turtle Camp currently allow campfires and access for kayaks and small rafts. The sites are owned and operated by BLM. BLM suggested KRRC increase the number of camping sites and provide additional day use parking to accommodate additional users. Improvements to Copco Big Bend Road would be necessary. Development of additional campsites and parking would provide additional opportunities for camping, fishing, and hiking in this reach. BLM would continue to be the owner and operator of this modified facility. If included in the Final Recreation Plan, completion of these modifications would be scheduled for the year following facility removal and reservoir/river restoration.

Frain Ranch Campground

Frain Ranch is an existing dispersed recreation area and undeveloped campground in Oregon located between J.C. Boyle Reservoir and Copco (shown on Figure 2-1 as Site 6). Ownership of the land is divided between PacifiCorp (Parcel A) and BLM and is operated by the BLM. This site is mainly used by boaters, campers, and ATV users. Stakeholders requested that the site be enhanced to provide a developed campground on lands owned by the BLM with defined campsites, restrooms, picnic tables, and fire rings. Development at this site would require improvements to Topsy Grade Road, the main access road for the site. These enhancements were identified to provide additional opportunities for camping, boating, and hiking. BLM would continue to be the owner and operator of this modified facility. The entity responsible for long-term maintenance of the improved road has not yet been identified. If included in the Final Recreation Plan, completion of these modifications would be scheduled for the year following facility removal and reservoir/river restoration.

Stateline Boater Takeout

Stateline Boater Takeout is located between J.C. Boyle Reservoir and Copco Lake (shown on Figure 2-1 as Site 7), just below the state line. Ownership of the lands at this site is divided between BLM and PacifiCorp (Parcel A) and the site is currently operated by the BLM. Stakeholders requested that the site be retained and modified to allow future boating access and shoreline fishing. The portion of this access point owned by PacifiCorp is on Parcel A property, which would generally be retained by PacifiCorp after license surrender; however, the future ownership of this property is unknown. To improve river access following facility removal, stakeholders suggested the portion of the access point on BLM property could be upgraded to support additional use. Retention of and enhancements at this facility would allow the continued use of a recreation facility that offers river access for boating, fishing, and day use. BLM would continue to be the owner and

operator of the modified facility. Completion of these modifications would be scheduled for the year following facility removal and reservoir/river restoration.

PacifiCorp Fishing Access Sites 1 through 6

PacifiCorp Fishing Access Sites 1-6 are located just upstream of Copco Lake (shown on Figure 2-1 as Sites 8 through 13). These sites are owned and operated by PacifiCorp (Parcel A), but they are not part of the FERC license for the hydroelectric developments. The facilities currently provide river access for fishing (and rafting at sites #1 and #6) along with some amenities for users. Stakeholders requested that access to these sites be maintained and if possible improved. PacifiCorp will retain ownership of these sites following license surrender for the hydroelectric developments and public access will no longer be available. It is unknown whether these sites would be sold to another entity or whether public access agreements could be granted in the future by PacifiCorp. If it is possible to maintain or enhance these sites, they could continue to provide river access for recreational fishing and boating uses. If included in the Final Recreation Plan, completion of any modifications at these sites would be scheduled for the year following facility removal and reservoir/river restoration.

R-Ranch

R-Ranch is located downstream of Iron Gate Reservoir in Hornbrook, California. The ranch currently supports camping, dirt bike and ATV riding, fishing, hiking, hunting, swimming, and horseback riding. Stakeholders suggested the ranch be expanded or enhanced to provide additional recreation opportunities. This expansion could include the development of a waterpark or similar attraction. R-Ranch is privately owned and operated. Future ownership and operations would remain unchanged. An expansion of R-Ranch would provide additional recreation, potentially reducing the impact from the loss of reservoir recreation. If included in the Final Recreation Plan, completion of any enhancements at R-Ranch would be scheduled for the year following facility removal and reservoir/river restoration.

2.3.2 New Facilities and Plans

This section presents descriptions of recreation opportunities stakeholders identified during outreach that were not directly linked to the retention of an existing facility.

Fishing Access Upstream of J.C. Boyle Powerhouse

Fishing access could be provided along the river approximately one mile upstream of the J.C. Boyle Powerhouse. The specific location of this access site was not however identified by the stakeholders that suggested it as a recreation opportunity for consideration. Currently, there is no trail next to river in this area, but there is the power canal access road that runs parallel to the river that could be connected to this new site. If the power canal access road would be closed to vehicles after dam removal, it could be converted to a trail and used for river access in this area. This new feature would provide river access for recreation uses such as fishing and walking. The future owner and operator of this facility is unknown. If included in the Final

Recreation Plan, completion of the development of these facilities would be scheduled for the year following facility removal/ river restoration.

Day Use and River Access at J.C. Boyle Powerhouse

Stakeholders recommended consideration of day use site to provide river access at the J.C. Boyle Powerhouse. The land directly surrounding J.C. Boyle Powerhouse and substation has been identified by stakeholders as a large and flat area that could serve as an effective location for a day use facility and/or campground. This land is currently owned by BLM, and BLM would continue to own the land following facilities removal and could potentially operate any new recreational facilities developed on this land. Development of a recreation facility at this site could increase recreational use and provide additional river access for hiking, fishing, and boating. If included in the Final Recreation Plan, completion of the development of these facilities would be scheduled for the year following facility removal/ river restoration.

New River Access Locations

Multiple whitewater rafting access locations were suggested by stakeholders between Keno Dam and the Iron Gate Hatchery. These locations were chosen based on known or expected changes in river conditions (rafting difficulty levels) and are shown in Figure 2-2. The site numbers identified for each access point in Figure 2-2 correspond to the site numbers listed for the descriptions of each access point presented in Table 2-2. Some of the locations identified were recommended for development prior to dam deconstruction to allow the continued use of existing river runs and to reduce the loss of boating access during dam decommissioning. No boating access will be allowed in the reservoirs themselves during drawdown and dam removal because conditions will constantly be changing, and it will be too risky to allow boating in the former reservoir areas due to the operation of the diversion facilities (e.g., large gates and tunnels at the dams) as well as the potential for mass movements of reservoir sediment into the river. Non-reservoir portions of the Klamath River system will remain accessible to boating during drawdown and dam removal. If included in the Final Recreation Plan, development of these pre-construction access sites needed during drawdown and dam decommissioning would need to be located outside of the existing reservoir footprints and scheduled for completion prior to the initiation of reservoir drawdown. The future owner and operator of these facilities is unknown. If included in the Final Recreation Plan, the remaining access sites would be completed the year following facility removal and reservoir/river restoration.

