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## **5 NEPA/CEQA REQUIRED SECTIONS**

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### **5.1 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

The relationship between local short-term use of the environment and the maintenance and enhancement of long-term productivity often entails a balancing of social, economic, and environmental impacts over time. In some cases, a relatively short-term benefit may have adverse long-term effects, with the possibility that future generations may be burdened with unwarranted social and environmental costs. It is also possible to have long-term benefits at the expense of short-term costs. Balancing of such impacts from this Project is the responsibility of the City of Santa Rosa and U.S. Army Corps of Engineers as part of their policy-making and regulatory functions.

Short-term impacts of the Project include construction dust and noise, erosion potential, loss of wetlands, and road closure.

Long-term benefits of the Project include the beneficial use of reclaimed water for nonpotable uses such as agricultural and urban irrigation. Long-term impacts to health and safety, as evaluated in Section 4.7, Public Health and Safety, are unlikely due to the level of treatment that the reclaimed water receives. However, there may be long-term impacts that are currently unknown at this time, such as impacts from estrogen-like compounds as stated in Section 4.7.

Additionally, if one of alternatives 2-5 is not implemented, the Subregional System will not be able to accommodate the long-term growth planned in the approved General Plans of the Subregional System member cities.

The Project is occurring at this time rather than in the future, to comply with the City of Santa Rosa's National Pollutant Discharge Elimination System (NPDES) permit. The Subregional System has not conformed to its current permit due to its weather-dependence. This Project will allow the Subregional System to meet the Regional Board's reliability requirements and existing and future capacity needs, no matter what weather conditions occur.

### **5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

#### **Alternative 1 - No Action (No Project) Alternative**

The No Action Alternative will have no irreversible and irretrievable commitment of resources. The Alternative will maintain the wastewater system at approximately its current level.

## **Alternatives 2 and 3 - South and West County Alternatives**

Alternatives 2 and 3 will result in construction activities that will entail the commitment of natural resources, energy resources, and human resources. The permanent commitment of resources will include: the land required for the reservoir, pump stations, and the pipelines; the fuel required to transport construction vehicles and operate machinery; and the fill required for dam construction.

It is unlikely that the land required for the reservoir will ever be converted back to its agricultural or pastoral state once constructed. However, most of the pipeline alignments are located along roadways and once the pipelines are constructed, the roads will revert back to their current state.

## **Alternative 4 - Geysers Recharge Alternative**

Alternative 4 will result in construction activities that will entail the commitment of natural resources, energy resources, and human resources. The permanent commitment of resources will include: the land required for the tank sites, pump stations, and the pipeline; the fuel required to transport construction vehicles and operate machinery; and the electricity required to operate the pumps to deliver the reclaimed water to the geysers steamfield.

It is unlikely that the land required for the tank sites and pump stations will ever be converted back to its current state once constructed. However, the pipeline to the geysers reserve is located along a roadway and once the pipelines are constructed, the road will revert back to their current state.

## **Alternative 5 - Discharge Alternative**

Discharge directly to the Russian River will result in construction activities that will utilize natural resources. Discharge to the Laguna de Santa Rosa does not involve construction or the commitment of resources. The land required for the outfall on the Russian River is a permanent commitment, but the pipeline route will revert back to its current state.

## **5.3 GROWTH-INDUCING IMPACTS OF THE PROJECT ALTERNATIVES**

Growth inducement is defined by the CEQA Guidelines as the fostering of economic or population growth, or the construction of new housing. Growth inducement may result from direct employment, population, or housing growth; secondary or indirect growth; or provision of new infrastructure which will remove obstacles to population growth.

To examine growth inducement, the Project's effect has been evaluated on the following growth factors and their relationship to the growth defined in the region's General Plans:

- Population;
- Employment;

- Housing demand; and
- Infrastructure.

### Evaluation Criteria with Point of Significance

Growth inducement is frequently measured against the growth authorized by a local General Plan. General Plans set forth goals, objectives and policies to guide decisions about the future growth of local jurisdictions. These policies must, by law, take account of existing and projected economic and social conditions, as well as the desires of the community. As such, General Plans embody a community's understanding of existing conditions and its aspirations for the future.

General Plan law requires that all of the elements of a General Plan be consistent with one another. The land use policies in a General Plan define the amount, location, intensity, and character of development that may occur. The development potentials established by land use policies provide, in turn, the basis for infrastructure and public facilities needs, including sewer, water and road systems. Plans for these facilities must, according to state law, reflect the growth potential of General Plan land use policies.

