

**TECHNICAL MEMORANDUM FOR RECONFIGURATION OF
INSTALLATION RESTORATION SITE 18
ALAMEDA POINT, ALAMEDA, CALIFORNIA
March 1, 2001**

1.0 INTRODUCTION

The purpose of this technical memorandum is to provide an administrative record of the decision to reconfigure installation restoration (IR) Site 18 at the Navy's Alameda Point facility. Site 18 (the Alameda Point storm sewer system) will be reconfigured by incorporating remedial investigation and feasibility study (RI/FS) activities for the storm sewer system into existing IR sites. Any remaining actions will be managed as part of the ongoing investigation activities at IR sites where storm sewer piping is a concern. Appropriate actions will be taken based on investigation results from these IR sites. Investigation results will be documented in the RI/FS reports for each IR site.

The Alameda Point storm sewer system consists of 194,000 linear feet of storm sewer lines, 449 manholes, 830 catch basins, and 35 outfalls discharging to Oakland Inner Harbor, Seaplane Lagoon, and San Francisco Bay. Table I provides additional information on the physical characteristics of the storm sewer system. Section 2.0 presents historical and technical background information related to Site 18; and Section 3.0 describes the regulatory documentation associated with the site. Section 4.0 presents the basis for reconfiguring Site 18 and the Navy's revised approach for addressing remaining areas of concern for the storm sewer system.

2.0 STORM SEWER SYSTEM HISTORY

Construction of Naval Air Station Alameda was begun in 1936, and construction of infrastructure, including the storm sewer system, continued into the early 1940s. Table 2 summarizes the history of the Alameda Point storm sewer system. Historically, the storm sewer system presented a potential pathway for chemicals from the following sources to reach receiving waters in the Bay:

- Direct industrial discharges, such as plating shop baths and paint shop wastes, that originally discharged directly to the storm sewer system. These sources were eliminated from the storm sewer system beginning in the early 1970s with the construction of the industrial wastewater treatment system.
- Indirect industrial discharges, such as spills from storage tanks, that reached the storm sewer system via overland flow to catch basins and manholes. These sources were addressed beginning in the 1970s with the Navy's spill control program under the Clean Water Act.

- Non-point sources such as pesticides and runoff from parking lots, streets, runways, and other paved and non-paved areas. These sources are being addressed through the Navy and City of Alameda storm water management programs.
- Contaminated groundwater that infiltrated into the storm sewer system through cracked and leaking storm sewer lines.

The Navy began addressing these issues during the early 1970s by implementing water and wastewater pollution controls and constructing industrial wastewater treatment facilities to treat industrial discharges. Non-point sources were addressed through regulatory requirements under the Clean Water Act, including National Pollutant Discharge Elimination System requirements, best management practices for spill prevention, development of a spill prevention control and countermeasures plan, and development of a pollution prevention program that included releases to the storm sewer system. These efforts continue. In the 1980s the Navy implemented its IR program and began investigations related to releases from historical and current industrial activities.

By the late 1980s the Navy and the regulatory agencies recognized that the storm sewer system was continuing to serve as a potential contaminant transport pathway for sediment and groundwater from other IR sites, and Site 18 was identified as an IR site. Several investigations and maintenance actions were conducted by the Navy to assess the storm sewer system during the 1990s. Maintenance actions included completion of closed circuit television (CCTV) surveys in 1990, which revealed sediment accumulation and pipeline damage in sections of storm sewer line. This resulted in the cleaning or replacing of portions of the storm sewer system in 1991. Additional investigations under the Navy's IR program during 1994 revealed the presence of additional contaminated sediment in the storm sewer system. Chemicals of concern (COC) identified in the sediment included metals; semivolatile organic compounds, such as polycyclic aromatic hydrocarbons; pesticides; and polychlorinated biphenyls.

In 1995, the Navy conducted Phase I of a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) time-critical removal action at Site 18 which involved removal of sediment and debris from the catch basins. In 1996 and 1997, the Navy completed Phase II of the removal action which involved removal of sediment and debris from storm sewer system lines and manholes. Phase I of the removal action generated approximately 109 cubic yards of solid waste and 52,000 gallons of wastewater. Phase II generated approximately 2,150 cubic yards of dewatered sediment and 320,000 gallons of wastewater.