Table 2-2 Stakeholder Suggested Whitewater Rafting Access Points

Site ID	Location	Proposed Recreation Development
17	Keno Dam	Proposed access on river left. There is no existing facility for the run from Keno to J.C. Boyle. This would provide an additional river access point.
18	Highway 66 Bridge Crossing	Proposed access on river left. The current reservoir boat ramp could become a good location for rafting access point. This point could serve as a take-out for the Keno run and a put-in for the reach currently under J.C. Boyle Reservoir that would become available after dam removal.

Site ID	Location	Proposed Recreation Development
1*	Below J.C. Boyle Dam	Proposed on river left. Would serve as a put-in for the Boyle Bypass run during dam removal and future take-out for the extended Keno run post dam removal. Depending on river conditions post drawdown, this site might be exchangeable with access at Topsy Campground (if Topsy Campground is retained).
2	Spring Island Boater Access	Existing boater access site suggested for retention. This site is important to boaters as a location that breaks up the runs at a point where the difficulty changes. If this point is retained there would not be a need for a point at the J.C. Boyle Powerhouse.
19	Above Caldera	Proposed on river right, opposite to Frain Ranch. This would serve as an important location for rafters as the run changes from a class 3 to a class 4. The location opposite to the existing access site at Frain Ranch would provide boaters the opportunity to run the J.C. Boyle run and have shuttle access on the south side of the river. Currently boaters can only be shuttled on the north side, which restricts accessibility and reduces potential recreation use. This location would serve as a take-out for the J.C. Boyle Bypass run or put-in for Hell's Corner gorge. There is an existing road on the west side of the river that goes down to Caldera that could serve as an access road for this point.
7	Stateline Boater Takeout	Existing boater access site suggested for retention.
8	PacifiCorp Fishing Access Site 6	Existing boater access site suggested for retention. As noted above, this site is located on PacifiCorp Parcel A lands. Ability to obtain for future public access is uncertain.
13	PacifiCorp Fishing Access Site 1	Existing boater access site suggested for retention. As noted above, this site is located on PacifiCorp Parcel A lands. Ability to obtain for future public access is uncertain.
20	Above Copco 1 Dam	Proposed on river right. This point would serve as a take-out for the run currently under Copco Lake and a future put-in for the Copco 2 Bypass (Ward's Canyon) and Iron Gate runs. This area is anticipated to break up a Class 2 run (run under Copco Lake) and a Class 4 run (Ward's Canyon).
21	Copco 2 Dam (Ward's Canyon)	Proposed on river right, approximately 1,500 feet downstream of Copco 1 Dam. During drawdown and dam decommissioning activities, stakeholders indicated that this point could serve as an important access site for boaters, providing a put-in for the Ward's Canyon run. Given this facility's close proximity to Copco 1 Dam it would be located in an active construction area during dam removal. Stakeholders requested limited access to this site on a schedule coordinated with KRRRC and contractors on-site. After dam removal has been completed, the site would serve as a put-in for the Iron Gate run. There is an existing dirt road that could provide access to this site.
22	Copco 2 Powerhouse	Proposed on river left. This site would serve as a take-out for the Ward's Canyon run or a put-in for the future Iron Gate run. It would represent a break in runs where there is a shift in difficulty.
14	Fall Creek	Proposed on river right. This point could serve as a take-out for upstream runs and a put-in for the run currently under Iron Gate Dam.
15	Jenny Creek Confluence	Proposed on river right. Stakeholders indicated that this site could allow boating during drawdown and serve as a take-out for the upper portion of the run currently under Iron Gate Reservoir and a future put-in for runs to Iron Gate and beyond. This site is interchangeable with the Camp Creek Confluence location.

Site ID	Location	Proposed Recreation Development
23	Camp Creek Confluence	Proposed on river right. Stakeholders indicated that this site could allow boating during drawdown and serve as a take-out for the upper portion of the run currently under Iron Gate Reservoir and a future put-in for runs to Iron Gate and beyond. This site is interchangeable with the Jenny Creek Confluence location, but may be a better location, based on bathymetry and pre-dam topographic maps.
16	Iron Gate Hatchery	Existing boater access site suggested for retention. Improvements to the existing facilities offered at Iron Gate Hatchery could provide needed access for boaters and serve as a take-out for the future Iron Gate run following dam removal.

*This site was proposed to be placed in close proximity to the existing Topsy Campground and is therefore represented in Figure 2-2 as site 1, Topsy Campground.

