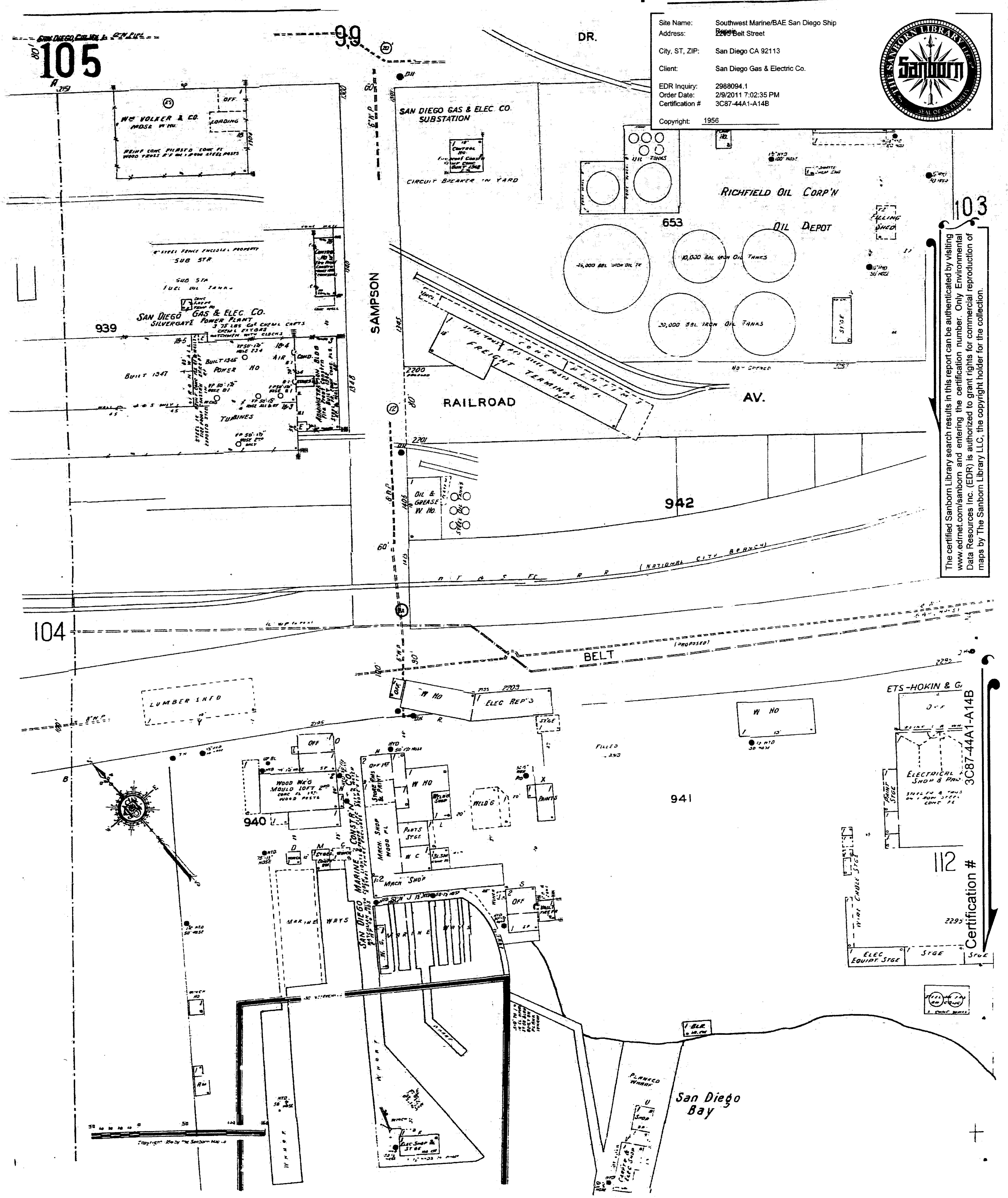
EXHIBIT NO. 1264
Barker

1956 Certified Sanborn Map

Site Name:	Southwest Marine/BAE San Diego Ship Repair
Address:	2205 Belt Street
City, ST, ZIP:	San Diego CA 92113
Client:	San Diego Gas & Electric Co.
EDR Inquiry:	2988094.1
Order Date:	2/9/2011 7:02:35 PM
Certification #	3C87-44A1-A14B
Copyright:	1956



The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # 3C87-44A1-A14B

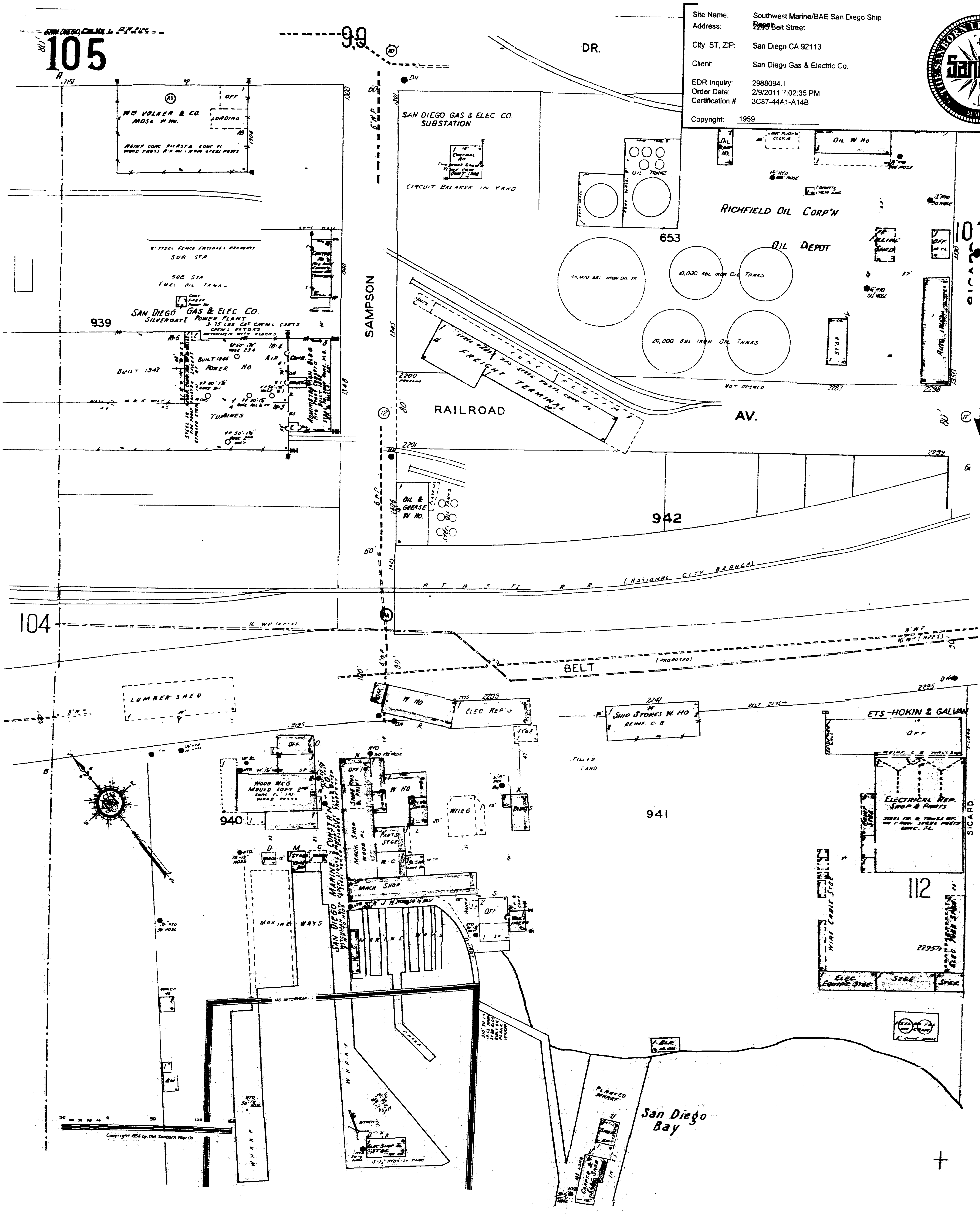
1265

EXHIBIT NO. 1265 Barker

jmilano.com

1959 Certified Sanborn Map

Site Name:	Southwest Marine/BAE San Diego Ship Repair
Address:	2205 Belt Street
City, ST, ZIP:	San Diego CA 92113
Client:	San Diego Gas & Electric Co.
EDR Inquiry:	2988094.1
Order Date:	2/9/2011 7:02:35 PM
Certification #	3C87-44A1-A14B
Copyright:	1959

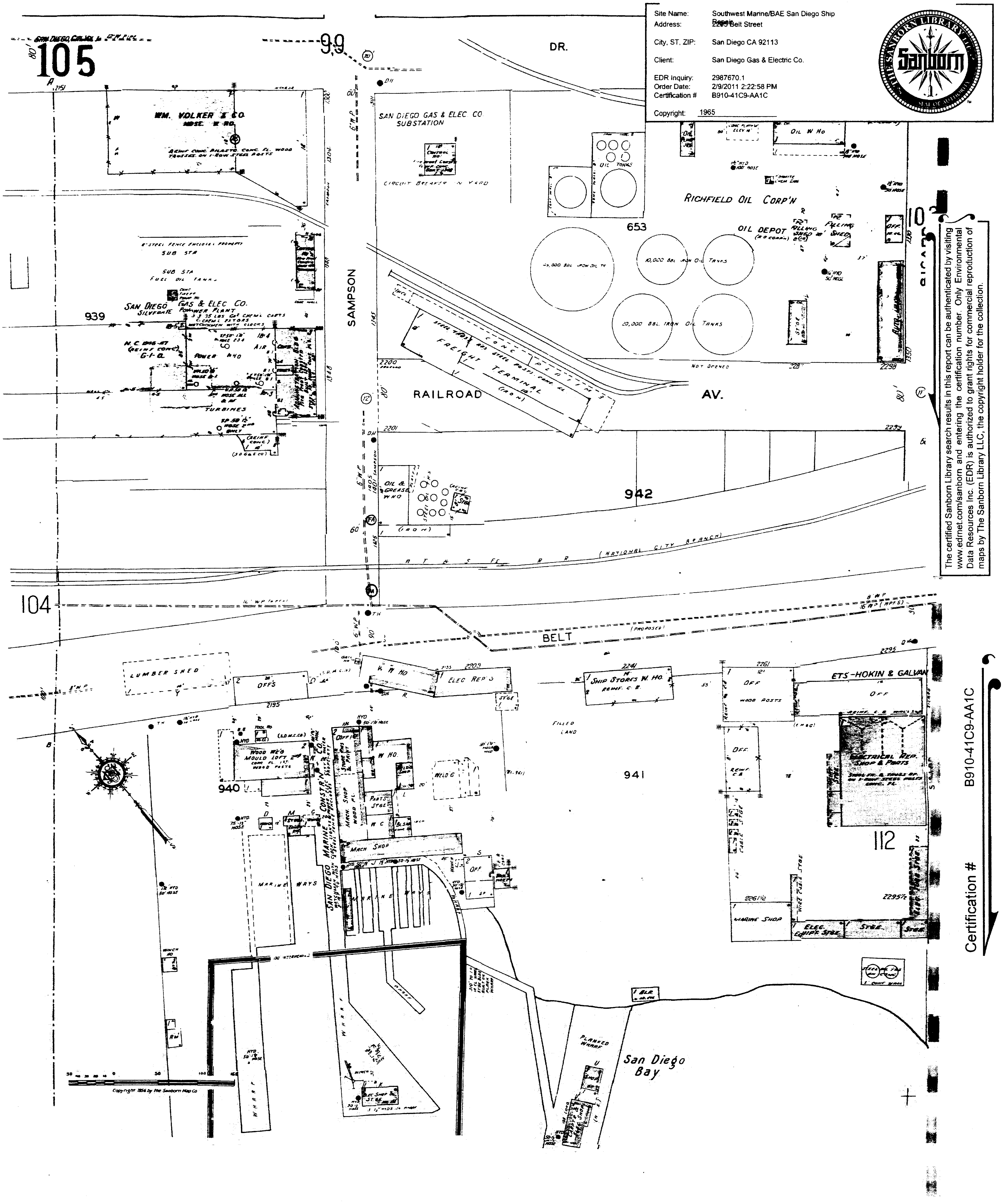


Certification # 3C87-44A1-A14B

1266

1965 Certified Sanborn Map

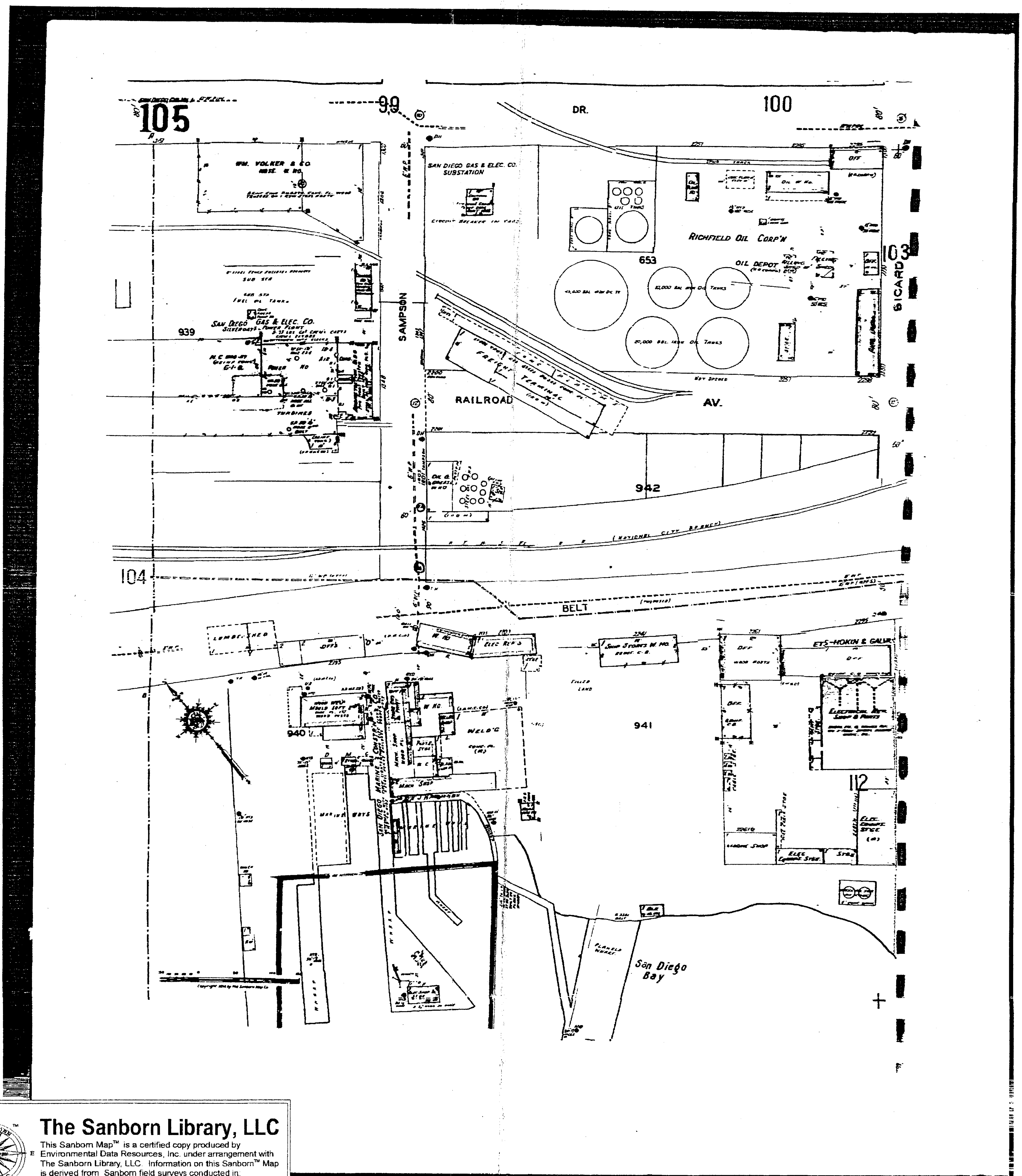
Site Name:	Southwest Marine/BAE San Diego Ship Repair
Address:	2205 Belt Street
City, ST, ZIP:	San Diego CA 92113
Client:	San Diego Gas & Electric Co.
EDR Inquiry:	2987670.1
Order Date:	2/9/2011 2:22:58 PM
Certification #	B910-41C9-AA1C
Copyright:	1965



THE SANBORN LIBRARY LLC — SEAL OF AUTHORITY — Sanborn

Certification # B910-41C9-AA1C

1267



The Sanborn Library, LLC

This Sanborn Map™ is a certified copy produced by Environmental Data Resources, Inc. under arrangement with The Sanborn Library, LLC. Information on this Sanborn™ Map is derived from Sanborn field surveys conducted in:

Copyright © 1976 The Sanborn Library, LLC JMB
Year EDR Research Associate

EXHIBIT NO. 1267
Barker

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

IN RE THE MATTER OF)
)
TENTATIVE CLEANUP AND ABATEMENT)
ORDER NO. R9-2011-0001)
)
)
____________________________________)

EXHIBIT BOOK THREE OF THREE TO THE

DEPOSITION OF DAVID BARKER

Volume I - IV

San Diego, California

2011

Reported By: Anne M. Zarkos, RPR, CRR,
CSR No. 13095

Peterson Reporting
Truth and Technology, Transcribed.

530 B Street
Suite 350
San Diego, CA
92101

800 649 6353 toll free
619 260 1069 tel
619 688 1733 fax

bookadepo.com

Reporting
Videography
Trial Presentation
Global Reach
Complex Cases
Accurate, Fast

I N D E X

WITNESS: DAVID BARKER, Vol. 1

EXAMINATION	PAGE
MR. RICHARDSON	9

E X H I B I T S

MARKED FOR IDENTIFICATION		PAGE
1201	NASSCO's Third Amended Notice of Videotaped Deposition of David Barker; eight pages	16
1202	NASSCO's First Amended Notice of Videotaped Deposition of San Diego Regional Water Quality Control Board Cleanup Team's Person(s) Most Knowledgeable for Designated Subject Matters; seven pages	23
1203	San Diego Water Board Cleanup Team's Amended Witness Designations; three pages	34
1204	Resolution No. 2001-02; five pages	69
1205	Letter and Certified Mail receipt to Mike Chee of NASSCO from John H. Robertus of RWQCB dated June 1, 2001; eight pages	70
1206	RWQCB Guidelines for Assessment and Remediation of Contaminated Sediments in San Diego Bay at NASSCO and Southwest Marine Shipyards, dated June 1, 2001; 42 pages	72
1207	Article from Ecotoxicology 5, 327-229 (1996) entitled "Presentation and interpretation of Sediment Quality Triad data," 13 pages	106
1208	SWRCB Resolution No. 92-49 as Amended on April 21, 1994, and October 2, 1996; 21 pages	117

E X H I B I T S (cont.)

1209	RWQCB Cleanup and Abatement Order No. 95-21 for Campbell Industries; 40 pages	119
1210	Regional Board Cleanup Team's Responses & Objections to Designated Party NASSCO's Second Set of Special Interrogatories; 17 pages	122
1211	RWQCB Cleanup and Abatement Order No. 86-92 for Teledyne Ryan Aeronautical; 21 pages	123
1212	RWQCB Cleanup and Abatement order No. 89-18 for Eichenlaub Marine; 14 pages	127
1213	RWQCB Order No. 91-91 Rescinding Cleanup and Abatement Order No. 88-70 for Shelter Island Boatyard; 12 pages	129
1214	RWQCB Cleanup and Abatement Order No. 88-79 for Bay City Marine; 16 pages	131
1215	RWQCB Addendum No. 2 to Cleanup and Abatement Order No. 89-31 for Driscoll Custom Boats; 17 pages	132
1216	RWQCB Addendum No. 6 to Cleanup and Abatement Order No. 88-78 for Kettenburg Marine Corporation and Whittaker Corporations; four pages	134
1217	RWQCB Cleanup and Abatement Order No. 89-32 for Koehler Kraft Company; 21 pages	135
1218	RWQCB Cleanup and Abatement Order No. 88-86 for Mauricio and Sons, Inc.; 18 pages	136
1219	RWQCB Cleanup and Abatement Order No. 85-91 for Paco Terminals, Inc.; 20 pages	137

E X H I B I T S (cont.)

1220	NASSCO Whole Yard Bathymetry Survey; one page	153
1221	Technical report entitled "Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay," dated May 30, 2007; eight pages	164
1222	EPA document entitled "Contaminated Sediment Remediation Guidance for Hazardous Waste Sites," nine pages	166
1223	Report entitled "Sediment Assessment Study for the Mouths of Chollas and Paleta Creek, San Diego," dated May 2005; 13 pages	170

ALL EXHIBITS FOR ALL 4 VOLUMES TO BE BOUND SEPARATELY

I N D E X

WITNESS: DAVID BARKER, Volume 2

E X H I B I T S

E X H I B I T S

1230	RWQCB Staff Report on the Establishment of Shipyard Sediment Cleanup Levels for NASSCO and Southwest Marine, Inc., dated February 17, 1999; six pages	361
1231	RWQCB Final Report for Shipyard Sediment Cleanup Levels, NASSCO & Southwest Marine Shipyards, dated February 16, 2001; 34 pages	366
1232	RWQCB Addendum No. 1 to Cleanup and Abatement Norder No. 85-91 for Paco Terminals, Inc.; 13 pages	381
1233	RWQCB Staff Report for Cleanup and Abatement Order No. 98-08 for The Aerostructures Group of BF Goodrich Aerospace and The BF Goodrich Company, dated March 26, 1998; 17 pages	387
1234	PowerPoint slides from San Diego Bay Contaminated Marine Sediments Assessment and Remediation Workshop dated June 18, 2002; 27 pages	389

ALL EXHIBITS TO BE BOUND SEPARATELY

I N D E X

E X H I B I T S

E X H I B I T S (cont.)

1241	Email from Craig Carlisle to Tom Alo and David Barker dated July 25, 2003; one page	586
1242	Letter (with attachment) to David Barker from Lane McVey of NASSCO dated November 9, 2004; 30 pages	594
1243	Ogden Environmental and Energy Services report entitled "Final Report Site Remediation Marine Railway Removal Project Southwest Marine Shipyard," dated December 1998; 11 pages	635
1244	Excerpt from Ogden Environmental and Energy Services report entitled "Final Report Site Remediation Marine Railway Removal Project Southwest Marine Shipyard," dated December 1998; nine pages	650
1245	Southwest Marine NPDES Permit, Marine Sediment Monitoring and Reporting Annual Report dated August 2000; 15 pages	663
1246	Intermal Memorandum dated April 29, 1991; one page	666
1247	Excerpt from Ogden Environmental and Energy Services report entitled "Final Report Site Remediation Marine Railway Removal Project Southwest Marine Shipyard," dated December 1998; six pages	673

I N D E X

WITNESS: DAVID BARKER

E X H I B I T S

E X H I B I T S (cont.)

1259	Aerial photograph dated December 30, 2003; one page	762
1260	Storm water map; one page	763
1261	Excerpt from Ogden Environmental and Energy Services report entitled "Final Report, Sediment Characterization Study and Remediation Plan, Southwest Marine Shipyard, San Diego, California," dated December 1998; 14 pages	777
1262	Woodward-Clyde document entitled "Appendix C, SAIC Sediment Sampling Report - January 13, 1991," 25 pages	778
1263	1950 Certified Sanborn Map	785
1264	1956 Certified Sanborn Map	795
1265	1959 Certified Sanborn Map	796
1266	1965 Certified Sanborn Map	796
1267	1976 Certified Sanborn Map	799
1268	Maps of San Diego Marine Construction shipyard facilities; four pages	800
1269	Bechtel document entitled "Preliminary Assessment," dated November 22, 1993; 20 pages	802
1270	Fax from Ruth Kolb to Craig Carlisle dated November 22, 2005; three pages	808
1271	RWQCB Fact Sheet for Discharges from Ship Construction, Modification, Repair, and Maintenance Facilities and Activities Located in the San Diego Region; nine pages	825
1272	Letter to Jill Tracy of SDG&E from Jason Conder, Ph.D., of Environ, dated February 10, 2011; ten pages	29

E X H I B I T S (cont.)

1273	Figures from Environ Report; eight pages	829
1274	Spreadsheet entitled "Soil Sample Analytical Results," one page	851
1275	Excerpt from Underground Storage Tank Closure Report prepared by TN & Associates, dated November 13, 2006; six pages	857
1276	Memorandum (with attachments) from TN & Associates to SDG&E dated February 7, 2011; 16 pages	858
1277	Spill/Illicit Discharge Log; two pages	884
1278	Environmental Affairs Spill/Illicit Discharge Report Form; two pages	885
1279	RWQCB Resolution No. R9-2007-0043; 14 pages	924
1280	Campbell Sediment Remediation Aquatic Enhancment report dated July 2003; 235 pages	932
1281	Anchor Environmental document entitled "Construction Quality Assurance Report and Documentation of Construction Completion," dated June 2008; 50 pages	934
1282	Ninyo & Moore document entitled "Long-term Monitoring and Reporting Plan, Sediment Remediation and Aquatic Enhancement Project, former Campbell Shipyard, San Diego, California," dated April 20, 2005; 46 pages	935
1283	Printout from RWQCB 401 Water Quality Certification; 23 pages	938

E X H I B I T S (cont.)

1284	EPA Superfund Record of Decision for Commencement Bay dated 1989; 12 pages	945
1285	EPA Superfund Record of Decision for Puget Sount Naval Shipyard Complex dated 2000; 11 pages	947

1268

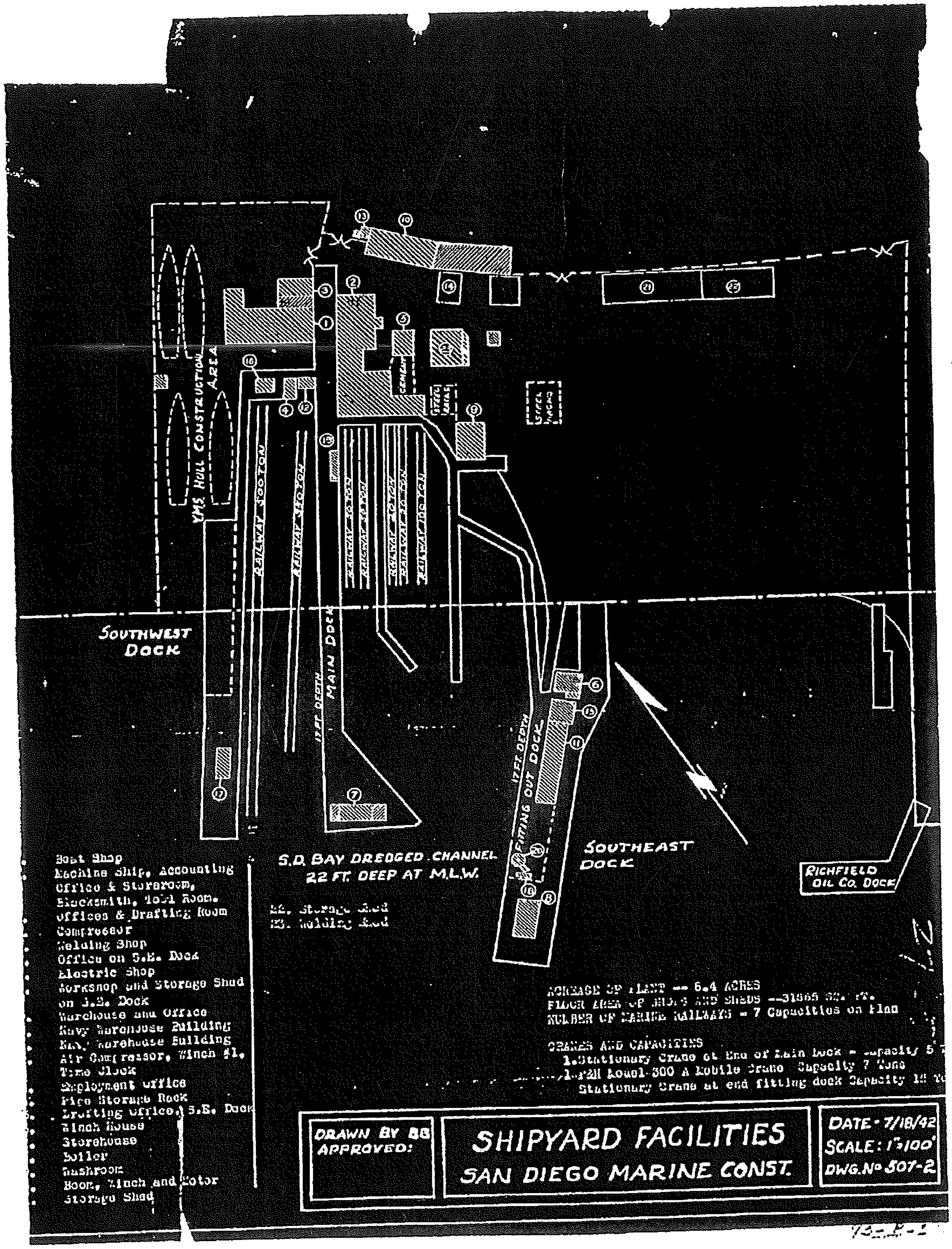
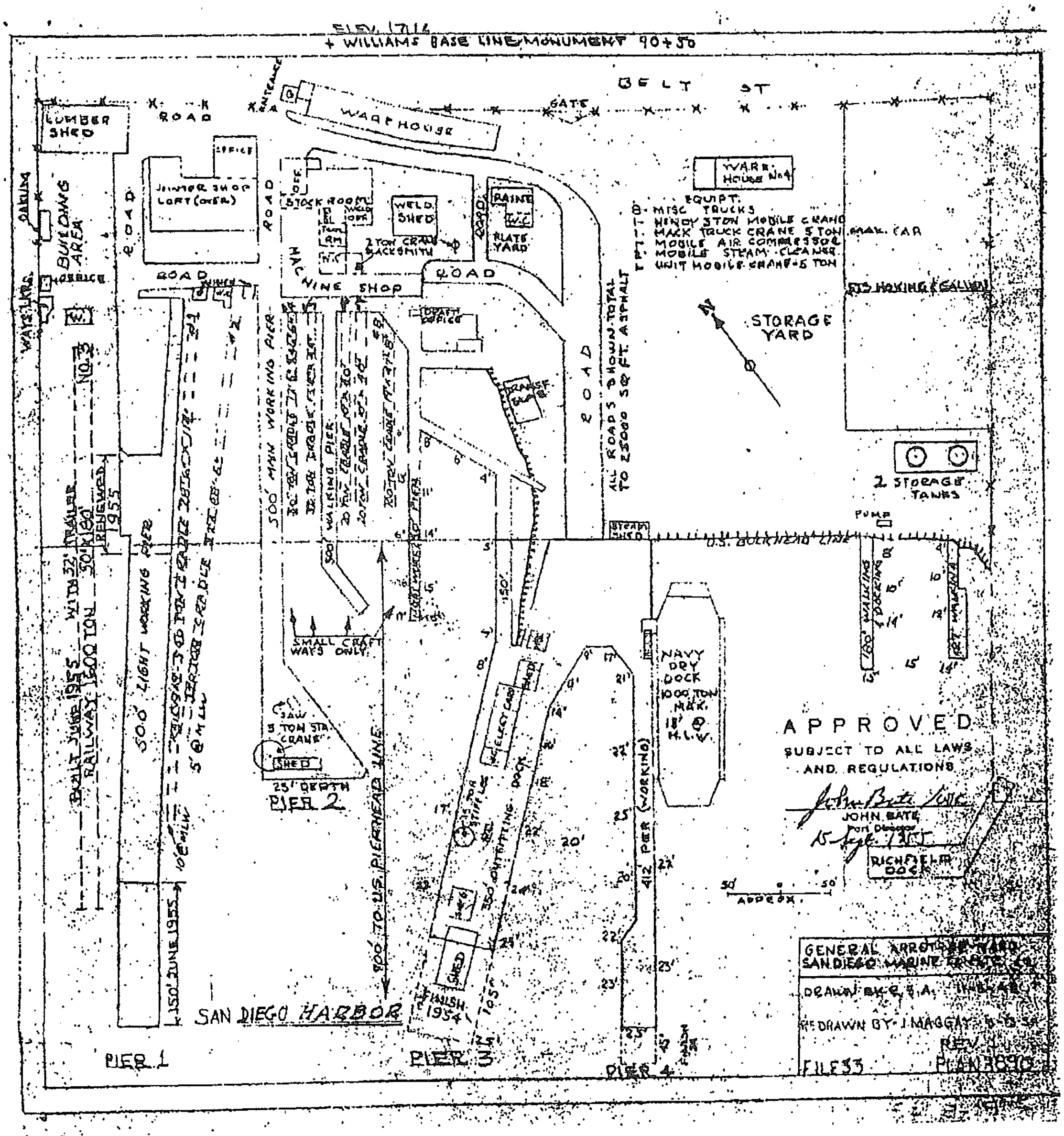


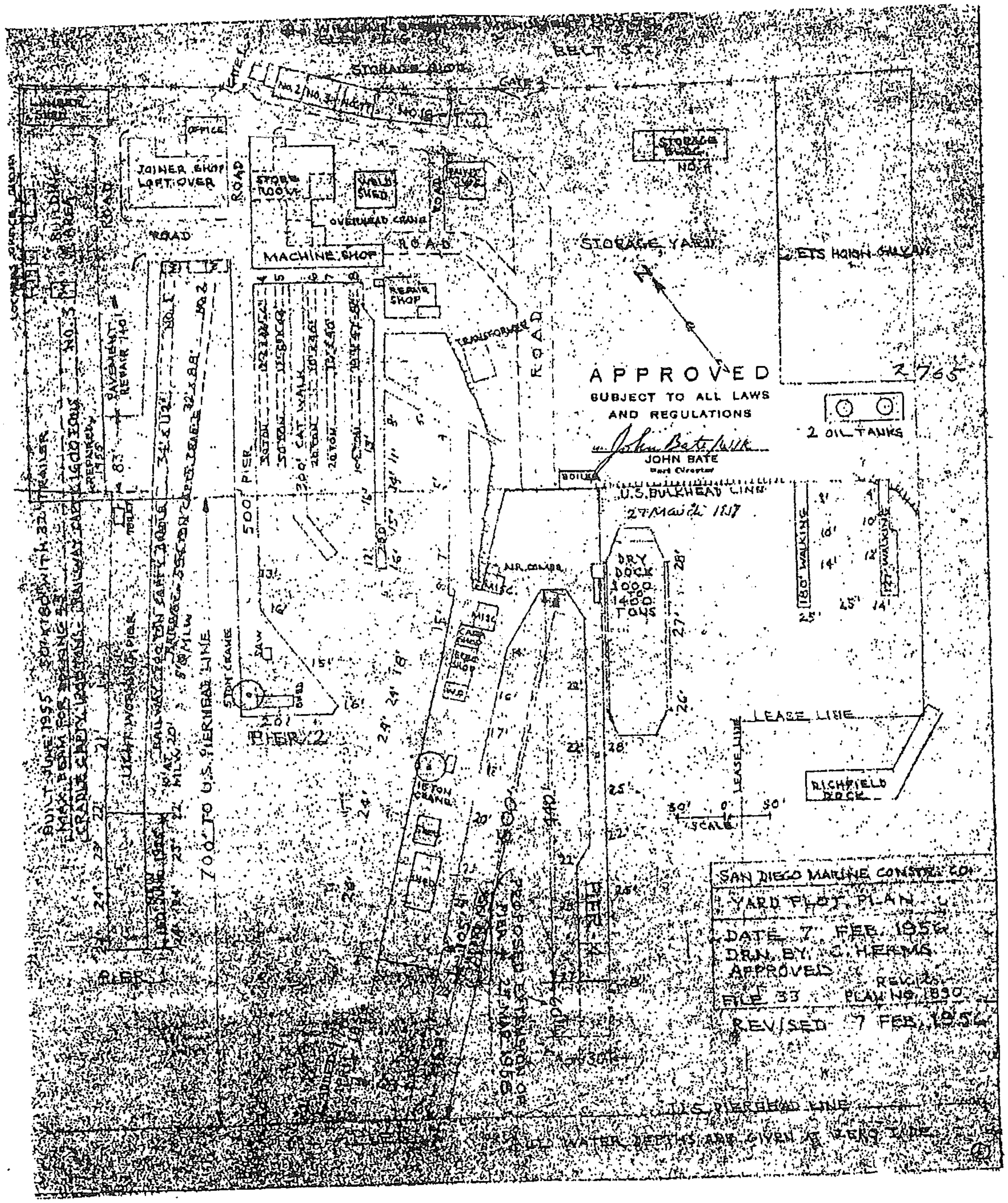
EXHIBIT NO. 1268
Barker

SAR163094



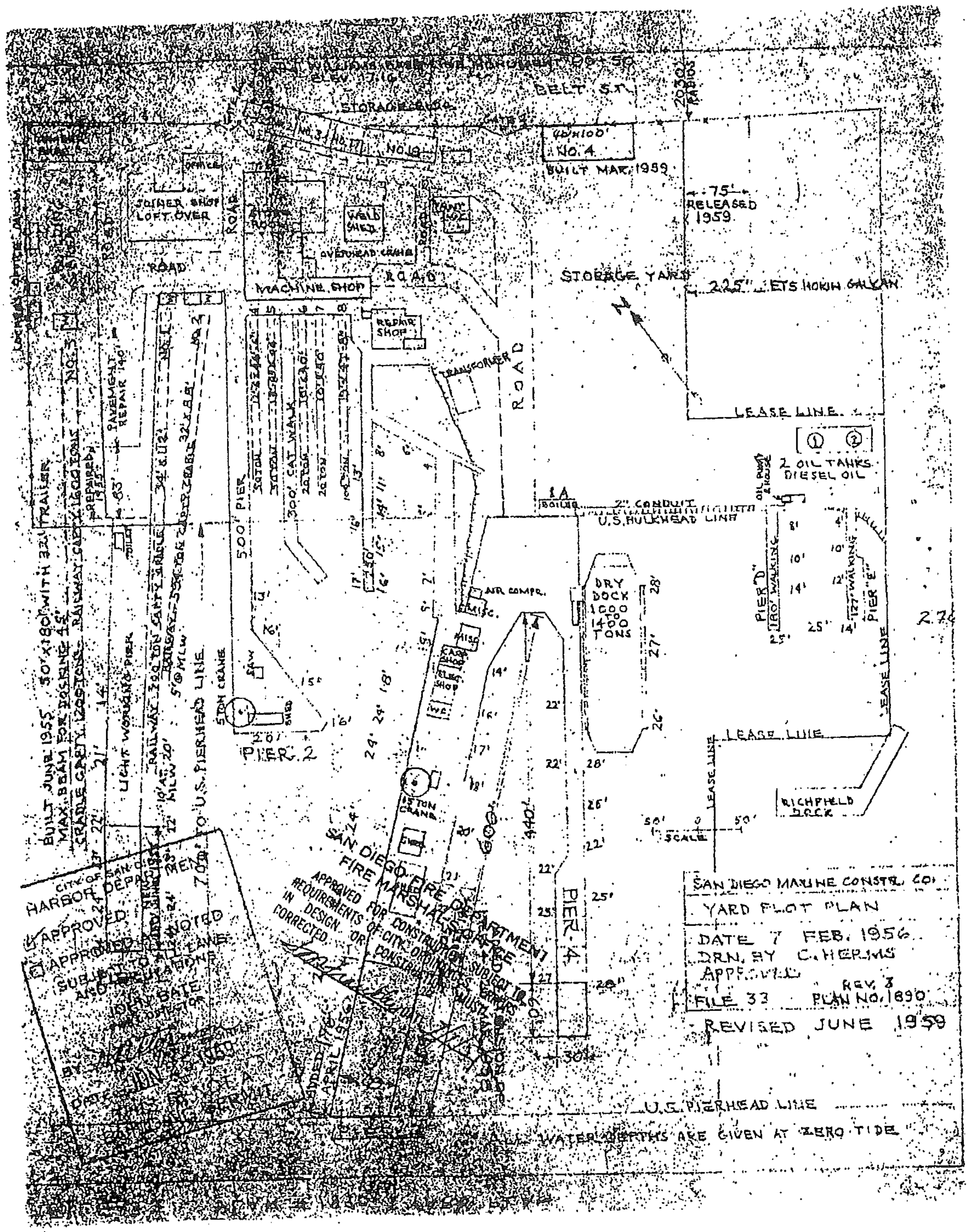
WILLIAMS BASE LINE MONUMENT
BELT ST
LUMBER SHED
ROAD
WAREHOUSE
GATE
OFFICE
JOINER SHOP LOFT (OVER)
STOCK ROOM
WELD SHED
PAINT
PLATE YARD
MACHINE SHOP
2 TON CRANE
BLACKSMITH
WAREHOUSE No 4
EQUIPT.
MISC TRUCKS
MOBILE AIR COMPRESSOR
MOBILE STEAM CLEANERS
UNIT MOBILE CRANE 5 TON
STORAGE YARD
ALL ROADS SHOWN TOTAL TO 25000 SQ FT ASPHALT
BUILDING AREA
OFFICE
2 STORAGE TANKS
PUMP
U.S. BULKHEAD LINE
STEAM SHED
500' MAN WORKING PIER
500' LIGHT WORKING PIER
SMALL CRAFT WAYS ONLY
5 TON STA. CRANE
SHED
25' DEPTH
PIER 2
800' TO U.S. PIERHEAD LINE
NAVY DRY DOCK
OUTFITTING DOCK
412' PIER (WORKING)
FINISH 1954
SHED
SAN DIEGO HARBOR
PIER 1
PIER 3
PIER 4
150' JUNE 1955
RENEWED 1955
BUILT JUNE 1955
RAILWAY
APPROVED
SUBJECT TO ALL LAWS AND REGULATIONS
JOHN BATE
RICHFIELD DOCK
APPROX.
GENERAL ARRGT. SAN DIEGO MARINE
REDRAWN BY J. MAGGAY
FILE 33

SAR163118



BELT ST.
STORAGE BLDG.
GATE 2
OFFICE
JOINER SHOP LOFT OVER
ROAD
MACHINE SHOP
OVERHEAD CRANE
REPAIR SHOP
STORAGE YARD
APPROVED
SUBJECT TO ALL LAWS AND REGULATIONS
JOHN BATE
2 OIL TANKS
U.S. BULKHEAD LINE
DRY DOCK 3000 1400 TONS
AIR COMPR.
500' PIER
PIER 2
LEASE LINE
RICHFIELD DOCK
SCALE
700' TO U.S. PIERHEAD LINE
U.S. PIERHEAD LINE
PIER 1
SAN DIEGO MARINE CONSTR. CO.
YARD PLOT PLAN
DATE 7 FEB. 1956
DRN. BY C. HERMS
APPROVED
FILE 33
PLAN NO. 1850
REVISED 7 FEB. 1956

SAR163121


BELT ST.
STORAGE BLDG.
No. 4
BUILT MAR. 1959
RELEASED 1959
JOINER SHOP LOFT OVER
ROAD
MACHINE SHOP
REPAIR SHOP
TRANSFORMER
STORAGE YARD
LEASE LINE
2 OIL TANKS DIESEL OIL
2" CONDUIT
U.S. BULKHEAD LINE
AIR COMPR.
DRY DOCK 1000 1400 TONS
PIER "D"
PIER "E"
500' PIER
PIER 2
PIER 4
RICHFIELD DOCK
SCALE
U.S. PIERHEAD LINE
SAN DIEGO FIRE DEPARTMENT
FIRE MARSHAL'S OFFICE
CITY OF SAN DIEGO
HARBOR DEPARTMENT
APPROVED
SAN DIEGO MARINE CONSTR. CO.
YARD PLOT PLAN
DATE 7 FEB. 1956
DRN. BY C. HERMS
APPROVED
REV. 3
FILE 33 PLAN NO. 1890
REVISED JUNE 1959
ALL WATER DEPTHS ARE GIVEN AT ZERO TIDE

1269

Bechtel

50 Beale Street
San Francisco, CA 94105-1895
Mailing address: P.O. Box 193965
San Francisco, CA 94119-3965

405 0012

RECEIVED
JAN 18 1994
SAN DIEGO REGIONAL WATER
QUALITY CONTROL BOARD

Preliminary Assessment

Site: Southwest Marine
2205 East Belt St. (Foot of Sampson Street)
San Diego, CA 92113

Site EPA ID Number: CAD 981172554

Work Assignment Number: 60-15-9J00, ARCSWEST Program

Submitted to: Rachel Loftin
Work Assignment Manager
EPA Region IX

Date: November 22, 1993

Prepared by: Maynard Geisler MG

Review and Concurrence: Michele Dermer
MD

BWP 1/18
DTB
JA
KTB
file: Southwest Marine

Bechtel Environmental, Inc.

EXHIBIT NO. 1269
Barker
jmsteno.com

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA), Region IX, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), has tasked Bechtel Environmental, Inc. (BEI) to conduct a preliminary assessment (PA) of the Southwest Marine site in San Diego, San Diego County, Calif.

The purpose of the PA is to review existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment and to determine if further investigation under CERCLA/SARA is warranted. The scope of the PA includes the review of information available from federal, state, and local agencies and performance of an onsite reconnaissance visit. A PA onsite reconnaissance visit was performed by BEI on July 13, 1993.

Using these sources of existing information, the site is then evaluated using the EPA's Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites at which the EPA may conduct remedial response actions. This report summarizes the findings of these preliminary investigative activities.

Southwest Marine was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on February 8, 1993 (CAD 981172554) (1). The site was entered into CERCLIS as a result of the site discovery program conducted by the EPA in San Diego County.

1.1 Apparent Problem

The apparent problems at the site are as follows:

- Southwest Marine operations include the application and removal of paint from ships. There are two dry docks on site where paint application and removal are performed. Currently, paint mixtures include a copper oxide, known as cupric oxide, which is an antifouling agent used to inhibit the growth of marine organisms. Historically, tributyltin (TBT) was the antifouling agent used in marine paints. (2)
- In 1987, staff from the Regional Water Quality Control Board (RWQCB), San Diego Region, observed water being discharged from a Southwest Marine dry dock into San Diego Bay. The discharge water was sampled and found to contain arsenic, cadmium, chromium (total), copper, lead, mercury, nickel, silver, and zinc. (3)
- Onsite sediment and mussel sampling data reported by the RWQCB and sediment sampling data reported by Southwest Marine in 1993 documented elevated concentrations of TBT, copper, and zinc in sediments and mussels collected from San Diego Bay. (4,5)

2.0 SITE DESCRIPTION

2.1 Location

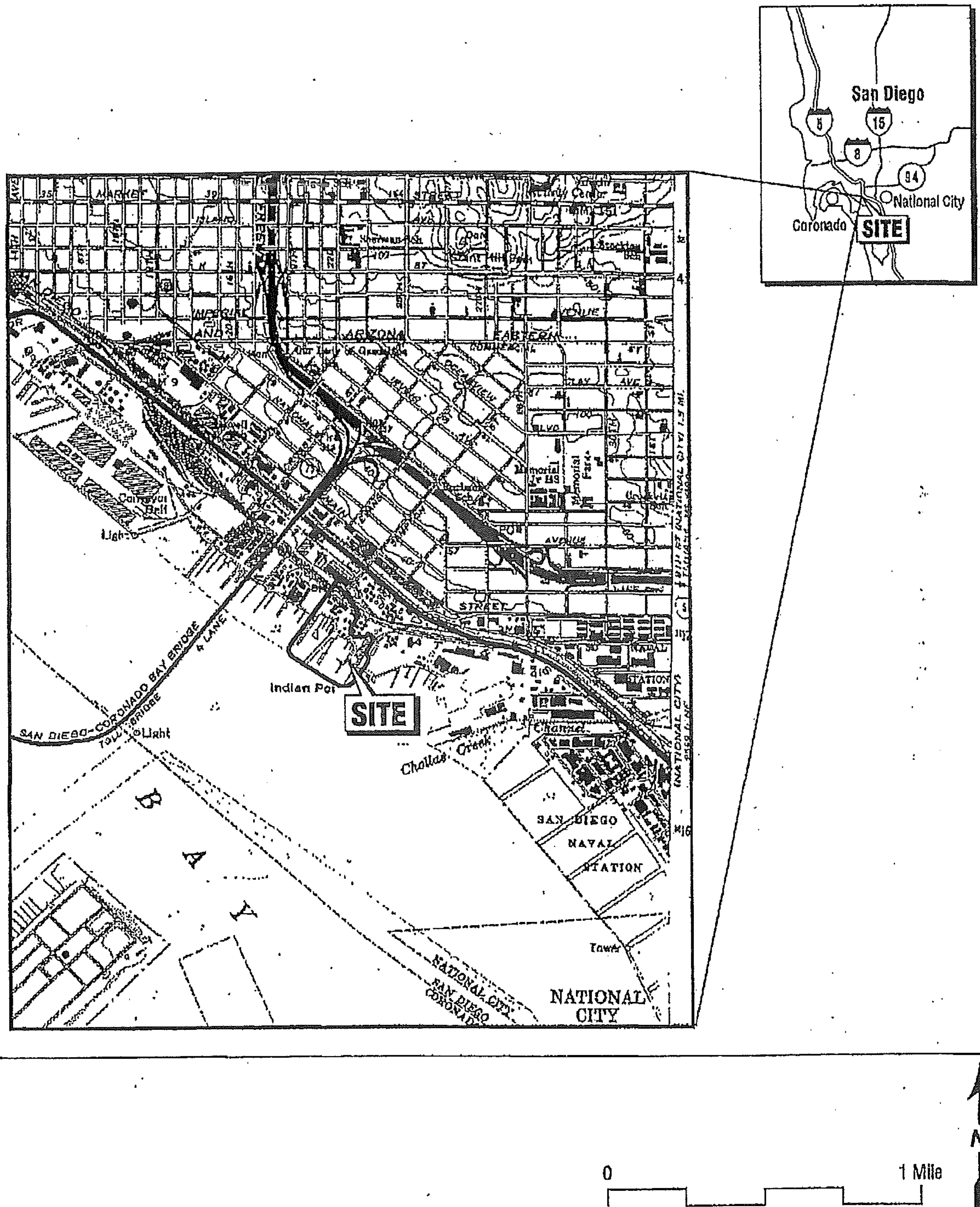
The Southwest Marine site is located at 2205 East Belt St. (at the foot of Sampson Street) in San Diego, Calif. The geographic coordinates of the site are 32° 41' 33.0" N latitude and 117° 08' 35.0" W longitude (No Township, Range and Section designations, San Bernardino Baseline and Meridian, Point Loma, Calif., 7.5-minute quadrangle) (6). The site location is shown in Figure 2-1.

2.2 Site Description

The Southwest Marine site occupies approximately 9.75 acres of land and 16.64 acres of water in a heavy industrial area of San Diego. The site is bordered on the north by Kelco Division of Merck and Company, on the south by National Steel and Shipbuilding Company, on the west by San Diego Bay, and on the east by a Chevron USA aboveground storage tank farm and East Belt Street, across from which is a former San Diego Gas & Electric Company cogeneration facility and an ARCO aboveground storage tank farm. The site is fenced to the north, south, and east. The site is completely covered with asphalt and concrete pavement or buildings. The closest residence is approximately 1,000 yards east of the site, across Harbor Boulevard. (2) The site layout is shown in Figure 2-2.

