STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

AIRPORTS

SPECIAL PROVISIONS, SPECIFICATIONS, AND PROPOSAL

FOR

UTILITY SYSTEM IMPROVEMENTS

KALAELOA AIRPORT

BARBERS POINT, OAHU, HAWAII

STATE PROJECT NO. AO5021-17

2026

NOTICE TO BIDDERS
Hawaii Revised Statutes (HRS),
Chapter 103D

The receiving of bids for **UTILITY SYSTEM IMPROVEMENTS, KALAELOA AIRPORT, BARBERS POINT, OAHU, HAWAII, STATE PROJECT NO. AO5021-17**, will begin as of the HIePRO Release Date. Bidders shall register and submit complete bids through HIePRO only. Refer to the following HIePRO link for important information on Vendor Registration: https://hiepro.ehawaii.gov/welcome.html.

The solicitation plans, specifications, proposal, and additional documents designated or incorporated by reference shall be available in HIePRO.

HIePRO OFFER DUE DATE AND TIME is **JUNE 19, 2026, at 2:00 p.m., Hawaii Standard Time (HST). Bidders shall submit and upload the complete proposal to HIePRO prior to the offer due date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall not include confidential and/or proprietary documents as part of their proposal. The record of each bidder and their respective proposal shall be open to public inspection. FAILURE TO UPLOAD THE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION.**

The scope of work consists of replacing existing water, sewer and electrical utilities under the jurisdiction of State of Hawaii, Department of Transportation, Airports and within City and County of Honolulu Right-of-Way. The estimated cost of construction is between $31,000,000.00 and $32,500,000.00.

To be eligible for award, bidders shall possess a valid State of Hawaii General Engineering "A" license **at the time of bidding.**

The Hawaii Department of Transportation, Air and Water Transportation Facilities Division, 2016 GENERAL PROVISIONS FOR CONSTRUCTION PROJECTS, applicable to this project are available on the internet at: http://hidot.hawaii.gov/administration/con/.

A virtual pre-bid conference is scheduled for **MAY 14, 2026, at 2:00 p.m., HST**. Interested bidders shall contact Jake Shiraki, State Project Manager, directly at jake.l.shiraki@hawaii.gov, no later than 48 hours after advertisement to receive the meeting invitation. All prospective bidders and/or their respective representatives are encouraged to attend, however, attendance is not mandatory. All information presented at the pre-bid conference shall be provided for clarification and information only. Any amendments to the solicitation shall be made by formal addendum and posted in HIePRO.

Pre-bid site inspection at Kalaeloa Airport is scheduled for **MAY 15, 2026, at 9:00 a.m., HST**. All bidders that wish to attend the pre-bid site inspection must send an email indicating their interest to Jake Shiraki, our Airports State Project Manager, at jake.l.shiraki@hawaii.gov, no later than 48 hours after advertisement to receive the site visit invitation. All prospective bidders and/or their respective representatives are encouraged to attend, however, attendance is not mandatory.

All Request for Information (RFI) questions and Substitution Requests shall be submitted in HIePRO **no later than MAY 22, 2026, at 2:00 p.m., HST.** RFI questions received after the stated deadline shall not be addressed. Substitution Requests received after the stated deadline shall not be considered. Verbal RFI(s) shall not receive a response. All responses to RFI questions shall be provided for clarification and information only and issued by formal addendum. Any amendments to the solicitation shall be made by formal addendum and posted in HIePRO.

If there is a conflict between the solicitation and information stated in the pre-bid conference, the meeting minutes, and/or the responses to RFI questions, the solicitation shall govern and control, unless as amended by formal addendum.

Apprenticeship Preference. A five percent bid adjustment for bidders that are party to apprenticeship agreements pursuant to HRS § 103-55.6 is applicable to this project.

Employment of State Residents on Construction Procurement Contracts. Compliance with HRS § 103B-3 is a requirement for this project whereby a minimum of 80 percent of the bidder's work force on this project shall consist of Hawaii residents.

Campaign contributions by State and County Contractors. Contractors are hereby notified of the applicability of HRS § 11-355 which states that campaign contributions are prohibited from specified State or County government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body. For more information, contact the Campaign Spending Commission at (808) 586-0285.

Protests. Any protest of this solicitation shall be submitted in writing to the Director of Transportation, in accordance with HRS § 103D-701 and Hawaii Administrative Rules § 3-126.

The Equal Employment Opportunity Regulations of the Secretary of Labor implementing Executive Order 11246, as amended, shall be complied with on this project.

The U.S. Department of Transportation Regulation entitled "Nondiscrimination in Federally Assisted Programs of the U.S. Department of Transportation," Title 49, Code of Federal Regulations (CFR), Part 21, is applicable to this project. Bidders are hereby notified that the Department of Transportation shall affirmatively ensure that the contract entered into pursuant to this advertisement shall be awarded to the lowest responsible bidder without

discrimination on the grounds of race, color, national origin, or sex (as directed by 23 CFR Part 200).

For additional information, contact Jake Shiraki, State Project Manager, by phone at (808) 838-8805, or by email at jake.l.shiraki@hawaii.gov.

The State reserves the right to reject any or all proposals and to waive any defects in said proposals in the best interest of the public.

CURT T. OTAGURO
Deputy Director of Transportation for Airports

HIePRO RELEASE DATE: May 11, 2026

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INSTRUCTIONS FOR CONTRACTOR'S LICENSING

"A" general engineering contractors and "B" general building contractors are reminded that due to the Hawaii Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project *(See, HRS § 444-7 for the definitions of an "A" and "B" project.)*, respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license *(An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR § 16-77-32.)*. The remaining work must be performed by appropriately licensed entities. It is the sole responsibility of the contractor to review the requirements of this project and determine the appropriate licenses that are required to complete the project.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

AIRPORTS

SPECIAL PROVISIONS

SPECIAL PROVISIONS

The following additional amendments to the General Provisions are applicable to this project:

1.3 DEFINITIONS

1. Section 1.3 Definitions: The definition for "Subcontractor" is amended by deleting it and replacing it with the following:
   "Subcontractor – An individual, partnership, firm, corporation, or joint venture, or other legal entity, as licensed or required to be licensed under Chapter 444, Hawaii Revised Statutes, as amended, which enters into an agreement with the Contractor to perform a portion of the work."

2. Section 1.3 Definitions: The definition for "Bid" is amended by deleting it and replacing it with the following:
   "Bid - The offer of a Bidder, on the prescribed HDOT form, to perform the work and to furnish the labor and materials at the prices quoted."

3. Add the following to 1.3 Definitions.
   "HAWAII ePROCUREMENT SYSTEM (HIePRO) - The State of Hawaii eProcurement System for issuing solicitations, receiving proposals and responses, and issuing notices of award."

2.7 REQUEST FOR SUBSTITUTION OF SPECIFIED MATERIALS AND EQUIPMENT BEFORE BIG OPENING is amended as follows:

1. The last sentence in the first paragraph (line 147 to 152) shall be replaced with the following:

"Where a bidder intends to use a material or equipment of an unspecified brand, make, or model, the bidder must submit a request to the Department for review and approval at the earliest date possible. As specified in the Notice to Bidders, all requests shall be posted as a question in HIePRO under the "Question and Answer" tab. Supporting documents for specific request shall be emailed to the Project Manager specified in the Notice to Bidders. Request must be posted in HIePRO and supporting documents received by the Project Manager no later than fourteen (14) calendar days before the bid opening date."

2. The first sentence in the second paragraph (line 154 to 156) shall be replaced with the following:

"It shall be the responsibility of the bidder to submit sufficient evidence based upon which a determination can be made by the Department that the alternate brand is a qualified equivalent."

2.8 PREPARATION AND DELIVERY OF BID is amended as follows: Last Paragraph (line 189 to 192) shall be replaced with the following:

"**Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall not include confidential and/or proprietary documents with**

the proposal. The record of each bidder and respective bid shall be open to public inspection. Original (wet ink, hard copy) proposal documents are not required to be submitted. **Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO.**
FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified."

2.11 BID SECURITY is amended by deleting (a) and replacing it with:
"(a) Unless directed otherwise in the invitation for bids, each bid shall be accompanied by bid security which is intended to protect the Department against the failure or refusal of a bidder to execute the contract for the work bid or to supply the required performance and payment bonds. Bid security shall be in an amount equal to at least five percent of the base bid and additive alternates. Bid security shall be in one of the following forms:

(1) A deposit of legal tender;
(2) A valid surety bid bond, underwritten by a company licensed to issue bonds in the State of Hawaii, in the form and composed, substantially, with the same language as provided herewith and signed by both parties; or
(3) A certificate of deposit; credit union share certificate; or cashier's, treasurer's, teller's, or official check drawn by or a certified check accepted by a bank, savings institution, or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA) and payable at sight or unconditionally assigned to the Department. These instruments may be utilized only to a maximum of one hundred thousand dollars ($100,000.00). If the required amount totals over one hundred thousand dollars ($100,000.00), more than one instrument not exceeding one hundred thousand dollars ($100,000.00) each and issued by different financial institutions shall be accepted.

If bidder elects options (1) or (3) above for its bid security, said bid security shall be in its original form and shall be submitted before the bid deadline to the Contract Office, Department of Transportation, Aliiaimoku Hale, 869 Punchbowl Street, Room 103, Honolulu, Hawaii 96813. Original surety bid bonds do not need to be submitted to the Contracts Office. Bidders are reminded that a copy of its surety bid bond shall be included with its bid submitted and uploaded to HIePRO."

Delete 2.12 PRE-OPENING MODIFICATION OR WITHDRAWAL OF BIDS in its entirety and replace with the following:
"2.12 PRE-OPENING MODIFICATION OR WITHDRAWAL OF BIDS. Bids may be modified or withdrawn prior to the bid opening date and time. Withdrawal or revision of proposal shall be completed and submitted and uploaded to HIePRO prior to the bid opening date and time."

2.14 PUBLIC OPENING OF BIDS is amended by deleting 2.14 PUBLIC OPENING OF BIDS in its entirety.

2.20 BID EVALUATION AND AWARD is amended as follows: Paragraph (a) shall be replaced with the following:

(a) The award shall be made to the lowest, responsive, responsible bidder within 90 days after bid opening and shall be based on the criteria set forth in the invitation for bids. The Department may request the bidders to allow the Department to consider the bids for the issuance of an award beyond the 90 day period. Agreement to such an extension must be made by a bidder in writing. Only bidders who have agreed to such an extension will be eligible for the award.

4.12 UTILITIES AND SERVICES is amended as follows:

Add the following after the last paragraph:

"(e) Repairs and Outages.

(1) The Contractor shall have available on 24-hour call sufficient specialty contractors, such as electrical and plumbing contractors, to repair any, damage to existing facilities that might occur as a result of construction operations regardless of when the damage might occur.

(2) Outage: Written requests for power outage, communication changes, and water and sewer connection outages shall be submitted to the Engineer at least seven (7) days in advance or as specified in other sections of these specifications. Outages will be restricted to non-peak operational hours between midnight and 6:00 a.m."

5.16 SUBCONTRACTS

Add the following after the last paragraph:

"e) The Specialty Items of work for this project are as follows:

Asphalt concrete patching, sealing, and striping
Electrical
Hydro mulching
Tree trimming and removal
Masonry
Concrete cutting, drilling, sawing, coring, and pressure grouting
Water chlorination and sanitation
Reinforcing steel
Structural steel
High voltage electrical"

7.4 WORKING HOURS; NIGHT WORK is amended as follows: Paragraph shall be replaced with the following:

"7.4 Working Hours. Normal working hours shall be as shown on the Plans."

7.21 PUBLIC CONVENIENCE AND SAFETY - is hereby added to the General Provisions:

"It shall be especially noted by the Contractor that the area directly adjacent to the existing in use runways and taxiways, is an extremely hazardous area and that very strict controls will apply throughout the entire period required to complete all work within 500 feet from the edge of an in use runway and 180 feet from the edge of an in use taxiway.

The Contractor shall familiarize himself with the Airport Certification Manual available for review

at the Airport Manager's Office and shall comply with its requirements.

The Contractor is responsible for the security of access points to the Airport Operational Area that are located within the limits of construction and will be fined $1,000 per incident for any breach of security at these locations. All gates leading into the AOA shall be kept locked and if required to be open, the Contractor shall provide professional security guards to attend gates. The guards must be approved by the Director and shall be required to attend a training session conducted by the Airport Manager prior to gate assignment."

8.8 LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE THE WORK OR PORTIONS OF THE WORK ON TIME: The General Provisions is hereby amended to include the following:

The schedule of liquidated damages provided in Section 8.8 of the General Provisions in these specifications shall be amended to include the following:

ONE THOUSAND EIGHT HUNDRED DOLLARS ($1,800.00) per calendar day for failure to complete each construction stage (s) within the duration (calendar days) noted below.

8.20 LIMITATION OF OPERATIONS: is hereby added to the General Provisions:

"The following limitations shall be observed by the Contractor when operating within 75 feet from the edge of any taxiway.

General - The Contractor shall schedule his operations to minimize interference with the movement of aircraft or passengers as may be required by the Engineer. The Contractor shall be responsible to alert all of his personnel to the location of power and signal cables installed for the operation of the airport. The Contractor shall control his operations in a manner to preclude any possible damage to those cables. Utility companies shall be notified by the Contractor one week before commencement of work. The Contractor shall give notice to the Engineer in writing, at least 168 hours before operating within 75 feet from the edge of any taxiway and the Engineer will assure himself that the Airport Management personnel are notified in sufficient time to publish the warning (NOTAM). The Contractor shall immediately repair any damages to the existing perimeter fence to prevent inadvertent entry to the Airport Operation Area (AOA).

Work in Vicinity of Runways and Taxiways in Use - Under the terms of this contract, it is intended that work shall be completed without disturbing the paved surface of existing runways and taxiways, unless shown otherwise on the plans.

Aircraft traffic shall not be interrupted. The Contractor shall schedule to work within 75 feet of the taxiway as directed by the Airport Management. No ruts, holes, or open trenches of 3 inches or more in depth and no objects or material 3 inches or more in height shall be permitted within the safety area when the airfield is in operation in conformance to Federal Aviation Regulation Part 139. The Contractor is also informed that Airport Zoning Regulations dictate that a 'clear zone' be maintained 500 feet on each side of an active runway, to be known as a hazardous area. The Contractor shall comply with all regulations governing ground operations within hazardous areas. The following FAA Advisory Circulars ·or later versions and FAA Regulations specify these requirements.

AC 150/5210-5D Painting, Marking, and Lighting Vehicles Used on an Airport, dated April 2010

AC 150/5340-lM Standards for Airport Markings, dated May 2019

AC 150/5370-2G Operational Safety on Airports During Construction, dated December 2017

FAA Regulations Objects Affecting Navigable Airspace Part 77

The Contractor shall keep all personnel and equipment off the areas not specifically designated for

work under this Contract. At all times when the Contractor's equipment is not in use, the equipment shall be moved outside the hazardous areas to an area designated by the Engineer. Under no condition shall equipment be parked or material stored within the hazardous areas.

Failure on the part of the Contractor to abide by the above will result in suspension of work.

Authority of Control Tower Personnel - With the exception of actual construction methods, the airport control tower personnel will have full authority to control the Contractor's movements within the existing taxiway. When required, the Contractor shall maintain a constant radio vigil within all work areas and in addition shall keep at least one flagman on duty with the radio man. When notified by the control tower to temporarily halt operations, it shall be the duty of the flagman, through the use of appropriate methods (lighted flares shall not be used under any circumstances), to notify all operators of equipment and other personnel to cease work and move men and equipment off of hazardous areas. Contractor shall provide, at his own expense, the necessary radio and equipment including a radio equipped mobile vehicle to maintain contact with control tower personnel at all times during job performance. A transceiver operating at a frequency designated by the Engineer to communicate with the Control Tower.

Marking of Hazardous Areas - The Engineer will designate areas that are hazardous for aircraft. The Contractor shall provide red blinker lights spaced not more than 50 feet apart around all hazardous areas and areas of work within 75 feet of any taxiway. Such systems shall be subject to approval by the Engineer. The Contractor shall have personnel on call 24 hours per day for the emergency maintenance of hazard markings.

The Contractor shall provide red flags not less than 20 inches square in addition to the red blinker lights. When danger flags are made of fabric, a wire stiffener shall be used to hold the flags in an extended position. Flags shall be so mounted that they do not produce a hazard. The red danger flags shall be spaced not more than 50 feet apart around all areas of work within 75 feet of any taxiway.

All systems proposed by the Contractor for lighting and barricading shall be submitted to the Engineer for review prior to installation. The Contractor shall install all flags, lighting and barricades as required by the Engineer. Such systems shall be subject to approval by the Engineer.

Storage of Equipment and Materials - At the end of each working shift, all of the Contractor's equipment shall be withdrawn to an area designated by the Engineer. The Contractor shall park all equipment in an orderly fashion and place a sufficient number of red flasher lights to identify these areas. Materials stored within the airport shall be so placed and the work shall, at all times, be so conducted as to cause no greater obstruction to the air and ground traffic than is considered necessary by the Engineer. No runways, taxiways or roadways shall be closed or opened, except by permission of the Engineer.

Blasting Operations - The Contractor shall notify the Engineer at least three (3) days before performing blasting operations as to the extent and timing of such operations, so that the Control Tower and other concerned parties can be informed.

Utilities - The Contractor shall provide for the protection of all utilities from damages in areas to be traversed by his vehicles and equipment. If required, buried cables and utility lines shall be protected by mounding earth over the cables or by any other method approved by the Engineer.

The Contractor shall notify representatives of the owner, agencies, and other affected organizations at least 48 hours prior to working in any area containing the facilities of these organizations.

Failure to notify the owning organization will prevent authorization to work in a specific area.

Archaeological Features - Any archaeological features such as petroglyphs, burial sites, and artifacts discovered or unearthed during the performance of the work shall immediately be brought to the attention of the Engineer and all work that would damage or destroy these features shall be discontinued.

The Engineer will decide, after proper investigation, to salvage or abandon such artifacts."

8.21 OPERATION OF CONTRACTOR'S MOTOR VEHICLE AND PERSONNEL IN RESTRICTED AIR OPERATIONS AND MOVEMENT_AREAS is hereby added to the General Provisions:

"The contractor shall conform with the all sections of the "State of Hawaii, Department of Transportation, Airports Division, Contractor's Training Guide" pertaining to access and operation in the Airport Operation Area (AOA) hereinafter described as follows:

"A. Motor Vehicles in Airport Operation Area
for safety reasons, the operation of motor vehicles in the AOA must conform with all applicable State Airport rules and regulations."

B. Motor Vehicle Access Permit

Each motor vehicle operated in the AOA is required to:

1. Meet all State licensing registration and safety requirements and be specifically licensed for operation in the AOA.
2. Meet all insurance requirements.
3. Be restricted to operation by those persons qualified to drive the vehicle and in possession of a current Ramp Driver's License and applicable Motor Vehicle Operator's License.

D. The operators of motor vehicles in the AOA shall be responsible for meeting the following insurance requirements.

1. Licensed Vehicles

As a condition for authorization to enter the AOA, the Contractor shall provide evidence of vehicle liability insurance in the form of a Certificate of Insurance issued by an authorized insurance carrier. Automobile Liability and general Liability (combined single limit, Bodily Injury and Property Damage, per occurrence) shall be required in the applicable minimum limits specified below:

a. Daniel K. Inouye International Airport

(1) Standard AOA clearance....$5,000,000

(2) Limited AOA clearance .....$1,000,000 Limited AOA clearance is defined as operations restricted to Diamond head and Ewa Concourses second level roadways and connecting third level main terminal roadway only, with entry and exit via Security Access Point "C" (Primary) and Access Point "A" (Secondary)

b. Other Airports

Standard AOA clearance.....$1,000,000
Standard AOA clearance is defined as any portion of a public Airport from which the public is restricted by fences or appropriate signs and no leased or demised to anyone for exclusive use and shall include runways, taxiways, all ramp and apron areas, aircraft parking and storage areas, fuel storage areas, maintenance areas, and any other area of a public Airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft or used for embarkation or debarkation of passengers.

2. Unlicensed Vehicles

Airport Liability (or General Liability) shall be required in the applicable minimum limits specified below:

a. Daniel K. Inouye International Airport, Kahului Airport and Ellison Onizuka Kona International Airport at Keahole

AOA clearance.....$5,000,000

b. All other Airports

AOA clearance.....$1,000,000

3. Specifically name the State of Hawaii as additionally insured.

4. Indicate that the Airport Engineer will be provided with a 30-day written prior notice of policy cancellation or material change in coverage or conditions.

E. Operator's Permit

1. No person shall operate a motor vehicle on the AOA unless he holds and carries on his person a current Airport Motor Vehicle operator's permit issued by the State of Hawaii, Department of Transportation, Airports Division.

2. Operator's permits will only be issued to persons who apply through the Airport District Security Office and pass a written exam covering those portions of the Airport Rules and Regulation relating to the operation of vehicles in Airport Operations Areas.

F. Authorized Vehicles

1. Only vehicles considered operationally safe and necessary for the performance of this contract may be allowed to operate in the AOA.

2. All motor vehicles must be painted in such a manner so as to be easily identifiable and must carry the Contractor's name on each side. These signs may be of a temporary nature applied to the side windows or doors.

The lettering shall be in bold characters of a minimum of four (4) inches in height and one and one-half (1-1/2) inches in widths, the height of logos should be a minimum of six (6) inches.

3. The Contractor's operations on, over, across, and/or immediately adjacent to any runway and/or taxiway at a towered airport shall require the use of two-way radio communication. The Contractor shall obtain the necessary equipment at his own expense.

4. No person shall operate a motor vehicle on the AOA unless he holds and carries on his person a current Motor Vehicle Operator's Permit issued by the Airport Manager.

a. The Motor Vehicle Operator's Permit will be issued only to persons who apply through the Airport Security Section and pass a written exam covering those portions of the Airport Rules and Regulations relating to the operation of vehicles in the AOA.

b. Permits issued may be suspended or revoked for cause at any time by the Airports Division.

G. Airport Operation Area Construction Pass

1. Issuance of Airport Operation Area (AOA) Construction Passes shall be limited to contractors, subcontractors, companies, organizations, individuals engaged in authorized and approved construction activity which requires a continuing need for entry into the AOA or Airfield Movement Areas Request letters for such passes must be made to the Airport District Manager's Office in accordance with the Contractors Training Guide or applicable District requirements.

2. As a condition for security area clearance, applicants must comply with Transportation Security Regulation 1542 which requires a ten-year background Criminal History Records Check for those individuals employed under this contract.

H. Access to Movement Areas

1. Movement areas shall mean all of the runways and taxiways of the Airport which are utilized for taxiing, takeoff, and landing of aircraft.

   a. Any vehicle which requires access to the movement area shall be equipped with operational radio equipment capable of positive two-way contact with Tower/Ground Control.

   b. Operators of vehicles in movement areas must possess knowledge and familiarity with restricted and airfield movement areas, operational rules, regulations, and procedures, or be under direct escort by individuals meeting all of the above requirements.

2. Vehicle Operations on Movement Areas

   a. No vehicle shall proceed across any runway unless specifically cleared by Tower/Ground Control.

   b. The operator of a vehicle in the movement area shall not leave his vehicle unless continuous radio contact is maintained with the Tower/Ground Control while he is away from his vehicle.

   c. Any vehicle proceeding onto the movement area between the hours of sunset and sunrise shall be equipped with an overhead flashing light which is visible for one (1) mile, unless such vehicle is being escorted by another vehicle so equipped.

   d. All vehicles operated on the movement area between sunrise and sunset except those being escorted, shall operate an overhead amber or red flashing beacon visible for at least one (1) mile; or display a flag at least three (3) feet square with orange and white checkered squares of not less than one (1) foot on each side.

I. Runway and Taxiway Closure

1. Requests for runway or taxiway closures, or for any work which affect operational conditions at the airport must be made in writing through the Airport Engineering Branch.

2. Temporarily closed runways require placement of a lighted “X” runway closure marker on top of the runway identification numerals at both ends of the closed

runway.

3. Taxiway closures require placement of barricades with alternate orange and white markings at each end of the closed taxiway segment. Barricades must be supplemented with flashing red lights. The intensity of the lights and spacing for barricades, and lights must adequately define and delineate the hazardous area.

J. Gate Guards Furnished by Contractors

1. If a contractor is permitted by the airport to maintain operational control of an AOA Access Gate, entry through such gate shall be controlled by the posting of a gate guard.

   a. Written instruction will be provided, outlining the guard's duties to enforce those requirements and provisions prescribed by the airport's security program to include all personnel and vehicle entry and access requirements.

   b. Procedures will be established to identify the actions which will be undertaken by the guard in calling for assistance.

   c. An approved emergency communications procedure will be established.

K. Compliance

1. The contractor shall comply with all regulations and rules governing the Air Operations Areas during construction, as specified in the following or later versions:

   a. Hawaii Revised Statutes, Title 19, Administrative Rules for Public Airports.

   b. Federal Aviation Administration Advisory Circular AC 150/5340-l, Standards for Airport Markings; AC 150/5370-2, Operational Safety on Airports During Constructions.

L. Enforcement Authorization

Act 21, Section 1, Section 261-17(a), HRS; Federal Aviation Administration Regulations, Part 139, Part 107.

M. Right of Rejection or Revocation

The State of Hawaii, Airports Division, reserves the right to withhold, deny or revoke any airport security clearance, licenses or permits to any individual or organization who fails to meet the prescribed or required access area clearance criteria to include background investigation information, or fails to observe or comply with established rules, regulations, and directives.

It should be clearly understood that such denial or revocation is based solely on airport security or safety considerations and does not in any way constitute a determination by the State with regard to private employment by any individual or organization."

--------END OF SECTION--------

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

SPECIFICATIONS

PART I

GENERAL PROVISIONS

The Hawaii Department of Transportation AIR and WATER Transportation Facilities Division General Provisions for Construction Projects dated 2016 is not physically included in these specifications. The General Provisions are available at

http://hidot.hawaii.gov/administration/con/

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

AIRPORTS

PART II – TECHNICAL PROVISIONS

SECTION 01000 – DESCRIPTION OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.2 SUMMARY

A. Section Includes:

1. Location of the work.
2. Hours of work
3. Safety
4. Operation of airport facilities during construction
5. Disposal of excess soil materials
6. Construction stakes, lines and grades.
7. Special project requirements

1.3 VEHICLE PARKING

Subject to availability of space and approval by the Airport Manager, parking may be made available at a designated parking area for vehicle parking. The General Contractor shall submit the parking request to the Airport Manager through the State Project Manager (SPM) for review. The SPM will verify the list against the General Contractor's approved subcontractor list and forward it to Airport Manager for approval.

1.4 PROVISIONS FOR FIELD OFFICE/STORAGE SPACE

Pending the availability of space on airport property, the State will issue Revocable Permit(s) to the Contractor for the use of the space, assessed at a monthly fee of $25 for each Revocable Permit issued. The space(s) may be used for a field office, staging of materials and equipment, vehicle parking or other uses subject to the approval of the State. All spaces shall be subject to the requirements of Section 01561 – CONSTRUCTION SITE POLLUTION CONTROLS.

Since space on airport property is extremely limited, the State does not guarantee that space(s) provided to the Contractor will be in close proximity to the project site. The State will make every effort to provide the Contractor with space on airport property, however, should the State determine that no space is available for such use(s), the responsibility shall then be on the Contractor to find space outside of airport property.

1.5 LOCATION OF THE WORK

A. The work to be performed under this contract is located at Kalaeloa Airport, Barbers Point, Oʻahu, Hawaiʻi.

B. Conditions:

1. All facilities and airport roadways shall remain operational at all times. Any damages to existing areas caused by the Contractor shall be repaired by the Contractor at no cost to the State.

2. Upon award of the contract, the Contractor, at their cost, shall obtain all permits required for this project.

1.6 HOURS OF WORK

A. Work can be performed at the construction site at 8:30 AM to 3:30 PM without considerable disruption to airport operations or other adjacent tenants. Noise, including demolition work, shall occur from 10:00 p.m. to 6:30 a.m., and water proofing shall be done from 1:30 p.m. to 10:00 p.m. Contractor shall coordinate other work activities with the Engineer for the hours between 6:30 a.m. to 1:30 p.m. Submit a proposed construction schedule to Engineer for review and approval within 14 calendar days prior to start of work. The Contractor shall coordinate their schedule with the Engineer if rescheduling of work or intermittent work is required, such work shall be performed at no extra cost to the State. If the Contractor elects to work overtime, compensation for State employees and for construction management consultant as authorized by the State shall be the Contractor's obligation to pay in accordance with Section 7.6 of the General Provisions.

B. Contractor shall clean work areas at the end of each working shift. Rubbish, loose materials, etc. shall be disposed of daily. Materials shall be safely secured and stored in an area designated by the Airport Manager.

1.7 SAFETY

A. The Contractor shall take the necessary precautions to protect his workers and other personnel from injuries. The rules and regulations promulgated by the Occupational Safety and Health Acts are applicable and made a part of these specifications.

B. Barricades and warning signs shall be erected by the Contractor in the work area to properly protect all personnel in the area.

C. During the progress of the work debris, empty crates, waste, material drippings, etc., shall be removed by the Contractor at the end of each workday, and the work area shall be left clean and orderly.

1.8 OPERATION OF AIRPORT FACILITIES DURING CONSTRUCTION

A. The Contractor shall coordinate the phases of work under this contract with the Engineer to permit the continuing operation of existing Airport facilities and to minimize disruption to pedestrian and vehicular traffic.

B. Utility Maintenance: During the construction of this contract, existing utility services serving occupied or used facilities shall not be disrupted except where authorized in

writing by authorities having jurisdiction. Contractor shall provide temporary services during interruptions to existing utilities, as acceptable to the Engineer. Damages to the existing utility facilities by the Contractor will be repaired at the Contractors expense.

C. Outages for water, power, communications, air conditioning or any other utility, if necessary, shall be kept to a minimum and scheduled for off-peak hours, generally from 12:00 a.m. to 6:00 a.m. The Contractor shall submit written requests to the Engineer for such outages no later than fourteen (14) calendar days in advance. The request shall include a description of work and the duration of the outage. The Contractor shall not proceed with such outages until written approval is received from the State.

1.9 CONSTRUCTION STAKES, LINES AND GRADES

A. The Contractor shall perform all construction layout and reference staking necessary for the proper control and satisfactory completion of all structures, paving, sewer, water, electrical and telecommunications work, and all other appurtenances required for the completion of the work.

B. Existing horizontal and vertical survey control points for the project are shown on the plans. The Contractor shall verify the location of all control points prior to the start of construction.

C. The Department will not be responsible for delays in setting stakes and marks.

D. All control points and stakes or marks which the Engineer may set shall be preserved by the Contractor. If such control points, stakes or marks are destroyed or disturbed by the Contractor, the cost of replacing such stakes or marks will be charged against the Contractor and deducted from payments due the Contractor.

E. The Contractor shall be responsible for the placement and preservation of adequate ties to all control points whether established by the Contractor or by the Engineer.

F. All original, additional or replacement stakes, marks, references and batter-boards which may be required for the construction operations, shall be furnished, set and properly referenced by the Contractor. The Contractor shall be solely and completely responsible for the accuracy of the line and grade of all features of the work. Any errors or apparent discrepancies found in previous surveys, the plans and specifications shall be called to the Engineer's attention by the Contractor for correction or interpretation prior to proceeding with the work.

G. Before construction is started on any structure which is referenced to an existing structure or topographical feature, the Contractor shall check the pertinent locations and grades of the existing structures or topographical features to determine whether the locations and grades shown on the plans are correct.

H. All construction staking shall be performed by qualified personnel under the direct supervision of a person with an engineering background who is experienced in the direction of such work and is acceptable to the Engineer.

I. All stakes and markers used for control staking shall be of the same quality as used by the Department for this purpose. For slope limits, pavement edges, gutter lines, et

cetera, where so called "working" stakes are commonly used, stakes of different quality may be acceptable.

