Final Work Plan

Basewide Well Decommissioning
Naval Weapons Station Seal Beach
Seal Beach, California

December 2014

Prepared for:
Naval Facilities Engineering Command Southwest
San Diego, California

Contract No. N62473-09-D-2627
CTO NO. 0010
DCN: CEKA-2627-0010-0004

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Prepared by:

CE2-KLEINFELDER JV
Pleasanton, CA

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Date: December 11, 2014

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Executive Summary

This Work Plan was prepared to support the work to be performed by CE2 Kleinfelder Joint Venture (CE2-K) for the Naval Facilities Engineering Command (NAVFAC) Southwest under Performance Based Small Business Environmental Multiple Award Contract No. N62473-09-D-2627, Task Order N0. 0010. The task order involves groundwater monitoring well decommissioning activities at several former remedial project locations within Naval Weapons Station (NAVWPNSTA) Seal Beach (Figure 1 and 2). Specific well construction details and installation dates are included in the Well Inventory List included in Appendix A. Site-specific monitoring well locations are shown in Figures 4a - 4m, which are presented in Appendix B. The project schedule is included as Figure 3. This Work Plan provides the technical approach and scope of work (SOW) to be performed to complete the well decommissioning activities.

A site inspection/well survey was conducted on November 17, 2014, to assess the physical location of the 47 wells reported to be present and the 24 suspected wells. CE2-K utilized a handheld Trimble™ 2005 GeoXT GPS unit and a metal detector to assess the well locations and their current condition (present, damaged, decommissioned, etc.). A total of 42 wells were confirmed to be present during the site inspection/well survey field activities. The findings of the site inspection/well survey are tabulated in Appendix C. The status and final disposition of the remaining wells that were not located is unknown. The list of 42 wells confirmed to be present at the Site and scheduled for decommissioning as part of this Work Plan at NAVWPNSTA Seal Beach are included in Table ES-1 below.

Please note that the project area includes wells that are located inside the Seal Beach National Wildlife Refuge. These wells will have an asterisk next to them in Table ES-1 below. Some of these wells are in sensitive habitat that support federal and state listed, threatened, and endangered species and require specialized equipment to access and are indicated with a (^) symbol in Table ES-1 below. Many of the wells located inside the SBNWR can be decommissioned using traditional drilling equipment with no damage to sensitive habitat. Avoidance and minimization of impacts to sensitive habitats and endangered species are discussed in Section 3.6 of the Work Plan.

Table ES-1: Wells Confirmed to be Present During Well Survey

Site	Well Identification
04	MW-04-01*, MW-04-02*, MW-04-03, MW-04-04, and MW-04-05
05	MW-05-01, MW-05-02, MW-05-03*^, MW-05-04*^, and MW-05-05*^
06	W-40*, MW-06-01*, MW-06-02*, MW-06-03*^, MW-06-04*, and MW-06-05^
07	07M01^, W-41*, W-42*, W-43*, and W-45^
12	12_M01* and 12_M02*
14	BSW-14-01, BSW-14-02, BSW-14-03, BSW-14-04, BSW-14-05, BSW-14-06, BSW-14-07, BSW-14-08, BSW-14-09, BSW-14-10, and BSW-14-11
16	16_M01 and 16_M02
UST 229	SB229-MW01, SB229-MW02, SB229-MW03, and SB229-MW04
35	35_M01* and 35_M02*

*- Indicates well is located inside the Seal Beach National Wildlife Refuge
^ - Indicates well is located in sensitive habitat and requires specialized equipment to access.

Well decommissioning activities for the Sites that are described in this work plan consist of the following:

- Investigate the presence and location of the 47 wells reported to be present and the additional 24 suspected wells;
- Mobilization of drill rig, associated equipment, and personnel;
- Proper decommissioning of the 42 confirmed groundwater monitoring wells in general accordance with Orange County Environmental Health Division (OCEHD) guidelines and California Department of Water Resources, California Well Standards;
- Decontamination of equipment;
- Management and disposal of wastes derived during well decommissioning activities;
- Demobilization and site cleanup; and,
- Preparation of a well decommissioning report.

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Abbreviations and Acronyms

bgs	Below Ground Surface
APP	Accident Prevention Plan
BMPs	Best Management Practices
CE2-K	CE2 Kleinfelder Joint Venture
CSWRCB	California State Water Resources Control Board
DOD	United States Department of Defense
DON	Department of the Navy
DTSC	California Department of Toxic Substances Control
FEAD	Facilities Engineering & Acquisition Division
IDW	Investigative Derived Waste
IRP	Installation Restoration Program
JV	Joint Venture
NAVFAC	Naval Facilities Engineering Command
NAVWPNSTA	Naval Weapons Station
NWR	National Wildlife Refuge
OCEHD	Orange County Environmental Health Division
OSHA	Occupational Safety and Health Administration
PG	Professional Geologist
PM	Project Manager
POC	Point of Contact
PVC	Polyvinyl Chloride
RPM	Remedial Project Manager
RWQCB	Santa Ana Regional Water Quality Control Board
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
UST	Underground Storage Tank

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1.0 Introduction

This Work Plan was prepared to support the work to be performed by CE2-K for the Naval Facilities Engineering Command (NAVFAC) Southwest under Performance Based Small Business Environmental Multiple Award Contract No. N62473-09-D-2627, Task Order N0. 0010. The task order involves groundwater monitoring well decommissioning activities at several former remedial project locations within Naval Weapons Station (NAVWPNSTA) Seal Beach (Figure 1 and 2). This Work Plan provides the technical approach and scope of work (SOW) to be performed to complete the well decommissioning activities.

***Figures 1 and 2**, located in the Figures section at the end of the text, show the location of NAVWPNSTA Seal Beach and the project sites included in the well decommissioning*

The well decommissioning activities at Sites 01, 04, 05, 06, 07, 08_42, 12, 13, 14, 16, 19, 35, and Underground Storage Tank (UST) Site 229 (the Sites) will be conducted in accordance with NAVFAC's SOW included in the contract, dated July 11, 2014; the approved final Work Plan; and, the final Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP) that will be submitted jointly under a separate cover. The Site-specific figure reference numbers in Table 1-1 below correspond to site location figures included in Appendix B. The Sites and their corresponding California State Water Resources Control Board's (CSWRCB) Geo-Tracker identification numbers are included in Table 1-1 below.

Table 1-1: Remedial Project Sites and Geo-Tracker ID #

Site	Figure Reference Number	Geo-Tracker ID #
01	B1	SLT8R2604067
04	B2	DOD100379000
05	B3	DOD100379100
06	B4	DOD100350500
07	B5, B6	DOD100350600
08_42	B7, B8, B9	(8) - DOD100350700, (42) - T0605953305
12	B10	DOD100352200
13	B11	DOD100352300
14	B12, B13	T0605901139
16	B14	DOD100352400
19	B15	DOD100352500
35	B16	DOD100355600
UST 229	B17	T0605901373

1.1 Scope of Work

Well decommissioning activities for the Sites that are described in this work plan consist of the following:

- Conduct a site inspection/well survey to investigate the presence and location of the 47 wells reported to be present and the additional 24 suspected wells;
- Mobilization of drill rig, associated equipment, and personnel;
- Proper decommissioning of groundwater monitoring wells in general accordance with Orange County Environmental Health Division (OCEHD) guidelines and California Department of Water Resources, California Well Standards;
- Decontamination of equipment;
- Management and disposal of wastes derived during well decommissioning activities;
- Demobilization and site cleanup; and,
- Preparation of a well decommissioning report.

1.2 Project Schedule

The activities detailed in this work plan will be completed over the next 6 months, between September 2014 and February 2015. Well decommissioning activities are anticipated to occur between November 2014 and January 2015. A more detailed schedule showing various phases, specific project tasks, and submittals can be found on Figure 3.

1.3 Project Team

The Project Team will include Mr. Edward Kilduff P.G. as the Program Manager, who will be responsible for overall management of contract activities. The Project Manager for this task order will be Mr. Sean Roy P.G., and he will be responsible for project oversight and verifying that all tasks are completed properly and in a timely fashion. Mr. Neil Fajardo will serve as the Field Team Leader/Site Safety and Health Officer (SSHO).

1.4 Project Responsibilities

NAVFAC's Remedial Project Manager (RPM) for this project is Ms. Brenda Reese, P.E. and the NAVWPNSTA Seal Beach Installation Restoration Program (IRP) Coordinator is Ms. Pei-Fen Tamashiro, P.G. Together, the

RPM and IRP Coordinator are responsible for project management, regulatory agency contacts and community relations, and coordinating field activities with different NAVWPNSTA Seal Beach departments and personnel. Vincent Pankoski, Facilities Engineering & Acquisition Division (FEAD) Point of Contact (POC), will responsible for overall safety oversight and quality control of the project. They will also promote compliance of applicable rules and regulations of field and remedial activities.

CE2-K's Project Manager (PM), Sean Roy, will be responsible for general project administration and will be the lead technical professional. Mr. Roy will oversee budget, schedule, and document preparation, and will promote quality of project activities and deliverables. The Field Team Leader, Mr. Neil Fajardo, will manage fieldwork and provide oversight to the subcontractors. Mr. Fajardo will coordinate the field activities with the senior technical staff to promote compliance of field activities with the project specifications. He will also serve as the Site Safety and Health Officer (SSHO), interact with Department of the Navy (DON) personnel, and coordinate efforts among subcontractors.

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2.0 Background

This section provides a general description and historical information for NAVWPNSTA Seal Beach and a well inventory list for the Sites.

2.1 Site Description and History

NAVWPNSTA Seal Beach is located in Seal Beach, northwest Orange County, approximately 25 miles south of downtown Los Angeles, California (Figure 1). NAVWPNSTA Seal Beach comprises approximately 5,000 acres of land originally purchased between 1941 and 1944, commissioned as the Naval Ammunition and Net Depot in 1944 and as NAVWPNSTA Seal Beach in 1964. A portion of the Anaheim Bay and its adjoining salt marsh, recognized as Seal Beach National Wildlife Refuge (NWR), are also located within the extent of NAVWPNSTA Seal Beach (SWDIV 1990).

2.2 Geologic Setting

NAVWPNSTA Seal Beach is situated in the coastal plain of Los Angeles-Orange Counties, regionally underlain with Recent Alluvium to a depth of approximately 80 to 100 feet below ground surface (bgs). The upper-most 50 feet consists of varying soil types, including fine sand, silt, and clay which overlies deeper unconsolidated sands, gravels, silty sands and clays, and clays.

The Recent Alluvium is underlain by the Upper Pleistocene Lakewood Formation, extending from approximately 80 to 100 feet bgs to approximately 350 feet bgs, followed by the Lower Pleistocene San Pedro Formation, and the Pliocene Pico Formation (DWR 1961).

2.3 Hydrogeology

Groundwater beneath NAVWPNSTA Seal Beach is situated in the Orange County groundwater management zone, beneath the Lower Santa Ana River Basin – East Coastal Plain hydrologic subarea (801.11) (Water Board 1995, amended 2004).

The four aquifer zones identified at NAVWPNSTA Seal Beach include (JEG 1995):

- A semi-perched, unconfined zone in the upper portion of the Recent Alluvium
- A confined fresh groundwater zone in the lower portion of the Recent Alluvium

- Pleistocene deposits of the Lakewood and San Pedro Formations, and localized portions of the Late Pliocene Pico Formation
- Confined saline water underlies the freshwater zone

According to the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), beneficial uses of the groundwater supply in the Orange County groundwater management zone include industrial process supply, industrial service water supply, agricultural supply, and municipal supply (Water Board, 1995, amended 2004).

2.4 Regulatory Framework

NAVWPNSTA Seal Beach is the lead agency for the former remedial project sites included in the well decommissioning activities of this Work Plan. The Santa Ana Regional Water Quality Control Board (RWQCB) and California Department of Toxic Substances Control (DTSC) varied as the lead regulatory agency on a site-specific basis. The Site-specific figure reference numbers correspond to site location figures included in Appendix B. The applicable RWQCB and DTSC case numbers for the Sites are included below in Table 2-1. Additionally, a case number is also setup by OCEHD for the UST 229 Site (Case #91UT32).

Table 2-1: Applicable Regulatory Case Numbers

Site	Figure Reference Number	RWQCB Case #	DTSC Case #
01	B1	SLT8R260	CA0170024491
04	B2	166-69 -- 2	400136 -- 2
05	B3	166-69 -- 1	400136 -- 1
06	B4	166-69 -- 21	400136 -- 21
07	B5, B6	16583—20	--
08_42	B7, B8, B9	(8) - 166-69 – 19, (42) - 16583-22	(8) - 400136 – 19, (42) –
12	B10	16583 -- 17	400136 -- 17
13	B11	16583 -- 16	400136 -- 16
14	B12, B13	083001494T	--
16	B14	166-69 -- 15	400136 -- 15
19	B15	16583 -- 14	400136 -- 14
35	B16	16583 -- 9	400136 -- 9
UST 229	B17	083001835T	--

Table 2-2 below lists the references documents for each case giving the justification for well decommissioning. The reference listed for Site 07 provides the rationale for why no further action is required for groundwater. Concurrence was received by the regulators for each of these documents. These reports are publicly available and can be obtained directly from the Navy.

Table 2-2: Case References

Site	Reference
01	Southwest Division Naval Facilities Engineering Command (SWDIV), 2002. *Final Record of Decision, Installation Restoration Sites 1 and 19, Naval Weapons Station Seal Beach, Seal Beach, California*. 18 April.
04	Southwest Division Naval Facilities Engineering Command (SWDIV), 2005. *Final First Annual Groundwater Monitoring Report, IR Sites 4, 5, 6, and 7, Naval Weapons Station Seal Beach, Seal Beach, California*. June.
05	Southwest Division Naval Facilities Engineering Command (SWDIV), 2007. *Final Third Annual Groundwater Monitoring Report, IR Sites 5 and 7, Naval Weapons Station Seal Beach, Seal Beach, California.* June.
06	Southwest Division Naval Facilities Engineering Command (SWDIV), 2005. *Final First Annual Groundwater Monitoring Report, IR Sites 4, 5, 6, and 7, Naval Weapons Station Seal Beach, Seal Beach, California.* June.
07	Southwest Division Naval Facilities Engineering Command (SWDIV), 2007. *Final Third Annual Groundwater Monitoring Report, IR Sites 5 and 7, Naval Weapons Station Seal Beach, Seal Beach, California.* June.
12	CH2M Hill, 2002. *Draft Final Focused Site Inspection Phase II Report, Naval Weapons Station Seal Beach, Seal Beach, California.* 28 January.
14	MARRS Services, Inc., 2007. *Final Groundwater Monitoring Report, Installation Restoration Program Site 14, Naval Weapons Station Seal Beach, Seal Beach, California*. June 1.
16	CH2M Hill, 2002. *Draft Final Focused Site Inspection Phase II Report, Naval Weapons Station Seal Beach, Seal Beach, California.* 28 January.

Site	Reference
35/44/45	Jacobs Engineering Group, Inc., 1996. Draft Final Operable Units 4 and 5 Focused Site Inspection Report, Naval Weapons Station Seal Beach, Seal Beach, California. 20 December. CH2M Hill, 1998, Final (Revision 1) Operable Unit 4 Site Inspection Report, Naval Weapons Station Seal Beach, Seal Beach, California. 19 March CH2M Hill, 1998, Final Operable Unit 5 Site Inspection Report, Naval Weapons Station Seal Beach, Seal Beach, California. 20 March CH2M Hill, 2002. Draft Final Focused Site Inspection Phase II Report, Naval Weapons Station Seal Beach, Seal Beach, California. 28 January.
UST 229	Brady, 2011. *Final Extended Site Assessment Report of Former Underground Storage Tank Site 229, Naval Weapons Station Seal Beach, Seal Beach, California*. July 29.

The activities described in this Work Plan will be conducted under the current requirements of the RWQCB, DTSC, and the DON. Well decommissioning activities will follow the OCEHD and California Department of Water Resources, California Well Standards Bulletins 74-81 and 74-90 guidelines.

Although not required, a groundwater monitoring well destruction permit application was assembled and submitted to the IRP coordinator for NAVWPNSTA as requested. The IRP Coordinator forwarded the well destruction permit application to the OCEHD for informational purposes only.

A well decommissioning report will be prepared for submittal following the decommissioning activities; the report will include the well identification, method, type and quantity of materials used in the decommissioning process.

2.5 Well Inventory List

Except for Site 7, the wells proposed to be decommissioned in this work plan are located at sites that have received no further action/closure approval from their respective agency or agencies. Additional landfill cover vegetation is still on-going for Site 7, but no further action is required for groundwater. Since there is no need to continue to monitor groundwater using these wells, to prevent being used as a route of entry for potential future releases and to prevent some of the well heads being used as

perching points by predatory birds, the Navy decided to properly decommission these wells.

The 47 wells included in the request for proposal (RFP) for decommissioning at NAVWPNSTA Seal Beach are listed in Table 2-3 below.

Table 2-3: The 47 Wells Included in the RFP

Site	Well Identification
01	01M02, 01M03, and 01M04
04	MW-04-01, MW-04-02, MW-04-03, MW-04-04, and MW-04-05
05	MW-05-01, MW-05-02, MW-05-03, MW-05-04, and MW-05-05
06	MW-06-01, MW-06-02, MW-06-03, MW-06-04, and MW-06-05
07	07M01, 07M02, 07M03, 07M04, W-41, W-42, W-43, W-44, W-45, and W-46
12	12_M01 and 12_M02
14	BSW-14-01, BSW-14-02, BSW-14-03, BSW-14-04, BSW-14-05, BSW-14-06, BSW-14-07, BSW-14-08, BSW-14-09, BSW-14-10, and BSW-14-11
16	16_M01 and 16_M02
UST 229	SB229-MW01, SB229-MW02, SB229-MW03, and SB229-MW04

The 24 suspected (optional item) wells, included in the original RFP, are listed in Table 2-4 below. Specific well construction details and installation dates are included in Appendix A (Well Inventory List), and the reported site-specific monitoring well locations are presented in Appendix B.

Table 2-4: The 24 Optional Wells in the RFP

Site	Well Identification
05	05-MW01 and 05-MW02
06	06-MW01, W-38, W-39, and W-40
8-42	USGS-1, USGS-1A, USGS-2, USGS-23, and USGS-24
13	13-MW01, 13-MW02, and 13-MW03
14	N35, N36, N37, N38, and N39
19	W54, W55, and W56
35	35_M01 and 35_M02

The actual number of wells to be decommissioned are based on the results of the site inspection/well survey into the location or existence of the wells listed in Tables 2-3 and 2-4.

2.6 Site Inspection/Well Survey

A site inspection/well survey was conducted on November 17, 2014, to assess the physical location of the 47 wells reported to be present and the 24 suspected wells. CE2-K utilized a handheld Trimble™ 2005 GeoXT GPS unit and a metal detector to assess the well locations and their current condition (present, damaged, decommissioned, etc.). Prior to site inspection/well survey activities, the specifications for the GPS Unit and metal detector will be submitted to the IRP Coordinator to clear equipment for Hazards of Electromagnetic Radiation to Ordnance (HERO) by the NAVWPNSTA explosives safety office.

A total of 42 wells were confirmed to be present during the site inspection/well survey field activities. The findings of the site inspection/well survey are tabulated in Appendix C. The status and final disposition of the remaining wells that were not located is unknown. The list of 42 wells confirmed to be present at the Site are shown in Table 2-5 below. The latitude and longitude of the 42 wells were recorded with the handheld GPS unit. A geographic information system (GIS) layer for the wells decommissioned as part of this project will be provided to the Navy as part of the Final Well Decommissioning Report. Please note that the project area includes wells that are located inside the Seal Beach National Wildlife Refuge (SBNWR). These wells are have an asterisk next to them in Table 2-5 below. Some of these wells are in sensitive habitat that support federal and state listed, threatened, and endangered species and require specialized equipment to access and are indicated with a (^) symbol. Many of the wells located inside the SBNWR can be decommissioned using traditional drilling equipment with no damage to sensitive habitat.

Table 2-5: Wells Confirmed to be Present During Well Survey

Site	Well Identification
04	MW-04-01*, MW-04-02*, MW-04-03, MW-04-04, and MW-04-05
05	MW-05-01, MW-05-02, MW-05-03*^, MW-05-04*^, and MW-05-05*^
06	W-40*, MW-06-01*, MW-06-02*, MW-06-03*^, MW-06-04*, and MW-06-05^
07	07M01^, W-41*, W-42*, W-43*, and W-45^

Site	Well Identification
12	12_M01* and 12_M02*
14	BSW-14-01, BSW-14-02, BSW-14-03, BSW-14-04, BSW-14-05, BSW-14-06, BSW-14-07, BSW-14-08, BSW-14-09, BSW-14-10, and BSW-14-11
16	16_M01 and 16_M02
UST 229	SB229-MW01, SB229-MW02, SB229-MW03, and SB229-MW04
35	35_M01* and 35_M02*

* - Indicates well is located inside the SBNWR

^ - Indicates well is located in sensitive habitat and requires specialized equipment to access.

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3.0 Well Decommissioning Activities

This section provides information on the various practices that will be utilized by CE2-K to complete the well decommissioning activities.