Southwest Marine is a ship repair facility with operations that include paint removal and application and mechanical, electrical, plumbing, and hydraulic system repair and maintenance. Areas on site that are used to support operations include a vehicle maintenance building that is used to service company vehicles; an underground gasoline storage tank; a steam cleaner and wash rack that are used to clean parts and materials; a sheet metal shop and welding shop that are used to fabricate metal parts for ships; a wood shop and an electrical shop that are used for facility support and ship repairs; a pipe shop that is used for pipe fitting and repair; a machine shop (located on the east side of East Belt Street) that is used for machining metal parts; and a spray paint area that is used for the removal and painting of ship components. The spray paint area consists of an enclosed building where paint removal (by sandblasting with copper slag) and paint application (by spray painting) are performed. Waste copper slag with paint chips and dust are collected by Southwest Marine and sent to the blast media waste storage area for shipment by rail to a recycler. (2)

Onsite hazardous materials and hazardous waste are stored, respectively, at the hazardous materials storage yard and the hazardous waste storage yard. The hazardous materials storage yard was recently constructed and consists of nine adjacent storage lots that are approximately 10 feet long by 5 feet wide each. Approximately twenty 55-gallon drums, reportedly containing machine and hydraulic oils, were observed in this area during the BEI site visit on July 13, 1993. The hazardous waste storage yard is used to store hazardous waste prior to manifesting and pick up for disposal or recycling. Drums of hazardous waste observed during the BEI site visit reportedly contained unused paint; diesel-fuel-contaminated sea kelp (dried sea kelp was used as an absorbent to soak up a diesel spill on site), muriatic acid, methylene ketone peroxide, mercury-contaminated Tyvek, gloves, and rags (reportedly, this equipment was used to clean a mercury spill from a broken thermometer), waste oil, oily rags, antifreeze (ethylene glycol), and approximately ten plastic bags containing approximately 1,000 pounds of asbestos-containing material. (2)



ars93-3873b.001

Source: U.S. Geological Survey, San Diego, California, 7.5-Minute Series, Point Loma Quadrangle

Figure 2-1 Site Location

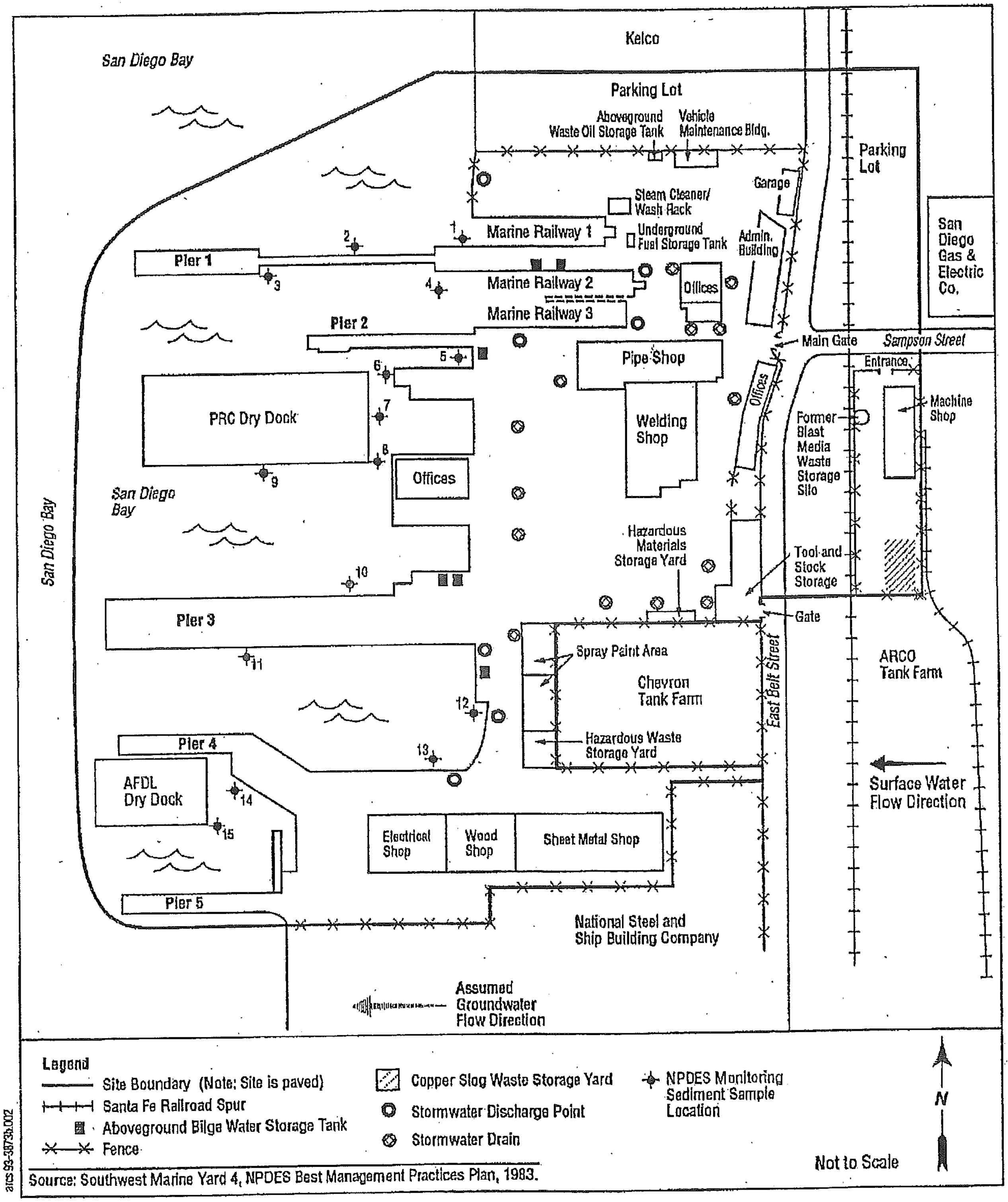


Figure 2-2 Site Layout

2.3 Operational History

The Southwest Marine site has been used as a ship yard/boat yard since the 1930s. San Diego Marine Construction was the site tenant immediately prior to Southwest Marine. San Diego Marine Construction was a boat yard that is currently bankrupt. It is not known when San Diego Marine Construction began operations on site. Although details of San Diego Marine Construction operations are not known, boat yard workers generally known to perform work similar to the work performed at ship yards, except that boat yard workers repair smaller vessels than those found at ship yards. The names of site tenants prior to San Diego Marine Construction are unknown. Southwest Marine has operated on site since approximately 1980. Southwest Marine operates 24 hours a day and, depending on the amount of work, employs between 200 and 2,200 people. During ship repair, which can last up to 9 months, between 300 and 500 naval personnel live on site in naval personnel barges. The property on which Southwest Marine is located is owned by the San Diego Unified Port District. Major areas of ship servicing operations at the site include three marine railways and two dry docks. (2)

Marine railways and dry docks are used by Southwest Marine to remove ships from San Diego Bay for service. Marine railways use rails, which extend from the shore into San Diego Bay, to pull ships partially out of the water for repair and maintenance. The two dry docks on site are known as the PRC dry dock and the AFDL dry dock. One purpose for dry-docking a ship is to service and paint the ship's hull. Typical dry-docking procedures for painting a ship's hull are as follows: the dry dock is submerged, and a ship is positioned over the dry dock; the dry dock is then floated; the ship's hull is hydroblasted with sea water to remove marine organisms, and a tent is erected over the ship and dry dock; the paint from the ship's hull is removed by sandblasting with a copper slag abrasive. Paint removal with liquid paint strippers has never been practiced on site by Southwest Marine. The ship's hull is then painted.

After painting the ship's hull, the copper slag waste is collected, the dry dock is submerged, and the ship is maneuvered away from the dry dock. Different paints are applied to a ship's hull depending on whether the paint is applied above or below the waterline. Paint applied above the waterline is a blend of solvents and pigments; paint applied below the water line, known as antifouling paint, has special chemical agents to inhibit the growth of marine organisms on the hull. TBT was used as the antifouling agent until 1989. Currently, Southwest Marine uses cupric oxide in antifouling paints. (2)

Ship yard operations at Southwest Marine generate several wastes. Bilge water, waste oil, paint waste, and copper slag are the primary wastes generated on site. Bilge water is a mixture of water and oil that is pumped from the ships' bilges into aboveground storage tanks. The aboveground storage tanks are mobile and located near the piers where ships are being serviced. While in the aboveground storage tanks, the oil separates from the water. The oil is pumped off and picked up by a recycler at least every 90 days, or as necessary, while the water is analyzed and either discharged into the sanitary sewer or disposed of as hazardous waste. Other locations of waste oil generation on site include the vehicle maintenance building and, potentially, any pier where ships are being serviced. Waste oil generated from sources other than from bilge water is contained in 55-gallon drums and sent to the hazardous waste storage yard prior to their pick up by a recycler at least every 90 days or as necessary. Paint waste consists of unused paint, and is manifested as hazardous waste for disposal. Copper slag waste generated at the dry docks, composed of a mixture of copper slag and paint chips and dust, is taken to the blast media waste storage yard prior to shipment to a cement industry facility for recycling. Copper slag has been recycled by

Southwest Marine since approximately 1988. In 1991, soluble threshold limit concentration (STLC) values of 17 heavy metals in the copper slag were found to be below benchmark concentrations (7, 8). Prior to 1988, copper slag was sent to landfills for disposal. (2)

Solvents used on site are recycled by Safety Kleen, a hazardous waste hauler, every 90 days. A special solvent, T-35, is used to clean gun barrels on naval ships and is a mixture of xylene, methyl ethyl ketone, and n-butyl alcohol. T-35 is recycled on site by Southwest Marine in a solvent distiller in the hazardous waste storage yard. Sludge left over from the distilling process is manifested as hazardous waste for disposal by Pacific Treatments every 90 days.(2)

Onsite sediment sampling by Southwest Marine and the RWQCB have documented elevated concentrations of heavy metals and several organic compounds on site (4,5).

2.4 Regulatory Involvement

2.4.1 U.S. Environmental Protection Agency (EPA). The Southwest Marine site is listed as a large quantity generator in the Resource Conservation and Recovery Information System (RCRIS) database as of September 21, 1993. (9)

2.4.2 California Environmental Protection Agency, Regional Water Quality Control Board (RWQCB), San Diego Region. In 1987, during a compliance inspection, staff from the RWQCB observed water being discharged from a Southwest Marine dry dock into San Diego Bay. The discharge water was sampled and found to contain arsenic, cadmium, chromium (total), copper, lead, mercury, nickel, silver, and zinc. (3)

There have been three sediment sampling events at Southwest Marine that were conducted under the authority of the RWQCB. Two sampling events were associated with Southwest Marine's National Pollutant Discharge Elimination System (NPDES) Permit requirements, and the third sampling event was part of a RWQCB study of Southwest Marine.

Southwest Marine is currently operating under a Best Management Plan as required by its NPDES permit (10). In 1992, the NPDES permit was amended to require sediment monitoring by Southwest Marine. The sediment monitoring requirement requires sediment sampling every 6 months, for a period of 5 years, from 15 sample points at Southwest Marine and three reference (background) sediment sample points (sample points are illustrated in Figure 2-2). Selected sediment samples are analyzed for cadmium, chromium, copper, lead, nickel, silver, zinc by EPA Method 6010, arsenic by EPA Method 7060, mercury by EPA Method 7471, TBT by gas chromatic flame photometric detection (GCFPD), total petroleum hydrocarbons (aliphatic) by EPA Method 3611, polychlorinated biphenyls (PCBs) by EPA Method 8080, polychlorinated triphenyls by EPA Method 8080, and 11 polynuclear aromatic hydrocarbons by EPA Method 8270. To date, two monitoring reports, dated November 1992 and June 1993, have been submitted by Southwest Marine. (2,5) Analysis of onsite sediment samples indicate that concentrations of the following metals and organic compounds were at least three times above the background concentrations: arsenic, chromium, copper, lead, mercury, silver, zinc, TBT, total petroleum hydrocarbons (aliphatic), PCBs, and eight of the 11 polynuclear aromatic hydrocarbons. (5) By 1997, a final report describing any trends in sediment chemical concentrations is to be prepared by Southwest Marine and submitted to the RWQCB (2).

On February 1, 1993, the RWQCB reported on a sediment, and a mussel-testing program conducted adjacent to Southwest Marine and two other shipyards in the area. The sediment sampling program at Southwest Marine consisted of the collection and chemical analyses of an unspecified number of sediment samples from areas adjacent to bulkheads and piers at Southwest Marine. Onsite sediment sample analyses indicate TBT concentrations up to 8,800 micrograms per kilogram (µg/kg), copper up to 1,170 milligrams per kilogram (mg/kg), and zinc up to 1,322 mg/kg. Background sediment sample analyses averages reported by the RWQCB indicate TBT at 78 µg/kg, copper at 137 mg/kg, and zinc at 226 mg/kg. (4)

Mussel studies at Southwest Marine and two other shipyards in the vicinity were performed by the California Department of Fish and Game from 1985 through 1989 as part of the State Mussel Watch Program (SMW) and reported by the RWQCB. Data collected during this study were compared to an internal State Board's Mussel Watch Program standard referred to as an Elevated Data Level (EDL). An EDL 95 is defined as the concentration of a toxic substance in a mussel that equals or exceeds 95 percent of all SMW measurements of the toxic substance in the same mussel type since inception of the SMW. During the reporting periods 1985-1986, 1987-1988, and 1988-1989, TBT, copper, and zinc in mussels collected from a Southwest Marine sample point exceeded the SMW EDL 95. (4)

In 1991, the RWQCB, in addition to the NPDES sediment monitoring program, asked Southwest Marine and two other nearby shipbuilding companies to conduct a joint sediment sampling and analysis investigation/characterization of San Diego Bay sediments at their respective properties. On October 17, 1991, the RWQCB received an outline of the investigation to be performed by the three facilities (11). Sediment sampling for this investigation has not yet taken place at Southwest Marine. (2) The RWQCB plans to meet with the three facilities to discuss the sediment sampling investigation (11).

2.4.2 San Diego Air Pollution Control District. Southwest Marine is permitted by the San Diego Air Pollution Control District to operate abrasive blast machines, an underground fuel storage tank vapor recovery system, diesel, natural gas, and piston-engine generators, fiberglass machining equipment, a painting booth, and a solvent recovery system. There are two records of violations concerning Southwest Marine's operations. These violations involved an abrasive blast machine and the paint booth. According to the San Diego Air Pollution Control District, both violations have been resolved. (12)

3.0 HAZARD RANKING SYSTEM FACTORS

3.1 Sources of Contamination

Potential hazardous substance sources associated with the site are as follows:

- Onsite and reference sediment sample analyses indicate that concentrations of arsenic, chromium, copper, lead, mercury, zinc, and several polynuclear aromatic hydrocarbon compounds are present in onsite sediments (5). The quantities of sediments containing these hazardous substances are not known.
- At the time of the site reconnaissance by BEI, the hazardous waste storage yard contained two 55-gallon drums of waste muriatic acid, one 55-gallon drum of

"methylene ketone peroxide," two 5-gallon cans containing mercury-contaminated Tyvek, gloves, and rags, two 4,300-gallon aboveground waste oil tanks, one 55-gallon drum of antifreeze (ethylene glycol), forty 55-gallon drums and twenty 5-gallon cans of paint waste, and approximately 10 plastic bags of approximately 1,000 pounds of asbestos-containing material. (2)

- A 400-gallon aboveground waste oil storage tank is located near the vehicle maintenance building. Six 5,000-gallon to 10,000-gallon aboveground bilge water storage tanks are near onsite piers. (2) The amount of copper slag waste on site is unknown. Approximately 2,580 tons of copper slag waste were generated on site in 1991 (4).

3.2 Groundwater Pathway

No drinking water wells or monitoring wells are on site (2). The depth to groundwater in the site vicinity is approximately 20 feet to 30 feet below ground surface (13). The groundwater flow direction in the region is assumed to be west toward San Diego Bay. The Sweetwater Authority operates two municipal drinking water wells approximately 3.25 miles east of the site. The Sweetwater Authority provides water to approximately 160,000 people. Ten percent of the Sweetwater Authority's water supply is from the two wells, while the remaining 90 percent comes from surface water. (14)

3.3 Surface Water Pathway

3.3.1 Hydrological Setting. The Southwest Marine site is located on the San Diego Bay shoreline and slopes gently toward San Diego Bay (2). The site is located in an area subject to minimal flooding (15,16). Approximately 17 onsite storm drains that drain approximately 70 percent of the storm water runoff from the site into San Diego Bay. The remaining 30 percent of stormwater flows directly into San Diego Bay along the Southwest Marine waterfront. (10) The 2-year, 24-hour rainfall event for San Diego is approximately 1.8 inches (17).

3.3.2 Surface Water Targets. San Diego Bay is a designated water recreation area (4). San Diego Bay is not used as a source of drinking water (18). Approximately 1 million pounds of fish are caught annually from San Diego Bay (19). San Diego Bay is known to be a habitat for the following state-and federally designated endangered and threatened species: the California brown pelican, the California least tern, the salt marsh bird's-beak, the light-footed clapper rail, the California black rail, the beldings savannah sparrow, and the peregrine falcon (20).

3.3.3 Surface Water Pathway Conclusions. A release of arsenic, chromium, copper, lead, mercury, and zinc to San Diego Bay has been established based on the NPDES permit sediment analysis (3,5). A release to surface water is established when a hazardous substance is detected in onsite sediments at a concentration at least three times greater than the concentration detected in sediments hydraulically upgradient of the site, and some portion of the release is attributable to the site. Results of the June 1993 NPDES sediment monitoring program and 1987 RWQCB dry-dock discharge water analyses document a release to San Diego Bay. The hazardous substances arsenic, chromium, copper, lead, mercury, and zinc were detected in the 1987 RWQCB dry-dock discharge water sample and 1993 onsite sediment analyses at or above three times the background concentrations. (4,5) The quantity of sediment containing these hazardous substances is not known.

Approximately 1 million pounds of fish are harvested annually from San Diego Bay (19). Onsite commercial harvest of fish is unlikely. The areal extent of hazardous substances suspected to have been released from the site into San Diego Bay is unknown. San Diego Bay is known to be a habitat for seven state-and federally designated endangered and threatened species (20).

3.4 Soil Exposure and Air Pathway

The site is fenced to the north, south, and east. The site is completely covered with asphalt and concrete pavement or buildings. No large landward areas with exposed surficial soil are on site. Southwest Marine operates 24 hours a day and, depending on the amount of work, employs between 200 and 2,200 people. The closest residence is approximately 1,000 yards east of the site, across Harbor Boulevard. No schools or daycare centers are on or within 200 feet of the site. No permanent housing is on site. During ship repair, which can last up to 9 months, between 300 and 500 naval personnel live on site in naval personnel barges. (2) Approximately 97,411 people live within 4 miles of the site (21).

4.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40 CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region IX's Emergency Response Section does not appear to be necessary:

- The site is completely fenced and has no large areas of exposed surficial soil.
- The closest residence is approximately 1,000 yards east of the site, across Harbor Boulevard. No schools or daycare centers are on or within 200 feet of the site.

5.0 SUMMARY

The Southwest Marine site is located at 2205 East Belt St. (at the foot of Sampson Street) in San Diego, Calif. The site has been used as a ship yard/boat yard since the 1930s. Southwest Marine has operated on site since approximately 1980. The property on which Southwest Marine is located is owned by the San Diego Unified Port District.

Southwest Marine is a ship repair facility with operations that include paint removal and application and mechanical, electrical, plumbing, and hydraulic system repair and maintenance. Major areas of operations include marine railways and dry docks.

Three marine railways and two dry docks are on site. Marine railways use rails, which extend from the shore into San Diego Bay, to pull ships partially out of the water for service. The dry docks are used to service and paint ship's hulls. Southwest Marine removes paint from ships' hulls by sandblasting with a copper slag abrasive. Paint applied below the ship's water line is an antifouling paint that has special chemical agents which inhibit the growth of marine organisms on the hull. Historically, tributyltin, was used by Southwest Marine as an antifouling agent. However, tributyltin has not been used on site since 1989. Currently, Southwest Marine uses cupric oxide in antifouling paints. The copper slag waste and removed paint chips and dust are collected and sent to the blast media waste storage prior to submerging the dry dock.

Bilge water, waste oil, paint waste, and copper slag are the primary wastes generated on site. Bilge water is a mixture of water and oil that is pumped from the ship's bilge into aboveground storage tanks. The mixture is allowed to separate in the aboveground tanks. The waste oil is recycled. The water is tested and either discharged to the sanitary sewer or manifested and disposed of as hazardous waste. Paint waste consists of unused paint and is manifested as a hazardous waste for disposal. Copper slag waste is composed of a mixture of copper slag, paint chips, and paint dust.

Onsite sediment monitoring by Southwest Marine indicates that concentrations of arsenic, chromium, copper, lead, mercury, zinc, tributyltin, and several polynuclear aromatic hydrocarbon compounds are present in onsite sediments. State Mussel Watch program data collected by the California Department of Fish and Game, as reported by the RWQCB, indicate concentrations of tributyltin, copper, and zinc in mussels collected on site.

The Sweetwater Authority operates two municipal drinking water wells approximately 3.25 miles east of the site. The Sweetwater Authority provides water to approximately 160,000 people. Ten percent of the Sweetwater Authority's water supply is from the two wells, while the remaining 90 percent comes from surface water.

San Diego Bay is a designated water recreation area. San Diego Bay is not used as a source of drinking water. Approximately 1 million pounds of fish are harvested annually from San Diego Bay. San Diego Bay is known to be a habitat for seven state- and federally protected endangered and threatened species.

The pertinent Hazard Ranking System factors associated with the site are as follows:

- Sediment sample analysis indicates a release of arsenic, chromium, copper, lead, mercury, and zinc to onsite sediments.
- San Diego Bay is not used as a source of drinking water.
- Two drinking water wells, providing approximately 10 percent of the total drinking water supply to approximately 160,000 people, are located 3.25 miles east of the site.
- The site is covered with asphalt and concrete pavement or buildings, and fenced. No residences, schools, or daycare centers are on and within 200 feet of the site.

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION IX

Site Name: Southwest Marine EPA ID#: CAD 981172554

Alias Site Names:

City: San Diego County or Parish: San Diego State: CA

Refer to Report Dated: 11/22/93 Report type: Preliminary Assessment

Report developed by: Bechtel Environmental, Inc.

DECISION:

|✓| 1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:

|✓| 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

| | 1b. Site may qualify for further action, but is deferred to: | | RCRA | | NRC

| | 2. Further Assessment Needed Under CERCLA: 2a. (optional) Priority: | | Higher | | Lower

2b. Activity Type: | | PA | | SI | | ESI | | HRS evaluation

| | Other:

DISCUSSION/RATIONALE:

Report Reviewed, Approved, and Site Decision Made by: Michael E. Bellot Signature: [signature] Date: 1/10/94

EPA Form # 9100-3 Rev. 5/93

SAR050552

APPENDIX A

REFERENCE LIST

Site: Southwest Marine

1. U.S. Environmental Protection Agency, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), July 6, 1993.

2. Geisler, Maynard, Bechtel Environmental, Inc., Site Reconnaissance Interview and Observations Report, July 13, 1993.

3. California Environmental Protection Agency, Regional Water Quality Control Board, San Diego Region, Letter to Dave Bechtel, Southwest Marine, Inc., May 5, 1987.

4. California Environmental Protection Agency, Regional Water Quality Control Board, San Diego Region, Staff Report on Petitions to Downgrade Threat to Water Quality and Complexity Ratings for Campbell Industries, Southwest Marine, and National Steel and Shipbuilding Company Shipyards, December 14, 1992 (Revised February 1, 1993).

5. Southwest Marine, NPDES Permit, Marine Sediment Monitoring and Reporting, Second Semi-Annual Report, June 1993, prepared for Ecosystems Mgt. Assoc. Inc., June 11, 1993.

6. U.S. Geological Survey, Point Loma Quadrangle, California, 7.5-Minute Series (topographic), 1967, Photorevised 1975.

7. Walits, Kenneth J., Pacific Treatment Analytical Services, Letter regarding analytical report to Southwest Marine, June 30, 1991.

8. California Environmental Protection Agency, Regional Water Quality Control Board, Central Valley Region, The Designated Level Methodology for Waste Classification and Cleanup Level Determinations, October 1986, Updated June 1989, p. 14.

9. U.S. Environmental Protection Agency, Resource Conservation and Recovery Information System (RCRIS), September 21, 1993.

10. Southwest Marine, Inc., Storm Water Pollution Prevention Plan received August 10, 1993, Undated.

11. Zachary, Karen, California Environmental Protection Agency, Regional Water Quality Control Board, San Diego Region, Telephone conversation recorded on Contact Report (with attachment) by Maynard Geisler, Bechtel Environmental Inc., July 20, 1993.

12. Henson, Marta, San Diego Air Pollution Control District, Telephone conversation recorded on Contact Report by Maynard Geisler, Bechtel Environmental, Inc., June 25, 1993.

REFERENCE LIST (Cont'd)

Site: Southwest Marine

13. Hummel, Charles, San Diego County Health Department, Telephone conversation recorded on Contact Report by Surjit Dhillon, Bechtel Environmental, Inc., April 23, 1993.

14. Roberts, Paula, Sweetwater Authority, Telephone conversation recorded on Contact Report by Sharron Reackhof, Bechtel Environmental, Inc., September 28, 1992.

15. Bollanbach, Gerri, City of San Diego, Engineering and Development, Telephone conversation recorded on Contact Report by Surjit Dhillon, Bechtel Environmental, Inc., April 23, 1993.

16. Bollanbach, Gerri, City of San Diego, Engineering and Development, Discussion recorded on Contact Log, October 5, 1993.

17. U.S. Department of Commerce, National Oceanic Atmospheric Administration, National Weather Service, Atlas 2, Vol. 11, Isopluvials of 2 year, 24-hour precipitation for Southern Half of California in Tenths of an Inch.

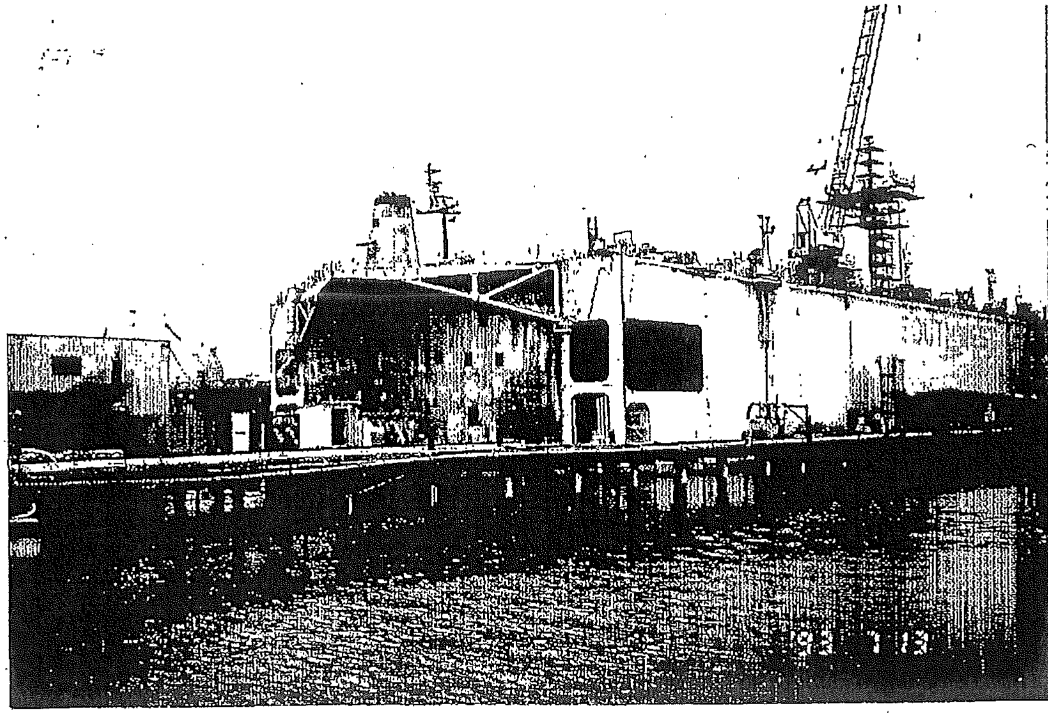
18. Eyre, Larry, San Diego Unified Port District, Environmental Management Department, Telephone conversation recorded on Contact Report by Surjit Dhillon, Bechtel Environmental, Inc., April 23, 1993.

19. Reed, Bob, California Department of Fish And Game, San Diego County, Telephone conversation recorded on Contact Report by Sharron Reackhof, Bechtel Environmental Inc., April 13, 1993.

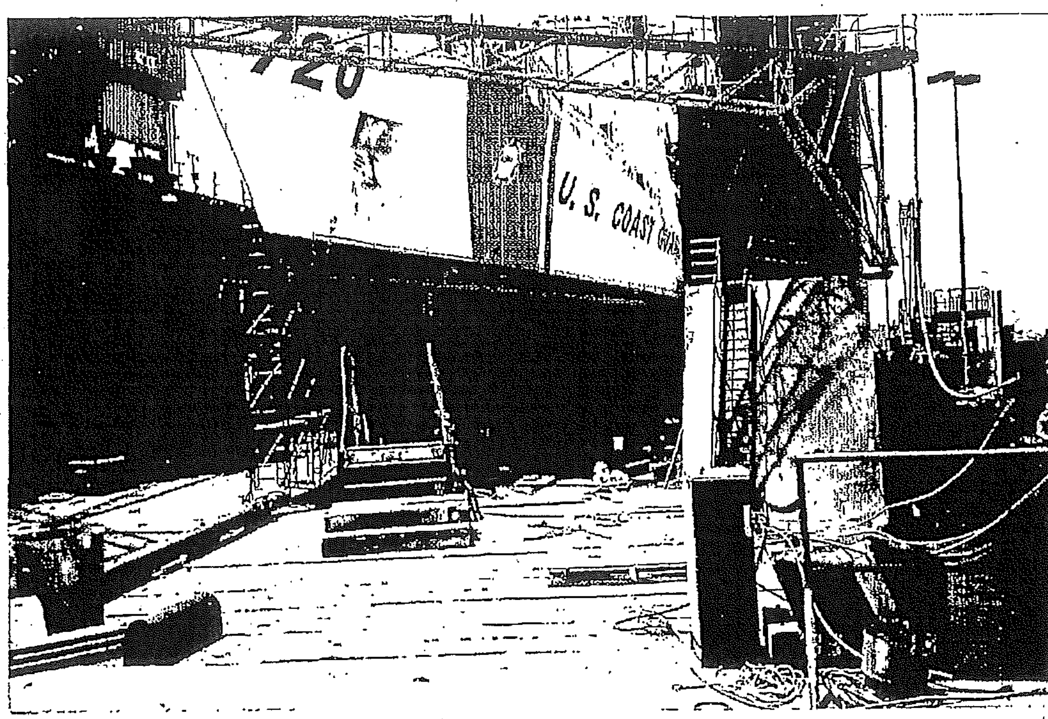
20. Dillingham, Tim, California Department of Fish And Game, San Diego County, Telephone Conversation recorded on Contact Report by Sharron Reackhof, Bechtel Environmental Inc., April 13, 1993.

21. Bureau of Census, 1980 Census, 1985 Population Projection.

APPENDIX B
Photographic Documentation

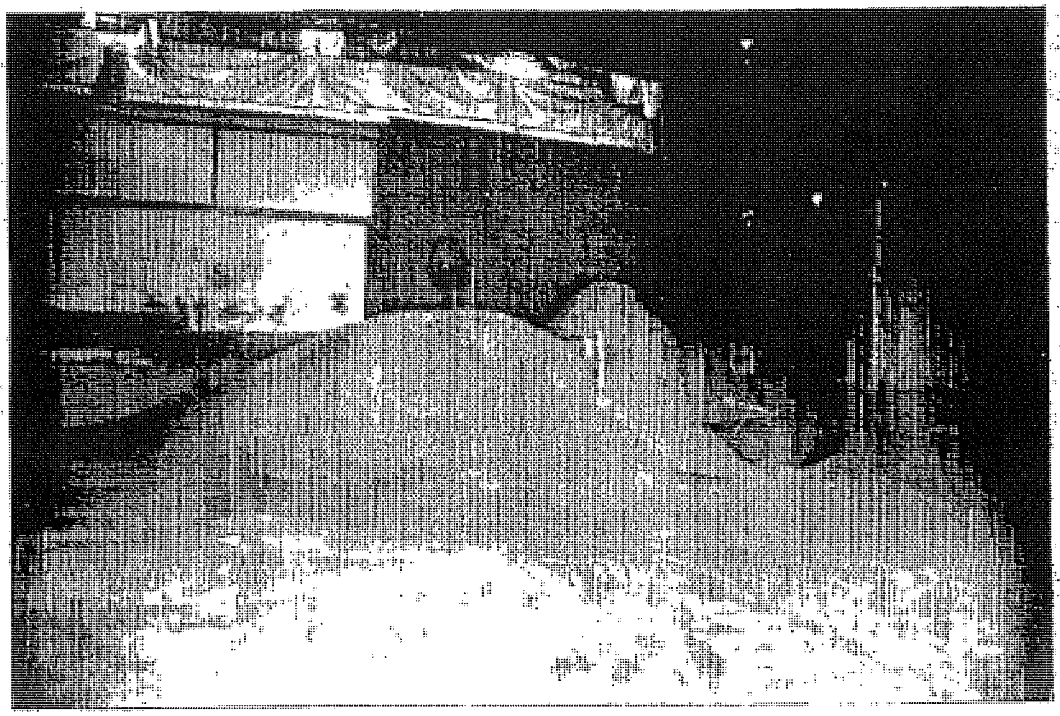


1. PRC Dry Dock; Pier 2 in the foreground (facing southwest).

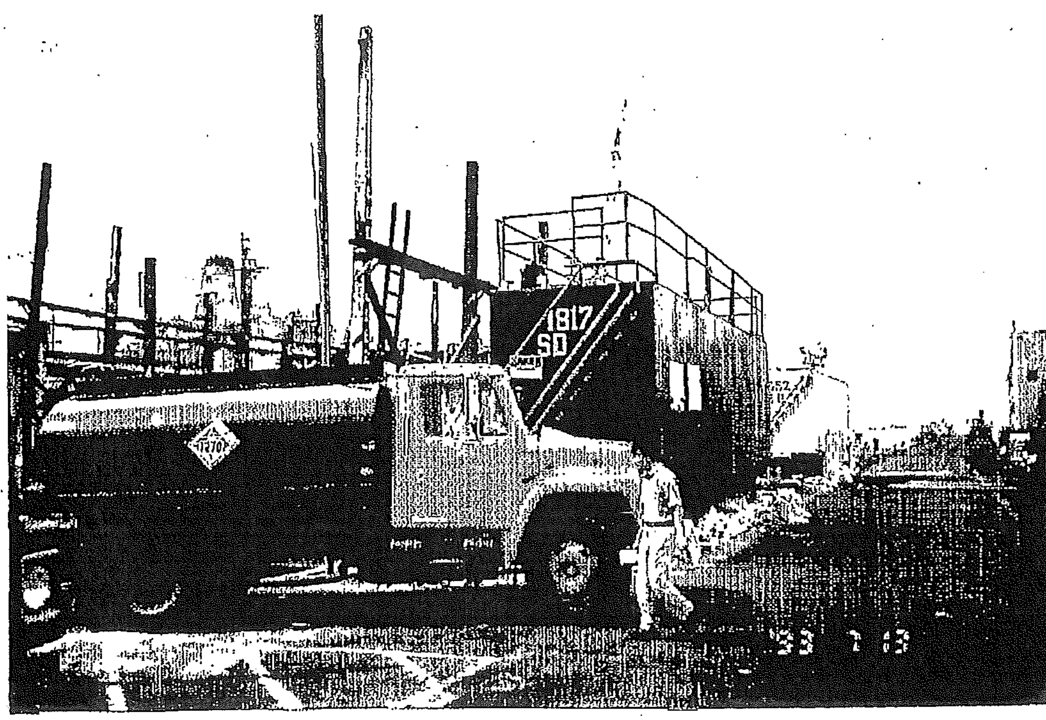


2. AFDL Dry Dock near Pier 4 (facing west).

SAR050555

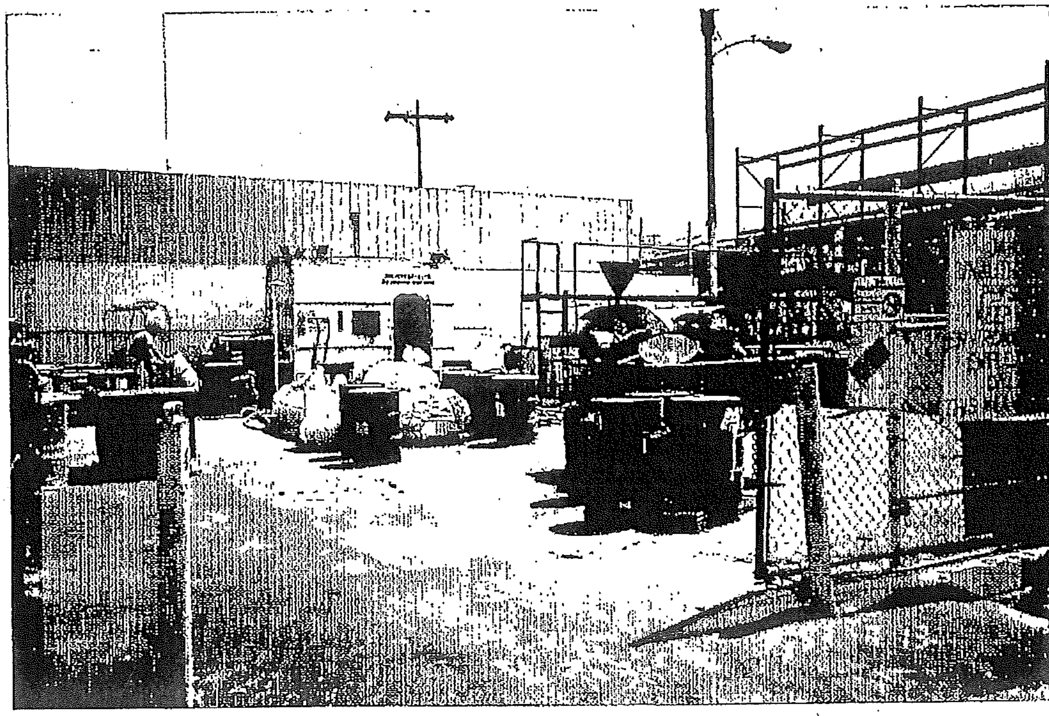


3. Spray paint area with piles of blast-media waste (facing south).

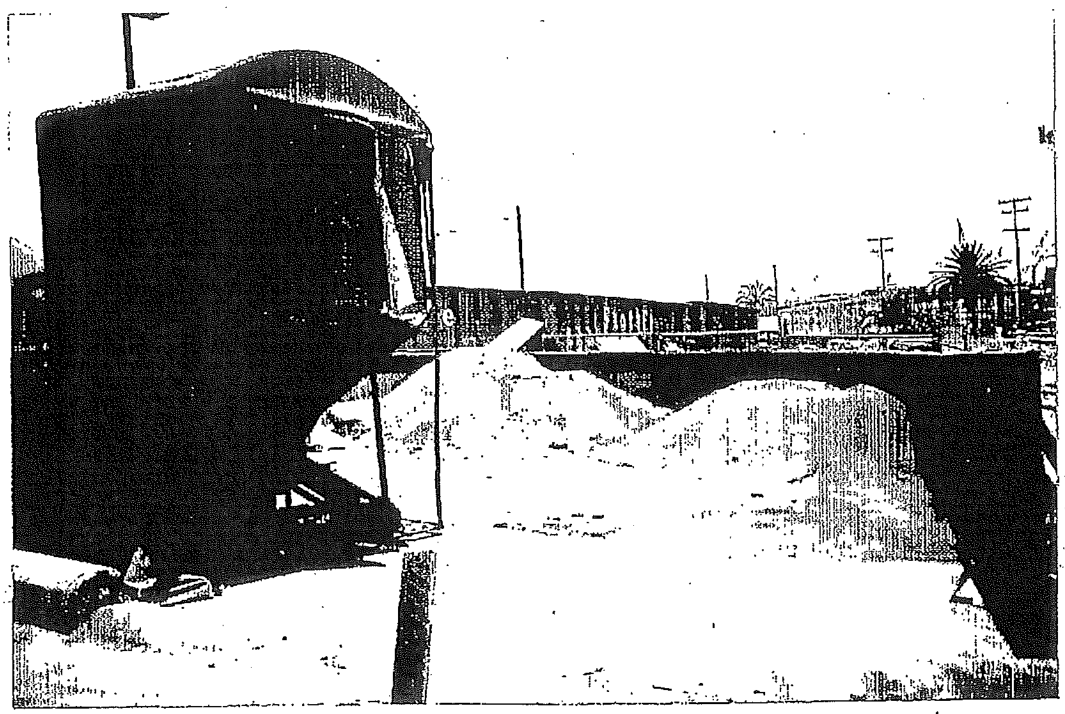


4. Aboveground bilge-water storage tanks near Pier 1 with waste oil recycling tank truck in foreground (facing west).

SAR050556



5. Hazardous waste storage yard (facing southeast).



6. Blast-media waste storage yard (facing southeast).

APPENDIX C

CONTACT LOG

Site: Southwest Marine

EPA ID: CAD 981172554

Name	Affiliation	Phone	Date	Information
Paula Roberts	Sweetwater Authority Water Distribution Network	(619) 422-8395	9/28/92	See Contact Report by Sharron L. Reackhof, Bechtel Environmental, Inc. (BEI).
Tim Dillingham	California Department of Fish and Game	(619) 525-4215	4/13/93	See Contact Report by Sharron L. Reackhof, (BEI).
Bob Reed	California Department of Fish and Game	(619) 525-4215	4/13/93	See Contact Report by Sharron L. Reackhof, (BEI).
Larry Eyre	San Diego Unified Port District	(619) 686-6254	4/23/93	See Contact Report by Surjit Dhillon, (BEI).
Gerri Bollanbach	City of San Diego, Engineering and Development	(619) 533-3795	4/23/93	See Contact Report by Surjit Dhillon, (BEI).
Charles Hummel	San Diego County, Environmental Health Services	(619) 565-5173	4/23/93	See Contact Report by Surjit Dhillon, (BEI).
Julie Johnson	California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control, Region 3	(310) 590-4980	6/23/93	Cal-EPA, Department of Toxic Substances Control has a file on Southwest Marine (Sampson Street). Files are not available for review until July 1.
Patricia Hackley	San Diego County Air Pollution Control District	(619) 694-3307	6/24/93	San Diego County Air Pollution Control District has a file on Southwest Marine.
Dana Austin	Southwest Marine	(619) 238-2043	6/25/93	See Contact Report.

CONTACT LOG (Cont'd)

Site: Southwest Marine

Name	Affiliation	Phone	Date	Information
Marta Henson	San Diego County Air Pollution Control District	(619) 694-3307	6/25/93	See Contact Report.
Clyde Morris	EPA, Region IX, Chief of Wetlands & Dredging	(415) 744-1962	7/9/93	Permits for ocean disposal site LA-5 are issued by Janet Hashimoto, Marine Protection Section. (415) 744-1156
Dale Deweese	San Diego County, Department of Health Services	(619) 338-2222	7/9/93	Dale inspects Southwest Marine approximately once a year. Will not comment further without a written request.
Fred Allee	San Diego County, Department of Health Services	(619) 338-2222	7/12/93	See Contact Report.
Allen Ota	EPA Region IX, Wetlands & Dredging Group	(415) 744-1164	7/12/93	Wetlands & Dredging Group provided data review for the Army Corps of Engineers. The Army Corps of Engineers permits ocean dumping of dredge materials. Patrick Cotter (USEPA, Region IX) is the project manager for the Southwest Marine project, and may be reached at (415) 744-1162.
Loretta Croumbie	California Department of Fish and Game	(619) 525-4215	7/15/93	See Contact Report.
Karen Zachary	Cal-EPA, Regional Water Quality Control Board, San Diego Region	(619) 467-2981	7/20/93	See Contact Report.

CONTACT LOG (Cont'd)

Site: Southwest Marine

Name	Affiliation	Phone	Date	Information
Pete Michaels	Cal-EPA, Regional Water Quality Control Board, San Diego Region	(619) 467-2990	7/20/93	Mussel watch data for San Diego Bay has been collected since 1977. High levels of polynuclear aromatics, polychlorinated triphenyls, polychlorinated biphenyls, and heavy metals are associated with shipyards.
Gerri Bollanbach	City of San Diego, Engineering and Development	(619) 533-3795	10/5/93	Southwest Marine is located in Community Panel 0602950159C, Flood Zone C.

1270

THE CITY OF SAN DIEGO

File Number:

03-0284.05

General Services/Storm Water
1970 B Street Suite C
San Diego, CA 92102
(619) 525-8647

FAX TRANSMITTAL

EXHIBIT NO. 1270
Barker
jmsteno.com

Date: 11.22.05

The following 3 total pages (including this cover page) are intended for:

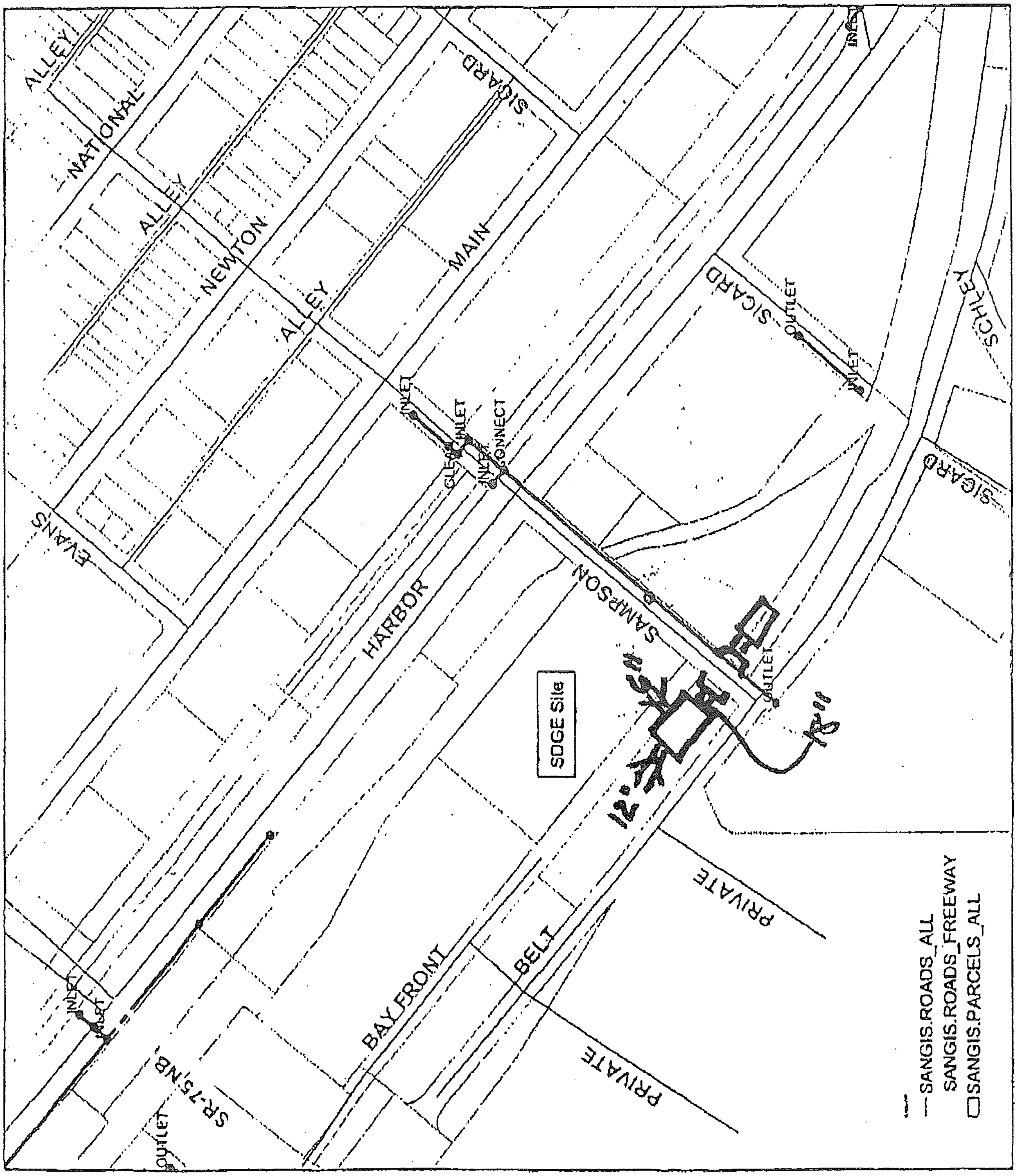
To:	Craig Carlisle	From:	Ruth Kolb
Company	RB	Division	Storm Water Pollution Prevention
FAX #	858.571.6972	FAX #	(619) 525-8641
Phone #		Phone #	(619) 525-8636

Subject: Sampson St. Investigation

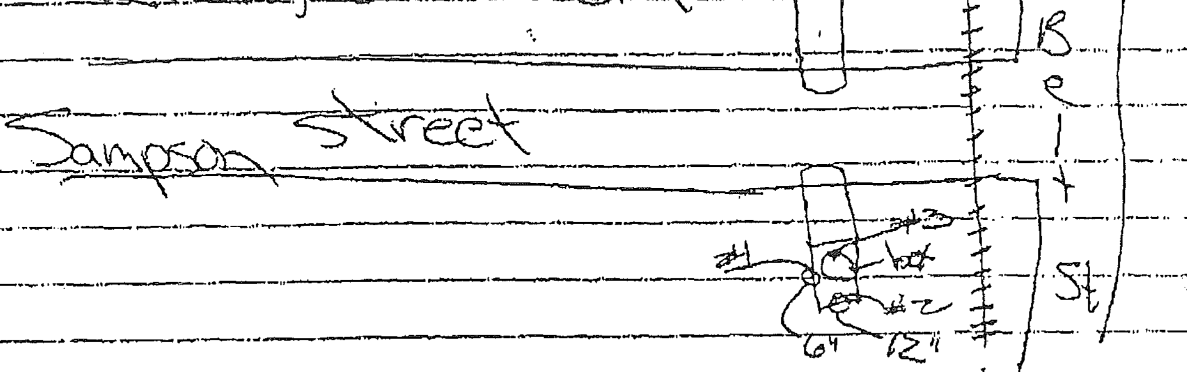
Comments:

Hi Craig,
Here's some maps. I'll be here until 3:00 + back on Monday.
R

If there are any problems with receiving this FAX transmission (such as missing pages), please contact the Sender at the "From" phone number given above.


ALLEY
NATIONAL
ALLEY
NEWTON
ALLEY
MAIN
SICARD
SICARD
SICARD
SCHLEY
INLET
INLET
INLET
INLET
CONNECT
OUTLET
OUTLET
OUTLET
EVANS
HARBOR
SAMPSON
SDGE Site
PRIVATE
PRIVATE
BELT
BAY FRONT
SR-75 NB
SANGIS.ROADS_ALL
SANGIS.ROADS_FREEWAY
SANGIS.PARCELS_ALL

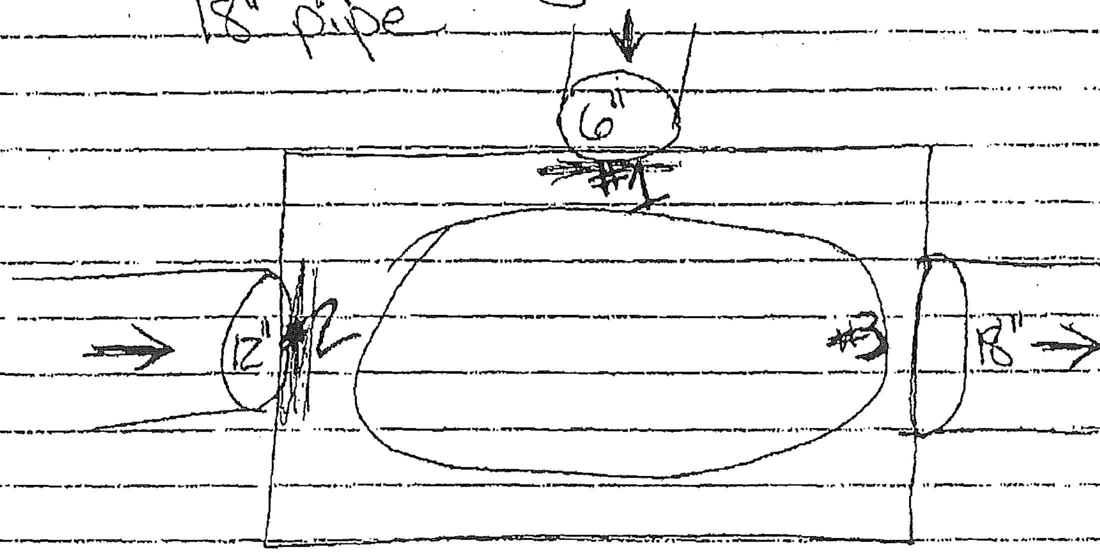
10/3/05 Sampson St. Stormdrain
sediment Sampling
R. Kolb, J. Carbert



#1: sample collected from base of the 6" drain @ 1:03 pm (*)

#2: sample collected from base of the 12" drain @ 1:05 pm

#3: sample collected from catch basin @ 1:08 pm just before entering 18" pipe



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

ORDER NO. 97-36
NPDES PERMIT NO. CAG039001

FACT SHEET

FOR

DISCHARGES FROM
SHIP CONSTRUCTION, MODIFICATION, REPAIR, AND MAINTENANCE
FACILITIES AND ACTIVITIES
LOCATED IN
THE SAN DIEGO REGION
(TTWQ/CPLX 1A)

1. The shipbuilding and repair industry is engaged in the construction, conversion, alteration, repair, and maintenance of all types of military and commercial ships and vessels. Shipbuilding and repair encompasses a large number and variety of activities and industrial processes including, but not limited to, formation and assembly of steel hulls and superstructures; application of paint systems; installation and repair of a large variety of mechanical, electrical, and hydraulic systems and equipment; repair of damaged vessels; removal and replacement of expended/failed paint systems; and provision of entire utility/support systems to ships (and crew) during repair.

2. Typical industrial processes at a shipyard might include:

   a. Structural (aluminum and steel) repairs and refit aboard ship
   b. Ship prefabrication ashore
   c. Surface preparation (abrasive blasting, slurry blasting, hydroblasting, scaling, paint removal)
   d. Paint/primer application
   e. Rigging of shipboard components from small pumps and motors to large structures and main engines
   f. Electrical/electronics repairs and alterations
   g. Sheetmetal fabrication for berthing, messing, and sanitary spaces
   h. Component inspection and testing
   i. Tank cleaning

j. Mechanical repair
k. Integrity/hydrostatic testing
l. Hydraulic repair
m. Pipe fitting
n. Tank emptying
o. Fueling
p. Patternmaking
q. Shipfitting
r. Boiler cleaning
s. Carpentry
t. Refurbishing/modernization
u. Air conditioning/refrigeration repair
v. Fiberglass repair
w. Electroplating/metal finishing
x. Blacksmithing
y. Printing
z. Photo processing

3. Shipyards conduct a wide range of support activities listed above that may use a variety of chemicals, and generate many types of waste. Frequently vessels are cleaned of marine fouling organisms while on a floating drydock or marine railway, in a graving dock, or docked at berths or piers. When ship hulls are refinished, antifouling paints and primers are removed, and new primers/paints are applied to inhibit the growth of marine fouling organisms and/or to inhibit corrosion. Removal can be accomplished by abrasive grit media, slurry abrasive, and/or hydroblasting. Antifouling paints may contain significant quantities of toxic substances such as copper, lead, zinc, chromate, tin, mercury, and arsenic. New paint/primer may be applied by brushes, rollers, or sprayed. Tank cleaning operations utilize steam to remove dirt and sludges from internal tanks, particularly fuel tanks and bilges. Detergents, cleaners, and hot water may be injected into the steam supply hoses; and wastewater is generated. Boiler cleaning involves the use of solvent and caustic cleaners. Integrity/hydrostatic testing is conducted on hull, tank, or pipe repairs and generates significant water flow. Pipe fitting involves pickling, brazing, and welding. Steel fabrication and machining uses cutting oils, fluids, acetone, methyl ethyl ketone, and chlorinated solvents. Sheetmetal fabrication involves the use of degreasing solvents, chromic acid, alkaline cleaners, and acid cleaners.

4. Wastes generated at shipyard facilities can include spent abrasives, paint and paint chips, primer, marine organisms, rust, bilge water and other oily wastewater, blast wastewater, oils (engine, cutting, and hydraulic), lubricants, grease, fuels, sludges, solvents, thinners, demolition waste, trash from

sweeping, asbestos, sewage, spent hydrocarbon or chlorinated solvents, electroplating/metal finishing wastes, acid wastes, caustic wastes, and aqueous wastes. Activities that could result in introducing waste to San Diego Bay from shipyard operations include floating drydock deballasting, floating drydock submergence/emergence, graving dock floodwaters, gate leakage, hydrostatic relief flow, and shipbuilding ways floodwaters/gate leakage, hydrostatic relief flows. Activities that could result in direct discharges to San Diego Bay include discharges of cooling seawater, fire protection system water, boiler and cogeneration feedwater, steam condensate water, saltbox water, integrity/hydrostatic testing water, and hosedown of drydocks and hulls.