The Project has been sized to provide treatment and disposal capacity to accommodate the land uses designated by the General Plans of cities which are members of the Subregional System. The buildout development estimates were based on the General Plans adopted as of April 1994. The buildout estimates used in this EIR/EIS were reviewed by the Planning Department of each city in the service area. The estimates presented in this document reflect the responses of each city. No attempt was made to develop the population and dwelling unit projections for each of the General Plans using actual planning categories and densities. Instead, the population and dwelling unit projections presented in the Plans were used. These projections were modified only if requested by the Planning Department staff of each city. Table 5.3-1 provides the results of these responses, and provides a comparison to ABAG projections.

**Table 5.3-1**

#### Population, Housing Units, and Employment Data for Subregional System

Category	1980 <sup>1</sup>	1990 <sup>1</sup>	1995 <sup>1</sup>	2000 <sup>1</sup>	2010 <sup>1</sup>	Buildout <sup>2</sup>
Population	135,599	177,657	196,800	212,900	243,626	236,966
Persons per Household	2.53	2.53	2.56	2.57	2.54	2.45
Occupied Housing Units	53,630	70,237	76,830	82,680	96,050	96,835
Total Employment	65,270	99,640	106,600	122,900	157,040	127,431

Employment Breakdown						
Agriculture and Mining	2,037	2,150	2,100	2,250	2,230	n/a
Manufacturing and Wholesale	12,251	17,860	19,170	22,300	31,410	n/a
Retail	13,526	20,940	21,170	24,390	30,250	n/a
Service	16,857	29,780	36,420	41,940	54,250	n/a
Other	20,599	28,910	27,740	32,110	38,900	n/a

Source: Economic and Planning Systems, inc., Nov. 1995

1. Based on ABAG projections.
2. Based on General Plan projections. Buildout in different member entities may occur before or after 2010.

Chapter 3, Description of Existing System and Alternatives, presents the process by which the Project has been sized to accommodate the growth projected by the General Plans of each member entity of the Subregional System. As an example, the following factors were used in sizing the Project:

- General Plan development capacity (as defined by each city);
- Wastewater use factors per household and per worker;
- Water conservation efforts;
- Average persons per household; and
- Water use by industries.

**Table 5.3-2**

Evaluation Criteria with Point of Significance -Growth Inducement

Evaluation Criteria	As Measured by	Point of Significance	Justification
1. The Project may cause the population to increase so that it exceeds the growth provided by the General Plans for the same time period.	New population that exceeds the General Plan projections of the cities and County	Any such exceedance	The General Plans of the cities and County
2. The Project may cause the employment to increase so that it exceeds the growth projected by ABAG for the same time period.	New employment that exceeds the ABAG projections	Any such exceedance	The General Plans of the cities and County
3. The Project may cause housing demand to increase so that it exceeds the growth provided by the General Plans for the same time period.	New housing units required that exceed the General Plan projections of the cities and County	Any such exceedance	The General Plans of the cities and County
4. Provision of infrastructure improvements as part of the Project may stimulate growth.	No point of significance due to disagreement among experts -- see text below		

Source: EPS, Harland Bartholomew & Associates, Inc.  
1995

## Infrastructure

There is a general consensus that a lack of infrastructure can limit growth and development. There is, however, a great deal of uncertainty about how public infrastructure affects the economics of growth, and the extent to which the provision of infrastructure can actually induce economic expansion.

In order to provide a basis for evaluating the growth-inducing impacts of the Project, a thorough review of the literature on this issue was conducted. The following is a summary of the key issues identified in the literature.

The literature on the growth effects of infrastructure has been produced principally by two academic and professional disciplines: urban planning and regional economics. Planning literature generally holds that infrastructure may determine the location of development, but not necessarily stimulate the economic demand for it. The regional economic literature takes a more rigorous statistical approach to the question and is ambiguous in its conclusions. Each of these approaches to the issue is discussed in detail below.

### ***The Planning Perspective***

Simply stated, the planning perspective is that infrastructure is a primary location decision factor that affects the selection of specific communities and development sites *within* a region (Bamberger, Blazar and Peterson 1985). Planners maintain that inter-regional location decisions are based more on factors such as labor force, climate, and market proximity. This conclusion is consistent with earlier work which holds that "...infrastructure merely concentrates growth which might otherwise have been located elsewhere in the region" (Council on Environmental Quality by Urban Systems Research & Engineering, Inc. 1976). The planners also conclude that there is a large degree of uncertainty about the economic returns of infrastructure (Bamberger, Blazar and Peterson 1985).

### ***The Regional Economics Perspective***

Regional economists are concerned with the economic effects of infrastructure as it relates to economic development. Public investment in infrastructure has long been an accepted means of attempting to foster economic development; thus, there has been at least the presumption that public infrastructure can stimulate private production. Yet, the literature reveals that little is known about the actual economic effects of infrastructure investment. Attempts to verify and measure these effects through rigorous statistical analysis have only been undertaken fairly recently.

