



Draft

Five-Year Review for Pier 12 (Fuel Pier)

Former Long Beach Naval Complex
Long Beach, California

August 2015

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Contract No: N62473-09-D-2622

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Prepared for:



Prepared by:



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Department of the Navy
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Southwest

Prepared by



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Acronyms and Abbreviations

§	Section
AOEC	areas of ecological concern
ARAR	applicable or relevant and appropriate requirement
Army	United States Department of the Army
BEI	Bechtel Environmental, Inc.
CDM	Camp, Dresser, and McKee, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
COEC	chemical of ecological concern
CSM	conceptual site model
DDT	dichlorodiphenyltrichloroethane
DFSP	Defense Fuel Support Point
ERA	ecological risk assessment
FS	feasibility study
HHRA	human health risk assessment
IAS	initial assessment study
IC	institutional control
IRP	Installation Restoration Program
JEG	Jacobs Engineering Group Inc.
KCH	CH2M HILL Kleinfelder, a Joint Venture
LA/LB	Los Angeles and Long Beach
LBNC	Long Beach Naval Complex
LBNSY	Long Beach Naval Shipyard
NAVSTA	Naval Station
Navy	United States Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Support Activity
OSWER	Office of Solid Waste and Emergency Response

PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
POLB	Port of Long Beach
PP	proposed plan
PR	port-related industrial
RAB	Restoration Advisory Board
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RFA	Resource Conservation and Recovery Act Facility Assessment
RI	remedial investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SI	site inspection
SWDIV	Southwest Division Naval Facilities Engineering Command
TBC	to-be-considered requirement
USC	<i>United States Code</i>
USEPA	United States Environmental Protection Agency

Executive Summary

This report presents the results of a Five-Year Review of the remedy implemented at Pier 12 (Fuel Pier), which is part of Installation Restoration Program (IRP) Site 7 at the former Long Beach Naval Complex (LBNC), Long Beach, California (Figure 1-1). Pier 12 is currently managed by the United States Department of the Navy (Navy) as part of an active naval installation, the Defense Fuel Support Point (DFSP), San Pedro, California. Remedial action was necessary at Pier 12 because elevated concentrations of chemical compounds and limited sediment toxicity were identified in sediments located beneath and adjacent to the pier during the remedial investigation. Although no adverse effects to the benthic community were reported, the chemically impacted subsurface sediments located beneath and adjacent to Pier 12 have the potential to pose ecological risk if these sediments are disturbed. The remedy for Pier 12 was described and documented in the *Final Record of Decision for Installation Restoration Site 7, Operable Unit 3, Former Long Beach Naval Complex, Long Beach, California* (Final Record of Decision [ROD]) (Camp, Dresser, and McKee, Inc. [CDM], 2007). This Five-Year Review was conducted by CH2M HILL Kleinfelder, a Joint Venture (KCH), for the Navy, under Contract Task Order 0076 of Navy Contract No. N62473-09-D-2622.

IRP Site 7 comprises the West Basin of Long Beach Harbor, and is bounded on the south and the west by the Navy Mole and on the north by the former Naval Station (NAVSTA) Long Beach and the former Long Beach Naval Shipyard (LBNSY) properties (Figure 1-2). IRP Site 7 is approximately 700 acres in size, with water depths on the order of 45 feet. During NAVSTA Long Beach and LBNSY operation, there were 13 piers at IRP Site 7 where ships docked for maintenance and loading.

Pier 12 was one of seven areas of ecological concern (AOEC) designated within IRP Site 7 of Operable Unit 3 at the former LBNC (Figure 1-3). This Five-Year Review is prepared for the remedy at Pier 12 (AOEC E) only, and it does not include information regarding IRP Site 7 in general or the six other AOECs discussed in the Final ROD (CDM, 2007). The other remedial responses documented in the IRP Site 7 ROD are being implemented by the Port of Long Beach.

This is the first Five-Year Review for Pier 12. The next Five-Year Review will be completed within 5 years from the signature date of this report.

The review was conducted in accordance with the following guidance documents:

- *Comprehensive Five-Year Review Guidance*, United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response Directive 9355.7-03B-P (USEPA, 2001)
- *Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act Five-Year Reviews* (Navy, 2011)
- *Clarifying the Use of Protectiveness Determinations for Comprehensive Environmental Response, Compensation and Liability Act Five-Year Reviews* (Navy, 2012)

- *Toolkit for Preparing Five-Year Reviews* (Navy, 2013)

This Five-Year Review was completed in order to accomplish the following objectives:

- Determine whether the remedy currently in place at Pier 12 is protective of human health and the environment.
- Document the methods, findings, and conclusions of the review in a report.
- Identify any issues found during the review and make recommendations to address them.

This Five-Year Review does not generate new data, significantly re-evaluate existing data, or question previous conclusions regarding the data. This Five-Year Review includes available finalized data (i.e., data presented in final documents) and follows regulatory guidance as of July 2014. New or revised data and regulatory guidance that became available after this date were not included in this Five-Year Review but will be included in the 2019 Five-Year Review. The Five-Year Review process consists of a document review, interviews with Navy personnel, site inspections, and a review of applicable or relevant and appropriate requirements. This information was used to answer three technical assessment questions from USEPA guidance, as follows:

- Is the remedy functioning as intended by the decision documents?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

As defined in USEPA (2001) guidance, the protectiveness of the site was determined, based on the answers to the preceding questions, as one of the following:

- Protective
- Protective for the short term
- Will be protective once the remedy is complete
- Protectiveness cannot be determined until additional information is obtained
- Not protective

The remedy in place at Pier 12, consisting of institutional controls (ICs), to protect benthic organisms from exposure to contaminated subsurface sediment is functioning as intended.

The following issues were identified for Pier 12 during this Five-Year Review:

- The sign on the east side of Pier 12 is illegible.
- Navy personnel including the Remedial Project Manager, staff at the DFSP San Pedro, and United States Department of the Army personnel monitoring the pier were not aware of the Final ROD (CDM, 2007) and the required ICs.

The following are summaries of the recommendations and follow-up actions for Pier 12:

- Replace the sign on the east side of Pier 12.
- Prepare a fact sheet that provides a brief overview of the current conditions of Pier 12, explains the RAO presented in the Final ROD (CDM, 2007), and describes the necessary protective measures to ensure the ICs continue to be properly implemented.

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1.0 Introduction

This report presents the results of a Five-Year Review of the remedy implemented at Pier 12 (Fuel Pier), which is part of Installation Restoration Program (IRP) Site 7 at the former Long Beach Naval Complex (LBNC), Long Beach, California (Figure 1-1). Remedial action was necessary at Pier 12 because elevated concentrations of chemical compounds and limited sediment toxicity were identified in sediments located beneath and adjacent to the pier during the remedial investigation (RI). Although no adverse effects to the benthic community were reported, the subsurface sediments located beneath and adjacent to the pier had the potential to cause adverse effects if disturbed and subsequently exposed to the benthic community. The remedy for Pier 12 was described and documented in the *Final Record of Decision for Installation Restoration Site 7, Operable Unit 3, Former Long Beach Naval Complex, Long Beach, California* (Final Record of Decision [ROD]) (Camp, Dresser, and McKee, Inc. [CDM], 2007). This Five-Year Review was conducted by CH2M HILL Kleinfelder, a Joint Venture (KCH), for the United States Department of the Navy (Navy), under Contract Task Order No. 0076 of Navy Contract No. N62473-09-D-2622.

IRP Site 7 comprises the West Basin of Long Beach Harbor, and is bounded on the south and the west by the Navy Mole and on the north by the former Naval Station (NAVSTA) Long Beach and the former Long Beach Naval Shipyard (LBNSY) properties (Figure 1-2). IRP Site 7 is approximately 700 acres in size, with water depths on the order of 45 feet. During NAVSTA Long Beach and LBNSY operation, there were 13 piers at IR Site 7 where ships docked for maintenance and loading. Pier 12 (Fuel Pier) is part of an active naval installation.

Pier 12 was one of seven areas of ecological concern (AOEC) designated within IRP Site 7 of Operable Unit 3 at the former LBNC (Figure 1-3). This Five-Year Review is prepared for the remedy at Pier 12 only, and it does not include information regarding IRP Site 7 in general or the six other AOECs discussed in the Final ROD (CDM, 2007). The other remedial responses documented in the IRP Site 7 ROD are being implemented by the Port of Long Beach (POLB).

This is the first Five-Year Review for Pier 12. Five-Year Reviews are required for the site because (1) an ongoing or completed remedial action has left hazardous substances in place that would not allow for unlimited use and unrestricted exposure, and (2) the ROD was signed on or after October 17, 1986 (the effective date of the Superfund Amendments and Reauthorization Act [SARA]). The triggering mechanism for this first Five-Year Review is the signature date of the Final ROD, August 2007 (CDM, 2007). The next Five-Year Review will be completed within 5 years from the signature date of this report.