J. The Department may check the Contractor's control of the work at any times as the work progresses. The Contractor will be informed of the results of these checks, but the Department by doing so will in no way relieve the Contractor of his responsibility for the accuracy of the layout work. The Contractor shall at his expense correct or replace any deficient or inaccurate layout and construction work. If, as a result of these deficiencies or inaccuracies, the Department is required to make further studies, redesign, or both, all expenses incurred by the Department due to such deficiencies or inaccuracies, will be deducted from any payments due the Contractor.

K. The Contractor shall furnish all necessary personnel, engineering equipment and supplies, materials, and transportation incidental to the accurate and satisfactory completion of this work.

Unless otherwise provided, all requirements imposed by this section and performed by the Contractor shall be considered incidental to the various contract items and not separate or additional payment will be made thereof.

1.10 SPECIAL PROJECT REQUIREMENTS

A. Upon receipt of the Contract, the Contractor shall process and return the Contract to the State' Contract Office within five (5) calendar days.

B. The State intends to issue the Notice to Proceed for the Project to the Contractor within 35 calendar days after execution of the contract. The Contractor shall be able to commence work on this date.

C. The Contractor must coordinate with the City and County of Honolulu for work within the City and County of Honolulu Right-of-Way.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PART 4 - MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section, except for services associated with Safety Risk Management activities, shall be considered incidental to and included in the bid prices for the various items of work in this project. Participation in Safety Risk Management activities including but not limited to the attendance and participation in Safety Risk Management meetings led by either the State or FAA Air Traffic Organization (ATO), construct-ability review of Construction Safety and Phasing Plans (CSPP), development or revisions of CSPP plans for the project works, or to accommodate another concurrent airport project or airport operations, etc. The allowance is an estimate, and the amount shall not exceed the maximum amount shown in the proposal schedule. Payment shall be the actual cost as invoiced by the Contractor.

Additional charges by the Contractor for overhead, coordination, profit, insurances, incidental expenses, and any other markups shall not be allowed. These shall be included in the Contractor's lump sum bid price

B. Work under this section for temporary traffic controls and unforeseen conditions shall be paid under allowance items in the Proposal Schedule. The allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule.

Item No.	Unit Price	Description
01000.1	Allowance	Temporary Traffic Controls & Signs
01000.2	Allowance	Unforeseen Conditions

--------END OF SECTION--------

SECTION 01210 - ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 GENERAL REQUIREMENTS

A. This Section includes administrative and procedural requirements governing allowances. Certain materials, equipment, and services are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials, equipment, and services to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Type of allowances include contingency allowances.

C. Related Sections include Divisions 1 through 16 Sections for items of work covered by allowances.

1.03 SUBMITTALS

Submit in accordance with SECTION 01300 - SUBMITTALS.

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders and Field Orders.

B. Submit invoices for delivery slips to show actual quantities of materials and equipment delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.04 COORDINATION

Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.05 CONTINGENCY ALLOWANCES

Contractor’s overhead, profit, and related costs for products, equipment, and services ordered by the State under the contingency allowance are included in the allowance and are not part of the Contract Lump Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs. Reference the contingency allowances respective specification sections for specific information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer or replacement.

3.02 PREPARATION

Coordinate consultants, vendors, subcontractors, materials and installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. The allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule.

B. Payment shall be made from each allowance items respective specification section.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this section.

1.02 PROJECT DOCUMENTATION

The contract will not be considered complete until required submittals have been received and accepted by the State.

At the discretion of the Project Manager, the number of copies to be submitted may differ from that specified in this Section.

1.03 DETAILED CONSTRUCTION SCHEDULE

A. The Contractor shall submit a detailed construction schedule to the Engineer for review, no later than 30 calendar days after execution of the contract. The detailed construction schedule shall be based on a detailed critical path analysis of construction activities and sequence of operations needed for the orderly performance and completion of any separable parts of any work and all work in accordance with the contract. The schedule shall be Critical Path Method (CPM) type in the form of an arrow diagram and activity listing or comprehensive bar graph. The network diagram shall show in detail and in orderly sequence all activities on a time scale, their descriptions, durations and dependencies, necessary and required to complete all work and any separable parts thereof. The schedule shall show in detail the following information for each activity:

1. Identification by code numbers and description;
2. Duration;
3. Craft and Equipment;
4. Earliest start and finish dates;
5. Latest start and finish dates;
6. Total and free float time; and
7. Highlighted Critical Path

B. The construction schedule shall be complete in all respects, covering in addition to activities at the site of work, off-site activities such as design, fabrication, and procurement of equipment; the scheduled delivery dates of such equipment; submittal and approval of shop drawings and samples; ordering and delivery of

materials; inspections; and testing. The schedule shall also include a manpower forecast by crafts. The detailed construction schedule shall be supplemented by a three-week schedule prepared by the Contractor and submitted to the Engineer on a weekly basis. The Contractor shall promptly inform the Engineer of any proposed change in the schedule and shall furnish the Engineer with a revised schedule and cash flow diagram within 15 calendar days after approval of such change.

The schedule shall be kept up to date, taking into account the actual progress of work and shall be updated, if necessary, every 30 calendar days. The updated schedule shall, as determined by the Engineer, be sufficient to meet the requirements for the completion of the separable parts of work and the entire projects as set forth in the contract.

Upon commencing work, the Contractor shall submit at the start of each week to the Engineer for review, a detailed three (3) week construction schedule.

C. If at any time during the progress of the Work, the Contractor's actual progress appears to the Engineer to be inadequate to meet the requirements of the contract, the Engineer will notify the Contractor of such imminent or actual noncompliance with the contract. The Contractor shall thereupon take such steps as may be necessary to improve his progress and the Engineer may require an increase in the labor force, the number of shifts, and/or overtime operations, days of work and/or the amount of construction plants all without additional cost to the State. Neither such notice by the Engineer nor the Engineer's failure to issue such notice shall relieve the Contractor from his obligation to achieve the quality of work and rate of progress required by the contract. Failure of the Contractor to comply with instructions of the Engineer under these provisions may be grounds for determination by the State that the Contractor is not prosecuting work with such diligence as will assure completion within the times specified. Upon such determination, the State may employ labor and equipment and charge the Contractor for the cost thereof, including depreciation for plant and equipment or may terminate the Contractor's right to proceed with the performance of the contract, or any separable part thereof, in accordance with the applicable provisions of the contract.

D. The Contractor shall submit to the Engineer one (1) reproducible and three (3) prints of the detailed construction schedule and of each revised schedule submitted thereafter.

1.04 SCHEDULE OF VALUES

A. The Contractor shall submit the Schedule of Values to the Engineer for review, no later than 30 calendar days after execution of the Contract.

B. Format and Content: Use Proposal Schedule and/or the Project Specifications table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section. Provide a breakdown of the contract sum in sufficient detail to facilitate continued

evaluation of Applications for Payment and progress reports. Break principle work or subcontract amounts down into several smaller identifiable items of work.

C. Identification: Include the following Project identification on the schedule of values:

1. Project name and location

2. Project number

3. Contractor's name and address

4. Contract No.

5. Date of submittal

D. Arrange the Schedule of Values in tabular form with separate columns to indicate the following items listed:

1. Related Specification Section or Division

2. Description of work

3. Dollar value and percent complete

E. Correlate line items in the Schedule of Values with other required administrative schedules and forms including;

1. Construction Schedule

2. Application for Payment forms including continuation sheets

3. List of Subcontractors

4. List of principle suppliers and fabricators

5. Schedule of submittals

F. Round amount to nearest whole dollar; the total shall equal the contract sum.

G. Provide a separate line item in the Schedule of Values for each part of the work where Applications for Payment may include materials or equipment, purchased, fabricated or stored, but not yet installed.

H. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Applications for Payment or when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.05 OTHER SUBMITTALS REQUIRED BEFORE CONSTRUCTION

The Contractor shall submit the following items prior to or at the pre-construction meeting or unless otherwise noted:

A. Name, residence phone number, addresses and scope of authority for the following persons:

1. Superintendent

2. Contractor's authorized representative to sign documents

3. Two (2) additional persons who can be contacted during non-working hours for emergencies.

4. Field Office location and phone numbers (cellular, pager, fax, etc.)

B. Name of Safety Officer

C. Notice of Materials to be furnished

D. Three (3) copies each of Certificates of Insurance. The State of Hawaii shall be named as additionally insured. The project number and project title shall be referenced in the Description of Operations/Locations/Vehicles. If canceled, 30 days written notice to the State of Hawaii must be given. If certificates are not correct, work cannot proceed.

E. Three (3) copies each Insurance and Tax Rates.

F. List of apprentices who will be working on the project supported with the Statement of Apprenticeship or copy of the Apprenticeship Agreements registered with the State Board, for each apprentice.

G. List of equipment to be used on the job. Designate maximum working height and capacity of equipment involved and their respective rental rates.

H. Three (3) copies of an expenditure (cash flow) plan consisting of an anticipated work completion graph plotting contract time and gross payment anticipated.

1.06 SHOP DRAWINGS, SAMPLES, CATALOG CUTS, AND CERTIFICATES

A. Submittal Schedule: Prior to the submission of any shop drawings or submittals, the Contractor shall submit to the Engineer for review, a submittal schedule. The schedule shall identify the subject matter of each submittal, the corresponding specification section number and the proposed date of submission. During the progress of work, the Contractor shall revise and resubmit the submittal schedule as directed by the Engineer.

B. The Contractor shall submit for review to the Engineer, or to a representative

designated by the Engineer, six (6) copies of all shop drawings, samples, catalog cuts and certificates. Three (3) copies will be returned to the Contractor with information of review action. The Contractor shall submit additional quantities for their subcontractor's or supplier's use. Each shop drawing, certificate of compliance, sample, and equipment list shall be checked and certified correct by the Contractor and shall be identified with the applicable information specified hereinafter under "Submittal Identification."

Items are to be reviewed prior to commencing fabrication or delivery of material to the job site.

C. Each copy of the drawings, certificates, catalog cuts, and lists reviewed by the Engineer will be stamped "REVIEW ACTION" with the appropriate action noted therein. The review of the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory. Acceptance of such drawings will not relieve the Contractor the responsibility of conforming to the contract drawings and specifications or for any error or omission which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. Each shop drawing submitted for review shall have, in the lower right-hand corner just above title, a white space 4" x 4" in which the Engineer can place the stamp and indicate action taken. The Contractor shall also inform their subcontractors to provide this space in their preparation of shop drawings.

1.07 MAINTENANCE DATA AND OPERATING INSTRUCTIONS

Six (6) copies of maintenance data and operating instructions shall be submitted by the Contractor at the conclusion of the equipment installation. The manuals shall be assembled in one or more binders, each with a title page, typed table of contents, and heavy section dividers with numbered plastic index tabs. The binders shall be a minimum of 2 inches thick, three ring, "D slant" with hard covers. All data shall be punched for binding and composition and printing shall be arranged so that punching does not obliterate any data. The project number, project title, and Airport shall be inserted in the front and backbone binder cover.

The Contractor shall submit a draft to the Engineer for review prior to the submission of the final copies.

The manual shall include separate sections describing each equipment. Provide a general description of the equipment, instructions for operation, maintenance, recommended inspection points and periods for inspection, testing, adjustments, calibration procedures with illustrations, wiring diagrams, trouble shooting situations and solutions, and repair methods in a practical, complete, and comprehensive manner.

For each equipment, include information on detailed parts listings (part numbers and costs) with the manufacturer's name, address, contact person, e-mail address and phone/fax numbers. Provide the contact name, address, e-mail address and phone/fax numbers of the distributor in the State of Hawaii for each equipment.

Include a separate section on warranty information on all products and equipment. Provide this information in a tabular format with a listing on all products and equipments with warranty start and completion dates for each item.

Include separate sections on all approved submittals, test reports, certifications, etc.

All information shall be arranged in a logical, orderly sequence. Manuals submitted by the manufacturer will not be accepted.

1.08 TEST REPORTS

Six copies of test reports for any material used in this Contract shall be submitted when specified or required by the Engineer.

1.09 SUBMITTAL IDENTIFICATION

A. To avoid rejection and to clarify each submittal, the General Contractor shall have a rubber stamp made up in the following format:

B. _____
General Contractor's Name

PROJECT TITLE: _____
AIRPORT: _____
STATE PROJECT NO: _____
AIP PROJECT _____
THIS SUBMITTAL HAS BEEN CHECKED BY THIS GENERAL CONTRACTOR AND IS CERTIFIED CORRECT AND IN COMPLIANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.

ITEM NO. _____

SUBMITTAL NUMBER _____
DATE RECEIVED _____
SPECIFICATION SECTION # _____
SPECIFICATION PARAGRAPH # _____
DRAWING NUMBER _____
SUBCONTRACTOR NAME _____
SUPPLIER NAME _____
MANUFACTURER NAME _____

CERTIFIED BY _____ (Contractor's Signature, Date)
(Contractor's Name and Title)

C. This stamp "filled in" should appear on each reproducible shop drawing, on the cover sheet of copies of test and mill reports, certificates of compliance, catalog cuts, brochures, etc. The stamp should be placed on a heavy stock paper

merchandise (approximately 3" x 6") and one tag tied to each sample submitted for approval. The tag on the samples should state what the sample is, so that if the tag is accidentally separated from the sample, they can be matched up again. The back of this tag will be used by the Engineer for receipt, approval, and log stamp for any comments that relates to the sample.

D. Submission Number: Each submission is to be sequentially numbered in the space provided in the Contractor's stamp. Correspondence and transmittal will refer to this number.

E. The Contractor shall ensure that all submittals, including shop drawings, are complete and in conformance to the requirements of the Contract specifications prior to submission to the State for review and acceptance. Incomplete submittals will not be processed by the State and returned to the Contractor for correction. Any cost impacts and delays in the Project schedule as a result of incomplete submittals shall be the responsibility of the Contractor.

1.10 AS-BUILT DRAWINGS

As-built drawings shall conform to the requirements of Section 5.8 - "Coordination Between the Contractor and the State" of the General Provisions for Construction Projects (2016), and the following requirements:

The Contractor shall maintain on the job site a set of full-size contract drawings, marking them in red to show all variations between the construction actually provided and that indicated or specified in the contract documents, including buried or concealed construction. (Section 5.8 (a) Drawings and Special Provisions of the General Provisions for Construction Projects.).

Where a choice of material or method is permitted herein or where variations in scope of character of work from that of the original contract or authorized, the drawings shall be marked to define the construction actually provided. Where equipment installation is involved, the size, manufacturer's name, model number, power input or output characteristics as applicable shall be shown on the as-built drawings.

The representation of such changes shall conform to standard drafting practice and shall include such supplementary notes, legends, and details as necessary to clearly portray the as-built construction.

The drawings shall be maintained and updated on a daily basis. The Contractor shall stamp, sign, and date each sheet with the following stamp:

AS-BUILT DRAWINGS/SPECIFICATIONS

This certifies that the dimensions and details shown on this sheet reflect the dimensions and details, and specifications as constructed in the field.

_____
CONTRACTOR'S NAME

_____
Signature Date

Monthly and final payments to the Contractor shall be subject to prior approval of the drawings. On completion of the work, both sets of marked-up drawings shall be delivered to the Engineer and shall be subject to approval before acceptance.

1.11 GUARANTEES

Guarantee periods shall start at time of acceptance in writing by the State.

All guarantees and warranties shall be made out to the "State of Hawaii." Supplier and subcontractor guarantees shall be co-signed by the Contractor.

The Contractor is solely responsible for coincidence or non-coincidence of factory warranties or equipment guarantees, and the Contractor's own warranties and guarantees as required by the contract. The Contractor is solely responsible for scheduling and coordinating the installation of equipment and materials so as to take maximum advantage of factory warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

SECTION 01400 – CONTRACTOR QUALITY CONTROL PROGRAM

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 CONTRACTOR QUALITY CONTROL PROGRAM

A. GENERAL

The Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

1. Adequately provide for the production of acceptable quality materials.

2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

3. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

The Contractor shall be prepared to discuss and present, at the pre-construction conference, his/her understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed and accepted by the Engineer and State Project Manager. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed and approved by the Engineer and State Project Manager.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer. All inspection and test reports shall be stamped and signed by a licensed professional engineer.

B. DESCRIPTION OF PROGRAM

1. General Description. The Contractor shall establish a Quality Control Program to perform work quality inspections and control testing on all materials and items of work required by the technical specifications, including those performed by subcontractors. This program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The program shall be effective for control of all construction work performed under this Contract, in addition to other requirements of this section, and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

2. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document which shall be reviewed by the Engineer and State Project Manager prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review within thirty (30) calendar days after the date of contract execution.

3. The Quality Control Program shall be organized to address, as a minimum, the following items:

   a. Quality control organization;
   b. Submittals schedule;
   c. Inspection and Testing Requirements;
   d. Quality control testing plan;
   e. Documentation of quality control activities;
   f. Requirements for corrective action when quality control and/or acceptance criteria are not met; and
   g. A listing of the definable features of work for the project.

   The Contractor is encouraged to add any additional elements to the Quality Control Program that he/she deems necessary to adequately control all production and/or construction processes required by this contract.

C. QUALITY CONTROL ORGANIZATION

The Contractor's Quality Control Program shall be implemented by the establishment of a separate organization that is not a part of the production organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel. The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the program, including work quality inspection and control testing on materials for each item of work. At the top of the chart, an overall Contractor Quality Control

System Manager, CQCSM, shall be named and his/her subordinates shall follow thereafter.

The quality control organization shall consist of the following minimum personnel:

1. Contractor Quality Control System Manager. The CQCSM shall be a Licensed Engineer of the Contractor, or a consultant engaged by the Contractor. The CQCSM shall have a minimum of 10 years of experience in airport and/or paving and building construction and shall have had prior quality control experience on a project of comparable size and scope as the contract. The CQCSM shall be on the project full time and shall nave no production duties. The CQCSM shall NOT be the point of contact for the production organization.

   The CQCSM shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications including authority to independently stop any work not in compliance with the contract. The CQCSM shall report directly to a responsible officer of the construction firm, such officer not being the project Superintendent or Foreman.

2. Quality Control Technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall either be an engineer, engineering technicians, or experienced craftsman with qualifications in the appropriate fields and shall have a minimum of 7 years of experience in their area of expertise. The Quality Control Technician shall be on the project full time and shall have no production duties.

   The quality control technicians shall report directly to the CQCSM and shall perform the following functions:

   a. Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by paragraph 1.02E of this Section.
   b. Performance of all quality control tests as required by the technical specifications and paragraph 1.02F of this Section.

3. Staffing. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

   All personnel shown on the organizational chart shall have, in resume form, all information regarding their education, any licenses, their present position, previous work experience, etc. included in the Quality Control

Program written documentation. These resumes shall be verified by the CQCSM.

D. SUBMITTALS SCHEDULE

The Contractor shall submit a detailed listing of all submittals (e.g., mix designs, material certifications, color samples) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

1. Specification item number:

2. Item description;

3. Description of submittal;

4. Specification paragraph requiring submittal; and

5. Scheduled date of submittal.

E. INSPECTION REQUIREMENTS

Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified in paragraph 1.02G of this Section.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work.

Before any definable feature of work is started, the CQCSM shall notify the Engineer and State Project Manager of such work at least 48 hours in advance. Upon notification, the Engineer or State Project Manager shall determine if a meeting shall be held to discuss the condition of the work area, material and equipment status, what is to be expected and any questions or possible problems. No definable feature of work shall commence without the consent of the Engineer and State Project Manager.

F. QUALITY CONTROL TESTING PLAN

As part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

1. Specification item number;

2. Item description (e.g., plant control, concrete cylinder tests);

3. Test type (e.g., concrete compressive strength);

4. Test standard (e.g., ASTM or AASHTO test number, as applicable);

5. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated);

6. Responsibility (e.g., plant technician, independent lab); and

7. Control Requirements (e.g., target, permissible deviations).

The testing plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Engineer and State Project Manager shall be provided the opportunity to witness the quality control sampling and testing. The CQCSM shall make every effort to inform the Engineer and State Project Manager at least 48 hours, or more if stated in the specifications, before such testing occurs.

All quality control test results shall be documented by the Contractor as required by paragraph 1.02G of this Section.

G. DOCUMENTATION

The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved, results of inspections or test; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer and State Project Manager daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCSM.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

1. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and Subcontractor operations on a form acceptable to the Engineer and State Project Manager. These technician’s daily reports shall provide factual

evidence that continuous quality control inspections have been performed and shall, as a minimum include the following:

a. Technical specification item number and description and location of work performed;
b. A comprehensive breakdown of the work force including the number of workers and total hours for each trade;
c. Compliance with approved submittals;
d. Proper storage of materials and equipment;
e. Proper operation of all equipment;
f. Adherence to plans and technical specifications;
g. Review of quality control tests; and
h. Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be stamped and signed by the licensed professional engineer CQCSM. The Engineer and State Project Manager shall be provided at least one copy of each daily inspection report on the workday following the day of record.

2. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all off-site and on-site quality control test results. Daily test reports shall document the following information:

a. Technical specification item number and description;
b. Test designation;
c. Location;
d. Date of test;
e. Control requirements;
f. Test results;
g. Causes for rejection;
h. Remedial actions; and
i. Retest results.

Test results from each day's work period shall be submitted to the Engineer and State Project Manager prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be stamped and signed by the licensed professional engineer CQCSM.

H. CORRECTIVE ACTION REQUIREMENTS

The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The

requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

I. SURVEILLANCE BY THE ENGINEER AND STATE PROJECT MANAGER

All items of material and equipment shall be subject to surveillance by the Engineer or State Project Manager at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer or State Project Manager at the site for the same purpose.

Surveillance by the Engineer or State Project Manager does not relieve the Contractor of performing quality control inspections of either the on-site or off-site Contractor's or subcontractor's work.

J. NONCOMPLIANCE

The Engineer or State Project Manager will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or State Project Manager or his/her authorized representative to the Contractor or his/her authorized representative at the site of the work, shall be considered sufficient notice.

In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the Contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer or State Project Manager, the Engineer or State Project Manager may:

1. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors in accordance with Section 8.4 – "Character and Proficiency of Workers" of the General Provisions for Construction Projects (2016).

2. Order the Contractor to stop operations in accordance with Section 8.10 – "Suspension of Work" of the General Provisions for Construction Projects (2016).

3. Determine work performed by the Contractor during periods of noncompliance to be unacceptable and subject to removal or non-payment in accordance with Section 5.12 – "Removal of Non-Conforming and Unauthorized Work: Performance of Corrective or Remedial Work" of the General Provisions for Construction Projects (2016).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the prices bid for the various items of work in this project.

END OF SECTION

SECTION 01524 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

1.03 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS

A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:

    a. Asphaltic concrete paving
    b. Concrete
    c. Equipment
    d. Wiring

2. Construction Waste:

    a. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

        1) Paper.
        2) Cardboard.
        3) Boxes.
        4) Plastic sheet and film.
        5) Polystyrene packaging.
        6) Wood crates.
        7) Plastic pails.
        8) Conductors.

1.05 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within fourteen (14) days of date established for the Notice to Proceed.

1.06 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices. The Honolulu Program of Waste Energy Recovery (H-POWER) by the City and County of Honolulu is the only acceptable incinerator in Oahu.

G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.07 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review requirements for documenting quantities of each type of waste and its disposition.
2. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
3. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
4. Review waste management requirements for each trade.

1.08 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis.

B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three days of submittal return.

2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility or crush asphaltic concrete paving and screen.

B. Concrete: Break up and transport paving to concrete recycling facility or crush concrete and screen.

C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

F. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

J. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

L. Carpet Tile: Remove debris, trash, and adhesive.

1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

N. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

3.06 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction. The Honolulu Program of Waste Energy Recovery (H-POWER) by the City and County of Honolulu is the only acceptable incinerator.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. H-POWER will take the architectural canopy fabric made of mostly vinyl. Contractor can contact Scale House at 808-682-0261. H-POWER requires an account with Contractor.

B. Burning: Do not burn waste materials in Airport ground.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

PART 4 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured for payment, but will be paid for at the Contract Lum Sum Price.

Item No.	Item	Unit
01524.1	Construction Waste Management	Lump Sum

END OF SECTION

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

SPECIFICATIONS

SECTION 01524 - CONSTRUCTION WASTE MANAGEMENT

APPENDIX A

TABLE 1: WASTE IDENTIFICATION

Material	Est. Qty.	Est. tons*	Point of Generation	Comments/Assumptions

* Avg volume-to-weight conversions are:

Mixed waste	5.7 yds/ton
Wood	6.7 yds/ton
Cardboard	20 yds/ton
Drywall	4 yds/ton
Rubble	1.4 yds/ton

TABLE 2: WASTE REDUCTION WORK PLAN

Material	**S/R/D** *	Est Qty S/R/D (tons)	Actual Qty S/R/D(tons)	Handling and Transport Procedures	Destination (Name, address, phone) **

*S Salvage/Reuse
R Recycle
D Dispose

** For materials sent for recycling or disposal, send to facilities currently permitted by the DOH, Solid Waste Section (808) 586-4226.
No solid waste management permit required for on-site processing of clean waste concrete, provided the processed product meets the "inert fill material" definition in Chapter 342H, HRS.
Solid Waste Management Permit required if destination site accepts for processing such waste materials (eg. Clean waste concrete) from other sites.

TABLE 3: COST/REVENUE **ANALYSIS**

Material	Est Cost of Disposal(1)	Est Revenue from Salvaqe/Recvcle(2)	Est Cost of Sal-vaqe/Recvcle(3)	Est Net Savings/Cost (1)+(2)-(3)

SECTION 01533 - BARRICADES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 BARRICADES

A. The Contractor shall take precaution to protect people and property from injury and damage. He shall erect barricades to delineate his work areas and provide the appropriate signing, hazard lights, and temporary paint striping as directed by the Engineer, to aid public and airport pedestrian and vehicular traffic around his work areas. Barricades shall be traffic cones, delineators, blinker barricades, caution tape, sawhorses, plywood barricades or other barriers as approved by the Engineer to effectively provide proper protection.

B. The Contractor shall be responsible for his own security and protection of his property, including mobilization yard barricades.

C. Barricades, in general, shall be neat and in good condition, as required for protection. In areas frequented by the general public, the barricades shall be visually presentable and plywood partitions shall be painted. Barricades shall follow the requirements shown in Attachments 1, 2, and 3 of this Section. Any deviations from these requirements shall be submitted to the Engineer for review and approval prior to erecting any barricades. Where dust is a problem, the Contractor shall erect floor to ceiling dust proof partitions

D. The Contractor shall coordinate and sequence this work with the Engineer to permit the continuing operation of the existing Airport facility. Barricades shall be removed upon the completion and acceptance of work and the premises left clean and operational.

E. The Contractor shall be responsible for securing access into and out of the barricaded areas.

PART 2 - PRODUCTS (Not Used)

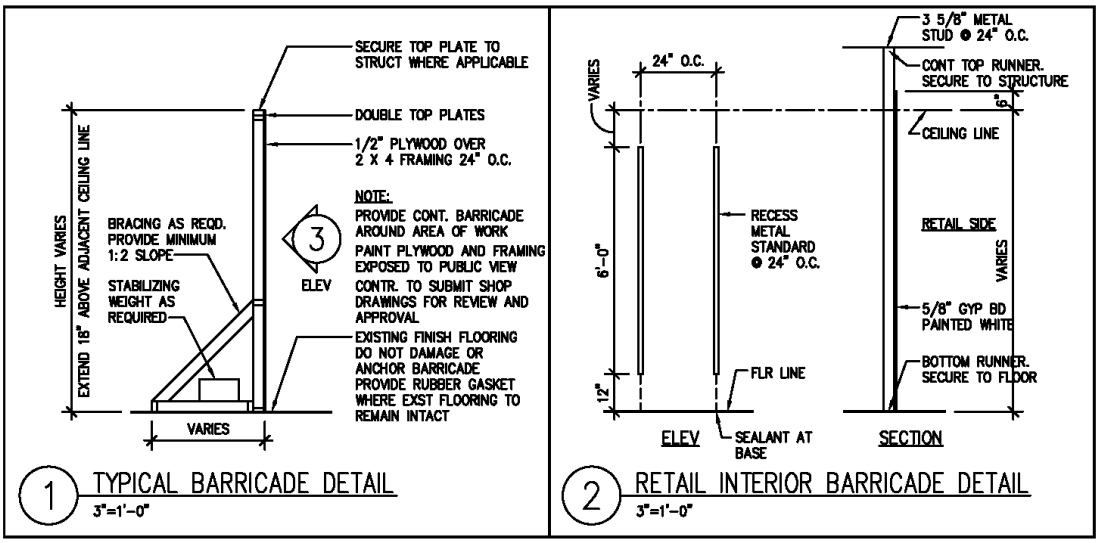
PART 3 - EXECUTION (Not Used)

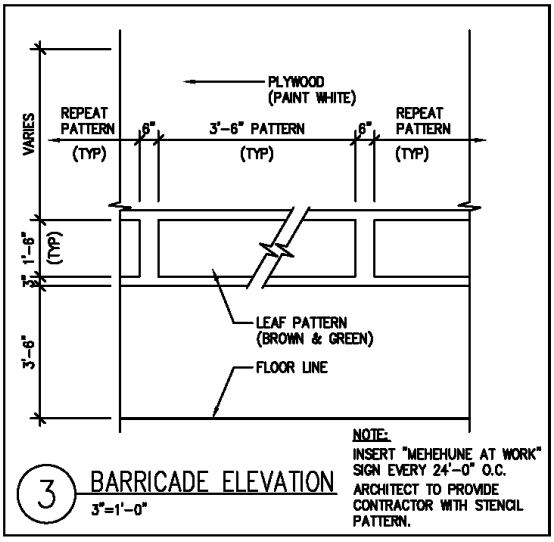
PART 4 - MEASUREMENT & PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION


SECURE TOP PLATE TO STRUCT WHERE APPLICABLE
DOUBLE TOP PLATES
1/2" PLYWOOD OVER 2 X 4 FRAMING 24" O.C.
NOTE:
PROVIDE CONT. BARRICADE AROUND AREA OF WORK
PAINT PLYWOOD AND FRAMING EXPOSED TO PUBLIC VIEW
CONTR. TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL
EXISTING FINISH FLOORING DO NOT DAMAGE OR ANCHOR BARRICADE PROVIDE RUBBER GASKET WHERE EXST FLOORING TO REMAIN INTACT
BRACING AS REQD. PROVIDE MINIMUM 1:2 SLOPE
STABILIZING WEIGHT AS REQUIRED
HEIGHT VARIES
EXTEND 18" ABOVE ADJACENT CEILING LINE
VARIES
3
ELEV
1 TYPICAL BARRICADE DETAIL
3"=1'-0"
3 5/8" METAL STUD @ 24" O.C.
CONT TOP RUNNER. SECURE TO STRUCTURE
6"
CEILING LINE
VARIES
24" O.C.
RECESS METAL STANDARD @ 24" O.C.
6'-0"
RETAIL SIDE
VARIES
5/8" GYP BD PAINTED WHITE
FLR LINE
12"
BOTTOM RUNNER. SECURE TO FLOOR
ELEV
SEALANT AT BASE
SECTION
2 RETAIL INTERIOR BARRICADE DETAIL
3"=1'-0"


PLYWOOD (PAINT WHITE)
VARIES
REPEAT PATTERN (TYP)
8"
3'-6" PATTERN (TYP)
8"
REPEAT PATTERN (TYP)
1'-6" (TYP)
3"
3'-6"
LEAF PATTERN (BROWN & GREEN)
FLOOR LINE
NOTE:
INSERT "MEHEHUNE AT WORK" SIGN EVERY 24'-0" O.C.
ARCHITECT TO PROVIDE CONTRACTOR WITH STENCIL PATTERN.
3 BARRICADE ELEVATION
3"=1'-0"



Menehune at work!
Aloha,
Please pardon the inconvenience.
ご迷惑をおかけしますが。
不便之处 敬请原谅
서비스 이용에 불편함을 드려 진심으로 사과 드립니다.
We are working hard to improve
and safeguard your flying experience!
皆様の安全な飛行のため　日々努力を重ねています。
我们正在致力改善和保障您的飞行体验
저희는 귀하의 안전한 항공여행을 위해서 최선을 다해 노력하고 있습니다.
Mahalo for your patience and understanding.
ご協力に感謝いたします。
感谢您的忍耐和体谅
승객 여러분의 이해와 협조에 감사 드립니다.
STATE OF HAWAII
1959
DEPARTMENT OF TRANSPORTATION • STATE OF HAWAII

SECTION 01560 – GENERAL ENVIRONMENTAL, HEALTH, & SAFETY CONTROLS

PART I – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

This section addresses the prevention of environmental pollution as the result of construction operations under this contract. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare, unfavorably alter ecological balances of importance to human life, adversely affect other species of importance, or degrade the utilization of the environment for aesthetic and recreational purposes.