5. a. Ship construction, modification, repair, and maintenance activities result or have the potential to result in discharges to San Diego Bay of wastes and pollutants which are likely to cause or threaten to cause pollution, contamination, or nuisance; adversely impact human health or the environment; cause or contribute to violation of an applicable water quality objective; and/or otherwise adversely affect the quality and/or beneficial uses of waters of the state and waters of the United States. Such discharges include:

   i. Water contaminated with abrasive blast materials, paint, oils, fuels, lubricants, solvents, or petroleum.

   ii. Hydroblast water - Water generated from hydroblasting is discharged to the sanitary sewer system. Hydroblasting is performed to remove layers of hull paint with water at pressures greater than 150 pounds per square inch.

   iii. Tank cleaning water - Water from tank cleaning to remove sludge and/or dirt.

   iv. Clarified water from oil/water separator - Most ship construction, repair, and maintenance facilities and operations have a system to collect oily water into an oil/water separator. The water is discharged to the sanitary sewer system, and the oil is either recycled or disposed of as hazardous waste.

   v. Steamcleaning water - Water generated from steamcleaning equipment and vehicles at the facility as part of maintenance is collected in a sump and transferred to an oil/water separator. The water is discharged to the sanitary sewer system, and the oil is either recycled or disposed of as hazardous waste.

vi. Demineralizer/reverse osmosis brine - The brine generated by demineralizer/reverse osmosis systems is discharged to the sanitary sewer system.

vii. Floating drydock sump water when the drydock is in use as a work area - Industrial process water, or storm water that has come in contact with pollutants, accumulating on the deck of a floating drydock is diverted to the sanitary sewer system.

viii. Oily bilge water.

ix. Contaminated ballast water.

x. The first flush of storm water from high risk areas.

b. Ship construction, modification, repair, and maintenance activities also result or have the potential to result in discharges to San Diego Bay of wastes and pollutants which pose less of a threat than those identified above. Such discharges include:

i. Vessel washdown water - Fresh water and San Diego Bay water is used to wash surfaces of ship hulls, superstructures and masts at a low water pressure (less than 150 pounds per square inch). This water drains off the vessels and is discharged to San Diego Bay.

ii. Floating drydock submergence/emergence water - A floating drydock is used to lift a ship out of the water so work can be done on the exterior of the ship below the water line. A floating drydock is flooded to dock and launch a ship. The drydock's ballast tanks are filled with San Diego Bay water to lower (submerge) the drydock, the ship is docked (or launched) and the drydock is raised (emerge) by pumping out the ballast tanks. The flood waters on the drydock flow into San Diego Bay.

iii. Graving dock flood water - A graving dock is a large, enclosed, elongated area shoreward from the bulkhead which is used for ship repair or construction. A graving dock enables work to be done on the exterior of a ship below the water line. A caisson at the entrance to the graving dock along the bulkhead is moved in order to open or close the graving dock so that ships can be moved into and out of the graving dock and so flood water in the graving dock can be pumped out. Flood water is pumped back to San Diego Bay.

iv. Graving dock sump pump test water - During test of graving dock sump pums, the water is pumped to San Diego Bay.

v. Shipbuilding ways flood water - A shipbuilding ways is an inclined structure used for construction of ships. A sliding platform is used to launch ships. A caisson at the bayward end of the ways is moved in order to open or close the ways to the bay. The gate is opened to allow the shipbuilding ways to be flooded before a ship is launched. After launching, the caisson is closed and the flood waters are pumped back to San Diego Bay.

vi. Floating drydock sump water when the drydock is not in use as a work area - Water accumulating on the deck of a floating drydock that is runoff associated with industrial activity, and runoff when the drydock is not in use as a work area and the sump has been purged, is discharged to San Diego Bay.

vii. Pipe and tank hydrostatic test water - Pressure tests are required to validate the integrity of systems, such as pumps, tanks, piping, and hoses. Pressure tests are performed by filling the systems being tested with either water from San Diego Bay, freshwater, or water with chemicals added, and applying pressure in a closed loop system. After completion of the test, the water is either pumped back to San Diego Bay, or collected and disposed of properly.

viii. Graving dock gate and wall leakage - Since the graving dock floor is located below the San Diego Bay water surface at a depth sufficient to allow a vessel to be floated into the dock area when the gate is open, gate and wall leakage is continuously removed by pumping the water to San Diego Bay.

ix. Shipbuilding ways gate and wall leakage - Gate and wall leakage at shipbuilding ways is pumped back to San Diego Bay.

x. Miscellaneous, low volume, water - A variety of low volume, chemically unchanged water is discharged to San Diego Bay. This category includes water from drinking fountains, distilling unit cooling water, emergency showers, portable air conditioning condensate, and fire hose testing.

xi. Storm water runoff other than the first flush of storm water runoff from high risk areas - Except where otherwise diverted to the sanitary sewer system, storm water flows off the site to San Diego Bay, either directly, or indirectly through storm drains which discharge to San Diego Bay.

c. Ship construction, modification, repair, and maintenance activities also result or have the potential to result in the discharge to San Diego Bay of water which representatives of operators of ship construction, modification, repair and maintenance facilities have indicated does not ordinarily come in contact with wastes or pollutants, other than heat, and to which no wastes or pollutants, other than heat, are ordinarily added by such activities. Such discharges include:

i. Saltbox water - For generator load tests, a container, often called a salt box, is filled with water from San Diego Bay. An electrode is placed in the water to act as the resistive load to the generator. During the test, the water can reach boiling temperatures, so it is continually replenished. After the test, the excess water is cooled to the ambient temperature of San Diego Bay at the point of discharge when it is discharged to San Diego Bay.

ii. Steam condensate - Steam is generated in boilers at ship construction, repair, and maintenance facilities and supplied to ships. As steam is conveyed through the pipes from the boiler to the ship, fresh water condensate forms within the pipes. This condensate is collected in condensation traps in the steam pipes and is periodically discharged from the traps to San Diego Bay.

iii. Compressor and condenser noncontact cooling water - Fresh water and San Diego Bay water is used to cool portable and stationary machinery and equipment used in ship construction and repair. This water is circulated once through the machinery heat exchanger and then discharged to San Diego Bay.

Periodic monitoring of such discharges is necessary to verify that wastes or pollutants, other than heat, from ship construction, modification, repair, and maintenance activities are not present.

d. Ship construction, modification, repair, and maintenance activities also result or have the potential to result in the release to San Diego Bay of water taken from San Diego Bay which representatives of operators of ship construction, modification, repair and maintenance facilities have indicated does not ordinarily come in contact with wastes or pollutants and to which no wastes or pollutants are ordinarily added by such activities. Such discharges include:

i. Fire protection water - Fire protection systems pump water from San Diego Bay through a series of pipes to vessels moored at berths and piers. Fire protection water is discharged back to San Diego Bay after a single pass through the system. No chemicals are added to the fire protection system water.

ii. Floating drydock ballast tank water - A floating drydock has ballast tanks which can be filled with and emptied of water so that it can be lowered and raised to dock and launch ships. The ballast tank water is taken in from and discharged to San Diego Bay.

iii. Graving dock caisson ballast water - A graving dock caisson holds water. The caisson is moved by emptying water from the gate so that it floats. The caisson is filled with San Diego Bay water and water emptied from the caisson is discharged to San Diego Bay.

iv. Graving dock hydrostatic relief - Since the graving dock floor is located below the San Diego Bay water surface at a depth sufficient to allow a vessel to be floated into the dock area when the gate is open, hydrostatic pressure is continuously relieved by pumping the groundwater to San Diego Bay.

Periodic monitoring of such releases is necessary to verify that wastes or pollutants from ship construction, modification, repair, and maintenance activities are not present.

e. Ship construction, modification, repair, and maintenance activities also result or have the potential to result in discharges to San Diego Bay of the following wastes and pollutants which also pose less of a threat than the discharges identified in 5.a above:

i. Ship launch grease / wax.
ii. Keel block sand.
iii. Marine fouling organisms removed from unpainted, uncoated surfaces by underwater operations.

Procedures for Final Decision

In accordance with 40 CFR 124.10 the Regional Board must issue a public notice that a tentative NPDES permit has been prepared and that the tentative permit will be brought before the Regional Board at a public hearing. The public notice must be issued at least 30 days prior to the public hearing. The public notice for preparation of a tentative permit and the public notice for a public hearing may be given at the same time and the two notices may be combined.

Persons wishing to comment upon or object to the proposed determinations should submit their comments in writing by August 20, 5:00 p.m., 1997 to the California Regional Water Quality Control Board, San Diego Region, 9771 Clairemont Mesa Blvd., Suite A, San Diego, CA 92124-1331.

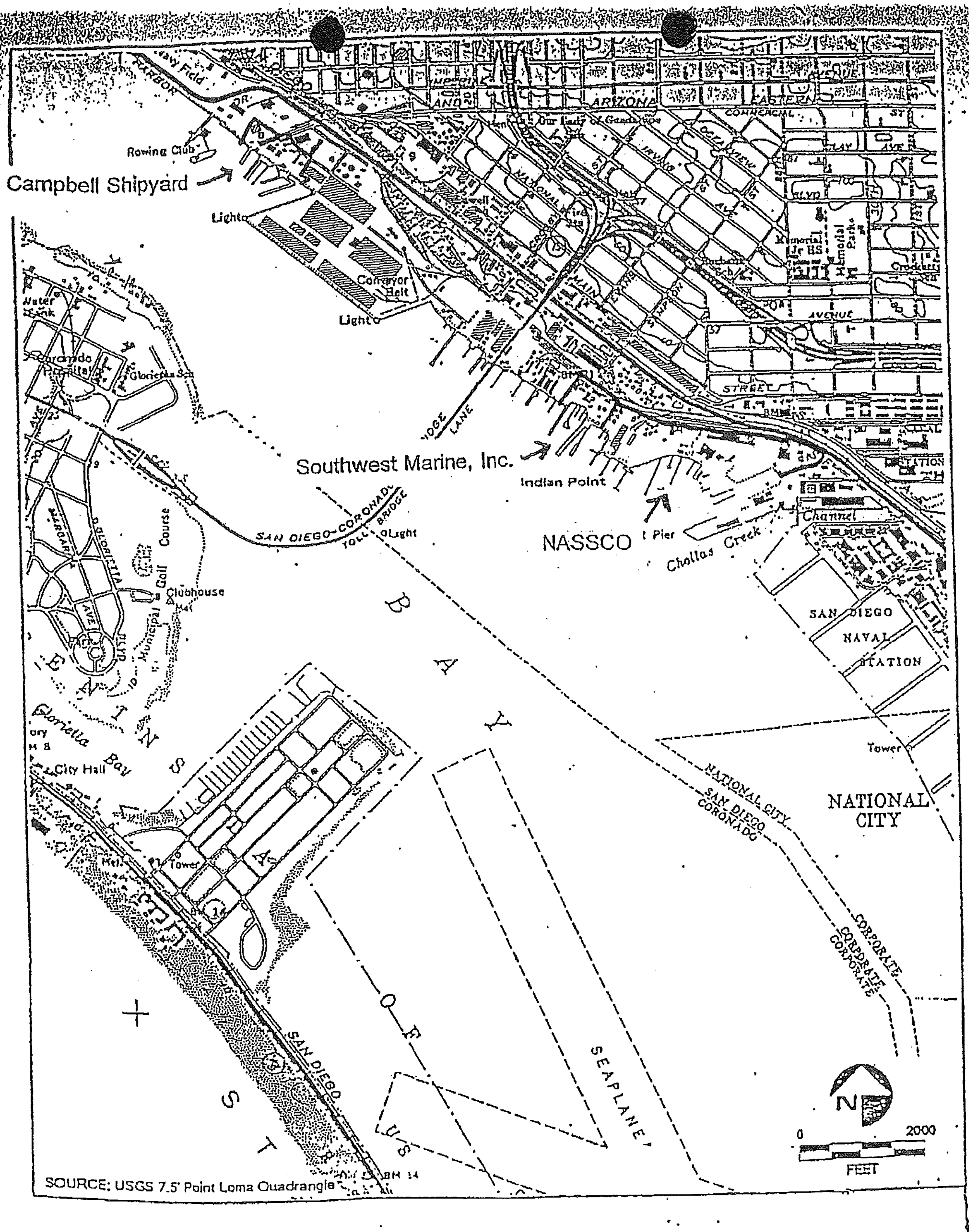
All comments or objections received at the above address of the Regional Board by the appropriate date will be retained and considered in the formulation of the final determinations regarding the draft permit. A public hearing will be held on August 13, 1997. Oral and written statements may be presented at the public hearing, and all comments and objections will be considered by the Regional Board.

For further information regarding the NPDES renewal application, tentative NPDES permit or public hearing, contact Ms. Susan Pease in writing at the above address or by telephone at (619) 637-5596. Copies of the application, tentative waste discharge requirements and other documents (other than those which the Executive Officer maintains as confidential) are available at the Regional Board office for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday (excluding holidays).

After the close of the public hearing the Regional Board may adopt a final permit. The final permit will become effective ten (10) days after the notice of the final permit adoption, unless a later date is specified.

Regional Board adoption of a final permit may be petitioned for review to the State Board. Petitions for review to the State Water Resources Control Board must be filed in writing within thirty (30) days following the Regional Board's adoption of the final permit.

Petitions for review of Regional Board action must be sent to the State Water Resources Control Board, P.O. Box 100, Sacramento, CA 95812-0100.



Location Map

ENVIRON

February 10, 2011

Via Electronic Mail (in PDF) and FedEx

jmsteno.com **EXHIBIT NO.** 1272 Barter

Ms. Jill Tracy
Senior Environmental Counsel
San Diego Gas & Electric
101 Ash Street, HQ13
San Diego, CA 92101

Re: Summary of Sampling and Analysis of Soil and Cooling Water Tunnels, BAE Subleasehold Area, San Diego Bay, San Diego, CA

Dear Ms. Tracy:

At the request of San Diego Gas & Electric (SDG&E), ENVIRON International Corporation (ENVIRON) has prepared this summary letter to present the analytical chemistry results of soil and cooling water solids samples collected in December 2010 from the BAE Subleasehold Area, located in the city of San Diego, California (the Site, Figure 1).

Sample Collection

Soil Collection

On December 18 through 21, 2010, Ninyo & Moore, on behalf of the property owner, San Diego Unified Port District (SDUPD), hereinafter referred to as "Ninyo & Moore/SDUPD", collected soil and groundwater samples from 31 sample locations at the Site (Figure 2). Ninyo & Moore/SDUPD targeted specific locations to collect discrete soil and groundwater samples based on cone penetration test-rapid optical screening tool (CPT-ROST^{TM}) data collected from previous investigations conducted at the Site. Soil borings were advanced using direct push Geoprobe^{TM} drilling techniques. Soil samples were collected from specific targeted intervals using an approximate 2-inch diameter by 4-feet long core barrel lined with an acetate sleeve. Ninyo & Moore/SDUPD homogenized soil in a stainless steel bowl prior to sample collection. SDG&E laboratory technicians, under ENVIRON's supervision, collected a portion of the homogenized soil (split samples) into glass jars, recorded the sample on standard chain-of-custody forms (COCs), stored the sample in a cooler on ice, and archived the sample for analysis. In addition, ENVIRON and SDG&E collected soil samples from intervals within the upper 15 feet at each soil sampling location. The additional soil samples were archived and recorded on the COC for potential analysis in the same manner as the split samples.

Cooling Water Solids Collection

On December 29, 2010, Ninyo & Moore/SDUPD collected samples of solid material from the abandoned SDG&E Silvergate power plant cooling water intake and discharge (outfall) tunnels (Figure 3). Two locations were sampled (#1 and #2). Location #1 is located in a point in the cooling water system closer to the Silvergate power house, whereas location #2 is located closer to San Diego Bay. Intake and outfall tunnels were sampled at each location. Ninyo & Moore/SDUPD accessed the cooling water tunnels through manholes and collected samples using a grab sampling device that obtained solids from approximately the top 1 to 6 inches of solid material present in the tunnels. In some locations, Ninyo & Moore/SDUPD combined the collected solid materials from multiple attempts into a stainless steel bowl prior to sample collection. SDG&E laboratory technicians, under ENVIRON's supervision, collected a portion of the solid (split samples) into glass jars, recorded the sample on standard COCs, stored the sample in a cooler on ice, and archived the sample for analysis. For the outfall tunnel sample at location #2, the material obtained in the grab sample was not homogenized because it was comprised of a heterogeneous mixture of a silt-like material and a sand-like material. These materials were separated before sampling. Thus, the material at this location is represented by two different samples ("Outfall #2 Silt" and "Outfall #2 Sand").

Sample Analysis

Soil Sampling

SDG&E Environmental Laboratory analyzed 54 of the soil samples for metals by Environmental Protection Agency (EPA) Method 7471A/6010B and polychlorinated biphenyl (PCB) Aroclors by EPA Method 8082. Analytical results for metals (copper and mercury) and PCBs are presented in Tables 1 and 2, respectively. SDG&E Laboratory analytical reports and COCs for soil samples are presented in Attachment A.

ZYMAX Environmental Forensics Solutions (ZYMAX) in Escondido, California analyzed a subset of the soil samples (12 soil samples) for Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270M. Analytical results for Priority Pollutant PAHs are presented in Table 3. ZYMAX Laboratory analytical reports and COCs for soil samples are presented in Attachment B.

Cooling Water Tunnel Sampling

SDG&E Environmental Laboratory analyzed the 5 cooling water solids samples for metals by EPA Method 7471A/6010B and PCB Aroclors by EPA Method 8082. Analytical results for metals (copper and mercury) and PCBs are presented in Tables 4 and 5, respectively. SDG&E Laboratory analytical reports and COCs are presented in Attachment C.

ZYMAX analyzed the 5 cooling water solids samples for PAHs by EPA Method 8270M. Because of high moisture content, ZYMAX treated sample "Intake #1" as a liquid. Analytical results for Priority Pollutant PAHs are presented in Table 6. ZYMAX Laboratory analytical reports and COCs are presented in Attachment D.

Discussion

Subleasehold soil analytical results from this investigation were compared to results from a previous BAE subleasehold investigation (ENV America, 2004 [1]) and results from an investigation of San Diego Bay aquatic sediment in the portion of San Diego Bay within the Southwest Marine shipyard (now BAE Systems) area, referred to as "Inside SWM" by Exponent (2003 [2]).

- Average concentrations of total PCB Aroclors and total PAHs in soils in the 2010 investigation were an order of magnitude lower than average concentrations in soils measured previously by ENV America (2004), and were 1-2 orders of magnitude lower than average concentrations measured in San Diego Bay sediment within the "inside SWM" area (Table 10-5 in Exponent, 2003).
- Aroclor 1248 was detected at only one sampling location, SB-32, at a depth of 1 to 1.5 feet below ground surface at a concentration of 0.17 mg/kg. SB-32 is located in an area near historical shipbuilding and ship repair operations (see discussion below).
- Concentrations of mercury in some of the soils in the 2010 investigation were higher than in concentrations of mercury in soils in the ENV America (2004) investigation; however, the average concentration in the soils in the 2010 investigation was an order of

[1] ENV America. 2004. Site Assessment Report, Landside Tidelands Lease Area, Silvergate Power Plant. San Diego, California, July 14, 2004.
[2] Exponent. 2003. NASSCO and Southwest Marine Detailed Sediment Investigation.

magnitude lower than the average concentration measured in San Diego Bay sediment within the "inside SWM" area (Table 10-5 in Exponent, 2003).

- With the exception of one sample (SB-40, 1,900 mg/kg), the concentrations of copper in all soil samples analyzed in the 2010 investigation were lower than the highest concentration observed in soils measured by ENV America (2004) (868 mg/kg). The average concentration of copper in soils measured in 2010 on the BAE subleasehold was an order of magnitude lower than the average concentration measured in San Diego Bay sediment within the "inside SWM" area (Table 10-5 in Exponent, 2003).

Concentrations of copper, mercury, total PCB Aroclors, and total PAHs in solids were similar between the intake and outfall tunnels. The highest concentrations for all five chemicals were found at location #2, in the portion of the cooling water system closer to San Diego Bay.

- Average concentrations of total PCB Aroclors and total PAHs in cooling water solids were 1-2 orders of magnitude lower than average concentrations measured in San Diego Bay sediment within the "inside SWM" area (Table 10-5 in Exponent, 2003).
- Aroclor 1248 was not detected in the cooling water tunnel samples.
- Average concentrations of mercury and copper in cooling water solids were less than the average concentrations measured in San Diego Bay sediment within the "inside SWM" area.

Figures 4 through 8 present the December 2010 soil sampling locations superimposed over aerial photographs from 1953 to 1979. Many of the soil sampling locations from the December 2010 investigation, including location SB-32, are located in areas where shipbuilding and ship repair activities have occurred, beginning in the mid to late1950s.

Sincerely,

Jason M. Conder, PhD
Manager

JC:gw

Attachments: Tables 1 through 6
Figures 1 through 8
Attachments A through D

Tables

TABLE 1. Summary of Copper and Mercury in Soil Samples
BAE Subleasehold Area
San Diego, California

Location	Laboratory ID	Sample Date	Soil Sample Interval Start Depth (ft bgs)	Soil Sample Interval End Depth (ft bgs)	Copper (mg/kg)	Mercury (mg/kg)
SB-01	1012107-02	12-18-10	2	4	6.6	0.036
SB-02	1012107-10	12-18-10	0.5	1.2	9.7	< 0.018
SB-03	1012107-13	12-18-10	1	1.5	21	0.036
SB-05	1012107-18	12-18-10	2	4.5	3.1	0.018
SB-08	1012107-22	12-18-10	3	4	< 2.0	< 0.018
SB-09	1012107-28	12-18-10	2	3	17	0.021
SB-10	1012108-02	12-19-10	1	2.5	3.9	0.026
SB-10	1012108-03	12-19-10	2.5	4	7.2	0.023
SB-10	1012108-12	12-19-10	22	23	6.6	< 0.018
SB-10	1012108-11	12-19-10	23	25.5	3.6	0.13
SB-10	1012108-13	12-19-10	25.5	26	< 2.0	< 0.018
SB-11	1012108-16	12-19-10	2	3	16	0.072
SB-11	1012108-17	12-19-10	5	6	16	0.087
SB-13	1012117-32	12-21-10	1	2	20	0.077
SB-13	1012117-34	12-21-10	13	14	5.5	0.088
SB-13	1012117-33	12-21-10	2	3	< 2.0	< 0.018
SB-13	1012117-35	12-21-10	12	13	4.3	0.021
SB-14	1012117-21	12-21-10	1	1.5	6.8	< 0.018
SB-14	1012117-22	12-21-10	1.5	2	< 2.0	< 0.018
SB-14	1012117-20	12-21-10	2	3	< 2.0	< 0.018
SB-14	1012117-24	12-21-10	10	11.5	3.9	0.022
SB-14	1012117-23	12-21-10	11.5	13	390	0.26
SB-14	1012117-25	12-21-10	15	16.5	< 2.0	< 0.018
SB-14	1012117-27	12-21-10	16.5	18	6.0	< 0.018
SB-15	1012117-38	12-21-10	2	3	110	0.73
SB-15	1012117-37	12-21-10	3	4	6.5	< 0.018
SB-16	1012117-29	12-21-10	2	3	4.9	0.056
SB-16	1012117-28	12-21-10	3	4	4.8	0.027
SB-18	1012115-41	12-20-10	1	2.5	130	0.89
SB-18	1012115-42	12-20-10	2.5	4	83	0.45
SB-18	1012115-43	12-20-10	8	9	100	0.39
SB-18	1012115-44	12-20-10	9	10	5.0	< 0.018
SB-19	1012115-32	12-20-10	22	25	4.2	< 0.018
SB-21	1012115-07	12-20-10	0.5	1	75	0.28
SB-22	1012115-14	12-20-10	2	3.2	5.6	< 0.018
SB-26	1012108-56	12-19-10	2.5	4	6.5	< 0.018
SB-28	1012115-02	12-20-10	1	2	7.2	0.027
SB-29	1012115-33	12-20-10	1	3	460	0.58
SB-29	1012115-34	12-20-10	3	5	5.8	0.019
SB-30	1012115-25	12-20-10	1	2	4.5	0.026
SB-30	1012115-26	12-20-10	2	4	< 2.0	< 0.018
SB-31	1012117-12	12-21-10	1	2	9.6	< 0.018
SB-31	1012117-13	12-21-10	2	3	9.2	< 0.018
SB-32	1012117-02	12-21-10	1	1.5	91	0.32
SB-33	1012108-49	12-19-10	1	3	18	0.16
SB-34	1012108-37	12-19-10	1	3	6.7	0.025
SB-35	1012108-31	12-19-10	1	2.5	9.3	< 0.018
SB-36	1012108-24	12-19-10	2	3	7.0	0.024
SB-37	1012108-42	12-19-10	1	3	9.5	0.049
SB-38	1012117-07	12-21-10	1	2	45	0.22
SB-38	1012117-08	12-21-10	2	3	6.6	< 0.018
SB-40	1012115-22	12-20-10	2	3	1900	0.63
SB-40	1012115-23	12-20-10	5	6.5	190	0.13
SB-41	1012115-35	12-20-10	2.5	3	140	0.14
				Average	74	0.11

Notes:
ID - identification
ft bgs - feet below ground surface
mg/kg - milligrams per kilograms
< X - less than laboratory reporting limit.
Bold indicates result greater than laboratory reporting limit.
Average concentrations were calculated using one-half the laboratory reporting limit for chemicals that were not detected.

TABLE 2. Summary of Polychlorinated Biphenyl Aroclors in Soil Samples
BAE Subleasehold Area
San Diego, California

Location	Laboratory ID	Sample Date	Soil Sample Interval Start Depth (ft bgs)	Soil Sample Interval End Depth (ft bgs)	Aroclor-1248 (mg/kg)	Aroclor-1254 (mg/kg)	Aroclor-1260 (mg/kg)	Total PCB Aroclors (mg/kg)
SB-01	1012107-02	12-18-10	2	4	< 0.022	< 0.022	< 0.022	< 0.022
SB-02	1012107-10	12-18-10	0.5	1.2	< 0.023	< 0.023	< 0.023	< 0.023
SB-03	1012107-13	12-18-10	1	1.5	< 0.022	< 0.022	< 0.022	< 0.022
SB-05	1012107-18	12-18-10	2	4.5	< 0.021	< 0.021	< 0.021	< 0.021
SB-08	1012107-22	12-18-10	3	4	< 0.021	< 0.021	< 0.021	< 0.021
SB-09	1012107-28	12-18-10	2	3	< 0.021	< 0.021	< 0.021	< 0.021
SB-10	1012108-02	12-19-10	1	2.5	< 0.022	< 0.022	< 0.022	< 0.022
SB-10	1012108-03	12-19-10	2.5	4	< 0.022	< 0.022	< 0.022	< 0.022
SB-10	1012108-12	12-19-10	22	23	< 0.026	< 0.026	< 0.026	< 0.026
SB-10	1012108-11	12-19-10	23	25.5	< 0.026	< 0.026	< 0.026	< 0.026
SB-10	1012108-13	12-19-10	25.5	26	< 0.024	< 0.024	< 0.024	< 0.024
SB-11	1012108-16	12-19-10	2	3	< 0.022	< 0.022	**0.024**	**0.024**
SB-11	1012108-17	12-19-10	5	6	< 0.022	< 0.022	< 0.022	< 0.022
SB-13	1012117-32	12-21-10	1	2	< 0.021	< 0.021	< 0.021	< 0.021
SB-13	1012117-33	12-21-10	2	3	< 0.021	< 0.021	< 0.021	< 0.021
SB-13	1012117-34	12-21-10	13	14	< 0.025	< 0.026	< 0.025	< 0.025
SB-13	1012117-35	12-21-10	12	13	< 0.026	< 0.026	< 0.026	< 0.026
SB-14	1012117-21	12-21-10	1	1.5	< 0.022	< 0.022	< 0.022	< 0.022
SB-14	1012117-22	12-21-10	1.5	2	< 0.022	< 0.022	< 0.022	< 0.022
SB-14	1012117-20	12-21-10	2	3	< 0.022	< 0.022	< 0.022	< 0.022
SB-14	1012117-24	12-21-10	10	11.5	< 0.026	< 0.026	< 0.026	< 0.026
SB-14	1012117-23	12-21-10	11.5	13	< 0.024	< 0.024	< 0.024	< 0.024
SB-14	1012117-25	12-21-10	15	16.5	< 0.026	< 0.026	< 0.026	< 0.026
SB-14	1012117-27	12-21-10	16.5	18	< 0.025	< 0.025	< 0.025	< 0.025
SB-15	1012117-38	12-21-10	2	3	< 0.022	**0.088**	**0.12**	**0.208**
SB-15	1012117-37	12-21-10	3	4	< 0.020	< 0.020	< 0.020	< 0.020
SB-16	1012117-29	12-21-10	2	3	< 0.022	< 0.022	< 0.022	< 0.022
SB-16	1012117-28	12-21-10	3	4	< 0.022	< 0.022	< 0.022	< 0.022
SB-18	1012115-41	12-20-10	1	2.5	< 0.022	**0.35**	**0.32**	**0.67**
SB-18	1012115-42	12-20-10	2.5	4	< 0.022	**0.087**	**0.11**	**0.197**
SB-18	1012115-43	12-20-10	8	9	< 0.037	**0.11**	**0.084**	**0.194**
SB-18	1012115-44	12-20-10	9	10	< 0.022	< 0.022	< 0.022	< 0.022
SB-19	1012115-32	12-20-10	22	25	< 0.025	< 0.025	< 0.025	< 0.025
SB-21	1012115-07	12-20-10	0.5	1	< 0.022	**0.073**	**0.075**	**0.148**
SB-22	1012115-14	12-20-10	2	3.2	< 0.021	< 0.021	< 0.021	< 0.021
SB-26	1012108-56	12-19-10	2.5	4	< 0.021	< 0.021	< 0.021	< 0.021
SB-28	1012115-02	12-20-10	1	2	< 0.021	< 0.021	< 0.021	< 0.021
SB-29	1012115-33	12-20-10	1	3	< 0.022	**0.10**	**0.12**	**0.22**
SB-29	1012115-34	12-20-10	3	5	< 0.021	< 0.021	< 0.021	< 0.021
SB-30	1012115-25	12-20-10	1	2	< 0.021	< 0.021	< 0.021	< 0.021
SB-30	1012115-26	12-20-10	2	4	< 0.021	< 0.021	< 0.021	< 0.021
SB-31	1012117-12	12-21-10	1	2	< 0.022	< 0.022	< 0.022	< 0.022
SB-31	1012117-13	12-21-10	2	3	< 0.022	< 0.022	< 0.022	< 0.022
SB-32	1012117-02	12-21-10	1	1.5	**0.17**	**0.16**	**0.086**	**0.416**
SB-33	1012108-49	12-19-10	1	3	< 0.021	**0.024**	**0.027**	**0.051**
SB-34	1012108-37	12-19-10	1	3	< 0.021	< 0.021	< 0.021	< 0.021
SB-35	1012108-31	12-19-10	1	2.5	< 0.021	< 0.021	**0.022**	**0.022**
SB-36	1012108-24	12-19-10	2	3	< 0.022	< 0.022	< 0.022	< 0.022
SB-37	1012108-42	12-19-10	1	3	< 0.021	< 0.021	**0.022**	**0.022**
SB-38	1012117-07	12-21-10	1	2	< 0.023	**0.19**	**0.16**	**0.35**
SB-38	1012117-08	12-21-10	2	3	< 0.021	< 0.021	< 0.021	< 0.021
SB-40	1012115-22	12-20-10	2	3	< 0.022	**0.37**	**0.44**	**0.81**
SB-40	1012115-23	12-20-10	5	6.5	< 0.022	**0.029**	**0.026**	**0.055**
SB-41	1012115-35	12-20-10	2.5	3	< 0.031	**0.097**	**0.095**	**0.192**
				Average	0.014	0.040	0.040	0.074

Notes:
ID - identification
ft bgs - feet below ground surface
mg/kg - milligrams per kilograms
< X - less than laboratory reporting limit.
Aroclors 1016, 1221, 1232, 1242 were not detected.
Bold indicates result greater than laboratory reporting limit.
Total PCB Aroclors for each sample is computed as the sum of Aroclors according to the following rules: 1) if any Aroclor is detected, all detected Aroclors are summed; 2) if no Aroclor is detected, the highest quantitation limit for any Aroclor is used.
Average concentrations were calculated using one-half the laboratory reporting limit for chemicals that were not detected.

TABLE 3. Summary of Polycyclic Aromatic Hydrocarbons in Soil Samples
BAE Subleasehold Area
San Diego, California

Location	Laboratory ID	Sample Date	Soil Sample Interval Start Depth (ft bgs)	Soil Sample Interval End Depth (ft bgs)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benz(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(e)pyrene (mg/kg)	Benzo(g,h,i)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz(a,h)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3-c,d) pyrene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)	Total PAHs (mg/kg)
SB-10	1012108-11	12-19-10	23	25.5	< 0.005	0.010	0.016	0.121	0.060	0.067	0.032	0.026	0.029	0.230	0.008	0.562	< 0.005	0.028	0.006	0.296	1.484
SB-10	1012108-12	12-19-10	22	23	< 0.005	< 0.005	0.006	0.005	0.014	0.020	0.011	0.012	0.037	0.014	< 0.005	0.018	< 0.005	0.012	< 0.005	0.027	0.1716
SB-10	1012108-13	12-19-10	25.5	28	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.04
SB-13	1012117-35	12-21-10	12	13	< 0.005	< 0.005	< 0.005	< 0.005	0.008	0.009	0.006	0.013	< 0.005	0.006	< 0.005	0.010	< 0.005	0.010	< 0.005	0.016	0.095
SB-13	1012117-34	12-21-10	13	14	< 0.005	0.006	< 0.005	0.022	0.041	0.035	0.028	0.038	0.014	0.029	0.006	0.062	< 0.005	0.035	0.006	0.069	0.3795
SB-14	1012117-24	12-21-10	10	11.5	< 0.005	< 0.005	< 0.005	0.006	0.007	0.008	< 0.005	0.010	< 0.005	0.007	< 0.005	0.020	< 0.005	0.008	< 0.005	0.024	0.108
SB-14	1012117-23	12-21-10	11.5	13	< 0.005	0.016	0.012	0.045	0.094	0.098	0.068	0.076	0.036	0.051	0.011	0.161	< 0.005	0.073	0.009	0.143	0.886
SB-14	1012117-25	12-21-10	15	16.5	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.006	< 0.005	0.007	< 0.005	< 0.005	< 0.005	0.087	< 0.005	0.008	< 0.005	0.008	0.063
SB-14	1012117-27	12-21-10	16.5	18	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.04
SB-18	1012115-43	12-20-10	8	9	0.033	0.128	0.248	0.455	0.463	0.628	0.414	0.328	0.147	0.626	0.043	1.161	0.065	0.247	1.644	1.657	8.188
SB-18	1012115-44	12-20-10	9	10	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.04
SB-41	1012115-35	12-20-10	3	3.5	< 0.05	< 0.05	< 0.05	< 0.05	0.08	0.08	0.16	0.08	< 0.05	0.13	< 0.05	0.06	< 0.05	< 0.05	< 0.05	0.10	0.90
																				Average	1.03

Notes:
ID - identification
ft bgs - feet below ground surface
mg/kg - milligrams per kilograms
< X - less than laboratory reporting limit.
Bold indicates result greater than laboratory reporting limit.
Total PAHs were calculated by summing all PAHs. One-half the laboratory reporting limit was used for compounds that were not detected.
Average concentrations were calculated using one-half the laboratory reporting limit for chemicals that were not detected.

ENVIRON

TABLE 4. Summary of Copper and Mercury in Cooling Water Solids Samples
BAE Subleasehold Area
San Diego, California

Location	Sample	Laboratory ID	Copper (mg/kg)	Mercury (mg/kg)
Outfall #1	--	1012129-01	**86**	**0.15**
Outfall #2	Silt	1012129-03	**240**	**0.73**
	Sand	1012129-04	**57**	**0.070**
Intake #1	--	1012129-02	**170**	**0.19**
Intake #2	--	1012129-05	**310**	**0.44**
		Average	**173**	**0.32**

Notes:
ID - identification
mg/kg - milligrams per kilograms
Samples were collected 12-29-10.
Bold indicates result greater than laboratory reporting limit.
Average concentrations were calculated using one-half the laboratory reporting limit for chemicals that were not detected.

TABLE 5. Summary of Polychlorinated Biphenyl Aroclors in Cooling Water Solids Samples
BAE Subleasehold
San Diego, California

Location	Sample	Laboratory ID	Aroclor-1254 (mg/kg)	Aroclor-1260 (mg/kg)	Total PCB Aroclors
Outfall #1	--	1012129-01	< 0.076	< 0.076	< 0.076
Outfall #2	Silt	1012129-03	< 0.062	< 0.062	< 0.062
	Sand	1012129-04	**0.12**	**0.082**	**0.202**
Intake #1	--	1012129-02	**0.082**	**0.060**	**0.142**
Intake #2	--	1012129-05	< 0.058	< 0.058	< 0.058
		Average	**0.060**	**0.048**	**0.088**

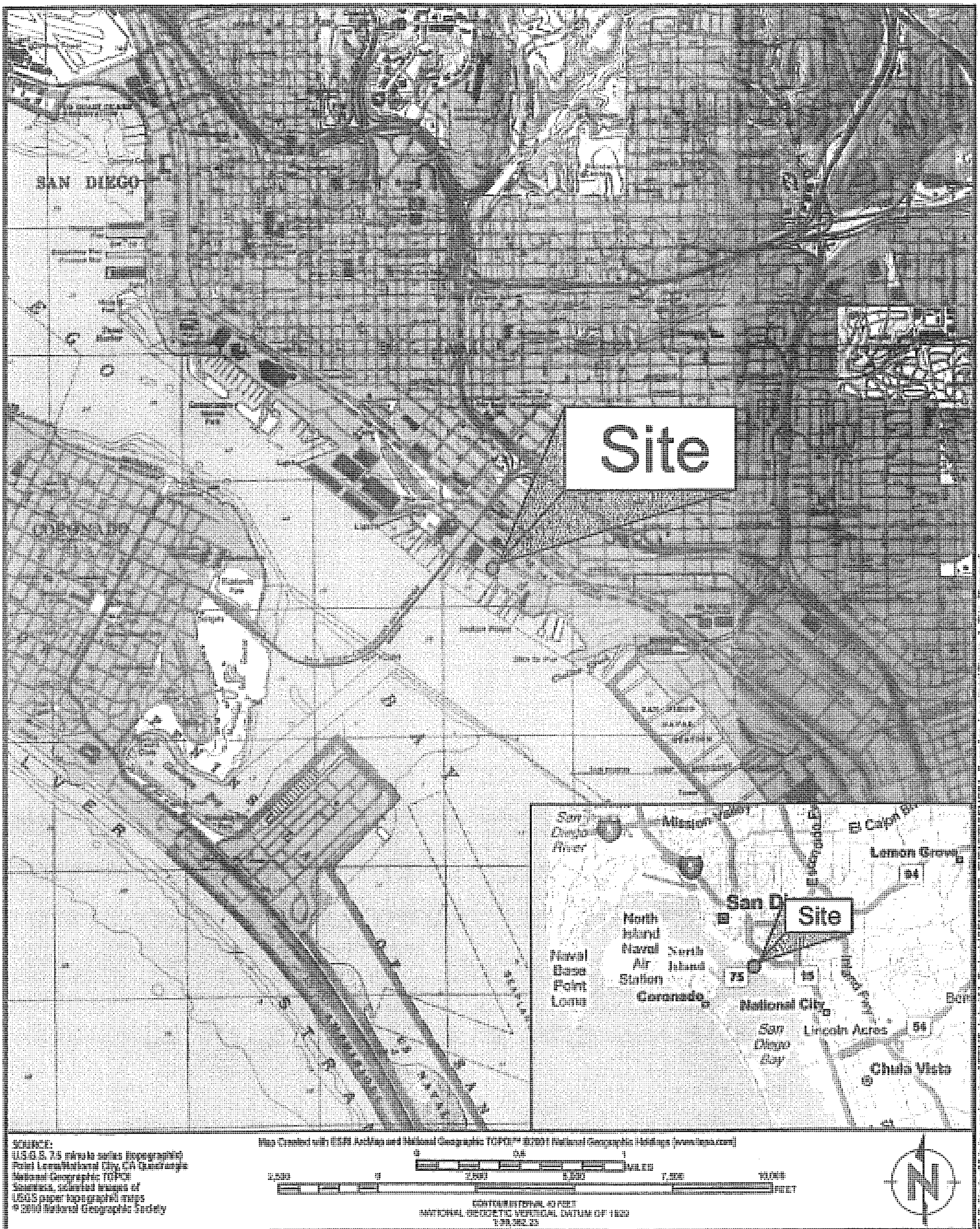
Notes:
ID - identification
mg/kg - milligrams per kilograms
< X - less than laboratory reporting limit
Samples were collected 12-29-10.
Aroclors 1016, 1221, 1232, 1242, and 1248 were not detected
Bold indicates result greater than laboratory reporting limit.
Total PCB Aroclors for each sample is computed as the sum of Aroclors according to the following rules: 1) if any Aroclor is detected, all detected Aroclors are summed; 2) if no Aroclor is detected, the highest quantitation limit for any Aroclor is used.
Average concentrations were calculated using one-half the laboratory reporting limit for chemicals that were not detected.

TABLE 6. Summary of Polycyclic Aromatic Hydrocarbons in Cooling Water Solids Samples
BAE Subleasehold
San Diego, California

Location	Sample	Laboratory ID	Unit	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)-anthracene	Benzo(a)-pyrene	Benzo(e)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)-pyrene	Phenanthrene	Pyrene	Total PAHs (mg/kg)
Intake #1	--	1012129-02	mg/L	< 0.005667	0.0134	0.0343	0.0284	0.0607	0.0635	0.1161	0.0494	0.0446	0.0572	0.0124	0.0880	< 0.005667	0.0436	0.0336	0.0723	0.7223
Intake #2	--	1012129-05	mg/kg	< 0.005	0.017	0.029	0.023	0.053	0.046	0.089	0.050	0.041	0.064	0.013	0.064	< 0.005	0.048	0.031	0.064	0.637
Outfall #1	--	1012129-01	mg/kg	< 0.005	< 0.005	< 0.005	<0.005	0.006	0.006	0.012	< 0.005	< 0.005	0.008	< 0.005	0.007	< 0.005	< 0.005	< 0.005	0.006	0.07
Outfall #2	Silt	1012129-03	mg/kg	< 0.005	0.023	0.042	0.049	0.096	0.085	0.158	0.072	0.060	0.084	0.020	0.090	< 0.005	0.073	0.032	0.096	0.984
Outfall #2	Sand	1012129-04	mg/kg	<0.0075	< 0.0075	0.0290	0.0106	0.0184	0.0239	0.0255	0.0301	0.0106	0.0168	0.0076	0.0204	0.0080	0.0207	0.0220	0.0382	0.2883
																			Average	0.54

Notes:
ID - Identification
ft bgs - feet below ground surface
mg/kg - milligrams per kilograms
mg/L - milligrams per liter
< X - less than laboratory reporting limit.
Samples were collected 12-29-10.
Bold indicates result greater than laboratory reporting limit.
Total PAHs were calculated by summing all PAHs. One-half the laboratory reporting limit was used for compounds that were not detected.
Average concentrations were calculated using one-half the laboratory reporting limit for chemicals that were not detected.

Figures



ENVIRON

Site Location Map

BAE Subleasehold Area
San Diego, California

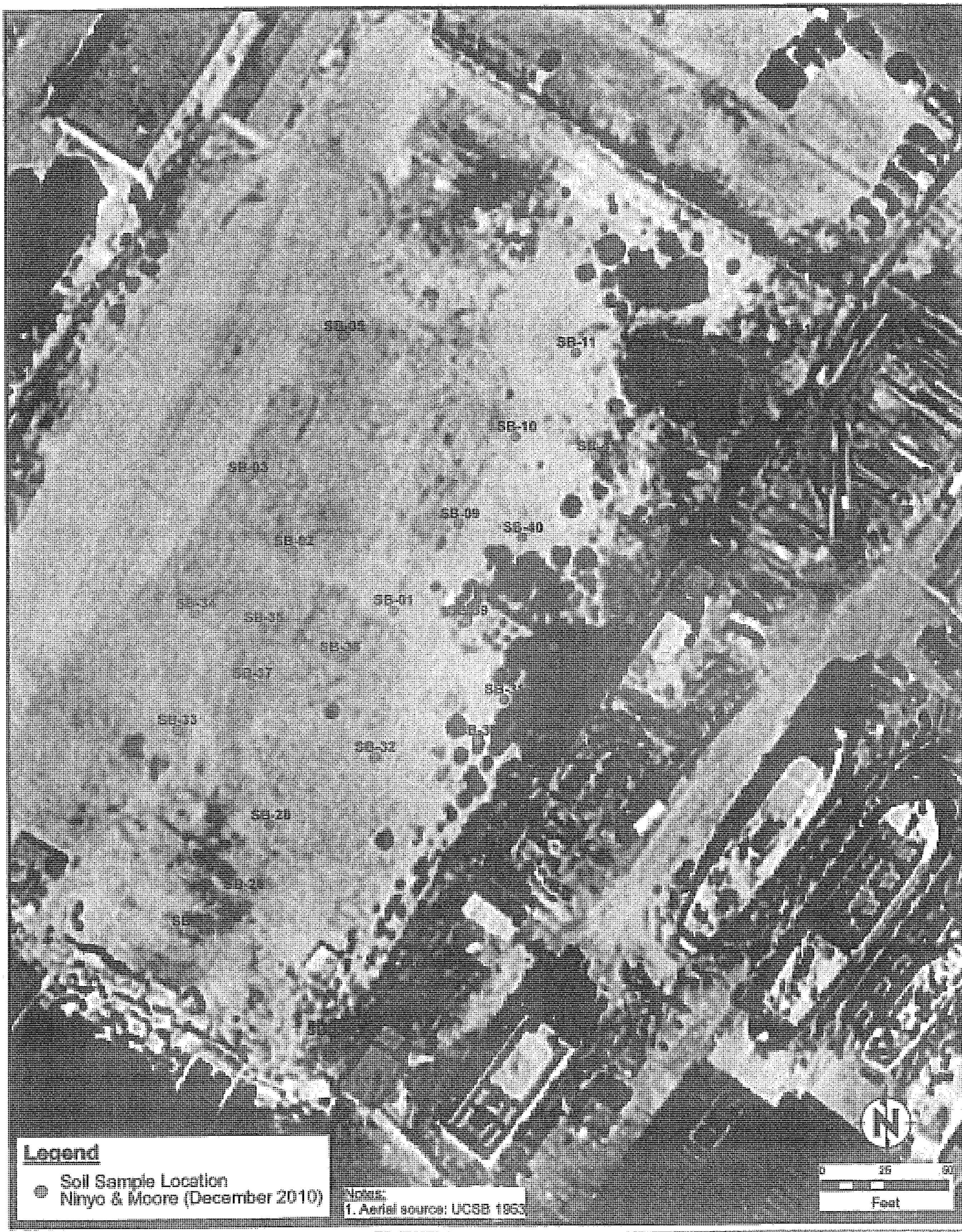
Figure 1

DRAFTED BY: SShin	DATE: 2/3/2011	PROJECT: 03-19562A

ENVIRON	Soil Sample Locations (December 2010) BAE Subleasehold Area San Diego, California	Figure 2
DRAFTED BY: SShin — DATE: 2/1/2011		PROJECT: 03-19562A

FILE: \\irvine06.irvine.environ.local\EDMS_Irvine\01_Projects\SEMPRA\03_GIS\MXD\SEMPRA_Sampling_Locations\Figure_3_Cooling Water Tunnel Dec 2010 Samplings.mxd

ENVIRON	Cooling Water Tunnel Sample Locations (December 2010)	Figure 3
DRAFTED BY: SShin / DATE: 2/3/2011	BAE Subleasehold Area San Diego, California	PROJECT: 03-19562A



ENVIRON

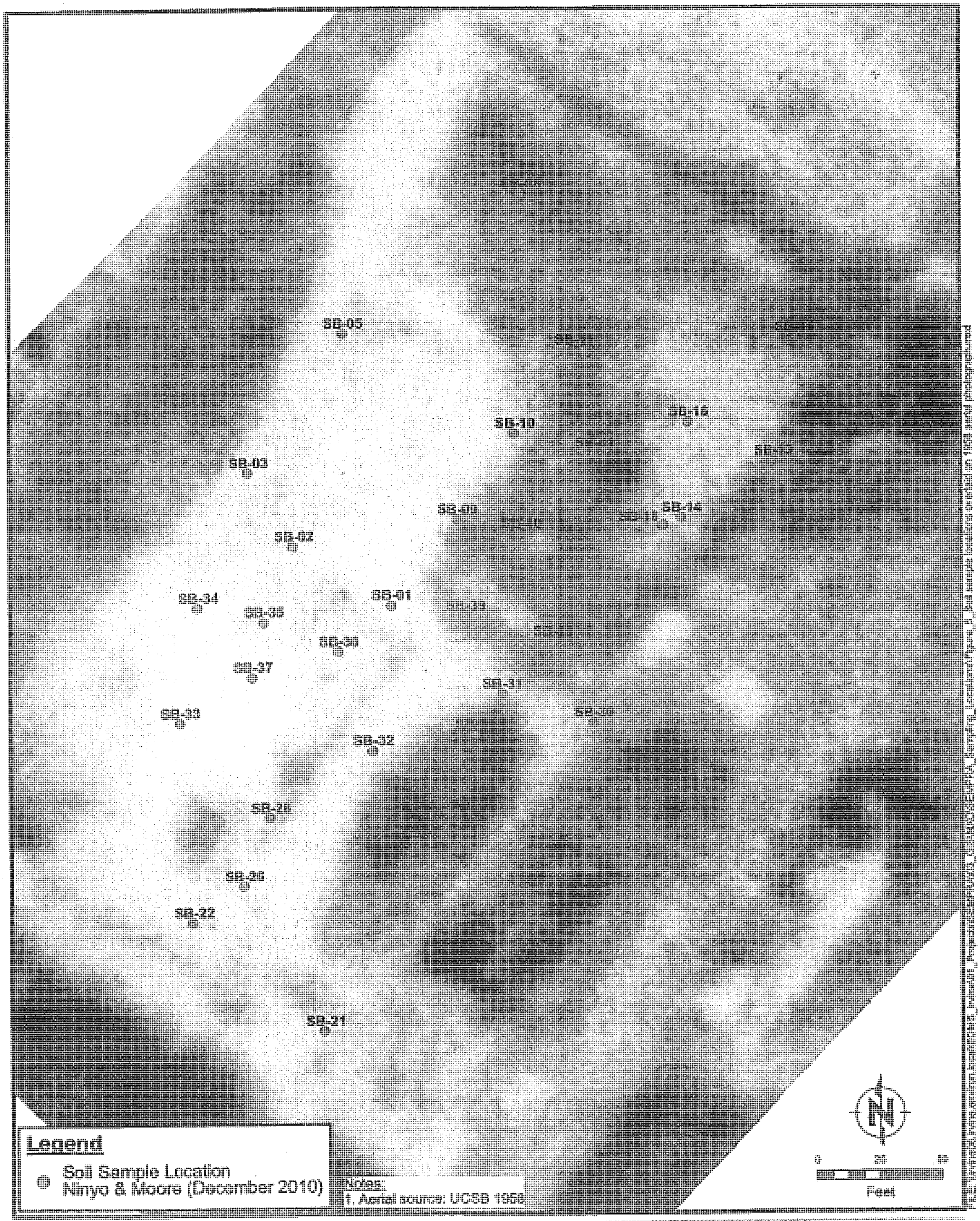
DRAFTED BY: SShin | DATE: 2/4/2011

Soil Sample Locations Overlaid on 1953 Aerial Photograph

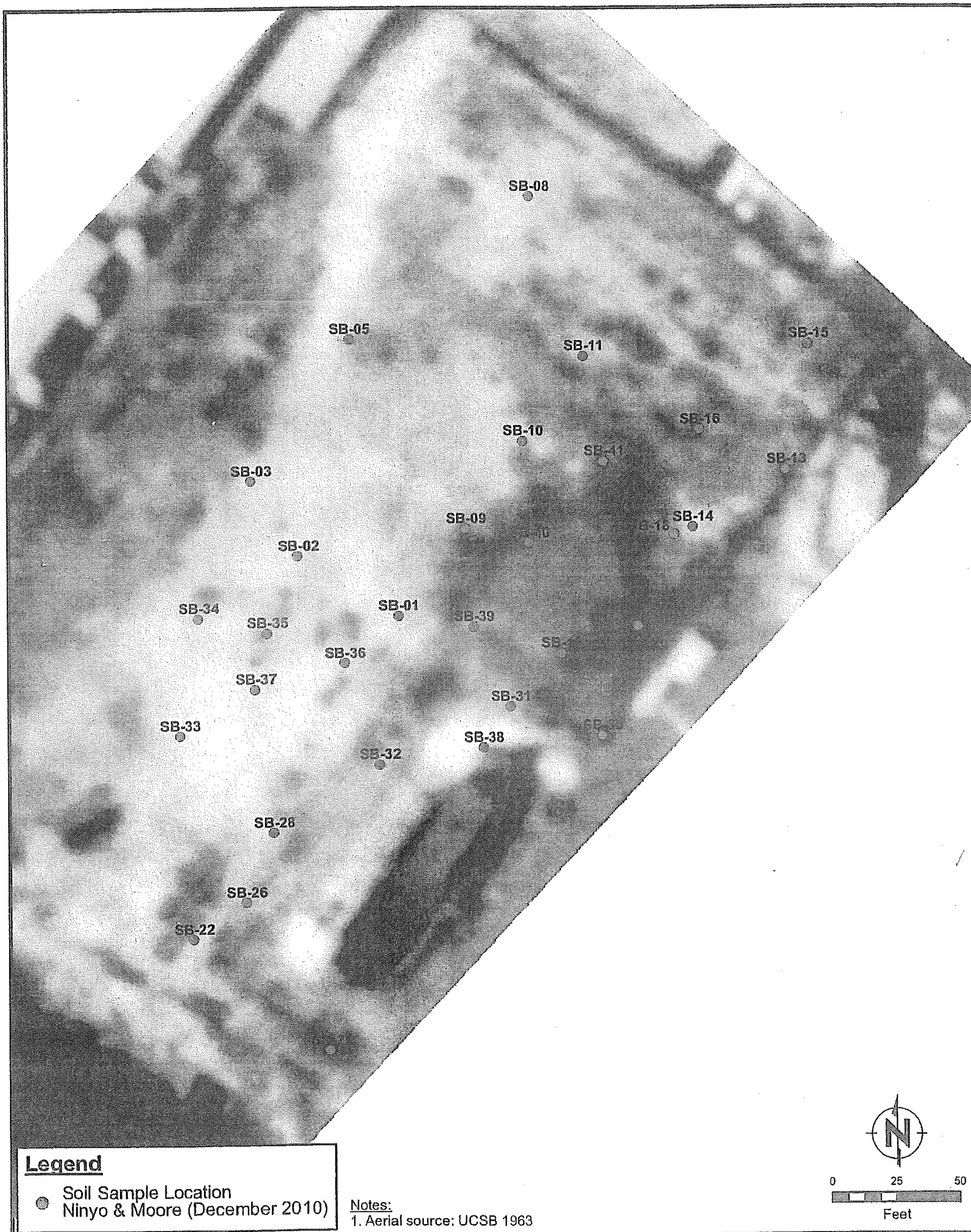
BAE Subleasehold Area
San Diego, California