The review was conducted in accordance with the following guidance documents:

- *Comprehensive Five-Year Review Guidance*, United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-03B-P (USEPA, 2001)
- *Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act Five-Year Reviews* (Navy, 2011)

- *Clarifying the Use of Protectiveness Determinations for Comprehensive Environmental Response, Compensation and Liability Act Five-Year Reviews* (Navy, 2012)
- *Toolkit for Preparing Five-Year Reviews* (Navy, 2013)

1.1 Purpose of Review

The purpose of a Five-Year Review is to evaluate the implementation and performance of the selected remedy in order to determine whether the remedy is or will be protective of human health and the environment. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 United States Code (USC) Section (§) 9601, et seq., and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 Code of Federal Regulations (CFR) 300 call for Five-Year Reviews of certain CERCLA remedial actions, when those remedial actions leave hazardous substances, pollutants, or contaminants onsite at levels that will not allow for unlimited use and unrestricted exposure. USEPA also conducts Five-Year Reviews of remedial actions in some other cases as a matter of policy. The statutory requirement to conduct a Five-Year Review was added to CERCLA as part of SARA, Public Law 99-499. USEPA (2001) classifies each Five-Year Review as either *statutory* or *policy*, depending on whether it is required by statute or is conducted as a matter of policy. The Five-Year Review for Pier 12 is a statutory review.

As specified by CERCLA and the NCP, statutory reviews are required for sites where, after remedial actions are complete, hazardous substances, pollutants, or contaminants will remain onsite at levels that will not allow for unlimited use and unrestricted exposure. Statutory reviews are required at such sites if the ROD was signed on or after the effective date of SARA. CERCLA §121(c), as amended, 42 USC § 9621(c), states the following:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each 5 years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

Additionally, the NCP, states the following at 40 CFR 300.430(f)(4)(ii):

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

1.2 Report Organization

This Five-Year Review report is organized as follows:

- **Section 1.0** introduces the Five-Year Review, describes the purpose of the review, and presents the organization of the report.
- **Section 2.0** presents the facility location and history, environmental setting, and site chronology.
- **Section 3.0** presents details of the remedial actions.

- **Section 4.0** describes the process taken to conduct this Five-Year Review.
- **Section 5.0** presents the technical assessment of this Five-Year Review.
- **Section 6.0** summarizes issues, recommendations, and follow-up actions identified during this Five-Year Review.
- **Section 7.0** lists the protectiveness statements for the site.
- **Section 8.0** indicates when the next Five-Year Review needs to be completed.
- **Section 9.0** lists documents cited in this report.
- **Figures** immediately follow Section 9.0 of the report.
- **Appendices** follow the figures in the report:
 - **Appendix A** provides the Five-Year Review Site Interviews.
 - **Appendix B** presents Site Inspection Photographs.
 - **Appendix C** provides the Applicable or Relevant and Appropriate Requirements (ARARs) Analysis.

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2.0 Background and Site Chronology

This section presents a brief description of the location and history of Pier 12, and information on the land and resource use, geology, hydrogeology, and ecology of the area. This section also includes a chronology of events that occurred at Pier 12, including the history of contamination and the basis for taking action.

2.1 Site Location and History

Pier 12 is located at the former LBNC (Figure 1-2), which is on the south side of Terminal Island within the Los Angeles and Long Beach (LA/LB) Harbor Districts, approximately 3 miles west of downtown Long Beach, Los Angeles County, California (CDM, 2007). The former LBNC comprises the former LBNSY and the former NAVSTA Long Beach. The LA/LB Harbor Districts are located in an industrial area, and the nearest residential areas are over 2 miles away.

In 1938, a strip of coastline along the southern portion of Terminal Island was acquired by the Navy from the cities of Long Beach and Los Angeles (CDM, 2007). This land was then expanded through hydraulic fill operations conducted between 1938 and the early 1940s. A seawall was constructed along its southern shoreline in the early 1940s, and the area between the seawall and the former shoreline was filled with dredged and imported fill materials. During this period, piers and dry docks were constructed along this seawall. The Navy Mole was constructed in late 1944 through early 1945 using imported rock and sediments dredged from nearby. Additional piers were constructed between the 1940s and late 1980s. Ships were docked at these piers, including Pier 12, for maintenance and loading as part of the former LBNC operations. Pier 12 was constructed in the mid-1980s (Bechtel Environmental, Inc. [BEI], 1997). A pipeline system delivers fuel to the Defense Fuel Support Point (DFSP) in San Pedro from Pier 12.

2.1.1 Relationship to IRP Site 7

Pier 12 is one of seven areas within IRP Site 7 that were designated as AOECs in the Final ROD (CDM, 2007) (Figure 1-3). These AOECs were labeled as AOEC A, AOEC B, AOEC C, AOEC D, AOEC E, AOEC F, and AOEC G. Pier 12 was considered AOEC E. Remedial actions were recommended for AOEC A, C, E, F, and G (remedial action at AOECs B and D was not required). As shown in Figure 1-3, AOEC C is adjacent to the east and west sides of Pier 12, while the area north of the pier was not considered an AOEC.

The chemically impacted sediments from IRP Site 7 are within an area referred to as the "West Basin." The chemically impacted sediments specific to Pier 12 are located beneath and adjacent to the pier.

2.2 Land and Resource Use

Pier 12 remains in use by the Navy, under its custody and control, as an active fuel facility (CDM, 2007). Facilities surrounding Pier 12 include tank farms; automobile-, cement-, and

cargo-handling terminals; and storage terminals. The areas around Pier 12 are used for commercial shipping, liquid bulk handling, and heavy industrial activities. The area north of former LBNC is used for oil production activities. Terminal Island, where the former LBNC once operated, comprises the western portion of POLB and the eastern portion of the Port of Los Angeles. These ports participate in heavy shipping traffic, container storage, cargo handling, dredging activities, and loading/off-loading operations.

The LA/LB Harbor District, including Pier 12, is currently zoned as a port-related industrial (PR) land use (City of Long Beach, 2014). At the time of the Final ROD, Pier 12 was also designated with a PR land use, and that designation was projected to continue in the future (CDM, 2007). At the time of this Five-Year Review, it is anticipated that the future land use designation for Pier 12 will remain PR.

2.2.1 Sedimentation

Sediments in the West Basin can be mobilized and moved away from their existing locations to settle somewhere else, or they can be moved out of the West Basin entirely (BEI, 1997). Conversely, sediments from outside could enter and settle in the West Basin. Redistribution of bottom sediments typically requires their initial mobilization and subsequent transport by currents. The intensity of currents required to initiate sediment motion is far greater than that required for subsequent transport. The overall circulation (i.e., persistent currents) in the West Basin is not strong enough to mobilize bottom sediments. However, there are other mechanisms that can mobilize the bottom sediments and make them available for transport by relatively weak currents.

Induced turbulence from ship propellers, as well as construction and dredging activities, which are relatively localized and of short duration, form the major mechanisms for suspension and mobilization of West Basin sediments (BEI, 1997). Once mobilized and suspended in the water column, currents caused by tides and wind are potentially capable of transporting the sediments. The suspended sediments susceptible to transport of this nature generally consist of fine particulates, such as clays, silts, and fine sands.

Sediment particle size is a characteristic that determines the extent of sediment dispersion throughout the West Basin (BEI, 1997). Dispersion may be attributed to ship propeller disturbance, tides, currents, and other phenomena. Particle sizes have been observed to be highly variable, ranging from fine particulates in suspected depositional areas to coarse-grained sediments in open areas of the main channel where maintenance dredging has been conducted. Part of these sediments may have originated from the fill materials brought in during the 1930s and 1940s to construct the Navy Mole and other portions of the LBNC.

The areas beneath the West Basin piers represent suspected depositional areas, with accumulated shell hash due to concentrated mussel populations colonizing pier pilings (BEI, 1997). These suspected depositional areas are characterized by fine particulates, the presence of shell hash, and a strong odor, probably caused by anaerobic degradation of organic matter. In general, sediments underneath the piers have been described as dark, micaceous silt with some sand, gravel, and shell fragments. It is also possible that to some extent, sediments beneath the piers at the LBNSY may be remnants of the historical beach that is known to have existed there before the seawall and piers were constructed.