1.03 REFERENCES

All work shall conform to the most recent edition of the following Federal, State, and Local regulations, unless otherwise noted or specified on the drawings or in these specifications. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.

A. DOTA Construction Site Runoff Control Program
http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program

1. DOTA Construction Activities Best Management Practices (BMP) Field Manual.

B. Department of Health (DOH) Hazard Evaluation & Emergency Response (DOH HEER) https://health.hawaii.gov/heer/

C. State of Hawaii Administrative Rules, Title 11, Department of Health (DOH)

1. Chapter 46, Community Noise Control.

2. Chapter 59, Ambient Air Quality.

3. Chapter 60.1, Air Pollution Control.

4. Chapters 260.1, 261.1, 262.1, 263.1, 264.1, 265.1, 266.1, 268.1, 270.1, 271.1, 273.1, and 279.1, Hazardous Waste Management.

5. Chapter 451, State Contingency Plan.

6. Chapter 501, Asbestos Requirements.

D. CFR Title 40, Protection of the Environment, Chapter I, Environmental Protection Agency.

E. CFR Title 42, Public Health, Chapter I, Public Health Service, Department of Health and Human Services.

1.04 SUBMITTALS

A. The Contractor shall submit the following items as required:

1. Individual Wastewater System (IWS) Final Report: For projects involving the construction of an individual wastewater system, an IWS Final Report is required to be submitted to the DOTA Engineering Branch, Environmental Section (AIR-EE) for approval, prior to submitting to DOH Wastewater Branch and prior to project closeout.

2. Underground Injection Control (UIC) Well Final Report: For new drainage well construction and existing drainage well modification, a UIC Well Final Report is required to be submitted to AIR-EE for review and approval, prior to submitting to DOH Safe Drinking Water Branch (SDWB), and prior to project closeout. The Final Report shall also be submitted within the deadline specified on the UIC Approval to Construct. If a project involves abandoning an existing drainage well, written instructions shall be obtained from DOH SDWB and a copy provided to AIR-EE prior to backfilling the demolished well. All supporting documentation requested by DOH post demolition work shall be completed and provided to AIR-EE for review prior to submitting to DOH SDWB.

3. AST (Flammable/Combustible Liquid) Tank Installation: Provide signed record of Final Inspection issued by County Fire Department.

4. Waste Manifests: If a project will generate hazardous waste, the Contractor shall prepare waste manifests in accordance with HAR 11-262 and provide records to AIR-EE.

B. The Contractor shall comply with all applicable regulations and maintain records of permits, licenses, certificates, and other environmental regulatory requirement correspondence. Submit copies of permits, licenses, certifications, inspection reports, releases, notices, receipts for fee payments, correspondence, records, and similar documents, established for compliance with environmental regulations bearing on performance of the work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 AIR POLLUTION CONTROL

A. Emission: The Contractor shall not be allowed to operate equipment and vehicles that show excessive emissions of exhaust gases until corrective repairs or adjustments are made, as determined by the Engineer.

B. Dust: The Contractor, for the duration of the contract, shall maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, graded areas, staging and storage areas, and all other work areas within or outside the project limits free from dust that would cause a hazard or nuisance to the work or operations of other Contractors, or to persons or property. Industry-accepted methods, that meet requirements of DOTA Construction BMP Field Manual as noted in Specification 01561 and that meet stabilization suitable for the area or materials involved.

C. Burning on Airport property shall not be permitted.

3.02 SPILL CONTROL

A. The Contractor shall follow the DOTA Construction Site Runoff Program and relevant documents, such as the Construction BMP Field Manual to implement BMPs to prevent spills and leaks and report and cleanup spills and leaks immediately, as required.

3.03 DISPOSAL

A. All unusable debris and waste material shall be hauled away to an appropriate local landfill. Contractor shall control dust during loading operations.

B. Contractor shall consult with the landfill and conduct any required waste characterization to ensure that waste meets the landfill's requirements for size, type, etc.

C. No burying of debris or waste materials, except for materials that are specifically indicated elsewhere in these specifications as suitable for backfill, shall be permitted on the project site.

D. Contractor shall manage all construction materials, debris, and waste in a manner that prevents Foreign Object Debris (FOD) from reaching the airfield, where it could be an aircraft safety hazard.

3.04 HAZARDOUS MATERIALS CONTROL

Hazardous materials shall be properly stored and handled. The use of prohibited hazardous materials, e.g., asbestos, lead paint, and polychlorinated biphenyls (PCBs), in the construction of this project shall be strictly prohibited. Any corrective action to remove and replace hazardous material and contaminated work areas shall be at the sole expense of the Contractor.

3.05 OCCUPATIONAL HEALTH AND SAFETY

The Contractor shall at all times comply with all State of Hawaii and Federal rules and regulations related to occupational health and safety and develop and follow a Health and Safety Plan describing measures the Contractor will employ to protect the health and safety of their employees. Include measures required to protect the public from dangers associated with their work.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

All work specified in this Section shall not be measured nor paid for separately but shall be considered incidental to item 01561.1, Construction Site Pollution Controls.

END OF SECTION

SECTION 01561 – CONSTRUCTION SITE POLLUTION CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

A. This Section describes procedures for the proper application of management and engineering controls at State of Hawaii, Department of Transportation, Airports (DOTA) construction sites so that pollutants do not impact any storm drainage system, State water, soil, or groundwater.

B. The Contractor shall supply all labor, materials, and equipment necessary for the management of stormwater during construction and to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.

C. This Section also applies to construction support activities including concrete or asphalt batch plants, rock crushing plants, equipment staging yards/areas, material storage areas, excavated material disposal areas, borrow areas, waste management facilities, sanitary facilities, material storage areas, and temporary equipment fueling locations, regardless of their proximity to the Airport Property and State Right-of-Way. For areas serving multiple construction projects or operating beyond the completion of the construction project in which it supports, the Contractor shall be responsible for securing the necessary permits, clearances, and documents, and following the conditions of the permits and clearances, at no cost to the State.

D. The Contractor shall be responsible for all subcontractors, suppliers, and vendors, and shall ensure that the means and methods of construction activities of subcontractors, suppliers, and vendors are in full compliance with this Section.

E. The Contractor shall examine and be familiar with documents related to stormwater management at the airports and shall comply with related requirements for construction stormwater control. Should a requirement not be clearly described within the construction plans, specifications, permits and other applicable bid documents, notify the Engineer immediately for interpretation.

1.03 REFERENCES

All work shall conform to the most recent edition of the following, unless otherwise noted or specified on the drawings or in these specifications. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.

A. DOTA Construction Site Runoff Control Program
http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program

1. DOTA Construction Activities Best Management Practices (BMP) Field Manual.

2. DOTA Environmental Requirements for Construction Projects Standard Operating Procedures.

3. DOTA Stormwater Management Plans (SWMPs) for the Daniel K. Inouye International Airport (HNL) and Kahului Airport (OGG), as applicable.

4. DOTA Industrial Stormwater Pollution Prevention Plans (SWPPPs) for the HNL, OGG, and Lihue Airport (LIH), as applicable.

B. State of Hawaii Administrative Rules, Title 11, Department of Health (DOH)
https://health.hawaii.gov/opppd/department-of-health-administrative-rules-title-11/

1. Chapter 54, Water Quality Standards

2. Chapter 55, Water Pollution Control

3. Chapter 451, State Contingency Plan

C. United States (U.S.) Code of Federal Regulations (CFR), Title 40, Chapter I: Environmental Protection Agency.

D. Hawaii Revised Statutes (HRS), Part I, Chapter 128D, “Environmental Response Law”.

PART 2 – PRODUCTS

2.01 MATERIALS

Comply with applicable materials described in the current DOTA Construction Activities BMP Field Manual. Refer to FAA Advisory Circulars and DOTA District Office, including Wildlife Hazard Management Plan, for additional guidance and conditions. In addition, materials shall comply with the following:

A. Grass: The FAA and USDA recommend the following grass species when requiring grass: “No-Mow” bermudagrass (“Green Velvet”) (Cynodon dactylon) or Seashore paspalum (Paspalum vaginatum). These species possess higher than average drought resistance, saline soil tolerances, and most importantly, do not produce seed heads attractive to the majority of hazardous avian species. Use stolons, sprigs, or plugs to avoid providing hazardous species with a readily available food source. The use of seeds is generally not allowed.

Alternative grass species shall only be applied with the approval by the Engineer

after consultation with United States Department of Agriculture (USDA) airport representative. This includes, but is not limited to, sodding, cuttings, and planting. Grass shall be a quick-growing species. Grass shall be suitable to the area and provide a temporary cover that will not compete later with permanent cover.

B. Irrigation: Any required irrigation shall be done after dark to reduce instances of water becoming a hazardous wildlife attractant.

PART 3 – EXECUTION

3.01 PRE-CONSTRUCTION REQUIREMENTS

Do not begin construction activities until all submittals detailed in this Subsection are completed, submitted to the Engineer, and accepted in writing by AIR-EE.

A. Water Pollution, Dust, Sediment, and Erosion Control Meeting: Schedule a water pollution, dust, sediment, and erosion control meeting with the Engineer after all documents required by AIR-EE are submitted to the Engineer and accepted in writing by AIR-EE. The meeting shall be scheduled a minimum of 14 calendar days prior to the Start Work Date. At a minimum, the meeting shall be attended by the Contractor, subcontractors whose work may provide an impact to stormwater or site environmental conditions, Engineer, AIR-EE, and any authorized representatives of the designated attendees. The meeting will discuss the sequence of work and plans and proposals for water pollution, dust, sediment, and erosion controls.

B. Land Disturbance Calculations: The Contractor is responsible for calculating the total land disturbance for the life of the project and complying with all environmental requirements associated with the total land disturbance calculated. Disturbance of land is defined by Hawaii Department of Health as "the penetration, turning, or moving of soil or resurfacing of pavement with exposure of the base course or the exposure of bare soil or ground surface, including the land surface exposed by construction roads, baseyards, staging areas, demolition, headquarters, and parking areas. It does not include grass or weed cutting, bush or tree trimming or felling that leaves soil or ground intact. It includes 'grubbing' in its normal meaning of the use of equipment to knock down and push vegetation out of the way, typically uprooting vegetation and disturbing the ground surface."

Land disturbing activities that shall be included in the disturbance area calculation shall follow the guidance provided in the Environmental Requirements for Construction Projects Standard Operating Procedures.

C. Site-Specific BMP (SSBMP) Plan or SWPPP: The Contractor shall submit a SSBMP Plan (for projects disturbing less than one acre) or SWPPP (for projects disturbing one acre or more) using the latest DOTA template for acceptance by AIR-EE. If a SSBMP Plan or SWPPP was prepared by the Designer, the Contractor shall revise the plan using the latest template to include additional

information required of the Contractor and any changes the Contractor proposes. The SSBMP Plan or SWPPP shall include site-specific temporary BMPs following requirements and practices outlined in DOTA's "Construction Activities BMP Field Manual." All AIR-EE comments shall be resolved and the SSBMP Plan or SWPPP approved prior to the start of land-disturbing activities, including those activities that are needed for the implementation of the BMPs. Submission of the complete and acceptable SSBMP Plan or SWPPP is the sole responsibility of the Contractor, and additional contract time will not be issued for delays due to incompleteness.

D. SSBMP Plan/SWPPP Modifications: Modify, as necessary, and resubmit amended SSBMP Plan or SWPPP and construction schedules to the Engineer for acceptance by AIR-EE. Amendments to the SSBMP Plan or SWPPP shall be made under the following circumstances at a minimum:

1. Conditions that develop during construction that were unforeseen during the design and pre-construction stages that could impact stormwater, soil, or groundwater.

2. Changes to the Contractor's Means and Methods of Construction that could impact stormwater, soil, or groundwater.

3. Omitted conditions that should have been allowed for in the accepted documents.

4. A SSBMP Plan measure that replaces an accepted SSBMP Plan measure that was not satisfactorily performing.

5. Revised dates of installation and/or removal of SSBMP Plan measures.

SSBMP Plan/SWPPP modifications shall be submitted to the Engineer and accepted in writing by AIR-EE before implementing the revised site-specific BMPs in the field. Amendments to the SSBMP Plan or SWPPP shall be included with the original SSBMP Plan or SWPPP and documented in the Amendment Log.

E. Documentation: A copy of the accepted original or amended SSBMP Plan or SWPPP, with the signed certification by the authorized representative filed with DOH for SWPPPs, shall be kept on site or at an accessible location so that it can be made available at the time of an on-site inspection, or upon request by the Engineer, AIR-EE, DOTA's designated authorized representative, and/or DOH/EPA Representative.

F. NPDES Construction Permit: If the total land disturbance for the life of the project, including all construction support activity areas, is one acre or more, coverage under an NPDES Permit Authorizing Discharges of Storm Water Associated with Construction Activity (NPDES Construction Permit) authorizing stormwater discharges associated with construction activity is required from the Department of Health, Clean Water Branch (CWB).

1. Do not begin land-disturbing activities until the CWB has issued an Individual NPDES Permit or NGPC. Conduct land-disturbing activities in accordance with the conditions of the NPDES Permit and/or NGPC.

2. The Contractor shall submit a Notification of Start to CWB a minimum of seven calendar days before the start of construction and provide AIR-EE with a record of submittal.

3. Before construction begins, the Contractor shall assign one of their personnel as the Duly Authorized Representative, in accordance with Section 15 of Appendix A, Chapter 1155. The Duly Authorized Representative is responsible for compliance with the NPDES Construction Permit (i.e., operations of the construction project) and shall certify, sign, and date various documents, including the SWPPP and SWPPP inspection documents.

G. Solid Waste Disclosure: Submit the Solid Waste Disclosure Form for Construction Sites, if applicable, to the DOH Solid Waste Branch as specified on the form within 7 calendar days before the start of construction activities and provide a copy to the Engineer. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer. This shall also include documentation from any intermediary facility where solid waste is stored, handled or processed.

H. NPDES Hydrotesting Permit: If hydrotesting activities require effluent discharge into State waters or drainage systems, coverage under an NPDES Hydrotesting Waters Permit authorizing discharges associated with hydrotesting is required from the CWB. Do not begin hydrotesting activities until the CWB has issued an Individual NPDES Permit or NGPC for hydrotesting. Conduct Hydrotesting operations in accordance with the conditions of the NPDES Permit and/or NGPC.

I. NPDES Dewatering Permit: If dewatering activities require effluent discharge into State waters or drainage systems, coverage under an NPDES Dewatering Permit authorizing discharges associated with dewatering is required from the CWB. Do not begin dewatering activities until the CWB has issued an Individual NPDES Permit or NGPC for dewatering. Conduct dewatering operations in accordance with the conditions of the permit or NGPC.

J. Construction BMP Training: All Contractor’s and subcontractor’s employees on the project shall complete the DOTA Construction BMP Training prior to entering the construction site and every calendar year thereafter. All Contractor and subcontractor personnel involved with construction project responsibilities shall also be trained on the site-specific BMPs that are utilized during construction and spill response. Records of completion and/or training roster sign-in sheet shall be up to date and included in the SWPPP or SSBMP Plan. Additional training required by AIR-EE shall be at no additional time or cost to the project. There are two training options:

1. All Contractor and subcontractor employees involved with construction project responsibilities watch the DOTA Construction BMP Training Video located on the DOTA Construction Site Runoff Control Program webpage and complete the DOTA Construction BMP Training Survey with a passing score, or

2. The Contractor and subcontractor supervisors/managers watch the DOTA Construction BMP Training Video located on the DOTA Construction Site Runoff Control Program webpage, complete the DOTA Construction BMP Training Survey with a passing score, then train all employees involved with construction project responsibilities and submit a sign-in roster documenting all employees trained at the bottom of the DOTA Construction BMP Training Survey.

   DOTA Construction BMP Training Survey:
   https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-bmp-training-survey/

K. Construction Connection, Discharge, and Surface Runoff Permit: The Contractor shall complete the Contractor's section of the Construction Connection, Discharge, and Surface Runoff Permit and submit to AIR-EE for review. All AIR-EE comments shall be resolved prior to the start of land-disturbing activities.

3.02 CONSTRUCTION REQUIREMENTS

A. Construction Start: Do not expose or disturb surface area of earth material or initiate any land-disturbing activities until submittals detailed in Subsection 01561.3.01 – Pre-construction Requirements are completed, submitted to the Engineer and accepted in writing by AIR-EE. Once installation of BMPs is allowed, a Pre-construction BMP Inspection is conducted, and all deficiencies that are noted during the inspection shall be corrected prior to any other ground disturbance.

B. BMP Installation and Maintenance: Provide, install, maintain, monitor, repair and replace BMPs as needed to maintain efficacy. Address all inspection comments received from the Engineer, AIR-EE, and/or DOTA's designated authorized representative.

C. Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff, and wind before the end of each work day. Coordinate and schedule the work to the maximum extent possible to minimize the amount of exposed or disturbed surface area of earth material.

D. Install and maintain stabilized construction entrances/exits, including any wheel washes, to minimize tracking of dirt and mud onto roadways, sidewalks, and other paved areas. Restrict traffic to stabilized construction entrance areas only. Clean dirt, mud, or other material tracked onto the road, sidewalk, or other paved area by the end of the same day in which the track-out occurs. If tracking is excessive or sediment is being transported farther along the pavement or

sidewalk by other vehicles traveling outside of the construction site, conduct cleaning and sweeping immediately. Modify stabilized construction entrances/exits, as needed, to prevent mud from being tracked onto road. Stabilize entire access roads if necessary.

E. Maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, and all other work areas within the project limits free from dust that would cause a hazard to the work, airport operations, operations of other contractors, or to persons or property. If chemicals are used as soil stabilizers for erosion and dust control, submit the manufacturer's product data sheets of the chemicals to the Project Manager for acceptance by AIR-EE. Oil treating shall not be used. Dust screens and fabrics are not allowed to be mounted on, or to inhibit the view of, the TSA and AOA Security Fences.

F. Cover exposed surfaces of materials completely with tarpaulin or a similar device when transporting aggregate, soil, excavated material, or other materials that may be a source of fugitive dust.

G. Protect ditches, channels, and other drainageways leading away from cuts and fills at all times by:

1. Hydromulching cuts and fills that may erode.

2. Installing check dams or other silt control devices.

3. Other methods acceptable to AIR-EE.

H. Clean up and remove any pollutant that is attributed to the Contractor. Care shall be taken to ensure that no petroleum/chemical products, bituminous materials, or other deleterious substances, including debris, are allowed to fall, flow, leach, or otherwise enter the sewage systems or storm drains. Deposition of solid waste or the discharge of liquid waste, such as fuels, lubricants, bituminous waste, untreated sewage and other pollutants that may contaminate stormwater, surface waters, soil, or groundwater shall not be permitted.

I. Disturbed Area Stabilization: Immediately initiate stabilization of exposed soil areas upon completion of land-disturbing activities for areas where disturbance has permanently or temporarily ceased on any portion of the site. Land-disturbing activities have permanently ceased when clearing and excavation within any area of the construction site that will not include permanent structures has been completed. Land-disturbing activities have temporarily ceased when clearing, grading, or excavation within any area of the site will not resume for a period of 14 or more calendar days, but such activities will resume in the future. The term "immediately" is used in this Section to define the deadline for initiating stabilization measures. "Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the land-disturbing activities have temporarily or permanently ceased.

1. After the initiation of stabilization, stabilization activities shall be completed according to the following timeline:

    a. For projects with an NPDES Construction Permit:

        - For construction areas discharging into waters not impaired for nutrients or sediments, complete installation of stabilization measures within 14 calendar days after the temporary or permanent cessation of land-disturbing activities.

        - For construction areas discharging into nutrient or sediment impaired waters, complete installation of stabilization measures within 7 calendar days after the temporary or permanent cessation of land-disturbing activities.

    b. For projects without an NPDES Construction Permit, complete stabilization within 14 calendar days after the temporary or permanent cessation of land-disturbing activities.

J. Notice of Cessation: For projects with an NPDES Construction Permit, the Contractor shall submit a Notice of Cessation to CWB within seven calendar days after the end of the month that the project was completed and provide AIR-EE with a record of submittal.

K. Changes to Land-disturbing Activities: The Contractor shall be responsible to prepare a new SWPPP or SSBMP Plans or amend existing SWPPP or SSBMP Plans if changes to the project or to the Contractor's activities result in land-disturbing activities additional to those previously approved:

1. Land-disturbing activity outside of the approved limits is NOT allowed until approval and proper permits are received. Revised documents, including an updated SWPPP or SSBMP Plan, shall be submitted to and approved by AIR-EE prior to conducting additional land-disturbing activities.

2. If coverage under an NPDES Construction Permit is needed, no activity in the additional area may occur until the additional permit coverage is granted:

    a. If the project was already granted coverage under an NPDES Construction Permit, additional coverage shall be obtained from CWB for the additional area, either by adding the area to existing project documents, and applying for NPDES Construction Permit coverage for the entire project OR by creating new documents and obtaining separate NPDES Construction Permit coverage for the additional area.

    b. If the new disturbed area will result in the total disturbed area

equaling one (1.0) acre or more for a project without existing NPDES Construction Permit coverage, NPDES Construction Permit coverage shall be obtained from CWB that will cover all land-disturbing activities anticipated for the life of the project.

3.03 INSPECTIONS

Refer to the DOTA Construction Site Runoff Program for information pertaining to AIR-EE BMP inspections (pre-construction, routine, and final). Contractor self-inspections shall occur based on the frequency outlined in the SSBMP Plan and, if applicable, NPDES Permit (HAR 11-55) and SWPPP requirements.

A. Corrective Actions: The Contractor shall be responsible for the correction of all deficiencies identified during any of the above inspections.

1. If the Contractor fails to satisfactorily address inspection deficiencies, the DOTA reserves the right to employ outside assistance or use the State's own labor forces to provide necessary corrective measures. The Contractor will be fully responsible for all related cost and time. The State will charge the Contractor such incurred costs plus any associated project engineering costs and will make appropriate deductions from the Contractor's progress payment. Additionally, DOTA can issue liquidated damages for deficiencies not resolved to DOTA's satisfaction and for illicit discharges or contaminant discharges to soil, groundwater, surface water, or State waters (see Appendix A).

2. Failure to install or maintain site-specific BMP measures may result in the assessment of liquidated damages (Appendix A). Depending on the severity of the deficiencies, additional enforcement actions, such as suspension of work and/or termination of the contract (with the Contractor's Surety being fully responsible for all additional costs incurred by the State), can be conducted and assessed against the Contractor.

3. For all citations or fines received by the DOTA for non-compliance, including non-compliance with NPDES Permit conditions, the Contractor shall reimburse the State within 30 calendar days for the full amount of outstanding cost that the State has incurred. The State may deduct incurred costs from the Contractor's progress payments; however, the Contractor shall be responsible for reimbursing the State if the costs exceed remaining payments owed to the Contractor.

4. The Contractor shall be responsible for all citations, fines and penalties levied by DOH or EPA against the State due to the Contractor's failure to satisfactorily address site-specific BMP deficiencies and/or any Contractor's illicit discharges. The State may make the appropriate deductions from the Contractor's progress payment; however, the Contractor shall be responsible for reimbursing the State if the costs of correction exceed remaining payments owed to the Contractor.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

The work specified in this Section will be paid for at the contract lump sum price. Payment shall be full compensation for work prescribed in this Section and contract documents, including but not limited to, all labor, materials, tools, equipment, and all incidentals necessary to install, maintain, monitor, repair, replace, modify, and remove site-specific BMP measures.

Item No.	Item	Unit
01561.1	Construction Site Pollution Controls	Lump Sum

Partial payments shall be paid in the Monthly Progress Payment as follows:

A. 20% of the line item price shall be paid upon the satisfactory completion of the Pre-construction BMP Inspection and associated corrective actions accepted by AIR-EE or their designated authorized representative, as described in Section 01561.3.03(A), above.

B. 70% of the line item price shall be paid in equal monthly payments over the duration of the contract. Failure to satisfactorily apply, maintain, or modify BMP measures and devices, and/or submittals shall result in the withholding of monthly progress payments for this line item.

For projects that will disturb one acre or more of land, or will be part of a larger common plan of development that will disturb one acre or more of land, payments shall be made only after Routine BMP Inspections described in Section 01561.3.03 above have been satisfactorily completed, and associated corrective actions accepted by AIR-EE or their designated authorized representative.

C. The remaining 10% of the line item price shall be paid after all temporary BMP measures have been satisfactorily removed.

Payment will be made only after the satisfactory completion of the Final BMP Inspection and associated corrective actions accepted by AIR-EE or their designated authorized representative, and acceptance of the Post-construction BMPs by AIR-EE or their designated authorized representative.

Liquidated Damages, up to $25,000 per day (Appendix A), shall be assessed for each non-compliance of the BMP requirements described in this Section. The Contractor shall not be entitled to recover any Liquidated Damages assessed, even after the deficiencies have been corrected.

The Liquidated Damages cited in Appendix A are in excess of reimbursement for any citations, fines, or penalties levied by any regulatory agency against the State due to the Contractor's violations of clean water regulations or standards.

Appendix A. Liquidated Damages Schedule for Non-Compliances

Non-Compliance	Amount
Failure to obtain coverage under an NPDES Construction Permit for construction activities associated with a project that will disturb one acre or more of land, or will be part of a larger common plan of development that will disturb one acre or more of land, as defined by DOH.	$1,000 per calendar day per violation.
Failure to obtain coverage under an NPDES Hydrotesting Permit for hydrotesting activities that will require effluent discharge into State waters or drainage systems.	$1,000 per calendar day per violation.
Failure to obtain coverage under an NPDES Dewatering Permit for dewatering activities that will require effluent discharge into State waters or drainage systems.	$1,000 per calendar day per violation.
Failure to comply with the conditions specified in an NPDES Permit, or any other applicable permit.	$1,000 per calendar day per violation.
Failure to schedule a Pre-construction BMP Inspection and receive acceptance of all associated corrective actions prior to conducting land-disturbing activities.	$1,000 per calendar day per violation.
Failure to provide corrective actions accepted by AIR-EE or their designated authorized representative by the deadlines identified in the BMP inspection report.	$1,000 per calendar day per violation.
Failure to have the accepted SSBMP Plan and amendments or the accepted SWPPP and amendments available at a project construction site.	$1,000 per calendar day per violation.
Failure to properly install or maintain a BMP specified by the SSBMP Plan, SWPPP, contract drawings and documents, or permit.	$2,000 per calendar day per violation.

Non-Compliance	Amount
Failure to have an accepted amendment to the SSBMP Plan or an accepted amendment to the SWPPP prior to implementing changes to previously accepted BMPs. Note: Advance review and acceptance can be provided to satisfy this non-compliance. However, for projects with an NGPC or NPDES permit, the written amendment shall still be formally submitted for certification and signature by the authorized representative identified in the NGPC or NDPES Permit.	$2,000 per calendar day per violation.
Failure to conduct required inspections.	$1,000 for each of the first ten violations, $2,500 for each of the next ten violations, $5,000 for each subsequent violation.
Failure to maintain required records such as BMP inspection reports, rain gauge data logs, etc.	$500 per calendar day for the first ten days of each violation, $1,000 per calendar day for the next ten days of each violation, $2,500 per calendar day for each subsequent day of violation.
Any violation resulting in a polluted discharge.	Up to $25,000 per calendar day per violation.
Note: Liquidated Damages shown in the Table shall be assessed at the discretion of the DOTA.	

Assessment of Liquidated Damages for Non-Compliance:

The Contractor may be assessed liquidated damages by issuance of an Enforcement Letter. The Enforcement Letter shall indicate the amount of liquidated damages that are assessed for the non-compliances which shall be deducted from the Contractor's next progress payment. The Enforcement Letter will be sent electronically via e-mail and a hard copy to the Contractor's designated representative(s), identified in Section 01561.3.01(2)(d), responsible for the Contractor's Construction Site Runoff Control Program. An Enforcement Letter may be issued with or without previous verbal notifications, written warnings, or official enforcement letters (i.e. Warning Letter or Notice of Violation (NOV).

Liquidated Damages may be assessed for the following:

- Non-compliances listed in the Table, herein, included in Appendix A.
- Non-compliances have not been corrected in the timeframes noted.
- Corrective actions are not completed after a verbal notification, written warning (email or formal letter), or NOV is issued.
- Contractors are non-responsive to DOTA's directives.
- Repeated non-compliance.
- A polluted discharge has occurred.

The number of days used for the liquidated damages calculations shall start on the day that the non-compliance was required to be corrected and shall end on the day that the non-compliance is corrected and accepted. If DOTA's personnel are not able to go out in the field to verify that the BMP deficiencies are corrected in the timeframe specified, the Contractor can send photographs showing the corrected deficiency via e-mail to the DOTA Engineer and AIR-EE along with documentation on how the deficiency was corrected. The DOTA Engineer and AIR-EE may visit the site to verify the corrective actions are acceptable. If the corrective actions are acceptable, then the clock stops on the day that the documentation was received.

The Contractor shall not be entitled for compensation for any liquidated damages or penalty, fine, or citations assessed and deducted from the Contractor's progress payments, even after corrective actions have been taken.

END OF SECTION

SECTION 01562 – MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions and General Requirements of the Specifications, apply to the work specified in this Section.

1.02 DESCRIPTION

A. This Section describes procedures for the management of known and/or unknown contaminated media (e.g., soil, sediment, groundwater, soil vapor, and building materials) and disposal and on-site reuse of either contaminated or uncontaminated soil/sediment (referred to herein as "soil"), that may be disturbed or generated during excavation or demolition activities, or other construction activities associated with this project.

B. All soil shall be treated as potentially contaminated until it is determined otherwise.

C. The Contractor shall supply all labor, materials, and equipment necessary for the removal, temporary storage, testing, handling, backfilling and management of soil and contaminated media to carry out the work in accordance with these specifications, and all applicable Federal, State, and local regulations and latest amendments.

D. The Contractor shall follow the State of Hawaii, Department of Transportation, Airports (DOTA) Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (DOTA EHE-EHMP). References to the Site-specific Construction-Environmental Hazard Management Plan (C-EHMP) do not apply unless contamination is identified during construction that warrants additional plans, if directed by DOH.]

{or}

[The Contractor shall follow the Site-specific Construction-Environmental Hazard Management Plan (C-EHMP). References to the State of Hawaii, Department of Transportation, Airports (DOTA) Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan (DOTA EHE-EHMP) do not apply.]

E. Qualified Environmental Professional: The Contractor shall employ a Qualified Environmental Professional (QEP) who possesses a minimum of five (5) years of experience providing environmental oversight for the management of contaminated media during construction activities, who shall assist with sampling, testing, and creating plans including the preparation and/or finalization of the Contractor's C-EHMP. The QEP shall be identified in the applicable

C-EHMP document.

F. The Contractor and their QEP shall review any available site-specific investigation reports (e.g., Phase II Environmental Site Assessment [ESA]) or construction management plans, etc.) to understand the conditions that may affect work performance.