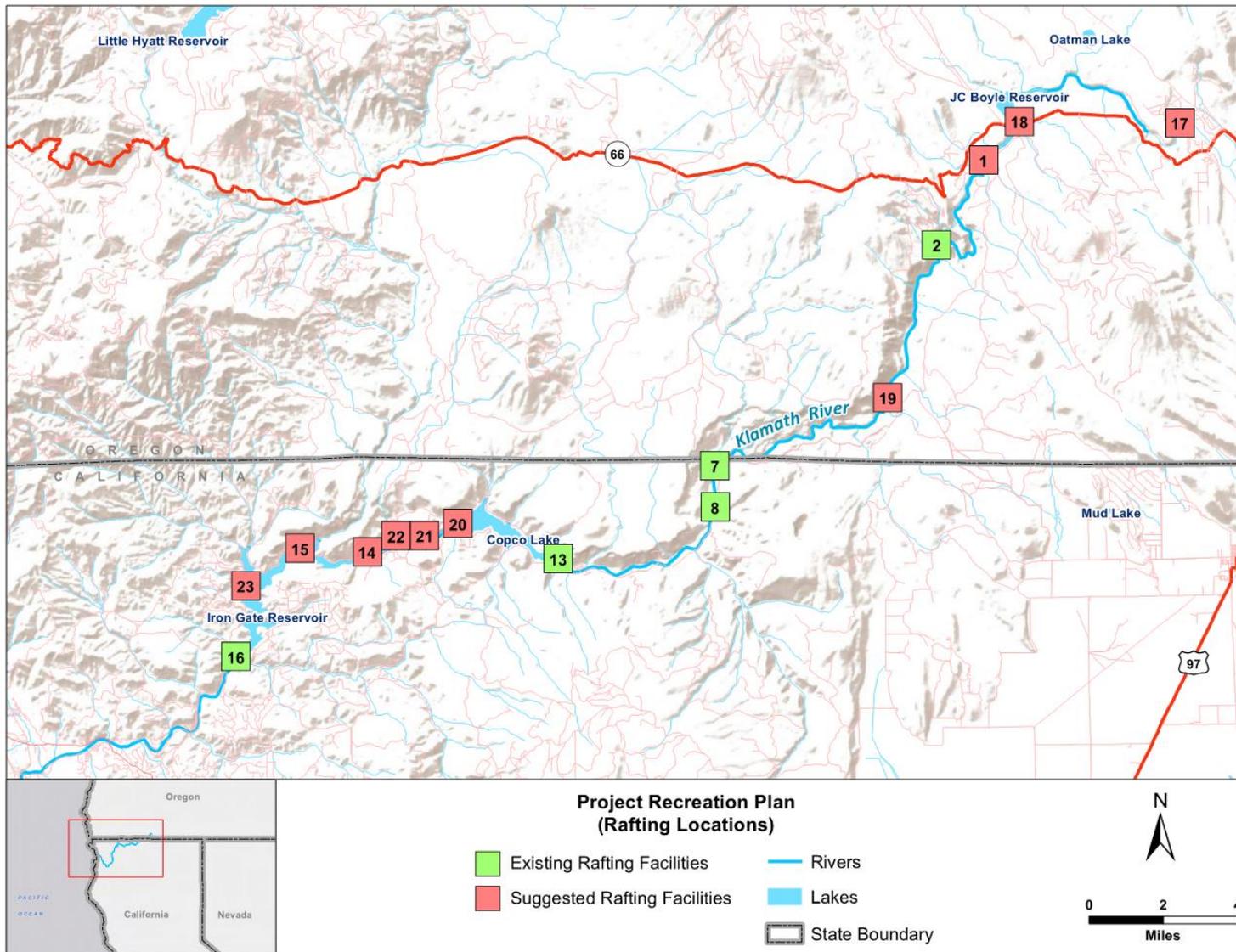


Figure 2-2 Potential Proposed River Access Sites

Copco 2 Bypass Reach

Stakeholders identified riparian vegetation that has grown into the historic river channel in the Copco 2 bypass reach due to low flows as a substantial safety hazard for future water-based recreation in that stretch of the river. The stakeholders indicated that the complete removal of this woody vegetation in the historic river channel prior to facilities removal would be most efficient to avoid complications generated by with vegetation removal attempted after the reach is inundated. Vegetation removal would make the reach navigable for boaters, providing an additional whitewater rafting run that would increase recreational boating use in the restored river. If included in the Final Recreation Plan, completion of vegetation removal would be scheduled for the year prior to reservoir drawdown.

Road Improvement

Stakeholders suggested that improvements could be made to some of the existing roadways that provide access to the Klamath River. The stakeholders indicated that many of the existing access roads in the area between Keno Dam and Iron Gate Dam are in need of improvement and long-term maintenance. Some of the roads have become unnavigable and inadequate for use to access recreation facilities. These poor road conditions also contribute to difficulties experienced by law enforcement personnel that need to access these areas. Stakeholders proposed that improvements be made to existing roads, such as Topsy Grade Road and Copco Big Bend Road, to improve accessibility and policing which could result in increased recreational use in the area. Specific stretches of roadways that need improvements have not been determined. It is assumed that roadways would continue to be owned and maintained by their current owners following any improvements. If included in the Final Recreation Plan, completion of roadway construction would be scheduled for the year following facility removal and reservoir/river restoration.

Access During Deconstruction

Stakeholders suggested that, where possible, access to roads currently used for river access be retained during the drawdown and deconstruction periods. These roads include but are not limited to the access road leading to J.C. Boyle Powerhouse and the dirt road near Copco 2 Dam, on river right. Road access could involve placing a flagger in established areas to direct traffic or establishing time intervals during which roads could be made open to the public. Providing road access that allows continued use for boaters and whitewater rafters during construction periods would reduce the impact made to boating in the Hell's Corner Reach during this time. Access requests would be coordinated with the contractor responsible for dam deconstruction activities. The terms of the access agreement would be determined and shared prior to facility removal and reservoir/river restoration.

Frain Ranch Bridge

Stakeholders suggested that a new bridge could be constructed to replace an old bridge that crossed the Klamath River at Frain Ranch. Reconstruction of this bridge would provide a point of access to either side of the river, increasing accessibility and recreational use in the area. The future owner and operator responsible for maintenance at the new bridge is unknown. If included in the Final Recreation Plan,

completion of bridge reconstruction would be scheduled for the year following facility removal and reservoir/river restoration.

RV Park in Seiad Valley or Happy Camp

A RV park with full hookups and amenities to be developed in Seiad Valley or Happy Camp was identified as a potential recreation opportunity by stakeholders. The RV park could generate revenue and tourism within the county, potentially offsetting lost tax revenue due to dam removal. The location of this park and its proposed owner and operator were not identified. If included in the Final Recreation Plan, completion of the development of the RV park would be scheduled for the year following facility removal.

Walking Trails/Wildlife Viewing/ Interpretive Trails

The development of educational recreational use sites and interpretative exhibits in the area was identified by stakeholders as a potential recreation opportunity. It was suggested that instead of full removal of dam infrastructure, some infrastructure (e.g., fish ladders, powerhouses, etc.) could be retained and signage added to promote educational tourism. Trails could be developed and routed to take recreational users through or by some of these remaining structures (preferably those with historic backgrounds). Signage promoting wildlife viewing could also be provided along these trails.