Figure
4

PROJECT: 03-19562A



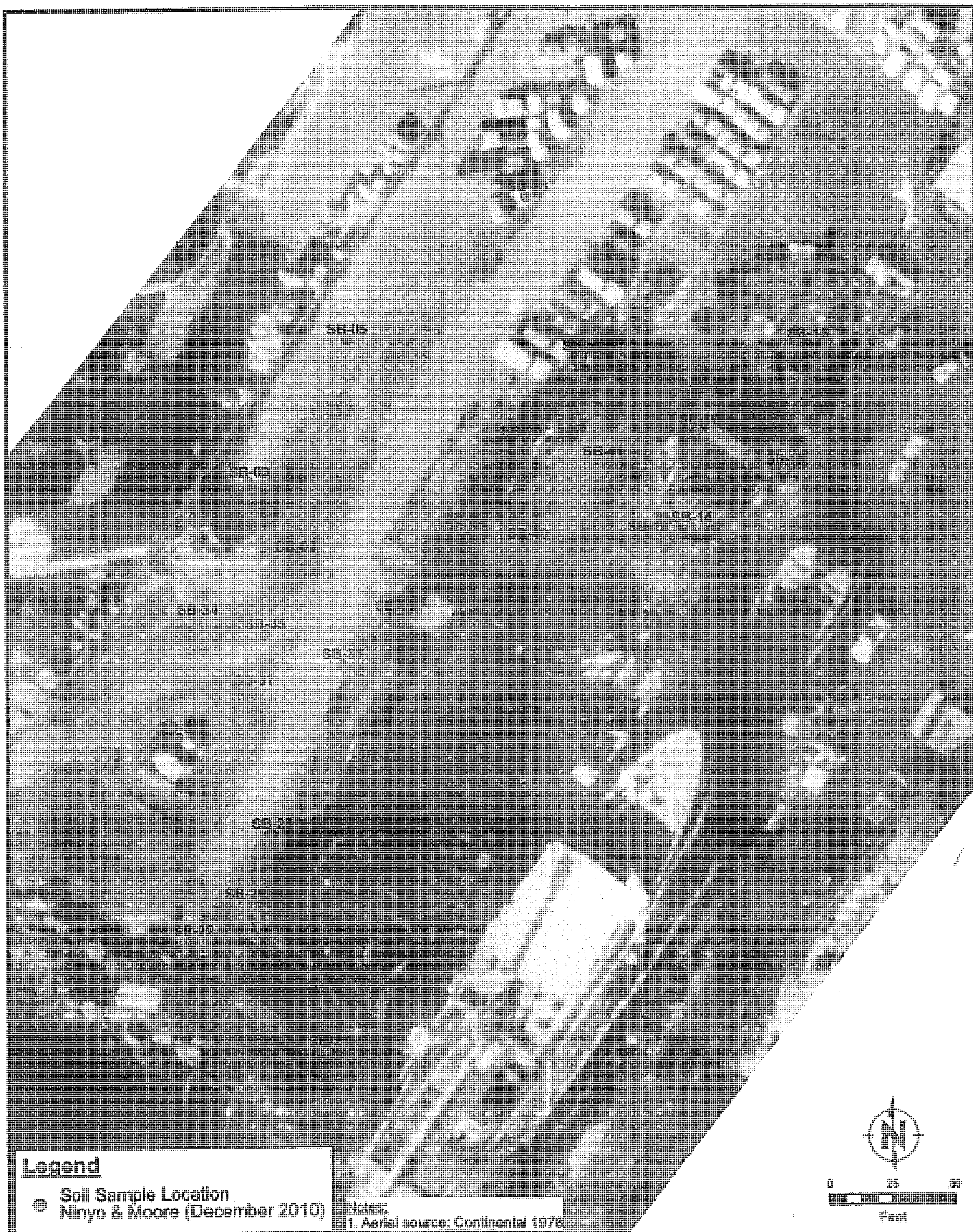
ENVIRON	Soil Sample Locations Overlaid on 1958 Aerial Photograph BAE Subleasehold Area San Diego, California	Figure 5
DRAFTED BY: SShin / DATE: 2/4/2011		PROJECT: 03-19562A



Notes:
1. Aerial source: UCSB 1963

FILE: \\irvine06.irvine.environ.local\EDMS_Irvine\01_Projects\SEMPRA\03_GIS\MXD\SEMPRA_Sampling_Locations\Figure_6_Soil sample locations overlaid on 1963 aerial photograph.mxd

ENVIRON		Soil Sample Locations Overlaid on 1963 Aerial Photograph BAE Subleasehold Area San Diego, California	Figure 6
DRAFTED BY: SShin	DATE: 2/4/2011		PROJECT: 03-19562A



ENVIRON	Soil Sample Locations Overlaid on 1978 Aerial Photograph	Figure 7
	BAE Subleasehold Area San Diego, California	PROJECT: 03-19562A
DRAFTED BY: SShin / DATE: 2/4/2011		

FILE: \\irvine06.irvine.environ.local\EDMS_Irvine\01_Projects\SEMPRA\03_GIS\MXD\SEMPRA_Sampling_Locations\Figure_8_Soil sample locations overlaid on 1979 aerial photograph.mxd

ENVIRON	Soil Sample Locations Overlaid on 1979 Aerial Photograph	Figure 8
DRAFTED BY: SShin — DATE: 2/4/2011	BAE Subleasehold Area San Diego, California	PROJECT: 03-19562A

Soil Sample Analytical Results

- 2010 data add to previous observations concerning low concentrations in soil relative to San Diego Bay sediment
  - Average concentrations in BAE subleasehold soils are 1-2 orders of magnitude lower than sediment at SW01, SW02, SW04 and inside BAE

			BAE Subleasehold Soils	**San Diego Bay Sediment, SW01 SW02, and SW04**	**San Diego Bay Sediment, Inside BAE Leasehold**
COC	**Statistic**	**Units**	**SDUPD Investigation (2010)**	**Exponent (2003)**	**Exponent (2003) Table 10-5**
Copper	Avg	mg/kg	28	480	400
	Max	mg/kg	1,900	2,200	1,500
Mercury	Avg	mg/kg	0.070	1.6	1.2
	Max	mg/kg	1.1	7.4	4.2
Total PCB Aroclors	Avg	µg/kg	35	5,400	1,900
	Max	µg/kg	810	36,000	7,100
Total HPAHs	Avg	µg/kg	772	11,000	14,000 (total PAHs)
	Max	µg/kg	5,661	58,000	57,000 (total PAHs)

66

UNDERGROUND STORAGE TANK CLOSURE REPORT

SILVER GATE POWER PLANT
1348 Sampson Street
San Diego, California 92113

DEH Establishment No. H13942-002

PREPARED FOR:

SAN DIEGO GAS & ELECTRIC COMPANY
555 W. 5th Street
Mail stop GT16G2
Los Angeles, CA 90013

Prepared by:

T N & Associates, Inc.
Engineering and Science

2247 San Diego Avenue, Suite 238
San Diego, CA 92110

November 13, 2006

jmsteno.com
EXHIBIT NO. 1275
Barker

SAR373807

Underground Storage Tank Closure Report

Silver Gate Power Plant
1348 Sampson Street
San Diego, California 92113

Prepared By:

Thomas J. Mulder, P.G., C.E.G., C.HG.
Senior Project Manager

Signature/Date

Krissy Lovering
Staff Geologist

Signature/Date

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

During excavation activities, underground asbestos-containing conduit and wire were encountered in the overburden. The asbestos containing material was removed by SDG&E's abatement contractor, Metalclad Insulation Corporation, and disposed of with the waste stream from the ongoing power plant demolition project.

2.6 Removal of UST Roof, Piers, Interior Walls and Tank Lining

PIVOX removed the concrete UST roof, piers and interior walls using a hydraulic breaker mounted on a track hoe. The exterior walls were removed to a depth of approximately 5 feet below grade. Approximately 310 CY of concrete debris was stockpiled on site for future crushing and use as backfill.

The steel plate UST lining was removed and recycled as scrap steel.

Upon removal of the steel plating from the UST floor, small pockets of fuel oil were encountered between the concrete and steel plating at locations where the steel lining had buckled. The oil was removed by steam cleaner and vacuum truck. Approximately 4,200 gallons of mixed fuel oil/rinse water was transported for disposal at Filter Recycling Services in Rialto, California.

2.7 Post- Removal Borings Below USTs

Following the removal of the UST roofs, six soil borings were drilled thru the bottom of the tanks to collect soil and groundwater samples from beneath the tanks (SB10, SB11, SB12, SB19, SB20 and SB21 in Figure 2). Each boring was advanced by a track-mounted direct-push drill rig operated by H&P. H&P collected continuous lithologic cores during drilling. Boring logs depicting the subsurface lithology are included in Appendix C. The soil samples were collected in acetate sleeves or glass sample jars, labeled and stored on ice. All soil samples were analyzed for TPH-d and TPH-h. In each boring, the soil sample with the highest TPH concentration was further analyzed for VOCs. Bailers were used to collect a groundwater sample from each boring. All groundwater samples were analyzed for TPH-d, TPH-h and VOCs.

A summary of soil boring soil and groundwater analytical results are found in Tables 2 and 3, respectively.

2.8 Perforation of Tank Floor and Backfill

The tank floor was perforated to prevent the tank floor acting as a hydrologic barrier after backfilling of the UST cavity. The perforations were spaced in a grid pattern approximately 5 feet on center. Perforations were made using a hydraulic breaker mounted on a track hoe.

On July 27, 2006, D.G. Williams of the Fire Department inspected the UST cavity and perforated tank floor and approved the UST cavity for backfilling.

In September 2006, SDG&E began backfilling the UST Cavity with the stockpiled UST overburden (see Section 2.5) and imported clean fill. The backfilling operations, completed in October 2006, required import of approximately 3,500 CY of clean fill. The concrete debris (see Section 2.5) was retained on site in stockpiles. This concrete rubble will be crushed and used as fill during the substation construction.

3.0 DISCUSSION

3.1 Nature and Extent of Surface Soil Impacts

Surface soil impacts above the USTs consisted of unstained soil with elevated concentrations of metals, PCBs and TPH, and soil with areas of observable oil-like staining with elevated concentrations of metals, TPH and PCBs. The pattern of oil-like staining indicated that the staining came from past leaks of transformers and circuit breakers.

Maximum concentrations detected in stained surface soil (Locations SS1 to SS10) included 155,000 mg/kg total TPH (C13-C40), 3.27 mg/kg Aroclor 1260, and 4,240 mg/kg lead (Table 4).

Maximum concentrations detected in unstained surface soil (Locations SS11 to SS18 and TS1 1 to TS10) included 548 mg/kg total TPH (C13-C40), 125 mg/kg Aroclor 1260, and 923 mg/kg lead (Table 4).

The PCB analysis by AETL reported Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1260, 1262 and 1268. Only Aroclor 1260 was detected in surface soil samples.

The metals detected in surface soil likely came from flaking paints and repainting operations in the substation area, and metal-working operations associated with substation operations.

Surface soil impacts with concentrations above industrial PRGs were typically limited to the surface crushed aggregate base layer and top 6- to 12-inches of soil underlying the crushed rock. Surface soil impacted with concentrations above industrial PRGs was excavated and disposed of off site.

Additional impacted surface soil exists in the substation area surrounding the USTs, and the additional impacted soil will be remediated in the future when the redevelopment schedule allows access to the impacted soil.

3.2 Nature and Extent of Subsurface Soil and Groundwater Impacts

3.2.1 Petroleum Impacts in Soil

Twenty borings were advanced into the groundwater-bearing strata beneath and adjacent to the USTs (Figure 3) to define the extent of petroleum hydrocarbon impacts. Visual descriptions of the cores of the 20 borings identified observable petroleum staining in 10 borings. Figure 3 illustrates the lateral extent of visible petroleum staining identified in the subsurface. The footprint of visible petroleum staining is coincident with the footprint of detectable TPH impacts. The areal extent of visible petroleum staining shown in Figure 3 is 11,500 square feet. The total volume of TPH-impacted soil within the 11,500 square foot area was estimated to be 1,700 CY.

Figure 6 illustrates a cross sectional view of the extent of visible petroleum staining. Petroleum staining in 8 of 10 borings was limited to the strata below the water table, at an approximate depth of 20 to 25 feet below grade. Shallower petroleum impacts were observed and detected in two borings, SB4 and SB17.

The maximum TPH concentrations detected in soil in Borings SB1 through SB21 were 24,300 mg/kg TPH-d and 17,000 mg/kg TPH-h at 23 feet bgs in Boring SB4 (Table 2 and Figure 3). All other soil borings had soil TPH concentrations that were substantially lower than the concentrations detected in Boring SB4 (all other total TPH concentrations were at least one order of magnitude less than the total TPH concentrations in Boring SB4). The high TPH concentrations observed in Boring SB4 came from a silt stratum (see boring log in Appendix C). The residual saturation capacities for diesel and fuel oil in silt are 36,000 mg/kg and 49,000 mg/kg, respectively (DEH SAM Manual Table 5-8). The maximum concentrations detected in SB4, 24,300 mg/kg TPH-d and 17,000 mg/kg TPH-h, were lower than the relevant residual saturation capacities put forth in the DEH SAM Manual as screening criteria for evaluating the potential for presence of non-aqueous phase liquid (NAPL) fuel. The volume of TPH-impacted soil in the vicinity of Boring SB4 was estimated to be 250 CY.

3.2.2 Petroleum Impacts in Groundwater

Groundwater samples were collected from 20 borings. Figure 4 illustrates the lateral extent of TPH-d concentrations greater than 1 mg/L in groundwater. The maximum TPH-d concentration detected in groundwater was 87 mg/L in Boring SB19. Boring SB19 is the only boring where sheen was observed in groundwater (see boring logs in Appendix C).

Trace concentrations of volatile petroleum fuel constituents were detected in groundwater samples from Borings SB1 through SB21 (Table 3). Maximum detectable

T N & Associates, Inc.
Engineering and Science

Memorandum

Date: February 7, 2011

To: Barbara Montgomery, SDG&E

From: Mary Londquist; Tom Mulder, CEG, CHG

Copy: Jill Tracy, SDG&E

Subject: **Former Silver Gate Substation – Surface Soil Sampling and Removal**

Between November 2006 and January 2007, T N & Associates (TN&A) sampled and analyzed surface soil samples and directed removal of impacted soil from the former substation and switchyard area of the San Diego Gas and Electric (SDG&E) Silver Gate Power Plant.

SURFACE SOIL ASSESSMENT

During November 2006, TN&A collected surface soil samples from the former substation. Samples were collected and analyzed in general accordance with the Site Assessment and Soil Management Work Plan (TN&A, 2006a). Site assessment activities included the following:

- Visual observations of the ground surface were used to document the lateral and vertical extent of debris and stained soil that were indicative of impacts;
- Surface and subsurface soil samples were collected using a hand auger or shovel at 56 locations, to augment the 11 surface soil samples previously collected in the area by TN&A (2006b) – yielding an approximate sampling density of approximately 1 station per 450 square feet;
- Three soil samples were collected from each location (where feasible) to characterize the nature of surface soil; and
- All surface soil samples were analyzed for chemicals of concern (COCs), and deeper soil samples at each location were analyzed only if surface soil samples had COC concentrations above cleanup levels.

Soil Sampling Locations and Rationale

Surface soil samples were previously collected at 11 locations and from stained soil areas (TN&A, 2006b). Additional sampling was conducted at 56 locations (SS-19 through SS-74), as shown on Figures 1 though 3. The sample locations and sampling intervals were developed to generate representative data at various locations throughout the site.

At locations with a surficial crushed aggregate base layer, soil samples were collected from

- the crushed aggregate base layer;
- the interface between crushed aggregate base and underlying soil; and
- native soil below the interface between crushed aggregate base and underlying soil.

At locations without a surficial crushed aggregate base layer, soil samples were collected from

- 0 to 6 inches bgs;
- 6 to 12 inches bgs; and

- 12 to 16 inches bgs.

Soil Sampling Methodology

Surface samples were collected in each location using a hand auger or shovel. The resulting soil cuttings were used to backfill the shallow borehole. Sampling locations are illustrated in Figures 1 through 3.

Samples were collected from each sampling interval; placed in new, clean glass jars; sealed with a Teflon-lined lid; labeled with a unique sample identification, date, and time of sample; and placed in an ice-filled cooler. Sample information including location, sample identification, sample interval depths, and geologic description were recorded on a sample log (Table 1).

Decontamination of non-disposable sampling equipment was performed to prevent the introduction of extraneous material into samples and to prevent cross-contamination between samples. All reusable sampling equipment (e.g., hand augers, shovels) was decontaminated by washing with a non-phosphate detergent such as Liquinox™ or equivalent, rinsing with potable water, and rinsing again with deionized water.

Analytical Methods

Samples were submitted to SDG&E Environmental Analysis Laboratory under chain-of-custody documentation for analysis. All samples were analyzed for total petroleum hydrocarbons (TPH) screen, polychlorinated biphenyl (PCB) Aroclors (by EPA Method 8082), and TTLC metals (except mercury, by EPA Methods 7471A and 6010B). A summary of soil sample analytical results is included in Table 2. Laboratory analytical results and chain-of-custody documentation are included as Attachment A.

SURFACE SOIL EXCAVATION AND CONFIRMATION SAMPLING

Results from the pre-excavation soil samples (Table 2) and the established clean up levels (Table 3) were used to guide the excavation of impacted surface soil at the former substation.

Between December 2006 and January 2007, PIVOX Corporation (PIVOX) excavated the surface soil at the former substation using a track-mounted excavator and front-end loader. Excavated soil was placed in roll-off bins or end-dumps and transported under manifest to Kettleman Hills Landfill in Kettleman, CA. Waste manifests are included as Attachment B.

Subsequent to excavation, TN&A collected confirmation samples in areas where initial soil sample results exceeded clean up levels in the deepest sample analyzed. Confirmation samples were not collected from locations where analytical results from the deepest soil sample were below clean up levels. Samples were collected using the methodology previously discussed. Samples were submitted to SDG&E Environmental Analysis Laboratory under chain-of-custody documentation for analysis. All samples were analyzed for TPH as gasoline and diesel (by EPA Method 8015), PCB Aroclors (by EPA Method 8082), and TTLC metals (except mercury, by EPA Methods 7471A and 6010B). Confirmation sample locations are shown on Figures 1 though 3. A summary of confirmation sample analytical results is included in Table 4. Laboratory analytical results and chain-of-custody documentation are included as Attachment A.

In the event that the confirmation sample results exceeded the established soil clean up level, PIVOX excavated additional soil from the specific excavation area, and the area was resampled. This process was repeated until all confirmation sample results were below their respective clean up levels. Approximately 1,020 cubic yards of impacted soil were removed from the site throughout excavation activities.

Should you require additional assistance or further information, please do not hesitate to call.

References

TN & Associates, Inc., 2006a. Site Assessment and Soil Management Work Plan for SDG&E Silvergate Substation. Prepared for SDG&E. November.

TN & Associates, Inc., 2006b. Underground Storage Tank Closure Report for SDG&E Silvergate Power Plant. Prepared for SDG&E. November.

Tables

Figures

Attachments

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 19		SS 20		SS 21		SS 22		SS 23		SS 24	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0
Sample ID		SS-19-0-0.5	SS-19-0.5-1.0	SS-20-0-0.5	SS-20-0.5-1.0	SS-21-0-0.5	SS-21-0.5-1.0	SS-22-0-0.5	SS-22-0.5-1.0	SS-23-0-0.5	SS-23-0.5-1.0	SS-24-0-0.5	SS-24-0.5-1.0
Sample Date		11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006
Lab ID	Units	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611019
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.022	ND< 0.022	ND< 0.023	ND< 0.023	ND< 0.023	ND< 0.024	ND< 0.022	ND< 0.024	ND< 0.022	ND< 0.024	ND< 0.022	--
Aroclor-1254 (PCB-1254)	mg/Kg	ND< 0.022	ND< 0.022	ND< 0.023	ND< 0.023	ND< 0.023	ND< 0.024	0.30	ND< 0.024	0.61	ND< 0.024	0.50	--
Aroclor-1260 (PCB-1260)	mg/Kg	ND< 0.022	ND< 0.022	0.28	0.086	ND< 0.023	ND< 0.024	0.32	ND< 0.024	0.61	ND< 0.024	0.47	--
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5	ND< 5.0	ND< 5.0	29	ND< 5.0	31	ND< 5.0	14	ND< 5.0
Arsenic	mg/Kg	7.4	ND< 5.0	5.3	8.3	6.4	7.3	33	11	39	8.2	33	ND< 5.0
Barium	mg/Kg	100	54	98	84	57	51	340	72	280	79	270	72
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1	ND< 1.0	ND< 1.0	1.3	ND< 1.0	3.1	ND< 1.0	2.4	ND< 1.0
Cadmium	mg/Kg	ND< 1.0	ND< 1.1	ND< 1.0	ND< 1.1	ND< 1.0	ND< 1.1	23	ND< 1.1	23	ND< 1.1	8.5	ND< 1.1
Chromium	mg/Kg	23	24	27	31	31	29	130	34	130	28	150	17
Cobalt	mg/Kg	12	9.3	11	13	10	7.5	41	16	39	11	76	7.9
Copper	mg/Kg	350	11	65	12	13	11	7,200	16	12,000	12	1,900	13
Lead	mg/Kg	90	11	40	13	9.8	ND< 9.0	3,600	14	2,300	ND< 9.0	1,100	ND< 9.0
Molybdenum	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	36	ND< 2.0	51	ND< 2.0	18	ND< 2.0
Nickel	mg/Kg	73	11	66	15	14	11	700	15	690	9.6	1,800	9.5
Selenium	mg/Kg	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	3.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	6.3	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8
Vanadium	mg/Kg	140	65	130	88	71	65	1,300	83	1,300	63	4,100	58
Zinc	mg/Kg	130	39	130	51	260	92	13,000	83	8,600	47	4,400	39
TPH by TPH Screen													
C28-C30	mg/Kg	--	--	--	--	--	--	1,100	--	530	--	--	--
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	--
TPH as Diesel (C10-C30)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	820	ND< 50	340	200	ND< 50	--
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	--
% Solids by ASTM D2216													
% Solids	%	89.6	89.0	87.7	86.9	85.6	83.7	93.0	82.8	92.4	83.8	91.1	87.5

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
-- = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 25		SS 26		SS 27		SS 28		SS 29		SS 30	
Sample Interval (ft bgs)		0-0.5	1.5-2.0	0-0.5	1.0-1.5	0-0.5	1.0-1.5	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0
Sample ID		SS-25-0-0.5	SS-25-1.5-2.0	SS-26-0-0.5	SS-26-1.0-1.5	SS-27-0-0.5	SS-27-1.0-1.5	SS-28-0-0.5	SS-28-0.5-1.0	SS-29-0-0.5	SS -29-0.5-1.0	SS-30-0-0.5	SS -30-0.5-1.0
Sample Date		11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006	11/2/2006
Lab ID	Units	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611019	0611027	0611027	0611027	0611027
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.022	ND< 0.024	ND< 0.022	ND< 0.023	ND< 0.021	ND< 0.023	ND< 0.021	ND< 0.022	ND< 0.021	ND< 0.023	ND< 0.021	ND< 0.022
Aroclor-1254 (PCB-1254)	mg/Kg	0.078	ND< 0.024	0.31	ND< 0.023	0.32	ND< 0.023	0.47	ND< 0.022	0.15	ND< 0.023	0.12	ND< 0.022
Aroclor-1260 (PCB-1260)	mg/Kg	0.15	ND< 0.024	0.27	ND< 0.023	0.25	ND< 0.023	0.43	ND< 0.022	0.15	ND< 0.023	0.12	ND< 0.022
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	24	ND< 5.0	10	ND< 5.0	8.7	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	19	8.3	13	9.2	27	ND< 5.0	30	14	25	5.8	15	6.9
Barium	mg/Kg	180	150	140	140	250	100	360	73	230	70	180	74
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.1	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	1.9	ND< 1.1	1.3	ND< 1.1	9.7	ND< 1.1	4.8	ND< 1.1	1.8	ND< 1.1	4.3	ND< 1.1
Chromium	mg/Kg	55	26	41	22	94	31	82	19	79	23	48	21
Cobalt	mg/Kg	28	9.7	30	13	37	10	41	9.0	99	10	25	11
Copper	mg/Kg	580	16	410	13	740	19	540	13	370	13	200	11
Lead	mg/Kg	440	16	290	ND< 9.0	1,800	18	890	19	950	11	320	9.6
Molybdenum	mg/Kg	12	ND< 2.0	7.3	ND< 2.0	20	ND< 2.0	20	ND< 2.0	11	ND< 2.0	12	ND< 2.0
Nickel	mg/Kg	460	16	540	12	680	23	770	10	2,400	50	440	16
Selenium	mg/Kg	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 7.5	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	3.9	ND< 2.0	2.0	ND< 2.0	11	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8
Vanadium	mg/Kg	560	75	450	76	860	76	1,100	48	2,700	120	570	120
Zinc	mg/Kg	1,300	190	800	91	5,200	130	2,100	49	1,400	46	1,200	130
TPH by TPH Screen													
C28-C30	mg/Kg	–	–	–	–	–	–	–	–	–	–	–	–
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	71	ND< 50	ND< 50	ND< 50	5,300	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	130	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	200	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	91.7	84.0	91.7	85.4	96.4	85.9	95.4	90.9	96.1	85.6	93.6	91.4

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
– = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 31		SS 32		SS 33		SS 34		SS 35		SS 36	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0
Sample ID		SS-31-0-0.5	SS -31-0.5-1.0	SS-32-0-0.5	SS-32-0.5-1.0	SS-33-0-0.5	SS-33-0.5-1.0	SS-34-0-0.5	SS-34-0.5-1.0	SS-35-0-0.5	SS-35-0.5-1.0	SS-36-0-0.5	SS-36-0.5-1.0
Sample Date		11/2/2006	11/2/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006
Lab ID	Units	0611027	0611027	0611028	0611028	0611028	0611028	0611028	0611028	0611028	0611028	0611028	0611028
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.022	ND< 0.023	0.064	ND< 0.021	ND< 0.022	ND< 0.024	ND< 0.023	ND< 0.023	1.4	ND< 0.022	ND< 0.022	ND< 0.022
Aroclor-1254 (PCB-1254)	mg/Kg	0.14	ND< 0.023	ND< 0.021	ND< 0.021	0.44	ND< 0.024	0.29	ND< 0.023	ND< 0.043	0.20	ND< 0.022	ND< 0.022
Aroclor-1260 (PCB-1260)	mg/Kg	0.14	ND< 0.023	0.035	ND< 0.021	0.39	ND< 0.024	0.28	ND< 0.023	1.8	0.20	0.11	ND< 0.022
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	8.6	ND< 5.0	ND< 5.0	ND< 5.0	11	ND< 5.0	5.6	ND< 5.0	ND< 5.0	ND< 5	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	24	19	ND< 5.0	ND< 5.0	37	7.6	21	ND< 5.0	30	8.7	20	8.2
Barium	mg/Kg	140	61	15	18	910	150	190	59	300	97	140	28
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	4.8	ND< 1.1	ND< 1.0	ND< 1.1	14	ND< 1.1	7.0	ND< 1.1	4.7	ND< 1.1	7.1	ND< 1.1
Chromium	mg/Kg	55	15	5.0	5.6	150	24	60	21	110	26	54	8.7
Cobalt	mg/Kg	32	8.3	2.4	3.1	78	16	26	8.9	28	10	45	3.6
Copper	mg/Kg	4,100	20	6.2	2.5	1,200	17	1,000	9.0	440	57	2,100	36
Lead	mg/Kg	850	18	ND< 9.0	ND< 9.0	2,400	12	580	9.3	930	88	290	ND< 9.0
Molybdenum	mg/Kg	8.8	ND< 2.0	ND< 2.0	ND< 2.0	21	ND< 2.0	13	ND< 2.0	12	ND< 2.0	9.3	ND< 2.0
Nickel	mg/Kg	560	8.3	4.6	ND< 3.0	1,600	14	520	12	530	63	940	3.9
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	6.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8
Vanadium	mg/Kg	890	45	40	27	1,900	58	660	52	1,000	180	1,100	30
Zinc	mg/Kg	2,900	52	23	21	2,800	57	1,300	41	1,100	140	2,500	15
TPH by TPH Screen													
C28-C30	mg/Kg	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	84	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	210	ND< 50	190	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	90.7	87.7	96.4	93.3	92.2	84.5	85.4	88.5	93.8	91.9	90.7	90.0

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
-- = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 37		SS 38		SS 39		SS 40		SS 41		SS 42	
Sample Interval (ft bgs)		0-0.5	1.0-1.5	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	1.0-1.5	0-0.5	0.5-1.0
Sample ID		SS-37-0-0.5	SS-37-1.0-1.5	SS-38-0-0.5	SS-38-0.5-1.0	SS-39-0-0.5	SS-39-0.5-1.0	SS-40-0-0.5	SS-40-0.5-1.0	SS-41-0-0.5	SS-41-1.0-1.5	SS-42-0-0.5	SS-42-0.5-1.0
Sample Date		11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006
Lab ID	Units	0611028	0611028	0611028	0611028	0611038	0611038	0611038	0611038	0611038	0611038	0611038	0611038
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.022	ND< 0.024	ND< 0.021	ND< 0.022	ND< 0.022	ND< 0.022	ND< 0.021	ND< 0.044	ND< 0.021	ND< 0.024	ND< 0.020	ND< 0.024
Aroclor-1254 (PCB-1254)	mg/Kg	0.064	ND< 0.024	0.31	ND< 0.022	0.46	ND< 0.022	0.14	0.77	0.68	ND< 0.024	0.51	ND< 0.024
Aroclor-1260 (PCB-1260)	mg/Kg	0.072	ND< 0.024	0.30	ND< 0.022	0.46	ND< 0.022	0.17	0.87	0.57	ND< 0.024	0.47	ND< 0.024
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	16	ND< 5.0	ND< 5.0	ND< 5.0	8.9	ND< 5.0	6.6	9.0	8.5	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	48	ND< 5.0	27	ND< 5.0	25	7.1	10	12	24	ND< 5.0	27	8.3
Barium	mg/Kg	500	110	250	46	270	34	210	820	270	100	140	110
Beryllium	mg/Kg	1.1	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	6.3	ND< 1.1	2.3	ND< 1.1	3.4	ND< 1.1	4.5	19	3.0	ND< 1.1	4.2	ND< 1.1
Chromium	mg/Kg	200	27	150	20	90	8.0	30	170	71	26	60	26
Cobalt	mg/Kg	250	15	120	9.9	32	5.7	13	32	33	10	16	10
Copper	mg/Kg	670	8.8	1,600	8.0	750	14	210	850	710	15	900	19
Lead	mg/Kg	1,600	ND< 9.0	1,400	ND< 9.0	870	11	300	1,300	720	11	520	11
Molybdenum	mg/Kg	24	ND< 2.0	17	ND< 2.0	22	ND< 2.0	3.6	18	21	ND< 2.0	39	ND< 2.0
Nickel	mg/Kg	5,900	12	3,000	9.1	510	3.9	60	570	600	34	130	12
Selenium	mg/Kg	24	ND< 5.0	6.3	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	3.9	ND< 2.0	2.5	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8
Vanadium	mg/Kg	7,700	110	3,900	49	580	34	130	930	700	84	200	63
Zinc	mg/Kg	2,800	41	880	29	1,500	17	790	6,000	2,000	74	2,500	56
TPH by TPH Screen													
C28-C30	mg/Kg	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 1000	ND< 50	ND< 50	ND< 200	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	500	ND< 50	ND< 50	ND< 50	ND< 1000	ND< 50	260	5,800	95	ND< 50	260	200
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	15,000	ND< 100	ND< 100	ND< 400	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	92.3	84.3	94.1	91.6	90.1	89.9	93.9	91.5	95.9	83.3	99.1	83.6

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
-- = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 43		SS 44		SS 45		SS 46		SS 47		SS 48	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.25	1.0-1.5	0-0.5	0.5-1.0	0-0.5	1.0-1.5
Sample ID		SS-43-0-0.5	SS-43-0.5-1.0	SS-44-0-0.5	SS-44-0.5-1.0	SS-45-0-0.5	SS-45-0.5-1.0	SS-46-0-0.25	SS-46-1.0-1.5	SS-47-0-0.5	SS-47-0.5-1.0	SS-48-0-0.5	SS-48-1.0-1.5
Sample Date		11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/3/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006
Lab ID	Units	0611038	0611038	0611038	0611038	0611038	0611038	0611107	0611107	0611107	0611107	0611107	0611107
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.021	ND< 0.024	ND< 0.021	ND< 0.023	ND< 0.021	ND< 0.023	ND< 0.023	ND< 0.024	ND< 0.11	ND< 0.023	ND< 0.022	ND< 0.024
Aroclor-1254 (PCB-1254)	mg/Kg	1.3	ND< 0.024	0.67	ND< 0.023	0.12	ND< 0.023	1.0	ND< 0.024	ND< 0.11	0.20	0.65	ND< 0.024
Aroclor-1260 (PCB-1260)	mg/Kg	1.1	ND< 0.024	0.57	ND< 0.023	0.11	ND< 0.023	0.88	ND< 0.024	4.5	0.20	0.70	ND< 0.024
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	7.2	ND< 5.0	ND< 5.0	ND< 5.0	6.0	ND< 5.0	12	ND< 5.0	8.3	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	19	8.5	23	7.8	29	5.9	12	6.9	21	11	14	9.5
Barium	mg/Kg	160	200	170	120	170	100	180	51	420	220	290	87
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	2.5	ND< 1.1	2.7	ND< 1.1	1.8	ND< 1.1	3.1	ND< 1.0	4.9	6.1	7.1	6.9
Chromium	mg/Kg	49	25	59	21	68	18	49	14	90	43	69	20
Cobalt	mg/Kg	26	12	32	11	32	7.4	16	5.7	15	23	19	13
Copper	mg/Kg	1,300	24	830	16	590	15	690	9.4	1,100	190	2,200	67
Lead	mg/Kg	460	ND< 9.0	310	ND< 9.0	490	ND< 9.0	680	ND< 9.0	690	170	680	21
Molybdenum	mg/Kg	18	ND< 2.0	16	ND< 2.0	18	ND< 2.0	4.5	ND< 2.0	22	3.0	12	ND< 2.0
Nickel	mg/Kg	490	13	470	11	600	9.8	320	7.3	86	320	190	60
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	2.3	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 8.8	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Vanadium	mg/Kg	520	99	530	78	530	57	510	38	230	400	380	67
Zinc	mg/Kg	1,600	52	1,600	45	1,400	42	790	31	3,400	2,600	3,500	1,300
TPH by TPH Screen													
C28-C30	mg/Kg	--	--	--	--	--	--	--	--	--	--	--	--
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	340	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	150	ND< 50	68	ND< 50	180	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	95.8	83.9	96.1	88.7	93.8	88.8	88.5	83.5	91.2	85.3	91.9	82.8

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
-- = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 49		SS 50		SS 51		SS 52		SS 53	SS 54	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0.5-1.0	1.0-1.5	0-0.25	0.25-0.5	0-0.5	0.5-1.0	0-0.5	0-0.5	0.5-1.0
Sample ID		SS-49-0-0.5	SS-49-0.5-1.0	SS-50-0.5-1.0	SS-50-1.0-1.5	SS-51-0-0.25	SS-51-0.25-0.5	SS-52-0-0.5	SS-52-0.5-1.0	SS-53-0-0.5	SS-54-0-0.5	SS-54-0.5-1.0
Sample Date		11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006
Lab ID	Units	0611107	0611107	0611107	0611107	0611107	0611107	0611107	0611107	0611107	0611107	0611107
PCBs by USEPA Method 8082												
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.023	ND< 0.022	ND< 0.022	ND< 0.024	ND< 0.11	ND< 0.021	ND< 0.022	ND< 0.023	ND< 0.022	ND< 0.022	ND< 0.023
Aroclor-1254 (PCB-1254)	mg/Kg	0.12	ND< 0.022	0.16	0.11	3.5	0.67	0.71	0.081	ND< 0.022	0.31	0.026
Aroclor-1260 (PCB-1260)	mg/Kg	0.098	ND< 0.022	0.13	0.10	4.0	0.68	0.84	0.097	ND< 0.022	0.30	0.026
CAM Title 22 Metals by USEPA Method 6010B												
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	5.4	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	7.9	8.8	5.4	16	34	12	19	14	8.9	15	14
Barium	mg/Kg	95	54	110	130	700	160	300	110	170	150	78
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	1.1	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	1.8	ND< 1.0	ND< 1.0	1.9	15	3.2	3.3	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Chromium	mg/Kg	23	18	19	38	160	39	55	28	23	36	23
Cobalt	mg/Kg	12	14	8.7	12	29	17	25	14	13	10	14
Copper	mg/Kg	280	10	100	260	3,200	260	370	45	34	340	33
Lead	mg/Kg	80	ND< 9.0	79	93	910	180	330	63	16	290	32
Molybdenum	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	2.6	33	3.4	15	ND< 2.0	ND< 2.0	3.6	ND< 2.0
Nickel	mg/Kg	64	10	37	89	290	130	360	130	24	130	140
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	3.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Vanadium	mg/Kg	130	56	82	160	610	250	470	170	72	220	230
Zinc	mg/Kg	820	68	470	820	6,900	1,200	1,400	190	280	740	90
TPH by TPH Screen												
C28-C30	mg/Kg	--	--	--	--	--	--	--	--	--	--	--
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	ND< 50	ND< 50	210	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	170	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216												
% Solids	%	88.6	90.5	90.8	84.7	92.9	93.2	91.9	88.5	89.2	90.2	86.9

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
-- = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 55		SS 56		SS 57		SS 58		SS 59		SS 60	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0-0.5	1.0-1.5	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.25	0.25-0.5	0-0.5	0.5-1.0
Sample ID		SS-55-0-0.5	SS-55-0.5-1.0	SS-56-0-0.5	SS-56-1.0-1.5	SS-57-0-0.5	SS-57-0.5-1.0	SS-58-0-0.5	SS-58-0.5-1.0	SS-59-0-0.25	SS-59-0.25-0.5	SS-60-0-0.5	SS-60-0.5-1.0
Sample Date		11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006	11/15/2006
Lab ID	Units	0611107	0611107	0611117	0611117	0611117	0611117	0611117	0611117	0611117	0611117	0611117	0611117
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.022	ND< 0.023	ND< 0.022	ND< 0.022	ND< 0.021	ND< 0.022	ND< 0.087	ND< 0.023	ND< 0.022	ND< 0.021	ND< 0.021	ND< 0.021
Aroclor-1254 (PCB-1254)	mg/Kg	**0.20**	**0.028**	ND< 0.022	ND< 0.022	ND< 0.021	ND< 0.022	ND< 0.087	ND< 0.023	**0.11**	**0.022**	ND< 0.021	**0.067**
Aroclor-1260 (PCB-1260)	mg/Kg	**0.24**	**0.024**	**0.35**	**0.33**	**0.29**	**0.024**	**3.0**	**0.026**	**0.11**	ND< 0.021	**0.029**	**0.058**
CAM-Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	**13**	**9.7**	**15**	**14**	**11**	**936**	**18**	**15**	**16**	**15**	**12**	**16**
Barium	mg/Kg	**82**	**50**	**96**	**88**	**86**	**110**	**160**	**65**	**140**	**69**	**70**	**84**
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	**5.0**	**1.5**	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Chromium	mg/Kg	**15**	**15**	**24**	**27**	**16**	**12**	**37**	**20**	**38**	**21**	**16**	**30**
Cobalt	mg/Kg	**4.3**	**7.8**	**15**	**32**	**4.7**	**9.5**	**19**	**8.8**	**14**	**14**	**6.0**	**14**
Copper	mg/Kg	**99**	**34**	**130**	**170**	**78**	**39**	**640**	**17**	**290**	**22**	**54**	**140**
Lead	mg/Kg	**110**	**31**	**100**	**140**	**43**	**12**	**510**	**50**	**270**	**25**	**61**	**130**
Molybdenum	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	**6.2**	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Nickel	mg/Kg	**12**	**67.0**	**230**	**410**	**25**	**6.5**	**330**	**31**	**190**	**24**	**43**	**190**
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Vanadium	mg/Kg	**50**	**170**	**380**	**500**	**70**	**59**	**540**	**70**	**320**	**73**	**75**	**320**
Zinc	mg/Kg	**220**	**69**	**520**	**660**	**87**	**56**	**3,900**	**1,400**	**1,300**	**110**	**240**	**550**
TPH by TPH Screen													
C28-C30	mg/Kg	—	—	—	—	—	—	—	—	—	—	—	—
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	**67**	ND< 50	**450**	**200**	ND< 50	ND< 50	ND< 50	**92**
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	91.0	88.4	90.3	91.5	94.2	98.3	92.2	87.2	90.5	93.3	95.2	93.2

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
— = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 61		SS 62		SS 63		SS 64		SS 65		SS 66	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	0.5-1.0	0-0.5	1.5-2.0	1.0-1.5	1.5-2.0	0-0.5	1.0-1.5
Sample ID		SS-61-0-0.5	SS-61-0.5-1.0	SS-62-0-0.5	SS-62-0.5-1.0	SS-63-0-0.5	SS-63-0.5-1.0	SS-64-0-0.5	SS-64-1.5-2.0	SS-65-1.0-1.5	SS-65-1.5-2.0	SS-66-0-0.5	SS-66-1.0-1.5
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006
Lab ID	Units	011117	011117	0611117	0611117	0611117	0611117	0611117	0611117	0611117	0611117	0611117	0611117
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.022	ND< 0.022	ND< 0.021	ND< 0.022	ND< 0.022	ND< 0.023	ND< 0.021	ND< 0.024	ND< 0.023	ND< 0.023	ND< 0.022	ND< 0.021
Aroclor-1254 (PCB-1254)	mg/Kg	ND< 0.022	ND< 0.022	0.32	ND< 0.022	0.26	0.075	0.24	0.073	ND< 0.023	ND< 0.023	ND< 0.022	ND< 0.021
Aroclor-1260 (PCB-1260)	mg/Kg	0.22	0.077	0.28	ND< 0.022	0.22	0.069	0.21	0.063	ND< 0.023	ND< 0.023	0.11	ND< 0.021
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	13	18	21	23	23	22	24	24	27	22	13	13
Barium	mg/Kg	75	99	130	73	180	85	210	150	140	150	100	56
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	ND< 1.0	1.4	1.3	ND< 1.0	ND< 1.0	ND< 1.0	2.7	1.1	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Chromium	mg/Kg	14	31	35	22	55	25	42	56	25	24	16	18
Cobalt	mg/Kg	4.2	33	19	9.0	25	10	21	18	12	12	8.0	14
Copper	mg/Kg	15	390	280	13	240	32	270	150	28	25	65	7.4
Lead	mg/Kg	34	100	290	12	380	34	180	240	15	12	15	ND< 9.0
Molybdenum	mg/Kg	ND< 2.0	ND< 2.0	5.3	ND< 2.0	5.0	ND< 2.0	2.8	2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Nickel	mg/Kg	8.1	650	260	12	430	40	280	240	21	30	14	7.8
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Vanadium	mg/Kg	41	550	340	69	420	97	370	280	92	100	56	48
Zinc	mg/Kg	87	1,900	1,300	66	960	160	2,400	1,200	83	67	150	30
TPH by TPH Screen													
C28-C30	mg/Kg	–	–		–	–	–	–	–	–	–	–	–
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	57	200	82	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	90.7	89.4	93.9	89.2	92.0	88.7	93.6	85.0	86.7	87.1	92.2	94.6

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
– = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

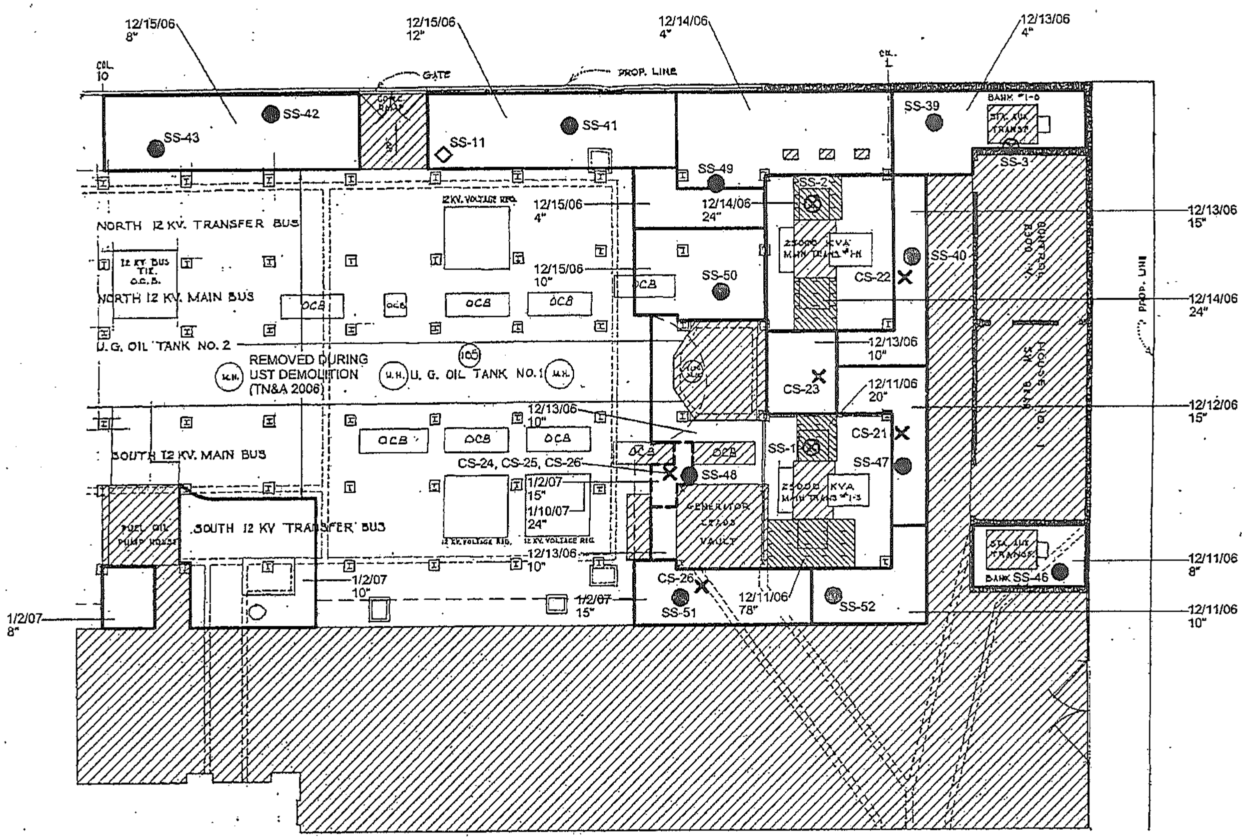
Soil Location		SS 67		SS 68		SS 69		SS 70		SS 71		SS 72	
Sample Interval (ft bgs)		0-0.5	0.5-1.0	0.5-1.0	1.0-1.5	1.0-1.5	1.5-2.0	1.0-1.5	1.5-2.0	0.5-1.0	1.0-1.5	0.5-1.0	1.0-1.5
Sample ID		SS-67-0-0.5	SS-67-0.5-1.0	SS-68-0.5-1.0	SS -68-1.0-1.5	SS-69-1.0-1.5	SS -69-1.5-2.0	SS-70-1.0-1.5	SS -70-1.5-2.0	SS-71-0.5-1.0	SS-71-1.0-1.5	SS-72-0.5-1.0	SS-72-1.0-1.5
Sample Date		11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/16/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006
Lab ID	Units	0611117	0611117	0611117	0611117	0611126	0611126	0611149	0611149	0611149	0611149	0611149	0611149
PCBs by US EPA Method 8082													
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.086	ND< 0.022	ND< 0.024	ND< 0.023	ND< 0.023	ND< 0.022	ND< 0.023	ND< 0.022	ND< 0.022	ND< 0.023	ND< 0.022	ND< 0.024
Aroclor-1254 (PCB-1254)	mg/Kg	1.9	0.091	ND< 0.024	ND< 0.023	ND< 0.023	ND< 0.022	ND< 0.023	ND< 0.022	0.096	ND< 0.023	0.26	ND< 0.024
Aroclor-1260 (PCB-1260)	mg/Kg	2.0	0.10	ND< 0.024	ND< 0.023	0.57	ND< 0.022	ND< 0.023	0.091	0.11	ND< 0.023	0.25	ND< 0.024
CAM Title 22 Metals by US EPA Method 6010B													
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	44	18	20	20	31	16	22	21	23	16	29	36
Barium	mg/Kg	220	61	120	78	190	38	66	110	120	840	140	90
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0	6.7	ND< 1.0	ND< 1.0	1.1	2.0	ND< 1.0	2.4	ND< 1.0
Chromium	mg/Kg	110	15	25	25	180	12	21	23	27	16	47	26
Cobalt	mg/Kg	52	8.8	14	10	26	4.2	9.1	9.1	12	8.5	22	12
Copper	mg/Kg	760	15	130	54	2,500	15	28	200	200	21	1,000	38
Lead	mg/Kg	620	22	66	45	1,700	ND< 9.0	19	54	85	20	310	15
Molybdenum	mg/Kg	13	ND< 2.0	ND< 2.0	ND< 2.0	13	ND< 2.0	ND< 2.0	ND< 2.0	2.9	ND< 2.0	6.1	ND< 2.0
Nickel	mg/Kg	1,100	69	48	24	440	8.2	17	39	55	26	380	20
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Vanadium	mg/Kg	2,000	160	120	73	770	58	61	82	120	97	500	72
Zinc	mg/Kg	2,100	140	1,400	310	5,400	61	220	880	880	180	3,500	110
TPH by TPH Screen													
C28-C30	mg/Kg	—	—	—	—	—	—	—	—	—	—	—	—
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50	290	ND< 50	57	ND< 50	ND< 50	ND< 50	64	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	ND< 100	130	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216													
% Solids	%	93.4	89.8	84.8	86.5	88.1	91.9	87.7	89.1	90.8	86.3	89.3	83.0

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
— = Analyte not tested
51 = Concentration exceeds indicated cleanup value.

TABLE 2
Summary of Surface Soil Sample Analytical Results
San Diego Gas and Electric Company
Silver Gate Power Plant
138 kV Transmission Construction
Substation Demo

Soil Location		SS 73		SS 74	
Sample Interval (ft bgs)		0.5-1.0	1.0-1.5	0.5-1.0	1.0-1.5
Sample ID		SS-73-0.5-1.0	SS-73-1.0-1.5	SS-74-0.5-1.0	SS-74-1.0-1.5
Sample Date		11/20/2006	11/20/2006	11/20/2006	11/20/2006
Lab ID	Units	0611149	0611149	0611149	0611149
PCBs by US EPA Method 8082					
Aroclor-1242 (PCB-1242)	mg/Kg	ND< 0.024	ND< 0.024	ND< 0.022	ND< 0.022
Aroclor-1254 (PCB-1254)	mg/Kg	ND< 0.024	ND< 0.024	ND< 0.022	ND< 0.022
Aroclor-1260 (PCB-1260)	mg/Kg	ND< 0.024	ND< 0.024	**0.098**	ND< 0.022
CAM Title 22 Metals by US EPA Method 6010B					
Antimony	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Arsenic	mg/Kg	**27**	**24**	**17**	**20**
Barium	mg/Kg	**93**	**120**	**150**	**87**
Beryllium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Cadmium	mg/Kg	ND< 1.0	ND< 1.0	ND< 1.0	ND< 1.0
Chromium	mg/Kg	**24**	**23**	**49**	**91**
Cobalt	mg/Kg	**12**	**11**	**4.7**	**21**
Copper	mg/Kg	**21**	**52**	**16**	**19**
Lead	mg/Kg	**15**	**32**	**270**	**540**
Molybdenum	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Nickel	mg/Kg	**13**	**20**	**21**	**340**
Selenium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Silver	mg/Kg	ND< 2.0	ND< 2.0	ND< 2.0	ND< 2.0
Thallium	mg/Kg	ND< 5.0	ND< 5.0	ND< 5.0	ND< 5.0
Vanadium	mg/Kg	**58**	**68**	**67**	**530**
Zinc	mg/Kg	**150**	**290**	**140**	**220**
TPH by TPH Screen					
C28-C30	mg/Kg	–	–	–	–
TPH as Gasoline (C6-C10)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Diesel (C10-C30)	mg/Kg	ND< 50	ND< 50	ND< 50	ND< 50
TPH as Transformer Oil (C16-C36)	mg/Kg	ND< 100	ND< 100	ND< 100	ND< 100
% Solids by ASTM D2216					
% Solids	%	84.6	84.8	92.2	90.1

Notes:
"ND<X" = Constituent(s) not detected at or above method detection limit
mg/Kg = milligrams per kilogram
– = Analyte not tested
51 = Concentration exceeds indicated cleanup value.