2.2.2 Oceanography

The West Basin is located in the San Pedro Bay region of the Southern California Bight (Bight). This region, which lies southeast of Santa Monica Bay, is defined oceanographically as the submarine shelf bounded by the Palos Verdes peninsula to the north, the Newport Submarine Canyon to the south, and the mainland shelf break extending 18 miles south of Long Beach (BEI, 1997). The Bight itself is a 100,000-square-mile submerged continental borderland of the Pacific Ocean bounded on the north, east, and southeast by a large mountainous reach of the North American coastline. The Bight extends from Point Conception, California, 360 miles south to Cabo Colnett, Baja California, Mexico. The Bight is bounded on the west by the inner border of the southward-flowing California Current and by the outer edge of the continental shelf. The prominent distinguishing feature of the bight is the eastward indentation of the coastline that allows for a northward-flowing return eddy, the Southern California Countercurrent. As a result of its unique circulation patterns and complex bathymetry, the Bight acts as an enclave of region-specific populations of marine life, a trap for warm, equatorial water, and a reservoir for chemical components entering from the land, air, and sea.

Physical characteristics, such as water transparency and temperature, may reflect overall water quality, currents, tides, and waves, and are responsible for water circulation patterns that, in turn, affect the concentration and distribution of chemicals within the West Basin (BEI, 1997). Water chemistry, including dissolved oxygen, hydrogen-ion activity (pH), salinity, metals, and organic compound concentrations, is also an indication of overall water quality and closely related to biological activity.

2.2.3 Ecosystems

The LA/LB Harbors contain a variety of marine habitats and marine life (BEI, 1997). These habitats may be subdivided into hard substrate, soft bottom, water column, and specially designated habitats. Hard substrate habitat typically includes riprap, walls, and wood and cement pilings. These different habitats support diverse types of biota, which are dominated by invertebrates. Barnacles, mussels, echinoderms, and seaweed dominate hard substrate habitat in the LA/LB Harbors, while polychaetes, amphipods, and other burrowing infaunal invertebrates dominate soft bottom substrates. The water column is generally inhabited by fish and plankton. A variety of bird species utilize the West Basin area.

The marine ecosystem in the West Basin is largely non-natural in that man-made structures, such as the Navy Mole, piers, and even the San Pedro Bay breakwater, have altered the natural environment of this general area for over 50 years (BEI, 1997). Before human intervention, the natural shoreline, where portions of NAVSTA Long Beach and LBNSY are presently situated, was a sandy beach. The margins of the West Basin are currently protected from wave action by concrete or wood walls that are lined with large angular rocks. Existing water depths in the West Basin ranged from less than 20 feet in the northwest corner to approximately 50 feet at the West Basin entrance. Typical water depths in the West Basin were in the range of 35 to 45 feet. Water depths beneath piers were shallower. Depths of 80 feet were encountered just outside of the West Basin entrance, very likely a part of the Long Beach Harbor entrance channel. Water depth in the West Basin has been maintained by occasional dredging to allow use by large ships. There are a small

number of intertidal and shallow water habitats associated with the pier pilings and steep rocky faces located along the periphery of the West Basin.

Two distinct bottom habitats occur in the West Basin: the basin area and areas beneath the piers (BEI, 1997). The bottom substrate in the basin area is generally considered to be soft silty clay composed mostly of fine grained sediments, with grain sizes ranging to coarse sand near the opening of the basin; there is no rock bottom substrate. The habitats beneath the piers are of three types: soft sediment, shells and debris protruding from the sediment, and columnar pilings extending from the sediments to above the water surface.

2.3 Site Chronology

Important and relevant information on environmental investigation, remedial planning, and remedial action events in connection with the remedial activities at Pier 12 are listed in Table 2-1. Events are listed in chronological order.

TABLE 2-1
Chronology of Site Events at Pier 12
Former LBNC, Long Beach, California

Event	Date	References
Wastes from various industrial areas and from the cleaning of process tanks on the former LBNC were reportedly discharged into the LA/LB Harbors	1940s–1970s	CDM, 2007
Industrial Waste Study	1969	Southwest Division Naval Facilities Engineering Command (SWDIV), 1969
Initial Assessment Study (IAS)	1983	Naval Energy and Environmental Support Activity (NEESA), 1983
Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)	1989	Department of Health Services, 1989
Site Inspection (SI)	1991	Jacobs Engineering Group Inc. (JEG), 1992a
SI	1992	JEG, 1992b
Sediment sampling	1996	CDM, 2007
NAVSTA Long Beach closure	1994	CDM, 2007
Final RI	1994–1997	BEI, 1997
LBNSY closure	1997	CDM, 2007
Final Feasibility Study (FS)	1998–2003	BEI, 2003
FS Addendum	July 2006	CDM, 2006
Proposed Plan (PP)	October 2006	Navy, 2006
Final ROD	August 2007	CDM, 2007

2.4 History of Contamination

From the early 1940s to the mid-1970s, various fuels, oils, paints, and other organic and metals wastes were disposed of at the former LBNC, including discharge into IRP Site 7 and

near Pier 12 (CDM, 2007). Wastes were also discharged into the LA/LB Harbors through the storm drain system and from flushing of dry docks. Primary sources of discharges were found to occur from numerous land- and ship-based activities that have included lead caulking, painting or paint removal, boiler cleaning, and pipe-flushing operations. Stormwater discharge and flushing of dry docks represent historical primary release mechanisms and potential sources of chemicals in Pier 12 sediments. Dredging has been conducted at the LA/LB Harbors for construction or relocation of piers and for maintenance between the piers.

As a result of these activities, sediments beneath and adjacent to Pier 12 were chemically impacted and could extend to approximately 9 feet below the mudline (BEI, 1997; 2003). The contaminated sediments were initially investigated in 1969 during the industrial waste study (SWDIV, 1969). Subsequent investigations included an IAS (NEESA, 1983), RFA (DEH, 1989), two Sis (JEG, 1992a; 1998b), sediment sampling activities (CDM, 2007), Final RI (BEI, 1997), Final FS (BEI, 2003), FS Addendum (CDM, 2006), PP (Navy, 2006), and Final ROD (CDM, 2007), as shown in Table 2-1. The chemicals of ecological concern (COECs) included metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and pesticides (e.g., dichlorodiphenyltrichloroethane [DDT]) (CDM, 2007).

Most of the detected metals, including arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc, were found in similar distributions among stations within the West Basin (BEI, 1997). Metal concentrations were generally higher along the seawall and the Navy Mole, and between and beneath piers. DDT and PAH compounds were found at highest concentrations beneath the piers and adjacent to piers. Similar to patterns observed with the metals, the PAH concentrations exceeded the reference station levels at the West Basin stations beneath the piers and adjacent to piers. PCB concentrations were greatest near the piers and along the West Basin perimeter.

Potential ecological receptors that could be exposed to these COECs were identified as the benthic community. The chemically impacted subsurface sediments located beneath and adjacent to Pier 12 would represent potential ecological risk if these sediments were to be disturbed, and the benthic community was exposed to them.

2.5 Basis for Taking Action

The selected remedial action for Pier 12 (Institutional Controls [ICs]) was chosen based on the site history (Section 2.1), the current and future land uses of Pier 12 (Section 2.2), the results of previous investigations (Section 2.4), and the results of a human health risk assessment (HHRA) and ecological risk assessment (ERA) (Sections 2.5.1 and 2.5.2). In 1997, an RI of the surface and subsurface sediments at IRP Site 7 was conducted (BEI, 1997). Overall results from the investigations conducted at IRP Site 7 indicate that sediment below Pier 12 poses no risk to human health or the environment under its current use; however, ICs are required to prevent disturbance of the sediment to protect the ecologically productive and diverse benthic community from future exposures to sediment that may pose a risk.

An HHRA and an ERA were conducted for IRP Site 7 as a whole, including Pier 12, during the RI phase. Additional ERAs were conducted during the FS phase (BEI, 2003). Reference stations outside of the IRP Site 7 boundaries were selected to represent fish and sediments

that were exposed to normal port activities of the LA/LB Harbors, but were not at locations used by the former LBNC. Fish and sediment samples were collected from both IRP Site 7 and the reference stations. A summary of the human health and ecological risk evaluations is provided as follows.

2.5.1 Summary of Human Health Risks

Cancer, noncancer, and lead risks to recreational and subsistence anglers consuming fish collected from locations within IRP Site 7 and from the reference stations were estimated for recreational and subsistence anglers consuming California halibut and white croaker (CDM, 2007). These are the two species of fish that dominated the catch in the fish trawls for the RI (BEI, 1997).

The HHRA results did not indicate an appreciable difference in cancer risks associated with consumption of California halibut and white croaker from IRP Site 7 compared with the reference stations (CDM, 2007). The results indicated, however, that the upper-bound cancer risk associated with consumption of California halibut and white croaker, regardless of the source (IRP Site 7 or reference stations), was above the risk management range. Since this risk was associated with both IRP Site 7 and the reference stations, the risk was not considered attributable to IRP Site 7, including Pier 12.