3.1 Pre-field Activities

Well decommissioning activities at NAVWPNSTA Seal Beach will be conducted in accordance with the OCEHD and California Department of Water Resources, California Well Standards Bulletins 74-81 and 74-90 guidelines. As requested, a well destruction permit application summarizing the wells to be decommissioned will be completed and submitted to the RPM and POC prior to initiating field activities. The Navy RPM will forward the application to the OCEHD.

Before preparing the well destruction permit application, CE2-K will request well records from the OCEHD, Orange County Water District, and the Navy's Administrative Records to assess if any of the wells listed in Table 2-2 or 2-3 had been previously decommissioned.

3.2 Site Access

Before conducting any site visit or work activity, CE2-K will provide a minimum of 2-week notice to the Navy. Additional notice will be provided dependent upon the task being completed, and the level of coordination required to gain access to well decommissioning locations. Several wells are located in sensitive habitats within the SBNWR. Access to and activities inside these locations will be coordinated with the SBNWR office.

CE2-K personnel and subcontractor(s) will utilize the Westminster Gate as the primary access point to NAVWPNSTA Seal Beach. Personnel will utilize proper Rapid Gate credentials in addition to appropriate NAVWPNSTA Seal Beach credentials.

3.3 Mobilization

Mobilization activities include the movement of personnel and equipment to the site that are necessary for the implementation of fieldwork. Prior to the initiation of any mobilization activities, site personnel will be trained on health and safety matters anticipated at the site by the IRP Coordinator.

CE2-K will coordinate our fieldwork with on-site personnel to safely conduct this work with reduced conflicts with current base operations.

3.4 Traffic Control

The scope of work for each of the Sites does not include any activities in a public or private right of way. A traffic control plan that describes alternate routes or lane control was not deemed necessary.

However, the safety of CE2-K and NAVWPNSTA Seal Beach personnel is of the utmost importance. As such, traffic control at each of the Sites will include maintaining high visibility cones at a perimeter of no less than 8 feet in each direction of the operating equipment. Based on an initial site inspection during the project kickoff meeting, no overhead wires were observed in the vicinity of the wells proposed for decommissioning. In addition, CE2-K does not anticipate the need for flag personnel or lane closures based on observed well locations.

3.5 Safety and Site Security

The planned work areas will be secured on a daily basis such that non-project personnel will not be able to enter the work areas.

Any field personnel working on this project will have the appropriate Occupational Safety and Health Administration (OSHA) health and safety training. Daily tailgate meetings will be conducted prior to the start of work each day to discuss health and safety issues as well as site security issues.

Caution tape will be used around the staging area and at each well decommissioning Site to keep military and other personnel away from the work area while work is being performed.

3.6 Biological Assessment and Avoidance and Minimization Measures

Many of the wells to be decommissioned under this contract are located inside the boundaries of the Seal Beach National Wildlife Refuge (NWR) with some wells being located in sensitive habitats, which is one of the largest remaining salt marshes along the southern California coast. About 740 acres of the 911-acre Seal Beach NWR are subject to unobstructed tidal influence, including 565 acres of salt marsh vegetation, 60 acres of intertidal mudflats, and 115 acres of tidal channels and open water. Since it was established in 1974, Seal Beach NWR's principal focus has been on protecting federally listed species and coastal wetlands used for foraging and resting by migratory waterfowl, shorebirds, and raptors that travel along the Pacific Flyway (USFWS, 2007). The Seal Beach NWR supports federally and state listed sensitive, threatened, and endangered species, as presented in this section.

Several bird species known to be residents or migrants at NAVWPNSTA Seal Beach are listed by federal or state agencies, or both, as threatened or endangered. They include the light-footed Ridgeway's rail (Rallus obsoletus levipes), western snowy plover (*Charadrius alexandrinus nivosus*), California least tern (*Sterna antillarum browni*), green sea turtle (Chelonia mydas), southern sea otter (Enhydra lutris nereis), and Belding's savannah sparrow (*Passerculus sandwichensis beldingi*). The breeding season for these bird species extends from approximately mid-March to October. The light-footed Ridgeway' rail is a subspecies of Ridgeway's rail that is a resident of the NWR, thus obtaining its entire food supply there. The mangrove clapper rail (*R. l. insularium*), California clapper rail (*R. l. obsoletus*), and Yuma clapper rail (*R. l. yumanensis*) are also subspecies of clapper rail in California. Life history and risk estimates are assumed to be similar among these four types of rails (Eddleman and Conway, 1998). The California least tern occupies the NWR only during the breeding season, but most of its food supply comes from the NWR during that period (USFWS, 1990).

Small mammals such as voles, shrews, and ground squirrels, and other mammals such as Audubon's cottontail (*Sylviagus audubonii*) and the brush rabbit are likely to be found in the upland area east of Case Road.

The breeding season for the Belding's savannah sparrow is recognized as February 15 to July 31. The breeding season for the light-footed Ridgway's rail is recognized as March 1 to September 15. The well decommissioning activities will be conducted to avoid the breeding seasons; therefore, it is unlikely that these endangered and threatened species will be impacted during the field work. In addition, the field crew will adhere to general installation practices to avoid impacts to these species and other ecological receptors located on the NAVWPNSTA Seal Beach. Of particular, the Navy and the Seal Beach NWR biologists will be notified of the field kickoff meeting and the field schedule prior to the commencement of the field activities. If necessary, a representative from the project, in coordination with the Navy and the Seal Beach NWR biologists, will conduct a preliminary site walk at each site prior to field work commencement to check that no ground nests are present in the area.

During field work, the project team will adhere to general installation practices to minimize the impact to natural resources at the project sites. Such practices include minimizing off-road vehicle and foot traffic as much as possible. However, since some of the wells are located inside tidally influenced areas, it is recognized that vehicle and foot traffic inside wetlands is necessary and will be closely coordinated with the Navy and

the Seal Beach NWR biologists. Staging and equipment decontamination will avoid taking place in areas where wildlife activity is observed. In order to prevent disruption to roosting birds, decommissioning activities will not carry on at night.

3.7 Spill, Discharge, and Water Pollution Control

BMPs will be installed and updated, as needed, throughout field activities.

A comprehensive spill, discharge and water pollution control plan is not required as part of the Work Plan. However, spill and discharge best management practices (BMPs) will be utilized at each well decommissioning Site and around materials/equipment in the designated staging area. These measures will include the use of drip pans, covered storage enclosures/bins, good housekeeping practices, and storm water inlet protection (as needed).

These measures will be utilized for the duration of the project to avoid impacts to water quality from an accidental release or inadvertent contact with waste material generated at the various well decommissioning Sites.

3.8 Equipment Storage

Upon mobilization to NAVWPNSTA Seal Beach, care will be taken to minimize potential disruptions to base operations in the vicinity of the Sites. In the unlikely event that it is necessary to leave boreholes open and unsupervised, an approval will be obtained from the IRP Coordinator and they will be appropriately covered and barricaded.

At each of the Sites where well decommissioning activities will be conducted, as described in Section 2.0 above, there will be a designated area for any temporary use of materials required for each well. Examples of bulk materials that will be temporarily stored onsite include miscellaneous drilling equipment and small quantities of bentonite and cement used for the grout mixture and surface completions. These materials will be removed at the end of each day end in the proposed staging area.

IDW generated during decommissioning activities are anticipated to be concrete, polyvinyl chloride (PVC) pipe, metal debris, and a small volume of soil spoils. None of the IDW is anticipated to be hazardous waste. The IDW will be segregated and temporarily stored at the Sites until decommissioning activities have been completed and transfer of the materials to the staging area can be completed at the end of each day.

The proposed staging area, located southeast of the intersection of Bolsa Avenue and Devlin Road within the fenced in area around the decontamination pad, will be utilized for the overnight storage of decommissioning equipment and waste storage. Covered roll-off storage bins and/or 55-gallon drums will be used to store the waste appropriately until offsite disposal can be completed. The storage, characterization, transportation and disposal will be managed in accordance with the Waste Management Plan included in Appendix D. The staging area will be inspected at the start and end of each day for appropriate housekeeping practices and as an additional security measure.

Material/waste staging will prevent disruption to base operations in the area. Signs, temporary fencing, etc., will be used as needed to secure and identify materials while they remain onsite.

3.9 Well Decommissioning Methodology

The well decommissioning activities will be completed by a California licensed C-57 drilling subcontractor in accordance with Orange County OCEHD well decommissioning requirements and California Department of Water Resources, California Well Standards, Bulletins 74-81 and 74-90 guidelines. Well decommissioning equipment anticipated to be used on the project includes a vacuum truck with a grout pump, a track-mounted limited access rig, a jack hammer with an air compressor, and a fork lift. The well decommissioning process includes the following procedures:

- Destruction of the existing well completion components, including the concrete pad, crash posts, and well box structure.
- Pressure grout in place, using a Tremie pipe to properly inject the bentonite grout from total depth to approximately 5 feet below ground surface. The grout will be applied with a minimum of 25 pounds per square inch pressure for five minutes or until refusal. The grout slurry will consist of Portland cement mixture, 20% bentonite solids and potable water.
- The approximate volume of grout used will be compared to theoretical volume of the voids in the sand pack and the casing volume for each well.
- Removal of the PVC riser pipe from ground surface to a depth of 5 feet bgs.
- Approximately 3-4 feet of hydrated medium bentonite chips will be placed on top of the grout.
- Complete the decommissioning at each borehole location by restoring the area to surrounding grade including matching the surrounding material (soil, asphalt, or cement) as necessary.

Many of the wells located inside the SBNWR are along or near existing roadways and can be decommissioned using traditional equipment with no impact to sensitive habitat. Wells located in wetland or wetland/upland transition areas located in sensitive habitat will have the surface completions removed using mats and a forklift with balloon tires or a 4-wheel drive backhoe.

Please note that seven of the wells (MW-05-03, MW-05-04, MW-05-05, MW-06-03, MW-06-05, 07M01, and W-45) are located in sensitive habitat and require specialized equipment. Wells in these locations cannot be decommissioned with traditional equipment, i.e. vacuum truck or a limited access rig due to the risk of sinking, becoming stuck, or damaging the sensitive habitat.

Therefore CE2-K is proposing the following method for these select wells. A breaker bar will be lowered down the well to break up the bottom of the PVC well screen. If the equipment with the grout pump and hoses can't get close enough than the appropriate amount of grout will be carried over and poured into the well by hand. Pressure grouting of these select wells will be achieved by attaching a pressure head to the top of the PVC casing and applying 25 psi of pressure with an air compressor for five minutes or until refusal.

A large capacity forklift with "balloon" tires will drive over landing mats placed along the pathway to the well and used to lift the entire well pad, well box, and well casing off the ground surface. The forklift will remove the well materials from the salt marsh to a location where it can be broken up in an environmentally safe location.

Approximately 3-4 feet of hydrated medium bentonite chips will be placed on top of the grout and the upper 1-2 feet of the open borehole will be filled with native soils and the ground surface restored to existing grade. This method will minimize the damage to the tidal mudflats, salt marsh, sensitive habitat, and reduce the likelihood of drilling equipment becoming stuck in the mudflats and tidal channels. This work will be conducted during a low tidal window.

Based on observed field conditions we do not propose to use the forklift to remove the concrete well pad of MW-05-03 due to concern of significant damage and rutting of sensitive habitat in the immediate vicinity. Well MW-05-03 will be handled similarly except that the concrete well pad will be jackhammered out and removed by hand or with the use of a 4-wheel drive backhoe or small all-terrain vehicle with a smaller footprint.

Regulatory agencies and interested parties have reviewed earlier drafts of this Work Plan and provided feedback in the form of comments. CE2-K's response to these comments are presented in Appendix E.

3.10 Decontamination Procedures

Non-disposable field equipment will be decontaminated after use. This includes, but is not limited to, drilling equipment, excavation equipment, Tremie pipe, or other equipment that comes in contact with soil or groundwater. Decontamination water will be managed in accordance with the Waste Management Plan (Appendix D).

3.11 Demobilization and Site Cleanup

Upon completion of decommissioning activities at each well, demobilization will include the removal of the remaining equipment, waste, and material. Decommissioning wastes will be removed from each well location and transferred to the staging area until offsite disposal can be completed. The well decommissioning Sites will then be cleaned of debris or wastes, and a final site inspection will be performed.

3.12 Waste Management and Disposal

A variety of IDW will be generated during the implementation of this scope of work. As such a waste management plan is provided as Appendix D. The plan describes waste management and minimization practices that will be implemented at the various UST Sites.

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4.0 Reporting

Following completion of groundwater monitoring well decommissioning activities, as described above, CE2-K will prepare a well destruction completion report. The report will describe the method of well decommissioning, the materials and quantities used for each well will be documented. The well destruction permit application, and investigative derived waste (IDW) disposal documentation (manifest) will be included as appendices to the report.

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5.0 References

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Figures

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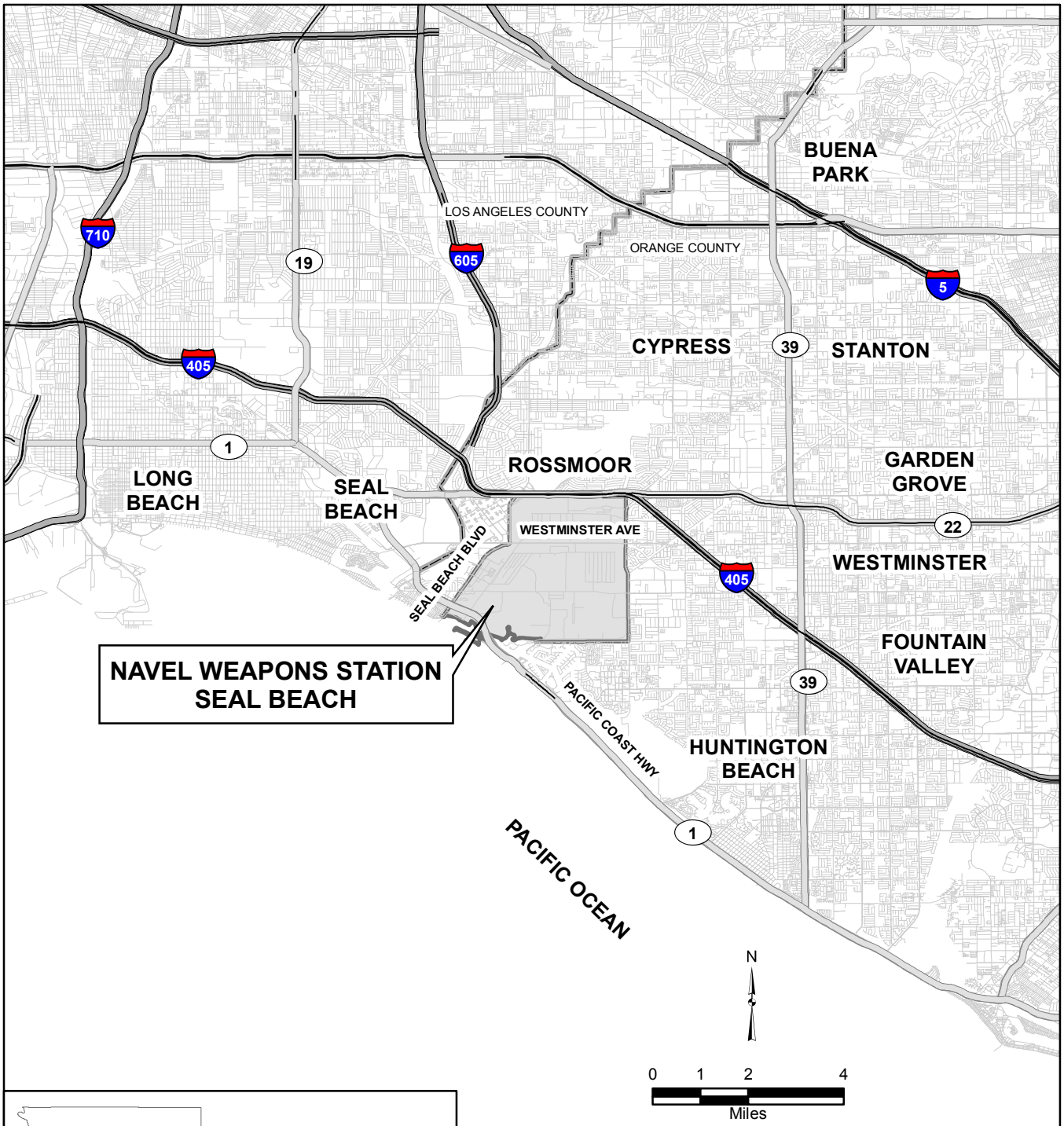

NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST

PREDRAFT WORK PLAN
AUGUST 2014

FIGURE 1

FACILITY LOCATION MAP

BASEWIDE WELL DECOMMISSIONING
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

REVIEW: DM
AUTHOR: RD
FILE NUMBER: Figure 1.mxd

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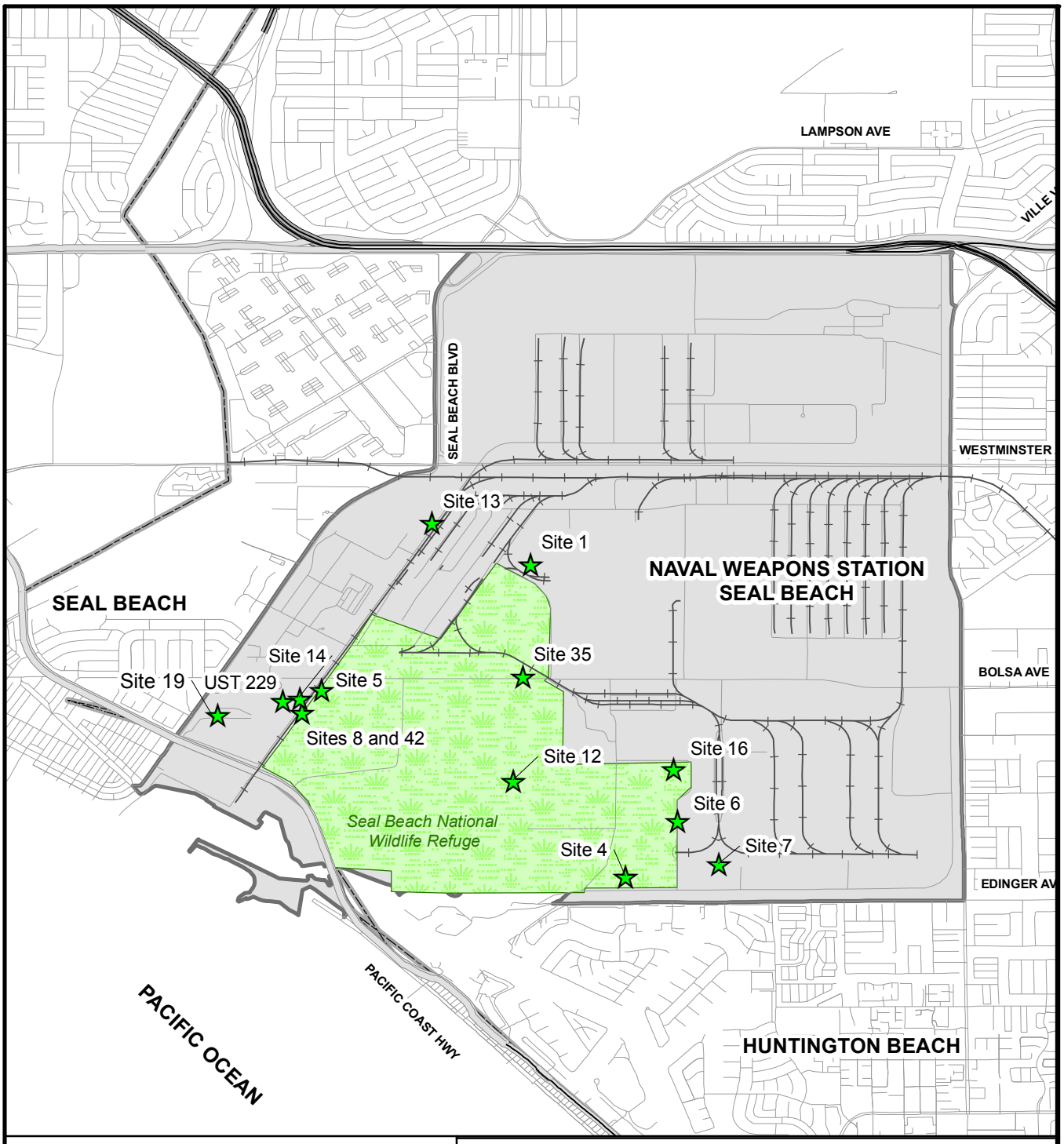

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NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST

PREDRAFT WORK PLAN
AUGUST 2014

FIGURE 2

SITE LOCATION MAP

BASEWIDE WELL DECOMMISSIONING
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

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AUTHOR: RD
FILE NUMBER: Figure 2.mxd