G. Should the Contractor deviate from the DOTA EHE-EHMP or Site-Specific EHMP, the Contractor shall be responsible to prepare or modify any existing Hawaii Department of Health (DOH) required C-EHMP. Any planned deviation from construction EHMPs will require written notification to and approval by DOH and the DOTA Engineering Branch, Environmental Section (AIR-EE) prior to implementation. The Contractor shall detail deviations from standard practices and explain how those deviations will be protective of human health and the environment.

H. The primary contaminant-related hazards addressed by the DOTA EHE-EHMP or a C-EHMP include, but are not limited to, the following Contaminants of Potential Concern (COPCs):

1. Petroleum-related Hydrocarbons, e.g., TPH-g, TPH-d, TPH-o, BTEX, and PAHs
2. Constituents of light distillate fuels and/or Chlorinated Solvents (together considered volatile organic compounds or VOCs)
3. Polychlorinated Biphenyls (PCBs)
4. Pesticides, e.g., Chlordane, Dieldrin
5. Metals, e.g., Arsenic, Barium, Cadmium, Total Chromium, Lead, Mercury, Selenium, and Silver
6. Per- and Polyfluoroalkyl Substances (PFAS)

In addition, free petroleum products (e.g., gasoline, aviation gasoline, diesel fuel, jet fuel, motor oils, lubricating oils) may be encountered in soil or groundwater in areas of previous petroleum releases.

Soil vapor may be present from volatile COPCs present in subsurface soil or groundwater.

Should changes in site conditions or additional site information identify contaminants or risks to human health and/or the environment not addressed by the DOTA EHE-EHMP or C-EHMP, the Contractor shall be responsible to revise, update, and finalize a C-EHMP to be reviewed and approved by AIR-EE and the DOH Hazard Evaluation and Emergency Response (HEER) Office.

The Contractor shall coordinate with AIR-EE, as well as have any C-EHMP approved by the HEER Office, prior to the start or continuation of any related ground disturbing activities.

1.03 REFERENCES

All work shall conform to the latest edition of the following, unless otherwise noted or specified on the drawings or in these specifications. Where conflicts among the requirements or with these specifications exists, the most stringent requirements shall apply.

A. DOTA Construction Site Runoff Control Program https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/

1. DOTA EHE-EHMP

2. DOTA Construction Best Management Practices (BMP) Manual

B. Department of Health (DOH) Hazard Evaluation & Emergency Response (DOH HEER) https://health.hawaii.gov/heer/

1. Technical Guidance Manual (TGM) for Implementation of the State Contingency Plan (including updates).

2. Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material.

3. HEER Office Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater.

4. HEER Office Construction EHMP Template.

C. State of Hawaii Administrative Rules, Title 11, DOH https://health.hawaii.gov/opppd/department-of-health-administrative-rules-title-11/

1. Chapter 54 Water Quality Standards

2. Chapter 58.1 Solid Waste Management Control

3. Chapter 59 Ambient Air Quality Standards

4. Chapter 11-260.1-279.1 Hazardous Waste Management: General Provisions

5. Chapter 280.1 Underground Storage Tanks

6. Chapter 451 State Contingency Plan

D. The Hawaii Environmental Response Law (Hawaii Revised Statutes [HRS] Chapter 128D) and the State Contingency Plan (Hawaii Administrative Rules [HAR] Title 11, Chapters 451-1–451-24).

E. American Petroleum Institute (API) RP 2219

F. United States Code of Federal Regulations (CFR), Title 29: Labor
https://www.ecfr.gov/current/title-29

G. CFR, Title 40: Protection of the Environment
https://www.ecfr.gov/current/title-40

1. Part 50, “National Primary and Secondary Ambient Air Quality Standards A”.

2. Part 122, “EPA Administered Permit Program: The National Pollutant Discharge Elimination System”.

3. Part 261, “Identification and Listing of Hazardous Waste”.

4. Part 263, “Standards Applicable to Transporters of Hazardous Waste”.

5. Part 302, “Designation, Reportable Quantities, and Notification”.

H. CFR, Title 49: Transportation
https://www.ecfr.gov/current/title-49

1. Part 171, “General Information, Regulations, and Definitions”.

2. Part 172, “Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans”.

I. U.S. EPA Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA), Section 107(1), exemption for cleanup of legally applied pesticide products.
https://www.epa.gov/enforcement/superfund-enforcement-authorities

1.04 SUBMITTALS

A. The Contractor shall submit the following items as required:

1. Preconstruction Submittals:

Final Contractor C-EHMP reviewed and approved by AIR-EE and the HEER Office [as needed per 01 57 13.3.02.A.1]

Notification to DOH HEER Office at least 90 calendar days prior to disturbing contaminated soil at “HEER Sites” [as needed per 01 57 13.3.03.A.1]

Written request to deviate from the DOTA EHE-EHMP or Site-Specific EHMP for review and approval by DOH and AIR-EE [as needed per

01 57 13.1.02.G]

2. Construction Submittals:

   Revised C-EHMP reviewed and approved by AIR-EE and the HEER Office [as needed per 01 57 13.1.02.H]

   Written request to deviate from the DOTA EHE-EHMP or Site-Specific EHMP for review and approval by DOH and AIR-EE [as needed per 01 57 13.1.02.G]

   Release Notification to DOTA and HEER Office [as warranted per 01 57 13.3.03.E.1]

   Spills/Leaks reporting [as warranted per 01 57 13.3.03.E.2]

   UST Removal Report [as warranted per 01 57 13.3.03.D.6]

3. Post-construction Submittals:

   Project Close-out Report submitted within 30 calendar days after work is completed [as needed per 01 57 13.3.04.A]

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 GENERAL WORK PROCEDURES

A. Prior to beginning work, the Contractor, the Contractor's QEP, and the Engineer or their representative shall review and discuss all available information pertaining to contamination or potential contamination at the work site.

B. It should be noted that, in some cases, the contamination (e.g., soil or groundwater contaminated with metals, PCBs, pesticides, PFAS, etc.) may not be identifiable through visual and/or olfactory observation, and contaminant-specific field screening techniques may need to be implemented.

C. Potential or suspected contaminated media from separate locations or sources shall not be mixed or placed together without the approval of the QEP and AIR-EE.

D. The removal, transfer, or handling of explosive or flammable media shall be conducted using explosion-proof pumps and equipment. If a vacuum truck is used for removal of liquids or residues, the area of operation for the vacuum truck shall be vapor free. Discharge the vacuum pump exhaust gases through a hose of adequate size and length downwind of the truck and tank area. Vacuum truck operating and safety practices shall conform to API RP 2219. Collect tank residues in drums, tanks, or tank trucks labeled according to 49 CFR 171 and

49 CFR 172 and dispose of as required by regulation.

E. Contractor shall follow decontamination regulations and procedures as necessary.

F. Soil excavation, grading, and any disturbance of contaminated soil may cause a potential exposure to Contractor's employees and the public from the release of vapors or fugitive dust. The routes of exposure to dust are by inhalation, ingestion, and dermal contact. The Contractor shall use engineering controls such as a cover, water spraying, tenting, and/or wind barriers along with any necessary worker personal protective equipment (PPE) to control fugitive dust to mitigate the release of and exposure to soil vapors.

G. The Contractor's QEP shall test excavated soil for the presence of COPCs and oversee excavated soil management in accordance with this Section and relevant guidance and regulations.

H. Contractor shall report construction activities in areas with contaminated soil or groundwater in accordance with an applicable C-EHMP or the DOTA EHE-EHMP. Contractor shall coordinate with the DOH HEER Office, the Engineer, and AIR-EE.

I. All Contractor correspondence with DOH and other regulatory agencies shall include the Engineer and AIR-EE.

3.02 PRECONSTRUCTION REQUIREMENTS

A. Submit the following a minimum of 30 calendar days prior to beginning any ground disturbing activities, for approval by AIR-EE.

1. The Contractor's revisions to the draft Site-Specific C-EHMP if prepared in the design phase, or creation of a C-EHMP if deviating from the DOTA EHE-EHMP during the course of the project, that includes, but is not limited to:

a. Procedures, engineering controls, and methods the Contractor will use during the excavation, soil stockpiling and segregation, temporary storage, testing, handling, treatment, backfilling, and disposal of contaminated media, work area isolation, construction barriers, dust control, decontamination, and emergency management.

b. Names of the Contractor's and their subcontractor's qualified personnel who will be supervising or managing contaminated materials at the site. Include the personnel's phone number and qualifications.

c. Name(s) of the Contractor's QEP , including their qualifications.

d. Proposed schedule of work.

e. Location map of temporary contaminated stockpiles and other contaminated media storage, including infrastructure such as pipes and appurtenances, if applicable.

f. All documents required as part of the appendices to the DOTA EHE-EHMP (e.g., health and safety plan and completing the management plans in the appendices) or C-EHMP applicable appendices (e.g., health and safety plan, construction material documents, etc.).

3.03 CONSTRUCTION REQUIREMENTS

A. Soil Excavation and Stockpiling:

1. Notify the DOH HEER Office at least 90 calendar days prior to disturbing contaminated soil at "HEER Sites" utilizing the HI DOH e-Permitting System - Notification of Construction Activities (HEER Office). Version 1.7 (hawaii.gov) or most recent version available. Obtain AIR-EE's review and concurrence prior to submittal to DOH.

2. The disturbance of contaminated media shall be performed in accordance with the DOTA EHE-EHMP or the Contractor's approved C-EHMP, where applicable. The HEER Office and AIR-EE shall be immediately notified if contaminated media not previously known or anticipated is encountered. The HEER Office will determine whether additional sampling is required. The Contractor shall provide a location map with Global Positioning System (GPS) coordinates and approximate depth below ground surface at which contaminated media were encountered to the Engineer and AIR-EE.

3. Soil stockpiles shall be created and managed in accordance with project plans, the approved project-specific C-EHMP (if applicable), and the DOH Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material. If deviating from a DOH-approved C-EHMP, approval from DOTA and DOH is required. Contractor shall secure approval of new or revised stockpile characterization plans from DOTA prior to implementation. Soils placed in watertight containers shall be covered with plastic sheeting or positioned under a roof when not in active use. Soil stockpiles and containers shall be located at least 50 feet from drainage features, surface waters, and stormwater drainage paths.

4. Any liquid-phase oil or free product associated with the contaminated soil shall be drained prior to stockpiling. If feasible, the free product shall be separated from the soil, properly stored, profiled, and disposed of at an approved recycling or disposal facility.

B. Soil Testing and Disposal:

The Contractor shall test all soil generated during excavation, demolition, or other construction activities. Sampling and testing of stockpiles shall be, at a minimum, in accordance with the latest edition of the DOH's Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material. The Contractor's QEP shall direct the soil sample collection and testing methods in accordance with the most current guidelines. All soil intended for disposal or reuse shall be tested for the presence of applicable COPCs as established by the QEP and as approved by AIR-EE.

Stockpiles shall be tested using multi-increment (MI) sampling methodology in accordance with the TGM. Alternative sampling approaches, and appropriate decision unit (DU) volumes for large volume soil stockpiles, should be discussed with AIR-EE and may be utilized on a case-by-case basis when approved by the HEER Office.

No soil from airport property shall be reused at private-owner off-site properties, even if the soil appears acceptable for unrestricted use based on testing conducted. Exceptions to this policy may only occur with the written approval of the Engineer and AIR-EE. Disposal or reuse of soil at a residential property or where there are sensitive receptors (i.e. schools, recreational areas, etc.) will not be allowed under any circumstance.

For the purposes of this Section "off-site" is defined as any location outside of the established project construction boundary from which excavated soil was generated. There are two off-site soil disposal/reuse categories applicable to this Section: (1) Off-site within the Airport Boundary, and (2) Off-site and outside of the DOTA Airport Property. "On-site" refers to within the construction project boundary from which excavated soil was generated.

1. For off-site soil reuse <u>within the airport boundary</u>:

    a. The Contractor shall secure approval from the Engineer and AIR-EE for transport to the reuse location(s) prior to moving the soil.

    b. Soil shall not be categorized as or contain a regulated hazardous waste.

    c. Soil shall not exceed the DOH Tier 1 Environmental Action Levels (EALs) for unrestricted use.

2. For off-site soil disposal/reuse <u>outside the airport property boundary</u>:

    a. The Contractor shall confirm and comply with the disposal/receiving facility's testing requirements, as well as their standards for disposal/reuse.

b. Soil that is a regulated hazardous waste shall be disposed at an approved United States Environmental Protection Agency (EPA) regulated facility.

c. Soil that is above the DOH Tier 1 EALs for commercial/industrial use but not a regulated hazardous waste shall be disposed of at a DOH or EPA permitted disposal facility (i.e., landfill).

d. Soil that is below the Hawaii Department of Health (DOH) Tier 1 Environmental Action Levels (EAL) for unrestricted use may be reused at an appropriate location as approved by the Engineer and AIR-EE.

e. For any contaminated media removed from Airport property to an approved facility, the Contractor shall be responsible for its legal transport and disposal. Contractor shall provide to the Engineer copies of any soil disposal receipts.

3. For on-site soil reuse:

a. The Contractor shall representatively test all soils designated for on-site reuse. Testing can occur either *in situ* prior to excavation or after excavation. Soil that does not exceed applicable DOH Tier 1 Environmental Action Levels (EAL) for unrestricted use may be reused on-site (within construction site boundaries) with AIR-EE approval.

b. Soil with contaminants that exceed DOH Tier 1 EALs may be approved for on-site (within construction site boundaries) reuse with written approval from AIR-EE and when the following conditions are met:

i. Contaminated soil is reused within other contaminated areas in the proximity of its original location and for which a long term EHE-EHMP has been established and (if necessary) can be readily modified to accommodate that change in site conditions.

ii. Contaminated soil is reused no less than 150 meters from the nearest surface water or surface water inlet.

iii. Contaminated soil is reused at an elevation above the tidally influenced high water table, and at least one foot below the finish surface grade, with the most contaminated soil placed at the bottom of the excavation and cleanest soil toward the ground surface. A minimum of one foot of clean soil shall comprise the final, top backfill layer and, unless waived by DOTA and DOH, an impervious layer shall cap this top layer.

iv. Contaminated soil is not reused within or beneath the footprint of a permanent building structure.

v. Contaminated soil to be reused cannot contain free oil, oil sheens, oil stains, or total petroleum hydrocarbons (TPH) concentrations exceeding 5,000 milligrams per kilogram (mg/kg).

C. Groundwater Management: Groundwater may be contaminated by petroleum hydrocarbons, dissolved metals, PFAS, VOCs, and/or pesticides, and may be encountered during soil excavation or dewatering activities.

1. If contaminated groundwater is discovered at a previously unknown source or site on the project, the Contractor shall immediately notify the Engineer, AIR-EE, and HEER Office. Provide a location map with GPS coordinates and approximate mean sea level depth of the groundwater at which the contamination was encountered.

2. The disturbance of contaminated groundwater shall be performed in accordance with the DOTA EHE-EHMP, or C-EHMP, where applicable. The HEER Office will determine whether additional sampling is required.

3. If free product is present in the extracted groundwater, it shall be separated from the groundwater, profiled, and disposed of at an DOH-approved recycling/disposal facility. Free product shall not be moved from one excavation to another. Engineering measures shall be taken to prevent the transfer of the free product during dewatering. Water contaminated with free product shall not be discharged from a dewatering pit.

4. Releases of contaminated groundwater to surface water bodies or areas beyond the work area is prohibited.

5. Groundwater shall only be re-infiltrated in the ground with the prior approval of AIR-EE and the HEER Office. Under circumstances where contaminated groundwater cannot be re-infiltrated, proper disposal at a licensed facility shall be conducted. Notification to the appropriate agencies and other pertinent information related to the discharge shall be conducted by copying the Engineer and AIR-EE on all correspondence and copies of correspondence provided upon request.

6. The Contractor is responsible for the legal disposal or discharge of groundwater that is not re-infiltrated and shall provide AIR-EE with copies of waste manifests.

7. For groundwater containerized and removed from Airport property, the Contractor shall have representative samples taken and tested in accordance with DOH guidelines, standards, and regulations. A copy of

the groundwater test results shall be submitted to AIR-EE. The groundwater shall not be disposed off-site without the approval of the Engineer and a written approval from the DOH-permitted facility receiving the groundwater indicating that they acknowledge the groundwater test results and providing their approval to dispose the groundwater at their facility. Transport off-site shall occur in DOT-approved containers or mobile tanks. Documentation for the removal of containerized groundwater is required in the Close-Out Report detailed in Section 3.04.

8. With approval from AIR-EE and oversight from the QEP, small volumes of groundwater may be disposed via evaporation from a constructed (lined) pond or basin, with solid residuals properly tested and disposed in accordance with this specification.

D. Underground Storage Tanks (USTs) and Utility Pipes:

1. For any UST or pipeline, whether unexpectedly discovered or a planned removal, the nature of the UST or pipeline and whether they are inactive shall be determined prior to removal. Immediately notify the Engineer, AIR-EE and HEER Office of any unexpected encounter with a UST or buried piping.

2. The Contractor shall record field observations of the UST and pipelines. These observations shall include, but are not limited to, the following:

   a. Location relative to fixed landmarks, including GPS coordinates. Provide a location map that shows the UST and pipelines that were encountered. The map shall include a North arrow and a scale.

   b. Depth, diameter, length, and type of piping. Describe the condition of the pipe.

   c. Volume and type of fuel or product, including analytical laboratory reports for the product recovered.

   d. Beginning and ending fluid levels, if applicable.

   e. Flow rates, if applicable.

   f. Direction of flow.

   g. Detailed photographs.

   h. Detailed description of actions taken following the discovery, such as cutting, product removal, and disposal.

3. Provide records of the field observations to the Engineer, AIR-EE, and

HEER Office.

4. The removal of all USTs must comply with HAR § 11-280.1, and all correspondence related to identification, removal, and documentation shall be provided to the Engineer and AIR-EE. Only personnel knowledgeable and trained in pipeline and UST removal shall cut, drain, and remove USTs and pipelines. Hazardous conditions, particularly those created by explosive vapors and releases of product to the environment, shall be mitigated prior to removal activities. If any waste pipe or UST components are to be stored on-site prior to disposal, the area shall be lined with polyethylene plastic sheeting, 20 mil or thicker, and bermed to contain any free product. Provisions shall be in place to contain viscous products that may liquify after exposure to atmospheric heating. The waste pipe segments shall be drained of any residual product and stored on appropriate dunnage with the ends of the pipe sealed or covered to protect the interior of the pipe from contact with rainwater and wind.

5. All removed pipelines and USTs shall be properly disposed or recycled.

6. The Contractor shall prepare and submit a UST Removal Report, including the results of all sampling activities required under HAR § 11-280.1, to the Engineer, AIR-EE, and the DOH SHWB (UST Program).

E. Reporting requirements:

1. Release Reporting: Encountering previously unknown contaminated soil or groundwater during subsurface construction activities is considered a release and shall be reported to the HEER Office. Copies of the DOH Release Report, DOH-issued Release Number, and email correspondence (if applicable), shall be furnished to the Engineer and AIR-EE. The Contractor shall be responsible for release reporting and AIR-EE shall be included on all correspondence with the HEER office.

2. Report all leaks and spills immediately to AIR-EE, DOTA personnel, and regulatory agencies in accordance with the airport-specific DOTA Spill Reporting Fact Sheet available via the DOTA Construction Site Runoff Control Program Webpage at https://hidot.hawaii.gov/airports/doing-business/engineering/environmental/construction-site-runoff-control-program/.

   Releases that occur during construction activities or releases due to unforeseen events (spills) shall be reported immediately.

3.04 POST-CONSTRUCTION REQUIREMENTS

A. Submit a Project Close-out Report within 30 calendar days after work is

completed. The Close-out Report shall contain the following applicable contents:

1. A signed letter certifying that the removal and disposal of all contaminated materials were completed in accordance with the DOTA EHE-EHMP or Contractor's approved C-EHMP, and all applicable Federal, State, and local rules and regulations.

2. All approved DOTA EHE-EHMP deviation request forms. (Reference DOTA EHE-EHMP.)

3. Any Site-Specific EHMP(s) or Long-term EHMP(s). For locations at an airport for which DOTA has already established a Site-Specific EHMP from previous projects, the DOTA's Site-Specific EHMP shall remain applicable. Contractor shall assist DOTA by providing requested project data and records necessary to draft any required amendments resulting from a change in site conditions due to construction.

4. All testing and laboratory results, including chain of custody, for any soil/sediment, groundwater, soil vapor, or other media sampling and analysis.

5. Any results from air monitoring.

6. Record of Field Observations, including location map with GPS coordinates, limits, and depths of any contaminated media (soil, groundwater, etc.) that were encountered at previously unknown source or sites on the project. Include a copy of the completed Hawaii Hazardous Substance Written Follow-up Notification form that was submitted to DOH and all other associated documents.

7. If contaminated soil was disposed off-site (off Airport Property), include the following:

    a. A copy of the signed agreement from the receiving facility acknowledging the sample test results and indicating acceptance of the soil.

    b. Documentation of the quantity of soil received by the facility.

    c. Copies of the test results of the soil sampling.

    d. All certifications, disposal forms, waste manifests, and summary logs.

8. If any soil was approved for reuse on-site (within the construction site boundaries) or off-site within Airport Property, at a minimum, include the following:

    a. Copies of the test results of the soil sampling.

b. The quantity of soil that was re-used.

c. Location map of the re-used soil. Include GPS coordinates of its emplaced limits.

d. A brief description of the purpose of the reused soil (e.g., general fill, utility trench backfill material, etc.). Include the depth and thickness of its placement.

e. Photos of the site after placement of the re-used soil has been completed.

9. Record of Field Observation of any unanticipated UST or pipeline discovered during construction activities, including a copy of the completed DOH Notice of Intent to Close Underground Storage Tanks form, UST Closure Report, and all other associated documents.

10. The Close-out Report may be distinct to each contaminated media type/source. For sites with multiple contaminated media types/sources, Close-out Reports for each contaminated media type can be submitted separately or combined into a project-wide compilation of reports.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work specified in this Section will be paid at the unit price measurement noted below.

Item No.	Item	Unit
01562.1	Management of Contaminated Media, Soil Disposal, and Soil Reuse	Lump Sum
01562.2	Additional Management of Contaminated Media, Soil Disposal, and Soil Reuse	Allowance

Payment shall be full compensation for work prescribed in this Section and contract documents and stipulated below.

Lump Sum items will be paid in accordance with the bid price upon approval of completed work under that line item by the Engineer. Should any unforeseen conditions arise, payment shall be made by an allowance, as directed by the Engineer.

For ALLOWANCE items in the Proposal Schedule, the allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule. Payment shall be the actual cost as invoiced by the Contractor and approved by the DOTA Engineer. The Contractor shall be allowed to include overhead, profit, insurance and/or other mark-ups, as stipulated in Section 9.5 of the 2016 General Provisions for Construction Projects, Air and Water Transportation Facilities Divisions.

Should the DOTA receive reports of any illegal dumping of material, and if illegal dumping is confirmed to have occurred, the DOTA will assess a Liquated Damages amount of $5,000 per truck per day, until the illegally dumped material has been cleaned up or the incident has been remedied to the satisfaction of the Engineer with the DOH's concurrence. The Contractor shall not be entitled to recover any Liquidated Damages assessed, even after the non-compliance has been corrected.

The Contractor shall be responsible for reimbursing DOTA for all citations, fines, and penalties levied by DOH, EPA, Department of Labor and Industrial Relations, or any other regulatory agency against the State due to the Contractor's failure to properly manage contaminated medias, including non-compliance with the DOTA EHE-EHMP, DOTA Site-Specific EHMP, or Site-specific C-EHMP. The Contractor shall reimburse the State within 30 calendar days for the full amount of any outstanding cost that the State has incurred. The State may deduct all incurred costs from the Contractor's monthly progress payments; however, the Contractor shall be responsible for reimbursing the State if the costs of correction exceed remaining payments owed to the Contractor.

If the Contractor fails to satisfactorily address the non-compliance item, DOTA reserves

the right to employ outside assistance or use the State's own labor forces to provide necessary corrective measures. The Contractor shall be fully responsible for all cost and time. The State shall charge the Contractor such incurred costs plus any associated project engineering costs and shall make appropriate deductions from the Contractor's monthly progress payment.

END OF SECTION

facility DEC - 2 1999

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D., M.P.H.
[redacted]
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
EMD/SHW

November 26, 1999

U11073DH

Mr. Leighton G.M. Wong
Environmental Services Department
Department of the Navy
Pacific Division
Naval Facilities Engineering Command
258 Makalapa Dr., STE. 100
Pearl Harbor, HI 96860-3134

Dear Mr. Wong:

Subject: Naval Air Station, Barbers Point - UST BP-01
Facility I.D. 9-100975; Release I.D. 990151

Our office has reviewed the following report regarding the subject release: *Final Closure Report Removal and Closure of Underground Storage Tank Systems Underground Storage Tank BP-01 Naval Air Station, Barbers Point Oahu, Hawaii,* dated July 1999, and prepared by OHM Remediation Services Corporation.

Based on the information provided, it appears that no further action is necessary in response to this release. You should note, however, that if in the future new information and data indicate the presence of contamination at or originating from the former release location, additional investigative and cleanup actions may be required.

Should you have any questions regarding this letter, please contact Mr. Dave Hodges of our Underground Storage Tank Section at (808) 586-4226.

Sincerely,

STEVEN Y.K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

APR 23 1998

In reply, please refer to:
EMD/SHW

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

April 17, 1998 U0458JS

MEMORANDUM

To: Mr. Bryce Hataoka, Acting Manager
Hazard Evaluation and Emergency Response Office

From: Mr. Steven Y.K. Chang, Chief
Solid and Hazardous Waste Branch

Subject: Case File Transfer

Remarks:

We are transferring the following case to the HEER Office on the basis that this facility has notified us of a release from their underground storage tank (UST) that is not regulated under 40 CFR Part 280.

UST Facility ID	UST Release ID	Facility Location	Reason for Transfer
9-102233	none	Naval Air Station, Barbers Point Tank BP22	Heating oil tank

Enclosed is a copy of the information that the Department of the Navy has submitted to us.

Please note that tank BP23 is a regulated emergency generator and we are in the process of issuing a clean closure letter.

Should you have any questions, please call Ms. Jan Sherrer of our office.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

APR 23 1998

In reply, please refer to:
EMD/SHW

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

April 17, 1998 U0451JS

Mr. David Georges
Department of the Navy
Naval Air Station
Barbers Point, Hawaii 96862-5050

Dear Mr. Georges:

Subject: Naval Air Station- Barbers Point, Tanks BP22 and BP23
Facility ID 9-102233

We have reviewed the "Closure of Underground Storage Tanks BP22 and BP23" that you submitted dated December 2, 1997, regarding the removal of one 163 gallon diesel underground storage tank (UST), and one 375 diesel UST. Please note that the report has been included as part of the public file for the facility.

USTs used for boilers are not regulated under the Code of Federal Regulations (40 CFR). The 163 gallon UST that was used as a boiler has been referred to the Hazard Evaluation and Emergency Response (HEER) Office. For further information regarding the status of this UST please contact the HEER Office at (808) 586-4249.

Based on the information provided, the 375 gallon diesel UST was in sound condition upon removal, no visual or olfactory indications of a release were noted, and laboratory analysis of soil samples collected underneath the UST verified that contaminants were not present at detectable levels. There is no evidence to indicate that a release has occurred for the UST. Please be aware that the Department of Health (DOH) may require you to perform additional investigative and/or cleanup actions if future evidence indicates that there may be contamination from the UST at the site that exceeds DOH's action levels.

Should you have any questions, please call Ms. Jan Sherrer at (808) 586-4226.

Sincerely,

STEVEN Y.K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

SYKC:js

Facility
MAR 17 1999

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
EMD/SHW

March 11, 1999

U03057EJS

Mr. Henry Rimas
NAS Barbers Point
Staff Civil Engineer, Building 117
Barbers Point, Hawai'i 96862

Dear Mr. Rimas:

SUBJECT: Barbers Point Building 184 Tank BP65
UST Facility ID 9-102254 / UST Release ID 990041

We have reviewed the Navy's March 8, 1999, submittal (5090 Ser OOL-L10.033/0386) regarding a release of petroleum from the subject 3,000-gallon underground storage tank formerly located at this facility.

We concur with the Navy's assessment that no further action is necessary in response to this release. You should note that if in the future new information indicates the presence of contamination at or originating from the former release location, additional investigative or remedial action may be required.

Should you have any questions or comments regarding this letter, please contact Mr. Eric Sadoyama of our Underground Storage Tank Section at (808) 586-4226.

Sincerely,

STEVEN Y. K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

DAVID Y. IGE
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:
172671 LC

January 8, 2020

Ms. Stacy Paquette
State of Hawaii Department of Transportation, Airports Division
400 Rodgers Boulevard, Suite 700
Honolulu, Hawaii 96819

Facility/Site: Kalaeloa Airport, Day Tank Warehouse

Subject: Review of: *Removal Action Report, Kalaeloa Day Tank Warehouse Spill Response, Kapolei, HI, 96707* by Weston Solutions, Inc. on December 2019.

Dear Ms. Paquette:

The Hawaii Department of Health (HDOH), Hazard Evaluation and Emergency Response (HEER) Office has reviewed the abovementioned document. Although contaminants remain in soil at the site at concentrations above the site-specific HDOH Environmental Action Levels (EALS), due to the estimated volume of the release (less than 25 gallons), the limited lateral extent of the release, and removal action was conducted to the extent practicable, HDOH concurs that following backfilling of the excavations with clean material, that the remaining contamination can be managed in place under the Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan for all State-owned airports. The location of the remaining contamination should also be logged in the State of Hawaii Department of Transportation, Airports Division's database illustrating the locations of all known areas of contamination.

Should you have any questions concerning the above, please feel free to contact me at 586-0956 or lauren.cruz@doh.hawaii.gov.

Sincerely,

Lauren Cruz
Remedial Project Manager
Hazard Evaluation and Emergency Response Office

APR 28 1994

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
BARBERS POINT, HAWAII 96862-5050

5090
Ser OOL-L111.141/0915
25 Apr 1994

Ms. Roxanne Kwan
State of Hawaii
Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
919 Ala Moana Boulevard, 3rd Flr
Honolulu, HI. 96814

Dear Ms. Kwan:

Subj: UNDERGROUND STORAGE TANK RELEASE

Your letter U0407RK of 6 April 1994, provided guidance on conducting release response actions at the following Naval Air Station (NAS) Barbers Point locations:

Bldg 48	Tanks	11/12	Facility ID No. 9-102227
Bldg 39	Tanks	9/10	Facility ID No. 9-102226
Bldg 36	Tanks	5/6	Facility ID No. 9-101726
Bldg 1788	Tank	61	Facility ID No. 9-102251
Bldg 1756	Tank	59	Facility ID No. 9-102249
Bldg 46	Tanks	13/14	Facility ID No. 9-102228

These tanks stored heating oil for consumptive use on the premises and consequently, are not underground storage tanks as defined in 40 CFR 280.12. Although these tanks are not subject to the requirements of subpart F, we will undertake site investigations and determine whether corrective action is required under our base closure program. We will make every attempt to comply with the guidelines provided in the State's "Technical Manual for Underground Storage Tank Closure and Release Response".