The results of the HHRA did not indicate an appreciable difference in noncancer risks associated with consumption of California halibut and white croaker from IRP Site 7 and the reference stations (CDM, 2007). The concentrations of lead in the fillets of white croaker from IRP Site 7 appeared to be high enough to cause lead toxicity. The concentrations of lead in the fillet and whole body samples of California halibut from IRP Site 7 sampling locations appeared not to pose a risk to either recreational or subsistence anglers. However, since lead was infrequently detected in the white croaker fillet samples, and because the lead risk value only slightly exceeded the benchmark value, the lead risks were not addressed further. Therefore, it was determined that any potential threat likely would be to the organisms that inhabit the surficial sediments of IRP Site 7.

2.5.2 Summary of Ecological Risks

An ERA was prepared as part of the RI that focused on the assessment of risk to ecological receptors posed by the chemicals measured in IRP Site 7 sediments (CDM, 2007). Three surface sediment samples and one subsurface sediment sample were taken at Pier 12, also referred to as AOEC E, in the Final RI (BEI, 1997).

The ERA for IRP Site 7 consisted of developing a conceptual site model (CSM), performing an exposure assessment using site-specific ecological data, characterizing ecological effects of detected chemicals in sediments and fish, characterizing ecological risk, and presenting the uncertainties associated with the risk assessment.

Figure 2-1 illustrates the CSM presented in the Final RI (BEI, 1997). The ecological receptors were identified as marine invertebrates and fish (both benthic and pelagic) and benthic-feeding aquatic predators. Exposure routes were considered ingestion (incidental, dermal absorption, and respiration).

Biological analyses included benthic (bottom dwelling) organisms and toxicity bioassays. Benthic organisms were collected from the surface sediments and evaluated for abundance

and diversity, and for potential toxic effects of chemicals in the sediment. Bioaccumulation measurements included analyses of laboratory-exposed clams and field-collected California halibut, and white croaker (BEI, 1997). Bioassays were performed using standard test organisms such as amphipod crustaceans, polychaete worms, and sand dollar larvae to evaluate survivability in the sediment bed. Hazard quotients were also calculated to evaluate potential risk to an upper-trophic level receptor (harbor seal) ingesting chemicals in prey species (white croaker).

The following conclusions were made from the ERA at Pier 12 (Fuel Pier). Sediments adjacent to and beneath Pier 12 were identified as AOEC E in the Final RI (BEI, 1997) because of sediment toxicity and 18 chemical compounds exceeding the reference value. The mean ratio to reference for all chemical compounds was 1.3. Several chemicals exceeded the RI reference and the low toxicity benchmark, but none of the chemicals exceeded median toxicity benchmark. Furthermore, some toxicity was observed in the amphipod bioassay conducted for each of the locations. Subsurface sediment test results obtained from the RI sampling event indicated that the chemicals of concern in sediments could extend to depths of approximately 9 feet below the "mud line" beneath Pier 12. No adverse effects to the benthic community were reported based exposure to the surface sediments. A modified benthic community that has adapted to a benthic habitat of sediment mixed with extensive shell fragments appeared diverse and abundant. Species that are considered indicators of degraded conditions were present; however, the Pier 12 sampling locations had the lowest abundance of these indicators species. As a result of the ERA, Pier 12 was considered to represent an area of moderate ecological risk due to the elevated chemical concentrations and some sediment toxicity for sensitive and moderately sensitive species (amphipods).

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3.0 Remedial Actions

3.1 Remedy Selection

In August 2007, the Navy completed a Final ROD for IRP Site 7 that documented the remedial action objective (RAO) for Pier 12 and selected a remedy to meet the RAO (CDM, 2007). The RAO is to protect the presence of an ecologically productive and diverse benthic community in the sediments of Pier 12, consistent with the existing land use. Achieving this RAO would demonstrate the remedy is complete, even if there is a requirement to maintain the ICs.

ICs were selected as the remedy that would achieve the RAO for chemically impacted sediments beneath and adjacent to Pier 12 (CDM, 2007). The ICs were designed to prevent unauthorized or uncontrolled disturbance of chemically impacted sediments below Pier 12, while allowing the continued use of the pier. The ICs are applied to just Pier 12; the other areas within IRP Site 7 are being addressed by the POLB. The Navy or its assignees are responsible for implementing this selected remedy at Pier 12.

Major components of the selected remedy include the following:

- Implementation of ICs in the form of administrative mechanisms, including limiting the use of Pier 12 to port-related activities, maintaining access control and oversight, and not allowing disturbance of the sediments beneath and adjacent to the pier without prior authorization and evaluation.
- CERCLA statutory Five-Year Reviews of the ICs remedy in perpetuity or until ICs have been released or terminated when ecological risk no longer exists.

3.2 Remedy Implementation

The main goals of the remedy at Pier 12 are to prevent unauthorized or uncontrolled disturbance of chemically impacted sediments below Pier 12, while allowing the continued use of the pier. The Navy has taken the following steps to implement the remedy at Pier 12:

- Pier 12 is locked and guarded at all times of the day and night.
- Access to the waterway surrounding Pier 12 is controlled by the POLB. Drivers of watercraft traveling within the waterway that have not been approved by the Harbor Master and the Coast Guard are stopped and questioned.
- Tankers are tied to the dock and do not drop anchor at Pier 12.
- Two signs indicating the area is restricted are located on the west and east sides of Pier 12.

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4.0 Five-Year Review Process

This Five-Year Review for Pier 12 was conducted in accordance with the following guidance documents:

- *Comprehensive Five-Year Review Guidance*, USEPA OSWER Directive 9355.7-03B-P (USEPA, 2001)
- *Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act Five-Year Reviews* (Navy, 2011)
- *Clarifying the Use of Protectiveness Determinations for Comprehensive Environmental Response, Compensation and Liability Act Five-Year Reviews* (Navy, 2012)
- *Toolkit for Preparing Five-Year Reviews* (Navy, 2013)

A technical assessment was conducted for Pier 12 by reviewing documents and data covering the period of the Five-Year Review (2007 to 2014), conducting interviews with relevant parties, and performing a site inspection. On the basis of the technical assessment, the protectiveness of the remedy for the site was evaluated, and recommendations were made. A detailed discussion follows, and the results of the technical assessment are provided in Chapter 5.0, Technical Assessment.

4.1 Five-Year Review Approach

The USEPA (2001) guidance uses the following three technical assessment questions to provide the framework for organizing and evaluating site data and information, and to ensure that relevant issues are considered when assessing the protectiveness of a remedy:

- Question A – Is the remedy functioning as intended by the decision documents?
- Question B – Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?
- Question C – Has any other information come to light that could call into question the protectiveness of the remedy?

The answers to these questions were then used to evaluate the overall protectiveness for Pier 12 (see Chapter 5.0, Technical Assessment). Protectiveness was categorized as follows:

- Protective
- Protective for the short term
- Will be protective once the remedy is complete
- Protectiveness cannot be determined until additional information is obtained
- Not protective

On the basis of the determination of protectiveness, required statutory findings and certain recommendations have been prepared. Issues and recommendations are provided in

Chapter 6.0. Protectiveness statements are provided in Chapter 7.0. Detailed information about Pier 12 can be found in Chapter 2.0.

The Five-Year Review did not generate new data or significantly re-evaluate existing data to assess previous conclusions regarding the data.

4.2 Community Notification and Involvement

Throughout the Five-Year Review process, community involvement has been a priority in Navy environmental management and CERCLA-related efforts. Community notification is also a requirement as part of the Five-Year Review, and USEPA (2001) guidance recommends that community involvement activities be performed.

The former LBNC Restoration Advisory Board (RAB) has been involved throughout the CERCLA process for IRP Site 7, including Pier 12. The RAB reviewed and provided comments on the IRP Site 7 RI/FS Work Plan (JEG, 1993), the Final RI (BEI, 1997), and the Final FS (BEI, 2003). The community also reviewed and was provided the opportunity to comment on the PP for IRP Site 7 (Navy, 2006).

The RAB was informed during the April 23, 2014, RAB meeting that the Navy had begun preparations for a Five-Year Review for Pier 12. Pending Navy approval, a public notice will be published in the *Long Beach Press-Telegram* when this report is finalized; it will summarize the findings of the review and announce the availability of the report at the information repository located at the City of Long Beach Public Library, Government Publications Section (located on the lower level), 101 Pacific Avenue, Long Beach, California. A public notice will also be posted on the former LBNC website home page:

http://www.bracpmo.navy.mil/brac_bases/california/former_ns_long_beach.html

4.3 Document and Data Review

This Five-Year Review compares documented information for Pier 12 against the RAOs specified in the Final ROD (CDM, 2007). This comparison was done to determine whether in-place systems were performing as expected, operating in compliance with the specified parameters, and meeting the RAOs. Potential early indicators of remedy performance issues and remedy sustainability were identified and evaluated. A summary list of documents reviewed and referenced is provided in Table 4-1. The documents reviewed also are referenced throughout the text and listed in Section 9.0.