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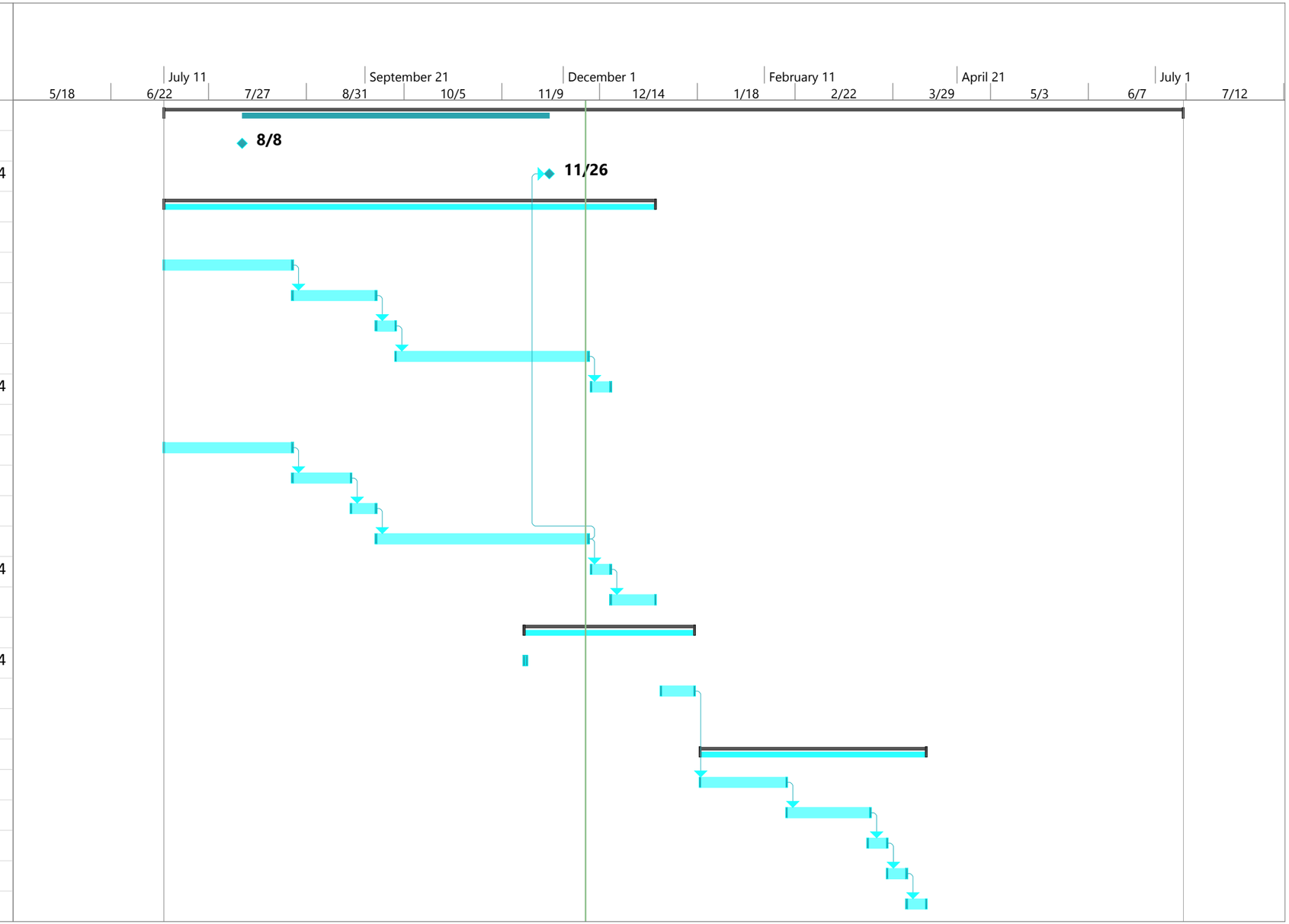
Figure 3.
Seal Beach Project Schedule

ID	Task Name	Duration	Start	Finish
1	**WE 1: Project Management**	**365 days**	**Fri 7/11/14**	**Fri 7/10/15**
2	Kick Off Meeting	0 days	Fri 8/8/14	Fri 8/8/14
3	Pre-Field Work Meeting	0 days	Wed 11/26/14	Wed 11/26/14
4	**WE 2: Project Specific Plans**	**176 days**	**Fri 7/11/14**	**Fri 1/2/15**
5	**SSHP/ APP**			
6	Draft SSHP/APP	46 days	Fri 7/11/14	Mon 8/25/14
7	SSHP/ APP Review	30 days	Tue 8/26/14	Wed 9/24/14
8	SSHP/ APP RTC	7 days	Thu 9/25/14	Wed 10/1/14
9	Navy review of RTC	69 days	Thu 10/2/14	Tue 12/9/14
10	Final SSHP/APP	7 days	Thu 12/11/14	Wed 12/17/14
11	**Workplan**			
12	Pre-Draft Workplan	46 days	Fri 7/11/14	Mon 8/25/14
13	Workplan Review	21 days	Tue 8/26/14	Mon 9/15/14
14	Workplan RTC/Draft	9 days	Tue 9/16/14	Wed 9/24/14
15	Draft Review/RTCs	76 days	Thu 9/25/14	Tue 12/9/14
16	Final Workplan	7 days	Thu 12/11/14	Wed 12/17/14
17	Final Concurrence	16 days	Thu 12/18/14	Fri 1/2/15
18	**WE 3: Field Work**	**61 days**	**Mon 11/17/14**	**Fri 1/16/15**
19	Well Survey	1 day	Mon 11/17/14	Mon 11/17/14
20	Field Work	12 days	Mon 1/5/15	Fri 1/16/15
21				
22	**WE4: Reports**	**81 days**	**Mon 1/19/15**	**Thu 4/9/15**
23	Draft Field Report	31 days	Mon 1/19/15	Wed 2/18/15
24	Field Report Review (Navy	30 days	Thu 2/19/15	Fri 3/20/15
25	Field Report RTC	7 days	Fri 3/20/15	Thu 3/26/15
26	Navy review of RTC	7 days	Fri 3/27/15	Thu 4/2/15
27	Final Field Report	7 days	Fri 4/3/15	Thu 4/9/15



Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

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Appendix A:
Well Inventory List

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Appendix A
Well Inventory List
Naval Weapons Station Seal Beach

Site No.	Well ID	Borehole Depth (ft)	Casing Depth (ft)	Borehole Diameter (in)	Casing Diameter (in)	Casing Type	Surface Completion	Northing	Easting	Datum	Date Installed	Figure Reference Number[1]	Well Located in Seal Beach National Wildlife Refuge?	Location Confirmed during Initial Site Inspection?
1	01M02	25	24	10	4"	PVC	Above Ground	582115.43	1446154.12	NAD 27/CA Zone 6	12/17/1993	B1	No	No
1	01M03	22	21	10	2"	PVC	Above Ground	581607.34	1446597.25	NAD 27/CA Zone 6	12/20/1993	B1	No	No
1	01M04	22	21	10	2"	PVC	Above Ground	581722.21	1446167.18	NAD 27/CA Zone 6	12/20/1993	B1	Yes	No
4	MW-04-01	19	18	10	4"	PVC	Above Ground	2214306.05	6009093.46	NAD83/CA Zon VI	9/29/2003	B2	Yes	Yes
4	MW-04-02	31	30	10	4"	PVC	Above Ground	2214259.37	6010788.5	NAD83/CA Zon VI	9/29/2003	B2	Yes	Yes
4	MW-04-03	30.5	29.5	10	4"	PVC	Above Ground	2214260.45	6011053.57	NAD83/CA Zon VI	9/25/2003	B2	No	Yes
4	MW-04-04	30.5	29.5	10	4"	PVC	Above Ground	2214251.25	6011327.24	NAD83/CA Zon VI	9/25/2003	B2	No	Yes
4	MW-04-05	19	18	10	4"	PVC	Above Ground	2214248.53	6011724.27	NAD83/CA Zon VI	9/25/2003	B2	No	Yes
5	05-MW01	18	15	8	2"	PVC	Above Ground	579001.1	1442318.8	NAD 27/CA Zone 6	1/13/1993	B3	Yes	No
5	05-MW02	18	18	8	2"	PVC	Above Ground	578828.73	1442208.08	NAD 27/CA Zone 6	1/11/1993	B3	Yes	No
5	MW-05-01	31	30	8	4"	PVC	Above Ground	2219636.19	6003393.59	NAD83/CA Zon VI	12/3/1998	B3	No	Yes
5	MW-05-02	30.5	29	8	4"	PVC	Above Ground	2219591.15	6003776.37	NAD83/CA Zon VI	9/22/2003	B3	No	Yes
5	MW-05-03	30.5	29.5	8	4"	PVC	Above Ground	2219183.74	6003948.87	NAD83/CA Zon VI	10/20/2003	B3	Yes	Yes
5	MW-05-04	30	29	8	4"	PVC	Above Ground	2218960.65	6003792.24	NAD83/CA Zon VI	9/23/2003	B3	Yes	Yes
5	MW-05-05	30.5	29	8	4"	PVC	Above Ground	2218903.76	6003574.37	NAD83/CA Zon VI	9/22/2003	B3	Yes	Yes
6	06-MW01	20	15.5	8	2"	PVC	Above Ground	575527.63	1449777.21	NAD 27/CA Zone 6	1/14/1993	B4	Yes	No
6	W-38	30	28	8	2"	PVC	Above Ground	575222.43	1448740.31	NAD 27/CA Zone 6		B4	Yes	No
6	W-39	30	29	8	2"	PVC	Above Ground	574896.25	1449515.05	NAD 27/CA Zone 6	11/1/1988	B4	Yes	No
6	W-40	30	29	8	2"	PVC	Above Ground	2216274.42	6010963.97	NAD83/CA Zon VI	11/1/1988	B4	Yes	Yes
6	MW-06-01	31.5	26	8	4"	PVC	Above Ground	2215757.89	6010345.96	NAD83/CA Zon VI	12/3/1998	B2	Yes	Yes
6	MW-06-02	30.5	30	10	4"	PVC	Above Ground	2216078.54	6010648.64	NAD83/CA Zon VI	9/19/2003	B2	Yes	Yes
6	MW-06-03	30.5	29.5	10	4"	PVC	Above Ground	2215525.23	6010371.32	NAD83/CA Zon VI	9/19/2003	B2	Yes	Yes
6	MW-06-04	30.5	29.5	10	4"	PVC	Above Ground	2215651.27	6010753.98	NAD83/CA Zon VI	9/24/2003	B2	Yes	Yes
6	MW-06-05	30.5	29.5	10	4"	PVC	Above Ground	2215548.19	6011294.93	NAD83/CA Zon VI	9/24/2003	B2	No	Yes
7	07M01	22	21	10	4"	PVC	Above Ground	573945.93	1449700.05	NAD 27/CA Zone 6	12/22/1993	B5, B6	No	Yes
7	07M02	22	21	10	4"	PVC	Above Ground	574235.98	1449848.62	NAD 27/CA Zone 6	12/21/1993	B6	No	No
7	07M03	22	21	10	4"	PVC	Above Ground	574549.82	1449855.17	NAD 27/CA Zone 6	12/22/1993	B6	No	No
7	07M04	22	21	10	4"	PVC	Above Ground	574048.49	1450000.13	NAD 27/CA Zone 6	12/20/1993	B6	No	No
7	W-41	30	30	8	2"	PVC	Above Ground	574690.71	1449457.34	NAD 27/CA Zone 6	11/4/1988	B6	Yes	Yes
7	W-42	30	29	8	2"	PVC	Above Ground	573819.91	1449550.1	NAD 27/CA Zone 6	11/4/1988	B6	Yes	Yes
7	W-43	30	29	8	2"	PVC	Above Ground	574279.55	1449397.51	NAD 27/CA Zone 6	11/7/1988	B6	Yes	Yes
7	W-44	30	29	8	2"	PVC	Above Ground	574711	1450026.52	NAD 27/CA Zone 6	11/7/1988	B6	No	No
7	W-45	28	28	7	2"	PVC	Above Ground	574473.56	1450467.61	NAD 27/CA Zone 6	11/10/1988	B6	No	Yes
7	W-46	34	30	7	2"	PVC	Above Ground	574168.94	1450446.85	NAD 27/CA Zone 6	11/10/1988	B6	No	No
8_42	USGS-1					Steel					Pre-1984	B7, B8, B9	No	No
8_42	USGS-1A					Steel					Pre-1984	B7, B8, B9	No	No
8_42	USGS-2		10.3	2	2"						Sep-84	B7, B8, B9	No	No
8_42	USGS-23		13	6	2"		Above grade				Nov-84	B7, B8, B9	No	No

Appendix A
Well Inventory List
Naval Weapons Station Seal Beach

Site No.	Well ID	Borehole Depth (ft)	Casing Depth (ft)	Borehole Diameter (in)	Casing Diameter (in)	Casing Type	Surface Completion	Northing	Easting	Datum	Date Installed	Figure Reference Number[1]	Well Located in Seal Beach National Wildlife Refuge?	Location Confirmed during Initial Site Inspection?
8_42	USGS-24		11.7	6	2"		Above grade				Nov-84	B7, B8, B9	No	No
12	12_M01	26	26	10.375	4"	PVC	Flush, no cover	576796.17	1445965.92	NAD 27/CA Zone 6	2/24/1995	B10	Yes	Yes
12	12_M02	26	25.5	10.375	4"	PVC	Flush, no cover	576682.63	1445737.21	NAD 27/CA Zone 6	2/24/1995	B10	Yes	Yes
13	13-MW01	26.4	25.4	8	2"	PVC	Flush Mounted	578455.54	1440808.13	NAD 27/CA Zone 6	12/16/1992	B11	No	No
13	13-MW02	27	21	8	2"	PVC	Above Ground	583395.62	1444811.75	NAD 27/CA Zone 6	12/16/1992	B11	No	No
13	13-MW03	20	19	8	2"	PVC	Above Ground	582428.63	1444192.44	NAD 27/CA Zone 6	12/15/1992	B11	No	No
14	BSW-14-1	25	25	10	4.5"	PVC	Flush Mounted	218993.11	3288.67		10/20/1999	B12	No	Yes
14	BSW-14-2	25	25	10	4.5"	PVC	Flush Mounted	219037.23	3263.83		10/20/1999	B12	No	Yes
14	BSW-14-3	25	25	10	4.5"	PVC	Flush Mounted	219070.47	3281.81		10/20/1999	B12	No	Yes
14	BSW-14-4	25	25	10	4.5"	PVC	Flush Mounted	219040.69	3217.05		10/20/1999	B12	No	Yes
14	BSW-14-5	25	25	10	4.5"	PVC	Flush Mounted	219111.56	3188.82		10/20/1999	B12	No	Yes
14	BSW-14-6	25	25	10	4" **	PVC	Flush Mounted	2218939.73	6003087.47	NAD83/CA Zon VI	10/2/2001	B12	No	Yes
14	BSW-14-7	25	25	10	4"	PVC	Flush Mounted	2219190.37	6003266	NAD83/CA Zon VI	10/1/2001	B12	No	Yes
14	BSW-14-8	24	24	10	4" **	PVC	Flush Mounted	2219111.49	6003422.59	NAD83/CA Zon VI	10/1/2001	B12	No	Yes
14	BSW-14-9	25	25	10	4" **	PVC	Flush Mounted	2218898.6	6003286.58	NAD83/CA Zon VI	10/1/2001	B12	No	Yes
14	BSW-14-10	25	25	10	4"	PVC	Flush Mounted	2219187.93	6003326.57	NAD83/CA Zon VI	8/1/2006	B12	No	Yes
14	BSW-14-11	27.5	25	10	4"	PVC	Flush Mounted	2219121.19	6003364.7	NAD83/CA Zon VI	8/2/2006	B12	No	Yes
14	N35	20	19.5		2"	PVC	Flush Mounted				10/11/1990	B13	No	No
14	N36	20.5	20		2"	PVC	Flush Mounted				10/11/1990	B13	No	No
14	N37	20.5	20		2"	PVC	Flush Mounted				10/11/1990	B13	No	No
14	N38	20	19.7		2"	PVC	Flush Mounted				10/12/1990	B13	No	No
14	N39	20.5	20		2"	PVC	Flush Mounted				10/12/1990	B13	No	No
16	16_M01	21.5	21.5	10.375	4"	PVC	Above Ground	577026.31	1449028.91	NAD 27/CA Zone 6	5/3/1995	B14	Yes	Yes
16	16_M02	21.5	19.5	10.375	4"	PVC	Above Ground	577011.49	1449548.6	NAD 27/CA Zone 6	5/3/1995	B14	Yes	Yes
19	W54	30	29	8	2"	PVC	Above Ground	578268.88	1440005.14	NAD 27/CA Zone 6		B15	No	No
19	W55	30	29	8	2"	PVC	Above Ground	578311.35	1440049.69	NAD 27/CA Zone 6		B15	No	No
19	W56	30	29.5	8	2"	PVC	Above Ground	578238.86	1440053.19	NAD 27/CA Zone 6		B15	No	No
35	35_M01	20.8	20	10.375	4"	PVC	Flush Mounted	579374.64	1446186.21	NAD 27/CA Zone 6	4/19/1995	B16	Yes	Yes
35	35_M02	21.5	20	10.375	4"	PVC	Flush Mounted	579353.94	1446315	NAD 27/CA Zone 6	4/17/1995	B16	Yes	Yes
UST229	SB229-MW01	16.5	16		2"	PVC	Flush Mounted	2219079.38	6003027.76	NAD83/CA Zon VI	7/21/2009	B17	No	Yes
UST229	SB229-MW02	15	15		2"	PVC	Flush Mounted	2219056.78	6002991.22	NAD83/CA Zon VI	7/21/2009	B17	No	Yes
UST229	SB229-MW03	14.5	14.5		2"	PVC	Flush Mounted	2219011	6003086.85	NAD83/CA Zon VI	7/21/2009	B17	No	Yes
UST229	SB229-MW04	16.5	16		2"	PVC	Flush Mounted	2219119.88	6002990.98	NAD83/CA Zon VI	7/30/2009	B17	No	Yes
Notes:	*ft - feet*			*- unknown well*										
	ID - identification		[1]	"Figure references are in Appendix B"										
	in - inches		*** - Schedule 80 PVC*											
	PVC - Polyvinyl Chloride													

Appendix B: Site-Specific Monitoring Well Locations

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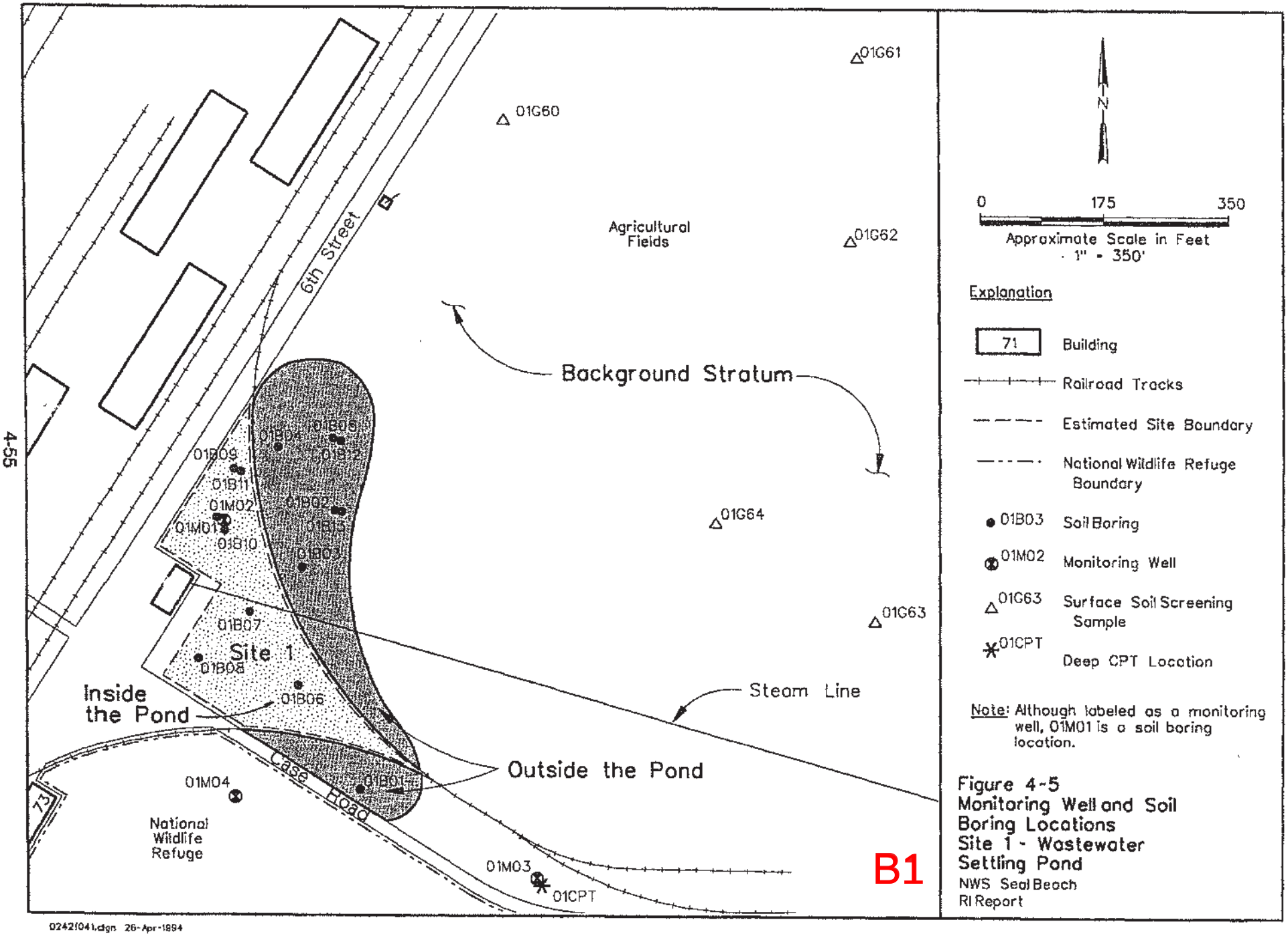