Locations for these trails have not yet been determined but could include areas around Copco residential areas or in the reservoir footprints of JC Boyle, Copco, and Iron Gate reservoirs. Development of recreational activities close to residential areas at Copco could provide residents with beneficial uses to offset the loss of reservoir-based recreation opportunities. Interpretative trails could provide additional recreational uses and opportunities for walking and tourism and as well as utilize local services. Future owners and operators of the remaining infrastructure were not identified. If included in the Final Recreation Plan, completion of the proposed trails and educational sites would be scheduled for the year following facility removal and reservoir/river restoration.

Flatwater Recreation in Siskiyou County

New or enhanced day use and/or camping sites could be developed in Siskiyou County to replace lost flatwater recreation opportunities. Locations have not yet been determined but could include the enhancement of existing recreation facilities and/or the development of new facilities at Lake Shastina or Medicine Lake. Specific amenities that would be available at these sites were not specified. The future owner and operator of these facilities is unknown. The development of additional day use and/or camping sites could promote recreational use and potentially offset lost flatwater recreation opportunities due to facility removal. If included in the Final Recreation Plan, completion of the development of these facilities would be scheduled for the year following facility removal.

Fishing Access Upstream or Downstream of J.C. Boyle Powerhouse

Fishing access sites could be developed upstream or downstream of J.C. Boyle Powerhouse in the J.C. Boyle Powerhouse footprint and in the bypass reach. Stakeholders did not identify specific locations for these new access sites. With the removal of dam facilities an increase in steelhead fish is expected in this reach of the river. Development of fishing access sites in this area would promote increased fishing activity and recreational use in the hydroelectric reach. The future owner and operator of these facilities is unknown. If included in the Final Recreation Plan, completion of development of these access sites would be scheduled for the year following facility removal/ river restoration.

Whitewater Park

Stakeholders identified the development of an in-river or off-river whitewater park along the river as a potential facility that could help offset whitewater rafting impacts in the Hell's Corner Reach by facilities removal. The proposed facility could be established by diverting from the river to provide whitewater conditions for recreational users to practice whitewater boating. The site could include day use areas and various amenities. A whitewater park would provide additional recreational opportunities for boating and could be a newly established tourist attraction, which could provide economic benefits for the county. The location of this park has not yet been determined. The future owner and operator is also unknown. Initiation of construction of the whitewater park would be scheduled for the year following facility removal alongside ongoing river restoration activities.

Recreational Gold Mining

Recreational gold panning opportunities could be established in areas on the river in Siskiyou County where users could participate in the county's history and culture. Specific locations where gold panning might be supported have not yet been determined. These locations could provide interpretative signage for the activity, including information on the history of gold mining in the county. Stakeholders indicated that the establishment of gold panning opportunities along the river could attract tourists and contribute to recreational use and available activities in the area. The future owner and operator of these facilities is unknown. If included in the Final Recreation Plan, development of these access points would be scheduled for the year following facility removal/river restoration.

New ADA Facilities

The Detailed Plan identified Camp Creek as an existing facility that would be removed after dam removal. Camp Creek is one of the few ADA recreation facilities in Siskiyou County. The Detailed Plan proposed that at least one of the recreation facilities retained along the Klamath River between J.C. Boyle Dam and Iron Gate Dam be upgraded to an ADA facility to offset this lost facility. Stakeholders noted during outreach meetings that shifting demographics for recreational users in the area could warrant the development additional ADA-accessible facilities. These facilities could include, but are not limited to, fishing access sites, boat ramps, and restrooms. The specific location of this replacement facility was not determined in the Detailed Plan. The future owner and operator of this facility is unknown. If included in the Final Recreation Plan, development of

the proposed facility would be scheduled for the year following facility removal and reservoir/river restoration.

Fishing Lodges

Stakeholders identified the development of two to five public fishing lodges to support fly fishing tourism along the hydroelectric reach as a recreation opportunity that should be considered. The fish lodges could provide year-round guided drift boat fishing, both fly and conventional fishing, for salmon, steelhead, and trout. Locations have not yet been determined but could be developed on Parcel B lands. Stakeholders suggested that these fishing lodges could be owned and operated under public/private partnerships, but the specific future owners and operators of these developments were not identified. Fees for facility use may be collected, but exclusive membership would not be permitted, and open access would be required. Fishing lodges could provide additional fishing access, increase recreational use in the area, additional jobs, and serve as a revenue generator to help offset lost tax revenue resulting from facilities removal. If included in the Final Recreation Plan, completion of development of these facilities would be scheduled for the year following facility removal and reservoir/river restoration.

River-side Commercial Recreational Development

Stakeholders suggested that commercial recreation facilities that could support recreational tourism could be developed on the river in the hydroelectric reach. The types of recreational uses for these developments were not specified. Potential locations were also not identified but facilities could be developed on Parcel B lands adjacent to the river. Similar to the fishing lodges described above, stakeholders suggested that these commercial developments could be owned and operated under public/private partnerships, but the specific future owners and operators of these developments were not identified. Fees for facility use may be collected, but exclusive membership would not be permitted, and open access would be required. River-side commercial recreation development could provide additional recreation opportunities such as fishing, hiking, boating, among other opportunities, as well as serve as a revenue generator to help offset lost tax revenue due to facilities removal. If included in the Final Recreation Plan, completion of development of these facilities would be scheduled for the year following facility removal and reservoir/river restoration.

Siskiyou Tourism Plan

The Siskiyou County County-wide Tourism Marketing Plan (Siskiyou Tourism Plan) includes a variety of ideas intended to promote tourism within the county by reaching a broader audience. Stakeholders proposed that some elements in the Siskiyou Tourism Plan be implemented as part of the Final Recreation Plan. The Siskiyou Tourism Plan highlights a lack of available tourism promotion funding, which poses a significant challenge for the county. Through either direct funding or partnering to develop destination awareness for attractions and outdoor recreation opportunities within the county, this recreation opportunity could promote continued recreational uses such as hiking, fishing, hunting, biking, and boating which could help reduce the loss of recreation use due to reservoir removal. If included in the Final Recreation Plan, implementation of this plan could be scheduled to coincide with facility removal and continue for an undetermined period following completion of river and reservoir restoration.