Some of the earliest contemporary work done on this subject suggests that economic growth is largely a result of private investment, stemming from favorable economic geography, that is, locational and natural resource advantages of particular places (Hansen 1965). It is theorized that the investment of private capital stimulates the demand for public infrastructure which in turn leads to more growth.

In testing the effects of public investment in infrastructure improvements on economic growth, regional economists identify three types of regions: congested, intermediate and lagging. Each type corresponds to a stage of development and is distinct with respect to the economic effects that are induced by infrastructure investment. Studies have concluded that public infrastructure investment will stimulate growth in intermediate and congested regions, but not in lagging regions (Hansen 1965). This finding follows from the conclusion that growth is not induced primarily by infrastructure, but rather stems from the favorable

attributes of the region. Intermediate and congested regions are already experiencing growth due to other economic advantages, and additional infrastructure capacity allows more businesses to capitalize on those assets. It is important to note that these studies refer to a situation where external or General Fund monies are used for public *investment* in infrastructure, rather than public *financing* of infrastructure through monthly service charges and demand fees assessed to users.

This theory was tested statistically by using time series data by region for Mexico (Looney and Frederiksen 1979). The statistical analysis tentatively confirmed the theory for Mexico; each measure of infrastructure was statistically significant in explaining differences in gross domestic product growth in intermediate regions, but not in lagging regions.

These findings have also been reconfirmed by a number of subsequent statistical analyses of empirical data. In 1986, the Federal Reserve Bank of Cleveland analyzed data for 38 metropolitan areas from 1958 to 1981, and concluded that public infrastructure investment significantly affects manufacturing output, but much less than do private capital and labor inputs. It was concluded that public capital stock affects economic activity in a variety of ways -- by influencing the locational decisions of businesses and households, by increasing the agglomeration economies of regions, and by entering into firms' production functions as an unpaid factor.

In attempting to assess the relative effect of different types of infrastructure on growth, studies indicate that certain types of infrastructure, including transportation and communication, have a larger effect on economic growth than do other types of infrastructure (Dahlenberg and Eberts 1988). Furthermore, research indicates that public investment stimulates private investment, both in local economies and at the national level.

### ***Summary of the Literature***

The following six points summarize the conclusions in the literature and will be used in our analysis to determine if the infrastructure provided by the Project is indeed growth inducing.

- The lack of adequate infrastructure is a constraint to economic development.
- The provision of infrastructure can have a major effect on the location, timing, and pattern of development within a region.
- Though public investment in infrastructure is an accepted means of attempting to foster economic development, empirical research yields ambiguous conclusions as to the effectiveness of such investment.



- Infrastructure, by itself, is not sufficient to induce economic growth; other favorable economic factors must be present, and are generally more important.
- Certain regions, notably those that are older, larger, or more congested, are more likely to benefit economically from infrastructure investment than rural, lagging or newer regions.
- Certain types of infrastructure, notably transportation and communications, may have a more stimulating effect on growth than other types.

### Analysis of Growth-Inducing Factors

The economic model presented in Section 4.18, Socio-economics, projects the total employment to be expected from the direct and indirect impacts of the Project alternatives (see Table 4.18-17). Of this total employment, some employees will be supplied by the existing local work force. The remaining employment will require new workers and their households to reside in the region. Expected population, dwelling unit, and employment increases and decreases for the Project alternatives are shown in Table 5.3-3.

**Table 5.3-3**

#### Employment, Population, and Housing Demand Increase(Decrease)

Alternative	Increase in Total Employment	Increase in Dwelling Units	Increase in Population
Alt 1 - No Action	<27,100>	<16,940>	<43,020>
Alt 2A - Tolay Extended	3,550	2,220	5,630
Alt 2B - Adobe Rd/Lakeville	3,520	2,200	5,680
Alt 2C - Tolay Confined	3,480	2,170	5,520
Alt 2D - Sears Pt/Lakeville	3,400	2,130	5,400
Alt 3A - Two Rock	3,650	2,280	5,790
Alt 3B - Bloomfield	3,610	2,250	5,720
Alt 3C - Carroll Road	3,640	2,270	5,770
Alt 3D - Valley Ford	3,620	2,270	5,760
Alt 3E - Huntley	3,630	2,270	5,770
Alt 4 - Geysers Recharge	<1,120>	<700>	<1,780>
Alt 5A - Discharge to Russian River	<40>	<30>	<70>
Alt 5B - Discharge to Laguna	<20>	<10>	<25>

Source: EPS, Harland Bartholomew & Associates, Inc.  
1995

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Notes: 1. ABAG Projections 94 and General Plans for all cities

The expected growth in Sonoma County from 1995 to buildout shown in Table 5.3-4. In summary, projected growth is:

- Employment 78,300
- Dwelling units 25,900
- Population 44,800

**Criterion 1. The Project may cause the population to increase so that it exceeds the growth provided by the General Plans for the same time period.**

Additional population is small compared to the growth projected in Sonoma County. None of the alternatives is considered growth inducing with regard to population.