Figure 4-5
Monitoring Well and Soil Boring Locations
Site 1 - Wastewater Settling Pond
NWS Seal Beach
RI Report

02421041.dgn 26-Apr-1994

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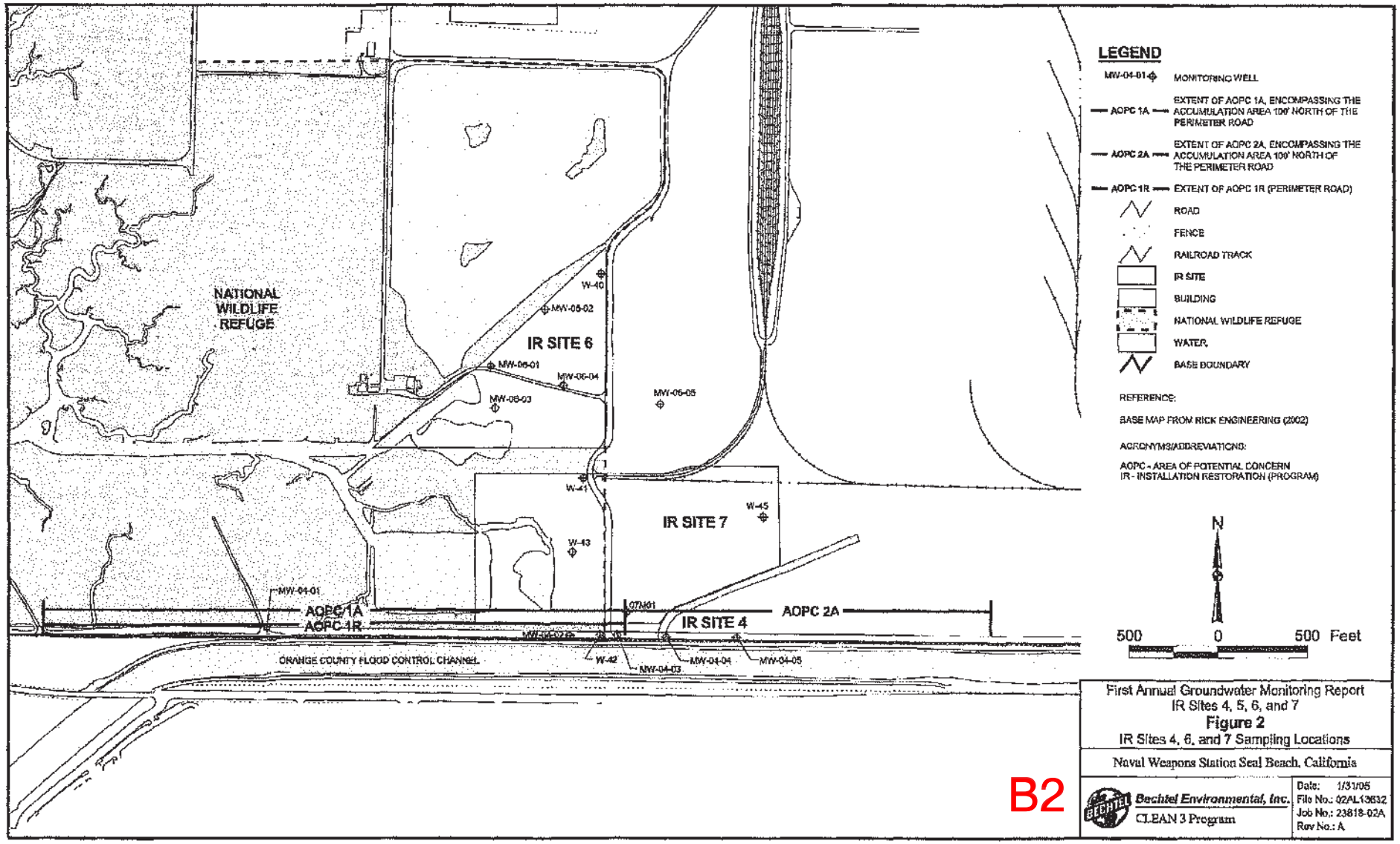

First Annual Groundwater Monitoring Report
IR Sites 4, 5, 6, and 7
Figure 2
IR Sites 4, 6, and 7 Sampling Locations

Naval Weapons Station Seal Beach, California

Bechtel Environmental, Inc.
CLEAN 3 Program

Date: 1/31/05
File No.: 02AL13632
Job No.: 23818-02A
Rev No.: A

B2

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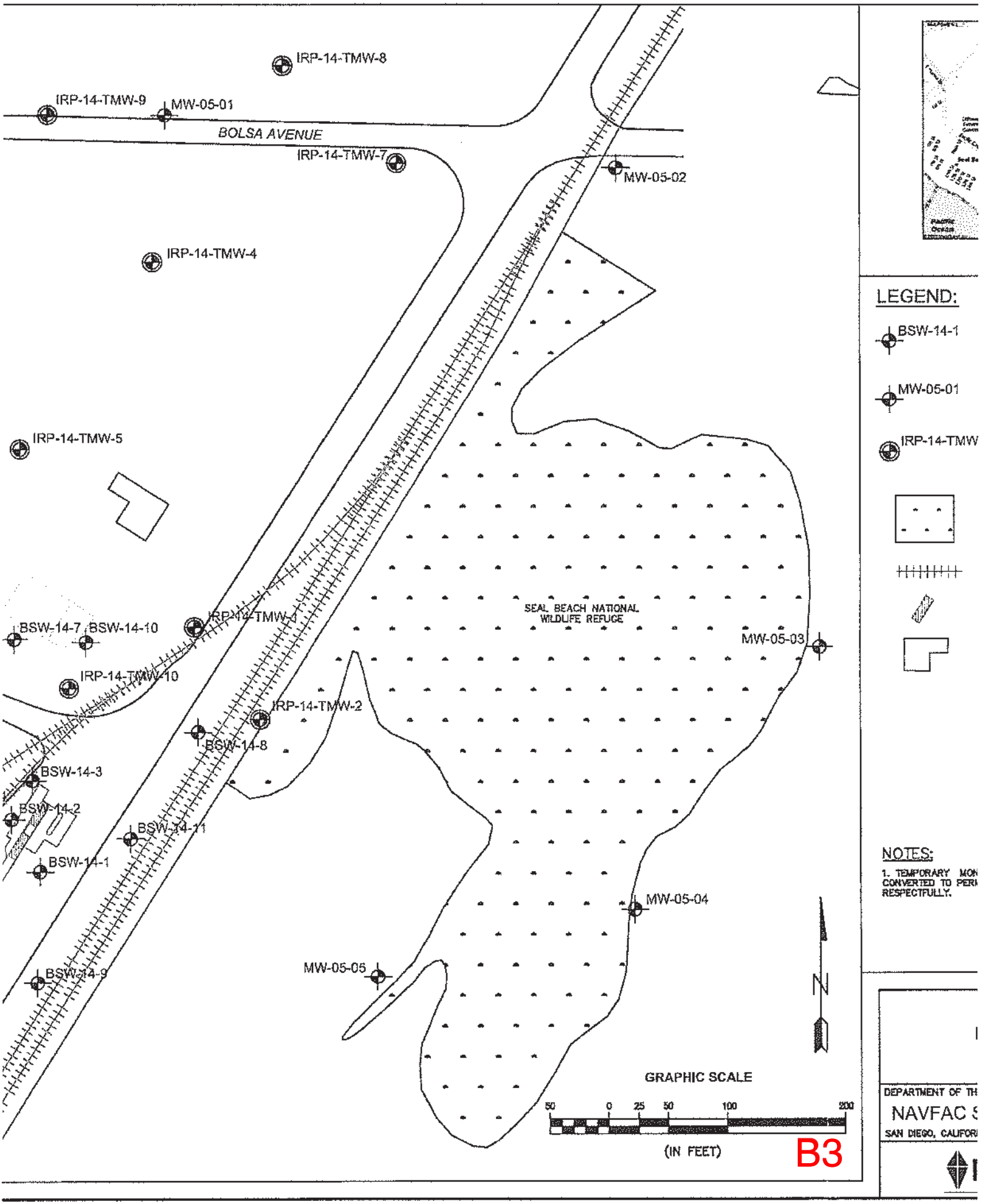
IRP-14-TMW-8
IRP-14-TMW-9
MW-05-01
BOLSA AVENUE
IRP-14-TMW-7
MW-05-02
IRP-14-TMW-4
IRP-14-TMW-5
BSW-14-7
BSW-14-10
IRP-14-TMW-1
IRP-14-TMW-10
IRP-14-TMW-2
BSW-14-8
BSW-14-3
BSW-14-2
BSW-14-11
BSW-14-1
BSW-14-9
SEAL BEACH NATIONAL WILDLIFE REFUGE
MW-05-03
MW-05-04
MW-05-05
N
GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
LEGEND:
BSW-14-1
MW-05-01
IRP-14-TMW
NOTES:
1. TEMPORARY MON
CONVERTED TO PERI
RESPECTFULLY.
DEPARTMENT OF TH
NAVFAC S
SAN DIEGO, CALIFORI

B3

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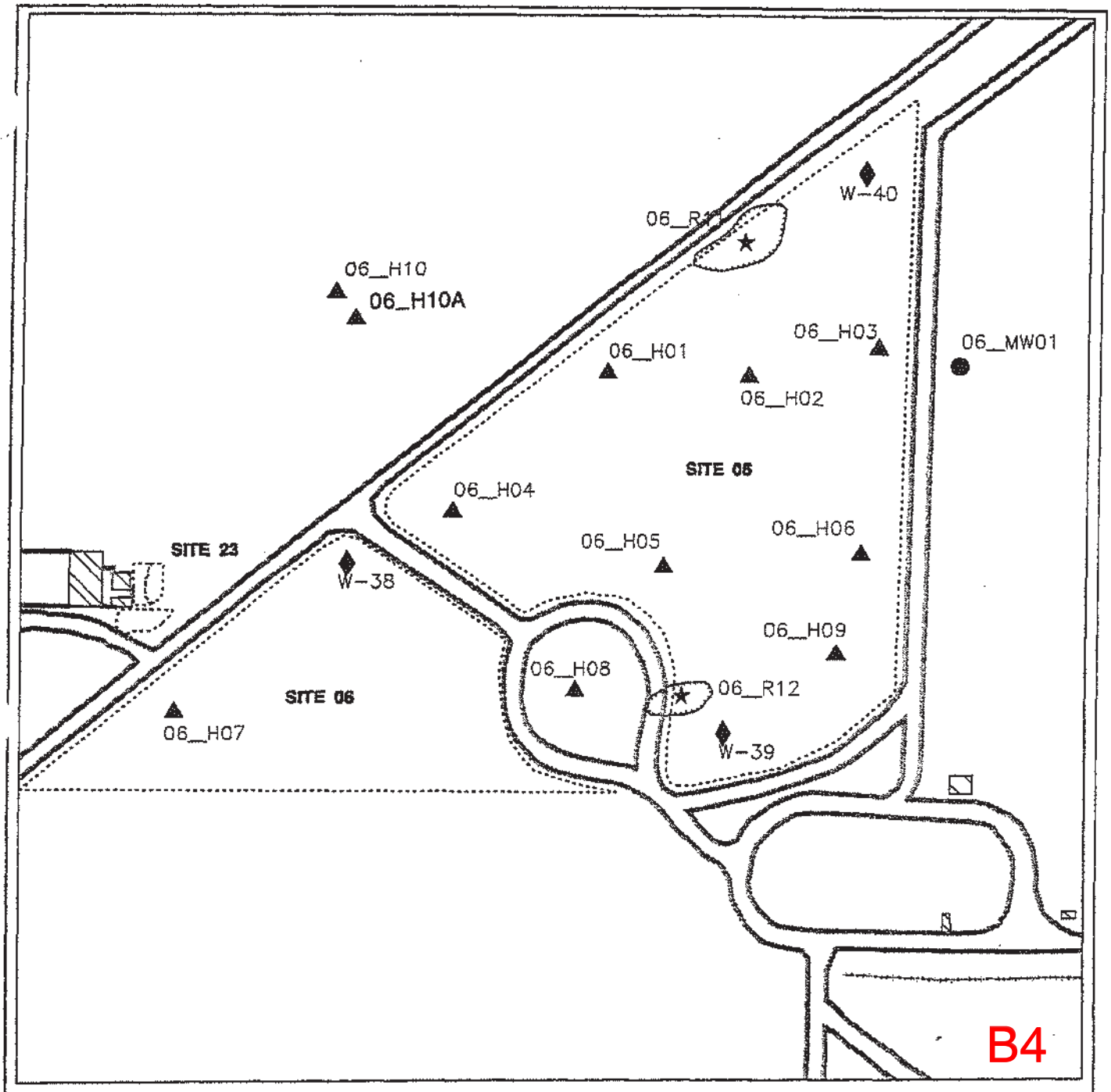

Features

- Building
- Puddle
- Site
- Fence
- Railroad
- Street

Type

- Boring
- Hand Auger
- Monitoring Well
- Pre-SI Monitoring Well
- Surface Water Sample

Feet

0 50 100 150

N

FIGURE 6-3

SITE 6

NWS SEAL BEACH
OU4 SITE INSPECTION REPORT

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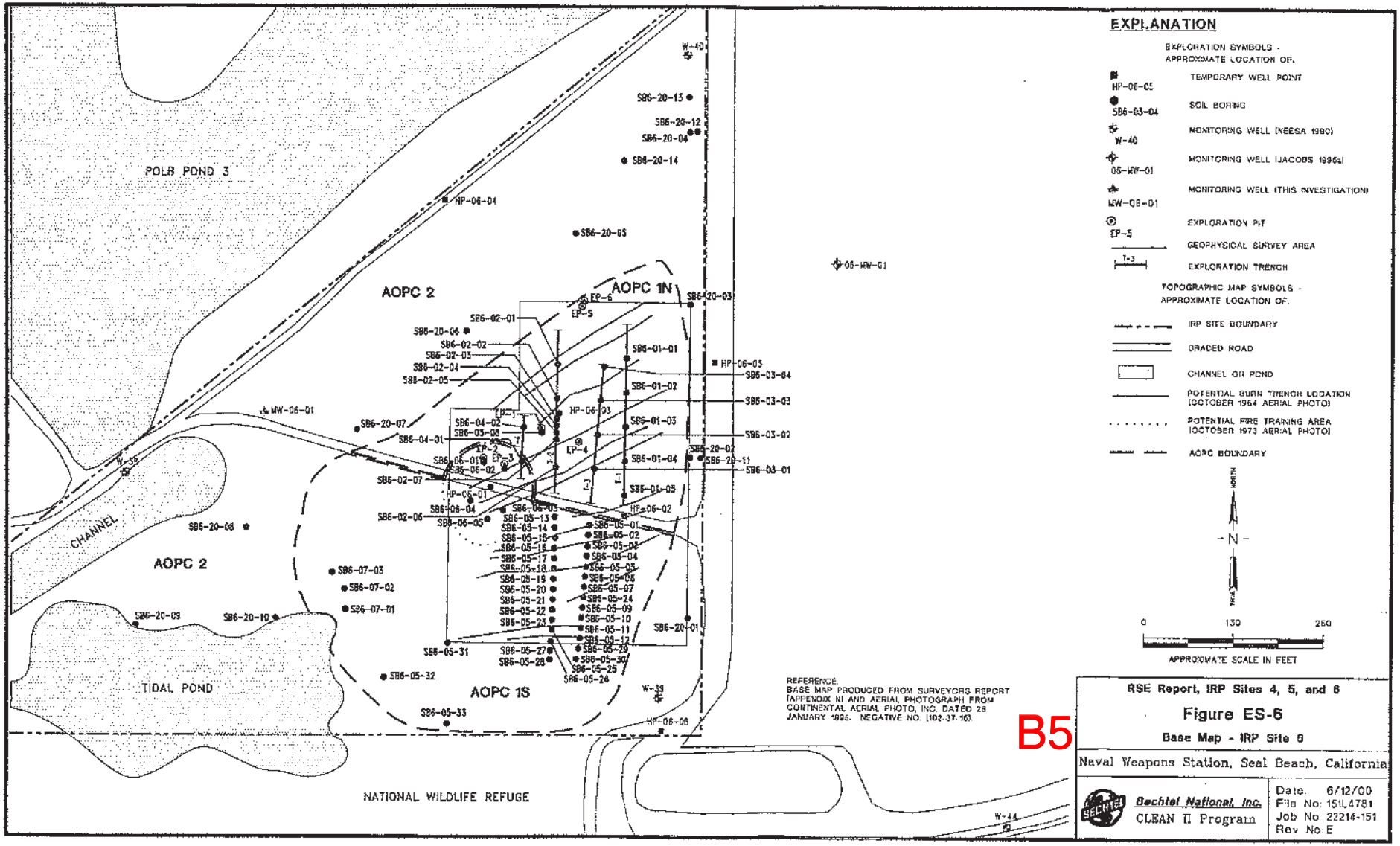
EXPLANATION
EXPLORATION SYMBOLS - APPROXIMATE LOCATION OF:
HP-06-05 TEMPORARY WELL POINT
SB6-03-04 SOIL BORING
W-40 MONITORING WELL (NEESA 1980)
06-MW-01 MONITORING WELL (JACOBS 1996a)
MW-06-01 MONITORING WELL (THIS INVESTIGATION)
EP-5 EXPLORATION PIT
GEOPHYSICAL SURVEY AREA
T-3 EXPLORATION TRENCH
TOPOGRAPHIC MAP SYMBOLS - APPROXIMATE LOCATION OF:
IRP SITE BOUNDARY
GRADED ROAD
CHANNEL OR POND
POTENTIAL BURN TRENCH LOCATION (OCTOBER 1964 AERIAL PHOTO)
POTENTIAL FIRE TRAINING AREA (OCTOBER 1973 AERIAL PHOTO)
AOPC BOUNDARY
NORTH
N
TRUE
0
130
260
APPROXIMATE SCALE IN FEET
POLB POND 3
AOPC 2
AOPC 1N
AOPC 1S
CHANNEL
TIDAL POND
NATIONAL WILDLIFE REFUGE
REFERENCE:
BASE MAP PRODUCED FROM SURVEYORS REPORT (APPENDIX K) AND AERIAL PHOTOGRAPH FROM CONTINENTAL AERIAL PHOTO, INC. DATED 28 JANUARY 1995. NEGATIVE NO. (102-37-16).
B5
RSE Report, IRP Sites 4, 5, and 6
Figure ES-6
Base Map - IRP Site 6
Naval Weapons Station, Seal Beach, California
Bechtel National, Inc.
CLEAN II Program
Date: 6/12/00
File No: 15IL4781
Job No: 22214-151
Rev No: E

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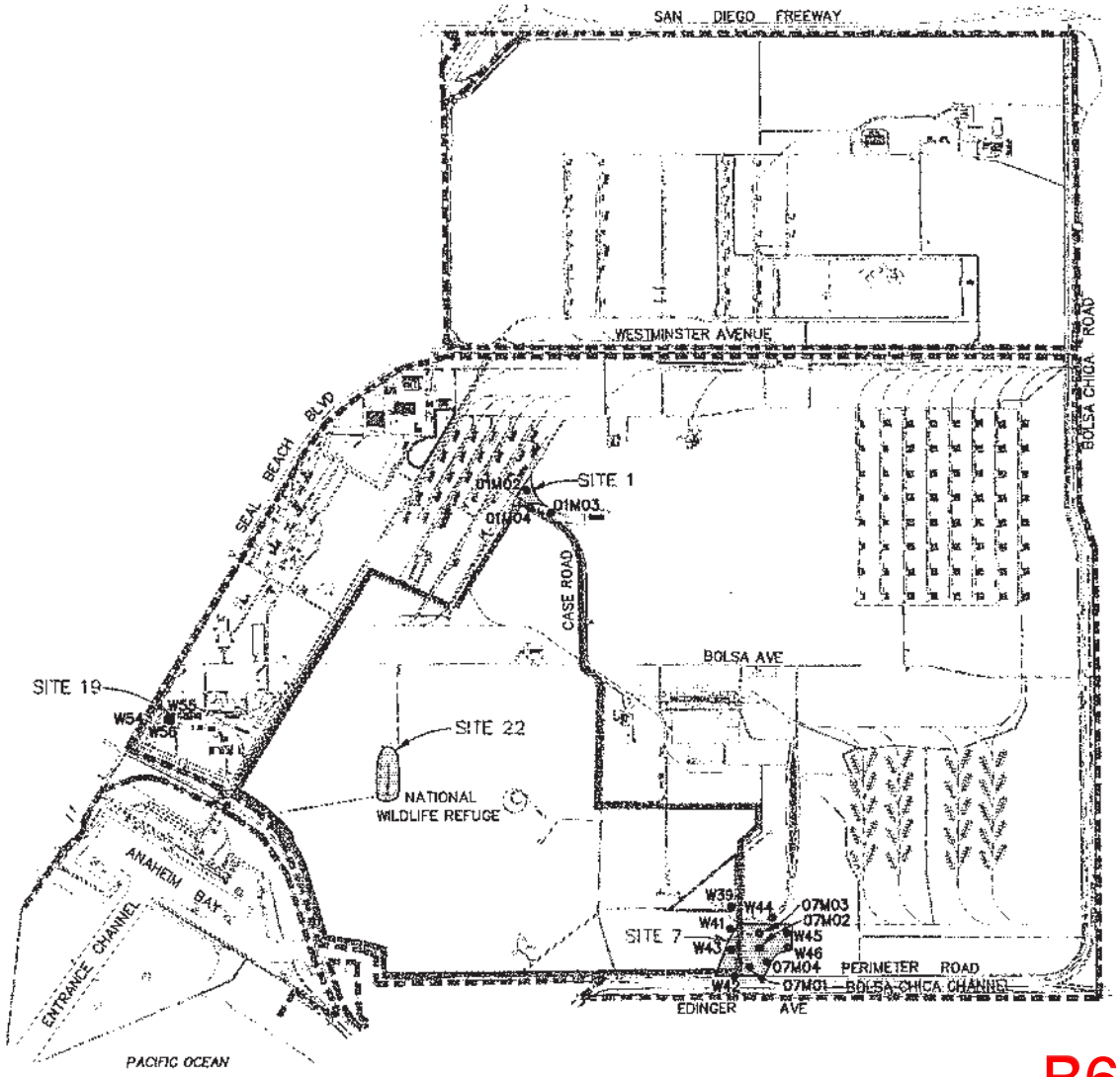
09-29-94