Upgrade Private Campgrounds

Numerous private campgrounds were identified in the region by stakeholders as being important recreational resources. These facilities are owned and operated by a variety of private owners and operators. Modifications and/or upgrades to these facilities were suggested by stakeholders as a way to provide continued and improved recreational use in the area. The future owner and operator of these sites would be the current owners and operators. If included in the Final Recreation Plan, completion of the upgrades proposed to these sites would be scheduled for the year following facility removal/ river restoration.

Transportation Plan

Development of a Transportation Plan that identifies appropriate roads and trails that could provide access to existing and newly developed recreation facilities was identified by stakeholders as important for planning potential recreation facilities and road improvements. Stakeholders suggested that the plan also identify which lands the roads cross and the entity or entities with current and future responsibility for road maintenance. The Transportation Plan would help inform the identification of new access routes for development in the future along with potential existing roadways that could be repurposed for trail use. The timeline for the plan was not specified. If included in the Final Recreation Plan, efforts developing the plan could begin prior to reservoir drawdown.

Enhance Private Docks

Several homeowners use private docks to access the Klamath River for fishing. Stakeholders from the Copco Village community suggested these private docks be extended to the newly formed river. The extension of private docks post dam removal would provide continued access for residents. If included in the Final Recreation Plan, completion of these modifications would be scheduled for the year following facility removal and reservoir/river restoration.

Klamath Hot Springs

Stakeholders suggested that a recreation facility near the historic Klamath Hot Springs Resort could be developed as commercial recreation facility. Development of a structure with restrooms and shelter for visitors could increase access to the existing hot springs near Shovel Creek. The potential future owner and operator of this facility was not identified. If included in the Final Recreation Plan, completion of the development of this facility would be scheduled for the year following facility removal and reservoir/river restoration.

2.4 Summary of Identified Recreation Opportunities

Table 2-3 presents a summary of the recreation opportunities identified including details on the location, current and future ownership if known, and where the opportunity was identified.

Table 2-3 Identified Recreation Opportunities

Site ID	Feature	Proposed Recreation Development	Current Owner/Operator	Origin
1	Topsy Campground	Replace or redesign boat ramp for river access and revegetate the reservoir rim in the vicinity of the campground	Owned and operated by BLM on J.C. Boyle Reservoir	Detailed Plan
14	Fall Creek Day Use Area	Upgrade facilities and reconstruct trail leading to Fall Creek waterfall	Owned/operated by PacifiCorp (Parcel B); located on Copco Road which is maintained by PacifiCorp	Detailed Plan
15	Jenny Creek Campground	Expand campground and upgrade facilities to provide Jenny Creek and Klamath River recreation	Owned/operated by PacifiCorp (Parcel B) on the edge of Iron Gate Reservoir	Detailed Plan
16	Iron Gate Hatchery Day Use Area	Reconstruct day use site to provide additional facilities and a boat ramp	Owned by PacifiCorp (Parcel B) and operated by CDFW	Detailed Plan
--	New Campgrounds	Two small to medium campgrounds in TBD location	N/A	Detailed Plan
--	New Routes/Roads	Provide routes on each side of the river that could be retained permanently to provide public recreation access to the river at defined locations	N/A	Detailed Plan
--	Non-motorized Trail	Construct trail to provide fisherman, biking, and hiking access from JC Boyle dam site to Iron Gate fish hatchery	New trail would need to cross PacifiCorp (Parcel A and B), BLM, private lands and potentially USFS land	Detailed Plan
2	Spring Island Boater Access	Retain/Enhance existing Spring Island boater put in below JC Boyle Powerhouse on the Klamath River and provide additional parking	BLM owns land	American Whitewater and BLM
3, 4, 5	Campground South of JC Boyle Powerhouse	Enhance and develop a new campground near JC Boyle Powerhouse; Klamath River Campground (primitive), Dispersed Site 1 and Turtle Camp could be modified or improved	BLM operates Klamath River campground (primitive), Dispersed Site 1 and Turtle Camp	American Whitewater

Site ID	Feature	Proposed Recreation Development	Current Owner/Operator	Origin
6	Frain Ranch Campground	Enhance and develop campground and improve Topsy Grade Road to Frain Ranch; Frain Ranch is a dispersed recreation site used by boaters and campers	Operated by BLM on PacifiCorp (Parcel A) land between Copco and JC Boyle Powerhouse	American Whitewater
8 through 13	PacifiCorp Fishing Access Sites 1 through 6	Maintain or enhance fishing access sites on Parcel A land between Copco Lake and Stateline. Sites include signage, porta-johns, and trash receptacles	Owned/operated by PacifiCorp (Parcel A); these sites are part of the FERC Lower Klamath Project definition	American Whitewater & Fishing Interests
7	Stateline Boater Takeout	Retain/enhance existing boater takeout on the river at Stateline to accommodate multiple parties in the take-out area and provide additional camp sites	Operated by BLM on PacifiCorp (Parcel A) land	American Whitewater and BLM
--	Fishing Access Upstream of J.C. Boyle Powerhouse	Provide fishing access along the river near the powerhouse approximately 1 mile up stream	BLM owns land	BLM
--	Day Use and River Access at J.C. Boyle	Provide recreational use/access in the large flat area on the river by the powerhouse and substation	BLM owns land	BLM
1, 2, 7, 8, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23	New River Access Locations	Develop river boating access with amenities (restrooms, road access, parking) in areas where the difficulty of river navigation changes	BLM and PacifiCorp-owned land (Parcel A and B)	American Whitewater
--	Copco 2 Bypass Reach	Remove riverine vegetation to provide safe boating thoroughfare in the Copco bypass reach	Owned and operated by PacifiCorp (Parcel B)	American Whitewater
--	Road Improvement	Improvements to the existing roads, including but not limited to Topsy Grade Road and Copco Big Bend Road	Various	Multiple stakeholders