**Criterion 2. The Project may cause employment to increase so that it exceeds the growth projected by ABAG for the same time period.**

New employees will be a small portion of the employment growth projected by ABAG. None of the alternatives is considered growth inducing with regard to employment.

ABAG projects a decrease in employment in the Agriculture and Mining sector of the economy starting in the year 2000 (see Table 5.3-4). Portions of the indirect employment growth as well as all of the direct employment growth from the reclamation alternatives will increase employment in the Agriculture and Mining sector, reducing this trend or even reversing it.

**Table 5.3-4**

Population, Housing Units, and Employment Projections for Sonoma County

Sonoma County	1980	1990	1995	2000	2010	Buildout <sup>2</sup>
Population	293,396	380,558	423,700	459,500	528,700	468,540
Persons per Household	2.56	2.55	2.6	2.58	2.53	2.48
Occupied Housing Units	114,475	149,011	163,130	177,940	208,870	189,000
Total Employment	103,356	153,600	162,730	190,260	240,990	241,000
Employment Breakdown						
Agriculture and Mining	6,589	6,840	7,010	7,340	7,130	n/a
Manufacturing and Wholesale	20,879	29,310	30,880	38,290	52,570	n/a
Retail	21,691	31,970	32,190	36,720	45,710	n/a
Service	26,050	45,290	54,010	62,100	80,630	n/a
Other	28,147	40,190	38,640	45,810	54,950	n/a

Source: Association of Bay Area Governments,  
Projections '94; Economic and Planning Systems, inc.,  
Nov. 1995

2. Buildout for some jurisdictions may occur before 2010.

**Criterion 3. The Project may cause housing demand to increase so that it exceeds the growth provided by the General Plans for the same time period.**

Required housing units comprise a small portion of the projected dwelling unit growth provided by the General Plans. None of the alternatives is considered growth inducing with regard to housing demand.

**Criterion 4. Provision of infrastructure improvements as part of the Project may stimulate growth.**

The primary types of infrastructure that are potentially growth inducing are transportation, communications, water supply facilities, and sewage treatment capacity. The Project alternatives supply only minimal transportation improvements (widening of Pine Flat Road for the Geysers Recharge Alternative). No communications facilities are supplied by the Project. Minor water supply facilities will be provided as a mitigation for groundwater impacts. The only substantive expansion of infrastructure is the sewage treatment capacity provided.

***Provision of New Water Supply***

The potable water supply which may be provided downgradient of a reservoir if a reclamation alternative is chosen is described in mitigation measure 2.3.12 in Chapter 2. If groundwater at existing or future well sites becomes degraded due to this Project, an alternate potable water supply will be provided by the City of Santa Rosa via a small potable water line laid in the main pipeline trench from the

Laguna Plant to the following parcels within the 20 percent mixing zone contamination zone, should monitoring indicate that the aquifer has become degraded:

- 1) Existing parcels with existing wells;
- 2) Existing vacant parcels which could receive a building permit; and
- 3) New parcels which are legally created according to existing zoning and General Plan designations and which could receive a building permit.

Table 5.3-5 shows the number of parcels that could be served by a new potable water supply at each reservoir site. For existing parcels with existing wells (category 1), no new houses will be built or permitted. For vacant parcels or newly created parcels (categories 2 and 3), new houses could be built, but only in accordance with existing zoning and general plans. Because of this compliance with existing General Plan growth capacity, these potential new houses are considered growth-accommodating rather than growth-inducing. At maximum, 84 new parcels could receive an alternate potable water supply (see Appendix T-1, Existing Vacant Parcels and Potential New Parcels which may Receive New Potable Water Supply as a Result of Mitigation Measure 2.3.12)

**Table 5.3-5**

**Parcels Which May Receive New Potable Supply**

<b>Alternative</b>	<b>Existing Parcels with Wells (Category 1)</b>	<b>Vacant Parcels (Category 2)</b>	<b>Potential New Parcels (Category 3)</b>
2A - Tolay Extended	16	0	12
2B - Adobe Rd./Lakeville	25	5	79
2C - Tolay Confined	16	0	12
2D - Sears Pt./Lakeville	20	0	9
3A - Two Rock	33	7	6
3B - Bloomfield	20	0	0
3C - Carroll Rd	8	0	1
3D - Valley Ford	3	0	1
3E - Huntley	20	0	14

Source: Harland Bartholomew & Associates, Inc. 1996

### ***Provision of New Sewage Treatment Capacity***

The new capacity supplied by this Project responds directly to the growth approved in each of the member jurisdictions' General Plans. Capacity will increase from 18 mgd to 21 mgd average dry weather flow.