In addition, enclosures (1) through (4) list other tanks at NAS Barbers Point that are used to store heating oil for consumptive use on the premises, field constructed tanks, tanks with less than 110 gallon capacity, and emergency spill and overflow tanks that are expeditiously emptied. Since these tanks are excluded or deferred from the regulations, we request that these tanks be deleted from the State's inventory of underground storage tanks.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MAY 10 2000
Facility

BRUCE S. ANDERSON, Ph.D., M.P.H.
[redacted]
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL MANAGEMENT DIVISION
SOLID AND HAZARDOUS WASTE BRANCH
919 ALA MOANA BLVD., #212
HONOLULU, HAWAII 96814

In reply, please refer to:
EMD/SHW

May 8, 2000

U00506RK

TO: Keith Kawaoka, Manager
Hazard Evaluation and Emergency Response Office

FROM: Steven Chang, Manager
Solid and Hazardous Waste Branch

SUBJECT: Referral of Underground Storage Tank located at Former Naval Air Station - Barbers Point

Since your office is the lead for the Former Naval Air Station - Barbers Point project, we are referring the following facilities for further action:

Former Naval Air Station - Barbers Point
Tank BP 19 and BP 20
Facility ID No. 9-102230

Former Naval Air Station - Barbers Point
Tank BP 48
Facility ID No. 9-102239

Former Naval Air Station - Barbers Point
Tank BP 88
Facility ID No. 9-102503

Former Naval Air Station - Barbers Point
Tank BP 27, BP 27A and BP 280
Facility ID No. 9-101691

Former Naval Air Station - Barbers Point
Tank BP 86
Facility ID No. 9-102501

Enclosed are copies of the closure reports for the above facilities. Should you have any questions, please contact Roxanne Kwan of our Underground Storage Tanks Section at 586-4226.

Enclosures

Refer to Facility No. 9-100975 for the original copy of the notification form

Refer to Facility No. 9-100975 for a ~~the original~~ copy of the diagram.

MAY - 5 1986

2

Notification for Underground Storage Tanks

FORM APPROVED
OMB NO. 2050-0068
APPROVAL EXPIRES 6-30-88

CO

STATE USE ONLY

ID Number 9100975

Date Received 9-102239

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means:

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws.
5. surface impoundments, pits, ponds, or lagoons,
6. storm water or waste water collection systems,
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. **2.** Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must by completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached: 13

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)

DEPT. OF THE NAVY

Street Address

NAVAL AIR STATION (NAS)

County

BARBERS POINT

City | State | ZIP Code

BARBERS POINT, HAWAII | | 96862-5050

Area Code | Phone Number

808 - 684-8201

Type of Owner (*Mark all that apply* ☒)

- ☐ Current
- ☐ Former
- ☐ State or Local Gov't
- ☒ Federal Gov't (GSA facility I.D. no. UIC # N00334)
- ☐ Private or Corporate
- ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) | State | ZIP Code

Indicate number of tanks at this location: 67

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☐) | Job Title | Area Code | Phone Number

JERRY YOGI | ENVIRONMENTAL ENGINEER | 808 - 684-8201

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative | Signature | Date Signed

LCDR GARY M. FITZPATRICK, CEC, BY DIRECTION OF THE COMMANDING OFFICER | | 4/21/86

SUBTITLE I SYSTEMS APPROVED FOR MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL AND SOIL REUSE

VI. CONTINUE ON REVERSE SIDE

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U. S. NAVY Location (from Section II) NAS BARBERS P Page No. 11 of 15 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 46	Tank No. 47	Tank No. 48	Tank No. 49	Tank No. 50
1. Status of Tank (Mark all that apply ☒) — Currently in Use	☒	☒	☒	☐	☐
Temporarily Out of Use	☐	☐	☐	☒	☒
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	37	37	43	43	43
3. Estimated Total Capacity (Gallons)	7,500	7,500	567,000	25,000	25,000
4. Material of Construction (Mark one ☒) — Steel	☒	☒	☒	☐	☐
Concrete	☐	☐	☐	☒	☒
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒) — Cathodic Protection	☐	☐	☒	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☒	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☐	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒) — Cathodic Protection	☐	☐	☒	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☒	☒	☒
Unknown	☒	☒	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒) — Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored In Greatest Quantity by Volume (Mark all that apply ☒) — a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☒	☒	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	UNLEADED		JP-5	WASTE FUEL	WASTE FUEL
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service) — a. Estimated date last used (mo/yr)	/	/	/	10 / 81	10 / 81
b. Estimated quantity of substance remaining (gal.)				1	1
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
BARBERS POINT, HAWAII 96862-5050

5090
Ser 00L-L11/0263

State of Hawaii
Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Five Waterfront Plaza Suite 250
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Attn: Ms. Arlene Kabei

1. In response to your letter of 22 October, 1990, NAS Barbers Point has developed an Underground Storage Tank (UST) program. The Station is committed to implementing this program and achieving full compliance with all applicable Environmental Protection Agency and State of Hawaii Department of Health UST requirements.

2. As required, enclosure (1) forwards the "Self Certification of Compliance" forms for the USTs at NAS Barbers Point.

3. Since most of our USTs and their associated piping do not meet the release detection requirements by the given deadlines, Enclosure (2) forwards our plan of action to comply with the release detection requirements.

4. Please note that some of the tanks listed in your letter no longer belong to NAS Barbers Point, but rather Naval Station, Pearl Harbor. The five tanks located at Ford Island and listed with a "Facility ID" number of 9-100995 should be registered as belonging to Naval Station, Pearl Harbor.

5. If you have any questions on our UST program, contact Mr. Stan Kato, our Environmental Engineer, or Ltjg Kevin O'Connor, our UST Program Manager, at 684-8201.

1) Change ownership & create a new file for ID # 9-100995

2) respond to plan of action for remaining tanks

Enclosure (1): UST Self Certificati
Enclosure (2): UST Plan of Action f
Compliance

cc:
COMNAVAIRPAC (Code 51) Encl (2) only
COMPATWINGSPAC (Code 80) Encl (2) only
PACNAVFACENGCOM (Code 114)
Naval Station, Pearl Harbor (SCE)

DOH Form (9/90)

DEPARTMENT OF HEALTH - UNDERGROUND STORAGE TANK SECTION

SELF-CERTIFICATION OF COMPLIANCE WITH FEDERAL RELEASE DETECTION REQUIREMENTS ON UNDERGROUND STORAGE TANKS SYSTEMS

Return this form to: State of Hawaii
Department of Health
Solid and Hazardous Waste Branch
Five Waterfront Plaza, Suite 250
500 Ala Moana Blvd.
Honolulu, Hawaii 96813
Attn: UST Section (SC)

For State Use Only

Facility ID No.: _____

Date Received: _____

Please type or print in ink all items. A certification form should be completed for the underground storage tank systems located at one facility only.

I. Tank Owner Information:

DEPARTMENT OF THE NAVY
Owner Name (Corporation, Individual, Government, or Other Entity)

NAVAL AIR STATION (NAS)
Mailing Address

BARBERS POINT		HI	96862
City	County	State	Zip Code

LTJG KEVIN O'CONNOR	UNDERGROUND STORAGE	684-3231
Contact Person	Job Title TANK COORDINATOR	Phone Number

II. Tank Operator Information:

DEPARTMENT OF THE NAVY
Operator Name (Corporation, Individual, Government, or Other Entity)

NAVAL AIR STATION (NAS)
Mailing Address

BARBERS POINT		HI	96862
City	County	State	Zip Code

ALAN MATSUOKA	FUELS OFFICER	684-9275
Contact Person	Job Title	Phone Number

III. Location of Tank(s):

DEPARTMENT OF THE NAVY
Facility Name

NAVAL AIR STATION (NAS)
Facility Address

BARBERS POINT		HI	96862
City	County	State	Zip Code

K. O'CONNOR	UST COORDINATOR	684-3231
Contact Person	Job Title	Phone Number

ENCLOSURE(1)

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL; AND SOIL REUSE
01562-27

Please provide complete information for all tank(s) and piping(s) under which this self-certification form is applicable. If more than 4 tanks or pipings are being certified, please photocopy pages 2 & 3 and continue providing the information for the additional tanks or pipings.

IV. **A. Tank Information**

Tank Identification Number	BP48	BP49	BP50	BP51
Date of Installation (mm\dd\yy)	00/00/43	00/00/43	00/00/43	00/00/43
Capacity of Tank (gallons)	567,000	25,000	25,000	25,000
Substance Stored	JP-5	Waste Fuel	Waste fuel	Diesel

B. Release Detection Indicate with an (X), the following applicable method(s) used for each tank being certified.

Manual Tank Gauging (only tanks less than 1,000 gal.)				
Tank Tightness Testing Plus Inventory Control				
Automatic Tank Gauging				
Vapor Monitoring				
Ground Water Monitoring				
Interstitial Monitoring (Double-walled)				
Interstitial Monitoring (Secondary containment)				

V. **A. Piping Information**

Piping Identification Number	BP48P	BP49P	BP50P	BP51P
Indicate (P) for Pressurized or (S) for Suction	S	S	S	S

B. Release Detection Indicate with an (X), the following applicable method(s) used for each set of piping being certified.

Vapor Monitoring				
Ground Water Monitoring				
Interstitial Monitoring (Double-walled piping)				
Interstitial Monitoring (Secondary containment)				
Line Tightness Testing				
Automatic Shutoff Device				
Automatic Flow Restrictor				
Continuous Leak Alarm System				

VI. **A. UST System Removal Information*** Identify those tank(s) and\or piping(s) which have been removed.

Indicate (T) for Tank, (P) for Piping, or (B) for Both				
Identification Number				
Date of Removal				

B. UST System Closure-in-Place Information* Identify those tank(s) and\or piping(s) which have been closed-in-place.

Indicate (T) for Tank, (P) for Piping, or (B) for Both				
Identification Number				
Date of Closure-in-Place				

* The federal regulations state that underground storage tank systems which cannot comply with applicable release detection requirements must permanently close. Owners and operators are required to notify the Department of Health (DOH) of their intent to close a tank system at least 30 days prior to beginning closure. In addition, an amended notification form (EPA Form 7530-1) should be submitted to the DOH within 30 days after tank system closure.

VII. **Certification:**

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents and diagrams, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete, and hereby certify that the underground storage tanks(s) and associated piping(s) identified above in Parts IV and V are in compliance with the federal requirements for release detection as specified in 40 CFR Part 280, Subpart D.

DAN KING LCDR, CEC, USN
Name of Owner, Operator, or Authorized Representative

STAFF CIVIL ENGINEER
Title

Dan K
Signature

JANUARY 17, 1991
Date

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
BARBERS POINT, HAWAII 96862-5050

5090
Ser 00L-L30/
27 MAR 1991

-1 1991

4/3/91 RK

State of Hawaii
Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Five Waterfront Plaza Suite 250
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

G-200192
G-102239

Dear Ms. Kabei:

1. As a follow up to the telephone conversation between Ltjg Kevin O'Connor of the NAS Barbers Point Staff Civil Engineer's Office and Ms. Roxanne Lau of the State Department of Health on March 8 regarding exemptions for field constructed underground storage tanks, we forward construction drawings of Barbers Point tank #48.

2. Tank #48 was originally listed on our Underground Storage Tank (UST) Program letter of January 17, 1991 as a category VI tank requiring the installation of a release detection system. Based on the conversation with Ms. Lau, the Air Station wishes to list this UST as a field constructed tank and therefore eligible for deferral from the release detection system under 40 CFR Subpart A section 280.10 (c).

3. Although the drawings of enclosure (1) are somewhat old (1941), they show that a tank was constructed out of reinforced concrete with a steel plate interior. The tank is 88 feet in diameter and has a height of over 13 feet. Although the drawings do not address how the tank was actually constructed, we believe it is reasonable to assume that a tank of this size had to be field constructed and thus eligible for an exemption from the release detection requirements.

4. Based on this conclusion, we intend to remove tank #48 from our UST program. Please advise us by April 15, 1991 if you do not concur with this action.

5. If you have any questions on this or our UST program in general, contact Mr. Stan Kato, our Environmental Engineer, or LTjg Kevin O'Connor, our UST Program Manager, at 684-8201.

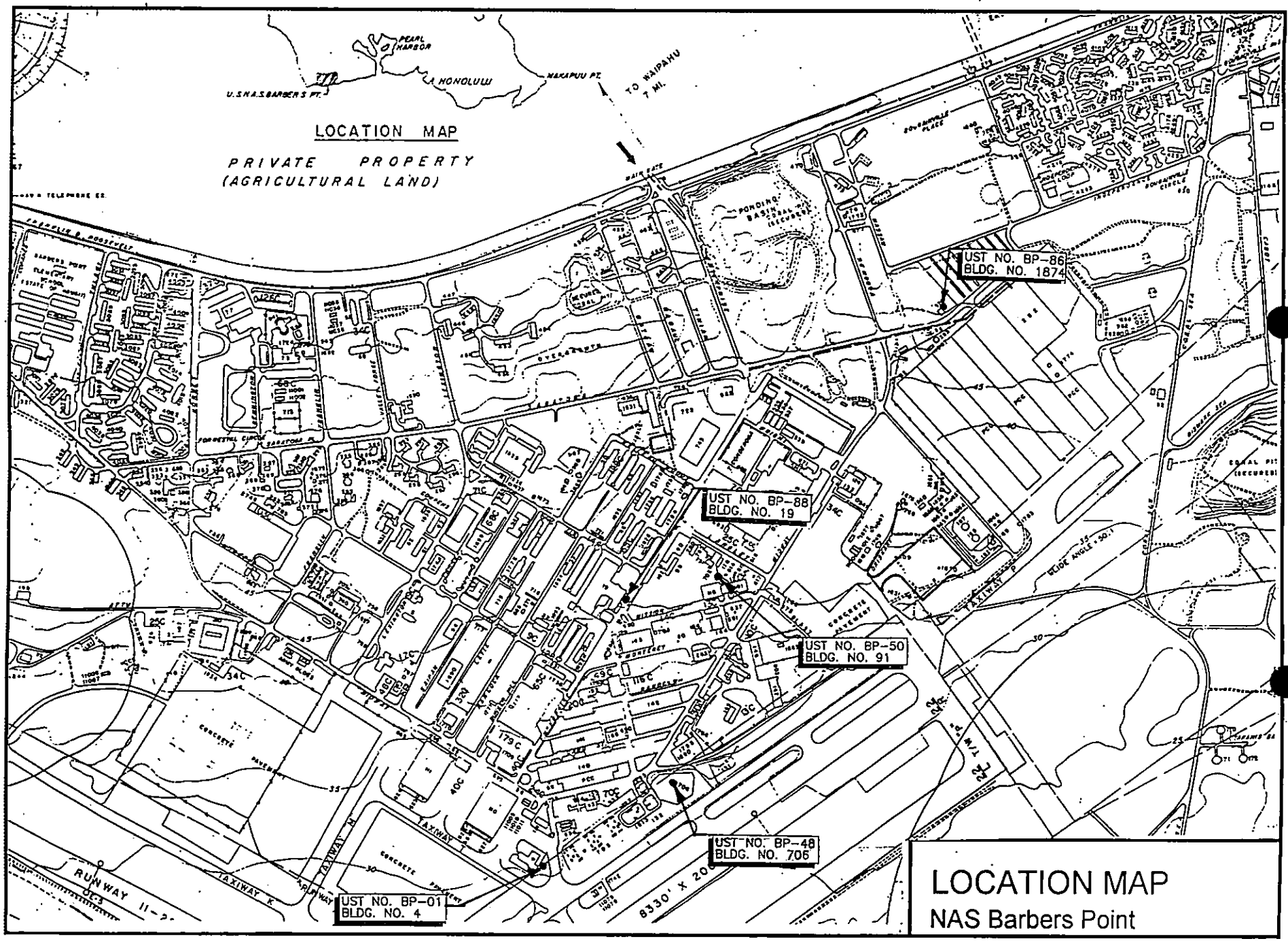
684-3231

RK- Plz Clarify, w/them that field constructed tanks are only deferred from Subparts B C, D, E, but not A, F!

Dan K

DAN KING
LCDR, CEC, USN
By direction of
the Commanding Officer

Encl (1): Construction drawings of tank #48


PEARL HARBOR
U.S.N.A.S. BARBER'S PT.
HONOLULU
MAKAPUU PT.
TO WAIPAHU 7 MI.
LOCATION MAP
PRIVATE PROPERTY
(AGRICULTURAL LAND)
UST NO. BP-86
BLDG. NO. 1874
UST NO. BP-88
BLDG. NO. 19
UST NO. BP-50
BLDG. NO. 91
UST NO. BP-48
BLDG. NO. 706
UST NO. BP-01
BLDG. NO. 4
RUNWAY 11-29
TAXIWAY K
TAXIWAY H
TAXIWAY P
8330' X 200'
LOCATION MAP
NAS Barbers Point

Enclosure (1)

Subj: UNDERGROUND STORAGE TANK RELEASE

Should you have any questions, please contact Mr. Henry Rimas at 684-1800.

E. A. CLARKSON
By direction of the
Commanding Officer

Encl:
(1) Tank Summary Listing (BOILERS)
(2) Tank Summary Listing (FIELD CONSTRUCTED)
(3) Tank Summary Listing (LESS THAN 110 GALLONS)
(4) Tank Summary Listing (EMERGENCY SPILL/OVERFLOW)

Copy to:
EPA Region IX, SF/R. Beckwith
PACNAVFACENGCOM/Code 18

****

ENCLOSURE (2)

FIELD CONSTRUCTED TANKS

****

TANK ID	DOH FACILITY ID	BLDG NR	LOCATION	CAPACITY (GALS)	MAT'L CONST	CONTENTS	YEAR INST	STATUS OF TANK
** (2)								
BP02	9-100375	32	FREE SPI	500	CONCRETE	DIESEL	1944	TEMP OUT
BP21	9-102231	91	PWC/WEAP	1100	CONCRETE	OL/WTR	1943	TEMP OUT
BP24	9-102234	117	AIMD	2500	CONCRETE	WST OL	1944	ABANDONE
BP25	9-102234	117	AIMD	2500	CONCRETE	WST OL	1944	ABANDONE
BP48	9-102239	706	FUELS	567000	STEEL	JP-5	1943	ACTIVE
BP50	9-102240	91	PWC/FUEL	25000	CONCRETE	JP-5	1943	ACTIVE
BP51	9-102240	91	FUELS	25000	CONCRETE	DIESEL	1943	TEMP OUT
BP52	9-102240	91	FUELS	25000	CONCRETE	DIESEL	1943	TEMP OUT
BP79	9-102243	1297	SCE	50000	CONCRETE	UNKNOW	UNK	REMOVED

Final Remedial Action Completion Report for Base Realignment and Closure Property

FORMER NAVAL AIR STATION BARBERS POINT
OAHU, HAWAII

February 2008

Department of the Navy
Naval Facilities Engineering Command, Hawaii
400 Marshall Road, Bldg. X-11
Pearl Harbor, HI 96860-3139



Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0066

Final Remedial Action Completion Report for Base Realignment and Closure Property

FORMER NAVAL AIR STATION BARBERS POINT OAHU, HAWAII

February 2008

Prepared for:



Department of the Navy
Naval Facilities Engineering Command, Hawaii
400 Marshall Road, Bldg. X-11
Pearl Harbor, HI 96860-3139

Prepared by:
Earth Tech, Inc.
841 Bishop Street, Suite 500
Honolulu, HI 96813-3920

and

Tetra Tech EM Inc.
707 Richards Street, Suite 300
Honolulu, HI 96813

Prepared under:
Comprehensive Long-Term Environmental Action Navy
Contract Number N62742-94-D-0048, CTO 0066

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ACRONYMS AND ABBREVIATIONS v

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ACRONYMS AND ABBREVIATIONS

µg/100 cm^2	microgram per 100 square centimeters
ACM	asbestos-containing material
AM	action memorandum
ARAR	applicable or relevant and appropriate requirement
AST	aboveground storage tank
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	contaminant of concern
CPR	Carbine and Pistol Range
CSR	Coral Sea Road
CTO	contract task order
CU	Consolidation Unit
cy	cubic yard
DD	decision document
DoD	Department of Defense
DOH	Department of Health, State of Hawaii
DON	Department of the Navy
Earth Tech	Earth Tech, Inc.
EBS	environmental baseline survey
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
FOST	finding of suitability to transfer
HAR	Hawaii Administrative Rule
HW6	hazardous waste accumulation area 6
IC	institutional control
IRP	Installation Restoration Program
LUC	land use control
LUCWP	land use control work plan
mg/kg	milligram per kilogram
MCAS	Marine Corps Air Station
MGR	Machine Gun Range
MWR	Morale, Welfare, and Recreation
NAS	Naval Air Station
NAVFAC Hawaii	Naval Facilities Engineering Command, Hawaii
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NEX	Navy Exchange
NTSR	Northern Trap and Skeet Range
OE	ordnance and explosive
Ogden	Ogden Environmental and Energy Services Company, Inc.
O&M	operation and maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	operable unit

PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyls
POI	point of interest
PRE	preliminary risk evaluation
PRG	preliminary remediation goal
PWC	Public Works Center
RAB	Restoration Advisory Board
RACR	remedial action completion report
RAO	removal action objective
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RME	reasonable maximum exposure
ROD	record of decision
RSE	removal site evaluation
RVR	remediation verification report
SARA	Superfund Amendments and Reauthorization Act
SERA	screening ecological risk assessment
SI	site investigation
SMDP	scientific management decision point
STP	Sewage Treatment Plant
STSR	Southern Trap and Skeet Range
SVOC	semivolatile organic compound
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TSD	treatment, storage and disposal
TSCA	Toxic Substances Control Act
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound

1. Overview

This final remedial action completion report (RACR) documents that all currently required remedial actions specified in the records of decision (ROD) and decision documents (DD) for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites identified on Base Realignment and Closure (BRAC) property at former Naval Air Station (NAS) Barbers Point are in place. All other issues such as non-CERCLA related actions, housekeeping actions, or aboveground storage tank (AST) or underground storage tank (UST) sites are briefly mentioned, but are not discussed in detail in this document. As part of the BRAC process, the property was divided into BRAC property (to be transferred out of the Navy's ownership) and Navy retention property. The final RACR also documents that these actions will meet the remedial action objectives for the RODs and DDs in accordance with "Update No. 2 to Procedures for Completion and Deletion of NPL Sites," Office of Solid Waste and Emergency Response (OSWER) Directive 9320.2-03C (1992).

The U.S. Environmental Protection Agency (EPA) and the State of Hawaii, Department of Health (DOH) concur that the actions in place are protective of human health and the environment.

1.1 SITE LOCATION AND HISTORY

In 1993, the Base Closure and Realignment Commission placed former NAS Barbers Point on the BRAC III list, subjecting the base to the requirements of the Defense Base Closure and Realignment Act of 1990. NAS Barbers Point was closed on July 2, 1999. Until its closure in 1999, the base was the largest naval air station in the Pacific and was homeport to several maritime surveillance and antisubmarine warfare aircraft squadrons and the U.S. Coast Guard. The facility employed and supported 3,145 military personnel (including all commands and tenants), their dependents, and 514 civilian employees. It also housed a sizable on-base military residential community.

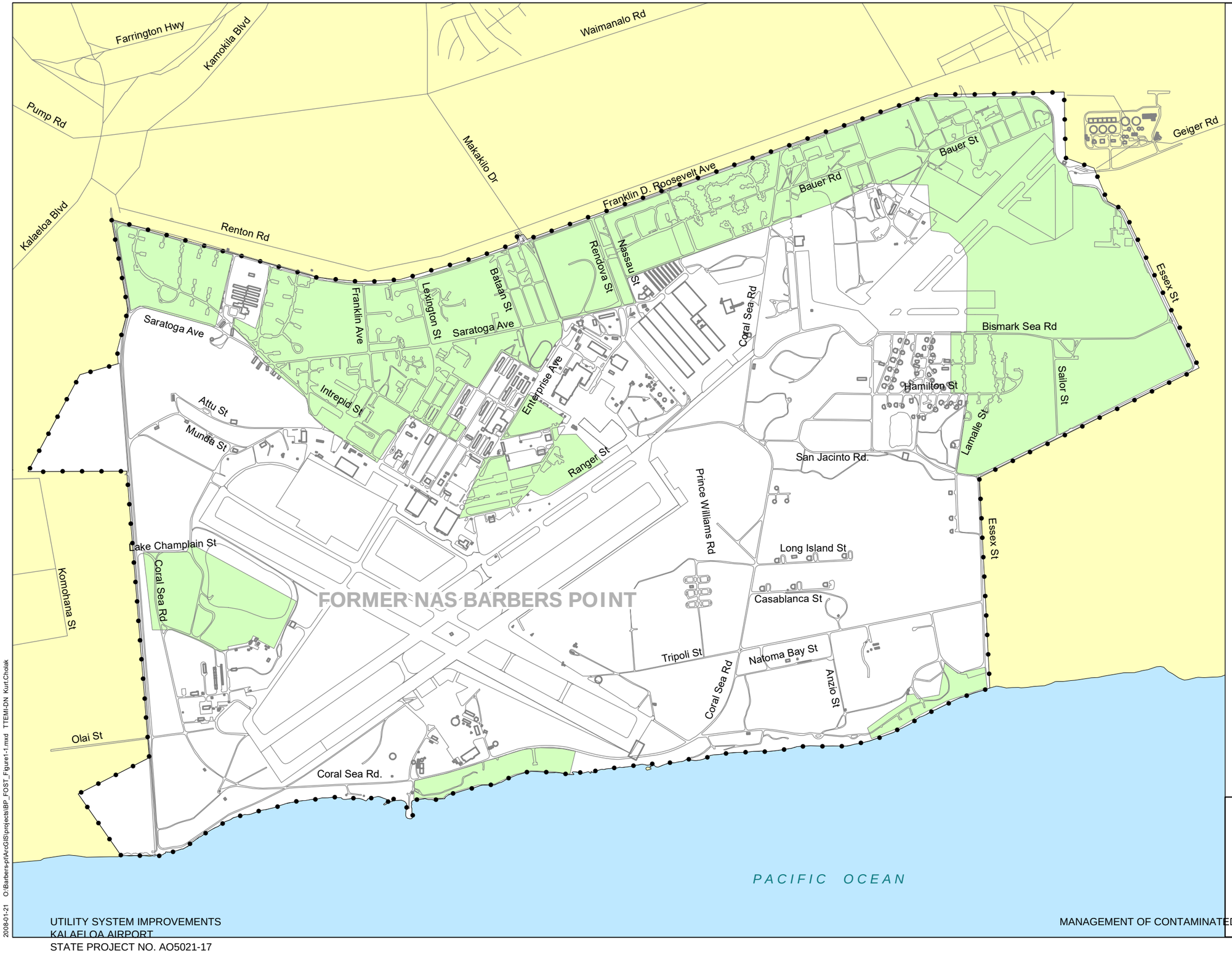
1.1.1 Site Location

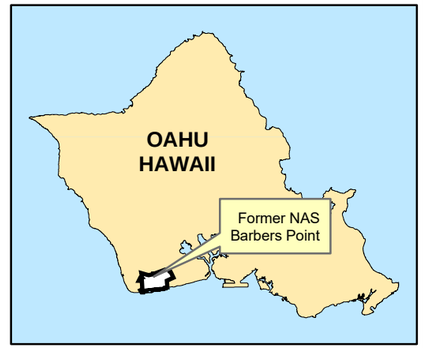
Former NAS Barbers Point is situated on 3,723 acres along the southern coastal plain of Oahu, approximately 13.5 miles west of downtown Honolulu (Figure 1-1). Former NAS Barbers Point is bounded on the north by former agricultural land and the City of Kapolei, on the east by mostly agricultural land and the Honouliuli Treatment Plant, on the south by the Pacific Ocean, and on the west by the Campbell Industrial Park.

1.1.2 Site History

Former NAS Barbers Point was previously owned by the Estate of James Campbell (Campbell Estate) and was used primarily for agriculture and livestock. For approximately 60 years, former NAS Barbers Point and surrounding properties underwent significant development, resulting in the transition from a largely agricultural community to a mixed-use area supporting a Naval base and adjacent industrial, agricultural, and residential developments.

In 1930, the Navy leased 206 acres of the land on the Ewa Plain from the Campbell Estate. This lease is the earliest recorded involvement of the Navy in the area. An emergency landing field was established during this time to support an existing airfield at Ford Island. After the lease expired in the late 1930s or early 1940s, the Navy acquired more than 3,500 acres from the Campbell Estate. In 1940, an emergency landing field was developed as an interim runway until the planned naval air station could be completed. Former NAS Barbers Point and nearby Marine Corps Air Station (MCAS) Ewa were constructed between 1941 and 1943. Upon its construction, the mission of former NAS Barbers Point was to maintain and operate facilities that provided services and material to support the operations of various Navy units. In the late 1940s, MCAS Ewa was annexed by former NAS Barbers Point in support of this mission. After the Vietnam War, the base became an operational shore command under the Commander, Naval Air Forces Pacific.





LEGEND

- FORMER NAS BARBERS POINT BOUNDARY
- ROADS OR PAVED AREAS
- NAVY-RETAINED AREAS
- BUILDINGS

N

0 1,600 3,200 Feet

Figure 1-1
Site Location Map
Former NAS Barbers Point
Oahu, Hawaii

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-44

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Prior to base closure, many military operations previously based at former NAS Barbers Point were moved to Marine Corps Base Hawaii at Kaneohe Bay. However, the Navy retained several areas of the base, including housing and shoreline recreational areas.

1.2 BRAC ENVIRONMENTAL HISTORY /OPERABLE UNIT BACKGROUND

As the first phase of the BRAC environmental assessment process, the Navy conducted a basewide environmental baseline survey (EBS) from 1993 to 1994 to assess the environmental condition of property at former NAS Barbers Point, and to identify any sources of potential contamination.

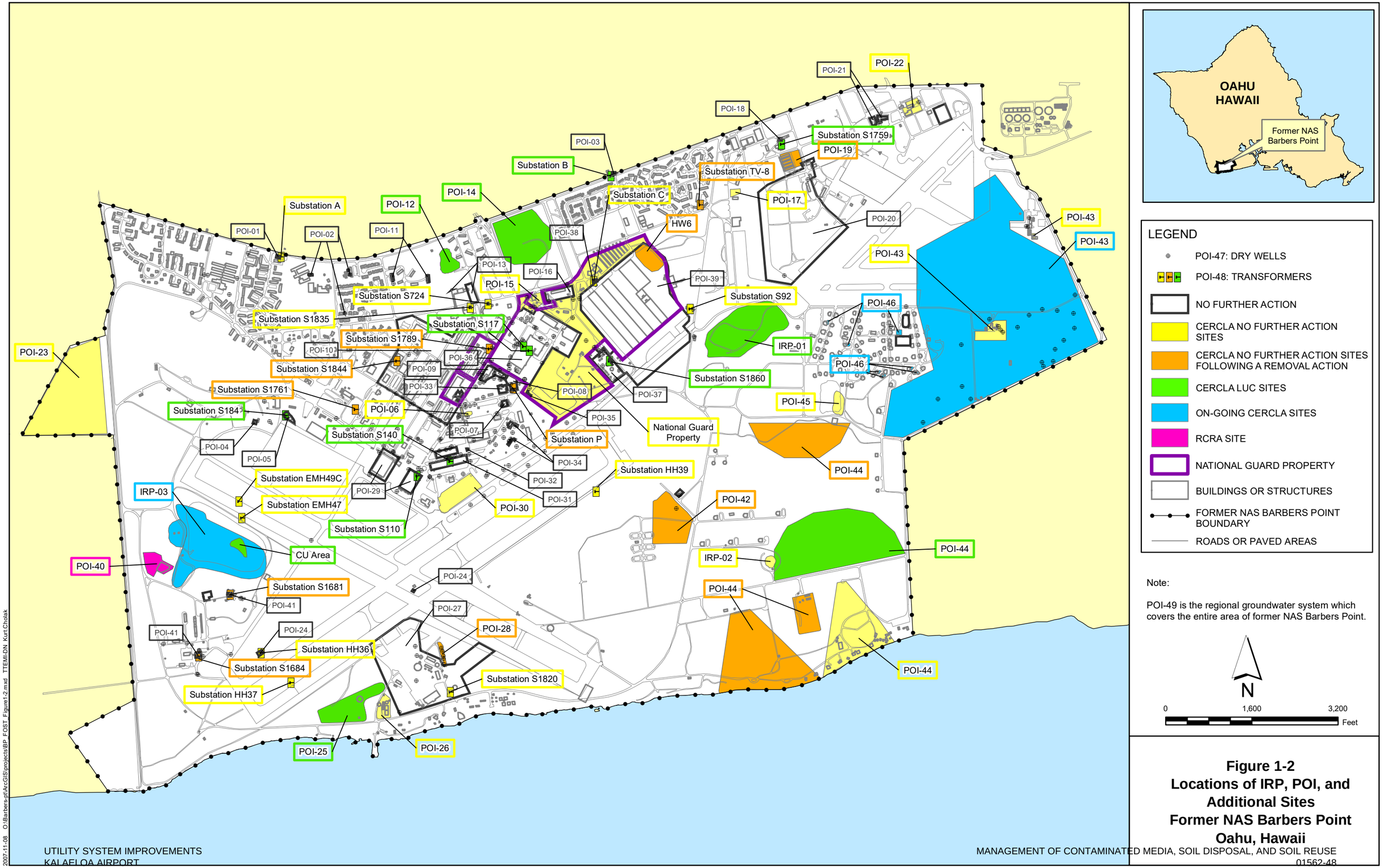
1.2.1 BRAC Environmental History

The EBS identified 47 potentially contaminated point of interest (POI) sites along with three sites that were previously identified under the Installation Restoration Program (IRP). In addition, following completion of the EBS, two additional POI sites (POI-48 and POI-49) were identified as areas of potential environmental concern. During the process of conducting CERCLA removal actions and BRAC property transfers, two additional sites (former hazardous waste accumulation area [HW] 6 and National Guard Property) were identified as areas of potential contamination. In addition, a third site, the Consolidation Unit (CU), was created to contain contaminated soil and debris from removal actions conducted at other BRAC sites within former NAS Barbers Point. The CU will be closed under CERCLA.