The time-critical removal action at Site 18 was documented using CCTV surveys and in several reports completed by Navy contractors. The Navy's removal action included the cleaning of all storm sewer lines that were accessible and that had not been addressed by previous Navy actions. Other sections of storm sewer line were cleaned or replaced during the 1991 storm sewer maintenance action. Some sections of storm sewer line were inaccessible. Inaccessible sections of line included those from the outfall to the first upstream manhole. These sections of line are tidally influenced, with significant flow into the storm system during high tide. In addition to the removal action and previous maintenance activities, the Navy removed and replaced approximately 1,200 feet of storm sewer piping in 1999 as part of the radiological removal action at IR Site 5.

The Navy has identified cracked and leaking storm sewer lines that are potentially receiving contaminated groundwater within IR site boundaries. Each Operable Unit-specific RI/FS report will address the potential of the storm sewer system to act as a transport mechanism to the Bay for specific COCs. These issues will be addressed in the conceptual site model, which includes analysis of COC fate and transport and identification of potential receptors. In addition, the Navy has prioritized known cracked and leaking lines for repair or replacement in its "Draft Final Storm Sewer Study Report," December 4, 2000.

3.0 REGULATORY DOCUMENTATION

Regulatory documentation related to Site 18 includes Navy reports related to the time-critical removal action as follows:

- PRC Environmental Management, Inc. 1995. "Time Critical Removal Action Scoping - Site 18 Storm Sewer System Solids and Debris Removal, Naval Air Station Alameda, Alameda, California." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. August 15.
- IT Corporation. 1997. "Site 18 - Storm Drain System. Naval Air Station Alameda, California, Final Project Closure Report." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. October.
- Tetra Tech EM Inc. and Morrison Knudsen Corporation. 1998. "Site 18 Storm Sewer System Solids and Debris Removal Action Closeout Report, Naval Air Station, Alameda California. Final." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. April.

Overall, these documents describe the scope of the removal action and its effectiveness in removing contaminated sediment from the storm sewer system. This technical memorandum serves as the official

regulatory document for the reconfiguration of Site 18. The recently completed "Draft Final Storm Sewer Study Report," December 4, 2000, describes a prioritization system for sections of storm sewer line that are potentially receiving contaminated groundwater.

4.0 RECONFIGURATION OF SITE 18

The Navy has removed industrial sources and contaminated sediment, that could potentially impact human health and the environment, from the storm sewer system. Existing data and documentation indicate that no additional sediment removal at Site 18 is required. Groundwater and soil at Alameda Point has been extensively investigated through the Navy's IR and environmental baseline survey (EBS) programs. Available information from these programs supports no further action at Site 18 outside of areas impacted by IR sites. Any remaining actions will be addressed as part of the activities planned at IR sites where storm sewer piping is a concern.

The remaining CERCLA-related concern for the storm sewer system is the potential for migration of groundwater contaminated with ecological COCs. The Navy recognizes that cracked and leaking storm sewer lines represent a potential transport pathway for ecological COCs in groundwater to reach the Bay, with the point of exposure being ecological receptors in the Bay. As appropriate, the potential for infiltration of contaminated groundwater into the storm water system will be addressed on a site-specific basis, through the Navy's IR program.

BIBLIOGRAPHY

- IT Corporation. 1997. "Site 18 - Storm Drain System, Naval Air Station Alameda, California, Final Project Closure Report." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. October.
- PRC Environmental Management, Inc. 1995. "Time Critical Removal Action Scoping - Site 18 Storm Sewer System Solids and Debris Removal, Naval Air Station Alameda, Alameda, California." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. August 15.
- Tetra Tech EM Inc. (TtEMI) and Morrison Knudsen Corporation. 1998. "Site 18 Storm Sewer System Solids and Debris Removal Action Closeout Report, Naval Air Station, Alameda California, Final." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. April.
- TtEMI. 1999. "Site 18 Storm Sewer Study Report, Alameda Point, Alameda California, Draft." Prepared for Naval Facilities Engineering Command, Engineering Field Activity West. September.