In response to the previous discussion regarding investment in infrastructure improvements under Evaluation Criteria, the following findings may be applied in the Santa Rosa/Sonoma County regional economy:

- *The lack of adequate infrastructure is a constraint to economic development.* In the Santa Rosa/Sonoma County area, the lack of adequate wastewater disposal will preclude future development.
- *The provision of infrastructure can have a major effect on the location and timing of development within a region.* In Sonoma County, if a wastewater disposal Project is not implemented in the short-term, the region will not be able to accommodate the projected market demand for housing and commercial development.
- *Public investment in infrastructure is an accepted means of attempting to foster economic development.* Because the Bay Area economy as a whole is growing, investment in infrastructure is not necessary to foster growth in Sonoma County. In this manner, the Project is growth accommodating rather than growth inducing.
- *Infrastructure, by itself, is not sufficient to induce economic growth; other favorable economic factors must be present, and are generally more important.* Adequate supply of housing, labor, transportation capacity, public services, market demand, and other factors must be in place for the community to capture future economic growth. This is the case in Sonoma County.
- *Certain regions, notably those that are older, larger, or more congested, are more likely to benefit economically from infrastructure investment than rural, lagging or newer regions.* The degree to which infrastructure improvements stimulate growth depends on the economic attributes of the region. The Santa Rosa and Sonoma County areas are vibrant economies that are experiencing strong, diversified economic growth and may therefore experience the stimulation of growth described in these empirical economic studies. These studies, however, describe a situation where external or General Fund monies are used to stimulate growth through investment in infrastructure. The situation in the Subregional System is different in that the City will provide a financing mechanism through issuance of tax-exempt municipal revenue bonds, but new and existing users are expected to pay for

100percent of the Project. It is therefore questionable to what extent these studies apply to the Project.

- *Certain types of infrastructure, notably transportation and communications, may have a more stimulating effect on growth than other types.* The quality of infrastructure has become extremely important in stimulating economic growth as the economy has become more service-based. In Sonoma County, as well as other sub-markets of the Bay Area, firms and households give higher weight to the quality of the transportation and communication systems than wastewater treatment systems when making location decisions.

There is not a clear agreement among experts nor does the analysis presented here provide a clear cut determination whether the Project Alternatives (excluding the No Action Alternative) are indeed growth inducing due to provision of infrastructure. Certainly, a primary obstacle to growth is being removed by provision of the infrastructure improvements. However, the Project is not driving the growth. The healthy regional economy, local resources, and existing labor force, together with the desire of the member communities as expressed in the General Plans, are responsible for the economic growth of the region. From this perspective, the Project accommodates existing growth trends rather than induces growth.

## **5.4 SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS**

Table 5.4-1 identifies impacts that will be significant even after mitigation. These impacts have been minimized to the extent possible, but will still exceed points of significance.

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures	
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B		
Land Use															
1.5.3. The storage reservoir component may be an incompatible land use type in a designated quarry area.						●								2.4.1. Removal of aggregate resources prior to construction.	
Agriculture															
2.5.1. The storage reservoir component may cause loss of farmland.		●	●	●		●								No feasible mitigation has been identified.	
2.5.2. The storage reservoir component may cause Williamson Act contracts to be canceled.							●			●				No feasible mitigation has been identified.	
2.6.1. The pump station component may cause loss of farmland.		●	●	●	●	●	●	●	●	●	●			No feasible mitigation has been identified.	
Geology, Soils, and Seismicity															
3.4.1. The pipeline component may be located within an area of unstable slope conditions.											●			2.3.4. Slope Stabilization Design . 2.3.7. Slope Monitoring and Response System. 2.3.8. Earthquake Preparedness and Emergency Response Plan.	
3.4.2. The pipeline component may be subject to ground rupture due to location near the surface trace of an active fault.		●	●	●	●	●	●	●	●	●	●			2.3.8. Earthquake Preparedness and Emergency Response Plan.	
3.5.1. The storage reservoir component may be located within an area of unstable slope conditions.		●	●	●	●									2.3.4. Slope Stabilization Design. 2.4.2. Remove weak surficial deposits from reservoir footprint.	