LEGEND

- W40 — WELL SAMPLE LOCATION
- EXISTING BOUNDARY
- NATIONAL WILDLIFE REFUGE BOUNDARY
- SITE 1 — WASTEWATER SETTLING POND (OU-1)
- SITE 7 — STATION LANDFILL (OU-2)
- SITE 19 — BUILDING 241 DISPOSAL PIT (OU-2)
- SITE 22 — OIL ISLAND (OU-3)
- APPROXIMATE RI/FS SITE AREA

N

1000 0 1000 2000

SCALE IN FEET

B6

FIGURE 1-1
GROUNDWATER SAMPLING LOCATIONS
NWS SEAL BEACH
SECOND QUARTER GROUNDWATER SAMPLING SUPPLEMENTAL REPORT

I:\FIGURES\SC070242.CI\SURV1A.DWG

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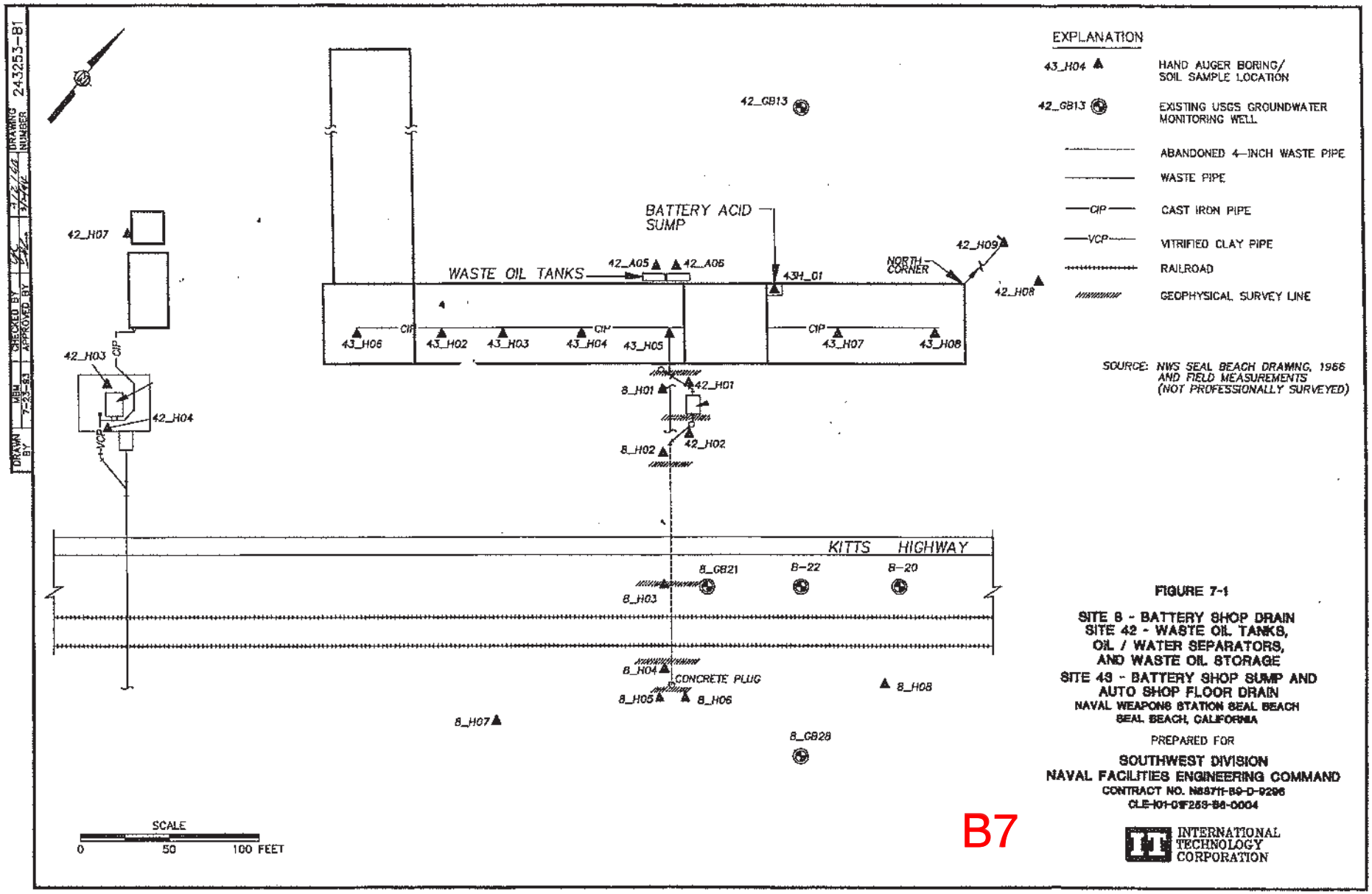

FIGURE 7-1

SITE 8 - BATTERY SHOP DRAIN
SITE 42 - WASTE OIL TANKS, OIL / WATER SEPARATORS, AND WASTE OIL STORAGE
SITE 43 - BATTERY SHOP SUMP AND AUTO SHOP FLOOR DRAIN
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

PREPARED FOR

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CONTRACT NO. N68711-89-D-9296
CLE-101-01F253-B6-0004

INTERNATIONAL TECHNOLOGY CORPORATION

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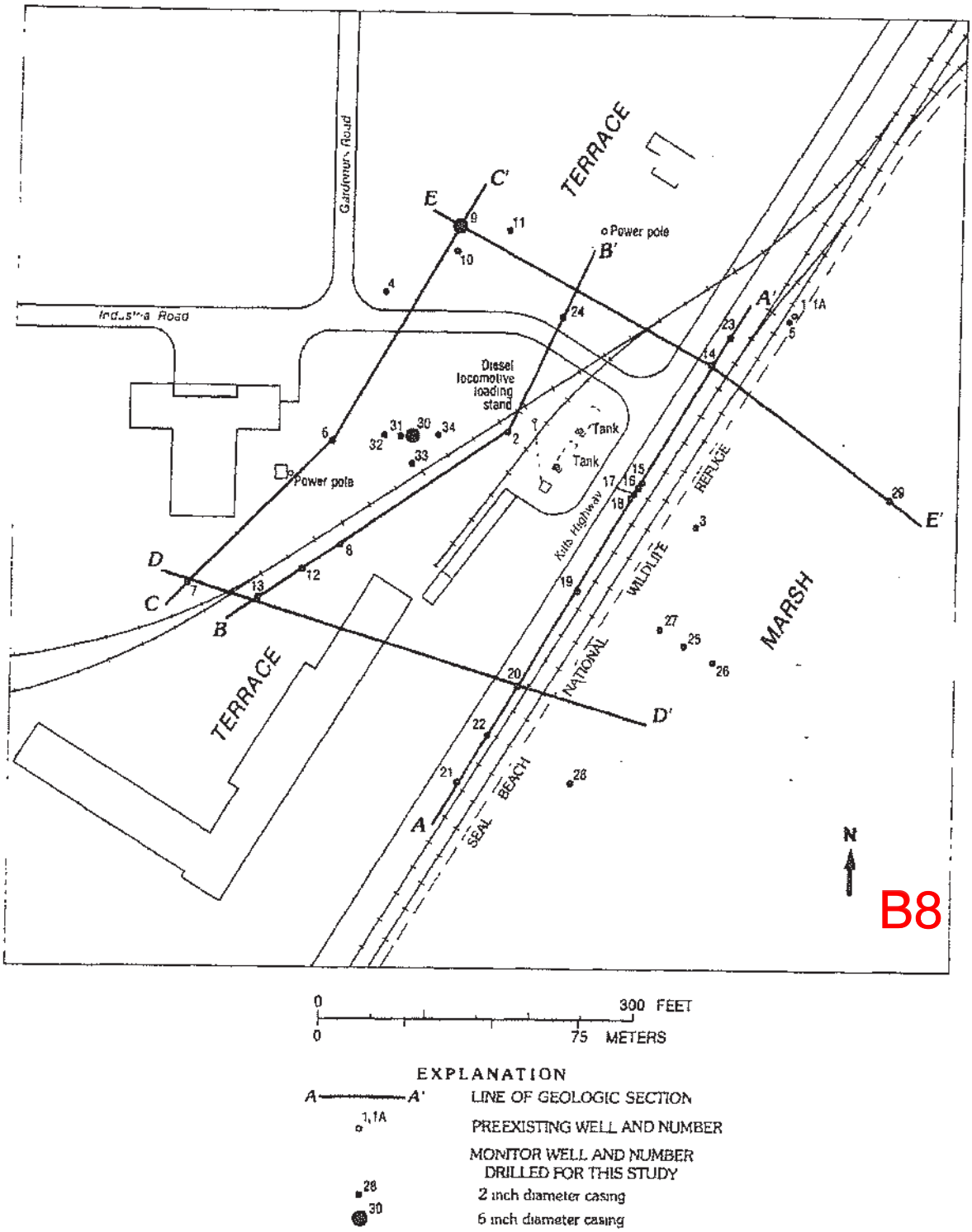

Figure 3. Location of monitor wells and geologic sections in the study area

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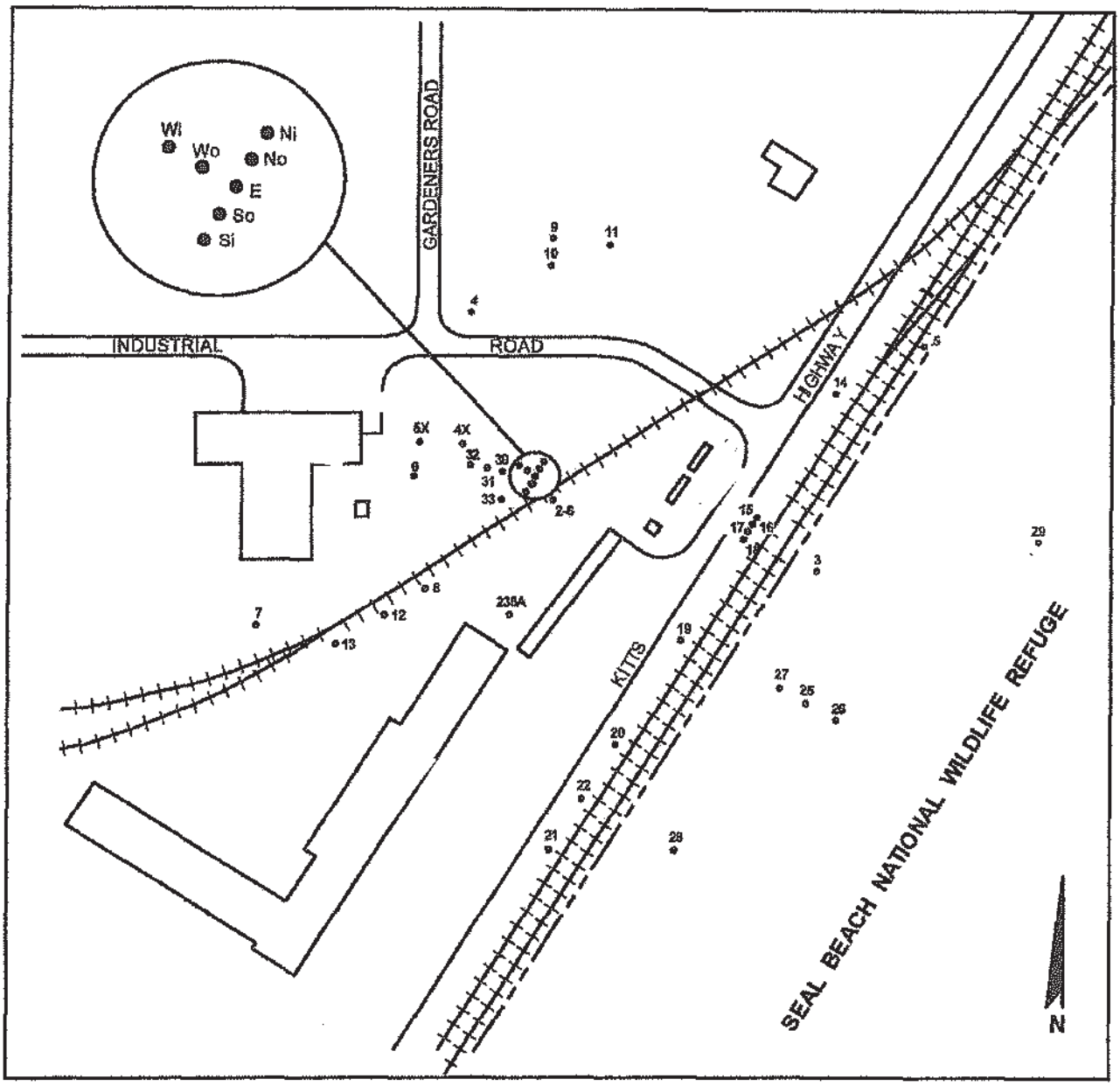

B9

Approximate Scale (feet)

0 75 150 300

EXPLANATION

- 17 MONITORING WELL AND NUMBER
- 4 MONITORING WELL AND NUMBER TO BE REMOVED IN SPRING/SUMMER 1988

GEOFON INCORPORATED

PROJECT NO.: 95-333.160

WELL LOCATIONS MAP

10/97

Figure 2

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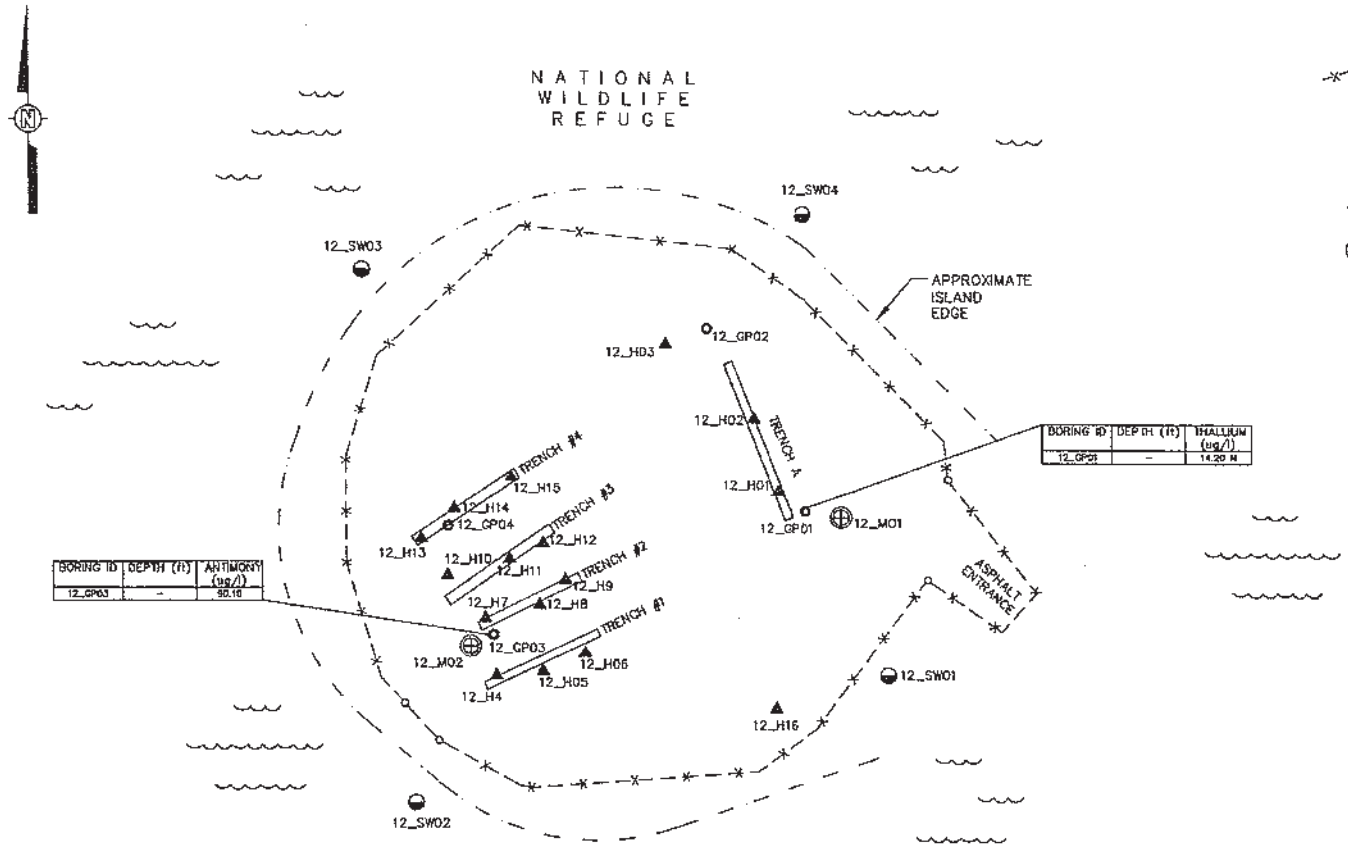

LEGEND

- METALIC FENCE (DASHED WHERE APPROXIMATE)
- PREVIOUS SI SOIL SAMPLE LOCATION
- PREVIOUS SI HYDROPUNCH–TYPE GROUNDWATER SAMPLING LOCATION
- FSI SURFACE–WATER SAMPLE LOCATION
- FSI MONITORING WELL LOCATION, COVERED WITH TOP SOIL.
- FENCE POSTS MARKED WITH RIBBON, CAN BE USED TO LOCATE WELLS
- ug/l MICROGRAMS PER LITER

SOURCE: NWS SEAL BEACH DRAWING, 1966 AND FIELD MEASUREMENTS (NOT PROFESSIONALLY SURVEYED)

FIGURE 5-3

SITE 12
NASA ISLAND SITE PLAN
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

PREPARED FOR

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CONTRACT NO. N68711-89-D-9298
CLE-101-01F297-B8-0008

INTERNATIONAL TECHNOLOGY CORPORATION

B10

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
JJC 12-10-96	DCT 12-17-96	PEF 12-17-96	760181-B14

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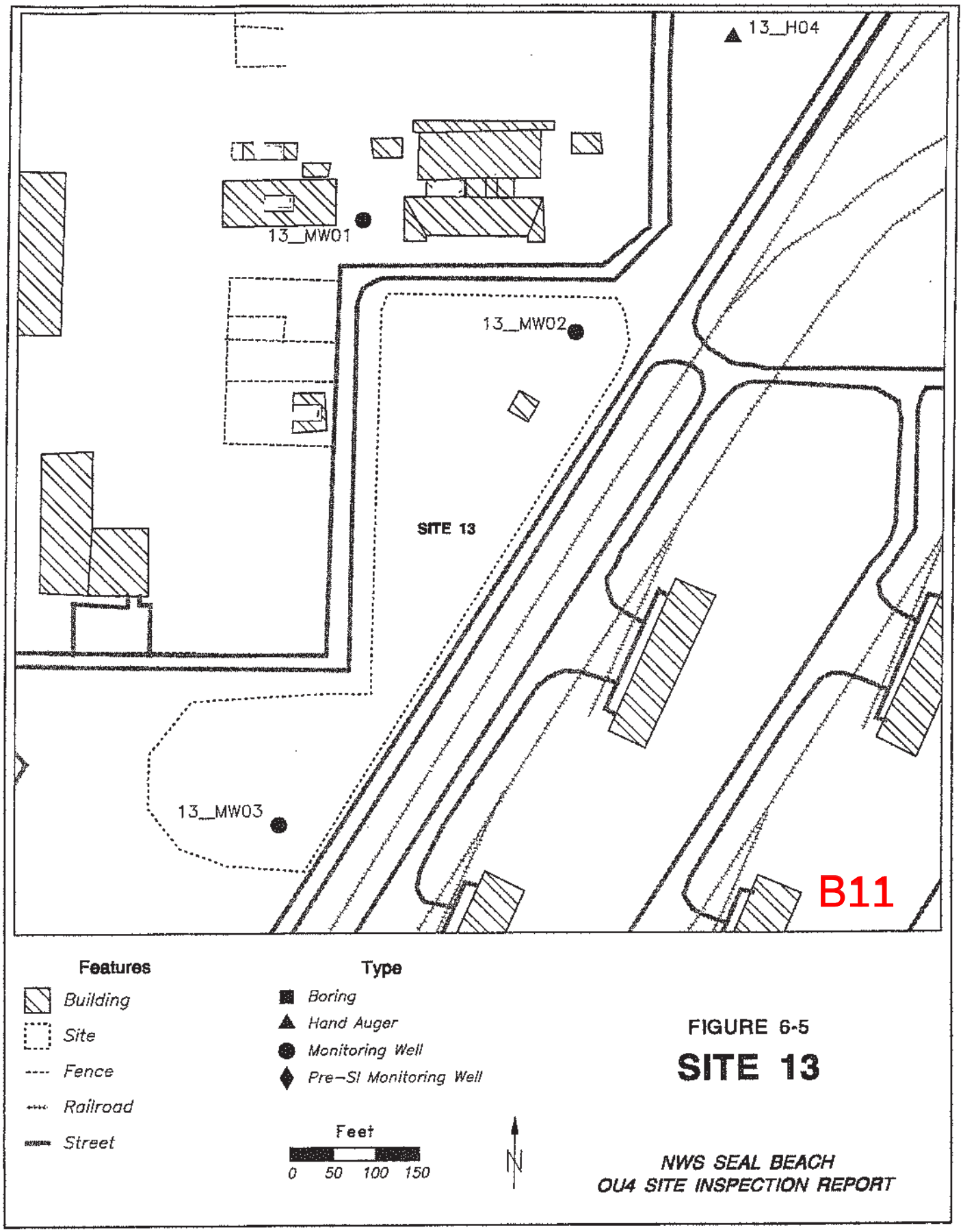