Legend

⊗ Stained Surface Soil Sample by TN&A (2006)

◇ Random Surface Soil Sample by TN&A (2006)

● Sample Location, November 2006

✕ Confirmation Sample Location, December 2006 - January 2007

Excavation Area

12/13/06 15" Date of Excavation and Depth of Excavation in Inches Below Original Ground Surface

Building or Pavement Left In Place

Excavated Rock from Ballast

Area where Additional Excavation was Required

Notes:

1. Base maps taken from SDG&E Property Atlas, Sampson Substation, sheets P2-5, P2-6, and P2-7, dated 1/1/55.

Reference:

TN & Associates, Inc., 2006, Underground Storage Tank Closure Report for Silver Gate Power Plant, prepared for SDG&E, November, 2006

0 20 40

Scale in Feet

Surface Soil Sample Locations and Extent of Excavation Substation East Side

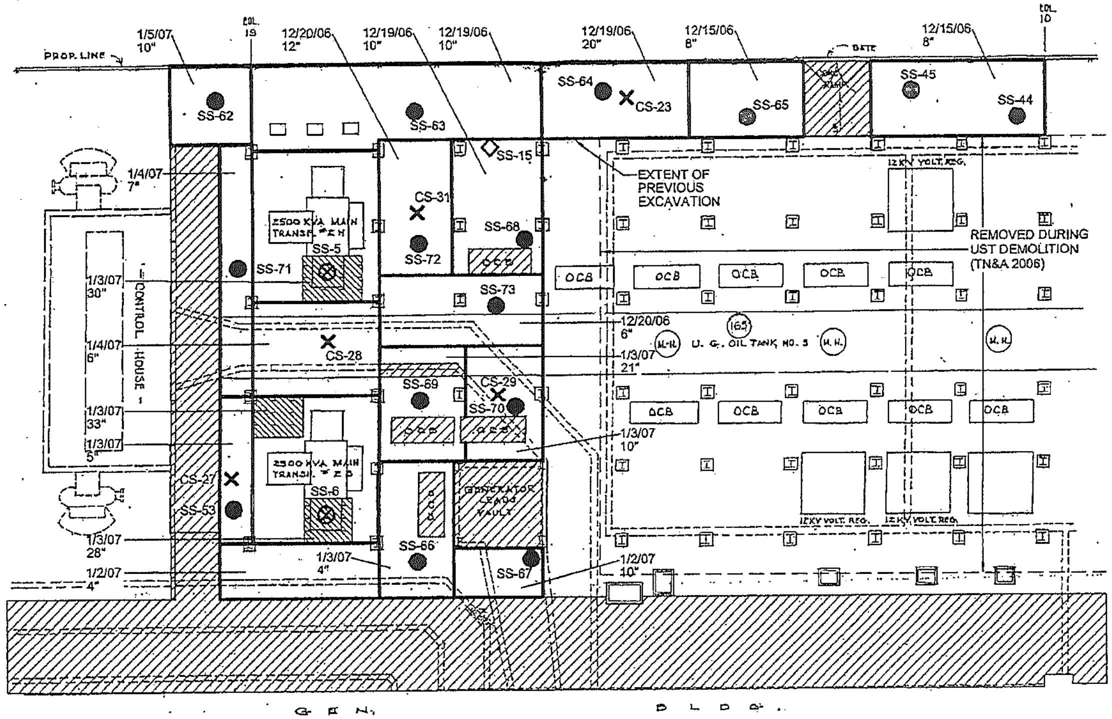
Date: 02-2007

San Diego Gas & Electric Co.
Silver Gate Power Plant

T N & Associates, Inc.
Engineering and Science

FIGURE 1

2006 Projects\2005100 - SDGE\Surface_Soil_Figures.dwg



Legend

⊗ Swined Surface Soil Sample by TN&A (2006)

◇ Random Surface Soil Sample by TN&A (2006)

● Sample Location, November 2006

✕ Confirmation Sample Location, December 2006 - January 2007

□ Excavation Area

12/13/06 15" Date of Excavation and Depth of Excavation in Inches Below Original Ground Surface

Building or Pavement Left in Place

Excavated Rock from Ballast

Notes:

1. Base maps taken from SDG&E Property Atlas, Sampson Substation, sheets P2-5, P2-6, and P2-7, dated 1/1/55.

Reference:

TN & Associates, Inc., 2006, Underground Storage Tank Closure Report for Silver Gate Power Plant, prepared for SDG&E, November, 2006

N

0 20 40

Scale in Feet

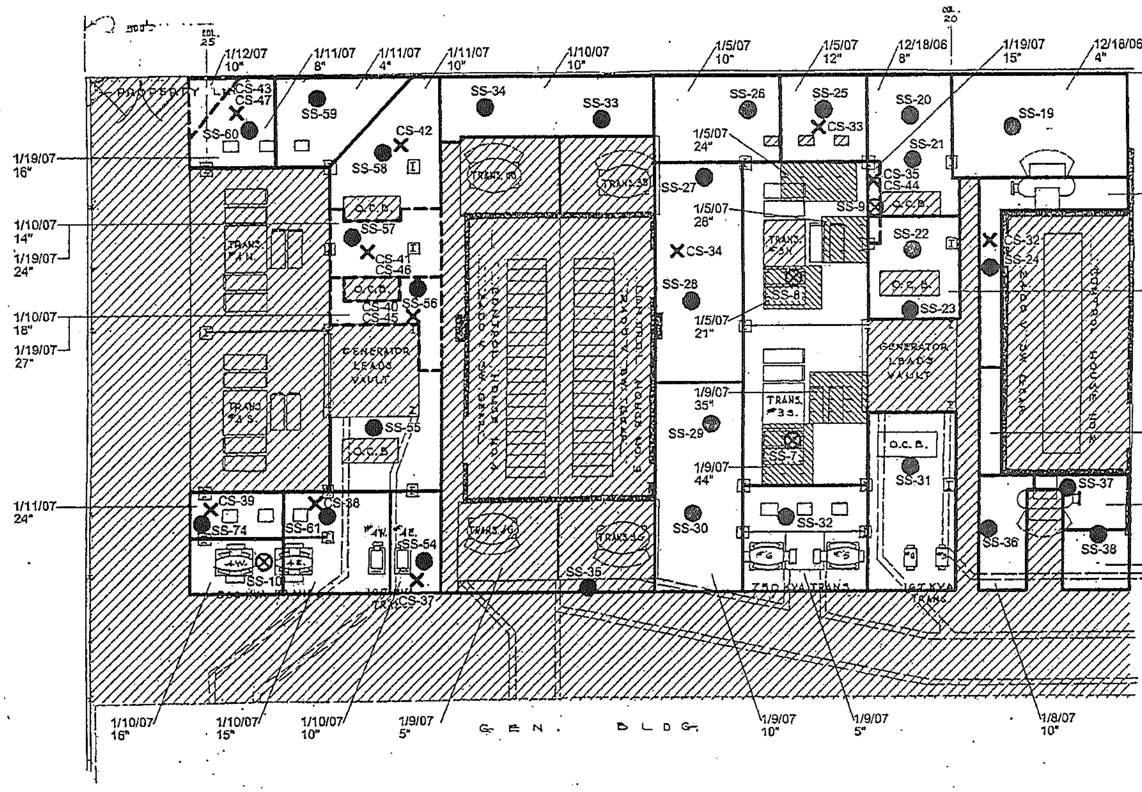
Surface Soil Sample Locations and Extent of Excavation Substation Central Side

Date: 02-2007

San Diego Gas & Electric Co. Silver Gate Power Plant

TN&A T N & Associates, Inc. Engineering and Science

FIGURE 2



Legend

- ⊗ Stained Surface Soil Sample by TN&A (2006)
- ◇ Random Surface Soil Sample by TN&A (2006)
- ● Sample Location, November 2006
- ✕ Confirmation Sample Location, December 2006 - January 2007
- □ Excavation Area
- 12/13/06 15" — Date of Excavation and Depth of Excavation in Inches Below Original Ground Surface
- Building or Pavement Left In Place
- Excavated Rock from Ballast
- Area where Additional Excavation was Required

Notes:

1. Base maps taken from SDG&E Property Atlas, Sampson Substation, sheets P2-6, P2-6, and P2-7, dated 1/1/55.

Reference:

TN & Associates, Inc., 2006, Underground Storage Tank Closure Report for Silver Gate Power Plant, prepared for SDG&E, November, 2006

Surface Soil Sample Locations and Extent of Excavation Substation West Side

Date: 02-2007	San Diego Gas & Electric Co. Silver Gate Power Plant	FIGURE 3
	T N & Associates, Inc. Engineering and Science	

2006 Projects\2006100 - SDGE\SDGE_Figures.dwg

SPILL/ILLICIT DISCHARGE LOG

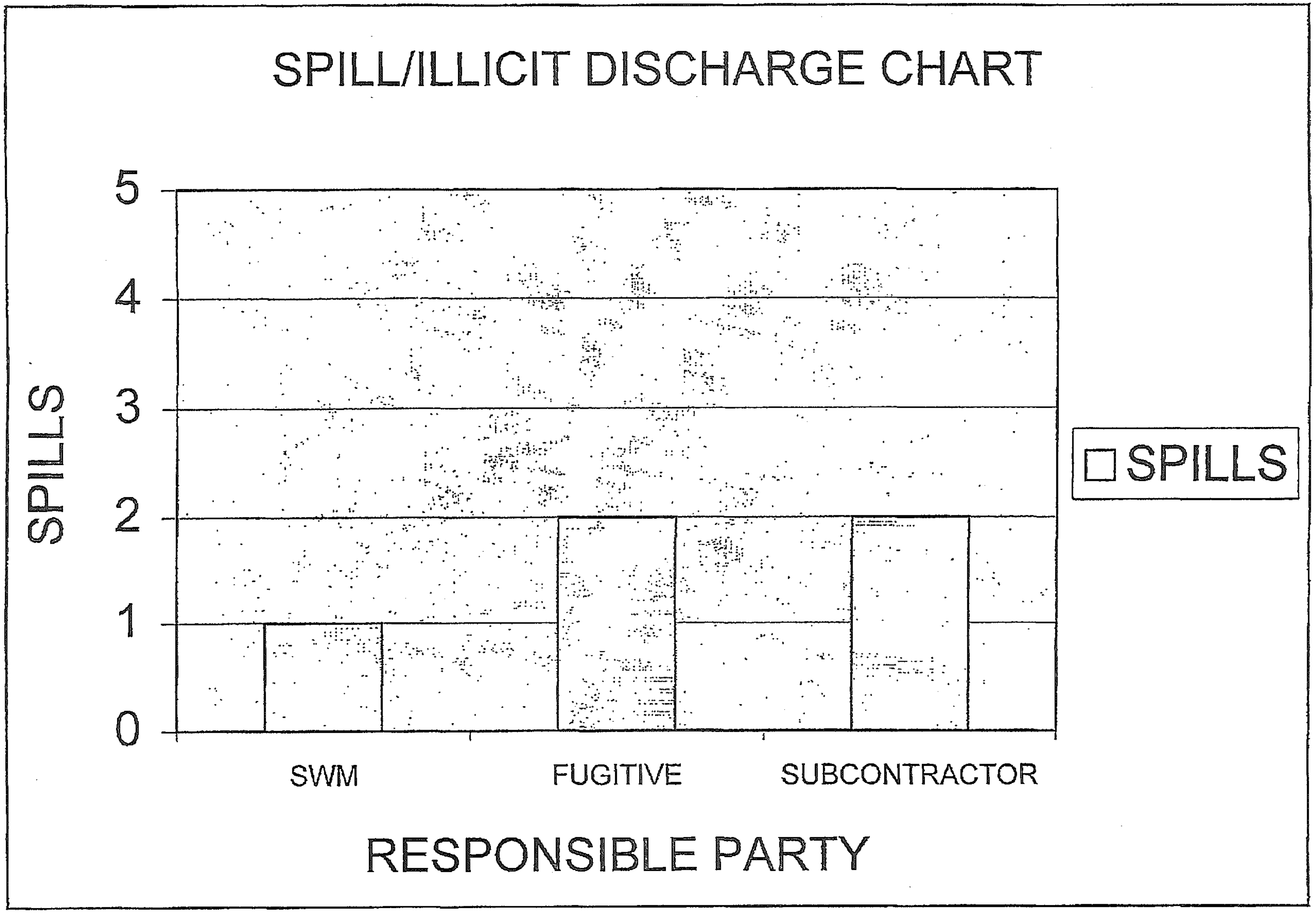
Date	Incident	Material Involved	Est. Amount	Responsible Party	Situation	From Where	To Where	Discharge Type	Action Taken
9/28/98	Fugitive Sheen	Petroleum Product	1gal as per CG	Unknown	Fugitive She	Bay	Bay		Notified RB, CG, NRC
9/22/98	Discharge/Spill	CHT-sewer	approx. 10 gal	SWM Facilities Dept.	sewer riser b	Pier 3	Pier 3	overflow	SBSB cleaned up
9/19/98	Discharge/Spill	Hydraulic Oil	25 gal	Subcontractor-SBSB	weld joint fail	Compressor on POSD basin	POSD basin	leak	compressor replaced, spill cleaned
9/10/98	Fugitive Sheen	Petroleum Product		Unknown	Fugitive She	Bay	Bay		CG, RWQCB, OES notified
7/27/98	Discharge/Spill	Paint PL-156	0.025 gal	Subcontractor-NCI	Paint spray li	Pier 3	Bay	overspray	Paint recovered, RB notified

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name SANDOR HALVAX
Title MANAGER, MATERIAL BUSINESS MANAGEMENT
Date 10/23/98
Signature S. Halvax

jmsteno.com
EXHIBIT NO. 1277
Barker

Reporting Period (July-Sep)



10/27/98

PR

ENVIRONMENTAL AFFAIRS SPILL ILLICIT DISCHARGE REPORT FORM

DATE: 8/5/99 TIME: 10:25 PM LOCATION: CMC, Baker tank next to central tool room

S. HALVAX
PERSON MAKING THIS REPORT

SUSPECTED RESPONSIBLE PARTY
Cal Marine Cleaning

1) Cause of the spill or illicit discharge. What Happened?
PIC @ Baker tank went to the restroom without notifying the shipboard PIC. Pumping from the bilges continued and the overflow occurred.

2) Materials or wastes involved in the spill or illicit discharge;
Diesel fuel Marine (DFM)

EXHIBIT NO. 1278
Barker
jmsteno.com

3) Estimated volume of the spill or illicit discharge;
5 gallon to bay, 100 gallon total

4) Specific location where the spill or illicit discharge originated;
foot of pier 3 - Baker tank

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD
1999 AUG 10 A 11:26

5) Fate of the spill or illicit discharge (to where did it spread? Is any going off-site?);
Most of material contained within baker tank
Approx 5 gallon to bay

6) Physical extent or size of the problem area(s);
50'x100' sheen in water

7) Did the spill or illicit discharge contain pollutants, if so, describe;
DFM

8) Persons and Public agencies involved/notified (include date and time);
Called NRC @ 10:25 on 8/5/99 RWQCB notified 8/6/99 @ 1040
Called US Coast Guard MSO San Diego @ 10:40 pm

9) Corrective actions taken (secure source, block storm drains, etc.);
Secured source, deployed absorbent boom and pad in H_2O and pad/particulate on shore.

10) Steps taken to prevent/minimize future spills or illicit discharges;
Conduct a training of all PIC's and evaluate procedures to eliminate future occurrences.

INSPECTED BY: [signature] DATE: 8/5/99 @ 10:45 PM

(GM FORM NO. 602) USE REVERSE FOR ADDITIONAL SPACE (NUMBER ITEMS)

NRC - TODD (LAST NAME) - #494090

SAR035105

ADDITIONAL INFORMATION (NUMBER ITEMS)

(GM FORM NO. 602)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

RESOLUTION NO. R9-2007-0043

A RESOLUTION ADOPTING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO INCORPORATE TOTAL MAXIMUM DAILY LOADS FOR DISSOLVED COPPER, LEAD, AND ZINC IN CHOLLAS CREEK, TRIBUTARY TO SAN DIEGO BAY,

AND TO REVISE THE TOXIC POLLUTANTS SECTION OF CHAPTER 3 TO REFERENCE THE CALIFORNIA TOXICS RULE

WHEREAS, The San Diego Regional Water Quality Control Board (hereinafter, San Diego Water Board), finds that:

1. **BASIN PLAN AMENDMENT:** Total Maximum Daily Loads (TMDLs) and allocations for pollutants that exceed water quality objectives in waterbodies that do not meet water quality standards under the conditions set forth in section 303(d) of the Clean Water Act [33 U.S.C. 1250, *et seq*., at 1313(d)] ("Water Quality Limited Segments") should be incorporated into the *Water Quality Control Plan for the San Diego Basin (9)* (Basin Plan) pursuant to Article 3, commencing with section 13240, of Chapter 4 of the Porter-Cologne Water Quality Control Act, as amended, codified in Division 7, commencing with section 13000, of the Water Code.

2. **CLEAN WATER ACT SECTION 303(d):** The lowest 1.2 miles of Chollas Creek (from the mouth of Chollas Creek at San Diego Bay to 1.2 miles inland) were placed on the List of Water Quality Limited Segments in 1996 due to levels of dissolved copper, lead, and zinc (metals) in the water column that exceeded numeric water quality objectives for copper, lead, and zinc, and narrative water quality objectives for toxicity, as required by Clean Water Act (CWA) section 303(d).

3. **BENEFICIAL USE IMPAIRMENTS:** Two beneficial uses exist in Chollas Creek that are sensitive to, and subject to impairment by elevated concentrations of dissolved metals in the water column. Warm Freshwater Habitat (WARM) and Wildlife Habitat (WILD) require water quality suitable for the protection of aquatic life and aquatic dependent wildlife. Dissolved metals are toxic to aquatic life and aquatic dependent wildlife at relatively low concentrations. Concentrations of dissolved metals in Chollas Creek exceed the water quality necessary to support the WARM and WILD beneficial uses of Chollas Creek.

4. **NECESSITY STANDARD** [Government Code section 11353(b)]: Amendment of the Basin Plan to establish and implement TMDLs for Chollas Creek is necessary because the existing water quality in the lowest 1.2 miles of Chollas Creek does not meet applicable water quality objectives for copper, lead, zinc, or toxicity. CWA section 303(d) requires the establishment and implementation of TMDLs under the conditions that exist in Chollas

Creek. TMDLs for copper, lead, and zinc are necessary to ensure attainment of applicable water quality objectives and restoration of water quality needed to support the beneficial uses designated for Chollas Creek.

5. **WATER QUALITY OBJECTIVES**: The United States Environmental Protection Agency (USEPA) has established numeric criteria for toxic pollutants which are applicable water quality objectives for dissolved copper, lead, and zinc in the inland surface waters, enclosed bays, and estuaries of California through promulgation of the California Toxics Rule (CTR). [40 CFR 131.38]. These water quality criteria, presented below, are applicable to Chollas Creek.

Water Quality Criteria for dissolved metals in Chollas Creek.

Metal	Numeric Target for Acute Conditions: Criteria Maximum Concentration	Numeric Target for Chronic Conditions: Criteria Continuous Concentration
Copper	(1) * (0.96) * {e^ [0.9422 * ln (hardness) - 1.700]}	(1) * (0.96) * {e^[0.8545 * ln (hardness) - 1.702]}
Lead	(1) * {1.46203 – [0.145712 * ln (hardness)]} * {e^ [1.273 * ln (hardness) - 1.460]}	(1) * {1.46203 – [0.145712 * ln (hardness)]} * {e^[1.273 * ln (hardness) - 4.705]}
Zinc	(1) * (0.978) * {e^ [0.8473 * ln (hardness) + 0.884]}	(1) * (0.986) * {e^[0.8473 * ln (hardness) + 0.884]}

Hardness is expressed as milligrams per liter.
Calculated concentrations should have two significant figures [40 CFR 131.38(b)(2)].
The natural log and exponential functions are represented as "ln" and "e," respectively.

In addition, the Basin Plan establishes the following narrative water quality objective for "toxicity" to ensure the protection of the WARM and WILD beneficial uses.

> **Toxicity Objective**: *All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the San Diego Water Board.*
>
> *The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water factors, shall not be less than that for the same water body in areas unaffected by the waste discharge or, when necessary, for other control water that is consistent with requirements specified in USEPA, State Water Resources Control Board (State Board) or other protocol authorized by the San Diego Water Board. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour acute bioassay.*
>
> *In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of*

toxic substances will be encouraged.

6. **NUMERIC TARGETS:** Numeric targets are established for the purposes of calculating TMDLs. Since the numeric targets are equal to the water quality criteria in the CTR for dissolved copper, lead, and zinc cited in finding 5, attainment of TMDLs will ensure attainment of these water quality criteria.

7. **SOURCES OF DISSOLVED METALS:** Many land uses and activities associated with urbanization are sources of copper, lead, and zinc to Chollas Creek. Freeways and commercial/ industrial land uses are major contributors. Automobiles are a significant source of all three metals. Water supply systems, pesticides, industrial metal recyclers and other industrial activities also contribute to levels of copper, lead, and zinc in excess of water quality criteria for Chollas Creek. Metals released to the environment by different land uses and activities are washed off of the land surface by urban runoff and storm flows and conveyed to Chollas Creek through municipal separate storm sewer systems. Quantification of bacteria loading in all watersheds is necessary to calculate the load reductions required to meet TMDLs.

8. **WATER QUALITY OBJECTIVE VIOLATIONS:** Concentrations of dissolved copper, lead, and zinc have frequently exceeded numeric water quality criteria contained in the CTR. Furthermore, in a Toxicity Identification Evaluation performed in 1999, Chollas Creek stormwater concentrations of zinc and to a lesser extent copper, were identified as causing or contributing to reduced fertility in the purple sea urchin.

9. **ADVERSE EFFECTS OF COPPER, LEAD, AND ZINC:** Concentrations of copper, lead, and zinc in excess of CTR criteria entail increased risk of adverse toxic effects in aquatic organisms exposed to them. Copper, lead, and zinc may bioaccumulate within lower organisms, however they do not biomagnify up the food chain. Of these three metals, copper is considered the most potent toxin at environmentally relevant aqueous concentrations.

10. **TOTAL MAXIMUM DAILY LOADS AND ALLOCTIONS:** TMDLs for dissolved copper, lead, and zinc are equal to the total assimilative or loading capacity of Chollas Creek for dissolved copper, lead, and zinc. The loading capacities are defined as the maximum amount of each dissolved metal that Chollas Creek can assimilate and still attain water quality criteria needed for the protection of designated beneficial uses. Each TMDLS must accommodate all known sources of a pollutant, whether from natural background, nonpoint sources, or point sources, and must include a margin of safety (MOS) to preclude pollutant loading from exceeding the actual assimilative capacities of Chollas Creek. The TMDL calculations also account for seasonal variations and critical conditions and were developed in a manner consistent with guidelines published by the USEPA. The TMDLs are concentration based, therefore, the allocations are not additive. The TMDLs for dissolved copper, lead, and zinc are equal to the Waste Load Allocations (WLAs) which are 90 percent of the CTR Criteria Continuous Concentration (CCC) and Criteria Maximum Concentration (CMC) equations. Discharges of dissolved copper, lead, and zinc require significant reductions from current levels to meet the allocations.

11. **IMPLEMENTATION PLAN:** The technical report entitled *Total Maximum Daily Loads for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay* dated June 13, 2007, presents a summary of measures that, if adopted by the San Diego Water Board, the State Water Resources Control Board (State Water Board), and local governmental agencies, will promote attainment of the load reductions needed to keep discharges of metals at or below the TMDLs calculated for Chollas Creek. Section 303 of the CWA and the federal National Pollutant Discharge Elimination System (NPDES) regulations direct the USEPA and authorized states to impose requirements consistent with TMDLs for point source discharges to "impaired" waterbodies. When the San Diego Water Board and the State Water Board re-issue or revise NPDES requirements for municipal, construction, and industrial stormwater discharges, and groundwater extraction discharges in the Chollas Creek watershed, including discharges of "small MS4s," they will have to include requirements that will implement all TMDLs applicable to waters affected by the regulated discharges.

12. **COMPLIANCE MONITORING:** Water quality monitoring will be necessary to assess progress in achieving WLAs and compliance in Chollas Creek with the water quality objectives for dissolved copper, lead, and zinc.

13. **COMPLIANCE SCHEDULE:** Full implementation of the TMDLs for dissolved copper, lead, and zinc shall be completed within 20 years from the effective date of the Basin Plan amendment. The compliance schedule for implementing the wasteload reductions required under these TMDLs is structured in a phased manner, with 80 percent of reductions required in 10 years, and 100 percent of reductions required within 20 years. The 20-year compliance schedule is contingent upon the dischargers implementing integrated controls to achieve required copper, lead, zinc, indicator bacteria, diazinon, and trash reductions.

14. **SCIENTIFIC PEER REVIEW:** The scientific basis of this TMDL has undergone external peer review pursuant to Health and Safety Code section 57004. The San Diego Water Board has considered and responded to all comments submitted by the peer review panel and has enhanced the Technical Report appropriately. No change to the fundamental approach to TMDL calculations was necessary as a result of this process.

15. **STAKEHOLDER AND PUBLIC PARTICIPATION:** Interested persons and the public have had reasonable opportunity to participate in review of the proposed TMDL. Efforts to solicit public review and comment included five public workshops held between April 1999 and April 2005, including a CEQA scoping meeting held on March 21, 2003; a public review and comment period of 45 days preceding the San Diego Water Board public hearing in May 2005; a two week extension of the comment period after the public hearing in May 2005; a second public review and comment period of 45 days commencing in July 2006; a third public review and comment period of 45 days commencing on March 9, 2007; and a public hearing on April 25, 2007. Notices for all meetings were sent to interested parties including cities and San Diego County with jurisdiction in Chollas Creek. All of the written comments submitted to the San Diego Water Board during the review and comment periods have been considered, and written responses provided in Appendix M to the Technical Report.

16. **CEQA REQUIREMENTS:** Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Water Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, section 21000 et seq.) requirements for preparing environmental documents. [14 CCR section 15251(g); 23 CCR section 3782] As such, the San Diego Water Board's basin planning documents together with an Environmental Checklist are the "substitute documents" that contain the required environmental documentation under CEQA. [23 CCR section 3777] The substitute documents for this project include the Environmental Checklist, the detailed technical report entitled Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay, responses to comments raised during the development of the TMDL, and this resolution. The project itself is the establishment of TMDLs for toxic metals in Chollas Creek where water quality has been listed as "impaired" by the State Water Board pursuant to section 303(d) of the CWA, as required by that section. While the San Diego Water Board has no discretion to not establish a TMDL (the TMDL is required by federal law) the San Diego Water Board does exercise discretion in assigning wasteload allocations, determining the program of implementation, and setting various milestones in achieving the water quality objectives for Chollas Creek.

17. **PROJECT IMPACTS:** The accompanying CEQA substitute documents satisfy the requirements of substitute documents for a Tier 1 environmental review under CEQA, pursuant to Public Resources Code section 21159 and CCR Title 14, section 15187. Nearly all of the compliance obligations anticipated to be necessary to implement the TMDLs for copper, lead, and zinc in Chollas Creek will be undertaken by public agencies that will have their own obligations under CEQA for implementation projects that could have significant environmental impacts (*e.g.*, installation and operation of structural best management practices). Project level impacts will need to be considered in any subsequent environmental analysis performed by other public agencies pursuant to Public Resources Code section 21159.2.

    If not properly mitigated at the project level, implementation and compliance measures undertaken could have significant adverse environmental impacts. The substitute documents for this TMDL, and in particular the environmental checklist and responses to comments, identify broad mitigation approaches that should be considered at the project level. The San Diego Water Board does not engage in speculation or conjecture regarding the projects that may be used to implement the TMDLs and only considers the reasonably foreseeable alternative methods of compliance, the reasonably foreseeable feasible environmental impacts of the these methods of compliance, and the reasonably foreseeable mitigation measures which would avoid or eliminate the identified impacts, all from a broad general perspective consistent with the uncertainty regarding how the TMDLs, ultimately, will be implemented. The lengthy implementation period allowed by the TMDLs will allow persons responsible for compliance with wasteload allocations to develop and pursue many compliance approaches and mitigation measures.

18. **PROJECT MITIGATION:** The proposed amendment to the Basin Plan to establish TMDLs for copper, lead, and zinc in Chollas Creek could have a significant adverse effect on the environment. However, there are feasible alternatives, feasible mitigation measures, or both, that would substantially lessen any significant adverse impact. The public agencies responsible for implementation measures needed to comply with the TMDLs can and should incorporate such alternatives and mitigation into any projects or project approvals that they undertake for the impaired creek. Possible alternatives and mitigation are described in the CEQA substitute documents, specifically the Technical Report and the environmental checklist. To the extent the alternatives, mitigation measures, or both, are not deemed feasible by those agencies, the necessity of implementing the TMDLs that is mandated by the federal Clean Water Act and removing the copper, lead, and zinc impairments in Chollas Creek (an action required to achieve the express, national policy of the Clean Water Act) outweigh the unavoidable adverse environmental effects identified in the substitute documents.

19. **ECONOMIC ANALYSIS:** The San Diego Water Board has considered the costs of the reasonably foreseeable methods of compliance with the wasteload reductions specified in these TMDLs. The most reasonably foreseeable methods of compliance involve implementation of structural and non-structural controls. Surface water monitoring to evaluate the effectiveness of these controls will be necessary.

20. **NO ADVERSE ENVIRONMENTAL EFFECTS:** This Basin Plan amendment will result in no adverse effect, either individually or cumulatively, on wildlife.

21. **REVISION TO BASIN PLAN:** The USEPA promulgated a final rule prescribing water quality criteria for toxic pollutants in inland surface waters, enclosed bays, and estuaries in California in 2000 (The California Toxics Rule or "CTR;" [40 CFR 131.38]). CTR criteria constitute applicable water quality objectives in California. In addition to the CTR, certain criteria for toxic pollutants in the National Toxics Rule [40 CFR 131.36] constitute applicable water quality objectives in California as well. The section in Chapter 3 of the Basin Plan titled "Toxic Pollutants" should be revised to be consistent with the current federal rules. The subsection entitled "Water Quality Objectives for Toxic Pollutants" in Chapter 3 of the Basin Plan needs to be deleted. This subsection is redundant since the CTR and certain NTR criteria constitute applicable water quality objectives in California.

NOW, THEREFORE, BE IT RESOLVED that

1. **AMENDMENT ADOPTION:** The San Diego Water Board hereby adopts the amendment to the Basin Plan to incorporate the TMDLs for dissolved copper, lead, and zinc in Chollas Creek and to revise the Basin Plan to reference the California Toxics Rule as set forth in Attachment A hereto.

2. **TECHNICAL REPORT APPROVAL:** The San Diego Water Board hereby approves the Technical Report entitled *Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay*, dated May 30, 2007.

3. **CERTIFICATE OF FEE EXEMPTION**: The Executive Officer is authorized to sign a Certificate of Fee Exemption.

4. **AGENCY APPROVALS**: The Executive Officer is directed to submit this Basin Plan amendment to the State Water Board for approval in accordance with Water Code section 13245.

5. **NON-SUBSTANTIVE CORRECTIONS**: If, during the approval process for this amendment, the State Water Board, San Diego Water Board, or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the San Diego Water Board of any such changes.

6. **ENVIRONMENTAL DOCUMENT CERTIFICATION**: The substitute environmental documents prepared pursuant to Public Resources Code section 21080.5 are hereby certified, and the Executive Officer is directed to file a Notice of Decision with the Resources Agency after State Water Board and OAL approval of the Basin Plan Amendment, in accordance with section 21080.5(d)(2)(E) of the Public Resources Code and the California Code of Regulations, title 23, section 3781.

   I, John H. Robertus, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Diego Region, on June 13, 2007.

JOHN H. ROBERTUS
EXECUTIVE OFFICER

ATTACHMENT A
TO RESOLUTION NO. R9-2007-0043

AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9) TO INCORPORATE TOTAL MAXIMUM DAILY LOADS FOR DISSOLVED COPPER, LEAD, AND ZINC IN CHOLLAS CREEK, TRIBUTARY TO SAN DIEGO BAY,

AND TO REVISE THE TOXIC POLLUTANTS SECTION OF CHAPTER 3 TO REFERENCE THE CALIFORNIA TOXICS RULE

This Basin Plan amendment establishes a Total Maximum Daily Load (TMDL) and associated load and wasteload allocations for copper, lead and zinc in Chollas Creek, and revises the Toxic Pollutants section of Chapter 3 to reference the California Toxics Rule. This amendment includes a program to implement the TMDL and monitor its effectiveness. Chapters 2, 3, and 4 of the Basin Plan are amended as follows:

Chapter 2, Beneficial Uses
Table 2-2. ***Beneficial Uses of Inland Surface Waters***

Add the following footnote 3 to Chollas Creek

> [3]Chollas Creek is designated as an impaired water body for copper, lead and zinc pursuant to Clean Water Act section 303(d). A Total Maximum Daily Load (TMDL) has been adopted to address this impairment. See Chapter 3, Water Quality Objectives for Toxicity and Toxic Pollutants and Chapter 4, Total Maximum Daily Loads.

Chapter 3, Water Quality Objectives
Inland Surface Waters, Enclosed Bays and Estuaries, Coastal Lagoons, and Ground Waters

Water Quality Objectives for Toxicity:
Add a fifth paragraph as follows:

> Chollas Creek is designated as a water quality limited segment for dissolved copper, lead, and zinc pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapters 2, Table 2-2, *Beneficial Uses of Inland Surface Waters, Footnote 3* and Chapter 4, Total Maximum Daily Loads.

TOXIC POLLUTANTS:
Revise as follows:

> The USEPA promulgated a final rule prescribing water quality criteria for toxic pollutants in inland surface waters, enclosed bays, and estuaries in California on May 18, 2000 (The California Toxics Rule or "CTR;" [40 CFR 131.38]). CTR criteria constitute applicable water quality criteria in California. In addition to the CTR,

certain criteria for toxic pollutants in the National Toxics Rule [40 CFR 131.36] constitute applicable water quality criteria in California as well.

Chollas Creek is designated as a water quality limited segment for dissolved copper, lead, and zinc pursuant to Clean Water Act section 303(d). Total Maximum Daily Loads have been adopted to address these impairments. See Chapters 2, Table 2-2, *Beneficial Uses of Inland Surface Waters, Footnote 3* and Chapter 4, Total Maximum Daily Loads.

~~Federal Register, Volume 57, Number 246 amended Title 40, Code of Federal Regulations, Part 131.36 (40 CFR 131.36) and established numeric criteria for a limited number of priority toxic pollutant for inland surface waters and estuaries in California. USEPA promulgated these criteria on December 22, 1992, to bring California into full compliance with section 303(c)(2)(B) of the Clean Water Act. California is not currently in full compliance with this section of the Clean Water Act due to the invalidation of the Water Quality Control Plan for Inland Surface Waters of California and the Water Quality Control Plan for Bays and Estuaries of California. However, the criteria established in 57 FR 60848 (December 22, 1992) (specifically pages 60920-60921) are still applicable to surface waters in the Region.~~

~~***Water Quality Objectives for Toxic Pollutants:***~~

~~*Inland surface waters, enclosed bays, and estuaries shall not contain toxic pollutants in excess of the numerical objectives applicable to California specified in 40 CFR 131.36 (§131.36 revised at 57 FR 60848, December 22, 1992).*~~

Chapter 4, Implementation

After the subsection on the TMDL for Dissolved Copper, Shelter Island Yacht Basin, San Diego Bay add the following subsection:

Total Maximum Daily Loads for Copper, Lead, and Zinc in Chollas Creek

On *June 13, 2007,* the Regional Board adopted Resolution No. R9-2007-0043, *Amendment to the Water Quality Control Plan for the San Diego Region to Incorporate Total Maximum Daily Loads for Dissolved Copper, Lead and Zinc in Chollas Creek, Tributary to San Diego Bay.* The TMDL Basin Plan Amendment was subsequently approved by the State Water Resources Control Board on *[Insert Date],* the Office of Administrative Law on *[Insert Date],* and the USEPA on *[Insert Date].*

Problem Statement

Dissolved copper, lead and zinc concentrations in Chollas Creek violate numeric water quality criteria for copper, lead, and zinc promulgated in the California Toxics Rule, and the narrative objective for toxicity. Concentrations of these metals in Chollas Creek threaten and impair the designated beneficial uses of warm freshwater habitat (WARM), and wildlife habitat (WILD).

Numeric Targets

The TMDL numeric targets for copper, lead, and zinc are set equal to the numeric water quality criteria as defined in the California Toxics Rule (CTR) and shown below. Because the concentration of a dissolved metal causing a toxic effect varies significantly with hardness, the water quality criteria are expressed in the CTR as hardness based equations. The numeric targets are equal to the loading capacity of these metals in Chollas Creek.

Table 4 *[insert number]* Water Quality Criteria /Numeric Targets for dissolved metals in Chollas Creek.

Metal	Numeric Target for Acute Conditions: Criteria Maximum Concentration	Numeric Target for Chronic Conditions: Criteria Continuous Concentration
Copper	(1) * (0.96) * {e^ [0.9422 * ln (hardness) - 1.700]}	(1) * (0.96) * {e^[0.8545 * ln (hardness) - 1.702]}
Lead	(1) * {1.46203 – [0.145712 * ln (hardness)]} * {e^ [1.273 * ln (hardness) - 1.460]}	(1) * {1.46203 – [0.145712 * ln (hardness)]} * {e^[1.273 * ln (hardness) - 4.705]}
Zinc	(1) * (0.978) * {e^ [0.8473 * ln (hardness) + 0.884]}	(1) * (0.986) * {e^[0.8473 * ln (hardness) + 0.884]}

Hardness is expressed as milligrams per liter.
Calculated concentrations should have two significant figures [40 CFR 131.38(b)(2)].
The natural log and exponential functions are represented as "ln" and "e," respectively.

Source Analysis

The vast majority of metals loading to Chollas Creek are believed to come through the storm water conveyance system. An analysis of source contributions reveals many land uses and activities associated with urbanization to be potential sources of copper, lead and zinc to Chollas Creek. Modeling efforts point toward freeways and commercial/industrial land uses as the major contributors

Total Maximum Daily Loads

The TMDLs for dissolved copper, lead and zinc in Chollas Creek are concentration-based and set equal to 90 percent of the numeric targets/loading capacity.

Margin of Safety

The TMDL includes an explicit margin of safety (MOS). Ten percent of the loading capacity was reserved as an explicit MOS.

Allocations and Reductions

The source analysis showed that nonpoint sources and background concentrations of metals are insignificant, and thus, were set equal to zero in the TMDL calculations. The wasteload allocations are set equal to 90 percent of the numeric targets/loading capacity. Concentrations of dissolved copper, lead and zinc require significant reductions from current concentrations to meet the loading capacity.

TMDL Implementation Plan

Persons whose point source discharges contribute to exceedance of Water Quality Criteria (WQC) for copper, lead, and zinc in Chollas Creek will be required to meet the WLA hardness dependant concentrations in their urban runoff discharges before it is discharged to Chollas Creek. Actions to meet the WLAs in discharges to Chollas Creek will be required in WDRs that regulate MS4 discharges, industrial facility and construction activity stormwater discharges, and groundwater extraction discharges in the Chollas Creek watershed. The following orders may be reissued or revised by the Regional Board to include requirements to meet the WLAs. Alternatively, the Regional Board may issue new WDRs to meet the WLAs.

Order No. 2007-0001, NPDES No. CAS0108758, *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District*, or subsequent superceding NPDES renewal orders.

Order No. 2000-90, NPDES No. CAG19001, *General Waste Discharge Requirements for Temporary Groundwater Extraction and Similar Waste Discharges to San Diego Bay and Storm Drains or other Conveyance Systems Tributary Thereto,* or subsequent superceding NPDES renewal orders.

Order No. 2001-96, NPDES No. CAG 919002, *General Waste Discharge Requirements for Groundwater Extraction Waste Discharges from Construction, Remediation and Permanent Groundwater Extraction Projects to Surface Waters within the San Diego Region Except for San Diego Bay* or subsequent superceding NPDES renewal orders.

Order No. 97-11, *General Waste Discharge Requirements for Post-Closure Maintenance of Inactive Nonhazardous Waste Landfills within the San Diego Region* or subsequent superceding NPDES renewal orders.

The Regional Board shall request the State Water Resources Control Board amend the following statewide orders:

Order No. 99-06-DWQ, NPDES No. CAS000003, *National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit, and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans),* or subsequent superceding NPDES renewal orders.

Order No. 97-03-DWQ, NPDES No. CAS 000001, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities,* or subsequent superceding NPDES renewal orders.

Order No. 2003-0005-DWQ, NPDES No. CAS000004, *Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems,* or subsequent superceding NPDES renewal orders.

Order No. 99-08-DWQ, NPDES No. CAS000002, *General Permit for Storm Water Discharges Associated with Construction Activity,* or subsequent superceding NPDES renewal orders.

The Regional Board shall require the U.S. Navy to submit a Notice of Intent to enroll the Naval Base San Diego facility under statewide Order No. 2003-005-DWQ or subsequent superseding NPDES renewal orders .

Implementation Monitoring Plan

The dischargers will be required to monitor Chollas Creek and provide monitoring reports to the Regional Board for the purpose of assessing the effectiveness of the management practices implemented to meet the TMDL allocations. The Regional Board shall amend the following order to include a requirement that the cities of San Diego, Lemon Grove, and La Mesa, the County of San Diego, the San Diego Unified Port District, and CalTrans investigate excessive levels of metals in Chollas Creek and feasible management strategies to reduce metal loadings in Chollas Creek, and conduct additional monitoring to collect the data necessary to refine the watershed wash-off model to provide a more accurate estimate of the mass loads of copper, lead and zinc leaving Chollas Creek each year.

Order No. R9-2004-0277, *California Department of Transportation and San Diego Municipal Separate Storm Sewer System Copermittees Responsible for the Discharge of Diazinon into the Chollas Creek Watershed, San Diego, California.*

Schedule of Compliance

Concentrations of metals in urban runoff shall only be allowed to exceed the WLAs by a certain percentage for the first nineteen years after initiation of this TMDL. Allowable concentrations shall decrease as shown in Table 4 *[insert number].* For example, if the measured hardness in year ten dictates the WLA for copper in urban runoff is 10 µg/l, the maximum allowable measured copper concentration would be 12.0 µg/L. By the end of the twentieth year of this TMDL, the WLAs of this TMDL shall be met. This will ensure that copper, lead and zinc water quality objectives are being met at all locations in the creek during all times of the year.

Table 4 *[insert number]* Interim goals for achieving Wasteload Allocations

	Allowable Exceedance of the WLAs (allowable percentage above)		
Compliance Year	**Copper**	**Lead**	**Zinc**
1	100%	100%	100%
10	20%	20%	20%
20	0%	0%	0%

Compliance with the interim goals in this schedule can be assessed by showing that dissolved metals concentrations in the receiving water exceed the WQC for copper, lead, and zinc by no more than the allowable exceedances for WLAs shown in the table above. Regulated groundwater discharges to Chollas Creek must meet the WLAs at the initiation of the discharge. No schedule to meet interim goals will be allowed in the case of groundwater discharges.

The compliance schedule for implementation of the TMDLs shall be as follows in Table 4 *[insert number]*.

Table 4 *[insert number]* Compliance Schedule

Item	Implementation Action	Responsible Parties	Date
1	Effective date of Chollas Creek Metals TMDL Waste Load Allocations.	San Diego Water Board, Municipal Dischargers, Caltrans, Navy, Industrial Stormwater Dischargers, Construction Stormwater Dischargers, Landfill Stormwater Dischargers	October 22, 2008[1]
2	Recommend High Priority for grant funds.	San Diego Water Board	Immediately after effective date
3	Submit annual Progress Report to San Diego Water Board due January 1 of each year.	Municipal Dischargers	Annually after reissue of NPDES WDRs.
4	Submit annual Progress Report to San Diego Water Board due April 1 of each year.	Caltrans	Annually after reissue of NPDES WDRs.
5	Submit annual Progress Report to San Diego Water Board due July 1 of each year.	Industrial Stormwater Dischargers	Annually after reissue of NPDES WDRs.
6	Submit annual Progress Report to San Diego Water Board due July 1 of each year.	Construction Stormwater Dischargers	Annually after reissue of NPDES WDRs.
7	Municipal NPDES WDRs shall be issued, reissued, or revised to include WQBELs consistent with the assumptions and requirements of the Chollas Creek WLAs.	San Diego Water Board	Within 5 years of effective date
8	Caltrans NPDES WDRs shall be issued, reissued, or revised to include WQBELs consistent with the assumptions and requirements of the Chollas Creek WLAs.	State Water Board	Within 5 years of effective date
9	Construction NPDES WDRs shall be issued, reissued, or revised to include WQBELs consistent with the assumptions and requirements of the Chollas Creek WLAs.	State Water Board	Within 5 years of effective date
10	Industrial NPDES WDRs shall be issued, reissued, or revised to include WQBELs consistent with the assumptions and requirements of the Chollas Creek WLAs.	State Water Board	Within 5 years of effective date

[1] Upon approval of by Office of Administrative Law.

Item	Implementation Action	Responsible Parties	Date
11	Amend Orders No. 2000-90, and No. 2001-96 (or superseding renewal orders) which regulates temporary groundwater extraction discharges to San Diego Bay and its tributaries to include WQBELs consistent with the assumptions and requirements of the Chollas Creek WLAs.	San Diego Water Board	Within 5 years of effective date
12	Municipal and Navy WDR Order No. R9-2004-0277 shall amended to require additional monitoring for metals and hardness.	San Diego Water Board	Within 5 years of effective date
13	Landfill NPDES WDR Order No. 97-11 (or superseding renewal orders) shall be issued, reissued, or revised to monitor for metals and hardness.	San Diego Water Board	Within 5 years of effective date
14	Navy and all other Phase II small MS4 permittees in the Chollas Creek watershed shall be enrolled in Order No. 2003-0005-DWQ (or superseding renewal orders).	San Diego Water Board	Immediately after effective date.
15	Take enforcement actions	San Diego Water Board	As needed after effective date.
16	Meet 80% Chollas Creek Metals TMDL WLA reductions.	Municipal Dischargers, Caltrans, Navy, Industrial Stormwater Dischargers, Construction Stormwater Dischargers, Landfill Stormwater Dischargers	10 years after effective date.
17	Meet 100% Chollas Creek Metals TMDL WLA reductions.	Municipal Dischargers, Caltrans, Navy, Industrial Stormwater Dischargers, Construction Stormwater Dischargers, Landfill Stormwater Dischargers	20 years after effective date.

Book #1

DRAFT

Supplemental Environmental Impact Report

for

Campbell Sediment Remediation/ Aquatic Enhancement

July 2003

1280

Book #1

DRAFT

Supplemental Environmental Impact Report

for

Campbell Sediment Remediation Aquatic Enhancement

July 2003

DRAFT

SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR CAMPBELL SEDIMENT REMEDIATION AQUATIC ENHANCEMENT

SCH 2002031096, UPD 83356-EIR-550

Prepared for:

San Diego Unified Port District
3165 Pacific Highway
San Diego, California 92101

Attention: Ms. Melissa Mailander

Prepared by:

P&D Environmental
A Division of P&D Consultants, Inc.
8954 Rio San Diego Drive, Suite 610
San Diego, California 92108

Attention: Ms. Betty Dehoney

July 2003

TABLE OF CONTENTS

CBL-P031094

Section			Page

CBL-P031095

List of Appendices

LIST OF FIGURES

CBL-P031098

LIST OF TABLES

CBL-P031099

Acronyms

AAQS	Ambient Air Quality Standards
ACOE	U.S. Army Corps of Engineers
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
ASCE	American Society of Civil Engineers
CAC	County Administration Center
CAO	Cleanup and Abatement Order
CCC	California Coastal Commission
CCDC	City Center Development Corporation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
cm^2/yr	Square Centimeters Per Year
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
COC	Constituents of Concern
CY	Cubic Yards
dB	Decibel
DOE	Department of Energy
DOER	Dredging Operations and Environmental Research
DRET	Dredging Elutriate Test
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ft/sec	Feet Per Second/Foot Per Second
HPAHs	High-Molecular-Weight Polynuclear Aromatic Hydrocarbons
l/kg	Liters Per Kilogram
LOS	Level of Service
μg/l	Micrograms Per Liter
mg/kg	Milligrams Per Kilogram
MHHW	Mean Higher High Water
MLLW	Mean Lower Low Water
mm	Millimeters
NAB	Naval Amphibious Base
NANSI	Naval Air Station North Island
NMFS	National Marine Fisheries Services

NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NO_x	Nitrogen Oxides
PCBs	Polychlorinated Biphenyls
PM_{10}	Airborne Particulate Matter
PSF	Pounds per Square Foot
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SDAPCD	San Diego Air Pollution Control District
SDUPD	San Diego Unified Port District
SEIR	Subsequent Environmental Impact Report
TAC	Toxic Air Contaminants
TAMT	Tenth Avenue Marine Terminal
TBT	Tributytlin
TPH	Total Petroleum Hydrocarbons
USFWS	United States Fish and Wildlife Service

1.0 EXECUTIVE SUMMARY

1.1 Project Synopsis

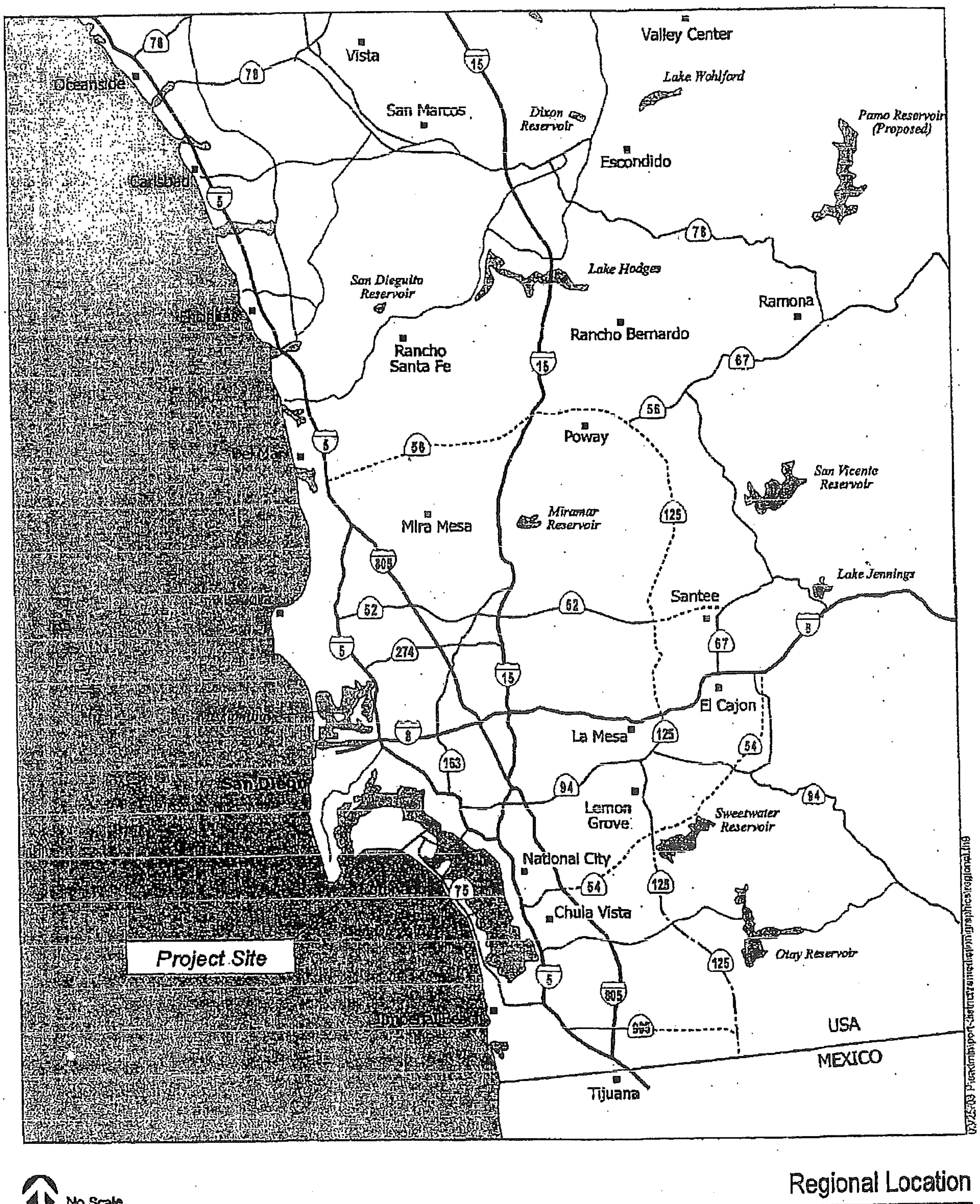
On May 24, 1995, the San Diego Regional Water Quality Control Board (RWQCB) issued Cleanup and Abatement Order (CAO) No. 95-21 to Campbell Industries and Marine Construction and Design Company (together referred to as "Campbell") addressing contaminated bay sediments, soils, and groundwater at the former facility (Figures 1.1-1 and 1.1-2). In August 2000, the San Diego Unified Port District (Port) took over responsibility for cleanup of the former Campbell Shipyard site. The purpose and need for this project is to address contaminated bay sediments at the former Campbell Shipyard facility to meet the requirements of the CAO No. 95-21 for remediation. This Environmental Impact Report analyzes four alternatives designed to meet the requirements of CAO No. 95-21.

Alternative 1: Engineered Cap-In-Place involves the construction of a cap over affected sediment containing COC concentrations greater than cleanup levels. The cap is expected to consist of approximately 5 feet of clean sand and gravel.

Alternative 2: Habitat Cap involves placing a clean habitat cap, with a thickness of up to 20 feet, over contaminated sediments that contain constituents of concern (COCs) at concentrations greater than cleanup levels. Deep water engineered caps, comprised of sand and gravel with a thickness of approximately 5 feet, will be located at portions of the site adjacent and parallel to the Tenth Avenue Marine Terminal (TAMT).

Alternative 3: Hybrid Cap involves the creation of a habitat cap, 10 to 20 feet thick, with adjacent engineered caps, to contain affected sediments that exhibit COC concentrations greater than cleanup levels in the former Campbell Shipyard leasehold. Deep water engineered caps, comprised of sand and gravel with a thickness of approximately 5 feet, will be located at portions of the site adjacent and parallel to the TAMT and in the northern portion of the leasehold below the proposed marina.