TABLE 4-1
Documents Reviewed for Pier 12
Former LBNC, Long Beach, California

Documents Reviewed^a

Final RI (BEI, 1997)
Final FS (BEI, 2003)
FS Addendum (CDM, 2006)
PP (Navy, 2006)
ROD (CDM, 2007)
United States Department of the Army (Army) Application, IRP Site 7 Dredging Project (POLB, 2008)
Waste Discharge Requirements for IRP Site 7 Dredging Project (RWQCB, 2008)
Contaminated Sediment Remediation Implementation Report (POLB, 2011)
Finding of Suitability to Transfer for Former LBNC (TriEco-Tt, 2014)

Note:

^a See complete list of documents in Section 9.0 of this report.

4.4 Site Inspection

A site inspection was conducted at Pier 12 on April 28, 2014, by the Navy contractor, KCH. This inspection effort included noting current land use, points of access, location of fencing or barriers, and status of ICs (Figure 4-1).

Implementation of the following ICs for Pier 12 were inspected:

- Pier 12 is locked and guarded at all times of the day and night (evaluated by visual observations and during interviews).
- Two signs indicating the area is restricted are located on the west and east sides of Pier 12 (evaluated by visual observations).

The site inspection was conducted on land and did not include entry into the water. An informal interview with security personnel was also conducted during the site inspection, and the results are presented in Section 4.5. A site inspection checklist was not completed due to the nature of the contamination at Pier 12. Photographs of conditions noted during the site inspection are provided in Appendix B.

Current land use for Pier 12 is the same as documented in the Final ROD (CDM, 2007), which entails port-related and industrial activities. During the site inspection, no activity was occurring at Pier 12. No one was working at Pier 12 during time of inspection, and the only objects present were permanent fixtures such as cleats, light posts, and miscellaneous equipment.

There are no fences or other barriers blocking access to the waterline along the Long Beach Harbor. Access into the former LBNC general area is not restricted; however, access to Pier

12 is blocked by locked security gates. Furthermore, Army personnel monitor Pier 12 access 24 hours a day from an office located on the Navy Mole across Nimitz Road.

The visual observations of the ICs present at Pier 12 included inspection of the fencing that blocked access to the pier, security personnel monitoring access to the pier, and warning signs along the sides of the pier. The fences and signs were inspected for signs of vandalism or other damage that would interfere with the security of the area. The fencing appeared to be in adequate condition; however, one of the warning signs was covered in bird excrements and illegible as a result. The other warning sign was readable.

4.5 Site Interviews

Site interviews were conducted as part of this Five-Year Review to obtain input regarding the effectiveness of ICs at Pier 12 observed in Section 4.4 and also including effectiveness of the following ICs:

- Access to the waterway surrounding Pier 12 is controlled by the POLB. Drivers of watercraft traveling within the waterway that have not been approved by the Harbor Master and the Coast Guard are stopped and questioned (evaluated during interviews).
- Tankers are tied to the dock and do not drop anchor at Pier 12 (evaluated during interviews).

An interview with Stuart Strum, Environmental Protection Specialist at the Defense Logistics Agency, was conducted on May 19, 2014. Strum noted that fuel delivery operations and active storage and transportation of fuel at Pier 12 have been temporarily halted since October 2013. He also noted that he did not know of any particular precautions being taken to avoid the sediments beneath and adjacent to Pier 12. However, he indicated that tankers do not drop anchor at Pier 12, and that access to the waterway is controlled. Therefore, in theory according to Mr. Strum, the ICs at Pier 12 are functioning as expected, though they are not well documented. To remedy this, Strum suggested that a brief overview of the situation, explanation of the ROD statements, and description of the necessary protective measures be prepared. Detailed information obtained during this interview is included in Appendix A.

A brief discussion was also held with Army personnel Rodriguez who was encountered at the pier during the site visit on April 28, 2014. Rodriguez noted that fueling activities have not occurred at Pier 12 for “a long time” (a specific length of time was not known). He mentioned that Navy’s Sea, Air, Land Teams (SEALs) occasionally will practice maneuvers on the surface of the pier, but not in the water below. He also mentioned that “a long time ago” fishermen would come into the Long Beach Harbor to fish but that this was stopped (specific details were not known).

5.0 Technical Assessment

As discussed in Section 4.1, the USEPA (2001) guidance uses three technical assessment questions to provide the framework for organizing and evaluating site data and information and to ensure that relevant issues are considered when assessing the protectiveness of a remedy.

The following paragraphs present the three technical assessment questions and summarize the findings of the evaluation of site data, information, and ICs for Pier 12.

Question A: Is the Remedy Functioning as Intended by the Decision Documents?

The remedy for Pier 12 is functioning as intended by the Final ROD (CDM, 2007). ICs at Pier 12 include security personnel, barriers, controlling access to the waterway, and signage. The ICs, developed to restrict specified uses, were evaluated as part of the site inspection. The ICs are in place and functioning as intended, as noted in Section 4.4. Recommendations are suggested for improved sign maintenance and personnel awareness regarding the existence and purpose of the ICs, to help ensure the remedy remains effective. Army personnel in an office on the Navy Mole across Nimitz Road monitor the area 24 hours a day and require visitors to check in before accessing the area. Access to the top of Pier 12 is barricaded by a locked gate, and the waterway is controlled by the POLB. Drivers of watercraft who have not registered with the Harbor Master are stopped and questioned. The security personnel and Navy policy continue to limit use of Pier 12 to port-related activities. One of the two signs attached to either side of Pier 12 is in suitable condition. The sign on the east side of the pier is covered with bird excrement and is therefore illegible.

To make the ICs more accessible and well known, a fact sheet or poster is recommended that provides a brief overview of the current conditions of Pier 12, an explanation of the RAO presented in the Final ROD (CDM, 2007), and a description of the necessary protective measures to ensure the ICs continue to be properly implemented. This fact sheet or poster could be made available to security personnel at Pier 12 and Navy personnel at the Defense Logistics Agency and posted onsite so that they are aware of the ICs and continue to restrict access to the area. Replacement of the illegible sign would improve the restriction of the area.

Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and RAOs Used at the Time of the Remedy Selection Still Valid?

Land use has not changed since the Final ROD (CDM, 2007) was signed, nor is it expected to change in the near future. In addition, no changes to physical site conditions that could affect the protectiveness of the remedy have occurred.

The RAO established for Pier 12 in the Final ROD (CDM, 2007) is still valid. The material of concern is still the chemically impacted sediment below the pier. The ROD is still valid for addressing the exposure pathways and receptors for sediments beneath and adjacent to Pier 12.

A review was completed to determine whether changes in ARARs, newly promulgated standards, or any to-be-considered requirements (TBCs) used in remedy selection could call into question the protectiveness of the remedial action. As discussed in Section 5.1 herein, there were no substantive changes or revisions identified for the ARARs reviewed that could potentially affect the protectiveness of human health and the environment.

Question C: Has Any Other Information Come to Light That Could Call into Question the Protectiveness of the Remedy?

No other information was identified that could call into question the protectiveness of the remedies for Pier 12.

5.1 Applicable or Relevant and Appropriate Requirements Evaluation

A review was completed to determine whether changes in ARARs, newly promulgated standards, or any TBCs used in remedy selection could call into question the protectiveness of the remedial action. These ARARs were defined in the Final ROD for IRP Site 7 (CDM, 2007).

There were no substantive changes or revisions identified for the ARARs reviewed that could potentially affect the protectiveness of human health and the environment. No new laws or regulations were identified. The detailed review and corresponding ARARs tables are provided in Appendix C.

6.0 Issues, Recommendations, and Follow-Up Actions

This Five-Year Review has identified issues, recommendations, and follow-up actions specific to Pier 12 that need to be addressed to help ensure the remedy continues to be protective of human health and the environment in the long term.

6.1 Issues

ICs to protect the sediments beneath and adjacent to Pier 12 are functioning as intended. The following issues were identified for Pier 12 during the Five-Year Review site inspection:

- The warning sign on the east side of Pier 12 is illegible.
- Navy personnel including the Remedial Project Manager, staff at the DFSP, and Army personnel monitoring the pier were not aware of the Final ROD (CDM, 2007) and the required ICs.

6.2 Recommendations and Follow-up Actions

The following bullet points summarize the recommendations and follow-up actions evaluated in this Five-Year Review:

- Replace the sign on the east side of Pier 12.
- Prepare a fact sheet/poster that provides a brief overview of the current conditions of Pier 12, explains the RAO presented in the Final ROD (CDM, 2007), and describes the necessary protective measures to ensure the ICs continue to be properly implemented.