TABLE 1
PHYSICAL LAYOUT OF THE ALAMEDA POINT STORM SEWER SYSTEM

FEATURES	DESCRIPTION
Artificial Fill	<ul style="list-style-type: none"> • Dredge spoils were taken from San Francisco Bay (the Bay) and used as fill at Alameda Point beginning in the 1890s. The fill material consisted primarily of poorly graded Fine to medium-grain sand with clay, silt, and gravel and shell rehash. • The fill material is contaminated with total petroleum hydrocarbons and PAHs due primarily to historical operations of the Pacific Coast Oil Works refinery and the PG&E crude oil gasification plant in the early and mid 1900s. • Thickness of the fill ranges from a few feet in the eastern portion of Alameda Point to 20 feet thick at the western edge of the facility.
Shallow Groundwater	<ul style="list-style-type: none"> • Shallow groundwater (the first water-bearing zone [FWBZ]) occurs within the artificial fill from 2 to 8 feet below ground surface (bgs). • Saturated thickness ranges from approximately 10 to 100 feet. • The FWBZ is recharged from infiltration of surface water as well as from leaking water supply and storm sewer lines. • During the dry seasons, groundwater from the FWBZ infiltrates into cracked and displaced storm sewer lines.
Storm Sewer System	<ul style="list-style-type: none"> • The Alameda Point storm sewer system consists of about 194,000 linear feet of storm sewer line ranging in size from 2 to 42 inches in diameter, 449 manholes, 830 catch basins, and 36 outfalls discharging to the Seaplane Lagoon, Oakland Inner Harbor, and the Bay. • Storm sewer lines are found at depths of 1 to 13 feet bgs, and most of the storm sewer system is below the water table and subject to groundwater infiltration. • Sediment deposited in the storm sewer system collects at manholes, at locations blocked by debris, and in other areas where water velocity slows allowing particles to settle.
Manholes	<ul style="list-style-type: none"> • Manholes represent access points where sections of storm sewer lines come together. As a storm sewer line empties into the manhole, storm water velocity slows, and sediment and debris accumulate.
Catch Basin	<ul style="list-style-type: none"> • Catch basins collect surface runoff and sediment from paved and industrial areas. These include roadways, parking lots, fuel storage areas, runways, and other developed and industrialized areas.
Outfalls and Distal Ends of the Storm Sewer System	<ul style="list-style-type: none"> • Most outfalls are tidally influenced; during high tides seawater flows upstream, carrying any resuspended sediment. The section of storm sewer line between the outfall and the first upstream manhole is known as the distal end. • The distal ends of the storm sewer system were not cleaned during the removal actions and have not been videotaped due to practical constraints in isolating these sections of storm sewer line. • Outfalls represent discharge points at which storm water and sediment reach receiving waters, including Seaplane Lagoon, Oakland Inner Harbor, or the Bay.
Industrial Facilities and Land Development	<ul style="list-style-type: none"> • During its operation as a Naval facility, Alameda Point supported a large number of industrial operations including metal plating, degreasing, painting, and aircraft maintenance and repair. • Alameda Point is a highly developed facility, most land area is paved, and runoff to the storm sewer system is rapid carrying solids (such as sand, soil, fill, and other material) into the system. Breaches in the storm sewer system allow debris to accumulate, block pipelines, and lead to additional accumulation of sediment.