The three IRP sites, 49 POI sites, and three additional sites are shown on Figure 1-2, and site descriptions, characteristics, and histories are provided in Table 1-1. There is overlap between some site categories. For example, some sites have more than one source of potential contamination, such as dry wells and USTs. When dry wells or USTs are located at a POI site, they were evaluated under either the dry well remedial investigation (RI) or separate UST investigations rather than as part of the POI site. In addition, POI-48 and POI-49 were established following the EBS, and they include all the transformer substations (POI-48) and the Regional Groundwater System (POI-49). All transformers, including those located on other POI or IRP sites, were evaluated under POI-48. POI-49 (the Regional Groundwater System) physically overlaps with all other POI and IRP sites since it underlies the installation.

Reference documents that were used to obtain site information included in the final RACR were so numerous that they were not included within the text of the report. A list of reference documents specific to former NAS Barbers Point sites is presented in Section 8, Table 8-1. Each reference document presented in Table 8-1 was assigned a unique reference document number, and those numbers are used in other tables throughout the report as a citation to the complete document listing in Table 8-1.

In 1993, the former NAS Barbers Point BRAC Cleanup Team (BCT) was formed to make decisions on closure-related environmental efforts to be performed by the Navy. The BCT is composed of the Navy's BRAC Environmental Coordinator, an EPA Remedial Project Manager, and a DOH Project Manager. The BCT was assisted in the decision-making process by base personnel, the Department of Defense (DoD) Base Transition Coordinator, U.S. Fish and Wildlife Service (USFWS), and other Navy personnel. The BCT's decisions were guided by the following objectives: (1) to protect human health; (2) comply with existing environmental regulations; (3) provide guidance and establish priorities for restoration and reuse strategy; (4) identify the environmental condition of property; (5) identify areas suitable for transfer and develop strategies for areas that are not currently suitable for transfer; (6) establish land use restrictions and strategies for enforcing these restrictions; (7) initiate investigations and removal actions to control, eliminate, or reduce risks, prioritized by considering both environmental concerns and reuse plans; (8) conduct long-term removal actions where needed and perform 5-year reviews for wastes left in place; and (9) ensure that land use restrictions are enforceable.



LEGEND

- POI-47: DRY WELLS
- POI-48: TRANSFORMERS
- NO FURTHER ACTION
- CERCLA NO FURTHER ACTION SITES
- CERCLA NO FURTHER ACTION SITES FOLLOWING A REMOVAL ACTION
- CERCLA LUC SITES
- ON-GOING CERCLA SITES
- RCRA SITE
- NATIONAL GUARD PROPERTY
- BUILDINGS OR STRUCTURES
- FORMER NAS BARBERS POINT BOUNDARY
- ROADS OR PAVED AREAS

Note:

POI-49 is the regional groundwater system which covers the entire area of former NAS Barbers Point.

N

0 1,600 3,200 Feet

Figure 1-2
Locations of IRP, POI, and Additional Sites
Former NAS Barbers Point
Oahu, Hawaii

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UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-48

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
IRP-01	CSR Coral Pit	1, 4	BRAC	The CSR Coral Pit is located in the east-central portion of former NAS Barbers Point. It is bounded on the west by Coral Sea Road, on the north and east by Bismark Sea Road, and on the south by Hamilton Road. The CSR Coral Pit is a topographic depression approximately 25 feet deep, covering approximately 26 acres (an irregular shape about 1,700 feet in length by 850 feet in width). The CSR Coral Pit was excavated to provide limestone fill material during base construction in the early 1940s. Following excavation, it was used for storage and disposal of various solid and liquid wastes until access to the site was halted in 1994. Waste oil and waste solvent collection and storage began at the site in the 1950s. A system consisting of a bowser offloading sump located on the West Crest adjacent to Coral Sea Road, approximately 300 feet of underground piping, and three 10,000-gallon ASTs located within the west floor of the CSR Coral Pit was used to handle and store waste oils, solvents, and other liquids generated during routine base operations. From the 1950s to 1979, wastes offloaded to the tanks were used as fuel for fire-fighting training activities on another part of the base and for dust control on base roadways. During this period, waste liquids were occasionally released from the storage tanks into the CSR Coral Pit through accidental spills or discharges. The waste quantity and types disposed of in this manner are unknown. In 1979, an outside contractor was hired to routinely drain liquids from the tanks for disposal off base. In 1993, use of the tanks was discontinued. In 1995, the offloading sump was sealed and the pipeline from the sump to the tanks was capped. The tanks were removed in 1996. Aircraft washwater from Hangar 282 was discharged to the CSR Coral Pit through an underground pipeline. Approximately 700,000 gallons of washwater was discharged to the site annually. Washwater discharge to the CSR Coral Pit had ceased by 1999.	In 1994, the U.S. Navy began an RI to evaluate the CSR Coral Pit. The RI determined that the eastern part of the CSR Coral Pit was suitable for recreational land use. A human health risk evaluation determined that the western part of the CSR Coral Pit had soil with contaminant concentrations (PAH, PCBs, TPH, and metals) that warranted a removal action. In 1999, an EE/CA was prepared to evaluate removal action alternatives. The EE/CA recommended a removal action in addition to further delineation. In 2000, an RSE was conducted on the West Floor of the CSR Coral Pit to better delineate the soil requiring a removal action. In 2000, an AM was prepared for the CSR Coral Pit selecting as the remedy soil excavation and consolidation of the contaminated material into a CU at a separate on-base location at the PWC Solid Waste Management Facility. A removal action was conducted between November 2000 and December 2001 at the CSR Coral Pit. Approximately 119,000 cy of contaminated soil, vegetative debris (i.e., wood chips), and solid relict waste debris were excavated and removed from the site and transferred to the CU. Verification sampling results following the 2000–2001 removal action showed that the removal action objective cleanup levels for the COCs were achieved (the cleanup levels were selected assuming restricted land use). In addition, a trenching and sampling investigation was performed from March 2001 to May 2001 on the West Floor of the CSR Coral Pit to characterize the extent of oil and oily sheen observed during removal action activities. The oil and associated PCBs identified in the West Floor were found to require no action. A DD was signed for the CSR Coral Pit in 2001. LUCs, as presented in Section 5 (Table 5-1), apply to the CSR Coral Pit.	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, PCBs, TPH as diesel and motor oil, arsenic, cadmium, chromium, lead, and manganese in soil	CERCLA Site Requiring LUCs	MS01 MS03 MS09 CSRCP02 CSRCP03 CSRCP06 CSRCP11 CSRCP12 CSRCP13
IRP-02	Ordy Pond	1	BRAC	Ordy Pond is located in the southeast portion of NAS Barbers Point, north of Tripoli Road. It is approximately 270 feet in diameter and occupies approximately 1.3 acres. Ordy Pond was reportedly used for the disposal of ordnance-related scrap material from the late 1960s to the late 1970s. During site surveys, flares and small arms munitions were found and removed. No other explosive ordnance was discovered.	In 1982 and 1983, an SI was conducted to address potential risks to animals and plants. In 1993, the EBS identified Ordy Pond as an area requiring further evaluation. From 1994 to 1998, the Navy conducted an RI at Ordy Pond. Environmental monitoring was conducted during two sampling events in 1998 and 1999 to further characterize the extent of chemicals detected in groundwater, surface water, and sediment at the site. Data collected during these monitoring events were used to conduct updated site risk assessments. Shoreline soil was sampled in 2005 to determine if surface soil along the south shore of the pond had been contaminated by pond water overflows. Human health and ecological risk assessments were conducted in 2005 to verify and update the results of the RI based on subsequent site monitoring data and revised regulatory screening criteria, and to evaluate use of the pond for university research. Chemicals (metals, SVOCs, cyanide, and pesticides) were detected in surface water and sediment during the multiple environmental sampling events; however, the concentrations of these chemicals did not appear to be increasing with time. The results of the human health risk assessment indicated that Ordy Pond is safe for future unrestricted land use. The results of the ecological risk assessment indicated that there are no significant risks to semi-aquatic birds that inhabit or visit the pond and that aquatic life in the pond appears to be thriving. A no action DD was signed for Ordy Pond in 2007.	NA	CERCLA No Further Action Site	MS01 MS03 MS09 OP04 OP07 OP08 OP10
IRP-03	Sanitary Landfill	1	Navy-retained	The Sanitary Landfill is located west of the main airstrip near the western base boundary. The landfill consists of 33 acres and is an irregularly shaped depression, bounded by steeply inclined bluffs along part of its perimeter. The Sanitary Landfill was originally a coral pit excavated in the early 1940s, and until 1972 it was the designated site for solid waste disposal at Barbers Point. Waste was typically burned and covered with fill. In 1976, the landfill ceased operating as a sanitary landfill. After that, bagged asbestos was deposited at the landfill for a period of time and digested sewage sludge was disposed of there. Additional information regarding the Oily Waste Landfarm is discussed under POI-40.	In 1994 and 1995, an RI was conducted at the Sanitary Landfill to assess whether environmental contamination was present within soils and groundwater at levels that pose a risk to human health and/or the environment. The RI included investigation of the nearby Former DCA. In addition, groundwater monitoring wells at the Oily Waste Landfarm were used to evaluate groundwater downgradient of the landfill. The results of the RI indicated that soil gas samples collected from the Sanitary Landfill contained TPH. Based on results of the RI, the Sanitary Landfill does not pose a risk to human health; however, could pose some risk to ecological receptors. The Sanitary Landfill is currently retained by the Navy and the use is not anticipated to change.	TPH in soil	On-going CERCLA Site	MS01 MS03 MS09 SL01
	DCA	1	Navy-retained	The former DCA is located immediately west of the Sanitary Landfill. The DCA area is the remnants of a drum crushing facility. At this location, drums (thought to contain mainly pesticides) were previously rinsed and crushed. There is no information available regarding the specific activities conducted, the number of drums crushed, quantities of waste material generated, or the years of operation.	The RI report for the Sanitary Landfill and former DCA recommended that additional analytical information should be collected at the DCA, due to reported metals and organochlorine concentrations in surface soil samples, to establish an appropriate cleanup goal to protect ecological receptors. In addition, the RI report also concluded that should future development or construction activities occur, leading to an increase in site use, it would be necessary to further delineate the extent of pesticide contamination at the former DCA through a follow-up RI or a removal action (see below). In 2002, an AM was prepared recommending excavation, treatment and disposal of contaminated soil from the former DCA. The action will be conducted as a time-critical removal action because of the imminent threat to human health and the environment posed by the continued presence of contamination. A removal action is pending for the former DCA to excavate contaminated soil and dispose of it in an off-island CERCLA-approved landfill. It is expected that the former DCA will be cleaned up to unrestricted use.	4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, gamma-chlordane, heptachlor epoxide, and arsenic in soil	On-going CERCLA Site	DCA01 MS03 MS09 SL01

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-01	Building 272, Transformer Substation A	2	BRAC	Substation A is located on the northern property boundary of former NAS Barbers Point, at the intersection of Franklin D. Roosevelt Avenue and Hornet Street. Substation A is a fenced transformer station consisting of Building 272 and surrounding concrete pads and utility trenches. Substation A was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions at Substation A were conducted under POI-48.	See POI-48	See POI-48	See POI-48
POI-02	USTs N1, BP17, BP18, BP19, and BP20	4	Navy-retained	Former UST N1 (BP92) was located on a vacant lot on the east side of Franklin Street between Franklin D. Roosevelt, Saratoga, and Valley Forge Avenues. N1 (BP92) was a 250-gallon waste oil UST constructed of steel, previously associated with Building 74. The UST was removed on November 12, 1993.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	MS03 MS09
				Former USTs BP17 and BP18 were located south of Franklin D. Roosevelt Avenue. The former USTs supported boilers at Building 55; BP17 was a 660-gallon diesel UST and BP18 was a 990-gallon fuel oil UST. Both were constructed of steel. They were installed in 1960 and removed on January 27, 1992.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
				Former USTs BP19 and BP20 were located near Building 77. Both USTs supported a boiler at Building 77; BP19 was a 675-gallon diesel UST; BP20 was a 2,000-gallon fuel oil UST. Both were of constructed of steel and were installed on April 21, 1958. The USTs were removed on October 9, 1991.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-03	Building 273, Transformer Substation B	2	BRAC	Substation B is located on the northern portion of former NAS Barbers Point, at the intersection of Franklin D. Roosevelt and Bougainville Roads. The substation is a fenced area consisting of Building 273 and surrounding concrete pads, utility trenches, and soil. Substation B was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions at Substation B were conducted under POI-48.	See POI-48	See POI-48	See POI-48
POI-04	Building 105 Area	NA	BRAC	Building 105 Area is located on the northwestern portion of the base, south of Munda Road. Building 105 was constructed in 1943 and operated until 1994 and was used as an aircraft arresting gear station. Materials stored at the building included 55-gallon drums of lube oil and antifreeze and small quantities of solvents.	The BCT recommended this site for “housekeeping” actions. No further action was required at this site.	NA	House-keeping; No Further Action	MS03 MS09
POI-05	Building 184, Substation S184	2, 3	BRAC	Substation S184 is located on the northwestern portion of former NAS Barbers Point near the intersection of Midway and Attu Streets. The area consists of soil surrounding Building 184, a concrete underground vault within Building 184, the ground floor of Building 184, concrete slabs outside of Building 184, and a small patch of soil exposed by an opening in the underground vault concrete floor. Substation S184 was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions at this site were conducted under POI-48 for transformer substations.	See POI-48	See POI-48	See POI-48
				A dry well was located inside Building 184.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-06	NEX Service Station Building 129 AST	1, 4	BRAC	The NEX Service Station Building 129 is located in the central portion of the base, east of Enterprise Road, between Mission and Monterey Roads. Building 129 was constructed during the original base build-out in 1945. The Building 129 service station facility formerly included a fuel dispensing facility, directly west of Building 129. A 250-gallon AST was located on the east side of the building and was used to collect waste oil until 1994.	An RI was conducted in 1995. The results of the RI indicated that soil samples collected from the site contained fuel-related VOCs, SVOCs, TPH, PCBs, and metals above screening levels. The petroleum hydrocarbon concentrations were at levels that did not require further action; however, a single soil sample contained lead above the cleanup level (400 mg/kg) for unrestricted reuse. Based on the intended commercial/industrial reuse of the site, the RI report concluded that the site did not pose a threat to human health. However, based solely on RI data, a land use restriction was placed on this site to prevent the area from being used for residential purposes. The land use restriction was documented in a ROD in 1999. In February 1999, the Navy collected soil samples at the site to reevaluate the findings of the 1995 RI. Results of subsequent sampling indicated that the single exceedance of lead was an anomaly and that no action is required, and the site is suitable for all reuse scenarios. The land use restriction was removed from this site. The site also does not pose a threat to the environment based on the results of the RI and subsequent sampling. A no action ROD amendment was signed for the NEX Service Station - Building 129 AST in 1999.	NA	CERCLA No Further Action Site	MS03 MS09 MUS01 NARLU01 AST01 CP3AST02
				Three former USTs (BP45, BP46, and BP47) were used at this site to store gasoline and MOGAS. Two of the three USTs were 7,500-gallon unleaded gasoline USTs and the third was a 10,000-gallon MOGAS UST. All three USTs were constructed of steel. The two 7,500-gallon USTs were installed in 1949, and the 10,000-gallon UST was installed in 1974. All three USTs were removed between September and October 1997.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-07	PWC Maintenance, Building 116	3	Navy-retained	Building 116 is located on the north-central portion of the base, north of Mission Street. Building 116 was constructed in the early 1950s and operated until 1994. The building was used to store and mix pesticides. A dry well is located north of Building 116.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-08	Building 91 and surrounding area, and Substation P	2, 4	BRAC and Navy-retained	Building 91 is located on the north-central portion of the base, east of Building 116, north of Mission Street, south of Langley, and west of Midway. Substation P is located within Building 91. Building 91 contains Substation P and originally served as a power plant and electrical substation. The first floor was used for PWC storage or maintenance materials, and the second floor was used by the Weapons Department as an armory. Building 91, Substation P was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions for Substation P were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Former USTs BP49, BP50, BP51, BP51B, and BP52 were each 25,000-gallon tanks containing waste fuel, diesel, and JP-5. The former USTs were associated with Building 91. The USTs were installed in 1943. Former UST BP49 was removed in 1991, and former USTs BP50, BP51, BP51B, and BP52 were removed in 1998. Former UST BP21 was a 1,100-gallon oil/water tank. The former UST was associated with Building 91. The UST was installed in 1943 and removed on October 7, 1996.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-09	PWC Transporta-tion Yard	3	Navy-retained	PWC Transportation Yard (Buildings 90, 98, 99, 790) is located in the northwestern portion of former NAS Barbers Point. It is bounded to the north by Langley Road, to the east by Midway, to the west by Enterprise Road, and to the south by Mission Street. It consists of Buildings 90, 98, 99, and 790, two former wash racks, vehicle storage areas, and hazardous substance storage areas. The PWC Transportation Yard began operation in the early 1950s and is currently still in operation. The washracks were used for washing PWC equipment and vehicles. Washwater was discharged to sumps located in the yard, which were connected to dry wells. Several dry wells were identified in the immediate vicinity of the PWC Transportation Yard.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-10	Substation 1789, Buildings 19, 1829, and BEQs (Buildings 34, 36, 37, 39, 46, 48, 1756, and 1788), and USTs	2, 4	BRAC and Navy-Retained	Substation S1789 is located on the north-central portion of former NAS Barbers Point, at the intersection of Enterprise and Belleau Woods. The substation consists of a fenced concrete pad and the surrounding soil. Substation S1789 was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions at Substation S1789 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Buildings 19 and 1829 are located on the north-central portion of former NAS Barbers Point, northwest of Enterprise Avenue and southwest of Saratoga Avenue. Building 19 previously operated as Bachelor Enlisted Quarters and Galley, and Building 1829 operated as the Naval Medical Clinic. The buildings were constructed in the 1940s. Former USTs BP02, BP03, BP04, BP05, BP06, BP07, BP08, BP09, BP10, BP11, BP12, BP13, BP14, BP59, BP61, BP62, BP88, and BP89 were associated with these buildings. The USTs contained diesel and fuel oil and were installed between 1960 and 1974, and removed prior to base closure in 1999. Several ASTs were also associated with buildings at this site.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-11	Buildings 446 and 454	NA	Navy-retained	Buildings 446 and 454 were located at the end of an unpaved road east of Lexington Road. The buildings operated from the 1940s to 1994 and have since been demolished. Building 454 was a 3,720–square-foot warehouse that was previously occupied by Kai Divers, a Navy diving club. At the time of the EBS, Building 446 was used for storage of dive equipment (such as storage lockers, air tanks, air compressors, and four dive boats) and light maintenance. Small quantities of hazardous materials were stored in the building. Building 454 was previously used by AIMD for storage of hazardous materials and airplane engine parts.	The BCT recommended this site for “housekeeping” actions. No further action was required at this site.	NA	House-keeping; No Further Action	MS03 MS09

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-12	Coral Pit 1	NA	Navy-retained	Coral Pit 1 is located in the northern portion of the base, west of the main entrance gate of former NAS Barbers Point, southwest of the intersection of Franklin D. Roosevelt Avenue and Bataan Avenue. Coral Pit 1 is on Navy-retained lands and occupies approximately 2 acres. Coral Pit 1 was excavated from 1960 to the mid-1970s to provide fill material used in construction projects throughout former NAS Barbers Point. It was used from the mid-1970s through the early 1980s as an active disposal area for construction debris and vegetative waste. Railroad ties, burned material, empty drums, a carbon dioxide tank, a portable generator, and a lead-acid car battery were identified among the discarded debris at Coral Pit 1.	An SI was conducted in 2000 at Coral Pit 1. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals, PAHs, and PCBs exceeding screening criteria at Coral Pit 1. The SI also identified a potential ecological risk. Removal action alternatives for Coral Pit 1 were evaluated in an EE/CA prepared in 2001. An AM documented the recommendation for a removal action consisting of implementing LUCS to restrict the area to industrial use. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Coral Pit 1 in accordance with Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at Coral Pit 1 is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. Coral Pit 1 was recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, Coral Pit 1 was recommended for no further action with regard to ecological risk. Concurrence was received from the DOH on April 6, 2005, for the BERA. A removal action was completed at Coral Pit 1 in September 2005, consisting of the implementation of LUCs to restrict the area to industrial use to address human health-risks at the site. A DD was signed for Coral Pit 1 in 2005. LUCs, as presented in Section 5 (Table 5-1), apply to Coral Pit 1 and are discussed in a LUCWP prepared in 2005.	Arsenic, antimony, lead, manganese, benzo(a)pyrene, dibenz(a,h)anthracene, and PCBs in soil	CERCLA Site Requiring LUCs	MS03 MS09 NRP02 NRP03 NRP05 NRP07 NRP08 NRP12 NRP13
POI-13	USTs BP81, BP82, BP83	4	Navy-retained	USTs BP81, BP82, and BP83 are located north of the intersection of Saratoga Road and Bataan Road. The NEX Touch-N-Go has four bays and three fuel dispenser islands. BP81, BP82, and BP83 were each 10,000-gallon tanks containing MOGAS, installed in 1987.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	MS03 MS06
POI-14	Coral Pit 2	NA	Navy-retained	Coral Pit 2 occupies 13 acres and is located between Enterprise Avenue and Midway Road, south of Franklin D. Roosevelt Avenue. Coral Pit 2 is located in the northern portion of the base. Coral Pit 2 was initially excavated to provide fill material for construction projects from the early 1940s to 1960. After 1960, excavation activities ceased, and the pit was used for the disposal of construction and demolition debris. It was also used as a stormwater collection area for runoff generated from residential developments north of former NAS Barbers Point. Dense vegetation and construction debris were observed throughout most of Coral Pit 2 and unsanctioned dumping occurred along the road leading to Coral Pit 2. Abandoned drums, an abandoned flammable liquids storage locker, empty solvent cans, and empty paint cans were observed along the road. Debris observed at Coral Pit 2 included decayed drums and 5-gallon cans; asphalt, concrete and rusted construction debris; scrap metal; a discarded oil-water separator; and a discarded flammable liquids storage locker.	An SI was conducted in 2000 at Coral Pit 2. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals, PAHs, and PCBs exceeding screening criteria at Coral Pit 2. The SI also identified a potential ecological risk. Removal action alternatives for Coral Pit 2 were evaluated in an EE/CA prepared in 2001. An AM documented the recommendation for a removal action consisting of implementing LUCS to restrict the area to industrial use. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Coral Pit 2 in accordance with Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at Coral Pit 2 is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. Coral Pit 2 was recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, Coral Pit 2 was recommended for no further action with regard to ecological risk. Concurrence was received from the DOH on April 6, 2005, for the BERA. A removal action was completed at Coral Pit 2 in September 2005, consisting of the implementation of LUCs to restrict the area to industrial use to address human health-risks at the site. A DD was signed for Coral Pit 2 in 2005. LUCs, as presented in Section 5 (Table 5-1), apply to Coral Pit 2, and are discussed in a LUCWP prepared in 2005.	Arsenic, antimony, chromium, iron, lead, manganese, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene in soil	CERCLA Site Requiring LUCs	MS03 MS09 NRP02 NRP03 NRP07 NRP08 NRP12 NRP13
POI-15	Auto Hobby Shop (Building 1869)	3, 4	Navy-retained	The Auto Hobby Shop (Building 1869) is located at the intersection of Enterprise Avenue and Saratoga Avenue on the northern portion of the base. Building 1869 was constructed in 1981 and was used as a vehicle maintenance shop and self-service auto hobby shop until the base closed in 1999. Minor vehicle maintenance services were performed at this site.	An SI was conducted in 2000 at the Auto Hobby Shop. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals exceeding screening criteria. Based on the findings from the SI, no further action is needed to protect human health at the Auto Hobby Shop; however, the SI identified a potential ecological risk. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Auto Hobby Shop site in accordance with Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at the Auto Hobby Shop is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. The Auto Hobby Shop is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Auto Hobby Shop was recommended for no further action. Concurrence was received from the DOH on April 6, 2005, for the BERA.	NA	CERCLA No Further Action Site	MS03 MS09 NRP02 NRP03 NRP05 NRP07
				Eight 250-gallon waste oil ASTs were also located in this area, and hydraulic fluid was previously stored in an UST that was removed.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
				A dry well was located west of Building 1869.	Remedial investigations for the dry well at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-16	Hawaii Air National Guard Building 1923	3, 4	BRAC	Hawaii Air National Guard facility is located southwest of the intersection of Saratoga and Midway Road. The area occupies approximately 2-acres and consists of a compound that includes Buildings 1922 (administration) and 1923 (automotive maintenance facilities). The yard south of Bldg 1923 was used for hazardous materials storage, hazardous waste accumulation, vehicle fueling, vehicle washing, and spray painting. One room in Bldg 1923 was used to refill automotive batteries, and battery acid was stored there. An automotive shop was also located in the building and lubricants and oils were stored. Hazardous waste was accumulated in a fenced area on the northeast edge of the compound. Waste from this site was reportedly discharged to dry wells.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
				Three former USTs (BP84, BP85, and BP85A [also identified as UST N2]) were also associated with this site and previously stored waste oil and diesel. The tanks have been removed. One AST was previously located in this area and was used to store petroleum naphthalene.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-17	Area South of Building 1570 (MWR Recycling Center Area)	4	Navy-retained	Buildings 1562 and 1570, a former MWR Recycling Center, are located in the northeastern portion of the base, southeast of the intersection of Cabot Road and Vinson Road. An open, unpaved waste oil storage area was noted south of the Building 1570 compound. Construction debris, hundreds of discarded sonobuoy containers, and 55-gallon drums that reportedly contained waste oil were observed at the site. Two, 250-gallon used oil ASTs are located adjacent to Building 1562.	An SI was conducted in 2000 at the Area South of Building 1570. Based on data collected during the SI, analytical results from soil samples detected concentrations of metals exceeding screening criteria. Based on the findings from the SI, no further action is needed to protect human health at the Area South of Building 1570; however, the SI identified a potential ecological risk. The Navy prepared a draft Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Area South of Building 1570 site in accordance with U.S. Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The Area South of Building 1570 is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Area South of Building 1570 was recommended for no further action. Concurrence was received from the DOH on April 6, 2005 for the BERA.	NA	CERCLA No Further Action Site	MS03 MS09 NRP02 NRP03 NRP05 NRP07
POI-18	Building 1759, Substation S1759	2	BRAC	Substation S1759 (Building 1759) Is located adjacent to Building 929, in the northeastern portion of former NAS Barbers Point, near the intersection of Pond and Corregidor Streets in a commercial/recreational land use area. The area consists of a fenced concrete transformer pad surrounded by soil, refrigeration equipment, air-condition chiller, and an asphalt-paved driveway.	Remedial investigations and any response actions for Substation S1759 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
POI-19	MWR Warehouse Complex (Buildings 1144, 1149, 1152, and 1153)	1, 3, 4	BRAC and Navy-retained	The MWR Warehouse Complex site is located in the northeast portion of former NAS Barbers Point. The MWR Warehouse Complex consists of Buildings 1144, 1149, 1150, and 1153, located on Corregidor Street. The MWR Warehouse Complex was built during the 1940s and was originally associated with the former Marine Corps Air Station Ewa airstrip. The warehouses were used to store maintenance equipment and supplies, and served as the auto maintenance building for MWR vehicles. Practices at the MWR Warehouse Complex included collection of used oil filters for disposal, collection of batteries and brake pads for recycling, and accumulation of waste oil in open, 5-gallon buckets. Two 500-gallon ASTs were also located south of Building 1150 and were used to store diesel fuel and MOGAS.	In 1995, an RI was conducted for the western half of the MWR Warehouse Complex in the vicinity of debris and abandoned drums and tanks. The results of the RI indicated that the area evaluated does not pose a significant risk to human health or the environment, and no further response action is required for this western portion of the site. A no action ROD was signed for the western portion of the site in 1999. In 2001, the eastern portion of the MWR Warehouse Complex was evaluated in an SI. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals and pesticides exceeding screening criteria. The MWR Warehouse Complex was evaluated in an EE/CA prepared in 2001. The Navy prepared a draft Tier 2, Step 3a BERA in 2005 and recommended an appropriate SMDP for the MWR Warehouse Complex due to potential ecological risk identified in the SI. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The MWR Warehouse Complex was recommended to be eliminated from further concern with regard to ecological risk. Concurrence was received from the DOH on April 6, 2005, for the BERA. An AM documented the recommendation for a limited removal action consisting of excavation and disposal of contaminated soil in a CERCLA-approved disposal facility. The limited removal action was completed at the MWR Warehouse Complex in August 2005. Approximately 961 cy of arsenic- and heptachlor epoxide-contaminated soil, concrete, and asphalt was excavated and transported off-island for disposal at a CERCLA-approved disposal facility. The excavated area was backfilled with clean soil. Results for samples collected during the removal action indicate that the cleanup levels for the COCs were met and the site no longer poses a threat to human health or the environment. It was concluded that the removal action objectives have been met and that no further response action is required to be protective of human and ecological receptors, and the site is suitable for unrestricted use. A no-further-response-action DD was signed for the MWR Warehouse Complex in 2005.	NA	CERCLA No Further Action Site following a Removal Action	MS03 MS09 NARLU01 NRP01 NRP02 NRP03 NRP05 NRP06 NRP07 NRP10 NRP14 NRP15
				A dry well was located between Buildings 1144 and 1149.	Remedial investigations for the dry well at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-20	Abandoned Roads near Ewa Airstrip	4	BRAC and Navy-retained	This site consists of an area north of the MCAS Ewa Airstrip where abandoned concrete foundations (former buildings) are currently located, and west of the MCAS Ewa Airstrip where several warehouses are located. Two warehouses (Buildings 1569 and 1545), a transmitter building (Building 1657), and an unused warehouse (Building 1327) are located west of the Airstrip. The MCAS Ewa Airstrip was constructed in the early 1940s on land at the northeast corner of the base. Roads were constructed during this time as well. By the 1950s, the airstrip and associated buildings had been abandoned. Former USTs BP71, BP72, and BP73 were also associated with Building 1545.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	MS03 MS09
POI-21	COMPAT-WINGSPAC (Buildings 972, 1822, and USTs BP54, BP55, and BP101)	4	Navy-retained	Building 972 and Building 1822 are located northeast of the intersection of Kasaan Bay and Vinson Roads. The COMPATWINGSPAC was previously located at the buildings. Building 972 was used for administrative purposes and Building 1822 and its associated equipment trailers were used as an intelligence gathering center for P-3 flight crews. Former USTs BP54 and BP55 were each 2,500-gallon tanks containing diesel; the tanks were removed September 23, 1996. Former UST BP96 (also identified as BP101) was a 500-gallon UST containing diesel; the tank was removed September 25, 1996. Four ASTs containing diesel were previously associated with Buildings 972 and 1822.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	MS03 MS09
POI-22	Fleet Imaging Center (Buildings 1767 and 1769 and USTs BP68, BP69, and BP70)	4	Navy-retained	The Fleet Imaging Center (Buildings 1767 and 1769) is a 1.6-acre site located in the northeastern portion of the base, north of Bauer Road, between Philippine Sea Road and Alward Road. Buildings 1767 and 1769 were constructed in the 1970s. Activities at Building 1767 included development of photographs using silver-containing fixer and developer solutions. Building 1769 previously operated as a power plant; however, at the time of the 1994 EBS it was used for storage. Several drums were noted in the hazardous waste storage area southeast of Building 1769. A stained and cracked concrete pad historically used for storing hazardous materials was observed southeast of Building 1769.	An SI was conducted in 2000 at the Fleet Imaging Center. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals, exceeding screening criteria. Based on the findings from the SI, no further action is needed to protect human health at the Fleet Imaging Center; however, the SI identified a potential ecological risk. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Fleet Imaging Center. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at the Fleeting Imaging Center is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. The Fleet Imaging Center is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA reports, which were prepared in coordination with DOH, the Fleet Imaging Center was recommended for no further action. Concurrence was received from the DOH on April 6, 2005, for the BERA.	NA	CERCLA No Further Action Site	MS03 MS09 NRP02 NRP03 NRP05 NRP07
				Former USTs BP68, BP69, and BP70 contained diesel to fuel four generators previously located within Building 1769. The three USTs were 2,500-gallon, single-walled, steel-constructed, diesel USTs. The USTs were installed in 1970. USTs BP68 and BP69 were removed on September 25, 1996, and UST BP70 was removed on January 27, 1992. Two ASTs containing waste oil and propane were previously associated with Building 1767.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-23	Runway 11 Clear Zone	1	BRAC	Runway 11 Clear Zone is an irregularly shaped lot located at the western boundary of Barbers Point. It is bounded by Malakole Road to the south, Hawaii Raceway Park to the west, and the Kapolei Business Industrial Park to the north. The 50.12-acre parcel is currently enclosed by an 8-foot chain-link fence, which was installed in the 1980s on its southern, western, and northern borders. The area was maintained as an undeveloped area to provide a safety buffer extending from the end of active Runway 11. The southwest corner of the clear zone was leased by Hawaiian Dredging and Construction Company and used for construction equipment and materials storage.	An RI was conducted in 1995 at Runway 11 Clear Zone. Surface and subsurface soil and groundwater samples were collected from the site. Analytical results showed the presence of low levels of VOCs, SVOCs, TPH, and metals above screening levels in a few shallow soil samples. Most of the identified chemicals were in a small area of shallow soil and in sandblasting grit that had spilled onto the site from the adjacent property. These constituents were evaluated for human health and ecological risk. The RI report concluded that no action was required for the Runway 11 Clear Zone site to be suitable for any reuse scenario. A no action ROD was signed for Runway 11 Clear Zone in 1999.	NA	CERCLA No Further Action Site	MS03 MS09 MS10 NARLU01 RCZ01
POI-24	Runway Sites, Transformer HH36 and Building 1911	2	BRAC	The runway sites include Building 1911 and HH36. Building 1911 is located at the intersection of Runway 4 and Runway 11, and houses precision approach radar equipment. Backup power was supplied by an aboveground diesel generator with a 55-gallon AST. HH-36 was located on Runway 4L-22R in a below-grade concrete vault containing electrical transformers.	Remedial investigations and any response actions for Transformer HH36 were conducted under POI-48.	See POI-48	See POI-48	See POI-48