FIGURE 6-5

SITE 13

NWS SEAL BEACH
OU4 SITE INSPECTION REPORT

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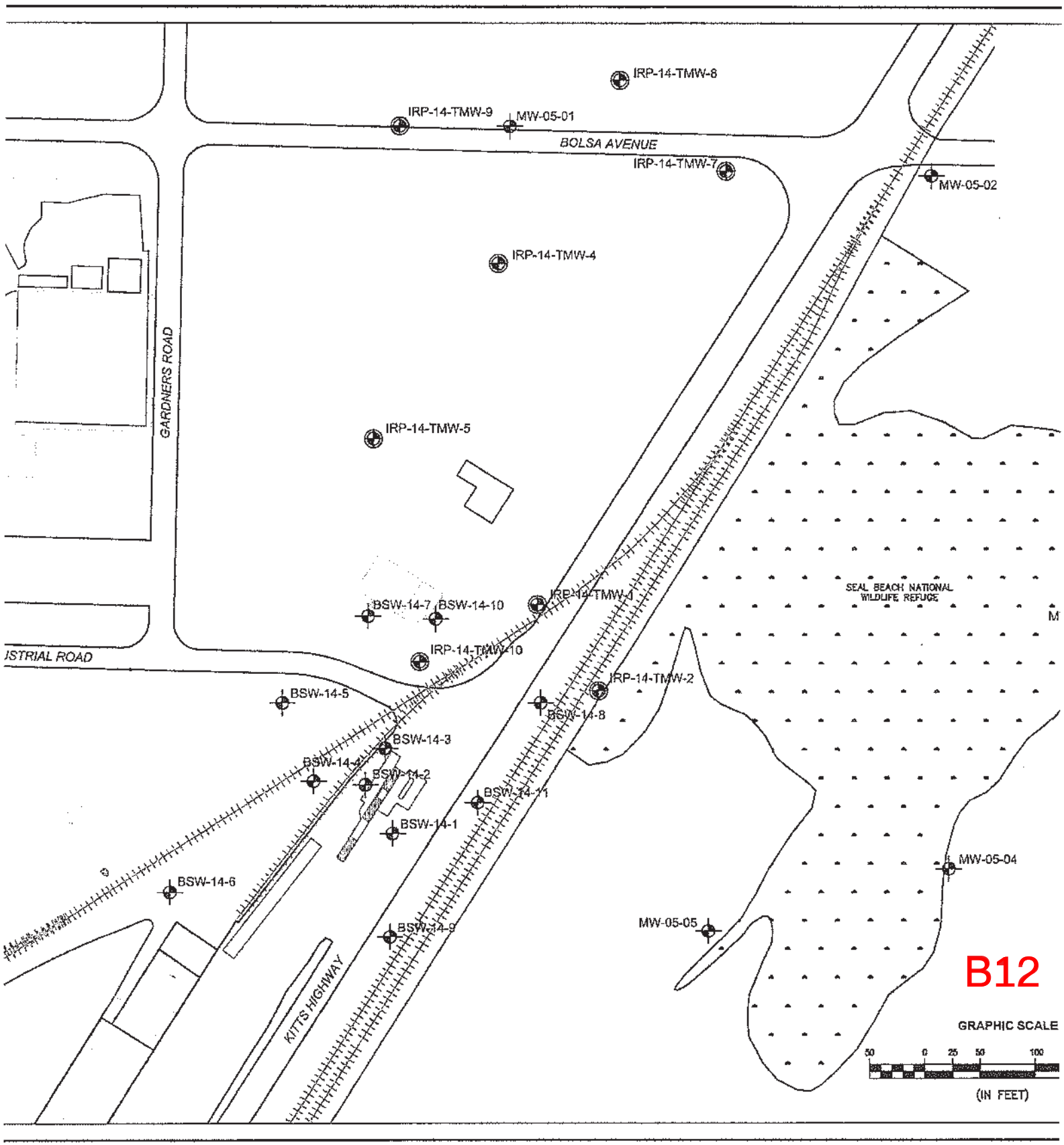
IRP-14-TMW-8
IRP-14-TMW-9
MW-05-01
BOLSA AVENUE
IRP-14-TMW-7
MW-05-02
IRP-14-TMW-4
GARDNERS ROAD
IRP-14-TMW-5
SEAL BEACH NATIONAL WILDLIFE REFUGE
BSW-14-7
BSW-14-10
IRP-14-TMW-1
IRP-14-TMW-10
ISTRIAL ROAD
IRP-14-TMW-2
BSW-14-5
BSW-14-8
BSW-14-3
BSW-14-4
BSW-14-2
BSW-14-11
BSW-14-1
MW-05-04
BSW-14-6
MW-05-05
BSW-14-9
KITTS HIGHWAY
B12
GRAPHIC SCALE
50 0 25 50 100
(IN FEET)

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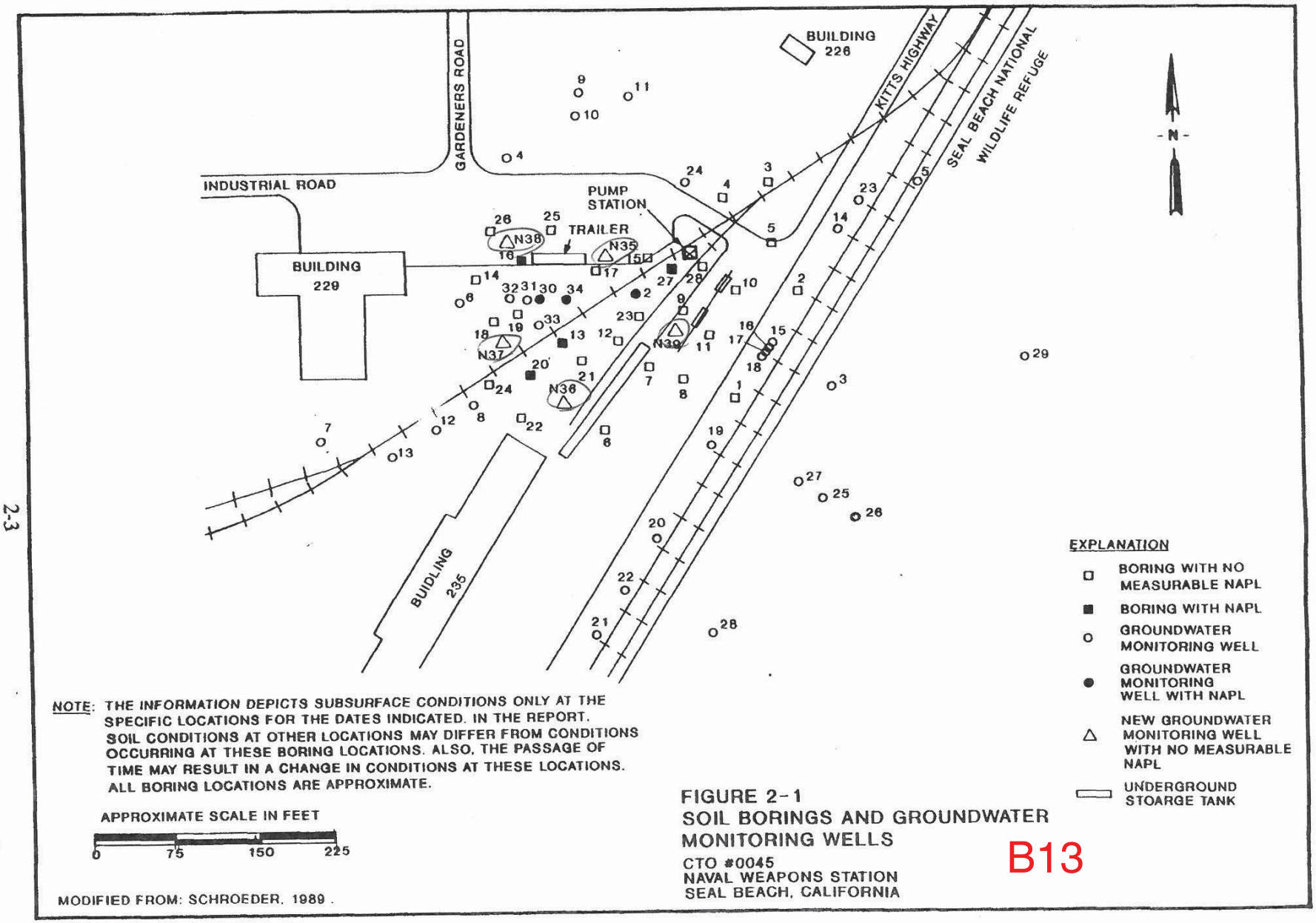
Site 14



NOTE: THE INFORMATION DEPICTS SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS FOR THE DATES INDICATED. IN THE REPORT. SOIL CONDITIONS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO, THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN CONDITIONS AT THESE LOCATIONS. ALL BORING LOCATIONS ARE APPROXIMATE.

MODIFIED FROM: SCHROEDER, 1989.

FIGURE 2-1
SOIL BORINGS AND GROUNDWATER MONITORING WELLS
CTO #0045
NAVAL WEAPONS STATION
SEAL BEACH, CALIFORNIA

B13

#232

LA030230.45.SA

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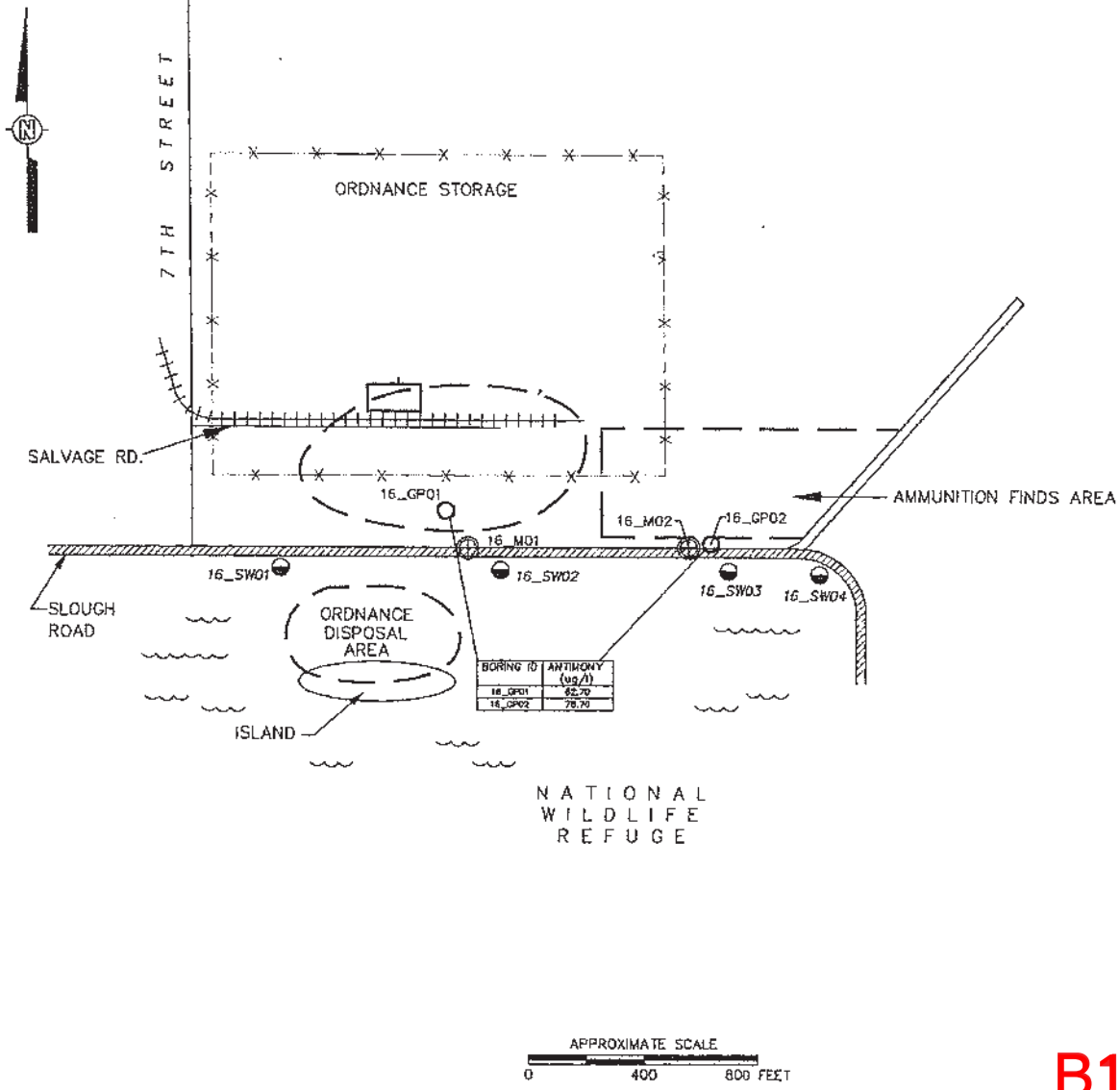

LEGEND

- SEAL BEACH NATIONAL WILDLIFE REFUGE BOUNDARY
- FENCE
- RAILROAD
- PREVIOUS SI HYDROPUNCH-TYPE GROUNDWATER SAMPLING LOCATION
- APPROXIMATE LOCATION OF SITE AREA BOUNDARIES
- FOCUSED SITE INSPECTION MONITORING WELL LOCATIONS
- SURFACE WATER SAMPLE LOCATION
- ug/l — MICROGRAMS PER LITER

SOURCE: NWS SEAL BEACH DRAWING, 1966 AND FIELD MEASUREMENTS (NOT PROFESSIONALLY SURVEYED)

FIGURE 5-4

SITE 16
PRIMER/SALVAGE YARD SITE PLAN
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

PREPARED FOR

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CONTRACT NO. N68711-89-D-9298
CLE-101-01F297-88-0008

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY: JJC 12-12-95 | CHECKED BY: APPROVED BY: | DRAWING NUMBER: 760181-B11

B14

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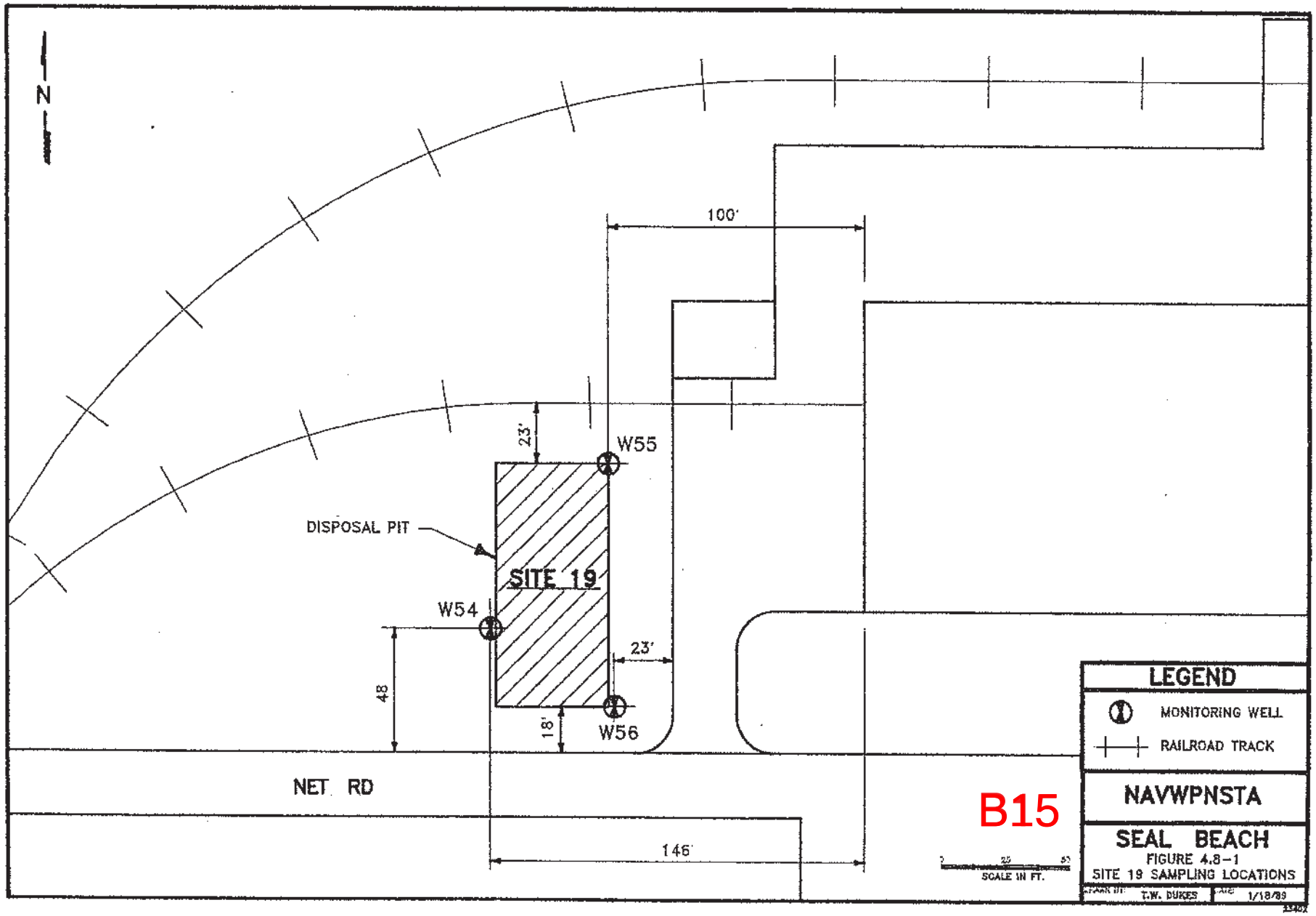
N
100'
23'
W55
DISPOSAL PIT
SITE 19
W54
23'
48
18'
W56
NET RD
146'
B15
0 25 50
SCALE IN FT.
LEGEND
MONITORING WELL
RAILROAD TRACK
NAVWPNSTA
SEAL BEACH
FIGURE 4.8-1
SITE 19 SAMPLING LOCATIONS
T.W. DUKES
1/18/89