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures	
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B		
Surface Water Hydrology															
4.4C. The Project plus cumulative projects may cause a cumulative increase in the maximum flood elevation in the Russian River.	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	☉	2.5.10. Discharge prohibition during flood state is proposed to mitigate for the project’s contribution to a flooding impact.	
Surface Water Quality															
6.5.3. Salinity, ammonia, dissolved oxygen, planktonic algae, benthic algae, and metals. The storage reservoir component may cause special-site criteria to be exceeded.						●	●	●	●	●				No feasible mitigation has been identified.	
6.7.3. Salinity, ammonia, dissolved oxygen, planktonic algae, benthic algae, and metals. The agricultural irrigation may cause the special site criterion to be exceeded.						●	●	●	●	●				No feasible mitigation has been identified.	
6.9.1. Conductivity. Discharge component may cause numeric-based criteria to be exceeded.												●		No feasible mitigation has been identified.	
6.9.1. Cyanide. Discharge component may cause numeric-based criteria to be exceeded.	●														
6.9.1. Dissolved oxygen. Discharge component may cause numeric-based criteria to be exceeded.													●	No feasible mitigation has been identified.	
6.9.2. Algal growth. Design discharge component may cause narrative-based criteria to be exceeded.	●	●	●	●	●	●	●	●	●	●	●	●	●	2.5.4 Discharge Operations.	
6.9.2. Turbidity. Discharge scenarios may cause narrative-based criteria to be exceeded.												●	●	2.5.4 Discharge Operations.	



**Table 5.4-1**

**Summary of Significant and Unavoidable Adverse Impacts**

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B	
6.9.2. Turbidity (beneficial). Discharge scenarios may cause narrative-based criteria to be exceeded.	●													
6.9.2. Waste Reduction Strategy - Ammonia-Nitrogen. Discharge scenarios may cause narrative-based criteria to be exceeded.	●													
6.9.2. Waste Reduction Strategy - Total Nitrogen. Discharge scenarios may cause narrative-based criteria to be exceeded.	●													
6.9.2. Toxicity. Discharge component may cause narrative-based criteria to be exceeded.	●													
<b>Terrestrial Biological Resources</b>														
8.4C. The Project plus cumulative projects may cause permanent loss of sensitive terrestrial wildlife habitat.		●	●	●	●	●	●	●	●	●				No feasible mitigation has been identified.
8.7C. The Project plus cumulative projects may result in ecological risk to terrestrial plant and wildlife populations (i.e., acute or chronic toxicity and bioaccumulation).	●													2.4.16. Ecological Risk Monitoring and Source Control Program.
<b>Aquatic Biological Resources</b>														
9.5.6. The storage reservoir component may cause a change in the physical condition of aquatic habitat in the Estero Americano or the Estero de San Antonio within the Gulf of the Farallones National Marine Sanctuary.						●	●	●	●	●				No feasible mitigation has been identified.

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B	
9.7.6. The storage reservoir component may cause a change in the physical condition of aquatic habitat in the Estero Americano or the Estero de San Antonio within the Gulf of the Farallones National Marine Sanctuary.						●	●	●	●	●				No feasible mitigation has been identified.
Transportation														
11.4.1. Traffic from construction or operations of the pipeline component may cause congestion along access roads		●	●	●	●	●	●	●	●	●	●			No feasible mitigation has been identified.
11.4.2. Lane closures due to construction of the pipeline component may delay traffic, delay transit services, restrict access, increase hazards, and reroute traffic, including emergency vehicles.		●	●	●	●	●	●	●	●	●	●	●		No feasible mitigation has been identified.
11.4.4. The pipeline component may cause damage to public or private roadbeds.											●			No feasible mitigation has been identified.
11.5.1. Traffic from construction or operation of the storage reservoir component may cause congestion on access roads.		●	●	●	●	●	●	●	●	●				No feasible mitigation has been identified.
11.8.1. Traffic from construction of the geysers steamfield component may cause congestion on access roads.											●			No feasible mitigation has been identified.
Air Quality														
12.2.5. The headworks expansion component may cause odors.	●	●	●	●	●	●	●	●	●	●	●	●	●	No feasible mitigation has been identified.

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B	
12.4.1. The pipeline component may exceed emission threshold levels.		●	●	●	●									2.4.11 Dust Control Program. 2.4.10 Vehicle and Equipment Exhaust Control Program.
12.5.1. The storage reservoir component may exceed emission threshold levels.		●	●	●	●	●	●	●	●	●				2.4.10 Vehicle and Equipment Exhaust Control Program. 2.4.11 Dust Control Program.
12.8.1. The geysers steamfield component may exceed emission threshold levels.											●			2.4.10 Vehicle and Equipment Exhaust Control Program.
<b>Noise</b>														
13.4.1. Construction of pipeline component may expose the public to high noise levels.		●	●	●	●	●	●	●	●	●	●	●		2.4.9. Construction Noise Control Measures.
13.4.3. Construction of the pipeline component may cause high noise levels from the construction traffic.		●	●	●	●	●	●	●	●	●	●	●		2.4.9. Construction Noise Control Measures.
13.5.1. Construction of the storage reservoir component may expose the public to high noise levels.			●		●	●				●				2.4.9. Construction Noise Control Measures.
13.5.3. Construction of the storage reservoir component may cause high noise levels from the construction traffic.		●	●	●	●	●	●	●	●	●				2.4.9. Construction Noise Control Measures.
13.6.1. Construction of the pump station component may expose the public to high noise levels.		●	●	●	●	●	●	●	●	●	●			2.4.9. Construction Noise Control Measures.
13.6.2. Operation of the pump station component may expose the public to high noise levels.		●	●	●	●	●	●	●	●	●	●			2.3.17. Incorporate noise control measures into the final design of the pump station.