Site ID	Feature	Proposed Recreation Development	Current Owner/Operator	Origin
--	Access During Construction	Provide access to roads that lead to river access for boaters to use during drawdown and deconstruction periods. Access could be granted by flagger or established time intervals for public use.	N/A	Upper Klamath Outfitters Association and American Whitewater
--	Frain Ranch Bridge	Construct a replacement bridge that crosses the Klamath River at Frain Ranch to provide continuous access to both side of the river	N/A	BLM
--	RV Park in Seiad Valley or Happy Camp	Develop an RV park with full hookups that would be generate revenue and tourism	N/A	SWCA ¹
--	Walking Trails / Wildlife Viewing / Interpretive Trails	Retain portions of the dam structures, provide interpretive signage, and develop a walking trail around it. Trails could also incorporate wildlife viewing. Construct trails around Copco Village residential areas to provide recreation opportunities for residents.	PacifiCorp-owned land (Parcel B)	SWCA ¹
--	Flatwater Recreation in Siskiyou County	Develop day use and/or camping sites in TBD locations for public recreational use to replace lost flatwater recreation opportunities. Locations could include Lake Shastina and Medicine Lake.	N/A	SWCA ¹
--	Fishing Access Upstream or Downstream of J.C. Boyle Powerhouse	Develop fishing access sites in the J.C. Boyle Powerhouse footprint and in the bypass reach	BLM and PacifiCorp-owned land (Parcel A and B)	BLM and ODFW
--	Whitewater Park	Develop an in-river or off-river whitewater park	N/A	SWCA ¹

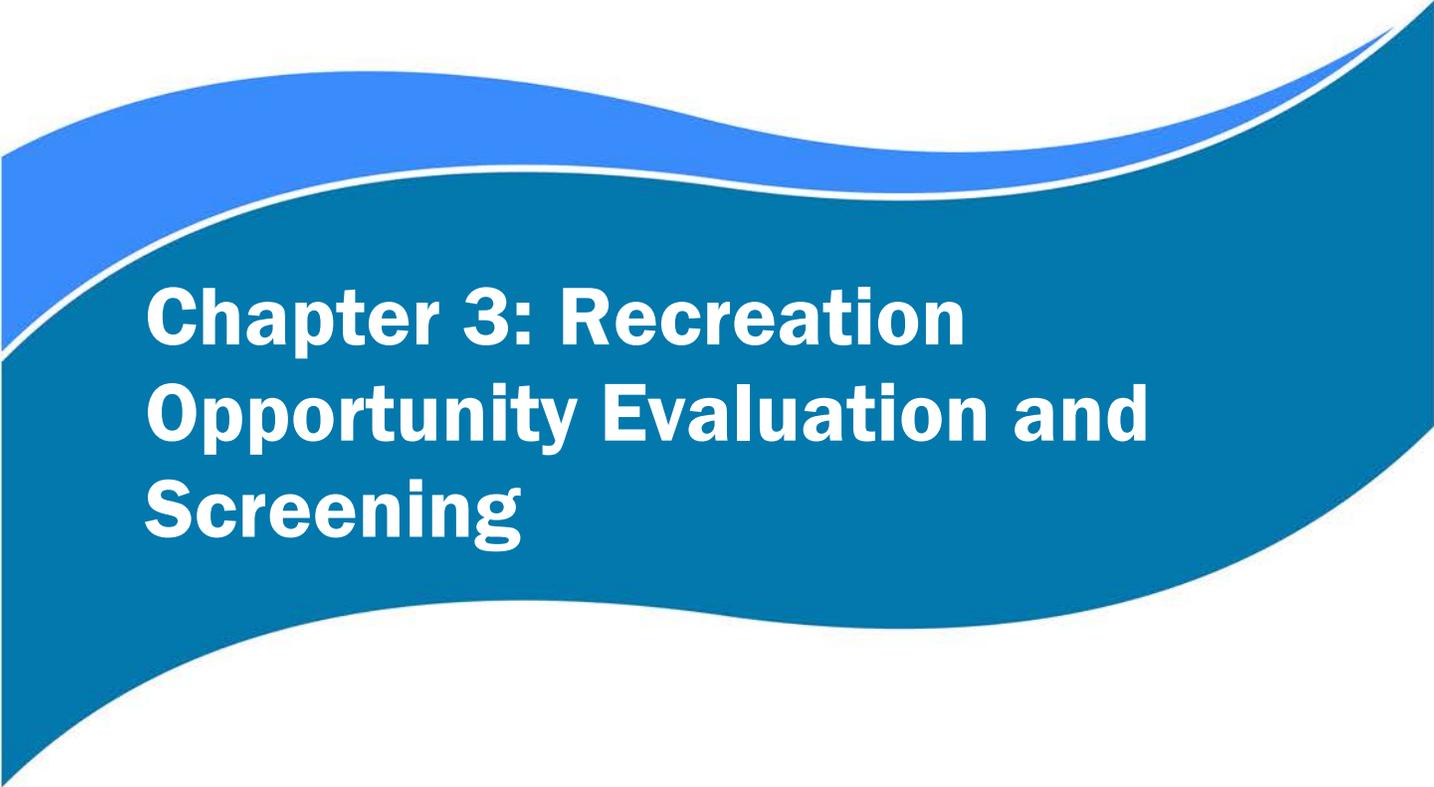
Site ID	Feature	Proposed Recreation Development	Current Owner/Operator	Origin
--	Recreational Gold Mining	Establish gold panning recreation opportunities in Siskiyou County	N/A	SWCA ¹
--	New ADA Facility	Provide at least one ADA facility to retain the current ratio of ADA opportunities in the area.	N/A	Detailed Plan, SWCA ¹ , Oregon Council, Copco Village Residents
--	Fishing Lodges	Provide up to five public fishing lodges that could support fly fishing tourism along the current hydroelectric reach. These could be developed on Parcel B land under public/private ownership	N/A	John Jacques
--	River-side Commercial Recreation Development	Develop commercial recreation uses at points along the river.	N/A	John Jacques
--	Siskiyou Tourism Plan	Provide funding to establish a tourism campaign that would point people to other recreation facilities within Siskiyou County. This could include strategically placed signage.	N/A	SWCA ¹ , Siskiyou Economic Development Council / Discover Siskiyou
--	Upgrade Private Campgrounds	Improve existing private campgrounds in the area	Unidentified private owners	Siskiyou Economic Development Council / Discover Siskiyou
--	Transportation Plan	Develop a transportation plan that identifies appropriate roads and trails that could provide access to recreation facilities	N/A	BLM
--	Expand R-Ranch	Expand the recreation opportunities provided at R-Ranch. This could include the development of a water park.	Bruce Kinseth	Bruce Kinseth
--	Enhance Private Docks	Enhance private docks that are currently on the reservoir to provide river access	Various private owners	Copco Village Resident