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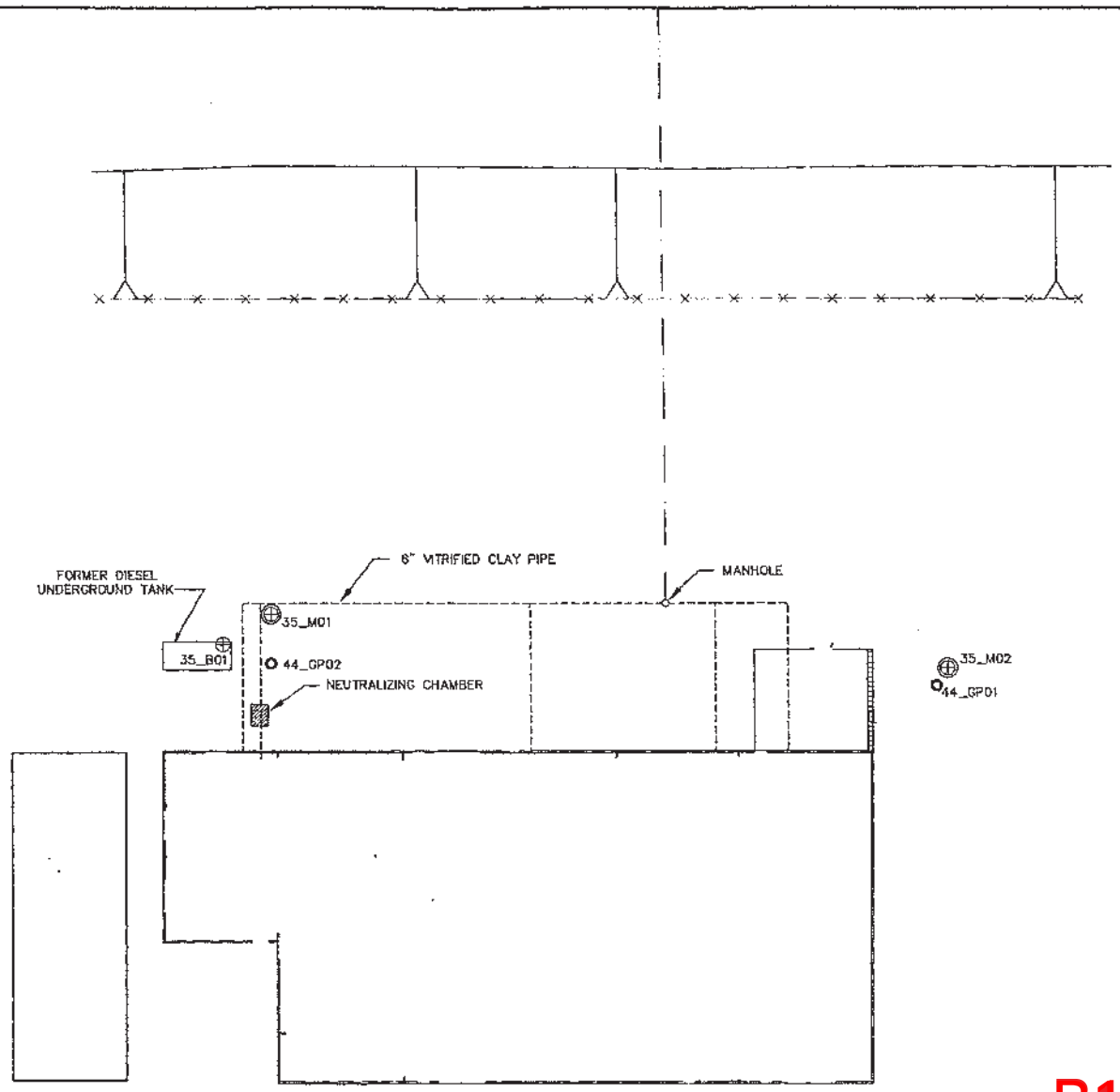

LEGEND

- PREVIOUS HYDROPUNCH-TYPE SI GROUNDWATER SAMPLING LOCATION
- FSI MONITORING WELL LOCATION
- FSI BORING LOCATION
- FENCE
- SEWER LINE
- ABANDONED DRAIN

SOURCE: NWS SEAL BEACH DRAWING, 1966 AND FIELD MEASUREMENTS (NOT PROFESSIONALLY SURVEYED)

APPROXIMATE SCALE

0 20 40 FEET

FIGURE 5-7

SITE 44
FORMER WASTE OTTO FUEL DRUM STORAGE AREA SITE PLAN
NAVAL WEAPONS STATION SEAL BEACH
SEAL BEACH, CALIFORNIA

PREPARED FOR

SOUTHWESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CONTRACT NO. N68711-89-D-9298
CLE-101-01F297-B6-0008

INTERNATIONAL TECHNOLOGY CORPORATION

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
J.K. 12-10-96	RET 12-12-96	RET 12-12-96	760181-B12

B16

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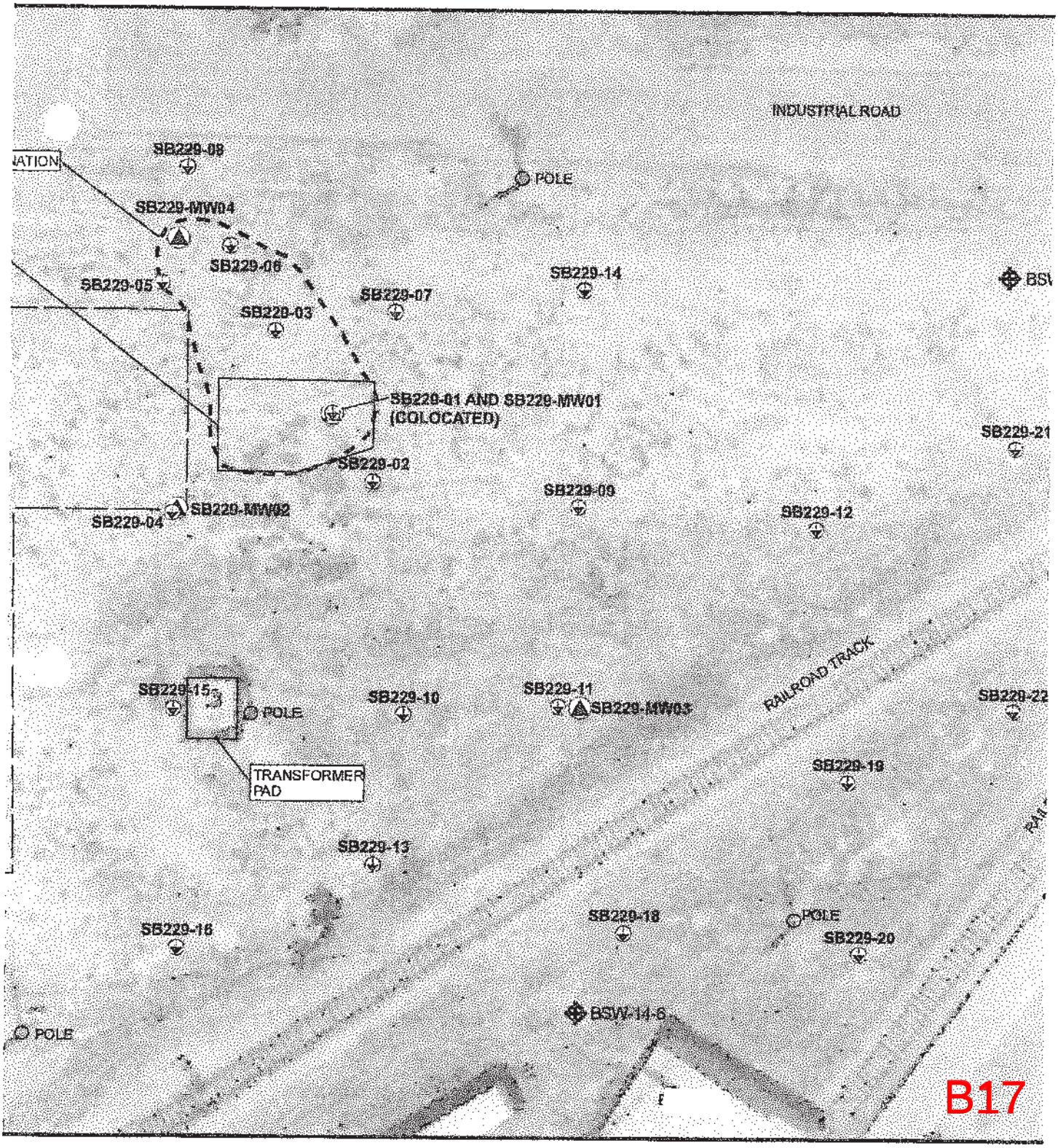

LEGEND

MONITORING WELL

SCAPS LOCATION (E

EXISTING MONITORI

60

RVEY FEET

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Appendix C: Findings of Site Inspection/ Well Survey

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Appendix C
Findings of Site Inspection/Well Survey
Final Basewide Well Decommissioning Work Plan
Naval Weapons Station Seal Beach, California

Site No.	Well ID[1]	Figure Reference Number	Location confirmed?	GPS Location		Well Inside SBNWR	Wetland, Upland, Neither	Footprint	Comments
				Latitude	Longtitude				
1	01M02	B1	No						
1	01M03	B1	No						
1	01M04	B1	No						
4	MW-04-01	B2	Yes	33° 43' 50.416" N	118° 04' 43.053" W	Yes	Wetland	0 ft^2	Off the road=> No footprint
4	MW-04-02	B2	Yes	33° 43' 50.261" N	118° 03' 40.967" W	Yes	Wetland	0 ft^2	Off the road=> No footprint
4	MW-04-03	B2	Yes	33° 43' 50.333" N	118° 03' 39.842" W	No	Upland	0 ft^2	Off the road=> No footprint
4	MW-04-04	B2	Yes	33° 43' 50.260" N	118° 03' 36.950" W	No	Upland	0 ft^2	Off the road=> No footprint
4	MW-04-05	B2	Yes	33° 43' 50.319" N	118° 03' 31.895" W	No	Upland	0 ft^2	Off the road=> No footprint
5	**05-MW01**	B3	No						
5	**05-MW02**	B3	No						
5	MW-05-01	B3	Yes	33° 44' 42.140" N	118° 05' 11.644" W	No	Neither		
5	MW-05-02	B3	Yes	33° 44' 41.674" N	118° 05' 07.106" W	No	Neither		
5	MW-05-03	B3	Yes	33° 44' 37.757" N	118° 05' 4.988" W	Yes	Wetland	2,000 ft^2	Driving forklift over mats to MW-05-04 and remotely using equipment to access MW-05-03 or backhoe with mats
5	MW-05-04	B3	Yes	33° 44' 35.531" N	118° 05' 6.791" W	Yes	Wetland	300 ft^2	Driving forklift/equipment over mats to well location
5	MW-05-05	B3	Yes	33° 44' 34.938 N	118° 05' 9.349" W	Yes	Wetland	0 ft^2	Drive over mudflats with forklift, no vegetation, mats if needed
6	**06-MW01**	B4	No						
6	**W-38**	B4	No						
6	**W-39**	B4	No						
6	**W-40**	B4	Yes	33° 44' 10.196" N	118° 03' 41.326" W	Yes	Wetland	0 ft^2	Off the road=> No footprint
6	MW-06-01	B2	Yes	33° 44' 5.001" N	118° 03' 41.326" W	Yes	Wetland	0 ft^2	Off the road=> No footprint
6	MW-06-02	B2	Yes	33° 44' 8.190" N	118° 03' 45.006" W	Yes	Wetland	0 ft^2	Off the road=> No footprint
6	MW-06-03	B2	Yes	33° 44' 2.703 N	118° 03' 48.174" W	Yes	Wetland	450 ft^2	Driving forklift/equipment over mats to well location
6	MW-06-04	B2	Yes	33° 44' 4.012" N	118° 03' 43.672" W	Yes	Wetland	0 ft^2	Off the road
6	MW-06-05	B2	Yes	33° 44' 3.086" N	118° 03' 34.250" W	No	Upland	2,500 ft^2	Driving forklift/equipment over mats to well location
7	07M01	B5, B6	Yes	33° 43' 50.260" N	118° 03' 39.232 W	No	Upland	600 ft^2	Driving forklift/equipment over mats to well location
7	07M02	B6	No						
7	07M03	B6	No						
7	07M04	B6	No						
7	W-41	B6	Yes	33° 44' 58.296" N	118° 03' 42.241" W	Yes	Wetland	0 ft^2	Off the road =>No footprint
7	W-42	B6	Yes	33° 43' 50.333" N	118° 03' 40.697" W	Yes	Wetland	0 ft^2	Off the road =>No footprint
7	W-43	B6	Yes	33° 43' 54.864" N	118° 03' 42.872" W	Yes	Wetland	0 ft^2	Off the road =>No footprint
7	W-44	B6	No						
7	W-45	B6	Yes	33° 43' 56.965" N	118° 03' 36.950" W	No	Upland	1,000 ft^2	Driving forklift/equipment over mats to well location
7	W-46	B6	No						
8_42	**USGS-1**	B7, B8, B9	No						
8_42	**USGS-1A**	B7, B8, B9	No						
8_42	**USGS-2**	B7, B8, B9	No						

Appendix C
Findings of Site Inspection/Well Survey
Final Basewide Well Decommissioning Work Plan
Naval Weapons Station Seal Beach, California

Site No.	Well ID[1]	Figure Reference Number	Location confirmed?	GPS Location		Well Inside SBNWR	Wetland, Upland, Neither	Footprint	Comments
				Latitude	Longtitude				
8_42	**USGS-23**	B7, B8, B9	No						
8_42	**USGS-24**	B7, B8, B9	No						
12	12_M01	B10	Yes	33° 44' 19.107" N	118° 03' 47.808" W	Yes	Neither	0 ft^2	Must coordinate with range
12	12_M02	B10	Yes	33° 44' 17.995" N	118° 04' 24.030" W	Yes	Neither	0 ft^2	Must coordinate with range
13	**13-MW01**	B11	No						
13	**13-MW02**	B11	No						
13	**13-MW03**	B11	No						
14	BSW-14-1	B12	Yes	33° 44' 35.783"N	118° 05' 12.750"W	No	Neither		
14	BSW-14-2	B12	Yes	33° 44' 36.214"N	118° 05' 13.055"W	No	Neither		
14	BSW-14-3	B12	Yes	33° 44' 36.543"N	118° 05' 12.853"W	No	Neither		
14	BSW-14-4	B12	Yes	33° 44' 36.233"N	118° 05' 13.605"W	No	Neither		
14	BSW-14-5	B12	Yes	33° 44' 36.948"N	118° 05' 13.691"W	No	Neither		
14	BSW-14-6	B12	Yes	33° 44' 35.234"N	118° 05' 35.234"W	No	Neither		
14	BSW-14-7	B12	Yes	33° 44' 37.737"N	118° 05' 45.104"W	No	Neither		
14	BSW-14-8	B12	Yes	33° 44' 36.987"N	118° 05' 13.069"W	No	Neither		
14	BSW-14-9	B12	Yes	33° 44' 34.851"N	118° 05' 11.209"W	No	Neither		
14	BSW-14-10	B12	Yes	33° 44' 37.720"N	118° 05' 12.761"W	No	Neither		
14	BSW-14-11	B12	Yes	33° 44' 36.073"N	118° 05' 11.866"W	No	Neither		
14	**N35**	B13	No						
14	**N36**	B13	No						
14	**N37**	B13	No						
14	**N38**	B13	No						
14	**N39**	B13	No						
16	16_M01	B14	Yes	33° 44' 21.986" N	118° 03' 47.808" W	Yes	Wetland	0 ft^2	Off the road =>No footprint
16	16_M02	B14	Yes	33° 44' 21.926" N	118°03' 41.661" W	Yes	Wetland	0 ft^2	Off the road=> No footprint
19	**W54**	B15	No						
19	**W55**	B15	No						
19	**W56**	B15	No						
35	**35_M01**	B16	Yes	33° 44' 45.452"N	118° 04' 20.066"W	Yes	Neither	0 ft^2	In asphalt, must coordinate with torpedo facility
35	**35_M02**	B16	Yes	33° 44' 44.717"N	118° 04' 20.962"W	Yes	Neither	0 ft^2	In asphalt, must coordinate with torpedo facility
UST229	SB229-MW01	B17	Yes	33° 44' 36.956"N	118° 05' 15.848"W	No	Neither		
UST229	SB229-MW02	B17	Yes	33° 44' 36.368"N	118° 05' 16.279"W	No	Neither		
UST229	SB229-MW03	B17	Yes	33° 44' 35.934"N	118° 05' 150139"W	No	Neither		
UST229	SB229-MW04	B17	Yes	33° 44' 36.918"N	118° 05' 16.298"W	No	Neither		

SBNWR - Seal Beach National Wildlife Refuge
Latitude and longitude coordinates recorded with a Trimble GeoXT 2005 handheld Global Positioning Satellite (GPS) unit using World Geodetic System 1984 (WGS84) datum.
Footnotes: (1) Red and Bold Indicates these wells are "Optional Wells for Decommissioning"
Number of Confirmed Wells for Decommissioning = 42
Footprint indicates the estimated area in square feet (ft^2) of potential impact to sensitive habitat wetland or upland.

Appendix D:
Waste Management Plan

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Waste Management Plan

This Waste Management Plan provides information on how wastes will be managed and disposed of during the execution of this project. A secondary goal of this section is to ensure that waste minimization practices are followed, to the extent practicable, and to reduce the volume of waste that will be generated, stored, and removed from the site for disposal.

1.0 Project Waste Descriptions

Resultant waste streams associated with project activities can be categorized as follows:

- Well materials, sand pack, grout, crash posts, well boxes, concrete, and polyvinyl chloride (PVC) pipe from the monitoring well decommissioning activities
- Wastewater including displaced groundwater and decontamination water
- Disposable equipment and materials (used HDPE tubing, gloves, paper, etc.)
- Used personal protective equipment (PPE)

2.0 Waste Handling

Hazardous waste is not expected to be generated as a result of the project activities. However, in the unlikely event that hazardous waste is generated, it will be stored temporarily, less than 60 days. These wastes will be labeled, managed, accumulated, and inspected in accordance with the applicable Title 22 CCR regulations.

Construction debris (concrete, metal components, and PVC pipe) generated during the well decommissioning activities will be stored at the various project sites until transfer to the proposed staging area can be completed at the end of each day. The staging area is proposed to be located southeast of the intersection of Bolsa Avenue and Devlin Road, in the fenced in decontamination pad area.

Well materials generated during field activities at NAVWPNSTA Seal Beach will be segregated and stored on site in labeled, 55-gallon drums and/or covered roll-off bins at the staging location approved by the Installation Restoration Program (IRP) Coordinator.

Wastewater generated during field activities will also be stored in 55-gallon drums at the staging area. To comply with the requirement for

secondary containment, drums with wastewater will be stored in the concrete decontamination pad located at the staging area.

In the event of drum accumulation, these containers will be handled as potentially hazardous, and an "Analysis Pending – Potentially Hazardous Waste" label will be used on the drums until analytical results are available.

All solid waste and liquid waste containers will be labeled with the following information: date, project name and number, generator name, IRP Coordinator name, applicable contact numbers, contents of drum, and the well/site identification number. Empty containers will be labeled as such to avoid confusion. These containers will be stored in the approved staging area for no more than 60 days prior to disposal. The method of disposal will be determined based on the analytical results from well materials and wastewater samples collected from the respective drums/roll-off bins (if needed).

Solid waste from field activities, including PPE, disposable supplies, and materials used during destruction activities, will be double-bagged and disposed of as municipal waste, unless site conditions indicate that more stringent disposal requirements are required.

3.0 Waste Characterization/Classification

Applicable waste (including but not limited to well materials, wastewater, and minimal excavated soil) will be sampled and analyzed for characterization purposes and in accordance with the disposal facility waste acceptance criteria (if offsite disposal is required).

3.1 Waste Profiling

Waste profiles will be completed for both hazardous and nonhazardous wastes, once analytical results have been received and waste is characterized. Blank profiles will be obtained from the specific disposal facility that will be used. They will be completed to accurately characterize the waste. Waste profiles will be signed by the IRP Coordinator, who will have oversight of the sampling used for the profile.

3.2 Hazardous Waste Manifests and Land Disposal Restrictions Certification

Based on previous site investigations, hazardous waste is not expected to be generated on this project. However, this section provides necessary provisions to address handling and disposal of hazardous waste in the event such waste is encountered. Hazardous waste transported from the site will be accompanied by a Hazardous Waste Manifest. NAVWPNSTA Seal Beach hazardous waste personnel will be responsible for reviewing

and signing both the waste manifest and Land Disposal Restriction (LDR) notifications (manifest packages). The generator copy and the DTSC copy of the manifests will be provided to the Navy.

To avoid signing delays, waste manifests must include the following: generator name and address, generator emergency response number, generator US EPA ID, analytical profiles, and generator hour of operations.

An LDR form will accompany any shipments of RCRA hazardous waste to the treatment, storage, and disposal facility (TSDF). The TSDF will be notified prior to the waste being sent.

3.3 NONHAZARDOUS WASTE MANIFESTS

Waste that is characterized as nonhazardous will be transported using a nonhazardous waste manifest, which will be reviewed and signed by the NAVWPNSTA Seal Beach hazardous waste personnel. The generator copy of the manifest will be provided to the Department of the Navy (DON). Copies of manifests for waste generated at the site will be maintained in CE2-K JV's project files.

4.0 Waste Transportation

RCRA hazardous waste material is not expected to be encountered or generated from the destruction activities. However, if such waste material is generated, it will be transported under Department of Transportation (DOT) hazardous material regulations. Hazardous wastes sent off-site for disposal will be done so in accordance with the DOT Hazardous Material Transportation regulations of 49 CFR Parts 171 through 177; 40 CFR Part 262, Subpart B; and 22 CCR Section 66262. A NAVWPNSTA Seal Beach authorized representative will sign the manifests. Under no circumstances will CE2-K JV personnel sign hazardous waste manifests.

5.0 Waste Disposal

This section describes the disposal methods for the waste materials generated at the site including construction debris, well materials and wastewater from the well destruction, and disposable equipment and materials (used/dedicated HDPE tubing, gloves, paper, PPE, etc.). The CE2-K JV Field Team Leader will coordinate the disposal of non-hazardous materials off site with the NAVWPNSTA Seal Beach IRP Coordinator.

Construction debris will be containerized and disposed of offsite as bulk non-hazardous waste. Profiling and waste manifestation for the construction debris will likely not be required. Documentation of the construction debris' final disposal location and quantity will be retained by CE2-K JV and provided to the DON.