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B	
13.7.1. Construction of the agricultural irrigation component may expose the public to high noise levels.		●	●	●	●	●	●	●	●	●				2.4.9. Construction Noise Control Measures.
13.8.3. Construction of the Geysers steamfield component may cause high noise levels from construction traffic.											●			No feasible mitigation has been identified.
<b>Visual Resources</b>														
14.4.5. The pipeline component may cause adverse effects on foreground or middleground views from a high volume travelway, recreation use area, or other public use area.											●			2.3.9. Adjust pipeline alignments. 2.3.10. Limit construction disturbance.
14.5.3. The storage reservoir component may be inconsistent with the County Open Space Element regarding Scenic Corridors.		●	●	●	●		●	●	●					2.4.6. Screen concrete diversion channels, pump stations, and other facilities. 2.4.7. Establish tree screening. 2.4.8. Revegetate face of reservoir dam.
14.5.5. The storage reservoir component may cause adverse effects on foreground or middleground views from a high volume travelway, recreation use area, or other public use area.					●									2.4.6. Screen concrete diversion channels, pump stations, and other facilities. 2.4.7. Establish tree screening. 2.4.8. Revegetate face of reservoir dam.

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B	
14.5.6. The Storage reservoir component may cause an adverse effect on foreground or middleground views from one or more private residences.		●	●	●	●	●	●	●	●					2.4.6. Screen concrete diversion channels, pump stations, and other facilities. 2.4.7. Establish tree screening. 2.4.8. Revegetate face of reservoir dam.
14.6.2. The pump station component may be inconsistent with the Sonoma County General Plan Open Space Element regarding Scenic Landscape Units.											●			2.4.6. Screen concrete diversion channels, pump stations, and other facilities.
14.6.3. The pump station component may be inconsistent with the County Open Space Element regarding Scenic Corridors.		●	●	●	●	●	●	●	●	●	●			2.4.6. Screen concrete diversion channels, pump stations, and other facilities.
14.6.4. The pump station component may be inconsistent with minimum building setbacks for structures along Sonoma County designated scenic corridors.		●	●	●	●	●	●	●	●	●	●			2.4.6. Screen concrete diversion channels, pump stations, and other facilities.
14.6.5. The pump station component may cause adverse effects on foreground or middleground views from a high volume travelway, recreation use area, or other public use area.		●	●	●	●	●	●	●	●	●	●			2.4.6. Screen concrete diversion channels, pump stations, and other facilities.
14.6.6. The pump station component may cause an adverse effect on foreground or middleground views from one or more private residences.		●	●	●	●	●	●	●	●	●	●			2.4.6. Screen concrete diversion channels, pump stations, and other facilities.

**Table 5.4-1**

Summary of Significant and Unavoidable Adverse Impacts

Impact	No Action	South County Irrigation				West County Irrigation					Geysers	Discharge		Mitigation Measures	
	1	2A	2B	2C	2D	3A	3B	3C	3D	3E	4	5A	5B		
Public Services, Utilities and Recreation															
16.1.1. The No Action Alternative may increase demand for police, fire, parks, and recreation facilities, water, sewage treatment and disposal, or solid waste to such a degree that accepted service standards are not maintained.	●													None.	
Socio-economics															
18.1. The Project may increase the service charge for wastewater.		●	●	●	●	●	●	●	●	●	●			No feasible mitigation has been identified.	
18.2. The Project may result in loss of homes due to construction of facilities.		●	●			●		●	●	●				No feasible mitigation has been identified.	

Note: No mitigation is proposed for the significant impacts of the No Action Alternative.

**Level of Significance:**

- Significant impact before and after mitigation

**Alternatives:**

- 1  
2A No Action (No Project)  
2B Tolay Extended  
2C Adobe Road/Lakeville Hillside  
Tolay Confined

**Alternatives:**

- 2D Sears Point/Lakeville Hillside  
3A Two Rock  
3B Bloomfield  
3C Carroll Road  
3D Valley Ford  
3E Huntley  
4 Geysers Recharge  
5A Discharge to Russian River  
5B Discharge to the Laguna

## 5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

### Selection of the Environmentally Superior Alternative

The California Environmental Quality Act requires the identification of an Environmentally Superior Alternative; that is, the alternative which has no significant effect or has the least significant effect on the environment. For reference, significance is determined based on substantial or potentially substantial adverse changes of any of the physical environmental conditions due to the Project. The degree of change is evaluated against existing environmental conditions.