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7.0 Protectiveness Statement

The remedy in place as described in the Final ROD (CDM, 2007) at Pier 12 is protective of human health and the environment for the long term. The basis for this protectiveness statement is provided in Chapters 3.0, 4.0, and 5.0. The recommendations and follow-up actions for this review will continue to protect human health and the environment at Pier 12 for the long term.

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8.0 Next Five-Year Review

Five-Year Reviews are required by statute for Pier 12, as stated in Section 1.1. The next Five-Year Review should be completed during or before 5 years from the signature date of this report.

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9.0 References

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United States Department of the Navy (Navy). 2006. *Proposed Plan for Installation Restoration Program Site 7, Former Long Beach Naval Complex, Long Beach, California*. Naval Facilities Engineering Command Southwest (NAVFAC Southwest). October.

United States Department of the Navy (Navy). 2011. *Navy/Marine Corps Policy for Conducting CERCLA Five-Year Reviews*. May.

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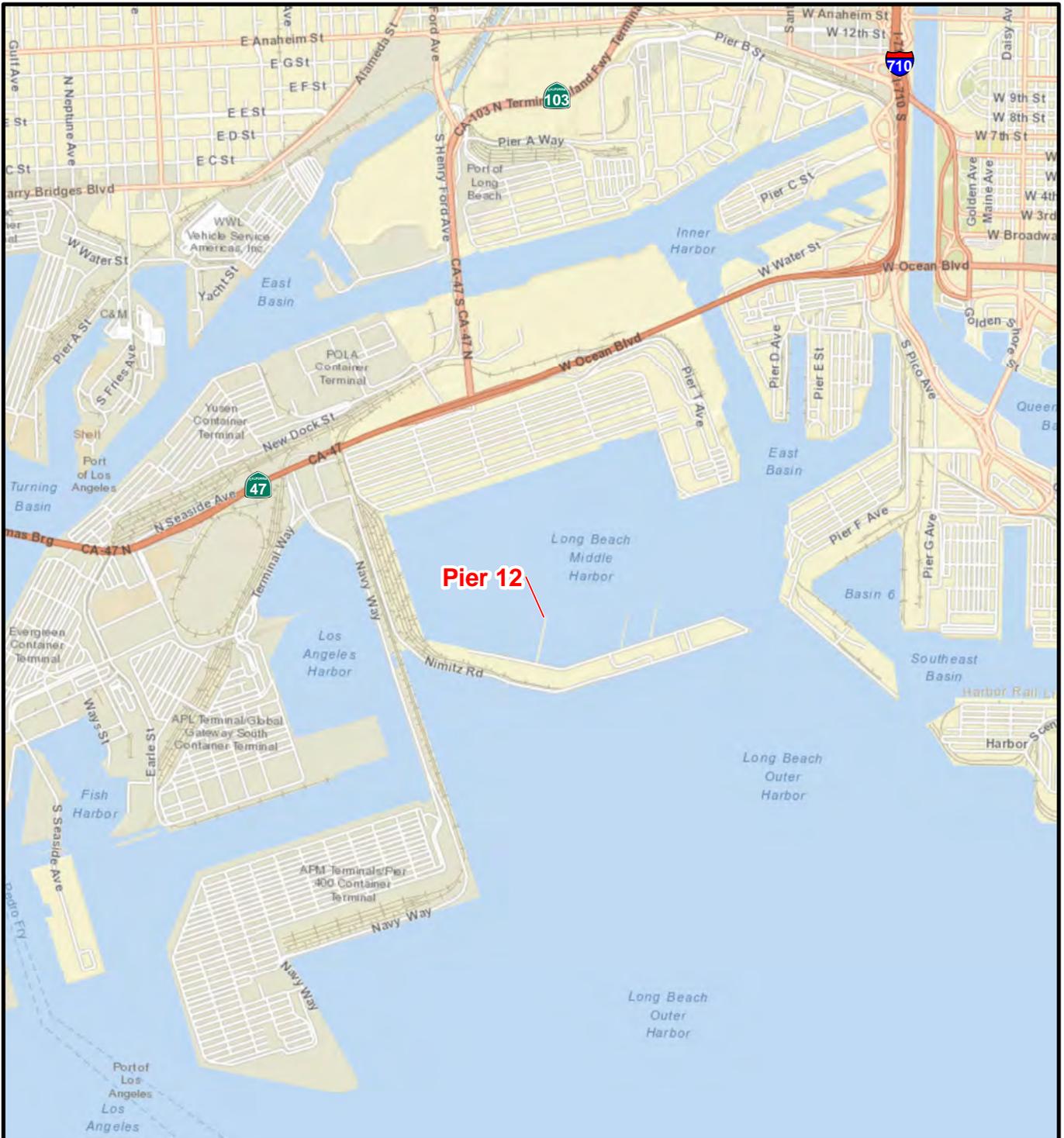
United States Department of the Navy (Navy). 2013. *Toolkit for Preparing Five-Year Reviews*. Final. December.

United States Environmental Protection Agency (USEPA). 2001. *Comprehensive Five-Year Review Guidance*. OSWER Directive 9200.2-84. June.

Figures

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SOURCE:
ESRI ArcGIS Online Web Service,
Streets



Pier 12 Vicinity

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE

1-1

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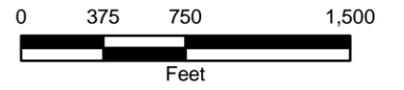


LEGEND

PIER - EXISTING

NOTES:
AOEC = Areas of Ecological Concern
POLB = Port of Long Beach

SOURCE:
- ESRI ArcGIS Online Web Service, World Imagery
5/25/2010



Pier 12 Site Location

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE

1-2

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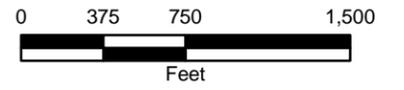
- AOEC
- AOEC (NO FURTHER ACTION)
- APPROXIMATE POLB DREDGE LIMITS, 1996 (NO FURTHER ACTION)
- NON-AOEC (NO FURTHER ACTION)
- PIER - EXISTING
- PIER - DEMOLISHED
- IRP SITE 7 BOUNDARY

NOTES:
 AOEC = Areas of Ecological Concern
 ROD = Record of Decision
 IRP = Installation Restoration Program
 POLB = Port of Long Beach

AOEC SURFACE AREAS
 - AOEC A: 15.26
 - AOEC B: 78.03
 - AOEC C: 69.83
 - AOEC D: 13.22
 - AOEC E: 1.59
 - AOEC F: 1.14
 - AOEC G: 1.46

- Piers 1, 2, 3, 6, 7, and 9 were removed by POLB (1999-2002)

SOURCES:
 - CDM, IR Site 7 Areas of Ecological Concern, May 2007
 - ESRI ArcGIS Online Web Service, World Imagery 5/25/2010