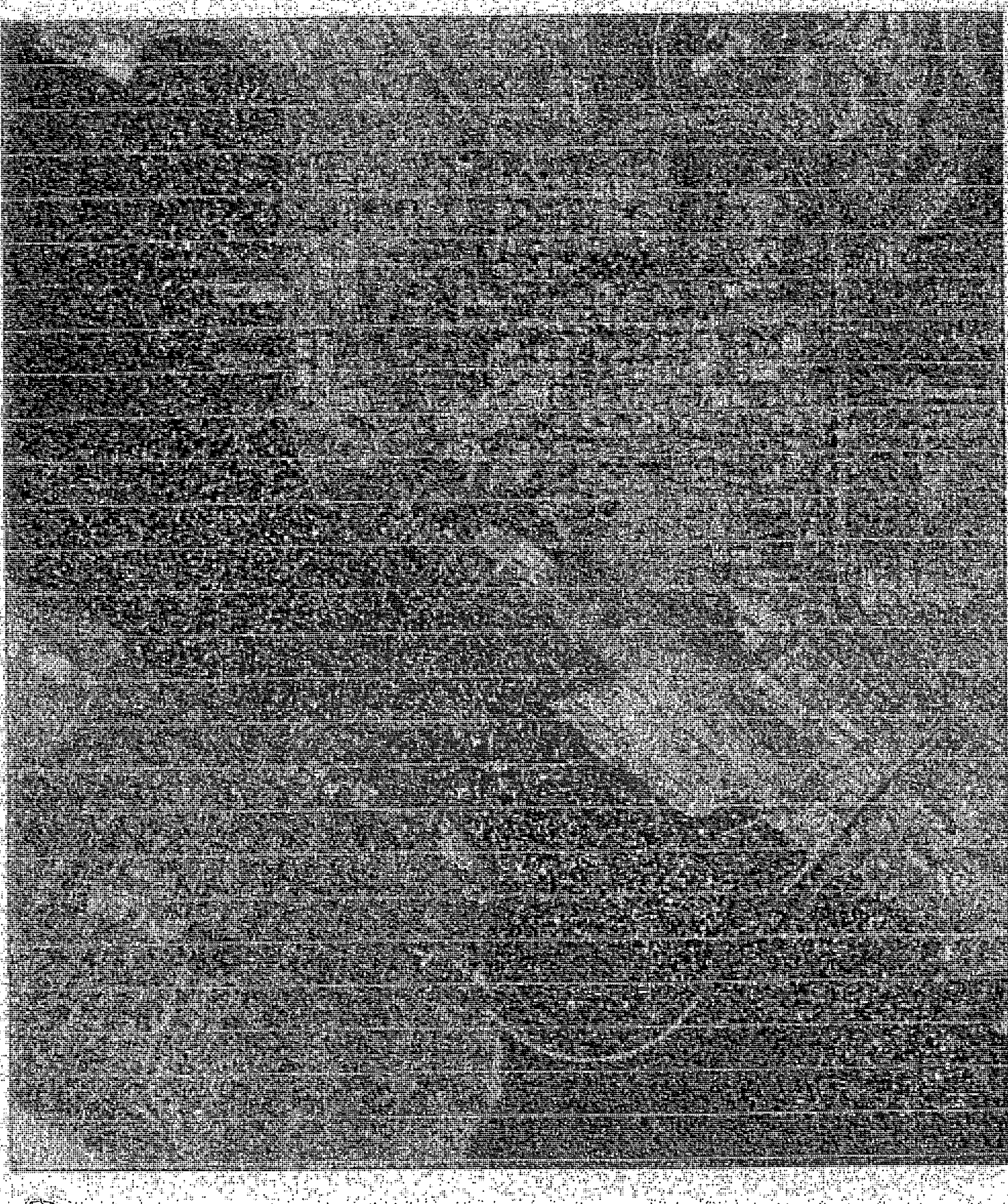
Alternative 4: Dredge and Sediment Disposal involves dredging sediment containing COC concentrations greater than cleanup levels specified in CAO-95. The dredged material will be hauled by barges to the shore, and offloaded to an adjacent staging site. Clean sand will be imported and the areas shallower than -2 feet Mean Lower Low Water (MLLW) will be backfilled to restore these areas to grade for habitat purposes.



Regional Location

Figure 1.1-1

P&D Environmental Services



1 inch = 1500 feet

Aerial Photograph

P&D Environmental Services

Figure 1.1-2

CBL-P031104

1.2 Project Alternatives

1.2.1 Alternative 1: Engineered Cap-In-Place

This alternative involves the construction of a cap over affected sediment containing COC concentrations greater than cleanup levels. The cap is expected to consist of approximately 5 feet of clean sand and gravel to provide a clean habitat for flora and fauna, as well as a barrier to bioturbation from deep burrowing marine species. A bench in the upper portion of the cap, between -4 and -6 feet MLLW, will provide 1 acre of shallow subtidal habitat. Areas of the cap near the TAMT will likely require placement of an armoring material on the surface of the cap, to prevent erosion by propeller wash from boats that call on the TAMT (Figure 1.2-1).

The cap will cover the shipways area, which will be demolished and dredged beforehand to remove the PCS underneath. That demolition is expected to create approximately 8,600 SF of water area. In addition to the PCS, approximately 2,900 CY of PCB-contaminated sediments, with concentrations above 3 mg/kg, will also be removed from areas near the seawall prior to cap emplacement. The PCB, PCS, and other contaminated material will be disposed of at an upland disposal facility.

This alternative includes stabilization and reconfiguration of part of the existing seawall. The seawall south of the shipyard ways will be extended towards the Bay to realign it with the existing seawall north of the shipyard ways. This realignment will remove approximately 2,500 SF of intertidal habitat and water area. This alternative will also include the placement of a revetment along the seawall to provide stability in case of an earthquake. Finally, an approximately 2,800-SF dock may be located over the cap for hotel use on the south side of the property, and a large transient marina may be built on the northern portion of the leasehold area, to accommodate private vessels.

1.2.2 Alternative 2: Habitat Cap

This alternative involves placing a clean habitat cap over contaminated sediments that contain COCs at concentrations greater than cleanup levels. The habitat cap will isolate contaminated sediments from the marine environment, and provide a clean habitat for flora and fauna. The cap will vary in thickness, with a gently sloping surface at water depths suitable to recreate shallow subtidal and intertidal habitats (Figure 1.2-2). Southern and northern areas of the site shall be constructed of deep water engineered caps approximately 5 feet thick.

A perimeter retaining berm will form the outer portion of the cap, with the bayward face armored with stone from the bay bottom to the top of the cap, to hold the cap material in place and to protect against erosion from propeller wash, wind waves, and ship waves. Clean imported sand will be placed on the surface in areas within 60 feet of the existing seawall. Up to 130,000 cubic yards (CY) of clean imported material are required to reach the desired elevations for the habitat cap, and up to 35,000 CY of rock material are required to reach the desired elevation for the retaining berm.

The habitat cap will cover the shipways area, which will be demolished and dredged beforehand to remove petroleum-contaminated soil (PCS) underneath. That demolition is expected to create approximately 8,600 square feet (SF) of new open water, some of which will be used for remediation. In addition to the PCS, approximately 2,900 CY of polychlorinated biphenyls (PCB) contaminated sediments, with concentrations above 3 milligrams per kilogram (mg/kg), will be removed from localized areas near the seawall prior to cap emplacement. The PCB, PCS, and other contaminated material will be disposed of at an upland disposal facility.

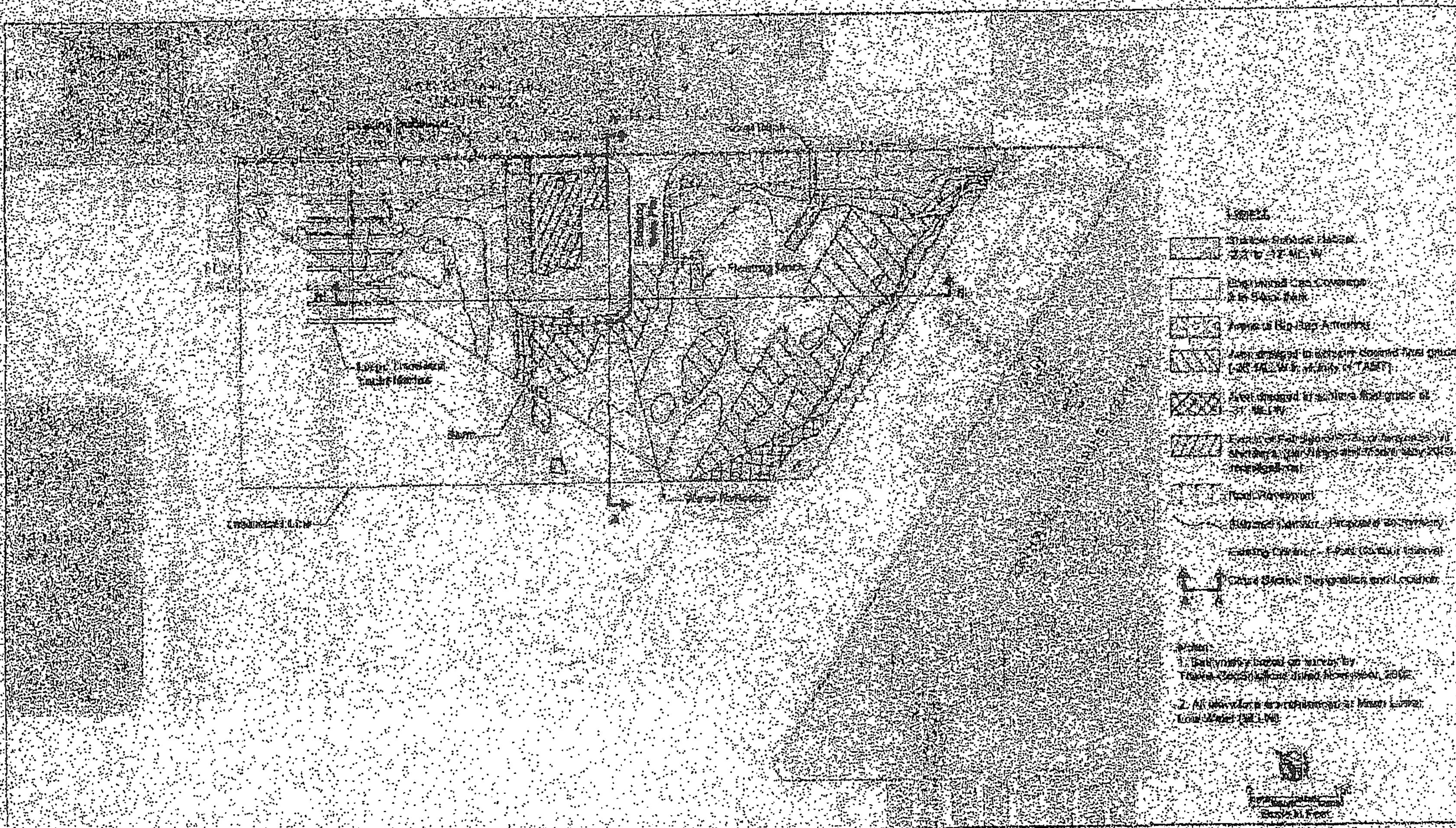
Deeper water engineered caps will be constructed in the northern and southern portions of the site to isolate contaminated sediments in these areas from the environment. The top of both engineered caps will be at an elevation of -20 feet MLLW to provide a sufficient depth for navigation and berthing at adjacent facilities.

The more extensive of the two engineered caps will cover the southern area of the site, adjacent and parallel to the TAMT. It is estimated that this engineered cap will be approximately 5 feet thick, comprised of sand and gravel layers, and include a surficial layer of armoring materials. Up to 15,000 CY of existing sediment will be dredged from this area and disposed of at an upland disposal site. A less extensive engineered cap will occupy the extreme northern end of the site. It will cover an area measuring 40 feet between the northern property line and the toe of the retaining berm. Up to 1,000 CY of existing sediment will be dredged from this area and disposed of at an upland disposal site.

This alternative includes stabilization and reconfiguration of part of the existing seawall. The seawall south of the shipyard ways will be extended towards the Bay so it aligns with the existing seawall north of the shipyard ways. This realignment will remove approximately 2,500 SF of intertidal habitat and water area. The habitat cap along the seawall will provide structural stability to that structure in case of an earthquake. The project will also require extension of the Eighth Avenue storm drain outfall to the edge of the cap to prevent discharge onto its surface. Finally, a small, approximately 2,800-SF dock may be located over the engineered cap for hotel use on the southern edge of the habitat cap.

1.2.3 Alternative 3: Hybrid Cap

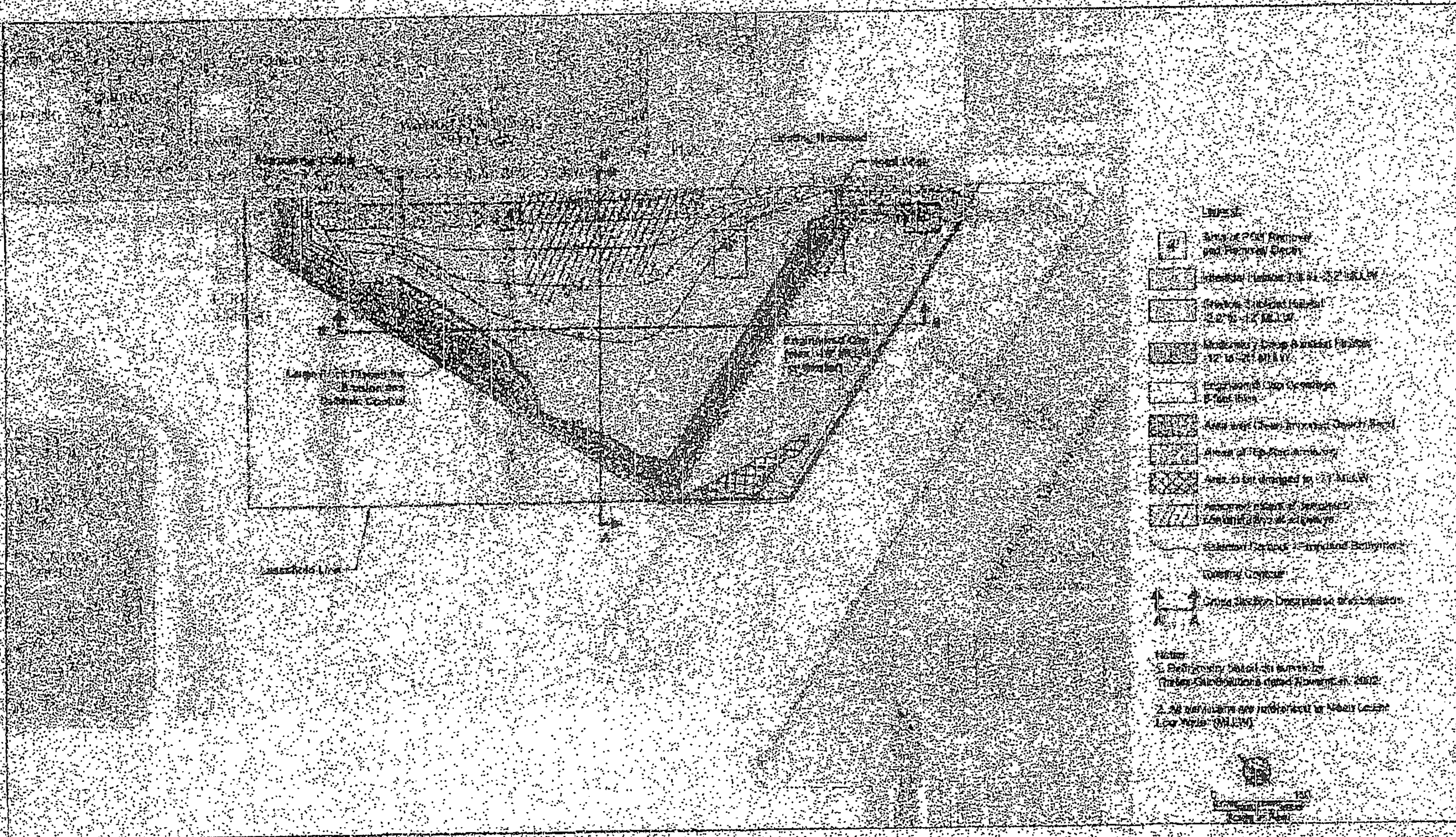
This alternative involves the creation of a habitat cap area with adjacent engineered caps, to contain affected sediments that exhibit COC concentrations greater than cleanup levels in the former Campbell Shipyard leasehold. The alternative provides self-mitigating habitat acreage within the project area, and adequate



Plan View of Alternative 1: Engineered Cap-In-Place

Figure 1.2-1

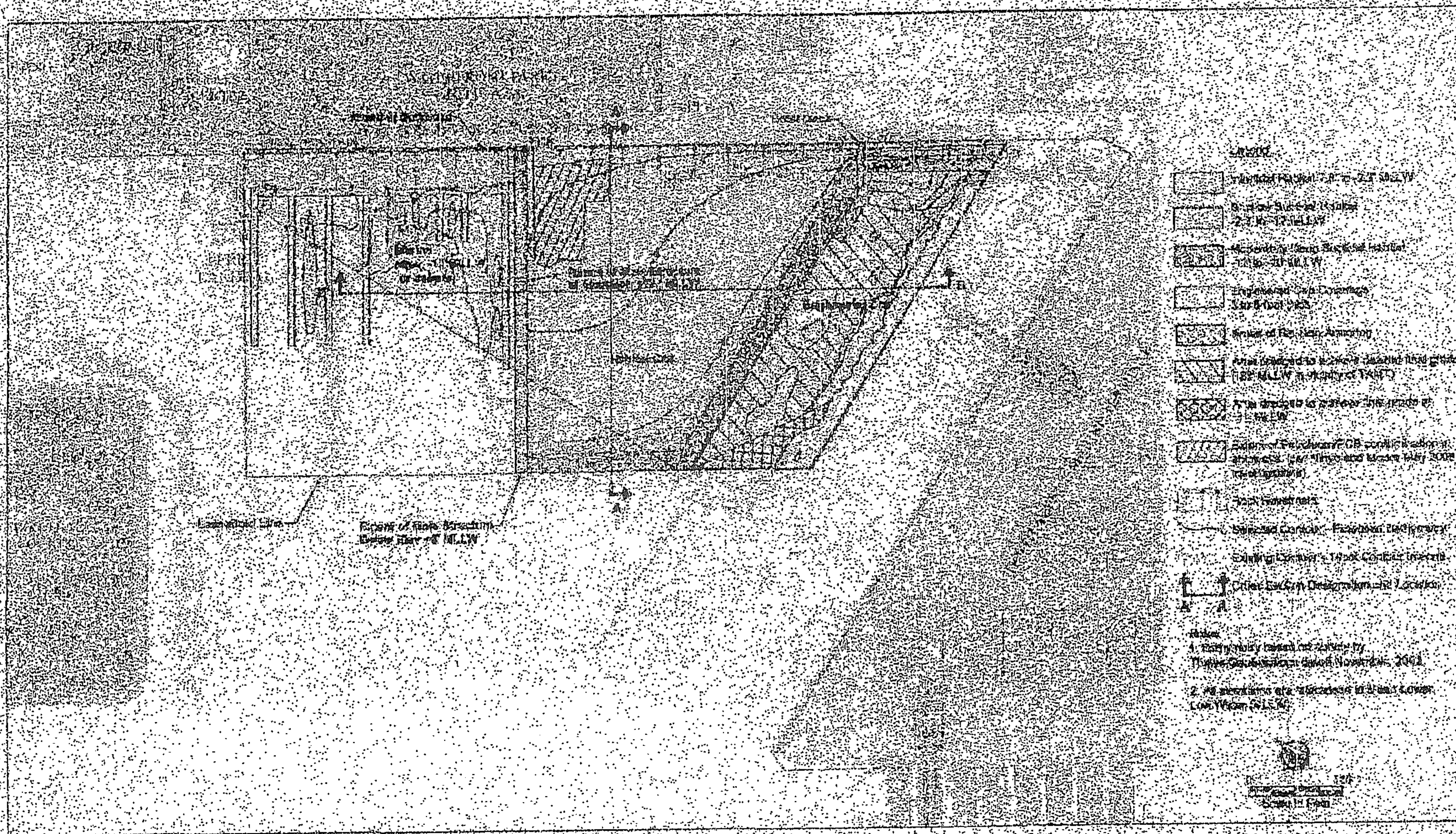
P&D Environmental Services



Plan View of Alternative 2: Habitat Cap

Figure 1.2-2

P&D Environmental Services

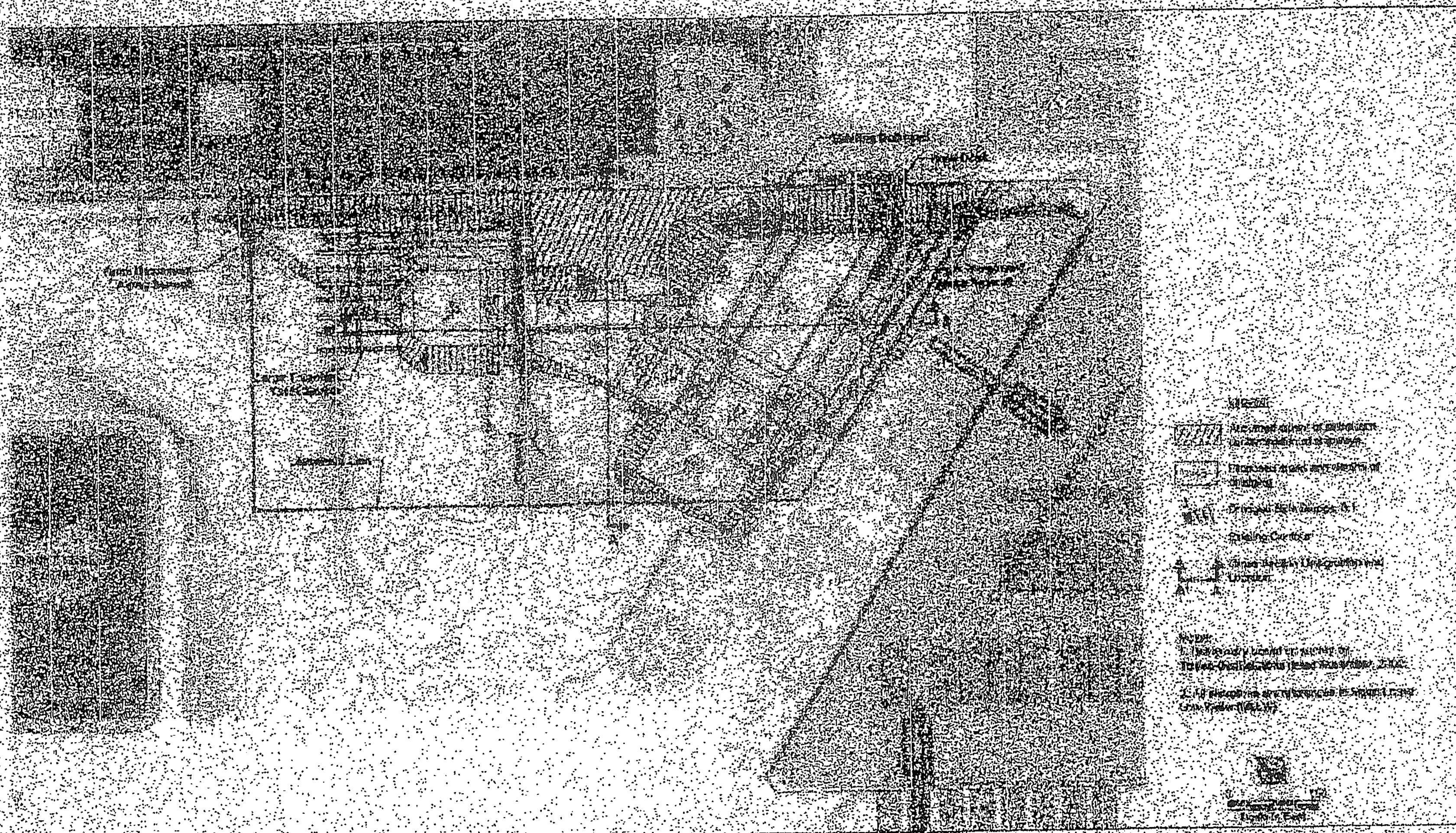


Plan View of Alternative 3: Hybrid Cap

Figure 1.2-3

P&D Environmental Services

CBL-P031109



Plan View of Alternative 4: Dredge and Sediment Disposal

Figure

P&D Environmental Services

CBL-P031110

water space for development of a marina. The habitat cap will isolate contaminated sediments from the marine environment, and provide a clean habitat for flora and fauna. It will cover approximately 4.8 acres and will be 10 to 20 feet thick, with a relatively flat surface, at water depths suitable to recreate shallow subtidal and intertidal habitats that have been lost in San Diego Bay over the years (Figure 1.2-3).

Approximately 16,000 CY of sediment will be dredged and disposed of at an upland facility. The habitat cap will cover the shipways area, which will be demolished and dredged beforehand to remove the PCS underneath. That demolition is expected to create approximately 29,000 SF of water area. In addition to the PCS, approximately 2,900 CY of PCB-contaminated sediments, with concentrations above 3 mg/kg will be removed from localized areas near the seawall prior to cap emplacement. The PCB, PCS, and other contaminated material will be disposed of at an upland disposal facility.

The perimeter of the south side of the habitat cap will consist of a retaining berm with the bayward face armored with stone from the bay bottom to the top of the cap, to protect against erosion from propeller wash, wind waves, and ship waves. Approximately 8,000 CY of sediment will be dredged for the berm. A mole structure will bind the north end of the cap to retain the habitat cap material, and protect it from vessels that will potentially operate in a marina on the northern portion of the site.

Deep water engineered caps will be located at portions of the site adjacent and parallel to the TAMT to provide a sufficient depth for navigation and berthing at the TAMT, and in the northern portion of the leasehold below the proposed transient marina. It is estimated that the engineered caps will be approximately 5 feet thick, and comprised of sand and gravel layers that include a surficial layer of armoring materials that will resist scour effects from the propeller wash of vessels that call at the TAMT. This armoring layer will also provide a barrier to bioturbation from deep burrowing marine species (e.g., ghost shrimp).

This alternative allows for future construction of a marina in the northern portion of the former Campbell Shipyard leasehold area adjacent to the habitat cap. This marina will be sited within the former Campbell Shipyard leasehold line, adjacent to and immediately north of the habitat cap, in an area that is sufficiently large for berthing three to four large recreational boats (mega yacht vessels, approximately 200 feet long) and four to six smaller vessels up to 60 feet long. Gangways will be built to allow handicap access to the headwalk and finger piers.

A "mole" retaining structure will be built perpendicular to the existing seawall and will function as a barrier between the habitat cap and the marina area. A mole structure consists of two sheetpiles driven parallel to each other and linked by tie rods. The minimum thickness of the mole pier for structural integrity in this setting is 20 feet. The area between the sheetpiles will be filled with rocks and sand, and capped with a concrete pad, which provides rigidity to the structure, and can transform it into a pier, or a promenade. This alternative also involves the stabilization and reconfiguration of part of the existing seawall. The temporary seawall south of the shipyard ways will be extended towards the Bay so that it is aligned with the existing seawall north of the shipyard ways. This realignment will remove approximately 2,500 SF of intertidal habitat and water area. A rock revetment will be constructed along the seawall north of the habitat cap for added stabilization during seismic events. Where the habitat cap is present, its compacted material will stabilize the seawall. Finally, this alternative includes the possible construction of an approximately 2,800-SF dock that may be located over the engineered cap for hotel use.

1.2.4 Alternative 4: Dredge and Sediment Disposal

This alternative involves dredging approximately 135,000 CY of sediment containing COC concentrations greater than cleanup levels specified in CAO 95. The dredged material will be hauled by barges to the shore, and offloaded to an adjacent staging site. The material will be dewatered or stabilized before being transported to an approved offsite disposal facility by truck or rail (Figure 1.2-4).

The portions of the site with a dredged elevation shallower than -20 feet MLLW will be nominally restored to grade for habitat purposes by backfilling with imported sand. The sand will be delivered by barge and placed either through the use of a derrick, or by pushing the material off the deck of a barge with a bulldozer as the barge is moved across the site. Trucks may be used for near-shore areas.

This alternative also accounts for the demolition of the shipways, and the dredging of the material underneath to remove the PCS. Demolition of the ways will include removal of concrete, steel rails, piles supporting the rails, and steel sheetpiling, which will either be recycled or disposed of at appropriate upland facilities. Also, this demolition will create approximately 8,600 SF of new water area.

The alternative includes stabilization and reconfiguration of part of the existing seawall. The seawall south of the shipyard ways will be extended towards the Bay so that it is aligned with the existing seawall north of the shipyard ways. This realignment will remove approximately 2,500 SF of intertidal habitat and water area. Also, this alternative includes the placement of a revetment along the seawall to provide stability in case of an earthquake. Overall, this alternative will create approximately 6,100 SF of water area. Finally, an approximately 2,800-SF dock will be located over the dredged area for hotel use on the south side of the property. In addition, a transient marina with approximately 20 to 30 slips could be built on the northern area of the leasehold.

1.3 Summary of Significant Effects and Mitigation Measures that Reduce the Significant Effects

A comparison of alternatives and significance of impacts is presented in Table 1.3-1. Table 1.3-2 is a summary of the impacts associated with the Alternative 1: Engineered Cap-in-Place recommended mitigation measures, and the level of significance of the impacts after mitigation. The Alternative 1: Engineered Cap-in-Place results in significant and mitigable impacts to marine biology, water quality, geology and soils, air quality, noise, and navigational safety. Traffic and circulation impacts were not considered significant.

1.4 Areas of Controversy

- Navigational safety: Concern by the Tenth Avenue Marine Terminal that activities associated with the remediation project could affect navigational safety.

- Selection of appropriate remediation for hazardous materials: Concerns were raised regarding the effectiveness of various alternatives.

1.5 Issues to be Resolved by the Decision-Making Body

The following issues need to be resolved:

- Selection of alternative to meet the objectives of the CAO.
- Size and configuration of the dock and marina.

Table 1.3-1
Comparison of Project Impacts With Alternatives

Project Area/ Issues	**Alternative 1: Engineered Cap-In-Place*** *Capping in-place the affected sediment. Placement of armoring material on the surface of the cap to prevent erosion. A floating dock marina with approximately 20 to 30 slips to be built on the leasehold. Removal of approximately 29,500 CY of sediment, including 1,000 cubic yards (CY) of petroleum-contaminated soil from the former shipyard area. The average thickness of the cap will be 4.5 to 5 feet. Required construction time is approximately 6 months.*	**Alternative 2: Habitat Cap** *Placement of a clean habitat cap over contaminated sediment. A perimeter retaining berm will form the outer portion of the cap, with an outward face armored with stone. A small, approximately 2,800-square-foot (SF) dock will be located over the engineered cap for hotel use. Approximately 27,500 CY of material will be removed. Approximate thickness of the cap will range from 10 feet up to 20 feet. Anticipated to require approximately 1 year to be constructed.*	**Alternative 3: Hybrid Cap** *An engineered cap will be placed over the affected sediment that contains COC concentrations greater than cleanup levels. A transient marina containing 20 to 30 slips for large recreational boats will be built above the cap. A small habitat cap will be installed in the northern corner of the former Campbell Shipyard waterside leasehold. Approximately 35,500 CY of soil will be removed from the site. Approximate thickness of the cap will range from 10 feet up to 20 feet. Anticipated to require about 1 year to be constructed.*	**Alternative 4: Dredge and Sediment Disposal** *Dredging of sediment containing COC concentrations. Removal of approximately 135,000 CY of sediment, including 1,000 CY of petroleum-contaminated soil from the former shipyard area. Material will be placed on barges, hauled to the shore, and offloaded onto a staging area for treatment. Disposal of the dredge material will be in an approved location offsite. Portions of the site will be backfilled with imported sand. A 20-to 30-slip transient marina and hotel deck would be built. The alternative will require 1.5 to 2 years to complete.*	**Alternative 5: No Project** *The contamination site will remain in its current condition. No action will be taken.*	**Cumulative**
Marine Biological Resources	SM	SM	SM	SM	NS	CNS
Water Quality	SM	SM	SM	SU	SU	CSU
Geology/Soils	SM	SM	SM	SM	NS	CNS
Air Quality	SM	SM	SM	SM	NS	CNS
Noise	SM	SM	SM	SM	NS	CSU
Traffic and Circulation	NS	NS	NS	NS	NS	
Navigational Safety	SM	SM	SM	NS	NS	CSU

Notes: SU = Significant Unmitigable, SM = Significant Mitigable, NS = Not Significant, CSU = Cumulative Significant Unmitigable, and CNS = Cumulative Not Significant.
*Alternative 1 is deemed the Environmentally Preferred Alternative.

CBL-P031114

Table 1.3-2
Summary of Project Impacts and Mitigation Measures

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
Potentially Significant Impacts Unless Mitigation Incorporated			
Marine Biological Resources (see Section 4.1)			
B1. Water Quality			
The disturbance of sediments during construction of the habitat cap brings the possibility of affecting water quality in areas outside and within the project site. Possible impacts to these areas include increased turbidity and decreased water quality affecting foraging, the deposition of contaminated sediments in areas that may not currently be contaminated, and the risk of spills from machinery used in the construction process. Together, these impacts are significant.	To minimize the potential short-term impacts to water quality from dredge and fill activities, certain operational controls will need to be implemented. ▪ **The use of a silt curtain will reduce impacts related to the resuspension of sediment, turbidity, and potential spills.** The use of a silt curtain will prevent areas outside of the project site from being impacted by the proposed project. Silt curtains have been shown to confine suspended sediments to specific areas, and can also be effective in controlling any possible spills from machinery used during construction. All crews will be trained in proper procedures to follow in the event of such a spill.	After mitigation, potentially significant impacts to marine biology can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap Alt. 4: Dredge and Sediment Disposal

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	▪ During capping, controlled placement of the initial layers of cap material on existing sediment will reduce the amount of suspended sediment in the project site and also reduce the amount of contaminated sediment present in the water column during construction. The contractor shall place initial layers of cap material in thin lifts, using either a clamshell dredge or hydraulically spraying the material from a barge, will be sufficient to avoid the resuspension of contaminated sediments.		
B2. Construction Related			
Increased garbage due to construction activities on the site could impact marine biological resources and contradict the project purpose. This is a significant impact.	Adequate facilities shall be provided in which to dispose of garbage, and workers shall be trained as to the requirement to and importance of controlling waste during construction at the project site.	After mitigation, potentially significant impacts to marine biology can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap
B3. Eelgrass			
An 0.33-acre eelgrass bed present in the project site will be impacted due to dredging and filling in association with the placement of the engineered cap in the project site. The existing eelgrass bed will most likely be smothered when the cap is constructed. This is a significant impact.	The 0.33-acre eelgrass bed present on the project site will be impacted as a result of this project. A site-specific mitigation plan shall be prepared, and pursuant to the Southern California Eelgrass Mitigation Policy, the following components shall be included (see below). Any additional requirements laid out in the Army Corps of Engineer's (ACOE) 404 permit and Section 10 of the Rivers and Harbors Act permit and conditions as stipulated by the NMFS will also be followed.	After mitigation, potentially significant impacts to marine biology can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

CBL-P031116

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	▪ **Demonstrate avoidance and minimization of impacts to eelgrass where possible.** Since the eelgrass beds are growing on sediment which must be remediated, avoidance of the eelgrass is not possible while still accomplishing the project's goals. ▪ **Survey and map the eelgrass coverage prior to construction.** Mapping efforts must be completed no earlier than 120 days prior to the start of construction if conducted between March 1 and August 1. If the mapping survey is conducted between August 1 through October 31, the survey is valid until March of the following year. All active eelgrass beds, as well as those areas that have the proper depth and substrate for eelgrass but which currently lack vegetation, are to be included in this survey. These areas are to be mapped according to protocols outlined in the Southern California Eelgrass Mitigation Policy. ▪ **Survey and map the eelgrass coverage following construction.** Within 30 days of construction, a postconstruction survey shall be completed to determine the actual area of impact of the project. If it is determined that the entire area of eelgrass was impacted, this survey may not be necessary.		

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	▪ Identify appropriate mitigation site. Factors such as distance from the project, depth, sediment type, distance from ocean connection, water quality, and currents are among those that should be considered in evaluating a potential site. For this project, onsite mitigation in an area of the project site that is similar to the impacted area, and will not be impacted by the future installation of marina piers is most appropriate. ▪ **Mitigate for the loss of eelgrass habitat at a ratio of 1.2 to 1.** A 1.2 to 1 mitigation ratio is required for all impacts greater than 100 square meters, with mitigation occurring following the start of the project. A 1 to 1 mitigation ratio is required if the project impacts less than 100 square meters of eelgrass habitat. ▪ **Mitigation technique for construction and planting of eelgrass mitigation shall be consistent with best available technology.** Donor material used in mitigation shall be taken from the area of impact whenever possible, but should also include material from a minimum of two additional distinct sites, to better ensure genetic diversity of the donor plants. No more than 10% of an existing unimpacted bed shall be harvested for transplanting purposes.		

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	▪ Transplanting should begin no later than 135 days following the completion of construction. If mitigation cannot begin within 135 days of project completion, the mitigation obligation shall increase at a rate of 7% for each month of delay. ▪ Five-year monitoring program. Monitoring activities shall determine the area and density of eelgrass at the mitigation site and shall be conducted at 3, 6, 12, 24, 36, 48, and 60 months after the completion of the transplant.		
Water Quality (See Section 4.2)			
WQ1. Turbidity			
Short-term turbidity impacts could occur as a result of resuspended sediments at the point of dredging or during cap placement, or through the loss of sediment offsite in the form of turbidity.	Operational controls will be in place during construction to ensure sediment disturbance is kept to a minimum. During capping, the contractor will place the initial layers of the cap in thin lifts using either a clamshell bucket or by hydraulically placing the material from a barge. These placement methods reduce the vertical impact and lateral spreading of the cap material, thus reducing the potential for resuspending the bottom sediment. Controlled placement also minimizes the mixing of cap and underlying sediment by allowing the sediment to slowly gain strength before subsequent layers are deposited.	After mitigation, potentially significant impacts to water quality can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap Alt. 4: Dredge and Sediment Disposal

CBL-P031119

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	For dredging operations, operational controls such as selection of appropriate dredge buckets, use of silt curtains, and/or control of cycle times minimize potential sediment resuspension and related turbidity. Water quality monitoring will be conducted during construction to ensure that significant resuspension of sediments to the water column are not occurring beyond the mixing zone boundaries.		
WQ2. Pile Driving			
Marina and hotel dock construction and future maintenance over the proposed cap once it has been completed could include driving piles through the cap which may expose contaminated sediments or mobilized contaminants through pore water movement to the biologically active zone or overlying water column.	To prevent impacts from piles being driven into the cap, potential displacement and pore water pressure changes shall be incorporated into the design of the cap whether it is thick (i.e., >3 feet) or thin (i.e., approximately 6 inches). Follow-up procedures to the design to ensure cap effectiveness might include placing additional cover material in areas of depression surrounding the pile or divots upslope after pile driving has been completed. When a cap design anticipates the impacts associated with the installation of piles, it is reasonable to assume that the affected portion of the cap may have a reduced efficiency for a short time. However, the overall potential for reduced effectiveness of the cap is negligible compared to the potentially affected area versus the overall surface area of a cap. The possible short-term impacts of pile driving will be monitored as part of the project's overall monitoring and maintenance program.	After mitigation, potentially significant impacts to water quality can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

CBL-P031120

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
Monitoring and Monitoring Program			
	To assess water quality within the project area, the following mitigation and monitoring program developed by Anchor (2003b) will be implemented. Short-term water quality monitoring will take place at designated reference (background) stations upstream and downstream of the project site and near the point of active remedial activities. Water quality analyses will include measurements of turbidity, PCBs, HPAHs, metals, and other contaminants, if appropriate. These measurements will ensure that Waste Discharge Requirements (WDR) imposed by the San Diego Regional Water Quality Control Board for the project are maintained. Long-term water quality monitoring will involve the evaluation of sediment cores at key locations through the engineered and habitat caps, up to 5 feet long, for the constituents of concern to determine if vertical migration of the contaminated sediment through the cap is occurring. Core samples will generally be taken at thinner portions of the cap, and will not penetrate into contaminated sediments. Surface sediments for the top 10 centimeters of the cap will also be analyzed for constituents of concern, to determine if recontamination associated with deposition of sediments from surface waters is occurring.	After mitigation, potentially significant impacts to water quality can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	A contingency plan will be prepared to respond to degradation of structural features associated with the remediation, erosion of cap, breaks, or other means by which biota or flora are exposed to contaminated sediments in the project area. If there is an instability, or breach of the remedial structures, those features will be repaired in a timely manner. If it is impossible to repair the affected area, an alternative cleanup plan will be adopted.		
Geology/Soils (See Section 4.3)			
G1. Liquefaction			
Liquefaction of the sand portion of the engineered cap could cause migration of pore water due to seismically induced excess pore pressures and sand boils during both seismic design level earthquakes.	Several liquefaction mitigation measures are possible for the cap; while they may improve overall cap stability, they will not fully alleviate the potential for damage in a seismic event. Such measures include: ▪ Incorporating gravel layers for pore pressure relief. ▪ Incorporating filter layers within the cap to inhibit the migration of soil particles. ▪ Densification of the cap to prevent liquefaction (although this alternative may not be economically feasible). ▪ Assessing potential damage to the engineered cap after the earthquake and recapping impacted areas as needed.	After mitigation, potentially significant impacts to geology and soils can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
G2. Seismic Stability			
Extension gaps or cracks in the cap, which in turn could lead to exposure of underlying contaminated sediments, could occur due to lateral spreading during a Design Level 2 seismic event.	Three potential measures to mitigate the effects of lateral spreading are: ▪ The inclusion of rock retaining berms along the edges of the cap and within the interior of the cap areas. ▪ Reducing the inclination of the engineered cap surface, particularly if the slope angle can be reduced to approximately 5 to 7 degrees (the slope angle above which 'flow'-type liquefaction failures could occur). ▪ Assessing the damage after the earthquake and recapping the impacted areas.	After mitigation, potentially significant impacts to geology and soils can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap
G3. Settlement			
The use of fine-grain silts could result in cap settlement for the habitat cap.	If a capping material is chosen that is likely to sink below an elevation suitable for serving as a habitat for targeted species due to settlement, a more extensive armor cap will be needed at the surface to avoid erosion. This cap will likely be a combination of sands and gravels. This armor cap will likely be thick, since the underlying fine-grained materials will have low strength and, as such, require a bearing layer to limit mixing of soils between the general cap and the armor cap.	After mitigation, potentially significant impacts to geology and soils can be reduced to below a level of significance.	Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
Monitoring and Monitoring Program			
	To assess the condition of the engineered cap, the following mitigation and monitoring program developed by Anchor Environmental, LLC (2003b) will be implemented. Short-term geologic monitoring will entail inspection of the contractor's work on a regular basis to ensure that project plans and specifications are being met. Construction monitoring will also include the following: ▪ Bathymetric surveys to evaluate cap thicknesses and dredge depths. ▪ Bathymetric and diver surveys to assess the accuracy of berm placement and quality of berm construction. ▪ Cap consolidation monitoring. At the end of the remediation project, soundings of the affected area will be made and mapped. A report summarizing the sounding results will be prepared for timely review. Any areas that are deficient in meeting the specifications for the project will be addressed at that time.	After mitigation, potentially significant impacts to geology and soils can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
	Long-term monitoring will entail recording the bathymetry of the site, and performing visual diving inspections. These surveys will be utilized to assess the integrity of structural features (berms, revetments, mole piers), and assess the impacts of erosion and shoaling in the area. Subbottom profiling, by core sampling or using a sediment profiling camera, may be used intermittently over the life of the project to assess the physical integrity of the cap. Core samples will be retrieved in a manner that does not threaten the integrity of clean caps. Markers will also be established so that potential long-term erosional problems can be identified. A contingency plan will be prepared to respond to degradation of structural features associated with the remediation, erosion of caps, breaks, or other means by which biota or flora could be exposed to contaminated sediments in the project area. If there is an instability, or breach of the remedial structures, those features will be repaired in a timely manner. If it is impossible to repair the affected area, an alternative cleanup plan will be adopted.		

CBL-P031125

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
Air Quality (see Section 4.4)			
AQ1.			
Using a diesel-powered dredge not registered with the State of California will create NO_x emissions that could exceed significance thresholds and create a significant air quality impact.	NO_x emissions can be maintained at less-than-significant levels if a diesel-powered dredge is used that has a valid state operating permit. Mitigation of the NO_x impacts is also possible through the use of an electrified dredge instead of a diesel-powered dredge. Use of either a state-registered dredge, or an electric dredge will reduce NO_x emissions to below a level of significance.	After mitigation, potentially significant impacts to air quality can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap Alt. 4: Dredge and Sediment Disposal
Noise (see Section 4.5)			
N1. Ambient Noise Monitoring			
Project remediation operations, combined with the most intensive Tenth Avenue Marine Terminal operations, could create a cumulative noise impact if they were to occur at the same time as special events at the Convention Center and Embarcadero Marina Park South.	Coordination of project remediation operations with the most intensive Tenth Avenue Marine Terminal operations and special events at the San Diego Convention Center and the Embarcadero Marina Park South will reduce noise impacts.	After mitigation, potentially significant impacts to noise can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap Alt. 4: Dredge and Sediment Disposal
N2. Construction			
Pile-driving noise could be intrusive for public events at the Embarcadero Marina Park South or the Convention Center terrace.	Coordination of the pile-driving schedule with any planned outdoor events at the Embarcadero Marina Park South or the Convention Center outdoor terrace will be needed to preclude noise interference.	After mitigation, potentially significant impacts to noise can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap Alt. 4: Dredge and Sediment Disposal

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
Traffic and Circulation (See Section 4.6)			
T1.			
Based on the established significance criteria, no significant traffic impacts were calculated for the study area key intersections and street segments.	No mitigation measures are required.	All impacts will be below a level of significance.	
Navigational Safety (See Section 4.7)			
NG1. TAMT Operational			
Construction of the engineered cap could potentially create a significant impact by creating a conflict between construction materials and tug boats bringing container ships to dock. If final plans result in less than 300 feet of free navigation from the face of the berth, significant impacts will occur.	During construction of the cap alternative, coordination with the TAMT will be required to ensure that minimal disturbance to the throughput is maintained. The southern portion of the cap alternative would be more efficiently constructed outside of the fall season, when there is an increase in produce vessels using the TAMT. Construction coordination will ensure that at least one berth between Berths 10-1 and 10-2 is always available. Furthermore, it is critical that the cap is constructed in a way that will allow at least 300 feet of free navigation area from the face of the berths. With these mitigation measures, impacts to navigation and the TAMT will be reduced to below a level of significance.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap
NG2. Operational			
Construction of the engineered cap may limit the ability of larger vessels departing Terminal 1 to maneuver around vessel berthed at Terminal 2.	The TAMT will coordinate with the Port Wharfinger to prevent conflicts from arising between larger vessels departing Terminal 10-1 and vessels berthed at Terminal 10-2.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
NG3. Proposed Dock: Hotel Dock			
Large vessels could become depth-limited in the shallower depths surrounding the hotel dock.	The Port shall provide signage displaying the depths surrounding the hotel dock in order to make boaters aware of the depths of water surrounding these areas.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap
NG4. Proposed Dock: Floating Dock			
Propeller wash from tugboats maneuvering vessels to the TAMT may cause disturbances to any vessels berthed at the floating dock.	The Port shall provide signage indicating that the loading or unloading of passengers must be avoided while tugboats are maneuvering vessels to the TAMT.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap
NG5. Proposed Dock: Transient Marina			
Vessels attempting to dock at the transient marina could become grounded on the crest of the revetment during dangerous weather conditions.	The Port shall provide signage indicating that the berthing of vessels along the transient marina shall be avoided during dangerous weather conditions.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 3: Hybrid Cap
NG6. Ferry Landing			
Large vessels could become depth-limited in the shallower depths surrounding the ferry landing and vessels attempting to dock could become grounded in the waters above the revetment slope during dangerous weather conditions.	The Port shall provide signage displaying the depths surrounding the ferry landing in order to make boaters aware of the depths of water surrounding these areas, and that the berthing of vessels along the ferry landing shall be avoided during dangerous weather conditions.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 1: Engineered Cap-In-Place Alt. 2: Habitat Cap Alt. 3: Hybrid Cap

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
NG7. Hotel Dock			
Vessels attempting to dock could become grounded on the crest of the revetment or shallow subtidal area during dangerous weather conditions.	The Port shall provide signage stating that the berthing of vessels along the north side of the hotel dock must be avoided during dangerous weather conditions.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 2: Habitat Cap Alt. 3: Hybrid Cap
NG8. Mole Structure			
Vessels could become grounded by a 300 ft mole structure with an elevation of +5 feet MLLW that may become submerged during higher high tide events.	The Port shall provide navigational buoys to mark where the submerged mole structure is located in order to avoid conflicts with the habitat cap and mole structure.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 3: Hybrid Cap
NG9. Ferry Landing			
The proposed transient marina's proximity to the ferry landing will make docking on the east of the ferry landing unsafe.	The Port shall provide signage stating that the east side of the proposed ferry landing will not be available for berthing.	After mitigation, potentially significant impacts to navigational safety can be reduced to below a level of significance.	Alt. 3: Hybrid Cap
Effects Not Found to be Significant (See Section 7.0)			
Aesthetics			
No significant aesthetics impacts were identified for the proposed project.			
Agricultural Resources			
No significant impacts to agricultural resources were identified for the proposed project.			

Table 1.3-2. Summary of Project Impacts and Mitigation Measures (Continued)

Impact	Mitigation	Significance After Mitigation	Alternatives Needing This Mitigation
Cultural Resources			
No significant impacts to cultural resources were identified for the proposed project.			
Land Use/Planning			
No significant land use/planning impacts were identified for the proposed project.			
Mineral Resources			
No significant mineral resource impacts were identified for the proposed project.			
Recreation			
No significant recreation impacts were identified for the proposed project.			
Population/Housing			
No significant population/housing impacts were identified for the proposed project.			
Utilities/Service Systems			
No significant utility/service system impacts were identified for the proposed project.			

2.0 INTRODUCTION

2.1 Background

The former Campbell Shipyard waterside leasehold, located at the foot of Eighth Avenue in San Diego, California, encompasses 12.9 acres of submerged tidelands and shipways. The configuration of the former Campbell Shipyard site prior to demolition of the site, including docks, launch ways, drydocks, piers, and wharf, totaled approximately 213,386 square feet (SF). On May 24, 1985, the San Diego Regional Water Quality Control Board (RWQCB) issued a Cleanup and Abatement Order No. 95-21 (CAO) to Campbell Industries and Marine Construction and Design Company (together referred to as "Campbell") addressing contaminated bay sediments, soils, and groundwater at the former facility. Constituents of concern at the site include copper, lead, zinc, total petroleum hydrocarbons, high-molecular-weight polynuclear aromatic hydrocarbons (HPAHs), polychlorinated biphenyls (PCBs), and tributytlin (TBT).

The demolition of the former Campbell Shipyard buildings, structures, and pavement was completed in July 2000. The piers and pilings were removed in April 2001. The upland area of the site has undergone extensive remediation. Phase One remediation addressed petroleum contamination and was completed in December 2001. The RWQCB issued a Notice of Completion to the Port with respect to this work in June 2002. Pending remediation activities that encompass an area known as the East Parking Lot and call for removal of the benzene-contaminated soil are scheduled to begin in June 2003. This activity is estimated to be completed in October 2003.

The Board of Port Commissioners, in April 2001, certified the Final Environmental Impact Report (EIR) for the South Embarcadero Redevelopment Program 2 and Port Master Plan Amendment project, which evaluated the redevelopment of the adjacent upland and water areas of the R.E. Staite and former Campbell Shipyard leaseholds (SCH No. 19997051014, UPD No. 83356-EIR-435). The California Coastal Commission (CCC) in December 2001 adopted the Port Master Plan Amendment for the following general project elements:

1. Change land use designation "Marine-Related Industrial" and "Harbor Services" to "Commercial Recreation", "Park/Plaza", and "Promenade". A small portion of the water area was converted from "Specialized Berthing" to "Recreational Boat Berthing".

2. A 1,200-room Convention Center Hotel with a ballroom of up to 35,000 SF and a public parking garage with up to 2,000 stalls. The hotel tower would be located east of the Park Boulevard view corridor. The amendment provides for a public promenade to extend the length of the waterfront, connecting with the existing northern promenade. An additional 5.3-acre public "Park/Plaza" area

was approved for the foot of Eighth Avenue and allows a public access pier. The plan for the water area also allows a 20- to 30-slip "transit-oriented" marina facility.

3. A 250-room Spinnaker Hotel and tower on the southwesterly portion of the existing R.E. Staite leasehold. The amendment allows development of a public promenade and public-access bridge to connect the hotel and the Convention Center public stairway. A water-taxi/ferry service would also be allowed within the water area of the leasehold.

After further characterization of the marine sediment found within the former Campbell Shipyard basin by Hart Crowser (2000, 2001), Ninyo & Moore, in association with Anchor Environmental, prepared a report titled "Briefing Package, Sediment Remediation and Habitat Alternatives, Former Campbell Shipyard, San Diego, CA" (revised November 5, 2001). The purpose of the report was to develop and compare a variety of remedial alternatives using technical effectiveness, implementability, environmental effects/habitat impacts, and estimated costs as evaluation criteria.

On September 9, 2001, Port Staff met with the Bay Council to discuss the overall remediation requirements for the basin and the general concerns of the various participants. Participants at the meeting included representatives from the Environmental Health Coalition, San Diego Baykeeper, Sierra Club, and Audubon Society.

On June 10, 2002, Port Staff met with state and Federal resource agencies to solicit their input regarding issues of concern related to the various options for remediation of the site. Agencies in attendance included the California RWQCB, California Department of Fish & Game (CDFG), U.S. Fish & Wildlife Service (USFWS), U.S. Army Corps of Engineers (ACOE), and the National Marine Fisheries Service (NMFS).