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-25	Fire Fighting Training Pits	1, 4	BRAC	The Fire Fighting Training Pits are adjacent to the southwest side of the airfield and consist of an area approximately 16.5 acres. This site consists of two unlined, earthen berm pits and one concrete pit. The Navy used the Fire Fighting Training Pits since the late 1950s for weekly fire fighting drills. These drills were initially conducted in two unlined pits until they were abandoned following the construction of a lined fire fighting pit in 1984. A 6,000 gallon waste diesel/JP-5 AST and drainage sump were located at this site.	The Navy conducted an RI at the Fire Fighting Training Pits from 1994 to 1995. VOCs, SVOCs/PAHs, TPH, pesticides, PCBs, dioxins, furans, and metals were detected above screening levels in soil samples and VOCs, SVOCs/PAHs, TPH, a furan, and metals were detected above screening levels in groundwater. The risk assessment prepared for the RI determined that the unlined Fire Fighting Training Pits site do not pose a threat to human health or the environment based on the intended use of the property (industrial use, such as restricted area adjacent to a runway); however, if the property was to be used for residential purposes, an additional assessment and/or cleanup may be required due to lead concentrations in soil. Based on the RI data and the results of the risk assessment and data evaluation process, a restricted land use decision was made for the site. A remedial action for the site consisted of implementing LUCs to restrict use of the site to industrial. A restricted land use ROD was signed for the Fire Fighting Training Pits in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the unlined pits at the Fire Fighting Training Pits site where contamination still exists above residential cleanup levels. The portion of the Fire Fighting Training Pits site that contained the lined concrete pit is considered suitable for unrestricted use.	VOCs, SVOCs, PAHs, fuel constituents, pesticides, PCBs, dioxins, furans, and metals	CERCLA Site Requiring LUCs	MS03 MS09 FFTP01 NARLU01
POI-26	Former Sewage Treatment Plant (STP)	1, 4	BRAC	The former STP is located south of Runway 4, east of Solomons Road, north of Coral Sea Road and approximately 400 feet north of the Pacific Ocean. The area occupies approximately 2 acres. The former Sewage Treatment Plant includes a sewage lift station (Building 1847), a clarifier (Structure 1757), a chlorination unit (Building 595), several sludge drying beds (Structures 596 and 597), and an outfall near Nimitz Beach. The former Barbers Point Sewage Treatment Plant was constructed in 1942. The clarifier was added to the facility in 1969. In 1983, the operation of the plant was discontinued and the facility was largely abandoned; however, the lift station (Building 1847) is still operational. After 1983, the clarifier was used for temporary storage of oily waste materials collected from Navy sewage lift stations on Oahu. The sludge drying beds were used to hold oily sludge until 1994, when the sludge and a layer of underlying soil were removed and the use of the drying beds was discontinued. One, 1,000-gallon diesel AST was associated with the sewage lift station.	An RI was conducted at the former STP in 1994 and 1995. All concentrations detected in the surface soil samples were well below the screening levels. TPH, PAHs, and arsenic were detected above screening levels in subsurface samples. Nearly all the contamination detected at the site was restricted to subsurface soil beneath the southernmost sludge drying bed. A risk evaluation concluded that the site does not pose unacceptable risks to human health or the environment based on the present condition of the facility. However, the RI report recommended additional characterization of the clarifier and sludge drying beds because these units were still in use and the soil beneath them had not been fully investigated. In 2000, wastes from the clarifier were removed and disposed of. In 2001, a supplemental RI was completed within the sludge drying beds and beneath the base of the clarifier; groundwater samples were collected downgradient of the clarifier, and from within the sludge drying beds. The results of RI showed no evidence of unacceptable levels of contaminants. Because the data indicate that conditions at the former STP do not pose unacceptable risks to human health and the environment under the unrestricted reuse scenario, no action under CERCLA was recommended at the site. Results of the RI conducted in 1994 and 2000 indicated that low concentrations of arsenic, SVOCs, and TPH were present in the soil from releases of oily wastes at concentrations that do not pose a threat to human health or the environment. Low concentrations of TPH were also detected in the groundwater in the area. No further action is required at the site for CERCLA hazardous substances. All TPH contamination is located at the southernmost drying bed. The soil containing petroleum hydrocarbons is greater than 2 feet below the ground surface and does not pose a risk to human health or the environment; however, DOH regulations address the presence of TPH as an environmental nuisance, and a non-CERCLA notification and covenant are required for this site. A no action ROD was signed for the Former STP in 2002.	TPH	CERCLA No Further Action Site	MS03 MS09 FSTP01 FSTP03 FSTP04
POI-27	U.S. Coast Guard	2, 3, 4	BRAC	The U.S. Coast Guard is a tenant at former NAS Barbers Point occupying a fenced compound located south of Runway 4R-22L and north of Coral Sea Road. Coast Guard facilities include miscellaneous storage structures, residential and recreational facilities, an administrative building, and structures used for aircraft maintenance and operations. Transformer Substation S1820 is located on this site and is associated with Building 1820 (an emergency deluge system pump house), which is used in fire fighting operations. Five ASTs containing waste oil, diesel, and propane are also located on this site.	Remedial investigations and any response actions for Substation S1820 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Dry wells are located at this site.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	
				Three USTs (BP 63, BP 66, and BP 67) were used at this site to store MOGAS, wastewater, and waste oil. Seven ASTs are located on the compound, ranging in size from 250 to 1,100 gallons.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
POI-28	Stormwater Drainage Ditch	1, 3	BRAC	The Stormwater Drainage Ditch is located north of the U.S. Coast Guard facility and south of Runway 11-29. The Ditch is an earthen ravine approximately 50 feet wide, 20 feet deep, and 500 feet long that contains dry wells. The dry wells at the bottom of the Ditch facilitated drainage only; the Ditch does not have an outlet. The Stormwater Drainage Ditch received discharged stormwater and aircraft and equipment washwater through an interconnected drainage system from numerous catch basins near Buildings 110 and 111 and the former Fuel Farm north of the site.	An RI was conducted at the Stormwater Drainage Ditch in 1994 and 1995. Analytical results indicated that VOCs, SVOCs, PAHs, TPH, and metals were present in the soil and sediment at concentrations exceeding screening criteria. However, a risk assessment determined that these concentrations did not pose a risk under an industrial and recreational use scenario. In 1999, an AM was prepared recommending a time-critical removal action of sediments and bedrock so the site would be suitable for any reuse scenario. A removal action was conducted at the Stormwater Drainage Ditch from February 1999 to April 1999. Approximately 747 cy of PCB-contaminated sediment and bedrock were removed from the following locations: (1) the Stormwater Drainage Ditch, (2) a manhole associated with the drain line connected to the Stormwater Drainage Ditch, and (3) the dry wells at the base of the Stormwater Drainage Ditch. Following the excavation, confirmation sampling and risk assessment indicated that the overall condition of the Stormwater Drainage Ditch was protective of human health and the environment and the site was suitable for unrestricted reuse. A no-further-action ROD was signed for the Stormwater Drainage Ditch in 1999.	NA	CERCLA No Further Action Site following a Removal Action	MS03 MS09 SWDD01 SWDD02 SWDD03 SWDD04 SWDD07 SWDD08 SWDD09
				Dry wells were located in the drainage ditch.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-29	Hangars 110 and 111, Substation S110	2, 3	BRAC	Hangars 110 and 111 are located south of Midway Road and immediately north of the airfield. Substation S110 is located in an electrical room at Hangar 110. Although Hangar 110 was built as part of the original base construction in the early 1940s, it is not clear when the substation was constructed, or when the two transformers located in the substation were installed. Aircraft from Hangars 110 and 111 were washed in an area west of Building 111. The area consisted of hoses and drains that lead to an oil-water separator. Six 250-gallon waste oil ASTs were also located at this site.	Remedial investigations and any response actions for Substation S110 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Dry wells were associated with this site as well.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
				Former USTs BP22 and BP23 were used at this site to store diesel fuel.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	See Appendix A
POI-30	Former Fuel Farm	1	BRAC	The Former Fuel Farm is located immediately north of the eastern half of Runway 4. Built in the 1940s, the original Fuel Farm was a water displacement system including a group of 26 USTs (H01 through H26). By 1979, tanks at the fuel farm were removed from service, and in 1985 the facility was demolished.	An RI was conducted in 1995 at the Former Fuel Farm. Analytical results showed the presence of TPH in soil and groundwater samples. VOCs and SVOCs were also identified in soil above screening levels. These constituents were evaluated for human health and ecological risk. The RI report concluded that no action was required for the Former Fuel Farm site to be suitable for any reuse scenario. A no-action ROD was signed for the Former Fuel Farm in 1999.	NA	CERCLA No Further Action Site	MS03 MS09 MS10 FFF01 NARLU01
POI-31	Buildings 140 (Substation S140), 141, and 142)	2, 3	BRAC and Navy-retained	Buildings 140, 141, and 142 are warehouses located northeast of the intersection of Enterprise Avenue and Midway Street. Buildings 140, 141, and 142 were constructed in the early 1940s for aviation maintenance and general storage. Substation S140 is located within Building 140. The area consists of a concrete ground floor, a concrete utility trench, concrete underground vault, and a small patch of soil exposed by an opening in the underground vault concrete floor.	Remedial investigations and any response actions for Substation S140 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Dry wells were associated with this site as well.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-32	Building 690	NA	BRAC	Building 690 is a small wooden structure located east of Building 141 and north of Building 140 and Card Street. During the EBS, several drums, cans, and leaking containers of dry cleaning solvents, and six drums of waste oil were observed in the building. During a subsequent inspection, however, the building was observed to be completely cleared of all materials previously stored there.	The BCT recommended this site for “housekeeping” actions. No further action was required at this site.	NA	House-keeping; No Further Action	MS03 MS09
POI-33	Building 144	3	BRAC	Building 144 is a warehouse located north of Monterey, west of Midway, and south of Mission Street. It is a concrete block structure located on an elevated concrete pad that appears to have been constructed to serve as a loading dock. Building 144 was built in the early 1940s for aviation and general storage, and was more recently used for storing hazardous substances. A dry well is located in the adjacent storage yard, which was also used to store hazardous substances.	Remedial investigations at this site were conducted under POI-47 for the dry well.	See POI-47	See POI-47	See POI-47
POI-34	Airfield Services Refueler Operations Building 145, Self Help Facility Building 156	3, 4	Navy-retained	Building 145 is located in a fenced compound east of Midway and northwest of Runway 4L-22R. Building 156 is located east of Midway Road and north of Building 145. Building 145 was constructed in the early 1940s and has served as an automotive maintenance facility throughout the history of NAS Barbers Point. Three dry wells are located within the refueling compound. Building 156 was also constructed in the early 1940s, although its original use is not known. The building served as the Construction Build Self-Help Facility. Four ASTs, ranging in size from 200 to 10,000 gallons, were associated with this site.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-35	Engine Test Cell, Building 175	3, 4	BRAC	Building 175 is located southwest of the intersection of Langley and Midway Roads. The building was used for testing of engine-driven compressors, and records indicate it was once used as the Turbo-Jet Test Facility. The building operated from before 1969 to 1991 to test engines and from 1991 to 1999 as a warehouse. A dry well was associated with this site.	Remedial investigations at this site were conducted under POI-47 for the dry well.	See POI-47	See POI-47	See POI-47
				Former USTs BP41 and BP42 were 10,000-gallon, steel-constructed, AVGAS USTs. The tanks were installed in 1960 and have been removed.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-36	Building 117 and associated Buildings (1749, 1818, 1898, 1220)	2, 3, 4	BRAC	Building 117 is located north of Langley, between Enterprise and Midway Roads. It is a 200,000-square-foot maintenance shop used for maintenance of aviation and ordnance equipment and office space. The building is enclosed behind a 6-foot fence on the western and southern boundaries. The entire compound covers an area of approximately 75,000 square feet. Building 117 was constructed in the early 1940s as the aviation assembly and repair building. In 1943, the building included shops for various operations including plating and anodizing, metal working, heat treating, and parts cleaning. There were at least 30 tanks in the building at one time. Waste from plating operations were reportedly discharged to dry wells. Hazardous waste from the building was formerly stored in two 90-day storage sites located northwest and southeast of Building 117, one of which was HW2.	Investigations at this location were also conducted as part of the “National Guard Property” and the “Former HW6,” described later in the table as well as those listed below.	See “National Guard Property”	See “National Guard Property”	MUS01 See “National Guard Property”
				The building also includes Transformer Substation S117, which included both an upstairs and downstairs transformer. Substation S117 is located within Building 117 and is comprised of four transformers located in a restricted access areas of the building (upstairs and downstairs locations). Substation S117 was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions for Substation S117 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Several dry wells are also located at this site.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
				Former USTs BP24 and BP25 were 2,500-gallon, concrete-constructed, waste oil USTs. The USTs were installed in 1944 and were removed and replaced with ASTs. In addition, this site also had hydraulic fluid pits that were closed under the UST program.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	See Appendix A
POI-37	Current Fuel Farm	2, 3, 4	BRAC	The Current Fuel Farm is located in the northeast portion of the installation, north of the runway, and is surrounded on the north, east and west sides by the Hawaii Air National Guard property. The Current Fuel Farm is 7 acres in size. Transformer substation S1860 is located at this site. The site was operational through base closure in 1999.	Remedial investigations and any response actions for Substation 1860 were conducted under POI-48 for the transformer.	See POI-48	See POI-48	See POI-48
				Built in 1952, with continued improvements through 1979, the Current Fuel Farm consisted of 10 structures and several ASTs and USTs. Four ASTs were removed in October 2000, and the remaining 5 ASTs (Tanks 1864, 1865, 1860-1, 1860-2, and 1866) have been closed. Former USTs BP48, BP93 (also identified as UST N3), and BP94 (also identified as UST N4]) were used for waste oil/fuel storage and have been removed.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST Site	
				The Current Fuel Farm contains three dry wells.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-38	Building 66, Substation C	2	BRAC	Building 66, also known as Substation C, is located southeast of the intersection of Nassau and Saratoga Roads. Substation C provides electrical service to Hangar 282 and was constructed in the late 1950s.	Remedial investigations and any response actions for Substation C were conducted under POI-48.	See POI-48	See POI-48	See POI-48
POI-39	Hangar 282	3, 4	BRAC	Hangar 282 is located in the northeast portion of Barbers Point, south of Saratoga Road. The building housed approximately 40 aircraft from five squadrons. Minor aircraft maintenance and washing was conducted on a concrete apron south of the building. The hangar had a satellite hazardous waste accumulation point (HW6). Electroplating was discontinued shortly after the City and County of Honolulu issued an industrial wastewater discharge permit in 1992 for sanitary wastewater from the facility, which prohibited the discharge of electroplating process water into the sewer. Five, 500-gallon waste diesel/JP-5 ASTs were also associated with Hangar 282.	Investigation activities conducted at Hangar 282 are discussed under “National Guard Property” and “Former HW6” discussed later in the table.	See “National Guard Property” and “Former HW6”	See “National Guard Property” ” and “Former HW6”	See “National Guard Property” ” and “Former HW6”
				According to NEESA, a dry well received acid waste discharge, but no evidence of discharge to any dry wells was noted.	Remedial investigations for the dry well at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-40	Oily Waste Landfarm	NA	Navy-retained	The Oily Waste Landfarm is a 4-acre facility located near the western boundary of the base, east of Coral Sea Road and west of Midway Road. The landfarm is located approximately 400 feet southwest of the Sanitary Landfill (IRP-03). The Oily Waste Landfarm was designed for oily waste bioremediation. A total of 11 groundwater monitoring wells surround the landfarm.	In 1994 and 1995, an RI was conducted at the Sanitary Landfill to assess whether environmental contamination was present within soils and groundwater at levels that pose a risk to human health and/or the environment. Groundwater monitoring wells at the Oily Waste Landfarm were used to evaluate groundwater downgradient of the landfill. Based on results of the RI, the Sanitary Landfill does not pose a risk to human health; however, could pose some risk to ecological receptors. The Sanitary Landfill and the Oily Waste Landfarm are currently retained by the Navy and the use is not anticipated to change. The Oily Waste Landfarm is not part of the Sanitary Landfill (IRP-03).	Oily waste	RCRA site (Non-CERCLA program)	MS03 MS09 SL01

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-41	Buildings 1681 and 1684, Substations S1681 and S1684; and former UST BP57	2, 4	BRAC	Building 1681 contains a standby generator for airfield operations. Substation S1681 is located within Building 1681 in an industrial land-use area on the southwestern portion of the base, west of Runway 4 and south of the Sanitary Landfill, at the intersection of Bon Homme Richard Street and Constellation Road. Substation S1681 consists of a fenced concrete pad and surrounding soil. Substation S1681 was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions for Substation S1681 were conducted under POI-48.	See POI-48	See POI-48	See POI-48
				Building 1684, also known as Substation S1684, is located in an industrial land use area on the southwestern portion of the base, southwest of Building 1681 near the intersection of Kitty Hawk and Coral Sea Roads. Substation S1684 consists of a fenced concrete pad surrounded by soil and an asphalt driveway. Substation S1684 was constructed in the early 1940s as part of the original electrical grid for the base.	Remedial investigations and any response actions for Substation S1684 were conducted under POI-48.	See POI-48	See POI-48	
				A former UST was located between Buildings 1680 and 1681, near the intersection of Kitty Hawk and Coral Sea Roads. Former UST BP57 provided fuel for an emergency generator located within Building 1681. The former UST was a 1,000-gallon, single-walled, steel-constructed, diesel UST. The UST was installed in 1964 and removed in 1996, and replaced with a 250-gallon AST.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST site	
POI-42	Old Engine Test Cells Area; USTs BP27, BP27A, BP28, and BP29-BP40	1, 3, 4	BRAC	The Old Engine Test Cells Area (Building 174, 175, and 176) is located on the south-central portion of the base, west of the intersection of Coral Sea Road and Long Island Road. The site operated from 1940s to 1990s. Use of the engine test cells was discontinued in the 1980s and the buildings, tank, and piping were removed in 1992, at which time 400 gallons of JP-4 jet fuel was spilled. The contaminated soil was contained within plastic liners that were placed above and below the spill area.	An RI was conducted in 1995. The results of the RI indicated that asbestos fibers were present in soil and transite material. In 1997, the Navy conducted a maintenance activity to remove solid waste, during which sections of old insulated piping were removed. In the process of removing the piping, transite fragments were crushed and spread further across the site. In January and February 1999, site reconnaissance activities were conducted to visually assess ACM. Results indicated a greater than anticipated area of ACM contamination. In September 1999, assessment of an additional 4 acres at the Old Engine Test Cells site was conducted to evaluate the presence of ACM; ACM was observed. The Old Engine Test Cells Area was evaluated in an EE/CA prepared in September 2000. An AM was prepared in November 2000 to document the recommendation for a removal action to remove soil mixed with ACM. A removal action was conducted at the Old Engine Test Cells Area from November 2000 to February 2001. Approximately 9,000 cy of soil mixed with ACM was excavated from 5 acres of the site. The soil mixed with ACM was disposed of in the CU. The removal action performed at the Old Engine Test Cells Area met the removal action objective of no visible observation of ACM and no asbestos fibers in the air above background levels. As a result, no further response action is necessary to ensure protection of human health and the environment under any reuse scenario. A no-further-action ROD was signed for the Old Engine Test Cells Area in 2001.	NA	CERCLA No Further Action Site following a Removal Action	MS03 MS09 OETCA02 OETCA03 OETCA04 OETCA05 OETCA07 OETCA08
				Former USTs BP27, BP27A, BP28, and BP29 through BP40 were located adjacent to Buildings 174, 175, and 176. The 15 USTs ranged in size from 260 to 25,000 gallons, were constructed of concrete or steel, and contained fuel oil, waste oil, or AVGAS. The 15 USTs were installed in 1945 and have been removed.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST site	
				Several dry wells are also located at this site.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-43	Golf Course, Golf Course Maintenance Shop (Building 1089), Golf Course Battery Shop (Buildings 1855 and 1881), and UST BP77	3	Navy-retained	The Golf Course covers 346 acres near the eastern boundary of former NAS Barbers Point. The 18-hole golf course is bounded by the abandoned MCAS Ewa airstrip and revetments to the north and west and by the former NAS Barbers Point property line to the south and east. Buildings of interest associated with the golf course include Building 1089, Golf Course Maintenance Shop, and Buildings 1855 and 1881, Golf Course Battery Shop (see below for more discussion on these buildings). The golf course was built in the 1950s on land occupied in the 1940s by MCAS Ewa housing. In the past, the Golf Course received sewage sludge from the Fort Kamehameha Sewage Treatment Plant at Pearl Harbor. The Golf Course has historically used sewage sludge to condition the soil. During field sampling for the 2000 SI, it was discovered that sandblast grit originating from the Pearl Harbor Naval Shipyard was shipped to the Golf Course for use in temporary greens, tee boxes, and cart path repair. The sandblast grit was used at the Golf Course for at least 8 years prior to sampling activities, and was identified at 16 locations throughout the Golf Course.	In 2000, the Golf Course was evaluated in an SI. Surface and subsurface soil samples were collected. In addition, surface samples were collected from temporary greens, tee boxes, and golf cart paths where sandblast grit was known to have been used. Groundwater was not sampled at the site. Metals concentrations exceeding screening criteria were found along the southwestern and the eastern portions of the sites where sandblast grit has been used for cart path repair, dust control, and construction of temporary greens and tee boxes. Based on those findings, the Golf Course was evaluated in an EE/CA prepared in 2001. The anticipated plan for future use of the Golf Course involves separating it into two types of areas: (1) playable areas (tee boxes, fairways, greens, and cart paths) and (2) nonplayable areas (unused space between the existing fairways). During the SI, two features of the playable areas were investigated: (1) fairways and (2) areas where sandblast grit was used for constructing temporary greens, tee boxes, and cart paths) (hereafter referred to as Sandblast Grit Use Areas). All of the Sandblast Grit Use Areas are located within playable areas of the golf course. In addition, several stockpiles of sandblast grit are currently stored on a paved surface between the 10th-hole and 11th-hole fairways, which is located in a nonplayable area of the golf course. The Navy plans to change the land use of the nonplayable areas of the golf course from restricted to unrestricted for the anticipated future land use as residential. Separate risk evaluations were completed for the fairway areas and the Sandblast Grit Use Areas. The Sandblast Grit Use Areas of the golf course were recommended for further action in the SI based on the results of a human health PRE and SERA for a residential (unrestricted) use scenario. By association, the stockpiles of sandblast grit are also considered to be recommended for further action. The PRE and SERA concluded that no additional action was necessary for the fairways and for the nonplayable areas of the Golf Course. The Navy prepared a draft Tier 2, Step 3a BERA in 2005 and recommended an appropriate SMDP for the Golf Course due to potential ecological risk identified in the SI. Results of Step 3a of the Tier 2 BERA suggest that populations of omnivorous mammals and omnivorous birds may be adversely affected by concentrations of the metals commingled with sandblast grit. For this reason, the BERA recommended that action be taken to	Arsenic, chromium, manganese in soil	On-going CERCLA Site	MS03 MS09 NRP02 NRP03 NRP04 NRP05 NRP07 NRP15 NRP16

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-43 (cont'd)	Golf Course, Golf Course Maintenance Shop (Building 1089), Golf Course Battery Shop (Buildings 1855 and 1881), and UST BP77 (cont'd)	3	Navy-retained	Golf Course (cont'd)	reduce or eliminate risks to ecological resources posed by the sandblast grit stockpiles in the nonplayable areas at the Golf Course. Concurrence was received from the DOH on April 6, 2005, for the BERA. Lastly, an FFS was prepared for the Sandblast Grit Use Areas to evaluate alternatives for the site. Currently, the planned future use of the playable areas of the golf course is for the Navy to retain ownership and maintain its current use (commercial/industrial) as a golf course. The nonplayable areas of the golf course between the fairways are planned for transfer with the future land use as residential (or unrestricted). Both restricted and unrestricted land-use scenarios were evaluated for the site, in accordance with the policy on LUCs associated with environmental restoration activities. Stockpiled sandblast grit currently stored in a nonplayable area of the golf course must be removed to satisfy the unrestricted reuse of this portion of the site. The recommended alternative for the sandblast grit stockpiles is excavation and off-island disposal. The sandblast grit will be disposed of as part of the IRP to accommodate the land use change to residential for the area where the sandblast grit stockpiles are located. This material is currently stockpiled on a paved surface and has not been in contact with any on-site soil or surface cover. Approximately 1,856 cubic yards of material will be removed and disposed of at an off-island facility. Because the Navy plans to retain ownership of the golf course and maintain the current land use (commercial/industrial) of the playable areas of the golf course, the recommended alternative for the playable areas of the golf course is implementing LUCs. The current land use does not provide a robust ecological habitat, and the Sandblast Grit Use Areas comprise only 0.3 percent of the total golf course land area; as a result, the current ecological risk is deemed acceptable provided LUCs are implemented. LUCs will be required for the sandblast grit use areas.	Golf Course (cont'd)	Golf Course (cont'd)	
				The Golf Course Battery Shop (Buildings 1855 and 1881) is located on the northeastern portion of the base, west of Essex Road and southeast of the Golf Course Driving Range. Golf cart batteries are recharged in the shop. The area southwest of Building 1881 was used for rinsing carts before storage and recharge. A drainage area observed there consisted of a shallow trench dug into the soil south of the concrete pad.	In 2000, an SI was conducted at the Golf Course Battery Shop. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals (arsenic, chromium, and manganese) exceeding screening criteria. Based on the findings from the SI, no further action is needed to protect human health at the Golf Course Battery Shop; however, the SI identified a potential ecological risk. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Golf Course Battery Shop. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at the Golf Course Battery Shop is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. The Golf Course Battery Shop is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Golf Course Battery Shop was recommended for no further action. Concurrence was received from the DOH on April 6, 2005, for the BERA.	NA	CERCLA No Further Action Site	
				The Golf Course Maintenance Shop (Building 1089) is located on the northeastern portion of the base, south of Bismark Sea Road and east of the intersection of Bismark Sea Road and Gambier Bay Road. Building 1089 has been used to store equipment and materials associated with maintaining the Golf Course. In addition, Building 1089 has also been used for storage of pesticides since the 1950s. At the time of the 1994 EBS, pesticides were stored in a locker located adjacent to Building 1089; pesticide containers were also rinsed in the vicinity of the building. In addition, fuel and automotive fluids are stored at the site. Two ASTs were also used to store diesel fuel and MOGAS.	In 2000, an SI was conducted at the Golf Course Maintenance Shop. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals (arsenic, lead, and manganese) exceeding screening criteria. Based on the findings from the SI, no further action is needed to protect human health at the Golf Course Maintenance Shop; however, the SI identified a potential ecological risk. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Golf Course Maintenance Shop. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at the Golf Course Maintenance Shop is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. The Golf Course Maintenance Shop is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Golf Course Maintenance Shop was recommended for no further action. Concurrence was received from the DOH on April 6, 2005, for the BERA.	NA	CERCLA No Further Action Site	
				Former UST BP77 previously stored aviation gasoline for fueling aircraft. The former UST was a 25,000-gallon, concrete-constructed, AVGAS UST. The UST was installed in 1942 and removed in 1992.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST site	
				Dry wells are associated with this site as well.	Remedial investigations for the dry wells at this site were conducted under POI-47.	See POI-47	See POI-47	See POI-47
POI-44	Former Firing Ranges, MGR No. 3 and 4, CPR, NTSR, STSR	1	BRAC	This POI consists of five firing ranges identified as the former NTSR, former STSR, MGR No. 3, the MGR No. 4, and CPR (see site-specific writeups below for each of these five firing ranges). All five former firing ranges are located on the southeastern portion of the base, east of Coral Sea Road.	See site-specific write-ups below for each of the five firing ranges.	See below	See below	See below