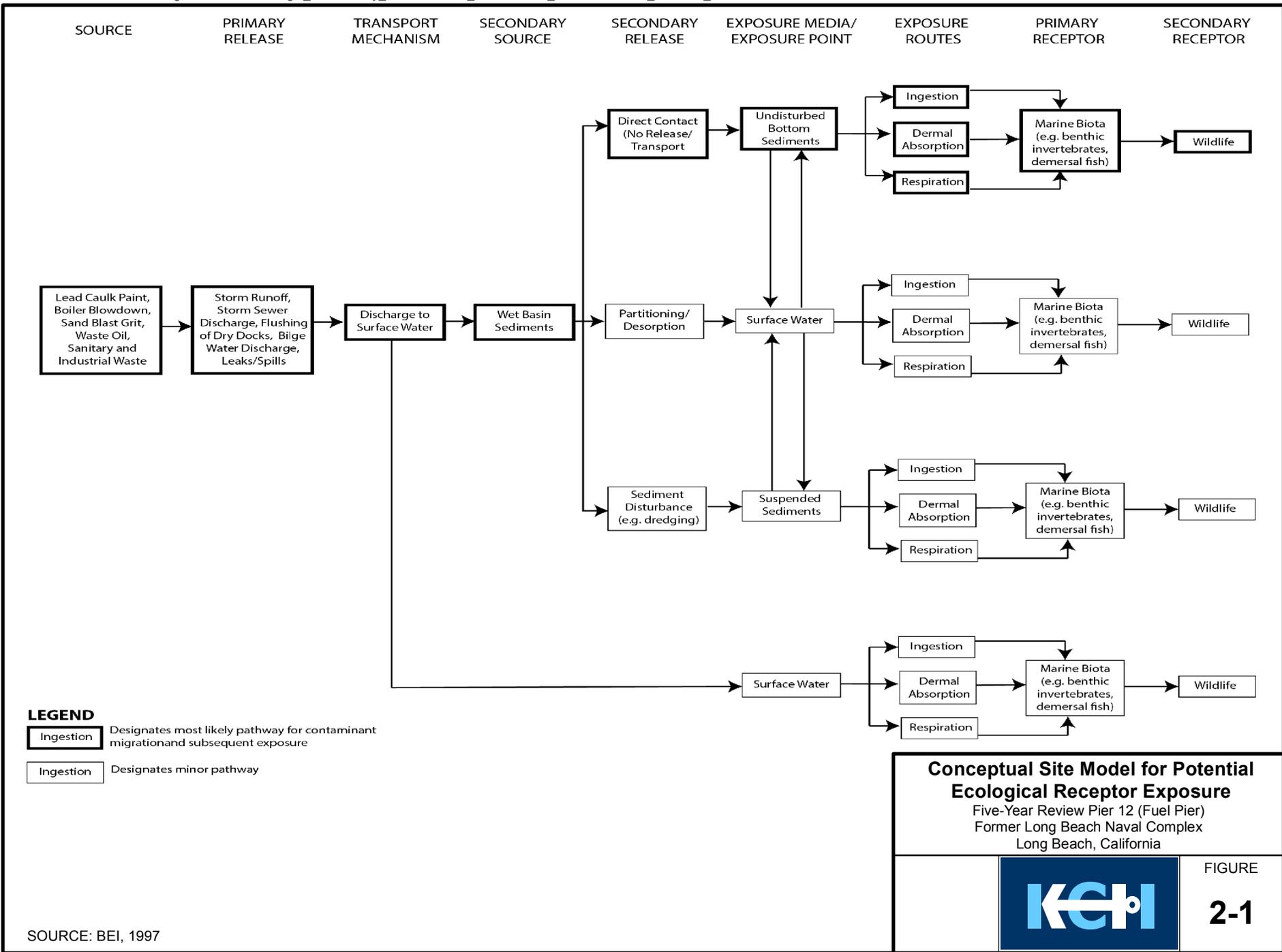


ROD IRP Site 7
Areas of Ecological Concern
 Five-Year Review Pier 12 (Fuel Pier)
 Former Long Beach Naval Complex
 Long Beach, California



FIGURE
1-3

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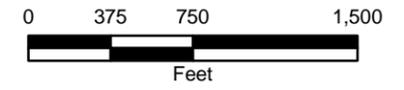


LEGEND

- ✖ ✖ FENCE
- ▭ PIER - EXISTING

NOTES:
AOEC = Areas of Ecological Concern
POLB = Port of Long Beach

SOURCE:
- ESRI ArcGIS Online Web Service, World Imagery
5/25/2010



**Status of Institutional Controls
at Pier 12**

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE

4-1

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Appendix A Site Interviews

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INTERVIEW RECORD

Pier 12 (Fuel Pier), Former Long Beach Naval Complex, Long Beach, California
Remedy: Institutional controls (ICs) to prevent unauthorized or uncontrolled disturbance and/or exposure of subsurface sediments under and adjacent to Pier 12 while allowing the continued use of the pier

Subject: Interview with Stuart Strum		Time: 2:30pm	Date: 5/19/14
Type: <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit		<input type="checkbox"/> Incoming <input checked="" type="checkbox"/> Outgoing	
Location of Visit: Conference call			
Contact Made By:			
Name: Caroline Ziegler Elyssa Figari	Title: Project Manager Document Lead	Organization: KCH KCH	
Individual Contacted:			
Name: Stuart Strum	Title: Environmental Protection Specialist	Organization: Defense Logistics Agency (DLA)	
Phone No: (310) 241-2833	E-mail Address: stuart.strum@dla.mil		
Fax No: (310) 241-2836	Street Address: 3171 N. Gaffey Street		
	City, State, Zip Code: San Pedro, CA, 90731		
Summary of Conversation			
<p>The interview began with Ms. Ziegler asking a few summary questions to understand Mr. Strum's role and knowledge of site activities. She followed by asking him specific questions from a predetermined list.</p> <p>Summary Questions:</p> <p>Ms. Ziegler asked what Mr. Strum's job title is and when he started working in his current position. Mr. Strum responded by saying he is the Environmental Protection Specialist for DLA and started in November 2012. He explained DLA's relationship to the United States Department of the Navy (Navy)—DLA provides support to the armed forces, including delivering fuel. He noted that a series of studies are currently being conducted within DLA to evaluate how to effectively deliver fuel to military service entities that are clients. As a result, the fuel delivery operations at Pier 12 have been temporarily halted pending this evaluation.</p> <p>Ms. Ziegler asked when the last time any fuel unloading occurred at Pier 12. Mr. Strum responded that the last tanker made a delivery in October 2013, and active storage and transportation of fuel ceased at this time. Some residual operations occurred since then including pushing fuel in the pipeline towards the Defense Fuel Support Point (DFSP) facility at 3171 North Gaffey Street. He also noted that he did</p>			

not know of any particular precautions being taken to avoid the sediments beneath Pier 12. However, he did note that the tankers were tied to the dock and did not drop anchor, which would have disturbed the sediments.

Ms. Ziegler asked if Mr. Strum was aware of the requirements outlined in the Final Record of Decision (ROD) (CDM, 2007). He was not aware of these requirements until recently, and to his knowledge, there is no existing guidance document that outlines procedures. He did mention that there is a memorandum of agreement (MOA) between DLA and the Navy, and an operating procedure manual for typical operations that occur at Pier 12. He will try to obtain these documents and send them to Ms. Ziegler and Ms. Figari.

Ms. Ziegler asked how long DLA had been responsible for fuel loading at Pier 12. Mr. Strum responded that it had been since the pier was constructed in the mid-1980s. He also noted that after Naval Station Long Beach went through base realignment and closure (BRAC), his understanding was that control over Pier 12 was shifted to several agencies before becoming the responsibility of Seal Beach. He does not have documentation to support this; this information was gleaned from verbal conversations he has had over the years. However, this could explain the lack of communication of Final ROD (CDM, 2007) guidance.

Ms. Ziegler asked how security was managed in the water, knowing that the pier itself is locked and guarded 24 hours per day/7 days per week (24/7). Mr. Strum responded that the waterway is controlled by the Port of Long Beach, and both the Harbor Master and the Coast Guard control access to the area. He mentioned that when DLA personnel enter the water in a boat, they always inform the Harbor Master because otherwise they would be stopped and questioned. Therefore, access to the waterway is very controlled.

Mr. Strum agreed with Ms. Ziegler's assessment that employees currently are not informed about the sediment beneath Pier 12. He isn't aware of communication or guidance regarding contaminated sediments and believes this could be a result of the shifts in parties responsible for the former Naval Station Long Beach Complex.

Specific Questions:

1. What is your role and responsibility as it relates to Pier 12? How long have you been in your position?

Mr. Strum is the Environmental Protection Specialist for DLA and started in November 2012. He manages DLA's support of the Navy, which includes the delivery of fuel at Pier 12.

2. Do you know when the last time any fuel unloading occurred at Pier 12, and when it did, what sort of precautions were taken to make sure that the sediment beneath Pier 12 was not disturbed?

The last tanker made a delivery in October 2013, and active storage and transportation of fuel ceased at this time. Some residual operations occurred since then including pushing fuel in the pipeline towards the DFSP facility at 3171 North Gaffey Street. Mr. Strum did not know of any particular precautions being taken to avoid the sediments beneath Pier 12. However, he did note that the tankers were tied to the dock and did not drop anchor, which would have disturbed the sediments.

3. Do you feel well informed about site activities and progress?

Not until recently.

<p>4. Are ICs at the site functioning as expected? For example, has the use of Pier 12 been limited to port-related activities? Have the sediments beneath the pier been disturbed?</p> <p>In theory, the ICs are functioning as expected, though they are not well documented. The use of the pier has been limited to port-related activities, and he has no knowledge of the sediment beneath the pier being disturbed.</p>
<p>5. Do you know if any guidance documents have been prepared that outline the concern at Pier 12 and the restrictions?</p> <p>He has no prior knowledge of any guidance documents.</p>
<p>6. Do you know anything about Navy Seal, Air, Land Teams (SEALs) practicing maneuvers in the area?</p> <p>He does not know and has not directly observed any maneuvers. He has heard that helicopters are sometimes used in the vicinity, and he is not aware of any kind of watercraft used for those exercises.</p>
<p>7. Do you know if the guards are present at Pier 12 24/7?</p> <p>Yes, they are present 24/7.</p>
<p>8. Do you know if fishermen were present in the harbor a while ago? Do you know what the Navy did to deter them from returning?</p> <p>He does not know if fishermen were present in the harbor. However, to his knowledge, navigation traffic in the harbor is restricted, and the Harbor Master and Coast Guard will investigate watercraft that is unaccounted for.</p>
<p>9. To the best of your knowledge, since August 2007, have there been any new findings related to potential site risks or changes in site conditions that might call into question the protectiveness of the remedy at the site?</p> <p>Not to his knowledge.</p>
<p>10. Since August 2007, are you aware of any complaints, violations, or other incidents at the site? If so, please provide details.</p> <p>Not to his knowledge.</p>
<p>11. What, if any effects, have site operations had on the surrounding community? Are you aware of any community concerns regarding the site?</p> <p>He is not aware of any community concerns.</p>
<p>12. Do you have any suggestions for changes in how monitoring of the remedy at the site is being conducted?</p> <p>It is clear that something was not communicated, but this could be remedied by a brief overview of the situation, explanation of the Final ROD (CDM, 2007) statements, and description of the necessary protective measures.</p>
<p>13. Do you have any other comments, concerns, or suggestions regarding the management or operation of the site?</p> <p>No.</p>