On January 28, 2003, the Board of Port Commissioners (Board) held a public workshop on the Campbell Shipyard marine sediment remediation. Several remediation alternatives were presented for the site including: excavation and removal, an engineered (thin) cap, a thicker habitat-enhancing cap, and a combination habitat/engineered (thin) cap. Each alternative's advantages and/or disadvantages associated with cost, permitability, and compatibility with a marina facility were presented. The purpose of the workshop was to allow interested parties to address the Board with their position on the alternatives. The Board asked that alternative(s) consider preserving existing deep-water uses.

As a result of the workshop, the Port staff performed additional outreach and development of refined alternatives for this project. Port staff conducted a partnering session on April 15, 2003, with representatives from the Environmental Health Coalition, San Diego Bay Keeper, Port Tenant's Association, and the RWQCB. The purpose of the meeting was to present information to the stakeholders and obtain their input regarding an alternative that maximized deep-water berthing. It was noted that an alternative that would maximize deep-water berthing would need to remove a portion of the shipways from the former shipyard's ship launchways and mole structure, which extend beyond the existing bulkhead line at the terminus of the Park Boulevard view corridor.

2.2 Purpose and Need for the Project

This project is to address contaminated bay sediments at the former Campbell Shipyard facility to meet the requirements of the RWQCB's May 24, 1995 CAO No. 95-21. The objectives of the project are to:

1. Protect public health and improve water quality in the basin through remediation of contaminated sediment.
2. Enhance aquatic habitat for marine and avian species.
3. Provide enhanced public access to the waterfront that is consistent with the policies of Chapters 3 and 8 of the California Coastal Act.
4. Protect and enhance adjoining land and water uses.

2.3 Environmental Procedures

This EIR for the proposed Campbell Shipyard Remediation/Aquatic Enhancement has been prepared in compliance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the procedures for implementation of CEQA set forth in the State CEQA Guidelines (California Code of Regulations Title 14, Section 15000 et seq.). This EIR has also been prepared in compliance with the Port's CEQA Guidelines (Resolution 97-191). The Port is the lead agency for the purpose of this EIR, as defined by Section 15051 of the State CEQA Guidelines.

This EIR is a project EIR, as defined by Section 15161 of the State CEQA Guidelines. This type of EIR examines the environmental impacts of a specific development project, and focuses primarily on the changes that would result from the development project.

This EIR is a supplemental EIR to the South Embarcadero Redevelopment Program 2 and Port Master Plan Amendment EIR, which can be reviewed at the office of the Port. In accordance with Section 15163 of CEQA, a supplemental EIR should be prepared in the event of the following conditions:

(a) The lead or responsible agency may choose to prepare a supplement to an EIR rather than a subsequent EIR if:

(1) Any of the conditions described in Section 15162 would require the preparation of a subsequent EIR, and

(2) Only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

(b) The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised.

(c) A supplement to the EIR shall be given the same kind of notice and public review as is given to a draft EIR under Section 15087.

(d) A supplement to an EIR may be circulated by itself without recirculating the previous draft of the final EIR.

(e) When the agency decides whether to approve the project, the decision-making body shall consider the previous EIR as revised by the supplemental EIR. A finding under Section 15091 shall be made for each significant effect shown in the previous EIR as revised.

2.4 Previous Environmental and Technical Documents

The State CEQA Guidelines (Section 15150) specifically provide for incorporation of relevant existing information by reference, as a means of reducing repetition in environmental documents for related projects, or where other existing information has been recognized as valid and applicable to the subject project. A substantial amount of environmental information, including previously certified environmental documents, is available and is directly applicable to the Alternative 1: Engineered Cap-In-Place.

The certified/approved environmental documents and related studies that apply to the Alternative 1: Engineered Cap-In-Place include the following:

1. *Final Environmental Impact Report for South Embarcadero Redevelopment Program 2 and Port Master Plan Amendment* (SCH No. 1997051014; UPD No. 83336-EIR-435), prepared by P&D Environmental Services, March 2001.

2. *South Embarcadero Urban Design and Signage Guidelines*, prepared by Sasaki Associates, Inc., January 1999 and amended May 2002.

3. *Port District Master Plan*, prepared by the Port, as amended in 2001.

4. *Final Environmental Impact for the South Embarcadero Redevelopment Program 1* (SCH No. 97051014; UPD No. 83356-EIR-338), prepared by the Port, May 1998.

5. *Final Environmental Impact Report for the San Diego Convention Center Expansion and Port District Master Plan Amendment* (SCH No. 81061702; UPD No. 83356-EIR-3), prepared by the Port, November 1995.

6. *South Embarcadero Urban Development Framework Plan*, prepared by Sasaki Associates, Inc., September 1996.

7. *Subsequent Environmental Impact Report to the Final Master Environmental Impact Report for the Centre City Redevelopment Project and Addressing the Centre City Community Plan and Related Documents for the Proposed Ballpark and Ancillary Development Projects, and Associated Plan Amendments*, prepared by Centre City Development Corporation, May 12, 1999.

8. *Final Master Environmental Impact Report for the Centre City Expanded Redevelopment Plan and Centre City Community Plan* (SCH No. 90010898), prepared by the Centre City Development Corporation (CCDC), April 1992.

9. *Final Environmental Impact Report on the Master Plan* (SCH No. 78030604; UPD No. 78102-EIR-1), prepared by the Port, February 1980.

Each of these documents is hereby incorporated by reference. Applicable data and analyses from these environmental and technical reports are summarized, where appropriate, and referenced to the source document.

These previous environmental and technical reports are available for public review during normal business hours at the Port Clerk's Office, San Diego Unified Port District, 3165 Pacific Highway, San Diego, California 92112.

2.4.1 Notice of Preparation and Responses

The Port published a Notice of Preparation (NOP) on March 18, 2002, describing its intent to prepare a Draft Environmental Impact Report (DEIR) for the proposed Campbell Sediment Remediation/Aquatic Enhancement (UPD No. 83356-550). The NOP was mailed to over 125 agencies and organizations to solicit their comments on the scope and content of the environmental analysis to be included in the EIR. In addition, other interested individuals and groups received a notice of availability of the NOP. A notice of availability was published on March 18, 2002, in the San Diego Union Tribune and the Daily Transcript. The following is a list of those respondents who submitted comments in response to the NOP within the 30-day comment period.

- California Department of Fish and Game
- Campbell Shipyard
- California Department of Toxic Substance Control
- National Marine Fisheries Service
- City of San Diego Water Department

Copies of the NOP and the NOP distribution list are contained in Appendix A of this EIR.

2.5 Scope of this EIR

The initial identification of general areas of environmental impact to be addressed in this EIR is contained in the environmental considerations section of the NOP issued for this EIR by the Port, in accordance with the Port's CEQA Guidelines.

The comments received in response to the NOP (Appendix A) were used to determine the scope of this Draft EIR. As provided by the State CEQA Guidelines, the impact analysis documented in this EIR focuses on potential significant effects, which have been identified in the following areas:

- Marine Biological Resources
- Water Quality
- Geology/Soils
- Air Quality
- Noise
- Traffic and Circulation
- Navigational Safety

The analysis for this Draft EIR identified a number of areas of potential environmental concern where no significant impacts are anticipated as a result of implementing the Alternative 1: Engineered Cap-In-Place. Those issues for which effects were found not to be significant include: aesthetics, agricultural resources, cultural resources, hazards and hazardous material, land use/planning, population/housing, and utilities/service systems. These are described in Section 6.3 of this EIR, and are not discussed in further detail in the EIR (State CEQA Guidelines, Section 15128).

2.6 Intended Uses of this EIR

This EIR will be considered by the Board in their decisions regarding the following action:

- Issuance by the Port of a Coastal Development Permit.

Other agencies may use the information contained in this EIR when considering issuance or authorization of the requisite permits for construction of the specific enhancement or remediation project addressed herein. Other agencies that may have discretionary approval or permitting authority over the project include:

- U.S. Army Corps of Engineers (Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act).
- United States Fish and Wildlife Service (USFWS Coordination Act and Endangered Species Act).
- National Marine Fisheries Service (USFWS Coordination Act, Endangered Species Act, and Marine Mammal Protection Act).
- Regional Water Quality Control Board (Section 401 of the Clean Water Act, Cleanup and Abatement).
- California Department of Fish and Game (Section 1601 of the Streambed Alteration Agreement and California Endangered Species Act).
- California Water Code for waste discharge requirements.
- State Lands Commission.

2.7 Areas of Controversy

- Navigational safety: Concern by the Tenth Avenue Marine Terminal that activities associated with the remediation project could affect navigational safety.

- Selection of appropriate remediation for hazardous materials: Concerns were raised regarding the effectiveness of various alternatives.

3.0 PROJECT DESCRIPTION

The following is a description of the technical, economic, environmental, and engineering components of the project. See Appendix B for more detailed information. The following presents the project location, environmental setting, and a description of the project's construction characteristics. A more detailed discussion can be found in the project descriptions technical memorandum located in Appendix B.

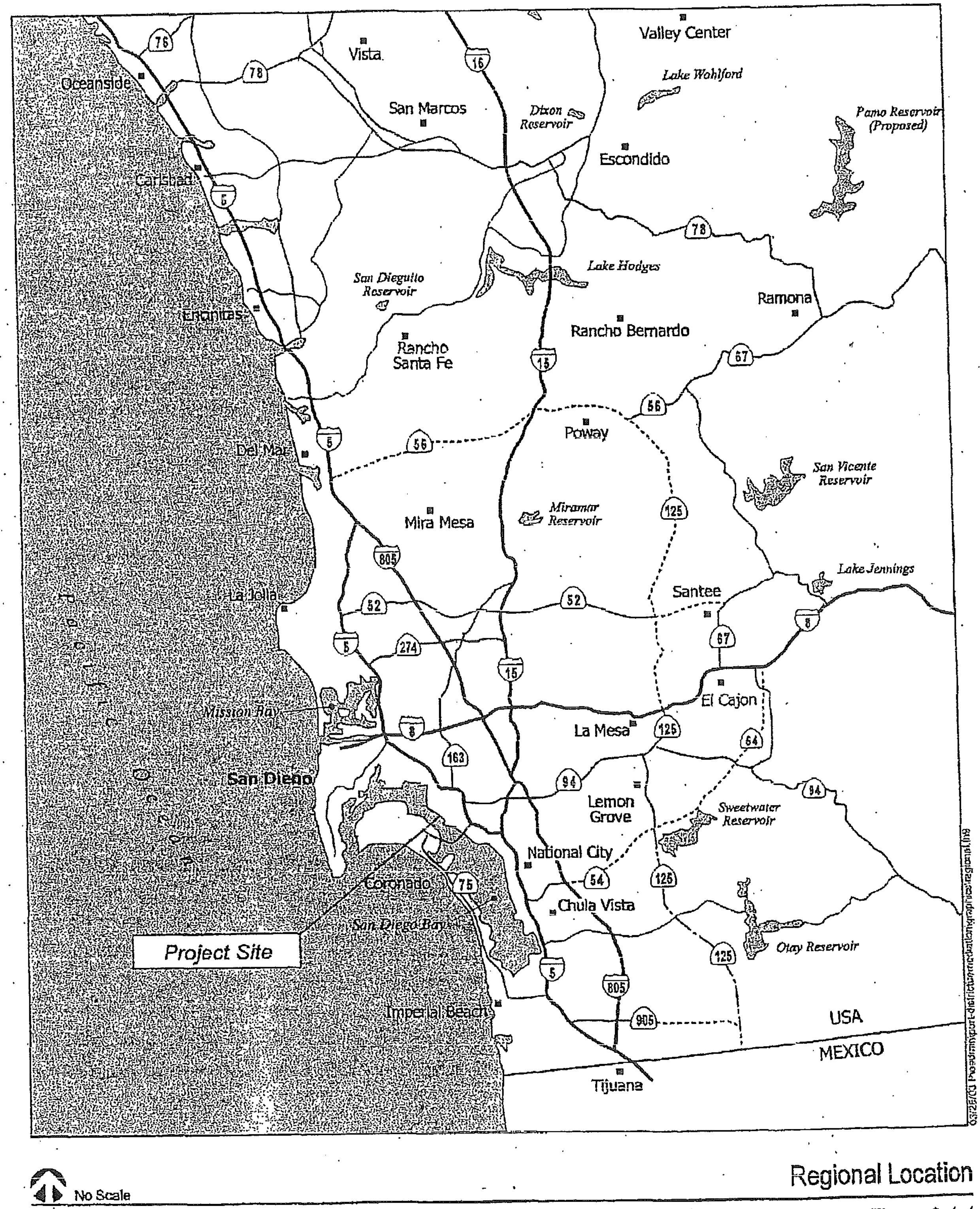
3.1 Project Location

The proposed project is located in the San Diego Unified Port District's (Port's) Centre City Embarcadero Planning District (Planning District 3) just south of the South Embarcadero Redevelopment Program 1 area in the City of San Diego (Figures 3.1-1, 3.1-2, and 3.1-3). The project site consists of approximately 12.7 acres of submerged tidelands and shipways located within the former Campbell Shipyard at the foot of Eighth Avenue (Figure 3.1-4). The project site is bordered by a concrete bulkhead along the waterfront, the Tenth Avenue Marine Terminal along the southeast, the San Diego Convention Center and Embarcadero Marina Park South to the northwest, and open water and shipways of the San Diego Bay to the south.

3.2 Environmental Setting

The marine habitat adjacent to the former Campbell Shipyard consists of approximately 12.7 acres of open-water areas with depths to about -33 feet Mean Lower Low Water (MLLW). Bathymetry at the site varies substantially due to the former presence of shipways, dry docks, and berths. It ranges from +7.8 to -33 feet MLLW. Under current National Marine Fisheries Service operational definitions, the entire area below the high tide line (+7.8 feet MLLW) is considered Essential Fish Habitat.

Demolition of the piers was completed on April 16, 2001. Old timber piles from the subtidal zone and debris on the waterfront have been removed. A concrete bulkhead borders the waterfront, and the land along the shoreline supports little vegetation. A concrete ship launchway in the central part of the waterfront provides a sloping habitat, with a hard substrate consisting of rocks and concrete. Dive surveys of the entire area (Littoral, 2000a and 2000b) reported that the substrate consists mostly of soft sediments comprised of predominantly fine, sandy-silt. However, water of about -10 feet MLLW and shallower supported either eelgrass or various species of red algae. Scattered debris in the subtidal zone provides a limited amount of hard substrate. The following habitats have been identified within the former Campbell Shipyard leasehold:

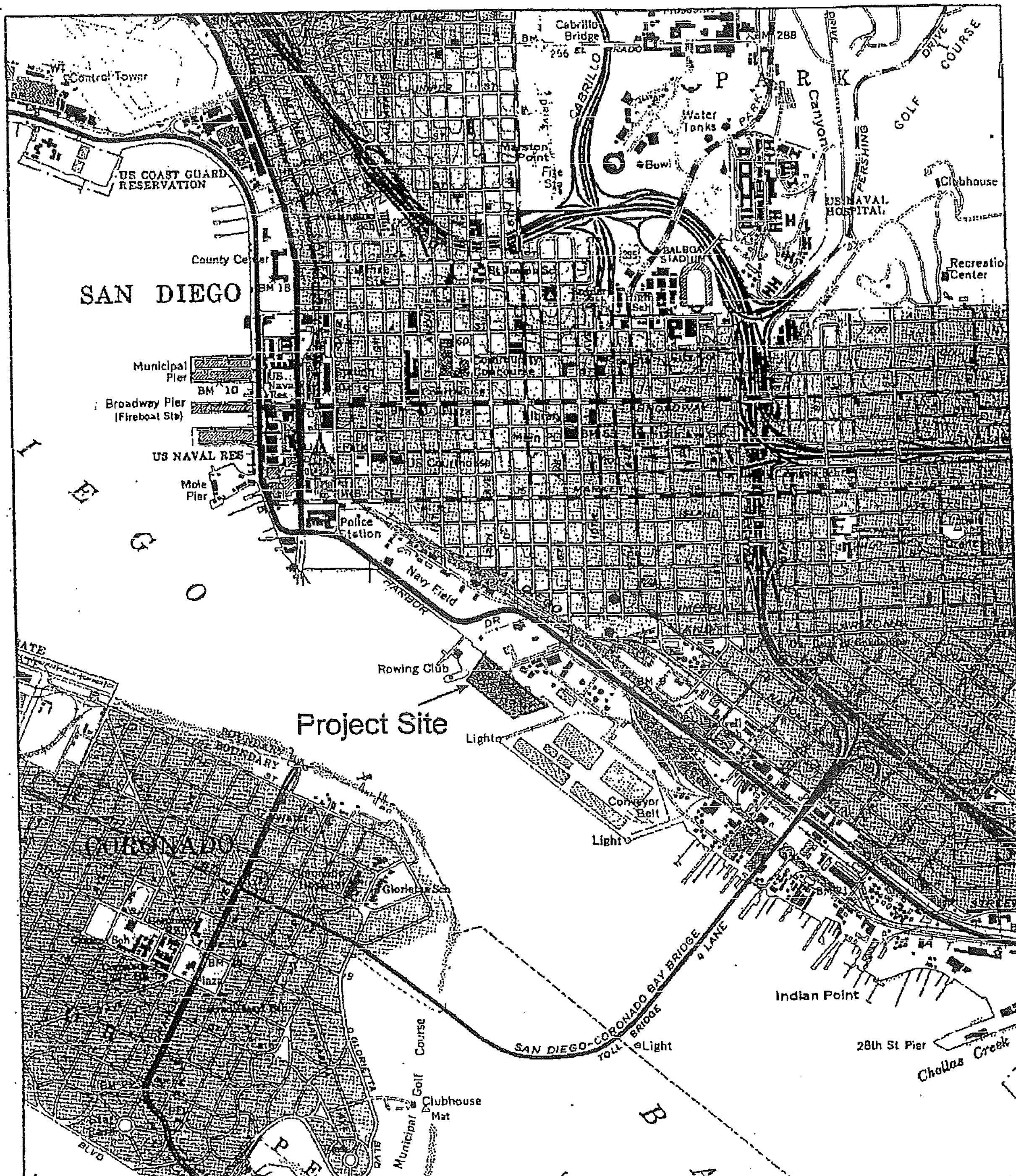


Regional Location

Figure 3.1-1

P&D Environmental Services

CBL-P031140



Source: USGS Point Loma Quadrangle

1 Inch = 2400 feet

Vicinity Map

Figure 3.1-2

P&D Environmental Services

- Eelgrass
- Soft-Bottom Invertebrate Community
- Piling, Bulkhead, and Concrete Debris Invertebrate Communities
- Fish
- Birds
- Marine Mammals

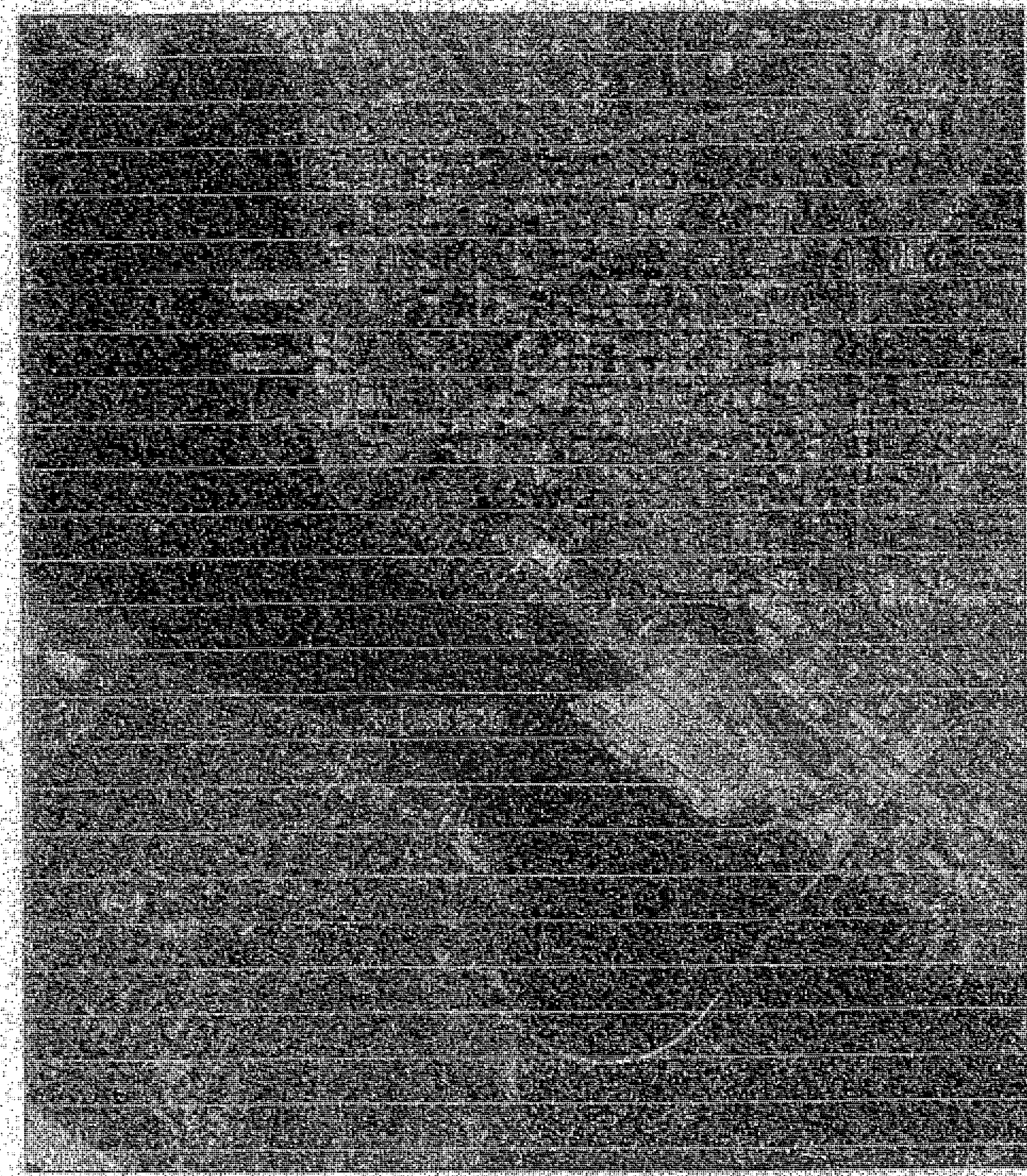
3.3 Project Description

The Alternative 1: Engineered-Cap-In-Place involves the construction of an engineered cap over affected sediment containing constituents of concern (COCs) at concentrations greater than cleanup levels. These cleanup levels, established by the Regional Water Quality Control Board's (RWQCB) Cleanup and Abatement Order (CAO), are as follows:

Constituent	Cleanup Level Dry Weight (mg/kg)
Copper	810
Zinc	820
Lead	231
Total Petroleum Hydrocarbons (TPH)	4,300
High-Molecular-Weight Polynuclear Aromatic Hydrocarbons (HPAHs)	44
Polychlorinated Biphenyls (PCBs)	0.95
Tributylin (TBT)	5.75

Note: mg/kg = milligrams per kilogram.

The Alternative 1: Engineered Cap-In-Place also will include the construction of a protected area to mitigate for the loss of existing eelgrass as a result of construction activities. The engineered cap is expected to consist of 3 to 5 feet of clean sand, gravel, and armoring materials designed to protect against migration and breakthrough of underlying chemical contaminants, provide a clean surface habitat for flora and fauna, protect against boat propeller wash and other erosive forces, and act as a barrier to bioturbation from deep burrowing marine species. Figure 3.3-1 shows the different features associated with this alternative, and Figure 3.3-2 shows the cross sections of this alternative.

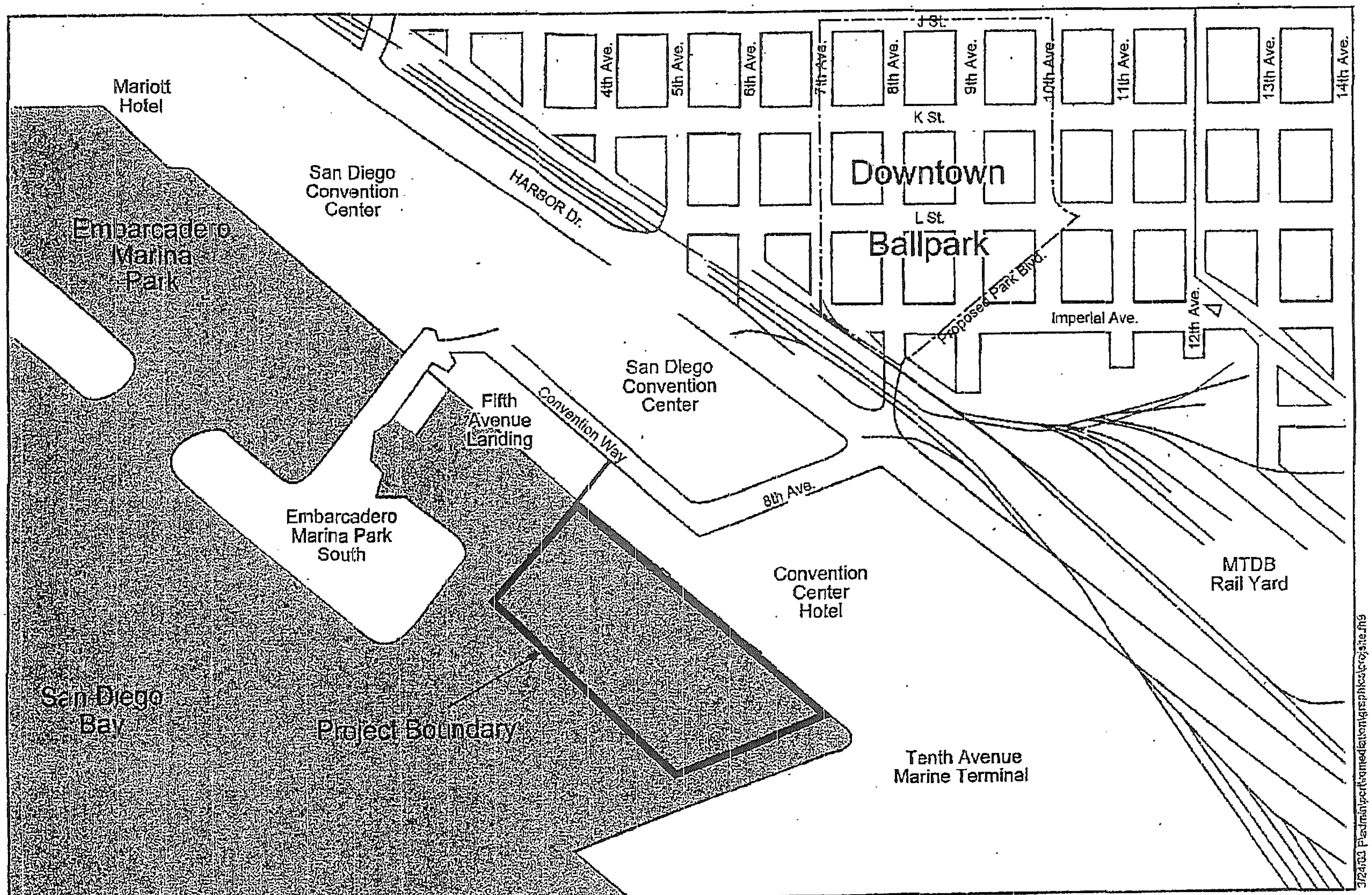


1 inch = 1900 feet

Aerial Photograph

P&D Environmental Services

Figure 3.1-3



Source: Centre City Development Corporation

No Scale

P&D Environmental Services

Project Site

Figure 3.1-4

CBL-P031144

The cap surface will generally follow the contour of the existing bay bottom, with the following exceptions:

- The northern part of the shipways will be demolished and dredged to remove petroleum- and PCB-contaminated soils. The final elevation after dredging will allow construction of a sediment cap that is suitable for providing approximately 1 acre of eelgrass habitat between –4 and –6 feet Mean Lower Low Water (MLLW). Demolition of the ways will include removal of concrete, steel rails, piles supporting the rails, and steel sheetpiling, which will either be recycled or disposed of at appropriate upland facilities. Approximately 18,000 cubic yards (CY) of sediment will be dredged and disposed of from the shipways area. The shipways demolition is expected to create approximately 18,000 square feet (SF) of water area, if the southern mole pier is left in place.

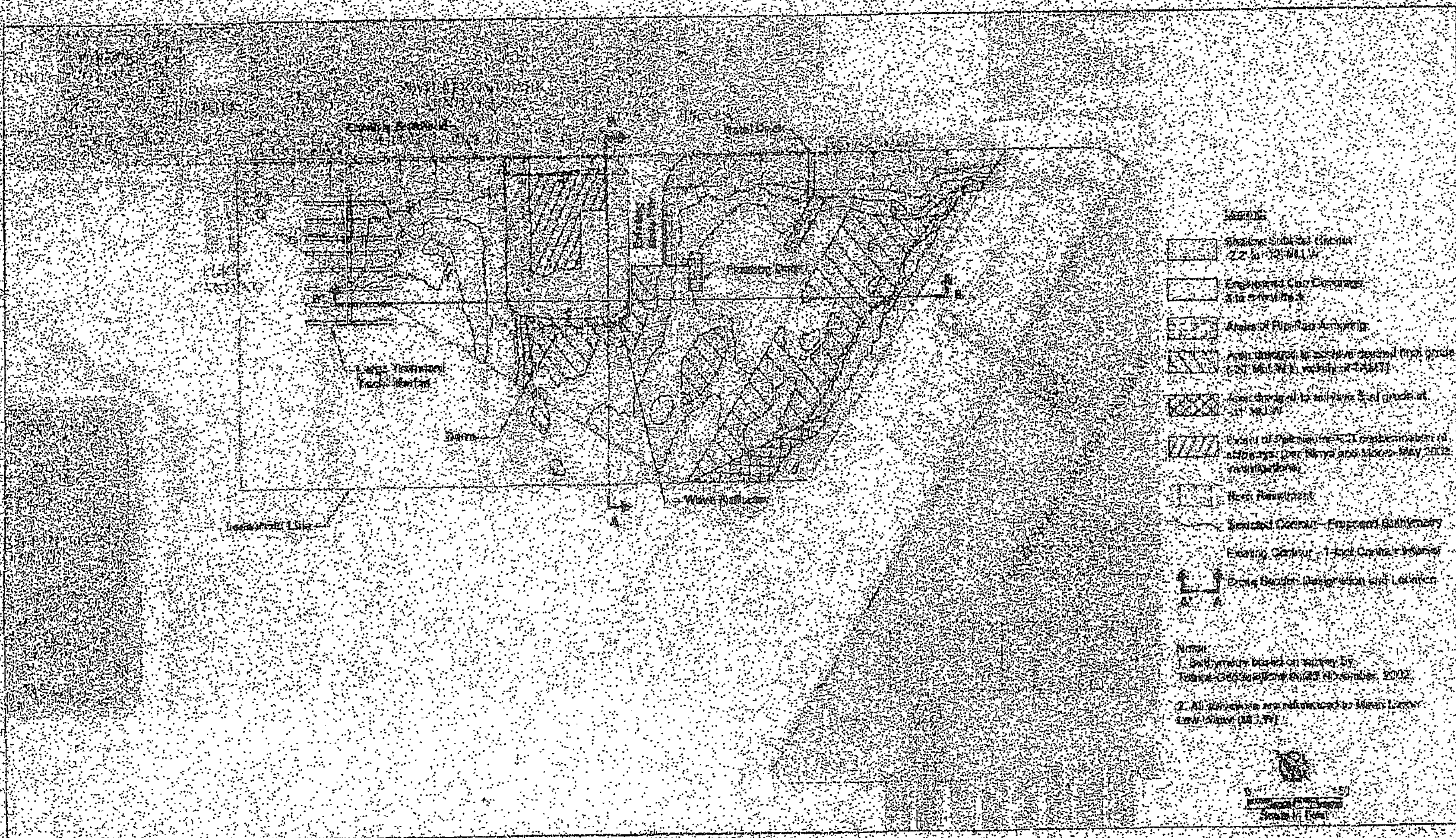
- Shallow areas in open water areas that could pose a hazard to navigation will be dredged to appropriate depths before capping.

- A deep water engineered cap will be constructed adjacent to and parallel with the Tenth Avenue Marine Terminal (TAMT) to provide a sufficient depth for navigation and berthing at the TAMT. It is estimated that this engineered cap will be approximately 5 feet thick, comprised of sand and gravel layers, and include a surficial layer of armoring materials that will resist scour effects from the propeller washes of vessels that call at the TAMT. The top of the engineered cap on the TAMT side will reach an elevation of -20 feet MLLW. To construct this cap and maintain navigation depths, approximately 11,500 CY of sediment will need to be dredged and disposed of offsite. The surface of the engineered cap on the north side of the habitat cap will be no shallower than elevation -15 feet MLLW for recreational boat maneuvering.

Most surface areas of the cap near the TAMT will require placement of armoring material to prevent erosion by propeller wash from boats that call on the TAMT, and other potential recreational boat traffic. The edges of the cap will also require revetment or armoring for slope stability. The area set aside for eelgrass habitat requires construction of a wave screen and a retaining berm. These features will help protect the eelgrass mitigation area from potential propeller washes associated with tugboats operating at the TAMT, and other vessels.

Other Features

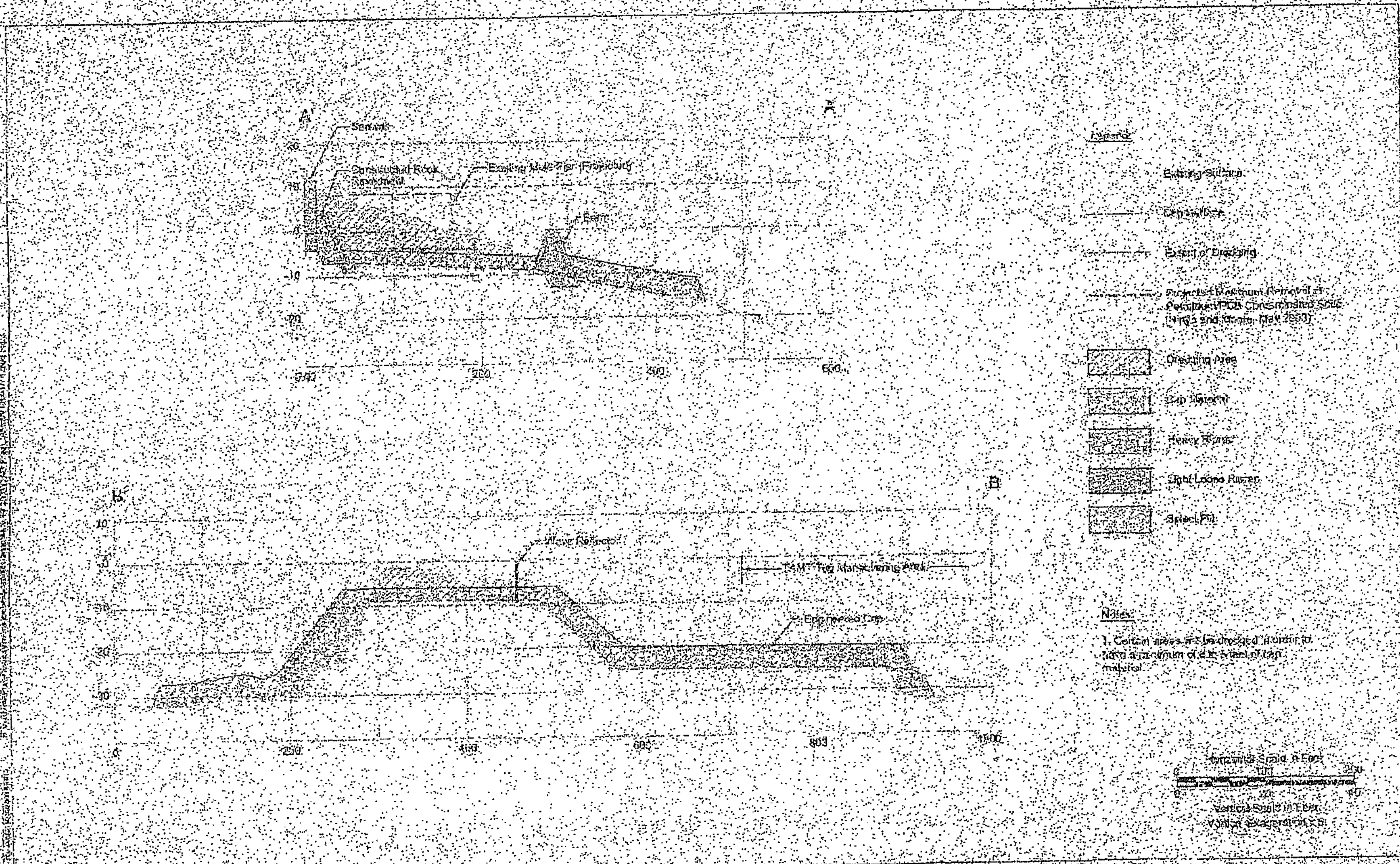
This alternative includes stabilization and reconfiguration of part of the existing seawall. The seawall south of the shipyard ways will be extended towards the Bay to realign it with the existing seawall north of the shipyard ways. This realignment will remove approximately 2,500 SF of intertidal habitat and water area. Seawall stabilization will also include the placement of a revetment along the seawall to provide stability in case of an earthquake.



Plan View of Alternative 1, Engineered Cap-in-Place

Figure 3.3-1

CBL-P031146



Cross Sections - Alternative 1 - Engineered Cap-In-Place

Figure 3.2

PnD Environmental Services

CBL-P031147

As noted previously, the existing southern mole pier may be left in place to function as a public access pier. Retrofitting the pier for stabilization and aesthetic value will involve driving new, corrosion-proof sheetpiling around the perimeter of the mole, filling the space between the new sheetpiling and the existing mole with concrete grout, and adding fill material and a new concrete slab-on-grade over the top of the existing mole.

A floating dock (measuring 20 feet by 60 feet) may be constructed off of the southern edge of the retrofitted mole pier, as indicated on the plan figure. The floating dock will be connected to the mole pier with an Americans with Disabilities Act (ADA)-accessible gangway ramp which runs along the edge of the mole pier for a portion of its length, and then extends southwards to the dock. In addition, an approximately 2,800-SF dock may be located over the cap for hotel use on the south side of the property, and a large transient marina may be built on the northern portion of the leasehold area, to accommodate private vessels. This marina would provide 20 to 30 transient oriented slips, as previously evaluated in the South Embarcadero Redevelopment Program 2 and Port Master Plan Amendment Final EIR (2001).

Schedule

This alternative is anticipated to require about six to nine months to construct.

Environmental Effects

The Alternative 1: Engineered Cap-in-Place will impact 9.1 acres of the site. The approximate net change in area for each habitat zone in the alternative is summarized in Table 3.3-1.

Table 3.3-1
Net Change in Habitat Zone Area for the Alternative 1: Engineered Cap-in-Place (all quantities in acres and all elevations in feet MLLW)

Habitat Zones	Upland >+7.8 feet	Intertidal +7.8 to -2.2 feet	Shallow Subtidal -2.2 to -12 feet	Moderately Deep Subtidal -12 to -20 feet	Deep Subtidal <-20 feet
Baseline Condition[1]	0.2	1.2	1.5	2.6	7.4
Postconstruction Condition[2]	0.2	0.3	3.3	4.2	4.9
Net Change[3]	0	-0.9	+1.8	+1.6	-2.5

Notes: (1) Based on existing site bathymetry within the leasehold line, from surveys by Thales (2002) for offshore and subtidal areas, and Port (2003) for intertidal and upland areas.
(2) Assumes that the southern mole pier is left in place.
(3) Net change in habitat zone area was developed using the entirety of the leasehold and capping footprint (12.9 acres).

The cap will cover the existing colonized marine subgrade and approximately a third of an acre of eelgrass. These environmental effects will be offset by the creation of approximately 1 acre of substrate between the elevations of -4 and -6 feet MLLW in the reclaimed shipways area (an optimal elevation range for eelgrass establishment). The cap will also provide a clean substrate for benthic organisms to recolonize, and the flatter topography will facilitate invertebrate colonization and fish utilization. These features increase the biological value of the area over existing conditions. It is anticipated that it will take approximately one to three years for the site to return to full function.

The hotel dock and the transient marina will provide greater access for large recreational boats to the bay; however, these structures will produce approximately 0.4 acre of shaded areas that inhibits the biological productivity of the area. In addition, there are increased risks of water quality contamination in these areas by boat fuels, cleaners, paints, and waste systems.

4.0 ENVIRONMENTAL ANALYSIS

4.1 Marine Biological Resources

Information in this section is summarized from the San Diego Convention Hotel and Fifth Avenue Landing Hotel Port District Master Plan Amendment Marine Oceanographic and Biological Assessment, prepared by MBC Applied Environmental Sciences (MBC), January 2000; "Area/Extent of Eelgrass in San Diego Bay Adjacent to Campbell Shipyard" prepared by Littoral Ecological and Environmental Services (LEES), April 2000; "Technical Memorandum, Sediment Remediation Alternatives Evaluation, Former Campbell Shipyard, San Diego, California" prepared by Ninyo & Moore Geotechnical and Environmental Sciences Consultants, June 2001, and other sources.

4.1.1 Existing Conditions

4.1.1.1 Existing Habitats

Marine habitat adjacent to the former Campbell Shipyard consists of 12.7 acres of open water habitat including intertidal [-2.2 to +7.8 feet Mean Lower Low Water (MLLW)], shallow subtidal (-12 to -2.2 feet MLLW), moderately deep subtidal (-20 to -12 feet MLLW), and deep subtidal (-20 feet MLLW and lower) habitats. The surrounding upland habitat is highly urbanized. The project site is bordered along the waterfront by a concrete bulkhead that supports a limited amount of weedy vegetation. The Tenth Avenue Marine Terminal borders the site to the southeast, the San Diego Convention Center and Embarcadero Marina Park South to the northwest, and open water and shipways of San Diego Bay to the south. The project site is located in what is known as the North-Central Ecoregion of San Diego Bay [Allen, 1998; U.S. Navy and San Diego Unified Port District (Port), 2000].

Bathymetry at the site varies substantially due to the presence of old shipways and dry dock berths (>-33 to +7.8 feet MLLW). Old piers, timber piles, and debris from the subtidal zone and on the waterfront have been removed. A concrete ship launchway in the central part of the waterfront provides sloping intertidal habitat with a hard substrate consisting of rocks and concrete. Habitat types in the project area include shallow water (intertidal and shallow subtidal), open water (moderately deep subtidal and deep subtidal), soft bottom (consisting of sand, silt, clay, or mud), and rocky (riprap) habitats. Dive surveys of the area conducted in 2000 reported that the bottom substrate consists primarily of a soft-bottom habitat composed of fine, sandy-silt (LEES, 2000). Scattered debris provides a limited amount of hard substrate (LEES, 2000). The shallow subtidal habitat in the northern portion of the project site supports eelgrass, sea lettuce, Sargassum, and various species of red algae.

Surveys by MBC in December 1999, LEES in 2000, and Ninyo & Moore in 2001 documented biological resources within the project site. The San Diego Bay Integrated Natural Resources Management Plan and additional marine resource surveys of San Diego Bay conducted by Ogden Environmental and Energy Services ("Ogden") in 1993 and 1994, and by Allen from 1994 to 1998, serve as additional sources indicating past species occurrence and species having the potential to occur in the project site.

4.1.1.2 Mammals

Two pinnipeds, the California sea lion and the Pacific harbor seal, are abundant along the coast of southern California and are regularly observed in San Diego Bay. These species are most often sighted in the channels of north and central San Diego Bay (U.S. Navy, 1995), and are known to use harbor areas, such as those in and adjacent to the project site, for feeding and hauling out.

The coastal bottlenose dolphin is observed in San Diego Bay almost every day, particularly in the northern channels (U.S. Navy and Port of San Diego, 2000). This species tends to stay within these relatively deep channels where prey is most abundant, and is thus unlikely to occur within the project site (MBC, 2000). The California gray whale passes San Diego Bay twice yearly during its migration from the Bering Sea to Baja California and back, and infrequently enters the north Bay channels. It is unlikely to occur in the relatively shallow waters of the project site. There is no evidence that San Diego Bay is a critical breeding or feeding habitat for these cetaceans (MBC, 2000).

Other marine mammals that are common in southern California and have the potential for isolated occurrences in the Bay are the northern elephant seal, long-beaked common dolphin, pacific white-sided dolphin, short-finned pilot whale, minke whale, and finback whale (Port and U.S. Navy, 1999).

4.1.1.3 Sea Turtles

The green sea turtle is a state and federally listed endangered species that has established a population in San Diego Bay. This species, which prefers warm, tropical waters, has been reported near the South Bay Power Plant discharge channel [San Diego Gas and Electric Company (SDG&E)]. During the day, the reptiles have been observed in and around the discharge channel, while at night they feed on eelgrass beds in the South Bay (Stinson, 1984). Green sea turtles are herbivores, feeding primarily on algae and eelgrass. It would be considered very unusual for a green sea turtle to occur in the project site, due to the distance from the established population and cooler water temperature. Leatherback, loggerhead, and Pacific Ridley's sea turtles have not been observed anywhere in San Diego Bay.

4.1.1.4 Water-Associated Birds

San Diego Bay provides an important habitat for millions of birds. It is part of the Pacific Flyway, the corridor for birds flying between breeding grounds to the north and wintering sites to the south. One third of birds dependent on San Diego Bay are recognized as sensitive or declining by federal or state governments or the Audubon Society. The majority of birds found in the Bay use it as a resting or feeding area during migration; others are overwintering birds using the Bay for food, shelter, and as a resting and staging area before migration. Overall, bird abundance and biomass are generally higher in winter, when large numbers of northern migrants are present.

Three surveys conducted in 1993 and 1994 provide information on the abundance, distribution, and diversity of bird populations utilizing the North-Central Ecoregion of the San Diego Bay [Ogden, 1994; U.S. Fish and Wildlife Service (USFWS), 1994 and 1995]. Overall bird abundance during these surveys was highest in December and lowest in June. A 1993 study by the U.S. Navy (U.S. Navy, 1994) found 70 waterbird species in northern San Diego Bay, with the greatest number occurring from September through January. This study classified the former Campbell Shipyard as a low use site for all categories of birds.

Waterfowl are birds that swim and are dependent on water. Waterfowl are common residents of bay waters. Most waterfowl seen in the Bay are temporary visitors from the north, stopping in the area on their southern migration. Abundant waterfowl in the Bay include surf scooter, Clark's grebe, western grebe, lesser scaup, greater scaup, bufflehead, black brant, cinnamon teal, American wigeon, ruddy duck, and mallard (Ogden, 1994; USFWS, 1994 and 1995). Numerous grebes were seen feeding in the waters adjacent to the project site during a site visit in December 1999 (MBC, 2000).

Shorebirds are birds that are dependant on beaches and shallow water habitats for foraging and/or nesting habitat. Shorebirds in Southern California are present mainly in winter months, with many feeding in intertidal habitats, especially estuaries and beaches (Dailey et al., 1993). Shorebirds use intertidal flats for foraging and upland transitional areas for nesting. Shorebird abundances have been affected by the loss of shoreline habitat due to the armoring of the shoreline in San Diego Bay. Their choice of feeding location is influenced by soil characteristics and prey density (Port and U.S. Navy, 1999). Shorebirds abundant in San Diego Bay include western sandpiper, least sandpiper, red-necked phalarope, marbled godwit, willet, black-bellied plover, long-billed dowitcher, and short-billed dowitcher (Ogden, 1994; USFWS, 1994 and 1995). In the Bay, the peak number of shorebirds is in August, during the fall migration (USFWS, 1994).

Seabirds are those birds that reside or spend portions of their life cycle on or near offshore waters, feeding on fish, squid, and crustaceans (U.S. Navy and Port, 2000). Seabirds abundant in San Diego Bay include California brown pelican, elegant tern, Foster's tern, Heerman's gull, western gull, double crested cormorants, Brandt's cormorant, and black skimmer (Ogden, 1994; USFWS, 1994 and 1995). Western gulls were seen feeding in the vicinity of the project site during a site visit in December 1999 (MBC). A California brown pelican was also observed in the water in the middle of the basin in December 1999 (MBC, 2000). The California least tern breeds in San Diego Bay between April and September. Nesting colonies have been observed at the North Island Naval Air Station and at Lindbergh Field, about 2 miles and 1.5 miles from the project site, respectively (MEC, 1999), making the former Campbell Shipyard a possible feeding area for these colonies (Ninyo & Moore, 2001).

Marsh birds are birds that are dependent on marsh habitat for foraging and/or nesting. Four species of marsh birds were observed during the three San Diego Bay surveys in 1993 and 1994: great blue heron, snowy egret, great egret, and black-crowned night heron (Ogden, 1994; USFWS, 1994 and 1995). In general, egrets and herons feed on fish, shrimp, insects, and other prey items. Black-crowned night herons are common in harbors, perching on masts and piers as hunting and/or roosting platforms. Great blue heron feed in shallow waters, on wetland shorelines, and on tidal flats and sandbars (Dailey et al., 1993).

4.1.1.5 Fish

San Diego Bay provides habitat types that support a large diversity of fish species. Numerous studies have helped characterize the diverse fish fauna residing in and visiting the Bay. Comprehensive work by Allen from 1994 to 1998 documented 79 fish species in San Diego Bay (Allen, 1998). Of 54 species collected in the North-Central Ecoregion, northern anchovy, topsmelt, slough anchovy, and jacksmelt comprised 92% in terms of numbers. In terms of biomass, round anchovy, spotted sand bass, and northern anchovy were dominant species.

The four most numerically abundant species in the studies by Allen are all near-shore schooling species common in southern California near-shore waters and embayments (Miller and Lea, 1972; Fitch and Lavenberg, 1971 and 1975). Together, these four species are important prey for shorebirds and sea lions. These fish species have been, or are likely to be, found throughout the project site. A school of juvenile northern anchovy was observed in the near-shore surface waters adjacent to the project site during the December 1999 site visit (MBC, 2000), and topsmelt were observed in the project site during eelgrass surveys performed by LEES in 2000 (Ninyo & Moore, 2001). Other near-shore schoolers collected in the North-Central Ecoregion include Pacific sardine, California grunion, deepbody anchovy, Pacific (or chub) mackerel, and shiner perch.

Bottom-dwellers common to the area include round stingray, California halibut, diamond turbot, and spotted turbot. A round stingray was observed in the project site during LEES eelgrass surveys (Ninyo & Moore, 2001). Another important group of fishes common in the region is the gobies. Cheekspot goby, arrow goby, and shadow goby are shallow-water fishes associated with artificial habitats in San Diego Bay (Allen, 1998). These small fish are common in bays and estuaries.

The riprap, bulkheads, piers, and other structures once present in the waters adjacent to the project site provided habitats for several fish species, including barred sand bass, spotted sand bass, and black perch. In the surveys conducted by Allen (1998), barred sand bass was more abundant than spotted sand bass in the region encompassing the current project site, but spotted sand bass contributed much more to overall fish biomass. These two species are sought by sportfishers throughout the Bay. LEES observed barred sandbass and spotted sandbass, pipefish, and pile perch in the project site during their surveys in 2000.

Eelgrass beds support diverse benthic infaunal and fish communities. Fish observed in eelgrass beds in San Diego Bay include barred and spotted sandbass, kelp bass, topsmelt, bat ray, round stingray, California halibut, diamond turbot, striped mullet, black perch, white seaperch, garibaldi, bay goby, and opaleye (MBC, 2000). Opaleye and black surfperch were observed in the project site during the LEES surveys.

The Pacific Fishery Management Council lists 87 species of fish as managed species relative to the Essential Fish Habitat (EFH) for West Coast groundfish and coastal pelagic species, one of which (northern anchovy) has been observed within the project site. Five other listed EFH species have the potential to occur in the project site (Ninyo & Moore, 2001). These are the northern anchovy, Jack mackerel, Pacific sardine, Pacific (chub) mackerel, and California scorpionfish [Pacific Fishery Management Council (PFMC), 1998a and 1998b].

4.1.1.6 Intertidal and Subtidal Epibiota

The project site shoreline consists of concrete bulkheads with intertidal and shallow subtidal riprap of medium boulders. This hard substrate provides intertidal and subtidal habitats for both attached and motile invertebrate species which, in turn, provide food for numerous fish species. Intertidal communities in the former Campbell Shipyard, as on most rocky shores, exhibit vertical zonation, where organisms inhabit specific zones determined by the frequency of tidal inundation. In areas with little or no wave action, such as the project site, this zonation tends to form distinct, narrow horizontal bands (MBC, 2000). Resident intertidal/subtidal epibiota present in the project site include barnacles in the splash zone/upper intertidal zone, transitioning into the lower intertidal zone consisting of oyster, clam, and bay mussel. Bulkheads and areas of concrete debris in shallow subtidal areas of the project site were observed supporting mussels, oysters, anemones, Sargassum, and considerable growths of red and green algae (MBC). The site is also likely to support crab species, tunicates, bryozoans, sponges, nudibranchs, and barnacles (U.S. Navy and Port, 2000; Peeling, 1975). Due to the removal of the piers, timber piles, and portions of the bulkhead in 2001, the assemblage of rocky-intertidal epibiota at the project site has likely decreased since the surveys summarized in this report.

At sites similar to the project site, the intertidal community may reach 3,000 individuals per square meter at the midtide level, and a little more than twice that amount at the low-tide level (MEC, 1988). The intertidal communities at the project site were found to be typical for embayments (MBC, 2000). These communities re-establish themselves following disturbance by settlement of planktonic larvae of sessile organisms (barnacles, mussels, algae, tunicates, and bryozoans), migration of motile animals (limpets, chitons, slippersnails, and large mussels), and expansion and growth from adjacent areas (colonial anemones) (MEC, 1988). Intertidal and subtidal communities tend to take one to three years after disturbance to return to previous levels of species richness and diversity (MBC, 2000).

4.1.1.7 Benthic Infauna

Benthic infauna (bottom-dwelling animals) are macroscopic (visible to the eye) animals that live in the top layers of sediment in intertidal, subtidal, and deep-water habitats. Their composition and distribution depends on the sediment composition and environmental toxicity. Of primary importance are the sediment characteristics, such as grain size, distribution, density, and water content (Gray, 1974; Rhoades, 1974; Keeley, 2001). Benthic species feed primarily on detritus suspended in the water and deposited in the sediments, and are more abundant in silts and clays, due to the large surface-area-to-volume ratio of these sediment types (U.S. Navy and Port, 2000). A 1998 study of benthic animals in soft-bottom shallow subtidal waters near the foot of Laurel Street (about 1 mile north of the project site) indicates that the most abundant taxa of invertebrates are polychaetes (marine worms; 70.3%), mollusks (snails and clams; 16.7%), and crustaceans (crabs, shrimp, and amphipods; 10.6%) (MEC, 1998). By weight, mollusks have the greatest biomass (47% of the total), followed by crustaceans (35.2%), and polychaetes (14.2%).