TABLE 2

HISTORY OF THE ALAMEDA POINT STORM SEWER SYSTEM

DATES	EVENTS
1890s to 1902	<ul style="list-style-type: none"> • Filling wetlands on western half of Alameda Island with marine sediment dredged from San Francisco Bay (the Bay) • Construction of San Antonio Channel ~currently Oakland Inner Harbor) and development of Alameda Point peninsula
Early 1900s	<ul style="list-style-type: none"> • Operation of PG&E crude oil gasification plant located across the Oakland Inner Harbor from Alameda Point from early 1900s through 1960 including discharge of gasification wastes to Oakland Inner Harbor • Operation of Pacific Coast Oil Works refinery at installation restoration (IR) Site 13 in southeastern portion of Alameda Point including discharge of petroleum wastes to southeastern portion of Alameda Point and directly to the Bay
1920s to 1930	<ul style="list-style-type: none"> • Operation of borax plant in southeastern portion of Alameda Point
1930 through 1960s	<ul style="list-style-type: none"> • Continued development of Alameda Point by the U.S. Army (early 1900s through 1930) and the U.S. Navy (beginning during 1936) using dredge spoils from the Bay and Oakland Inner Harbor • Construction of industrial facilities and infrastructure including storm sewer system • Pipelines placed directly on fill with no bedding material • Industrial discharges plumbed directly to storm sewer system • Outfall discharges to Oakland Inner Harbor, the Bay, and Seaplane Lagoon • Natural subsidence and seismic events lead to pipeline cracks, leaks, and displacement • Accumulation of sediment and debris (such as rocks and roots) in storm sewer system
1970s	<ul style="list-style-type: none"> • Implementation of water pollution controls and improvement and expansion of industrial wastewater treatment to minimize direct discharges to the Bay • Pretreatment facilities' construction by 1972 and wastewater diversion to the East Bay Municipal Utilities District by 1975 • Continued natural subsidence and seismic events leading to pipeline cracks, leaks, and displacement of storm sewer lines • Continued releases to storm sewer system through floor drains, spills, and non-point sources • Continued accumulation of sediment and debris in storm sewer system
1980s	<ul style="list-style-type: none"> • Increased environmental compliance activities, including investigations related to environmental releases from industrial activities • Initiation of studies and activities to identify and correct contamination problems in the storm sewer system • Initiation of IR program to identify and correct environmental contamination problems due to historical releases • Continued releases to storm sewer system through floor drains, spills, and non-point sources • Continued accumulation of sediment and debris in storm sewer system • Continued natural subsidence and seismic events leading to pipeline cracks, leaks, and displacement
1990s	<ul style="list-style-type: none"> • Initiation of closed-circuit television (CCTV) surveys of 40,000 linear feet of storm sewer system during 1990, followed by line cleaning, repair, and replacement • EBS studies starting in 1994 and carrying into 1996, with collection of sediment samples from storm sewer system • Continued IR investigations, including collection of sediment samples from the storm sewer system in 1994 • Phase I removal action starting in 1995 and carrying into 1996 to remove contaminated sediment from the storm sewer system • Phase II removal action starting in 1996 and carrying into 1997 to remove contaminated sediment from the storm sewer system • Performance of CCTV taping to verify effectiveness of removal action • Development of storm sewer study program to address infiltration of contaminated groundwater into the storm sewer system and to prioritize sections of storm sewer line for repair



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DATE: 3/15/01
CTO: 0202
LOCATION: Alameda Point, California

FROM: [Signature] Daniel Chow, Program Manager

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Revised Technical Memorandum for Reconfiguration of Installation Restoration Site 18,
March 15, 2001

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**Subject: Revised Technical Memorandum for Reconfiguration of Installation Restoration Site 18
Alameda Point, Alameda, California
CLEAN II Contract No. N62474-94-D-7609, Contract Task Order 0202**

Dear Ms. Clark:

Please find enclosed 6 copies of the revised Technical Memorandum for Reconfiguration of Installation Restoration (IR) Site 18 dated March 1, 2001. This revised memorandum serves to finalize the reconfiguration of IR Site 18 as directed by you during the week of February 19, 2001. As requested, I am forwarding additional copies to regulatory agency, contractor, and Navy representatives as listed on the Navy transmittal letter sent to me by fax. I will include a copy of the Navy transmittal letter with each memorandum sent.

If you have any questions, please call me at (916) 853-4501.

Sincerely,

A handwritten signature in black ink, appearing to read 'Neal Hutchison', with a long horizontal flourish extending to the right.

Neal Hutchison
Project Manager

cc: File

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