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Appendix B

Site Inspection Photographs

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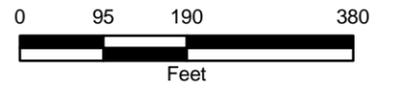
Date: 7/22/2014 User: swolfskill Path: \\kadc3-ssfs2.kleinfielder.com\drawings\drawings\Navy_CLEAN\LONG_BEACH\CTO_076\MXD\PIER12_5YR\076_2890.mxd



LEGEND

-  FENCE
-  PIER - EXISTING
-  PHOTOGRAPH LOCATION WITH DIRECTION AND REFERENCE NUMBER

SOURCE:
- ESRI ArcGIS Online Web Service, World Imagery
5/25/2010



Photograph Locations

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE
B-1

*Long
Beach
Harbor*

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PHOTO 1: VIEW OF WATER ON WEST SIDE OF PIER 12, STANDING ON NAVY MOLE, FACING NORTH



PHOTO 2: VIEW OF WATER ON EAST SIDE OF PIER 12, STANDING ON NAVY MOLE , FACING NORTH

Pier 12 Photographs

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE

B-2

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PHOTO 3: VIEW OF PIER 12 TAKEN FROM END OF PIER LOOKING TOWARDS NAVY MOLE, FACING SOUTH

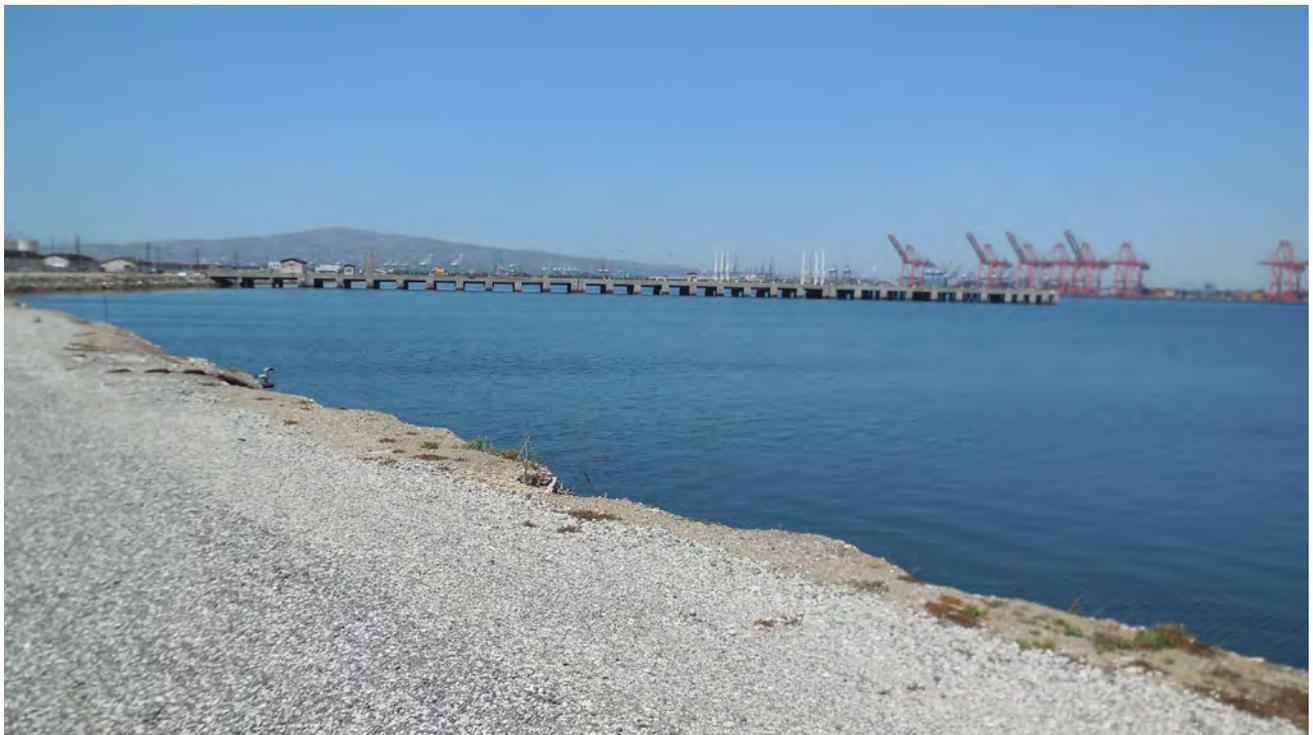


PHOTO 4: VIEW OF PIER 12 TAKEN FROM NAVY MOLE, FACING WEST

Pier 12 Photographs

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE

B-3

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PHOTO 5: VIEW OF WARNING SIGN COVERED IN EXCREMENT LOCATED ON THE EAST SIDE OF PIER 12, TAKEN FROM PIER 12

Pier 12 Photographs

Five-Year Review Pier 12 (Fuel Pier)
Former Long Beach Naval Complex
Long Beach, California



FIGURE

B-4

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Appendix C
Applicable or Relevant and Appropriate Requirements Analysis

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TABLE C-1
 Five-Year Review of ARARs

ARARs identified in the Final ROD for Pier 12 (Fuel Pier) (CDM, 2007), also referred to as AOEC E at IRP Site 7, Former Long Beach Naval Complex, dated September 19, 2007			
Requirement	Prerequisite	Citation	5-year Review Comments
Chemical-Specific ARARs			
FEDERAL			
No federal chemical-specific ARARs were identified in the Final ROD for the sediment in place at AOEC E.			
STATE			
No state chemical-specific ARARs were identified in the Final ROD for the sediment in place at AOEC E.			
Location-Specific ARARs			
FEDERAL			
Coastal Zone Management Act (16 U.S.C. §§ 1451–1464)			
Conduct activities in a manner consistent with an approved state management program.	Activities affecting the coastal zone, including lands thereunder and adjacent shore land.	16 U.S.C. § 1456(c) 15 CFR §§ 930 and 923.45	There are no significant changes or revisions to these requirements that would affect the protectiveness of the remedy selected for AOEC E. Further, the remedy for AOEC E (ICs) does not include active remedial measures on the coast or land under or adjacent to the coast.
STATE			
California Coastal Act of 1976			
The California Coastal Act of 1976 is an approved state coastal zone management program. The California Coastal Act of 1976 regulates activities associated with development to control direct significant impacts on coastal waters and to protect state and national interest in California coastal resources.	Any activity that could impact coastal waters and resources.	California Public Resources Code §§ 30702-30708 <i>Cal. Code Regs.</i> tit. 14, §§ 13001-13666.4	There are no significant changes or revisions to these requirements that would affect the protectiveness of the remedy selected for AOEC E. Further, the remedy for AOEC E (ICs) does not include active remedial measures on the coast or land under or adjacent to the coast.

TABLE C-1
 Five-Year Review of ARARs

ARARs identified in the Final ROD for Pier 12 (Fuel Pier) (CDM, 2007), also referred to as AOEC E at IRP Site 7, Former Long Beach Naval Complex, dated September 19, 2007			
Requirement	Prerequisite	Citation	5-year Review Comments
Action-Specific ARARs			
STATE			
Cal/EPA Department of Toxic Substances Control			
A land use covenant imposing appropriate limitation on land use shall be executed and recorded when facility closure, corrective action, remedial or removal action, or other response actions are undertaken and hazardous materials, hazardous wastes or constituents, or hazardous substances will remain at the property at levels that are not suitable for unrestricted use of the land.	Property transfer by the federal government to a nonfederal entity.	Cal. Code Regs. tit. 22, § 67391.1	There are no significant changes or revisions to these requirements that would affect the protectiveness of the remedy selected for AOEC E.

- Notes:
- § Section
 - AOEC area of ecological concern
 - ARAR applicable or relevant and appropriate requirement
 - Cal. Code Regs. *California Code of Regulations*
 - Cal/EPA California Environmental Protection Agency
 - CFR *Code of Federal Regulations*
 - IC Institutional Control
 - IRP Installation Restoration Program
 - ROD Record of Decision
 - tit. Title
 - U.S.C. *United States Code*



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