Studies of benthic species at the former Campbell Shipyard reported similar species compositions. The introduced Japanese mud mussel and nematodes were very abundant in the near-shore sediment (Ninyo & Moore, 2001). During eelgrass surveys, epifaunal organisms observed included bubble snail, opistobranch, blue mussel, Japanese mud mussel, sea anemones, large anemone, and burrows of snapping shrimp (LEES, 2002b). Other macroinvertebrates that may be present within the project site include gastropods, mollusks, sponges, larger crustaceans, and tunicates (U.S. Navy and Port, 2000).

4.1.1.8 Plankton

Plankton are small, free-floating organisms in the marine environment. Phytoplankton are photosynthetic organisms and are primary producers, composing the first trophic level of the marine food chain. Zooplankton are invertebrate adults or larvae that generally prey on phytoplankton and other organic material. Ichthyoplankton refers to the planktonic egg and larval stages of bony fish.

Few studies have been performed examining the compositions of planktonic communities in San Diego Bay. Studies in the Shelter Island Yacht Basin, near the 32nd Street Naval Station, determined the most abundant phytoplankton to be the diatoms and dinoflagellates.

The best available data on zooplankton communities in the project site comes from studies performed by SDG&E at the Silvergate and Station B Power Plants prior to 1980 (SDG&E, 1980a and 1980b). The most abundant zooplankton in these surveys were adult and juvenile forms of *Acartia* ssp. and *Callianassa* ssp.. Individual species densities ranged from 0 to almost 200,000 organisms per cubic meter.

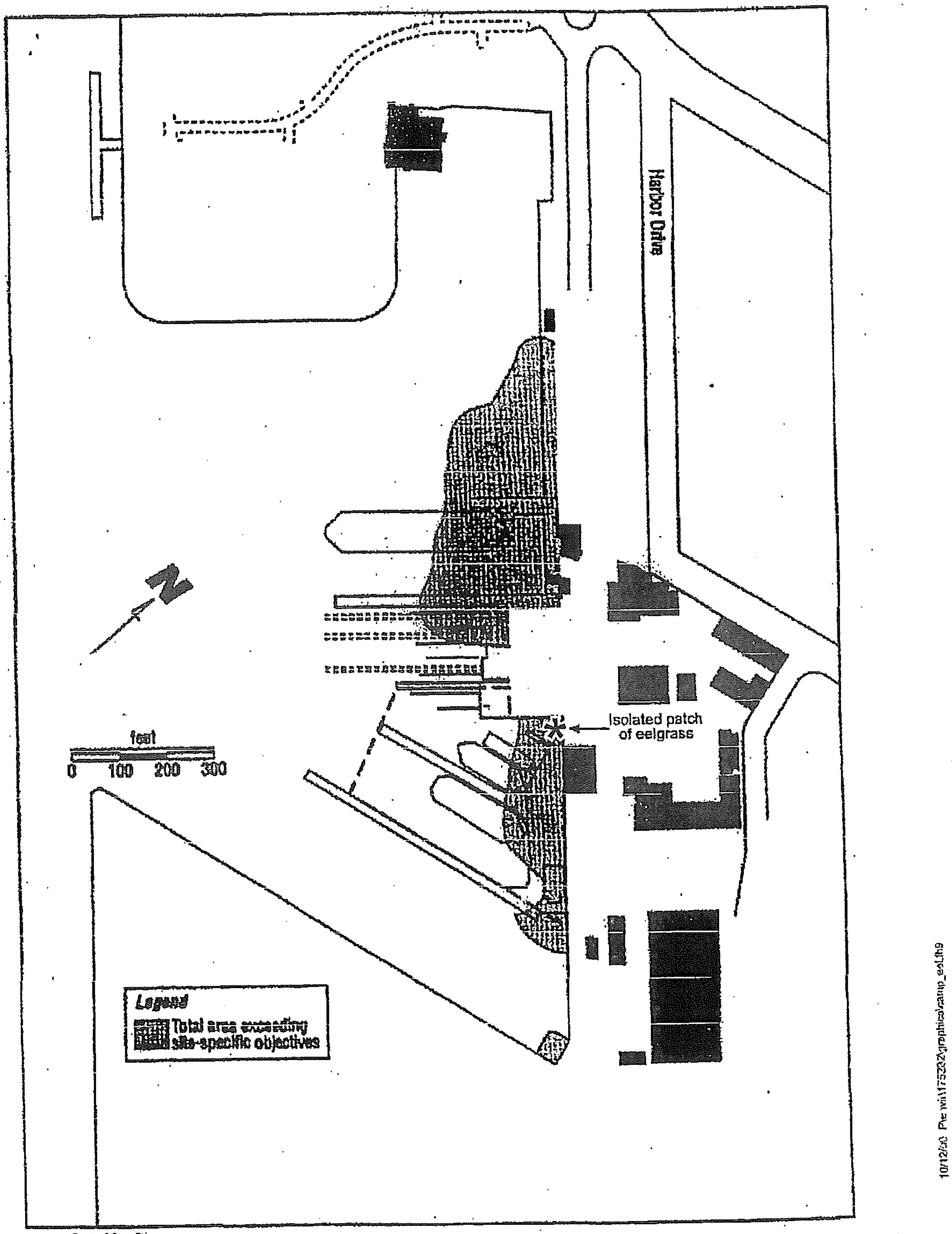
Ichthyoplankton surveys at the Silvergate and Station B Power Plants reported fish egg densities of 0 to 9,407 and 0 to 4,911 eggs per square meter, respectively. Slough anchovy, croakers, and gobies were most dominant. Other larval species collected included smelt, anchovies, flat fish, black croaker, white croaker, blennies, and queenfish (SDG&E 1980a from MBC).

4.1.1.9 Macroalgae

Macroalgae refers to large marine plants, such as seaweeds. Macroalgae observed in the shallow subtidal area of the project site include the brown alga Sargassum, sea lettuce, and eelgrass. Other types of macroalgae occurring in the bay include filamentous *Enteromorpha* sp., and the red algae *Gelidium* sp. (Port, 1980b). Enteromorpha is commonly found on the ocean bottom in thick mats, sea lettuce is commonly attached to rocks or shell debris, while Sargassum and Gelidium are most often found in intertidal areas attached to riprap, pilings, and other structures.

4.1.1.10 Eelgrass

Eelgrass is an ecologically important Bay species, providing habitat and nursery areas for many species of invertebrates and fish, and ranks among the most productive habitats in the ocean (U.S. Navy and Port of San Diego, 2000; Nybakken, 1997). Eelgrass beds inhibit erosion, decrease water turbidity, and greatly enhance the overall productivity of the marine environment (Ninyo & Moore, 2001). Commercially important species that utilize eelgrass beds include California halibut and California spiny lobster. High levels of turbidity and marine pollution have negative effects on the health of eelgrass beds (Hoffman, 1986). A sparse bed of eelgrass is located in the shallow waters of the basin among the launchways at the former Campbell Shipyard (Figure 4.1-1). In March of 2000, the eelgrass patch was observed between -2.4 and -7.5 feet MLLW. At that time, the width of the eelgrass bed ranged from 38 to 123 feet and averaged 100 feet. In total, the eelgrass covered 0.33 acre (LEES, 2000a).



Source: Port of San Diego

Eelgrass Locations

P&D Environmental Services

Figure 4.1-1

4.1.1.11 Endangered, Threatened, and Other Species of Special Concern

Special Status Species included in this EIR are limited to those that may potentially visit the former Campbell Shipyard or use it as a feeding, breeding, or resting habitat. Special Status Species potentially occurring in the project site are listed in Table 4.1-1.

California Brown Pelican (Federal and State Endangered)

Brown pelicans are plunge divers, feeding on fish primarily in the open waters of harbors. Pelicans are common, year-round residents of north San Diego Bay, and 1993 surveys recorded up to 550 birds per month in the area (U.S. Navy, 1994). This species is tolerant of human activity near its daytime roosts and readily utilizes various man-made structures. A brown pelican was seen in the project site during a December 1999 site visit (MBC, 2000). It is likely they use the basin for resting and foraging, and used the piers and other artificial structures in the area for roosting.

California Least Tern (Federal and State Endangered)

California least terns are known to breed at several locations in San Diego Bay between April and September. Nesting colonies have been observed at the North Island Naval Air Station and at Lindbergh Field, about 2 miles and 1.5 miles from the former Campbell Shipyard, respectively (MEC, 1999). California least terns are known to forage up to 5 miles from their nests, feeding on juvenile fish over eelgrass beds and near artificial structures (Atwood and Minsky, 1983). Therefore, the California least tern has a moderate potential to occur on the project site.

Light-Footed Clapper Rail (Federal and State Endangered)

The light-footed clapper rail lives and forages in salt marsh habitat. The project site is in open water, and the uplands adjacent are disturbed or developed; thus, the specific habitat requirements for this species are not found in the project site. The species is not likely to occur at the project site.

Green Sea Turtle (Federal Endangered)

The green sea turtle is a federally listed endangered species, and has established a population in the southern portion of the Bay. The green sea turtle has a low potential to occur in the project site. Its occurrence in the project site would be considered unusual, due to its distance from the established population (approximately 15 miles south). Pacific Ridley's, leatherback, and loggerhead turtles (the first two, federally endangered, the last, federally threatened) are unlikely to occur in San Diego Bay.

Table 4.1-1
Sensitive Species Potentially Occurring at the Project Site in San Diego Bay

Species Name	Scientific Name	Status[(1)]	Potential for Occurrence at Project Site[(2)]
Birds			
Belding's savannah sparrow	*Ammodramus sandwichensis beldingi*	FSC	N
Black skimmer	*Rhynchops niger*	CSC	M
Black-crowned night heron	*Nycticorax nycticorax*	None	L
California brown pelican	*Pelecanus occidentalis californicus*	FE, SE	P
California least tern	*Sterna antillarum browni*	FE, SE	M
California gull	*Larus californicus*	CSC	H
Common loon	*Gavia immer*	FSC, CSC	M
Double-crested cormorant	*Phalacrocorax auritus*	CSC	H
Elegant tern	*Sterna elegans*	FSC, CSC	M
Great blue heron	*Ardea herodias*	None	L
Light-footed clapper rail	*Rallus longirostris levipes*	FE, SE	N
Loggerhead shrike	*Lanius ludovicianus*	FSC, CSC	N
Long-billed curlew	*Numenius americanus*	FSC, CSC	L
Osprey	*Pandion haliaetus*	CSC	L
Short-eared owl	*Asio flammeus flammeus*	CSC	N
Western snowy plover	*Charadrius alexandrinus nivosus*	FT, CSC	L
Reptiles			
Green sea turtle	*Chelonia mydas*	FE	L
Mammals			
California sea lion	*Zalophus californianus*	MMA	M
California gray whale	*Eschrichtius robustus*	MMA	N
Coastal bottlenose dolphin	*Tursiops truncates*	MMA	L
Pacific harbor seal	*Phoca vitulina*	MMA	M

Notes: (1) Status
- FE = Listed as an endangered species by the federal government.
- FSC = Listed as a species of concern by the federal government (formerly Category 2).
- FT = Listed as a threatened species by the federal government.
- SE = State listed as an endangered species.
- CSC = California Dept. of Fish and Game Species of Special Concern.
- MMA = Marine Mammal Act.

(2) Potential for Species to Occur on Project Site
- N = Not present. Habitat on and adjacent to the site is clearly unsuitable for the species' requirements.
- L = Low potential to occur within the project site. Few of the habitat components meeting the species' requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality.
- M = Moderate potential to occur within the project site. Some of the habitat components meeting the species' requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable.
- H = High potential to occur within the project site. All of the habitat components meeting the species' requirements are present and/or most of the habitat on or adjacent to the site is highly suitable.
- P = Species present in project site during site visits.

Western Snowy Plover (Federal Threatened and CDFG Species of Special Concern)

Western snowy plovers prefer the same type of nesting habitat as least terns, and nests have been observed on beaches in San Diego Bay and on the salt works levees in the south Bay. Snowy plovers feed and nest on coastal sandy beaches and the shores of salt ponds and alkaline lakes, and therefore have a low potential to occur in the project site.

Belding's Savannah Sparrow (Federal Species of Concern)

Belding's savannah sparrow is a state-listed endangered species found in salt marshes bordering estuaries. The nearest population center of Belding's savannah sparrow is in the south San Diego Bay (Robinson, 1988). Specific habitat requirements for this species are not found in the project site. This species is not likely to occur within the project site.

Common Loon (Federal Species of Concern and CDFG Species of Special Concern)

Common loons winter in southern California coastal lagoons and near-shore waters in small numbers. They dive for fish in open water habitats. This species has declined due to disturbance in its breeding range to the north (Ehrlich et al., 1992). There is the moderate potential for common loons to utilize the waters in the project site.

Elegant Tern (Federal Species of Concern and CDFG Species of Special Concern)

Nesting populations of elegant tern have increased at several southern California coastal sites in recent years. This species prefers habitat somewhat similar to that of the California least tern, so they could potentially nest together. This species is fairly abundant in the Bay (Ogden, 1994; USFWS, 1994 and 1995), and has a moderate potential to use the project site as foraging grounds.

Loggerhead Shrike (Federal Species of Concern and CDFG Species of Special Concern)

Loggerhead shrikes are often found near water, and prefer open habitats with scattered shrubs, trees, fence posts, or other such perches. Loggerhead shrikes feed on small reptiles, insects, fish, and various invertebrates, searching for prey from a perch at least 2 feet above the ground. This species is not likely to occur in the project site, due to the high degree of urbanization and lack of sufficient roosting sites.

Long-Billed Curlew (Federal Species of Concern and CDFG Species of Special Concern)

Long-billed curlews feed in coastal mudflats, occurring most often in estuaries, feeding on ghost and mud shrimp, mud crabs, clams, and small estuarine fish. The project site could potentially provide a foraging habitat for the long-billed curlew, although its potential to occur on the site is low, because it prefers coastal estuarine systems.

Black Skimmer [California Department of Fish and Game (CDFG) Species of Special Concern]

Black skimmers are increasing in southern California as nesting colonies have been re-established at various locations. Their occurrence in the Bay will probably increase as the population continues to grow. It is possible they could use subtidal habitats within the project site for foraging. This species has a moderate potential to occur within the project site.

California Gull (CDFG Species of Special Concern)

Though the western gull is the only resident breeder in the Bay, several other gulls, including the California gull, are likely to be found there. The California gull nests in inland alkaline and freshwater lacustrine habitats, but is known to feed along sandy beach, mudflat, rocky intertidal, and open water marine habitats. Therefore, the California gull has a moderate potential to occur at the project site.

Double-Crested Cormorant (CDFG Species of Special Concern)

Similar to the brown pelican population, double-crested cormorants have increased in abundance since the early 1970s (MEC, 1988). This species forages for fish by swimming underwater in open waters of the Bay. They can be found resting on the water or on buoys and artificial structures. They have a high potential to occur in the project site, using the waters for foraging, and could use piers and artificial structures in the vicinity of the project for roosting.

Osprey (CDFG Species of Special Concern)

The osprey occurs most commonly in Northern California and the Lake Tahoe region, and is an infrequent winter visitor to the coast of southern California. Ospreys prey primarily on fish in rivers, lakes, reservoirs, bays, estuaries, and surf zones. Three ospreys have been noted in the South Bay Wildlife

Preserve. Ospreys have a low potential to occur within the project site. The habitat in the project site is suitable, but ospreys do not frequently occur in southern California.

Short-Eared Owl (CDFG Species of Special Concern)

Short-eared owl is not likely to be found in the project site. It is a marsh species requiring groundcover for nesting, and feeds primarily on voles and other small mammals.

Black-Crowned Night Heron (Regionally Rare Resource)

Although black-crowned night herons are resident throughout all of southern California, rookeries such as those occurring at Point Loma are considered a rare resource (CDFG, 1991). Black-crowned night herons forage at dusk for a variety of fish, crustaceans, amphibians, reptiles, and, rarely, small birds. It is possible that this species could use the former Campbell Shipyard for foraging. However, the known nesting colonies are located quite a distance from the project site (Naval Air Station North Island, Naval Station, and Submarine Base) (MBC, 2000), giving this species a low potential to occur within the project site.

Great Blue Heron (Regionally Rare Resource)

Although the great blue heron is not a federally or state protected species, its nesting sites are monitored by the CDFG. The great blue heron perches and roosts in secluded tall trees and in offshore kelp beds. The great blue heron has a low potential to occur on the project site.

Plants

No special status plants have the potential to occur on the project site, because no marsh habitat or terrestrial habitats are present. Eelgrass was discussed as a sensitive habitat previously in Section 4.1.1.9.

Marine Mammals

Marine mammals are fully protected under the Marine Mammal Protection Act; many are also listed as threatened or endangered species and are protected by the Federal and State Endangered Species Act. California sea lions are long-term residents of the Bay, and Pacific harbor seals are considered frequent visitors. Both species have a moderate potential to use the site for foraging. The coastal bottlenose dolphin is common to the Bay, but tends to stay within deep channels in the North Bay; therefore, there is a low potential for the coastal bottlenose dolphin to occur in the project site. The Pacific gray whale is known to visit San Diego Bay on occasion during its migration from Baja California to the Bering Strait. However, it is not likely to occur in the project site, due to the shallow waters and its position within the Bay. The Pacific white-sided dolphin and long-beaked common dolphin are considered infrequent visitors. These species are not likely to occur in the project site. They favor the deeper channel areas of the harbor, where their favored prey items are more abundant.

4.1.2 Impact Significance Criteria

Significance criteria for impacts to biological resources were developed based on Section 15065 and Appendix G of the CEQA Guidelines, and Section 21083 of the Public Resources Code. Direct and indirect adverse impacts are classified in this analysis as either "significant", "potentially significant", or "less than significant". A project will have a "significant" effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species". An impact is considered "potentially significant" when the presence of a special-status species or resource is uncertain and project construction could result in its loss. Impacts will generally be considered "less than significant" if the habitats and species affected are common and widespread in the region and state. According to these guidelines, a project will have a potentially significant or significant impact on biological resources if it will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS (Section 15065, Appendix G).
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (Appendix G).
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS (Section 15065a).
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Cause a fish or wildlife population to drop below self-sustaining levels (Section 15065).

4.1.2.1 Applicable Regulations

Federal and State regulations that are pertinent to the project are:

- California Environmental Quality Act
- California Department of Fish and Game Code
- California Coastal Act of 1976
- Coastal Zone Management Act of 1972
- Federal Endangered Species Act of 1973 and amendments
- Magnuson-Stevens Fishery Management Conservation Act
- Marine Mammal Protection Act
- Migratory Bird Treaty Act
- U.S. Fish and Wildlife Service regulations

4.1.3 Impacts Analysis

This section presents an analysis of impacts to biological resources resulting from the implementation of the Alternative 1: Engineered Cap-In-Place. Impacts associated with this project are direct and indirect impacts to marine biological resources resulting from in-water operation and alteration of habitat due to the cleanup of the project site mandated by Regional Water Quality Control Board (RWQCB) Cleanup and Abatement Order (CAO) No. 95-21.

Upon project completion, the project site will consist of 0.3 acre of armored intertidal habitat, 0.9 acre of armored shallow subtidal habitat, 2.4 acres of nonarmored shallow subtidal habitat, 0.2 acre of armored moderately deep subtidal habitat, 4.0 acres of nonarmored moderately deep subtidal habitat, 0.2 acre of armored deep subtidal habitat and 4.7 acres of nonarmored deep subtidal habitat (Table 4.1-2).

4.1.3.1 Construction and Fill Impacts

The implementation of the Alternative 1: Engineered Cap-In-Place will impact the project site through the placement of fill into approximately 9.1 acres of open water habitat. These activities will require a Section 404 permit (for activities below the High Tide Line) and a Section 10 permit (for activities below Mean High Water not covered under the Section 404 Clean Water Act) from the U.S. Army Corps of Engineers (ACOE). Fill activities associated with the construction of the engineered cap will result in no net creation of open water area. The project will result in the loss of 0.9 acre of intertidal habitat. However, the loss of intertidal habitat would constitute a less than significant impact due to the poor quality of the existing intertidal habitat, and the addition of the hotel dock, floating dock, and transient marina will

Table 4.1-2
Postconstruction Habitat Types at the Former Campbell Shipyard
Alternative 1: Engineered Cap-In-Place

Habitat Type	Preconstruction Condition (Acres)	Armored Area/ Nonarmored Area (Acres)	Change from Preconstruction Condition (Acres)
Intertidal (+7.8 to -2.2 feet MLLW)	1.2	0.3 / 0.0	-0.9
Shallow Subtidal (-2.2 to -12 feet MLLW)	1.5	0.9 / 2.4	+1.8
Moderately Deep Subtidal (-12 to -20 feet MLLW)	2.6	0.2 / 4.0	+1.6
Deep Subtidal[1] (<-20 feet MLLW)	7.4	0.2 / 4.7	-2.5
Total Water Area	12.7	**1.6 / 11.1**	+0.0

Note: [1] Consists of 2.1 acres of engineered cap, consisting of clean, imported sand, and 3.5 acres of existing deep subtidal habitat.

serve as a substrate for the attachment of intertidal epibiota, offsetting the loss of existing intertidal habitat. The project will also result in a net increase of 1.8 acres of shallow subtidal habitat and 1.6 acres of moderately deep habitat. Therefore, the effects of fill applied to the Bay within the project site are less than significant.

The placement of fill material for the engineered cap will impact the substrate available in the project site by replacing existing Bay sediments with coarse sand and gravel. Sand particles tend to contain a less diverse benthic community than mud sediments, and thus fewer prey species will be available to higher trophic levels (Wong, 2003; Seiderer, 1999; Coull, 1985). However, over time, the organic matter content of the imported sand is expected to increase, increasing the diversity and population of benthic species colonizing the engineered cap. Additionally, none of the benthic invertebrates known to inhabit the project site are threatened or endangered. Therefore, the impacts of replacing existing sediments within the project site with coarse sand and gravel will be temporary and less than significant.

Potential water quality impacts due to the resuspension of COCs into the water column from dredging and cap placement were determined to be below significant levels based on the ACOE Dredging Elutriate Test, and thus impacts to marine biology will be less than significant See Section 4.2 for a detailed discussion of water quality.

The short-term operation of machinery in the water increases the risk of spills and/or leaks of petroleum and other contaminants. Such a release may result in a potentially significant impact, due to the effects that such a release into the marine environment may have on marine habitats and species. Thus, construction activities pose a potentially significant impact to marine biology resources.

Construction activities associated with the placement of the engineered cap have the potential for short-term disturbance of biological communities in the project site as a result of increased noise, potentially increased garbage, and an increased human presence on the site. Although the construction of the cap will result in noise levels that are only slightly louder than background noise already present due to other activities around the project site, and the number of people in a work crew required to perform this type of project is minimal, due to the techniques being used, the potential degradation associated with controlled garbage could be a potentially significant impact to marine biology resources.

4.1.3.2 Contaminant Flux

Anchor also conducted an evaluation of the long-term mobility of the contaminated sediments through the cap and found that the long-term flux of contaminants through the cap into the overlying water column is unlikely to cause any adverse impacts to the aquatic environment. Thus, the biological impacts of long-term flux through the cap have been determined to be less than significant. (See Section 4.2.)

4.1.3.3 Bioturbation

In another analysis, Anchor concluded that the cap will be capable of preventing or greatly minimizing the effects of bioturbation (disturbance of the cap by deep-burrowing benthic organisms). The thickness of the cap exceeds the extreme burrowing depths of almost all burrowing benthic organisms likely to be present, and the cap will be protected by a surficial layer of armoring materials in key locations. Therefore, the potential impacts on biology due to site recontamination by bioturbation are less than significant. (See Section 4.2.)

4.1.3.4 Hydrodynamic Stability

The hydrodynamic stability of the cap was evaluated by Everest International Consultants (EIC), and it was determined that the cap will not be impacted by waves and tidal currents. Any movement of sediment will be limited to shallow water areas and be confined to areas within the former Campbell Shipyard basin (EIC, 2002). The potential for biological communities to be impacted by recontamination of the project site by disturbances to the habitat cap by waves and tidal currents is less than significant. (See Section 4.2.)

4.1.3.5 Propeller Wash

Analysis of the disturbance of the habitat cap by propeller wash was performed by Anchor. Installation of an armored retaining berm along the perimeter of the cap was found to be effective in protecting the habitat cap from these sources. If the engineered cap is built using the specifications determined through this analysis, the habitat cap will remain stable despite propeller wash. Therefore, the effects on biological communities of propeller wash disturbing the habitat cap will be less than significant. (See Section 4.2.)

4.1.3.6 Seismic Stability

Seismic stability evaluations of the engineered cap by TerraCosta Consulting Group determined that, although some shifting was likely to occur from an earthquake greater than a Level 1 seismic event (a 50% chance of exceedance in a 50-year period), the cap is thick enough to preclude any release of contaminated sediment into the water column (TerraCosta, 2002). The effects on biology of the potential impacts of a seismic event are therefore less than significant. (See Section 4.3.)

4.1.3.7 Impacts to Adjacent Areas

The project has the potential to cause impacts on areas adjacent to the project site. The dredging of sediments could potentially send contaminated sediments into the water column, some of which may settle outside of the project site. These sediments will not be covered by the engineered cap, and may contaminate areas outside of the project site that may not currently be contaminated. These potential construction impacts of increased turbidity and decreased water quality that are likely to occur due to suspended sediments pose a potential significant impact to marine biology resources.

Potential impacts to specific biological resources due to water quality impacts occurring as a result of construction are discussed below.

4.1.3.8 Marine Mammals

The dredging of sediments and placement of cap material may have an impact on marine mammals. Although dolphins, sea lions, and seals are known to be tolerant of construction (MBC, 2000), the increased turbidity may decrease visibility and drive fish from the area, possibly affecting foraging activities of these mammals in harbor waters and shipping channels in the vicinity of the project. However, the turbidity resulting from dredging and construction of the cap is expected to last a few minutes to a few hours. The impacts to these mammals will be less than significant, due to the short duration of disturbance and small area of disturbance relative to the area available for foraging elsewhere in San Diego Bay. Due to the location, size, and depth of the project site, gray whales are unlikely to occur in the area, and thus potential impacts to this species are considered less than significant.

4.1.3.9 Sea Turtles

Construction and operation of the new facilities will have little or no impact on sea turtles. Since they are unlikely to occur in or around the project site, they are unlikely to be affected by construction activities or by dredging and filling activities. Impacts on the green sea turtle resulting from this project are less than significant.

4.1.3.10 Water-Associated Birds

During construction, potential decreases in water clarity and water quality due to dredge and fill activities could deter birds from foraging in the project site and vicinity. Increased turbidity and decreased dissolved oxygen may also drive fish out of the project site and vicinity, decreasing the amount of food available for birds in the area. Use of the waters and roosting areas adjacent to the project site may decline during construction, due to increased noise and humans in the area. However, the duration of the disturbance will be short term, and sufficient suitable foraging and roosting sites exist in nearby areas; therefore, these impacts are considered less than significant. Upon completion of the project, use of the project area by birds for roosting, resting, and foraging will likely return to preconstruction levels. The creation of highly productive intertidal and shallow subtidal habitats for fish and invertebrates is expected to have a beneficial impact on birds, increasing the availability of food at the project site.

4.1.3.11 Fish

Decreases in water quality, including reductions in dissolved oxygen and water clarity, could potentially impact fish in and around the project site.. The impacts of turbidity and decreased water quality on fish will be temporary, and the fish have the ability to avoid affected waters and forage elsewhere. Upon completion of in-water construction activities, the fish community in the project site is expected to resemble the preconstruction community. The fish community in the area following construction is expected to consist of similar open-water, substrate-oriented, and bottom-dwelling fish species. The creation of intertidal and shallow subtidal open-water habitat is expected to increase productivity within the project site, and the riprap armoring will provide a valuable refuge habitat for many species of fish, including sand bass and black perch, species of value to sport fishers. The 2,500-SF hotel dock, floating dock, and transient marina will also provide fish with cover from predatory birds. Impacts to fish due to construction will be temporary and less than significant.

4.1.3.12 Intertidal and Subtidal Resources

During project construction, intertidal and subtidal areas will be subjected to siltation, increased turbidity, and potentially accidental construction material spills. As most of the intertidal organisms are filter feeders or photosynthetic organisms, suspended silt and toxic pollutants can interfere with feeding, and both suspended and settled fine sediments can obstruct algal photosynthesis. Permanent loss of the limited amount of rocky substrate on the ocean floor will occur, due to its removal or covering with habitat cap material. This will likely result in the loss of a limited amount of intertidal and subtidal biological resources. However, rocky substrates on the ocean floor are not currently a major source of habitat for these organisms in the project site, and none of the species of algae or invertebrates known or thought to be in the basin is threatened, endangered, or rare. Some hard substrates may be available to these organisms following construction of the retaining berm along the perimeter of the habitat cap, particularly in the area of armored intertidal and shallow subtidal habitat. The construction of the 2,500-SF hotel dock, floating dock, and transient marina will provide an additional habitat for intertidal and subtidal epibiota. Following construction, intertidal and subtidal communities similar to those currently present on the project site are likely to colonize the remaining available substrates within one to three years. Impacts to the rocky-intertidal community during construction will be temporary and less than significant.

4.1.3.13 Benthic Organisms

Dredge and fill activities during project construction will likely result in the loss of many benthic organisms in and around the project site. Dredging activities could suspend benthic organisms in the water column or remove them completely from the project site. Fill activities associated with the placement of the habitat cap will likely smother the majority of benthic infauna present in the project site. While many suspended organisms will be redistributed to nearby areas, the activities associated with the project implementation will result in the loss of most benthic organisms in the former Campbell Shipyard. Some minor incidental loss is possible in the vicinity of the project site due to sediment suspended in the water column deposited outside of the project site. However, these impacts to the soft-bottom benthos in the area are short term, and the project site is not known to support any sensitive benthic species. Due to the abundance of soft-bottom habitat in the vicinity of the project site and within San Diego Bay, the benthic infaunal community is expected to recover to preconstruction levels within two to three years (Soule, 1976). Potential impacts to benthic infauna due to construction activities will be temporary and less than significant.

The benthic community composition will depend on the sediment grain size present after construction and settlement of suspended material is complete, and on the degree of sediment toxicity. Since sediment contamination will be reduced after clean-up activities at the former Campbell Shipyard, sediment toxicity to benthic infauna should not occur, and effects due to sediment toxicity will be less than significant. Since there will not be an increase in large vessel traffic, disruption of bottom sediments from propeller wash will not increase, which is also beneficial to recolonization of the project site by benthic organisms.

The composition of sediment used in the capping material will affect the constitution of the benthic community. Sand particles tend to contain a less diverse benthic community than mud sediments, and thus provide fewer prey species to higher trophic levels (Wong, 2003; Seiderer, 1999; Coull, 1985).

Consequently, a decrease in the number of species in the benthic community is expected due to the construction of the cap. However, over time it is expected that fine sediments from the Bay will mix with the coarse sands of the engineered cap until the composition of the sediment within the project site resembles that of the existing conditions. Thus, impacts to the benthic community due to composition of sediment used in the engineered cap will be temporary and less than significant.

Construction of the hotel dock, floating dock, and transient marina may also impact the benthic organisms present at the site. Shading induced by the hotel dock, floating dock, and transient marina will result in a decrease in algal growth, and therefore a decrease in algal matter falling to the ocean floor and providing food for benthic organisms. However, the hotel dock, floating dock, and transient marina are relatively small compared to the size of the entire project site, and will result in much less shading than the previous piers and pilings associated with the former Campbell Shipyard. Therefore, the effects of the hotel dock, floating dock, and transient marina on the benthic infaunal community will be less than significant.

4.1.3.14 Plankton

Because of their low mobility, plankton may be affected by turbidity from construction activities. Turbidity inhibits solar penetration in the water column, limiting phytoplankton photosynthesis. Suspended sediments may contain biostimulants or toxicants, and/or increase oxygen demand, further limiting phytoplankton productivity. The removal and smothering of subtidal and benthic organisms will inhibit production of plankton larvae. These impacts on phytoplankton and larval plankton will , in turn, decrease the quality and quantity of available food sources for zooplankton. These effects will be temporary, however, and their extent will be limited to the vicinity of the project site. Because plankton are distributed by currents, organisms are continuously being carried into the area. Therefore, it is expected that plankton populations will return to normal when water quality conditions are stabilized following construction, and the impacts to phytoplankton due to the Alternative 1: Engineered Cap-in-Place will be temporary and less than significant.

Construction of the hotel dock, floating dock, and transient marina may also impact the planktonic community present at the project site. Shading induced by the hotel dock, floating dock, and transient marina will result in a decrease in phytoplankton productivity. However, the hotel dock, floating dock, and transient marina are relatively small compared to the size of the entire project site, and will result in much less shading than the previous piers and pilings. Therefore, the effects of the hotel dock, floating dock, and transient marina on the plankton will be less than significant.

4.1.3.15 Macroalgae

Macroalgae, including Sargassum, observed in the shallow subtidal area on the north side of the basin adjacent to the project site will be affected by construction activities. These plants will likely be removed by dredging or smothered during habitat cap placement. However, since no macroalgae in the area are endangered, rare, or threatened, and algae will likely recolonize the project site after construction, this loss is temporary and less than significant.

Construction of the hotel dock, floating dock, and transient marina may also impact macroalgae in the project site. Shading induced by the hotel dock, floating dock, and transient marina will result in a decrease in the growth of macroalgae. However, the hotel dock, floating dock, and transient marina are relatively small compared to the size of the entire project site and will result in much less shading than the previous piers and pilings. Therefore, the effects of the hotel dock, floating dock, and transient marina on macroalgae will be less than significant. Installation of the riprap armoring may also impact macroalgae within the project site. The riprap armoring is a relatively poor substrate for macroalgae colonization. However, the increase in shallow subtidal habitat with the implementation of the Alternative 1: Engineered Cap-In-Place will exceed the negative impacts of the riprap armoring. Therefore, the effects of the installation of the riprap armoring on macroalgae will be less than significant.

4.1.3.16 Eelgrass

Eelgrass located in the shallow subtidal area on the north side of the basin at the former Campbell Shipyard will likely be destroyed by dredge and fill activities associated with the remediation of the project site. It is expected that all eelgrass (0.33 acre) will be destroyed. This is a significant impact.

4.1.3.17 Endangered, Threatened, and Other Species of Special Concern

Special Status Birds

The implementation of the Alternative 1: Engineered Cap-in-Place has the potential to impact foraging activities of the black skimmer, black-crowned night heron, California brown pelican, California least tern, California gull, common loon, double crested cormorant, elegant tern, great blue heron, long-billed curlew, osprey, and western snowy plover. Construction activities may result in a temporary increase in turbidity and decrease in available fish for foraging. The project site is not used as a nesting habitat by any special status bird species. The project site is listed as a low-use foraging area for birds (Allen, 1998), and the foraging area currently available within the project site is small compared to that available in San Diego Bay. Special status bird species will likely use other areas of San Diego Bay for foraging during construction, returning to the project site following project completion. Therefore, the impacts to special status bird species due to project construction will be temporary and less than significant. Upon completion of construction, an overall increase in the amount of intertidal and shallow subtidal open water habitat in the project site will likely increase the foraging area available to bird species, resulting in a net benefit to special status birds.

Special Status Reptiles

The green sea turtle is not likely to use the project site for foraging or nesting, due to the distance from the established colony of green sea turtles at the South Bay Power Plant discharge channel. Therefore, the impacts to the green sea turtle are less than significant.

Marine Mammals

Construction activities associated with the Alternative 1: Engineered Cap-In-Place have the potential to impact the foraging activities of the California sea lion, Pacific harbor seal, and coastal bottlenose dolphin. A temporary increase in turbidity and decrease in dissolved oxygen will likely lead to a decrease in fish species within the project site. However, the project site is not known to be a particularly high use area for marine mammals, and there is a large amount of alternative foraging area available in other portions of the Bay. Marine mammals are likely to increase their use of the project site following construction, due to the increased productivity anticipated as a result of the project. Therefore, the impacts to marine mammals due to construction of the Alternative 1: Engineered Cap-In-Place are temporary and less than significant.

4.1.4 Significant Impacts Summary

1. Water Quality

The disturbance of sediments during construction of the habitat cap brings the possibility of affecting water quality in areas outside and within the project site. Possible impacts to these areas include increased turbidity and decreased water quality affecting foraging, the deposition of contaminated sediments in areas that may not currently be contaminated, and the risk of spills from machinery used in the construction process. Together, these impacts are significant.

2. Construction Related

Increased garbage due to construction activities on the site could impact marine biological resources and contradict the project purpose. This is a significant impact.

3. Eelgrass

An 0.33-acre eelgrass bed present in the project site will be impacted due to dredging and filling in association with the placement of the engineered cap in the project site. The existing eelgrass bed will be smothered when the cap is constructed. This is a significant impact.

4.1.5 Mitigation Measures

The following mitigation measures will be implemented to mitigate impacts to marine biological resources.

Mitigation Measure 1. Water Quality

To minimize the potential short-term impacts to water quality from dredge and fill activities, certain operational controls will need to be implemented.

- **The use of a silt curtain will reduce impacts related to the resuspension of sediment, turbidity, and potential spills.** The use of a silt curtain will prevent areas outside of the project site from being impacted by the proposed project. Silt curtains have been shown to confine suspended sediments to specific areas, and can also be effective in controlling any possible spills from machinery used during construction. All crews will be trained in proper procedures to follow in the event of such a spill.

- **During capping, controlled placement of the initial layers of cap material on existing sediment will reduce the amount of suspended sediment in the project site and also reduce the amount of contaminated sediment present in the water column during construction.** The contractor shall place initial layers of cap material in thin lifts, using either a clamshell dredge or hydraulically spraying the material from a barge, which will be sufficient to avoid the resuspension of contaminated sediments.

Mitigation Measure 2. Construction Related

Adequate facilities shall be provided in which to dispose of garbage, and workers shall be trained as to the requirement to and importance of controlling waste during construction at the project site.

Mitigation Measure 3. Eelgrass

The 0.33-acre eelgrass bed present on the project site will be impacted as a result of this project. A site-specific mitigation plan shall be prepared, and pursuant to the Southern California Eelgrass Mitigation Policy, the following components shall be included (see below). Any additional requirements laid out in the ACOE 404 permit and Section 10 of the Rivers and Harbors Act permit and the following conditions as stipulated by the NMFS will also be followed (Southern California Eelgrass Mitigation Policy).

- **Demonstrate avoidance and minimization of impacts to eelgrass where possible.** Since the eelgrass beds are growing on sediment which must be remediated, avoidance of the eelgrass is not possible while still accomplishing the project's goals.

- **Survey and map the eelgrass coverage prior to construction.** Mapping efforts must be completed no earlier than 120 days prior to the start of construction if conducted between March 1 and August 1. If the mapping survey is conducted between August 1 through October 31, the survey is valid until March of the following year. All active eelgrass beds, as well as those areas that have the proper depth and substrate for eelgrass but which currently lack vegetation, are to be included in this survey. These areas are to be mapped according to protocols outlined in the Southern California Eelgrass Mitigation Policy.

- **Survey and map the eelgrass coverage following construction.** Within 30 days of construction, a postconstruction survey shall be completed to determine the actual area of impact of the project. If it is determined that the entire area of eelgrass was impacted, this survey may not be necessary.

- **Identify appropriate mitigation site.** Factors such as distance from the project, depth, sediment type, distance from ocean connection, water quality, and currents are among those that should be considered in evaluating a potential site. For this project, onsite mitigation in an area of the project site that is similar to the impacted area, and will not be impacted by the future installation of marina piers is most appropriate.

- **Mitigate for the loss of eelgrass habitat at a ratio of 1.2 to 1.** A 1.2 to 1 mitigation ratio is required for all impacts greater than 100 square meters, with mitigation occurring following the start of the project. A 1 to 1 mitigation ratio is required if the project impacts less than 100 square meters of eelgrass habitat.

- **Mitigation technique for construction and planting of eelgrass mitigation shall be consistent with best available technology.** Donor material used in mitigation shall be taken from the area of impact whenever possible, but should also include material from a minimum of two additional distinct sites, to better ensure genetic diversity of the donor plants. No more than 10% of an existing unimpacted bed shall be harvested for transplanting purposes.

- **Transplanting should begin no later than 135 days following the completion of construction.** If mitigation cannot begin within 135 days of project completion, the mitigation obligation shall increase at a rate of 7% for each month of delay.

- **Five-year monitoring program.** Monitoring activities shall determine the area and density of eelgrass at the mitigation site and shall be conducted at 3, 6, 12, 24, 36, 48, and 60 months after the completion of the transplant.

4.1.6 Significance of Impacts After Mitigation

With the implementation of the mitigation measures listed in Section 4.1.5, all impacts to marine biological resources will be reduced to less than significant levels.

4.2 Water Quality

The following analysis is based upon the findings of technical reports prepared by Anchor Environmental, LLC (2002), Everest International Consultants, Inc. (2002), and Anchor Environmental, LLC (2003). The complete analyses are included as Appendix C.

4.2.1 Existing Conditions

Cleanup and Abatement Order No. 95-21

The former Campbell Shipyard waterslide leasehold, located at the foot of Eighth Avenue in San Diego, California, encompasses about 12.7 acres of submerged tidelands and shipways. The configuration of the former Campbell Shipyard site prior to demolition of the site, including docks, launch ways, dry docks, piers, and wharf totaled approximately 213,386 square feet. On May 24, 1995, the San Diego Regional Water Control Board (RWQCB) issued Cleanup and Abatement Order (CAO) No. 95-21 to Campbell Industries and Marine Construction and Design Company (together referred to as "Campbell") addressing contaminated bay sediments, soils, and groundwater at the former facility. Constituents of concern included copper, lead, zinc, total petroleum hydrocarbons (TPH), high-molecular-weight polynuclear aromatic hydrocarbons (HPAHs), polychlorinated biphenyls (PCBs), and tributytlin (TBT). The extent of this contamination is shown in Figure 4.2-1.

Existing Contamination

Volume estimates of sediment containing constituents of concern (COC) concentrations that exceed the cleanup levels indicated in the CAO were performed by Hart Crowser, Inc. (2001). The estimate solely represents the volume of impacted sediment that exceeds cleanup levels and is neither based on a dredge plan, nor takes into account equipment tolerances. The vertical and horizontal extents of impacted sediment were estimated by a group of environmental consultants including Ninyo and Moore, MEC Analytical Systems Inc., and Hart Crowser, Inc., based on analytical data obtained from the following three previous assessments:

- Hart Crowser, Inc., Phase II Sediment Characterization Report (2001).
- Hart Crowser, Inc., Phase I Sediment Characterization Report (2000).
- Ecosystems Management Associates, Campbell Shipyard NPDES Permit Marine Sediment Monitoring and Reporting Annual Report (August 1999).

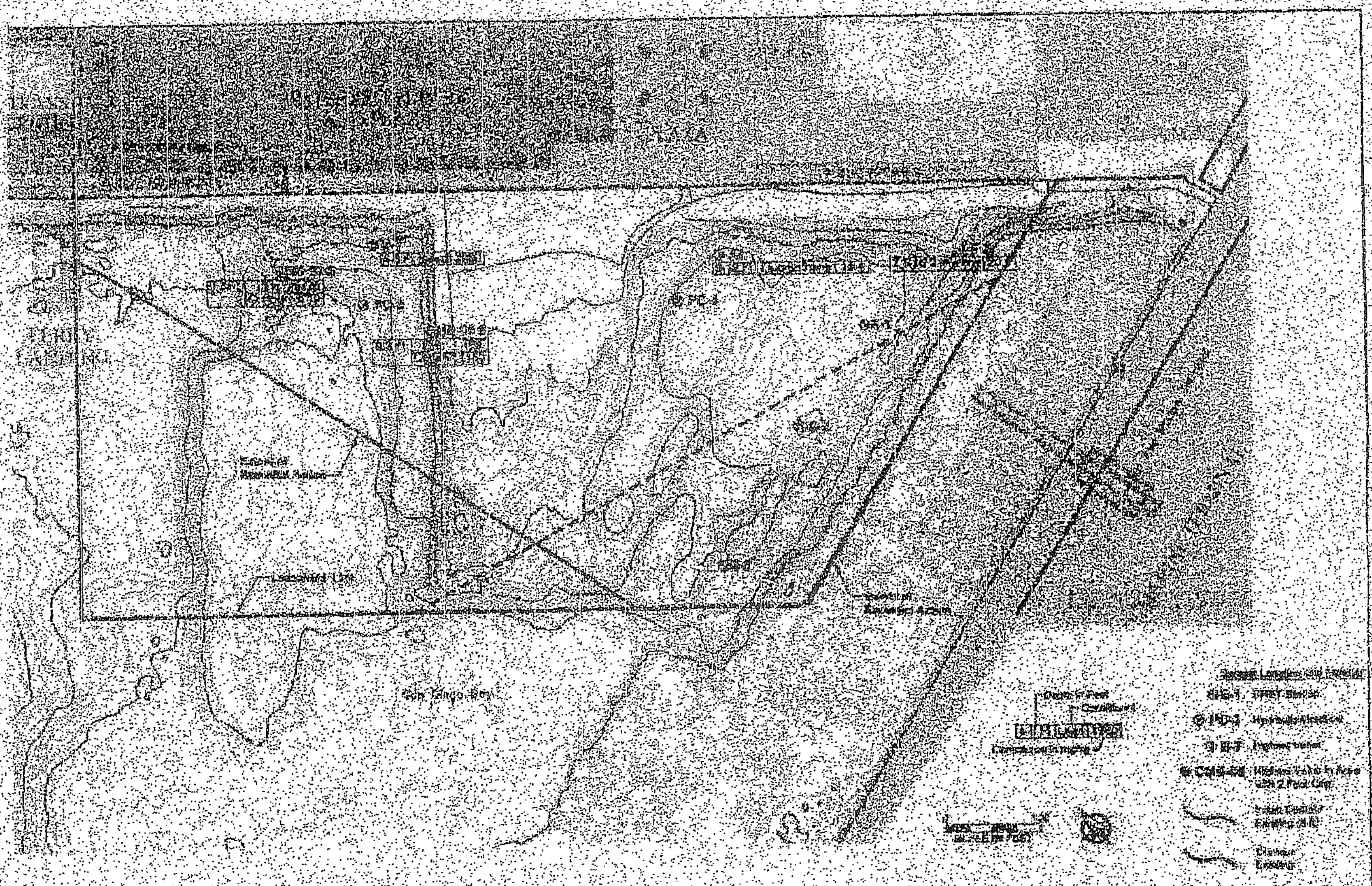
Source: Arcsoft Environmental

Extent of Existing Contamination

Figure 4.2-1

P&D Environmental Services

CBL-P031177



Source: Anchor Environmental

Water Quality Modeling Locations

Figure 4.2-2

P&D Environmental Services

CBL-P031178

Using Computer Aided Design calculations, Hart Crowser, in consultation with Ninyo & Moore and MEC Analytical Systems, Inc., estimated the volume of affected sediment at 96,600 cubic yards (CY). This estimation excluded the shipways area and the locations of former piers where data were not available. Hart Crowser's estimate was an interpolation between former pier locations, performed to provide an assumed extent of contamination in these areas. The estimated volume of affected sediment in the shipways was 20,300 CY, for a total estimated volume of 116,900 CY (Hart Crowser, 2001).

Hydrodynamic Conditions

The project site is well sheltered from distant waves propagating into San Diego Bay. Waves at the project location are therefore mainly local wind-generated waves, ship wakes, or both.

Since tidal current measurements at the project site are unavailable, Costa (2002) estimated tidal currents at the project location based on available current data at nearby locations and other marinas with similar physical conditions. For the site condition with expected small tidal currents, it is acceptable to estimate the tidal currents based on data available nearby or other locations with similar conditions.

The National Oceanic and Atmospheric Administration (NOAA) provides tidal current predictions for specific locations in San Diego Bay. The nearest NOAA current station is to the north of the project site at G Street Pier. The average maximum current speeds are between 0.3 and 0.8 knots [0.5 and 1.35 feet per second (ft/sec)]. Costa (2002) estimated that tidal currents along the navigation channel will probably generate very weak eddies in the former Campbell Shipyard basin with current speeds that are only about 1 to 10% of the main channel current speed, i.e., with current speeds of 0.01 to 0.1 ft/sec.

Based on tidal currents at the Fifth Street Marina Entrance, which has a narrower entrance than the former Campbell Shipyard entrance but similar basin areas, Costa (2002) estimated that the tidal current within the former Campbell Shipyard basin will be about 0.06 ft/sec.

4.2.2 Impact Significance Criteria

Significance criteria for impacts to water quality were developed based on Appendix G of the CEQA Guidelines.

- The proposed project will have a significant impact if it creates a significant hazard to the public environment through routine transport, use, or disposal of hazardous materials.

- The proposed project will have a significant impact if it creates a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

- The proposed project will have a significant impact if it violates any water quality standards or waste discharge requirements.

- The proposed project will have a significant impact if it otherwise substantially degrades water quality.

CAO 95-21 indicated that implementation of the project will need to reduce concentrations of copper, zinc, lead, TPH, HPAHs, PCBs, and TBT to below the levels shown below in Table 4.2-1.

Table 4.2-1
Cleanup Levels Required

Constituent	Cleanup Level Dry Weight (mg/kg)
Copper	810
Zinc	820
Lead	231
TPH	4,300
HPAHs	44
PCBs	0.95
TBT	5.75

Note: mg/kg = milligrams per kilogram.

Furthermore, California Ocean Plan thresholds were used as significance thresholds for determining whether the proposed project will create significant impacts to water quality.

4.2.3 Impact Analysis

Point of Dredging/Cap Placement

Turbidity

Results of the analysis concluded that some turbidity, which typically results from dredging operations in San Diego Bay, is expected as a result of dredging operations at the former Campbell Shipyard site, but this turbidity is typically confined to the immediate vicinity of dredging and is of short duration (minutes to several hours). Turbidity resulting from cap placement is not expected to be substantial, since the cap material will be predominantly sandy material with fairly rapid settling rates, and is also typically confined to the immediate vicinity of capping and is of short duration (minutes to several hours). However, the turbidity that typically results from dredging operations does pose a potential significant impact.

Sediment Resuspension

Potential impacts associated with sediment resuspension during dredge operations were evaluated using site-specific data and laboratory tests. Potential short-term water quality impacts associated with resuspension at the point of dredging were evaluated using the U.S. Army Corps of Engineers (ACOE) Dredging Elutriate Test (DRET) protocol that simulates contaminant loss resulting from mechanical dredge operations (ACOE 1995). Sediment and water samples were taken from three locations (Figure 4.2-2).

Of all the chemicals tested, only the metals (copper, lead, zinc) were detected in the elutriate test at concentrations above the analytical detection limit. However, none of the metals exceeded the California Ocean Plan daily maximum criteria. Therefore, based upon the laboratory testing, contamination of the surrounding habitat during the dredging operations is unlikely to reach levels that exceed regulatory requirements. Because the contamination levels will be below thresholds established by the California Ocean Plan, there are no significant impacts.

Bottom Consolidation

The issue of potential contaminated pore water loss as a result of existing bottom consolidation during and immediately after cap placement was evaluated using calculations from guidance documents on capping contaminated sediments [ACOE 1998 and Environmental Protection Agency (EPA) 1998]. The calculations incorporate the amount of consolidation in existing bottom sediments expected once the cap is placed, to predict the volume of pore water expressed from those underlying sediments into the overlying placed cap, and the resulting amount of chemical migration into the cap expected for several key chemicals of interest.

Table 4.2-2 presents the results of the above calculations using a range of input parameters. A reasonably conservative case (i.e., causing higher estimates of chemical migration), a midrange case, and a low-range case were estimated for each variable. Because the conservative case analysis combines conservative estimates for each variable, it is highly protective and presents a situation not likely to occur under most site conditions.

The penetration distance of pore water into the new cap ranged from 0.47 to 1.61 feet. Owing to partitioning effects, the penetration of dissolved chemical constituents into the cap is predicted to be substantially less. The maximum predicted amount of chemical migration into the cap was 0.106 foot for

Table 4.2-2
Estimates of Short-Term Chemical Migration into a 2-Foot-Thick Cap, Caused by Porewater Expressed from Consolidation of Underlying Material

	Distance (Feet)		
	Conservative Case	Midrange	Low Range
Consolidation Distance	0.50	0.38	0.25
Cap Porosity	0.31	0.40	0.54
Penetration Distance of Water Into Cap	1.61	0.94	0.47
Penetration Distance of Dissolved Chemicals Into Cap:			
Copper	0.106	0.010	0.002
Lead	0.008	0.001	0.000
Zinc	0.064	0.006	0.001
Fluoranthene	0.003	0.000	0.000
Pyrene	0.003	0.000	0.000

copper. All other chemicals and situations estimated were predicted to result in less chemical migration into the clean cap material. Because none of the chemicals were found to penetrate further than 2 feet using the conservative model, impacts from bottom consolidation will be less than significant.

Bioturbation

Aquatic caps need to be designed to prevent substantial bioturbation (mixing and overturning) of underlying contaminated sediments by any deep-burrowing benthic organisms that might be present in a particular region (Clarke et al. 2001, ACOE 1998). To prevent bioturbation, the cap should be designed to be thick enough to prevent bioturbation from impacting the cap, or include a gravel layer to minimize penetration or to exclude certain types of bioturbators that are present at the site.

The lower extent of bioturbation in San Diego Bay was previously estimated for the Convair Lagoon Remediation Project (Ogden 1993), where type and burrowing depth of organisms present or likely to be present at the site were determined. Based on this evaluation, it appears reasonably likely that deep bioturbation at the Campbell Shipyards cap site will range from 0.9 to 1.2 meters (2.95 to 3.94 feet) at most. This is a very conservative approach to estimating bioturbation, and it is likely that bioturbation at the site will be considerably less, depending on the community of species that eventually colonize the habitat area.

The proposed thickness of the cap ranges from 3 to 5 feet (0.9 to 1.5 meters). This equals and exceeds the extreme burrowing depths of almost all species likely to be present, and will likely be much thicker than the depths at which substantial bioturbation will take place. However, in order to minimize the risk of