Site ID	Feature	Proposed Recreation Development	Current Owner/Operator	Origin
3,5	BLM Klamath River Campground and [Turtle] Camp	Increase the number of camping sites and increase the day use area parking and related infrastructure. Existing road will need to be enhanced.	BLM	BLM
1	Topsy Campground	Develop new camping areas and bathrooms next to the new water's edge. Remove and replace existing boat ramp and dock.	BLM	BLM
--	Klamath Hot Springs	Develop structure with restrooms and shelter at the Klamath Hot Springs near the Klamath River's confluence with Shovel Creek	N/A	K. Bermel

Notes

1. Consultant for Siskiyou County
2. Frain Ranch Bridge does not currently exist. Current ownership of the lands where the bridge could be developed is divided between PacifiCorp (Parcel A) and BLM.

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Chapter 3: Recreation Opportunity Evaluation and Screening

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3. RECREATION OPPORTUNITY EVALUATION AND SCREENING

KRRC is developing evaluation and screening criteria that will be used to measure each recreation opportunity's consistency with the Recreation Objectives developed for this plan (Section 1.3). In addition, KRRC sought and continues to seek input on appropriate screening criteria as part of the stakeholder outreach effort that is underway in support of developing this plan. The preliminary criteria that have been identified, will be utilized during development of the Final Recreation Plan to measure whether each recreation opportunity will:

- A. Directly address the recreation impacts generated by implementation of the KHSA.
- B. Directly address or offset changes in the localized reservoir recreation or Hells Corner boating near where the impacts are occurring.
- C. Improve access to or usability of an existing recreation resource on lands with a land manager/owner that will accept and agree to maintain the new or upgraded facility.
- D. new or substantially increased O&M demands.
- E. Not result in impacts to sensitive river and riparian habitats including important river spawning areas in and adjacent to any river channel.
- F. Minimize and mitigate for any impacts to culturally sensitive areas.
- G. Integrate into the existing communities and infrastructure.
- H. Contribute to the regional recreation vision of Klamath River restoration
- I. Be acceptable to law enforcement
- J. Avoid impacts to local economics
- K. Be implementable through available funding

Each opportunity that will be proposed for implementation by KRRC will need to support the criteria presented in the Final Recreation Plan. The preliminary criteria presented above are not final and may change in response to feedback received during the refinement and finalization of the plan. It is anticipated that the evaluation completed for the Final Recreation Plan will measure the degree to which each opportunity supports these criteria. Some of the recreation opportunities identified in this Draft Recreation Plan and others identified through continued stakeholder outreach may fully support some criteria and only partially support others. KRRC will use the screening process to identify in the Final Recreation Plan the proposed recreation facilities that are best able to support these criteria. The preliminary plans for how each screening criteria will be used to evaluate the recreation opportunities is presented below.

Criterion A will verify that each opportunity provides new or supports existing recreation activities or river access. Similarly, Criterion B tests whether a recreation opportunity will address, or offset, recreation impacts in the areas near where the impacts are occurring is measuring how well that the recreation facility

or access point will improve conditions along the newly formed river channel between J.C. Boyle Reservoir and Iron Gate Dam. These criteria will evaluate recreation opportunities both qualitatively to verify the proposed location and type of facility and quantitatively to measure the amount of recreation access and use these facilities will provide to offset the removed facilities described in Section 1.2.1.

Criterion C was developed to ensure the durability of opportunities implemented as a result of this plan. Following the completion of facility removal and river restoration activities, KRRC will surrender its license for these facilities and will be unable to operate and maintain any new recreation features developed by this plan, jeopardizing their continued success in mitigating the impacts they were developed to address. For an opportunity to perform well under Criterion C, an entity responsible for its ownership, operation, and ongoing maintenance will need to be identified. Criterion D then evaluates whether each opportunity will generate new or substantially increased O&M demands given the need for this Recreation Plan to ensure the selection and implementation of durable solutions.

Criteria E and F utilized in this evaluation effort were identified through stakeholder input. Participants in the outreach efforts detailed concerns that potential recreation facilities or river access points created by this Recreation Plan could potentially impact locations important for spawning and rearing along the newly formed river channel and could potentially be developed in areas at or nearby culturally significant resources. The evaluations under both of these criteria will rely on existing resource mapping, river restoration plans and input from the stakeholder groups that raised these concerns.

Criteria G and H were developed to ensure the seamless integration of recreation opportunities into the local communities as well as the entire region. These criteria evaluate each opportunity's potential to integrate into the communities and existing infrastructure and its consistency with the overall vision for a restored Klamath River. The evaluations under both criteria will rely heavily on stakeholder feedback received during outreach and the plans and objectives of local agencies.

Criterion I was developed to evaluate each opportunity's acceptability to local law enforcement. During outreach, stakeholders indicated that recreation opportunities developed in the area will need to be accessible by law enforcement to minimize risk and vandalism. The existing access roads in several areas near the river need improvement and their current condition results in slower response times for law enforcement. This criterion will evaluate whether the option will be sufficiently accessible to law enforcement.

Criterion J was developed to assess each opportunity's impact to the local economies in Siskiyou and Klamath counties. This criterion will evaluate recreation opportunities both qualitatively and quantitatively to determine how the opportunity benefits the local economy and/or provides a means to offset lost tax revenue resulting from dam removal.

Criterion K was developed to determine whether available funding will be sufficient to support the development of each opportunity.



Chapter 4: Recreation Plan Implementation

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4. RECREATION PLAN FINALIZATION

This Draft Recreation Plan identifies the types of recreation opportunities and facilities consistent with pre-hydropower development conditions that will be developed to achieve the goals of the plan. This draft plan also describes the process envisioned by KRRC to evaluate these opportunities and identify the proposed facilities that will ultimately be recommended for implementation in the Final Recreation Plan.