The well materials and wastewater generated during well destruction will be scheduled for disposal off site at an approved disposal facility, wastewater recycler, or Class I/II landfill (if necessary). Disposal will occur after CE2-K JV receives proper approval from the NAVWPNSTA Seal Beach representative and in accordance with acceptance requirements for the facility. To avoid delays, nonhazardous waste manifests must include the following: generator name and address, generator emergency response number, generator US EPA ID, analytical profiles, and generator hour of operations.

Disposable sampling equipment and materials (used HDPE tubing, gloves, paper, used PPE, etc.) will be double-bagged and disposed of as municipal waste, unless site conditions indicate that more stringent disposal requirements are necessary.

6.0 Waste Inspection and Documentation Program

This section presents the waste inspection procedures and documentation program to be employed during the project field activities.

6.1 INSPECTIONS

While the proposed staging area will be informally inspected on a daily basis, formal inspections of accumulation areas will be conducted and recorded weekly at a minimum and documented. Daily inspections will be conducted for any containers or tanks containing hazardous waste (if encountered). The Site Safety and Health Officer (SSHO) or designee will conduct inspections. Inspections will be logged in a bound, numbered field notebook. The container storage area will be inspected to ensure the following:

- Container labels and markings are present, complete, accurate, and legible.
- Containers are in good condition. If a container is not in good condition or appears to be leaking, the waste will be transferred to another container.
- Containers are made of materials that will not react with, and are otherwise compatible with, the hazardous waste to be stored.
- Containers are closed at all times, except when adding or removing waste.
- Containers are stored on-site less than 60 days.

7.0 Waste Minimization

To minimize the volume of waste, the following general guidelines will be followed:

- *Wastewater Minimization.* Field personnel will be trained in decontamination of field sampling equipment and PPE, minimizing the generation of decontamination water.
- The staging area is proposed to be located southeast of the intersection of Bolsa Avenue and Devlin Road, in the fenced in decontamination pad area.
- *PPE Minimization.* Field personnel will be trained in the proper use of PPE. Based on the anticipated low site exposures (as outlined in the APP/SSHP), work will largely be performed in Level D wear, thereby minimizing PPE.
- Materials will not be contaminated unnecessarily.
- Work will be planned ahead, based on the work procedure to be used.
- Only the material (e.g., chemicals) needed to perform the work activity will be taken to the work location (if any). Any chemicals that are used need to be reviewed (using SDS) by the Environmental office before they are brought on base. Additional material can be brought to the work location if it is found to be necessary.
- Materials can be stored in large containers, but the smallest reasonable container will be used to transport the material to the location where it is needed.
- Cleaning and extra sampling supplies will be maintained outside any potentially contaminated area to keep them clean and to minimize additional waste generation.
- Mixing of detergents or decontamination solutions will be performed outside potentially contaminated areas.
- Drop cloths or other absorbent material will be used to contain small spills or leaks.
- Containers will be used to minimize the spread of contamination.
- Contaminated materials will not be placed with clean materials.
- Material and equipment will be decontaminated and reused when practical.
- Volume reduction techniques will be used when practicable.
- Waste containers will be verified to ensure they are solidly packed to minimize the number of containers.
- Only waste containers with adequate size to contain the volume of waste generated will be used.
- The DOT packaging weight limit for each container will be verified to ensure the limit is not exceeded by the weight of the waste.

8.0 Spill Prevention and Control Measures

CE2-K JV personnel are trained to contain and control minor spills of petroleum and hazardous substances. A hazardous materials spill kit, including a 55-gallon drum, clay absorbent, spill booms, absorbent pads, and shovels, will be kept readily available at active closure sites. Cleanup of minor spills will be initiated immediately following the occurrence of a spill event.

Upon discovery of a spill, on-site CE2-K JV personnel will contain the material, assess the spill using photographic and written documentation, and immediately notify the NAVWPNSTA Seal Beach IRP Coordinator, who will notify the base spill response authorities. Any sewer spill or spills on soils, rains, or waterway, the Regional Dispatch Center will be notified. CE2-K JV will respond to the spill depending on the incident level in accordance to the APP/SSHP; federal, state, and local regulations; and DON policies and procedures. CE2-K JV personnel will use sewer spill response procedures if spill flows into a storm drain or sanitary sewer.

8.1 Minor Spill

The main goal of a response to a minor spill at the site is to contain the spread of the spill. The following procedures will be implemented by on-site CE2-K JV personnel if a minor spill occurs:

- If the spill occurs on paved or impermeable surfaces, clean up using “dry” methods (i.e., absorbent pads, clay absorbent, and rags).
- If the spill occurs in unpaved or exposed soil areas, contain the spill by constructing an earthen dike. Dig up the affected soil and place in soil stockpile for disposal.
- If the spill occurs during rain, cover the affected area to avoid runoff.
- Record steps taken to report and contain the spill.
- If any spill occurs, immediately contact the NAVWPNSTA Seal Beach IRP Coordinator at 562-626-7897.

8.2 Major Spill

If a major spill occurs, CE2-K JV personnel will contact the IRP Coordinator immediately at 562-626-7897 and Regional Dispatch Center (RDC) at 662-626-7229. Appropriate base personnel will initiate emergency response notifications. CE2-K JV personnel will complete both written and photo documentation of the incident until the appropriate authorities arrive.

8.3 Sewer Spill

The main goal of a response to a sewer spill at the site is to contain the spread of the spill immediately. The following procedures will be implemented by on-site CE2-K JV personnel if a minor spill occurs:

- If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (i.e., absorbent pads, clay absorbent, and rags).
- If the spill occurs in unpaved or exposed soil areas, contain the spill by constructing an earthen dike. Dig up the affected soil and place in soil stockpile for disposal.
- If the spill occurs during rain, cover the affected area to avoid runoff.
- Prevent discharge to storm drains, waterways, and public areas
- Record steps taken to report and contain the spill.
- Contact the NAVWPNSTA Seal Beach IRP Coordinator immediately at 562-626-7897 as well as the RDC at 662-626-7229

8.4 Reporting Spills and Releases

Precautions will be taken to prevent hazardous material spills. Informal daily inspections of equipment, structure(s), and containers will be conducted by site personnel. In addition, personnel using hazardous materials will inspect containers before and after use. In the event of a spill/release, the Field Team Leader will notify the CE2-K JV Project Manager (PM), and spill response will be conducted in accordance with the APP/SSHP; federal, state, and local regulations; and DON policies and procedures.

9.0 Training/Certification Requirements

This section presents the DOT and waste management training and certification requirements for personnel involved with waste management and transportation. Employees will be 40-hour Hazardous Waste Operations trained with annual refresher training as required. Employees involved in waste management operations will be trained in CE2-K JV's Waste Management and Environmental Compliance policies and procedures to ensure that they are familiar with the program. This training is required annually. These policies and procedures provide for a sound environmental management program and satisfy the hazardous waste management training requirements under 22 CCR Section 66265.16. In addition, personnel who perform or oversee DOT-related activities will be DOT-trained. DOT training is required every 3 years. DOT and waste management training records of project personnel will be maintained in CE2-K JV's Corporate Department files and copies will be available on-site for potential audits by the Navy during the course of activities.

10.0 Updating the Waste Management Plan

The Waste Management Plan (WMP) will be updated as changes in site activities or changes in applicable regulations occur.

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Appendix E: Response to Comments Tables

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Reviewer:	Steven Niou (DTSC)
Document:	Draft Work Plan Basewide Well Decommissioning Naval Weapons Station Seal Beach
Date Reviewed:	October 7, 2014
NAVFAC SW RPM:	Brenda Reese
Contractor:	CE2-Kleinfelder JV
Contract Number:	N62473-09-D-2627 CTO 00010
General Comments:	Response to Steven Niou (DTSC)'s comments [October 7, 2014] on the Draft Work Plan Basewide Well Decommissioning Naval Weapons Seal Beach.

Comment Number	WS/page	H/L	Score	Comment	Response to Comments
1	Workplan Section 2.4 & 2.5	For Navy Use Only	For Navy Use Only	Add 1-2 sentences in Section 2.5 to state rationale that wells are to be decommissioned because site have been closed and there is no need for these wells (Similar statement exisits already in Section 2.4 --> move statements to Section 2.5)	The following sentences from Section 2.4 will be removed, "Except for Site 7, each of the Sites have received no further action/closure approval from their respective agency or agencies. Additional landfill cover vegetation is still on-going for Site 7, but no further action is required for groundwater." The following sentences will be added to Section 2.5, "Except for Site 7, the wells proposed to be decommissioned in this work plan are located at sites that have received no further action/closure approval from their respective agency or agencies. Additional landfill cover vegetation is still on-going for Site 7, but no further action is required for groundwater. Since there is no need to continue to monitor groundwater using these wells, to prevent being used as a route of entry for potential future releases and to prevent some of the well heads being used as perching points by predatory birds, the Navy decided to properly decommission these wells."

Reviewer:	Katie Zeeman (USFWS)
Document:	Draft Work Plan Basewide Well Decommissioning Naval Weapons Station Seal Beach
Date Reviewed:	October 7, 2014
NAVFAC SW RPM:	Brenda Reese
Contractor:	CE2-Kleinfelder JV
Contract Number:	N62473-09-D-2627 CTO 00010
General Comments:	Response to Katie Zeeman's (USFWS) comments [October 7, 2014] on the Draft Work Plan Basewide Well Decommissioning Naval Weapons Seal Beach.

Comment Number	WS/page	H/L	Score	Comment	Response to Comments
1	Global	For Navy Use Only	For Navy Use Only	I applaud efforts to decommission the monitoring wells, given that it's been determined that they are no longer necessary. That said, I would like to have for our records, a copy of the final groundwater monitoring report(s) for wells that border or are within boundaries of theSeal Beach National Wildlife Refuge (SBNWR). If the document(s) are publicly available, a reference would be fine; and,	Table 2-2 in Section 2.4 listing the references documenting the justification of no further action for each site, except for Site 7, has been provided in the final work plan. The reference listed for Site 7 provides the rationale for why no further action is required for groundwater. Concurrence was received by the regulators for each of these documents. These reports are publicly available and can be obtained diretly from the Navy.
2	Global	For Navy Use Only	For Navy Use Only	I see that measures are proposed for avoiding impacts on federal and state-listed species, including federally endangered light-footed Ridgway's rail (LFRR) that reside year-round in the salt marsh habitat and California least tern that nests on NASA Island, and state endangered Belding's savannah sparrow which is a year-round resident of upper marsh (especially in pickleweed) and upland transitional habitat. To help ensure that impacts on these species are are avoided, I hope that the Navy is considering plans to return habitat impacted by decommissioning activities (if any) to pre-project conditions. The concern is for vegetation, and efforts that aid in recovery of impacted vegetation will also aid the return of high quality habitat for species of concern. If vegetation is impacted, I request that you consider some replenishment with plantings in time for the next nesting season, and a return to full function within two to three years. The level of effort that this would entail could be small, but ultimately depends on the size and severity of project-related impacts.	A site visit was arranged with the Seal Beach National Wildlife Refuge Manager, Mr. Kirk Gilligan, on 17 November 2014. The purpose of the visit was to plan for the least intrusive well abandonment procedures inside the refuge. Although habitat restorations is not part of the SOW for this contract, every reasonable effort will be conducted to minimize the impact to refuge habitat resulting from well decommissioning actitivies. It is anticipated the vegetation disturbance will be temporary, and a full recovery is expected.
3	Workplan Executive Summary	For Navy Use Only	For Navy Use Only	Executive Summary - Please note that the project area includes sensitive habitats that support federal and state listed threatened and endangered species, as it does affect how work may be done. Noting the occurrence of listed species and their habitats would also reflect that there is a section in the WP on avoidance and minimization of impacts.	The Executive Summary will note that the project area includes sensitive habitats that support federal and state listed, threatened, and endangered species. Text will be added at the end of the second paragraph, before Table ES-1 as follows:"Please note that the project area includes wells that are located inside the Seal Beach National Wildlife Refuge. These wells will have an asterisk next to them in Table ES-1 below. Some of these wells are in sensitive habitat that support federal and state listed, threatened, and endangered species and require specialized equipment to access and are indicated with a (^) symbol in Table ES-1 below. Many of the wells located inside the SBNWR can be decommissioned using traditional drilling equipment with no damage to sensitive habitat. Avoidance and minimization of impacts to sensitive habitats and endangered species are discussed in Section 3.6 of the Work Plan."
4	Workplan Table ES-1 (and 2-2, 2-3)	For Navy Use Only	For Navy Use Only	Table ES-1 (and 2-2, 2-3) - Please note which wells are in sensitive habitat(s).	Table ES-1, Table 2-5, and Appendix B were revised to indicate wells that are located in sensitive habitat.

5	Workplan Introduction Figures 1 &2	For Navy Use Only	For Navy Use Only	Introduction, Figures 1 and 2 - Please outline areas of sensitive habitat, which include SBNWR. Showing SBNWR boundaries in Figure 2 would be helpful for those of us trying to visualize which wells may require special consideration for decommissioning activities. I appreciate that the information can be pieced together from figures in Appendix A. But Figure 2 provides a summary that is more friendly for users that are not intimately familiar with all the groundwater monitoring wells installed at NWS Seal Beach over the years.	Figure 2 was updated to show the boundary of the Seal Beach National Wildlife Refuge. This would allow readers to understand which project sites are in proximity of the refuge.
6	Workplan Section 3.2	For Navy Use Only	For Navy Use Only	Section 3.2 - It would be appreciated if it were stated that that access and other aspects of decommissioning activities for wells within SBNWR boundaries will also be coordinated with SBNWR management, albeit probably through coordination between the Navy and the Refuge.	The following senteces were added as the second paragraph in Section 3.2 "Several wells are located in sensitive habitats within the SBNWR. Access to and activities inside these locations will be coordinated with the SBNWR office."
7	Workplan Section 3.6	For Navy Use Only	For Navy Use Only	Section 3.6 - Please see comment 5. Also, please note that Light-footed clapper rail is now the light-footed Ridgway's rail (Rallus obsoletus levipes). It is no longer considered a clapper rail subspecies. Instead it is a subspecies of Ridgway's rail (American Ornithologist's Union checklist supplement for July 2014).	Section 3.6, reference changed to light-footed Ridgeway's rail (rallus obsoletus levipes)
8	Workplan Section 3.9	For Navy Use Only	For Navy Use Only	Section 3-9 - Unfortunately, my experience with the details of what is proposed for the wells 05-03, 05-04 and 05-05 is superficial at best. I appreciate that alternatives for minimizing impacts are being considered, however, and I will rely on others to provide meaningful comment on details such as feasibility or alternate approaches.	Field procedures were discussed with Mr. Gilligan on 17 November. Section 3.9 text was changed to the following: "Many of the wells located inside the SBNWR are along or near existing roadways and can be decommissioned using traditional equipment with no impact to sensitive habitat. Wells located in wetland or wetland/upland transition areas located in sensitive habitat will have the surface completions removed using mats and a forklift with balloon tires or a 4-wheel drive backhoe. Please note that seven of the wells (MW-05-03, MW-05-04, MW-05-05, MW-06-03, MW-06-05, 07M01, and W-45) are located in sensitive habitat and require specialized equipment. Wells in these locations cannot be decommissioned with traditional equipment, i.e. vacuum truck or a limited access rig due to the risk of sinking, becoming stuck, or damaging the sensitive habitat. Therefore CE2-K is proposing the following method for these select wells. A breaker bar will be lowered down the well to break up the bottom of the PVC well screen. If the equipment with the grout pump and hoses can't get close enough than the appropriate amount of grout will be carried over and poured into the well by hand. Pressure grouting of these select wells will be achieved by attaching a pressure head to the top of the PVC casing and applying 25 psi of pressure with an air compressor for five minutes or until refusal. A large capacity forklift with "balloon" tires will drive over landing mats placed along the pathway to the well and used to lift the entire well pad, well box, and well casing off the ground surface. The forklift will remove the well materials from the salt marsh to a location where it can be broken up in an environmentally safe location.... Based on observed field conditions we do not propose to use the forklift to remove the concrete well pad of MW-05-03 due to concern of significant damage and rutting of sensitive habitat in the immediate vicinity. Well MW-05-03 will be handled similarly except that the concrete well pad will be jackhammered out and removed by hand or with the use of a 4-wheel drive backhoe or small all-terrain vehicle with a smaller footprint."
9	Workplan	For Navy Use Only	For Navy Use Only	Partly in response to concerns raised in comment number 2, is it possible to provide rough estimates of the sizes of areas potentially affected by decommissioning activities? I would understand if the answer is "no". But, any indication of the extent of potential impacts on vegetation would help with planning for sites in sensitive habitat.	Estimated areas of potential impact to sensitive habitat for select wells for select wells has been added to Appendix B - Findings of Site Inspection/Well Survey. Please note that it is anticipated that the majority of the vegetation will only be temporarity impacted during field activities and is expected to recover fully after the completion of the field activities. The revegetation is not part of the scope of work under the current contract.

Reviewer:	Kirk Gilligan (USFWS)
Document:	Draft Work Plan Basewide Well Decommissioning Naval Weapons Station Seal Beach
Date Reviewed:	October 7, 2014
NAVFAC SW RPM:	Brenda Reese
Contractor:	CE2-Kleinfelder JV
Contract Number:	N62473-09-D-2627 CTO 00010
General Comments:	Response to Kirk Gilligans's (USFWS) comments [October 7, 2014] on the Draft Work Plan Basewide Well Decommissioning Naval Weapons Seal Beach.

Comment Number	WS/page	H/L	Score	Comment	Response to Comments
1	Workplan	For Navy Use Only	For Navy Use Only	Please provide a map with all known well locations on the Seal Beach NWR including those that are planned to be decommissioned as part of this project – Could not find MW-05-01 on any map. Did not see wells at Hog Island or Signal Rd. on any maps. Are these part of this project or a separate well decommissioning project?	Well MW-05-01 can be found in a figure included in Appendix B. Appendix A has been ammended to include a reference to the Figure number in Appendix B showing the locations of wells to be decommmissioned and whether it is located inside the SBNWR. The wells on Hog Island and Signal Road are not part of the Installation Restoration Program, and the decommissioning of these wells is not included in this project.
2	Workplan Section 1.2 page 2	For Navy Use Only	For Navy Use Only	Complete all work requiring access to wetland or wetland/upland transitional areas between Sept. 15th and Feb. 15th. – The document mentions 2 different bird breeding season time frames on page 11. The breeding season for the Belding's savannah sparrow is recognized as Feb. 15 – July 31th. The breeding season for the light-footed ridgway's rail is recognized as March 1 – Sept. 15.	Wells included in this SOW are scheduled to be decommissioned prior to Feb 15, 2015. Page 11 was revised to show the two different breeding seasons of the two different species.
3	Workplan Section 3.6 Page 11	For Navy Use Only	For Navy Use Only	Under mitigation measures, please include information as to whether or not night work with artificial lighting is being proposed on the Refuge. Additional mitigation measures should be employed if artificial lighting will be used on the Refuge in order to prevent disruption to roosting birds.	Night work is not proposed for the well decomissioning activties . The following sentence has been added to Section 3.6, "In order to prevent disruption to roosting birds, decommissioing activities will not carry on at night."
4	Workplan	For Navy Use Only	For Navy Use Only	Change light-footed clapper rail to light-footed ridgway's rail	Global edit changing light-footed rail to light-footed Ridgeway's rail.
5	Workplan	For Navy Use Only	For Navy Use Only	We support the requirement to use landing matts and balloon tires in all wetland or wetland/upland transitional areas since these sensitive habitats are especially prone to disturbance and take long periods of time to recover. Include other wells in wetland or wetland/upland transitional areas on the list for this requirement (MW-06-03, W-43, more?)	Section 3.9 text added. "Many of the wells located inside the SBNWR are along or near existing roadways and can be decommissioned using traditional equipment with no impact to sensitive habitat. Wells located in wetland or wetland/upland transition areas located in sensitive habitat will have the surface completions removed using mats and a forklift with balloon tires or a 4-wheel drive backhoe. Please note that seven of the wells (MW-05-03, MW-05-04, MW-05-05, MW-06-03, MW-06-05, 07M01, and W-45) are located in sensitive habitat and require specialized equipment. Wells in these locations cannot be decommissioned with traditional equipment, i.e. vacuum truck or a limited access rig due to the risk of sinking, becoming stuck, or damaging the sensitive habitat."
6	Workplan	For Navy Use Only	For Navy Use Only	Damage to habitats as a result of well decommissioning could result in indirect effects to listed species and other trust species on the Refuge. Restore Refuge habitats to pre-project conditions upon completeion of well decommissioning work. Restoration should include restoring area to surrounding grade (as identified in draft document) and revegetating areas where native plant species are removed or destroyed during project. Return to gradient and replant prior to next bird breeding season and restor to pre-project conditions within 2-3 years.	Habitat restorations is not part of the SOW of this contract. Every reasonable effort will be conducted to minimize the impact to refuge habitat resulting from well decommissioning actitivies. It is anticipated the vegetation disturbance will be temporary, and a full recovery is expected.
7	Workplan	For Navy Use Only	For Navy Use Only	Post-project - Please provide GIS layer for all wells to Refuge Manager and designate decommissioned wells in GIS layer.	A GIS layer for the wells decommissioned as part of this project will be provided as part of the Final Well Decommisioning Report. However, the GIS data have not been captured for all wells at this time. It is requested that USFWS coordinate with base personnel to obtain the GIS data for all wells when they become available.