The environmentally superior alternative is Alternative 5B, the Laguna Discharge Alternative. This Alternative cause the least change on the environment when compared with the other alternatives. This Alternative does not impact wetlands. Construction of facilities occurs only at the existing Laguna Plant headworks, where new pumps will be installed. No other construction is required because the outfall piping and discharge valves exist and will not be modified. The physical change that occurs is the discharge of additional volumes of water into the Laguna de Santa Rosa and Russian River at low flow conditions. The annual discharge of reclaimed water is 4,640 million gallons. Since the discharge valve sizes are not modified, the maximum volume of water discharged during higher flows of the Russian River does not increase over existing conditions. This Alternative discharges to the Laguna, which then reaches the Russian River. The majority of this water came from the Russian River upstream of the discharge. The constituents of the reclaimed water being discharged are different than water removed from the Russian River at the Sonoma County Water intakes. The unavoidable effects of Laguna Discharge include a further decrease of dissolved oxygen compared to the existing problem in the Laguna, and an increase in biostimulatory substances, as measured by benthic and planktonic algae, in the Laguna de Santa Rosa and Russian River.

All but one of these unavoidable impacts occur in less than one month every eight years. The unavoidable impact on benthic algae occurs in the lower-most quarter-mile reach of Santa Rosa Creek more frequently, however beneficial impacts on algae will occur more frequently than adverse impacts. With implementation of mitigation and cumulative projects (including nitrogen load reduction throughout the Laguna). Alternative 5B will have a less than significant impact.

The No Action Alternative is similar to Alternative 5B in that it uses the existing piping and valves to discharge to the Laguna. The No Action Alternative has greater water quality impacts because it has the highest annual discharge to the Russian River and does not provide mitigation provided by other alternatives. The No Action Alternative not only impacts biostimulatory substances and dissolved oxygen similarly to the Laguna Discharge, but also causes exceedence of standards for cyanide and toxicity, and non-attainment of the Regional Board's Waste Reduction Strategy.

Alternative 5A, discharge to the Russian River, will require the construction of seven miles of pipeline to the Russian River and a discharge structure within the River, requiring the filling of wetlands. The volumes of water delivered to the Russian River are the same as Alternative 5B.

The reclamation alternatives (alternatives 2 and 3) and the Geysers Recharge Alternative (Alternative 4) require physical changes to the existing environment. The reclamation alternatives require the construction of one or more reservoirs providing up to 4.5 billion gallons of storage, require the fill of wetlands, require up to 22 miles of pipeline to transport reclaimed water to the reservoir, require up to 45 miles of pipeline with up to 19 pump stations to distribute the water to irrigation areas, and up to 6,000 acres of agricultural or fallow land that will be potentially converted to irrigated crops. The Geysers Recharge Alternative requires the construction of 32 miles of pipeline, construction of four large pump stations, two large storage tanks to deliver the water to the geysers steamfield for injection and construction of pipelines in the steamfields.

Environmental effects have not been weighed or ranked against another in this analysis. The change to the existing environment has simply been analyzed. Agency and public comment to the City of Santa Rosa during their evaluation of this document is welcome.

Although Alternative 5B is considered environmentally superior (as defined above), any conclusion regarding the environmentally superior alternative should not be confused with an analysis of how each alternative may achieve the Project's purpose and need.. This Draft EIR/EIS has noted beneficial effects of the alternatives, including increased prime farmland, generation of electricity, and economic stimulation. The City will consider and weigh these benefits and the environmental effects against the purpose and need of the Project during the selection of the preferred Project.

### **Selection of the Environmentally Preferable Alternative**

The National Environmental Policy Act requires the identification of the Environmentally Preferable Alternative from the range of alternatives considered in the Record of Decision. The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources. Section 101 (b) further states "---to the end that the Nation may --

- (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;



- (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
- (5) achieve a balance between population and resource use which will permit high standards of living and wide sharing of life's amenities; and
- (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The National Environmental Policy Act requires the federal agencies to select an environmentally preferable alternative. The environmentally preferable alternative is the one which the Corps of Engineers believes will fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors. The environmentally preferable Project does not have to be the environmentally superior alternative but must meet the Project's purpose and need (Chapter 1.1). The Corps must consider, in addition to physical changes to the existing environment, the effects of socio-economics and compliance with the adopted purpose and need.

At this time the Corps has not selected the environmentally preferable alternative. After certification of the Final EIR, the City will consider and select its preferred alternative. At that time, the Final EIS will be prepared which will identify the environmentally preferable alternative and preferred alternative.

## PREPARERS, REFERENCES, AND CONSULTATION AND COORDINATION

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### References

#### ***HBA Team Documents***

None.

#### ***Other References***

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### Consultation and Coordination

#### ***Persons Contacted***

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None.