Based on the anticipated removal of reservoir recreation sites and reduced whitewater rafting use under the Project, KRRC has identified the need to implement, in the Klamath River Basin, recreation facility upgrades and/or new facility developments to provide, at minimum, the types of facilities that are proposed in this Draft Recreation Plan. KRRC configured these proposed opportunities to offset the anticipated effects on recreation access associated with dam and associated reservoir removal. The proposed location of specific opportunity types identified below was driven by KRRC's desire to support continued recreation use and access throughout the project area. Under the Amended KHSA, the existing license for the four dams will be transferred to KRRC to implement their removal. Following their removal, KRRC will surrender this license. Ultimately, the ownership, operation, and ongoing maintenance of the recreation opportunities developed by this plan will be the responsibility of the parties that the lands are transferred to.

KRRC initiated a stakeholder outreach process to seek input on the recreation opportunities previously identified during development of the 2011 *Detailed Plan for Dam Removal – Klamath River Dams* (Detailed Plan) as well as support with the identification of new opportunities that had not previously been considered. This ongoing outreach effort has included coordination with California and Oregon state officials, Siskiyou County, Klamath County, the BLM, PacifiCorp, economic development organizations including chambers of commerce, tourism organizations, recreation businesses, local communities, and the broader public. The outreach effort will continue throughout the refinement of this draft plan into a Final Recreation Plan scheduled for completion in June of 2019.

4.1 Proposed Recreation Facilities

KRRC, through its review of the potential recreation facilities removed under the Project and through preliminary stakeholder outreach, has identified two types of recreation access facilities that if developed will offset recreation access that will be eliminated by implementation of the Project – whitewater boat put-in/take-out sites and fishing access sites. In addition, KRRC intends to continue to collect input from stakeholders on both the refinement of these options with the identification of specific locations for implementation and additional detail on the types of amenities developed at each site. KRRC also intends to collect input from these stakeholders on new recreation opportunities beyond the new and upgraded access sites identified in this draft plan.

4.1.1 River Access Sites – Whitewater Put-in/Take-out

To offset reductions in boating access on the Klamath River generated by both the removal of reservoir boating access locations and reductions in river flow conditions capable of supporting whitewater rafting and

kayaking, KRRC has identified the development of river access sites that will support whitewater activities. This draft plan assumes the development of new or improved existing river access sites to allow for new whitewater boat access at or near the upstream and downstream ends of J.C. Boyle Reservoir, Copco Lake, and Iron Gate Reservoir. Developing put-in/take-out facilities at these locations will provide access to new sections of the river not currently accessible with the reservoirs in place.

These general locations will be refined during development of the Final Recreation Plan to incorporate input from stakeholders on site preferences, including input from future users on the specific locations anticipated to provide the best recreation experience. KRRC will also seek stakeholder input on any important in-river and river-adjacent habitat areas as well as sections of the river with specific cultural sensitivities to avoid and/or protect from future use. Preliminary feedback that has been provided by stakeholders on whitewater access preferences focused on identifying locations along the river with known or anticipated changes in future rafting/kayaking difficulty levels to better facilitate use of these sections by whitewater rafters and kayakers of varying skill levels.

KRRC will develop these river access sites to include at a minimum:

- An area near or along the adjacent roadway for the parking of trucks with trailers used to transport whitewater rafts, large passenger vans and buses for transporting commercial whitewater rafters,
- If necessary, an access road between any new parking areas and the adjacent existing roadway, and
- If necessary, developed paths from the area designated for parking to the river edge wide enough to support the portage of rafts.

Development of these whitewater access sites are assumed to require slope stabilization, drainage improvement, grading activities, and vegetation removal where necessary to develop parking areas, access roads and paths down to the river, if necessary, for raft portage.

4.1.2 River Access Sites – Fishing Access

To offset the loss of reservoir recreation sites that support flatwater recreation, KRRC has identified the development or improvement of access sites that will support fishing access on the river. This draft plan assumes the development of new or improved existing access sites to allow for access to the river for fishing and other active and passive recreation activities, including swimming. These sites could potentially be shared in some cases with the whitewater access sites identified above. KRRC will develop the sites to allow for new fishing access sites at locations along the river near or in the existing footprints of J.C. Boyle Reservoir, Copco Lake, Iron Gate Reservoir, and Copco No. 2.

Similar to the whitewater access sites described above, these general locations will be refined during development of the Final Recreation Plan to incorporate input from stakeholders on future user site preferences along with stakeholder concerns for biological and/or cultural resources. KRRC assumes that this will include input from stakeholders on preferred amenities at some or all of the sites. These amenities could potentially include fishing docks and Americans with Disabilities Act compliant features to support site accessibility.

KRRC will develop these river access sites to include at a minimum:

- An area near or on a road shoulder for the parking of personal vehicles,
- If necessary, an access road between any new parking areas and the adjacent existing roadway, and
- If necessary, developed trails from the area designated for parking to the river edge.

Similar to the whitewater access sites, development of these fishing access sites are assumed to require slope stabilization, drainage improvement, grading activities and vegetation removal where necessary to develop parking areas and access trails leading down to the river.

4.1.3 Other Recreation Facilities

KRRC intends to continue stakeholder outreach efforts during development of the Final Recreation Plan to refine the proposed recreation facilities identified above. KRRC intends this outreach effort to identify specific locations for recreation facility development and refine the site-specific details on the configuration of the preliminary amenities described above.

In addition to this refinement, KRRC intends to continue to collect input on other recreation facilities in the Klamath River Basin from stakeholders that could be developed in addition to or potentially in place of the facilities identified for implementation in this draft plan to offset impacts on reservoir recreation and whitewater recreation access in the Hell's Corner Reach associated with implementation of the Project.

4.2 Final Recreation Plan

As the Final Recreation Plan is developed, an evaluation and screening process will be implemented with input from stakeholders to identify the specific locations of, features developed for, and plans for operation and maintenance of the ultimate recreation opportunities. In addition, as was noted above, KRRC anticipates that additional recreation opportunities that have been identified during development of the final plan will perform well in this evaluation and screening process and could potentially be proposed by KRRC for implementation in the Final Recreation Plan alongside or in place of the facility types identified in this draft plan.

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