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-44 (cont'd)	Former Firing Ranges, MGR No. 3 and 4, CPR, NTSR, STSR (cont'd)	1	BRAC	The CPR consists of a former carbine rifle and a former pistol practice range. The former range is located at the southern end of Charger Road, approximately 1,000 feet southwest of the intersection of Tripoli Road and White Plains Road on the southeastern portion of the base. The CPR has reportedly been unused since approximately 1985. The former carbine rifle range is located on the western side of the range and is approximately 250 feet wide and 650 feet long. The only remnant of the range is the 250-foot-wide, 14-foot-high target berm located on the southern end of the range. The sideline berm and central berm were removed during the live-round clearance conducted in 1999. The former pistol range is located on the eastern side of the range and is approximately 200 feet wide and 225 feet long. The only remnants of the range are a concrete target support structure and the 600-foot-long, 16-foot-high U-shaped berm that served as the target and sideline berms. The firing line was removed during the live-round clearance conducted in 1999.	In 1994, an RI was conducted at the CPR. Based on data collected during the RI, the CPR was determined to be suitable for short-term recreational land use; however, a further health risk evaluation or response action would be warranted if the use were to change to an unrestricted, residential scenario. In 1998, an RSE was conducted at CPR to evaluate the extent of contamination at the site. An EE/CA was prepared in 1999 to evaluate removal action alternatives to allow for unrestricted, residential use of the CPR. An AM documented the recommendation for a removal action consisting of the excavation and disposal of contaminated soil in the CU. A removal action was conducted at the CPR between November 1999 and April 2000 to remove lead-contaminated soil. Results for confirmation soil samples indicate that the removal action objective cleanup level for lead (400 mg/kg) was met and the site no longer poses a threat to human health or the environment and is suitable for unrestricted reuse. Approximately 730 cy of soil was removed, stockpiled, and placed in the CU. A no-further-action ROD was signed for the CPR in 2001.	NA	CERCLA No Further Action Site following a Removal Action	MS03 MS09 FFR01 FFR02 FFR03 FFR05 FFR06 FFR07 FFR08 FFR09 FFR12
				MGR No. 3 has a trapezoidal shape. It is located on the southeastern portion of the base, with the firing line located approximately 300 feet southwest of the intersection of Tripoli Road and White Plains Road and the target berm located directly west of the intersection of White Plains Road and White Plains Circle. The only remnants of the range are the 200-foot-wide bermed firing line and portions of the 500-foot-diameter, 11-foot-high target berm. Significant portions of the circular target berm, including the entire southern half, are no longer present.	In 1994, an RI was conducted at the MGR No. 3. Based on data collected during the RI, the MGR No. 3 was determined to be suitable for short-term recreational land use; however, a further health risk evaluation or response action would be warranted if the use were to change to an unrestricted, residential scenario. In 1999, an RSE was conducted at MGR No. 3 to evaluate the extent of contamination at the site. Samples were collected from the ground floor and the northern berm of the site and analyzed for lead and antimony. Sampling results were below the removal action objective cleanup levels for lead (400 mg/kg) and antimony (31 mg/kg). An EE/CA addendum determined that MGR No. 3 was suitable for unrestricted, residential use. A no action ROD was signed for the MGR No. 3 in 2001.	NA	CERCLA No Further Action Site	MS03 MS09 FFR01 FFR02 FFR03 FFR05 FFR06 FFR09 FFR12
				MGR No. 4 has a trapezoidal shape. It is located on the southeastern portion of the base, with the firing line directly south of Natoma Bay Street between Coral Sea Road and Anzio Street and the target berm located 200 feet east of the intersection of Coral Sea Road and Eisenhower Road. The only remnant of the range is portions of the 1,000-foot-long, 600-foot-wide, 10-foot-high oval target berm.	In 1994, an RI was conducted at the MGR No. 4. Based on data collected during the RI, the MGR No. 4 was determined to be suitable for short-term recreational land use; however, a further health risk evaluation or response action would be warranted if the use were to change to an unrestricted, residential scenario. In 1999, an RSE was conducted at MGR No. 4 to evaluate the extent of contamination at the site. An EE/CA addendum was prepared in 1999 to evaluate removal action alternatives to allow for unrestricted, residential use for MGR No. 4. An AM documented the recommendation for a removal action consisting of the excavation and disposal of contaminated soil in the CU. A removal action was conducted at the MGR No. 4 between November 1999 and April 2000 to remove lead and antimony-contaminated soil. Samples were collected from the range floor, northern berm, northeastern berm, and southern berm of the site and analyzed for lead and antimony during removal action activities. Results for confirmation soil samples indicate that the removal action objective cleanup levels for lead (400 mg/kg) and antimony (31 mg/kg) were met and the site no longer poses a threat to human health or the environment and is suitable for unrestricted reuse. Approximately 462 cy of soil was removed, stockpiled, and placed in the CU. A no-further-action ROD was signed for the MGR No. 4 in 2001.	NA	CERCLA No Further Action Site following a Removal Action	MS03 MS09 FFR01 FFR02 FFR03 FFR05 FFR06 FFR07 FFR08 FFR09 FFR12

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-44 (cont'd)	Former Firing Ranges, MGR No. 3 and 4, CPR, NTSR, STSR (cont'd)	1	BRAC	The former NTSR is located on the eastern portion of the base, east of Coral Sea Road, and south of San Jacinto Road. The site appears to have been active in 1950 and abandoned prior to early 1960s. There were apparently two trap and two skeet (or combination skeet and trap) fields (from west to east), with shooting toward the south. The range was heavily vegetated and mostly undeveloped. Approximately 5 acres were cleared for construction of the range, but had become overgrown with vegetation. Numerous archaeological features including remnant enclosures and mounds were found in the vicinity of the former NTSR. The former NTSR was identified as a potential source of metals contamination due to past range activities. Also located within the former NTSR are 'akoko plants, which are listed as a federally endangered plant species.	In 1999, an RSE was prepared to investigate the former NTSR. Based on data collected during the RSE, soil sampling analysis detected concentrations of metals exceeding screening criteria at the former NTSR. A treatability study was performed at the former NTSR in 2002 to evaluate the cost of treatment to stabilize the lead- and arsenic-contaminated soil using triple super phosphate (TSP), evaluate the leachability of PAHs from areas of observed clay pigeon piles, and delineate the extent of lead, arsenic, and clay-pigeon contamination. 'Akoko area soil was sampled in 2003 at the former NTSR after the EPA suggested that additional surface soil samples should be collected within clusters of 'akoko near the periphery of the excavation area. This sampling phase provided supplemental data to determine if these clusters could be excluded from the proposed removal action and eliminate the need to disturb 'akoko plants during a removal action. The former NTSR was evaluated in an EE/CA prepared in 2003. An AM documented the recommendation for a removal action consisting of the stabilization, excavation, and disposal of contaminated material in the CU. The Navy consulted with the USFWS and developed a conservation plan to preserve the federally endangered 'akoko plant species during and after the removal action. A removal action was conducted at the former NTSR between October 2003 and April 2004. Approximately 52,000 cy of lead and PAH-contaminated soil was stabilized with TSP, excavated, and processed through mechanical screens. Of the 52,000 cy of excavated material, approximately 43,000 cy of stabilized material passed the screens and was transported and placed in the existing CU. The approximately 9,000 cy of uncontaminated material retained on the screens was used for site restoration. Soil within 'akoko clusters with high densities of 'akoko plants were manually excavated to preserve the plants. Confirmation samples were collected and analyzed for total lead and PAHs. All lead concentrations were below the cleanup level (400 mg/kg). An RME concentration was calculated for each PAH detected in soil. The RME concentrations of all PAHs were below the cleanup levels. Based on the post-removal laboratory data and RME calculations, the former NTSR is suitable for unrestricted reuse, and no further action is necessary at the site. A no-further-response-action DD was signed for the former NTSR in 2007.	NA	CERCLA No Further Action Site following a Removal Action	MS09 FNTSR01 FNTSR02 FNTSR03 FNTSR06 FNTSR07 FNTSR08 FNTSR11 FNTSR13
				The former STSR is located on the southeastern portion of the base, east of Coral Sea Road and north of Tripoli Road. The former STSR appears to have been active in 1950 and abandoned sometime prior to the early 1960s. Approximately 8 acres were cleared to accommodate the former STSR and a fence was placed around the former STSR in 1999. The former STSR was identified as a potential source of metals contamination due to past range activities. In addition, numerous archaeological features including sinkholes, enclosures, and wall segments were identified. Several sites are considered significant cultural resources, eligible for listing on the National Register of Historic Places. Several cultural resources are located within the former STSR site boundary.	In 1994, an RI was initiated at the former STSR. Based on sampling results, metals (lead) were detected in soil at concentrations exceeding screening criteria. In 1998, an RSE was prepared to collect data necessary for preparation of removal action documentation for the former STSR. Soil samples were collected and analyzed for lead. The sampling locations were limited to the general area of this estimated 8-acre range boundary. In the course of sampling and review of preliminary analytical data, it became evident that lead contamination had impacted an area much larger than the 8 acres previously anticipated. In 1999, an RSE was prepared to further delineate the extent of lead contamination identified during the 1998 RSE and evaluate whether the remaining soil presented unacceptable risk to potential human or ecological receptors. During the 1999 RSE, arsenic was added as a COC. The investigation results indicated that arsenic and lead contamination was limited to the loose surface soil and did not extend into the coralline rock subsurface. Results of the RSE were presented in the EE/CA prepared in 2001. The former STSR was evaluated in an EE/CA prepared in 2001. A treatability study was performed in 2001 to evaluate cost-effective treatments for stabilizing the lead- and arsenic-contaminated soil. An AM documented the recommendation for a removal action consisting of the stabilization with TSP, excavation, and disposal of lead-, arsenic-, and PAH-contaminated soils, and removal of clay pigeon target fragments. For the archaeological features, the AM recommended berming and fencing. A removal action was conducted at the former STSR from December 2000 to July 2003. Approximately 70,000 cy of material was excavated and processed through mechanical screens. Of that material, approximately 42,000 cy of lead-, arsenic-, and PAH-contaminated soil was passed through screens and was stabilized with TSP, transported, and disposed of in the CU, and approximately 28,000 cy of uncontaminated material was retained on the screens for site restoration activities. Lead- and arsenic-contaminated soil within the archaeological feature areas was not removed in order to preserve the archaeological features. PAH-contaminated soil within the clay pigeon area was removed to meet cleanup levels for industrial land use. A DD was signed for the former STSR in 2007. LUCs, as presented in Section 5 (Table 5-1), apply to the two areas at the former STSR (archaeological features and the clay pigeon area) where contamination in soil still exists above residential or industrial cleanup levels.	Lead, arsenic, PAHs in soil	CERCLA Site Requiring LUCs	MS03 MS09 FFR01 FFR05 FFR06 FSTSR03 FSTSR04 FSTSR05 FSTSR06 FSTSR07 FSTSR08 FSTSR09

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-45	Coral Pit 3	1	BRAC	Coral Pit 3 is located on the eastern portion of the base, northwest of the intersection of San Jacinto and Moffet Street. Coral Pit 3 was excavated for fill material during the 1950s and 1960s and is approximately 4.5 acres in size. Dense trees and shrubs surround the pit; grasses and some trees are within the pit. The pit was previously used as an unauthorized disposal area. Most of the wastes disposed of at the pit consisted of wood and concrete rubble; however, small amounts of domestic wastes, abandoned drums, and oil/solvent cans were also present in the pit.	An RI was conducted in 1995 at Coral Pit 3. Surface and subsurface soil and groundwater samples were collected from the site. The results of the RI indicated that soil samples collected from the site contained fuel-related VOCs, SVOCs, TPH, and metals. No site-related chemicals were found in the groundwater. VOCs, SVOCs, and TPH concentrations were at levels that did not require further action; however, a single soil sample contained lead above the cleanup level (400 mg/kg). Based on the intended commercial/industrial reuse of the site, the RI report concluded that the site did not pose a threat to human health or the environment. However, based solely on RI data, a land use restriction was placed on this site to restrict the area from being used for residential purposes. The land use restriction was documented in a ROD in 1999. In February 1999, the Navy collected soil samples at the site to reevaluate the findings of the 1995 RI. Results of subsequent sampling indicated that the single exceedance of lead was an anomaly and that no action is required, and the site is suitable for all reuse scenarios. The land use restriction was removed from this site and no further action was recommended. The site also does not pose a threat to the environment based on the results of the RI and subsequent sampling. A no-action ROD amendment was signed for Coral Pit 3 in 1999.	NA	CERCLA No Further Action Site	MS03 MS09 MS10 MUS01 CP301 CP3AST01 NARLU01
POI-46	Revetments	NA	BRAC and Navy-retained	A total of 74 revetments (Building 1227 through Building 1301), of which 31 are located on Navy-retained land, occupy 16 acres south of Bismark Sea Road and east of Fogarty Road on the eastern portion of the base. The revetments are reinforced concrete structures built in the early 1940s for aircraft storage. Most of the structures are abandoned, except for the stables that occupy the eastern row of revetments on Feyer Street and J.F. Kennedy (Buildings 1236 to 1245). Evidence of random dumping in and around the revetments was observed, including an empty drum of trichlorofluoromethane, a full drum of lubrication oil, and five empty rusted drums. Three abandoned ASTs were observed in a field between Building 1288 and Building 1289. Sandblast grit was also identified within two riding arenas at this site.	In 2000, the Revetments on Navy-retained property were evaluated in an SI. Based on data collected during the SI, no groundwater contamination was identified; however, soil sampling analysis detected concentrations of metals exceeding screening criteria in two riding arenas where sandblast grit was present. Although residential use is not planned for the Revetments, further action was recommended in the SI for areas where sandblast grit is located, because it is a waste-like material. Based on the findings from the SI, no further action is needed to protect human health at the Revetments; however, the SI identified a potential ecological risk. The Revetments were evaluated in an EE/CA prepared in 2001. The Navy prepared a draft Tier 2, Step 3a BERA in 2005 and recommended an appropriate SMDP for the Revetments due to potential ecological risk identified in the SI. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The Revetments were recommended to be eliminated from further concern with regard to ecological risk. Concurrence was received from the DOH on April 6, 2005, for the BERA. Based on findings from the SI and BERA and the intended industrial reuse, LUCs are necessary to restrict future use of the site to commercial/recreational purposes (such as horse stables and riding arenas). No LUCs have been implemented at this time for the Revetments; however, LUCs will be required for the sandblast grit use areas (such as horse stables and riding arenas).	Arsenic, chromium, manganese in soil	On-going CERCLA Site	MS03 MS09 NRP02 NRP03 NRP05 NRP07
				Former USTs BP74, BP75, BP76, BP78, and BP79 previously stored aviation fuel for fueling aircraft. USTs BP74, BP75, and BP76 were 25,000-gallon tanks, and BP78 and BP79 were 50,000-gallon tanks. USTs were concrete-constructed, AVGAS USTs, installed in 1942. BP74, BP75, BP76, and BP78 were removed in September 1996. BP79 was removed on March 11, 1992.	All USTs at former NAS Barbers Point were evaluated under a separate Navy program.[b] See Appendix A for information on the UST sites.	See Appendix A	UST sites	
POI-47	Dry Well Network (industrial waste discharge and hazardous substance runoff)	3	BRAC and Navy-retained	POI-47 is a basewide site that includes all dry wells at NAS Barbers Point. Dry wells at NAS Barbers Point have been classified according to past and present uses and the types of materials discharged to them. There are 40 Category 1 and 124 Category 2 dry wells located at NAS Barbers Point. The Dry Well Network at former NAS Barbers Point is used mainly to facilitate storm-water runoff; however, domestic sewage and industrial wastes were discharged to several of the dry wells located near buildings and airplane hangars. Dry wells are classified as underground injection control (UIC) wells, as defined by the Safe Drinking Water Act. Category 1 and 2 dry wells represent the greatest potential environmental concern.	An RI was conducted at the Dry Well Network in 1999. Results of the investigation indicated that sediments in several dry wells contained hazardous substances (cadmium, chromium, lead, total fuel hydrocarbons); however, the impacted sediments posed no threat to human health or the environment because the sediments are not affecting regional groundwater quality and there is no potential for direct contact with the sediments in the dry wells. A no-action ROD was signed in 1999 for the Dry Well Network.	NA	CERCLA No Further Action Site	MS03 MS09 DW01 NARLU01

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
POI-48	Transformer Substation System (includes Substations A, B, C, P, HH-36, HH-37, HH-39, EMH47, EMH49C, TV-8, S92, S110, S117, S140, S184, S724, S1681, S1684, S1759, S1761, S1789, S1820, S1835, S1844, S1860)	2	BRAC and Navy-retained	POI-48 includes all transformer substations on Barbers Point and overlaps POI-01 (Substation A) POI-03 (Substation B); POI-05 (Substation S184); POI-08 (Substation P); POI-10 (Substation S1789); POI-18 (Substation S1759); POI-24 (Substation HH36); POI-29 (Substation S110); POI-31 (Substation S140); POI-38 (Substation C); and POI-41 (Substations S1681 and S1684). Electrical transformers at NAS Barbers Point were originally cooled with oil containing PCBs. Such oil was once widely used because of the superior insulating properties of PCBs. PCBs were subsequently identified as being carcinogenic. In the 1980s, in accordance with the TSCA and Title 40 CFR 761, U.S. Navy PWC personnel tested the dielectric fluid in transformers to determine the PCB concentrations. On the basis of these data, PWC subsequently retrofitted or retrofilled transformers to reduce PCB concentrations in dielectric fluids to below the TSCA PCB-containing definition of 50 mg/kg. PWC collected wipe and soil samples at potentially contaminated substations to determine whether PCBs had impacted adjacent areas (Ogden 1999). PWC also began remediation efforts at Substations P, S117, and S140 (Ogden 1999). All transformers were retrofitted or retrofilled prior to base closure.	Twenty-three transformer substations were identified in the basewide EBS and required further evaluation. The substations were either previously tested for PCBs by PWC and found to require further testing, or had never been tested. In 1995, an RI was conducted to evaluate 21 of 23 transformer substations identified in the EBS: Substations A, B, C, S110, S140, S184, S1681, S1684, S1759, S1789, HH36, TV-8, S724, S1820, S1835, S1844, S1860, HH37, HH39, EMH49C, and EMH47. Two transformers, Substations P and S117, were not evaluated in the RI because PWC had completed sampling and had already started cleanup activities. Based on data previously collected by PWC and data collected during the RI, nine transformers were recommended for no additional evaluation (see Table 3-1): Substations C, HH37, HH39, EMH47, EMH49C, S724, S1789, S1820, and S1835. The remaining 14 transformers were recommended for removal actions and are discussed further in either Table 3-2 or Table 3-3. An EE/CA was prepared for the 14 transformer substations identified in the RI. No further action was recommended in the EE/CA for Substations A and HH-36. Analytical data obtained after completion of the 1995 RI and the initial EE/CA indicated a need to reevaluate one transformer site (Substation S1789). An addendum to the EE/CA recommended that Substation S1789 be included in the removal action. In total, 10 transformer substations did not require a response action (see Table 3-1): Substations A, C, HH36, HH37, HH39, EMH47, EMH49C, S724, S1820, and S1835. An AM documented the approval of the removal actions at the remaining 13 transformer sites recommended in the EE/CA and EE/CA Addendum. In addition, a second EE/CA Addendum identified another transformer (S92) not originally identified in the EBS, RI, or previous EE/CAs. However, the site was not added to the AM because the Navy conducted pre-construction investigative sampling at Substation S92 which indicated a removal action was not necessary. Therefore 11 total transformers did not require a response action (see Table 3-1): Substations A, C, HH36, HH37, HH39, EMH47, EMH49C, S92, S724, S1820, and S1835. A removal action was conducted at five of the 13 transformer sites (Substation S110, S184, S1681, S1684, and S1860) that were identified for transfer. The removal action was conducted from June 1998 to October 1998. PWC conducted the removal action at the remaining eight transformers (Substation B, P, TV-8, S117, S140, S1759, S1789, and S1844). Following the removal actions and subsequent confirmation sampling, six transformer substations were recommended for no further action: Substations P, TV-8, S1681, S1684, S1789, and S1844 (see Table 3-2); and seven transformer substations required LUCs: Substations B, S110, S117, S140, S184, S1759, S1860 (see Table 3-3 and Table 5-1). The ROD for *Sixteen Transformer Substations* prepared in 1999 documented the decision of no further action for Substations A, P, HH-36, TV-8, S92, S1681, S1684, S1789, and S1844 and the decision of further response action in the form of LUCs for Substations B, S110, S117, S140, S184, S1759, and S1860. The ROD for *No Action and Restricted Land Use Sites* prepared in 1999 documented the decision of no further action for Substations C, HH-37, HH-39, EMH47, EMH49C, S724, S1820, and S1835. All excavated soil from the removal actions were stockpiled at former NAS Barbers Point awaiting thermal desorption treatment. In addition, in 1999 a basewide PCB inventory was prepared to identify additional transformer substations at former NAS Barbers Point that may have had electrical equipment that utilized PCB-containing dielectric fluid and to summarize all sampling conducted at the transformer substations (prior to the initiation of the RI). Substation S1761 was identified for further investigation because it was not included in any of the previous investigations or EE/CAs. An SI was conducted between February 2002 and December 2003. Based on the results of the RI, a removal action was recommended for surface soil at transformer substation S1761, and this site was included in an AM prepared in 2003 (referencing a 1997 EE/CA). A removal action was conducted at transformer Substation S1761 from April 2004 to June 2004. Post-excavation confirmation sampling verified the removal of PCB-contaminated soil and confirmed that established cleanup levels had been achieved. Therefore, no further action was recommended for the site (see Table 3-2). A draft DD was prepared for Substation S1761 in June 2006 documenting the recommendation of no further action. In 2004, the previously stockpiled soil along with the newly excavated soil from Substation S1761 was treated by thermal desorption treatment at former NAS Barbers Point. Once laboratory results confirmed that the treated soil met cleanup levels, the soil was released for use as unrestricted backfill.	PCBs in soil	CERCLA No Further Action Sites: Substations A, C, HH36, HH37, HH39, EMH47, EMH49C, S92, S724, S1820, S1835. CERCLA No Further Action Sites Following a Response Action: Substations P, TV-8, S1681, S1684, S1761, S1789, and S1844. CERCLA Sites Requiring LUCS: Substations B, S110, S117, S140, S184, S1759, S1860.	MS03 MS09 NARLU01 TS01 TS02 TS03 TS04 TS05 TS08 TS09 TS10 TS11 TS13 TS14 TS15 TS16 TS17
POI-49	Regional Groundwater System	5	BRAC and Navy-retained	POI-49 is a basewide site that includes all groundwater beneath NAS Barbers Point. Groundwater underlying former NAS Barbers Point is not currently used for domestic water supply purposes and requires desalination before use as drinking water.	Regional groundwater quality at former NAS Barbers Point was investigated basewide during an RI in 1997. Hazardous substances were detected in groundwater in several localized areas; however, they were detected at low concentrations that posed no threat to human health or the environment. Furthermore, concentrations of hazardous substances (arsenic, lead, thallium, atrazine, bis(2-ethylhexyl)phlalate, lindane, 4,4'-DDE, and 4,4'-DDT) in groundwater appear consistent throughout the aquifer underlying former NAS Barbers Point, and with the exception of one area, do not appear to be the result of releases attributed to base activities. Regional groundwater monitoring activities have been completed. In 1999, a no-action ROD was signed for the Regional Groundwater System.	NA	CERCLA No Further Action SIte	MS09 GW01 NARLU01

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

IRP/POI	Site Name	OU	BRAC or Navy- retained Property	Description/Characteristics	History	COCs	Status	Reference Document Number[a]
CU	Consolidation Unit (CU)	NA	Navy-retained	The CU is constructed above an existing inactive monofill previously used to landfill sewage sludge in the northeast part of the NAVFAC Hawaii Solid Waste Management Facility, in the southwestern part of former NAS Barbers Point. It is bounded on the north by an aircraft runway, on the northwest by the sludge drying beds, and on the southwest by a closed municipal solid waste landfill. The CU covers approximately 5.2 acres of land within a former depression. The CU currently resembles an oval-shaped, grass covered flat-topped hill with gently sloping sides, and the area is vacant except for features and structures retained or constructed to protect or monitor the CU/Monofill cover, including methane gas vents, monitoring wells, access roads, fencing, and stormwater drainage structures (swales and an infiltration pond). The NAVFAC Hawaii Solid Waste Management Facility was originally a coral pit excavated in the early 1940s to provide fill material for Navy construction projects. Approximately 40 cubic yards per day of digested sewage sludge from wastewater treatment plants was disposed of at the monofill from 1902 through the late 1990s. The monofill is situated adjacent to a closed municipal solid waste landfill.	Risk evaluations concluded that releases resulting in environmental impacts occurred at several sites throughout former NAS Barbers Point that could endanger public health or welfare and the environment. The CU was conceived and designed to receive waste material generated at the multiple former NAS Barbers Point sites undergoing investigation and/or response actions. In 2000, the Navy prepared an AM to document the decision to consolidate contaminated soil and debris excavated from multiple cleanup sites within former NAS Barbers Point, including the CSR Coral Pit, Former STSR, Former NTSR, Old Engine Test Cells Area, Former MGR No. 3 and 4, Former CPR, Former HW6, and Storm Water Drainage System. Specifications and drawings were developed for the CU, including requirements and specifications for the CU cover, methane gas venting system, stormwater drainage system, and associated structures. The CU was constructed on top of the monofill from October 2000 to July 2005. Contaminated soil, debris, and IDW were excavated from those sites listed and consolidated in the CU. The Navy then constructed a low permeability containment system consisting of soil and a geosynthetic liner over the CU. Groundwater and methane gas monitoring wells at the CU/Monofill site were constructed and protected during the construction. Seven passive methane gas vents were installed, and an infiltration basin and drainage swales were constructed to control surface water runoff. A draft DD was prepared for the CU/Monofill in 2007. The DD is anticipated to be signed in 2008. LUCs, as presented in Section 5 (Table 5-1), restrict future access and use of the site. Long-term monitoring and maintenance of the CU is also required.	Includes all COCs from POI sites where removal action waste materials were placed in the CU	CERCLA Site Requiring LUCs	CU02 CU03 CU04 CU05 CU07 CU10 CU11
Former HW6	Former Hazardous Waste Accumulation Area 6 (HW6)	NA	BRAC	Former HW6 is located in the north-central potion of former NAS Barbers Point. It is located east of Hangar 282, and measures approximately 165 feet by 30 feet. HW6 was composed of 6 storage cells located within a grass-covered fenced area; each cell measured approximately 20 by 30 feet except for Cell 6, which measured approximately 50 by 30 feet. HW6 was used as an on-site 90-day waste storage facility at which drums and other containers of hazardous waste were temporarily stored until their disposal off-base.	A visual survey and subsurface sampling were conducted at HW6 during the survey and sampling of Miscellaneous Units. Sampling results indicated concentrations of PCBs above screening levels in Cell 1 and concentrations of metals and SVOCs above screening levels in Cell 6. A subsequent site inspection was conducted at Cells 1 and 6 in September 1999. Sampling and PRE results from Cell 1 indicate cadmium and PCB levels were suitable for industrial use but not residential. In addition, arsenic levels in Cell 6 posed a risk. A removal action was recommended. In 2001, the National Guard conducted a Phase II EBS which included sampling around the exterior of HW6. One sample collected from a swale about 40 feet showed arsenic exceeding screening levels (Belt Collins 2001). In 2001, an AM was prepared for excavation and disposal of soil from HW6 (Navy 2001). A removal action was conducted at the Former HW6 sites from August to September 2001. Approximately 80 cy of soil was excavated from HW6 Cell 1, 140 cy of soil was excavated from HW6 Cell 6, and 5 cy of soil was excavated from the drainage swale. RME calculations concluded that soil at HW6 no longer posed a risk under an unrestricted use scenario. As a result of the removal actions at HW6, no further response action is necessary to ensure protection of human health and the environment and the site is suitable for unrestricted reuse. A no-further-action ROD was signed for former HW6 in 2003.	NA	CERCLA No Further Action Site following a Removal Action	HW601 HW602 HW604 HW605 HW606 MUS01
National Guard Property	National Guard Property	NA	BRAC	National Guard Property is located in the north-central part of former NAS Barbers Point. The parcel is bounded by aircraft runways on the southeast, an open area to the east, Saratoga Avenue to the northwest, and Enterprise Road and Langley Street to the west. The parcel of land was transferred to the Department of the Army for use by the National Guard.	The Hawaii Army National Guard conducted a Phase II EBS in 2001. PCBs were detected in several discrete and composite samples that warranted additional evaluation. In addition, the EBS recommended additional evaluation of specific areas of the National Guard property based on previous activities at these locations. In total, 5 areas of the National Guard property were recommended for additional evaluation. Chemicals were also detected in the drainage swale near HW6, but this was addressed under the HW6 investigation. The Navy conducted an SI in 2003 to investigate the five areas identified as requiring further evaluation. Results of the SI indicated that PCB concentrations in the three PCB areas (combined as one area) do not pose a risk to human health. There were no chemical concentrations detected near the JP-5 Fuel Line (the second area), or from the groundwater near Hangar 282 (third area). Arsenic and PCBs were detected at concentrations exceeding screening criteria near HW2 (fourth area), however risk assessment results indicate these concentrations do not pose a risk to human health. Chemical concentrations detected from the fuel spill area (fifth area) do not exceed screening criteria. Therefore, the SI report recommended no additional investigation or action at these five areas and the areas are suitable for unrestricted use.	NA	CERCLA No Further Action Site	NGP01 NGP02

Notes:
[a] = See Table 8-1 in the report for list of former NAS Barbers Point reference documents.
[b] = ASTs and USTs were not regulated under CERCLA. See Appendix A for further information regarding the UST sites.
4,4'-DDD = 1,1-Dichloro-2,2-bis(p-chlorophenyl)ethane
4,4'-DDE = dichlorodiphenyldichloroethylene
4,4'-DDT = 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane
ACM = asbestos-containing material
AIMD = Aircraft Intermediate Maintenance Department
AM = action memorandum
AST = aboveground storage tank
AVGAS = aviation gasoline
BCT = BRAC Cleanup Team
BEQ = Bachelor Enlisted Quarters
BERA = baseline ecological risk assessment
BRAC = Base Realignment and Closure
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
COC = contaminant of concern

Table 1-1: IRP, POI, and Additional Sites at Former NAS Barbers Point (Continued)

Notes (Continued):
COMPATWINGSPAC = Commander, Patrol Wings U.S. Pacific Fleet
CPR = Carbine Pistol Range
CSR = Coral Sea Road
CU = Consolidation Unit
cy = cubic yard
DCA = Drum Crushing Area
DD = decision document
DOH = State of Hawaii Department of Health
EBS = environmental baseline survey
EE/CA = engineering evaluation/cost analysis
EPA = U.S. Environmental Protection Agency
FFS = focused feasibility study
HW2 = Hazardous Waste Accumulation Area 2
HW6 = Hazardous Waste Accumulation Area 6
IDW = investigation-derived waste
IRP = Installation Restoration Program
LUC = land use control
LUCWP = Land use control work plan
MCAS = Marine Corp Air Station
mg/kg = milligram per kilogram
MGR = Machine Gun Range
MOGAS = motor gasoline
MWR = Morale, Welfare, and Recreation
NA = not applicable
NAS = Naval Air Station
NAVFAC = Naval Facilities Engineering Command
NEESA = Naval Energy and Environmental Support Activity
NEX = Navy Exchange
NTSR = Northern Trap and Skeet Range
Ogden = Ogden Environmental and Energy Services Co.
OU = operable unit
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyl
POI = point of interest
PRE = preliminary risk evaluation
PWC = Public Works Center
RCRA = Resource Conservation and Recovery Act
RI = remedial investigation
RME = reasonable maximum exposure
ROD = record of decision
RSE = removal site evaluation
SERA = supplemental ecological risk assessment
SI = site investigation
SMDP = scientific management decision point
STP = Sewage Treatment Plant
STSR = Southern Trap and Skeet Range
SVOC = semivolatile organic compound
TPH = total petroleum hydrocarbon
TSCA = Toxic Substances Control Act
USFWS = U.S. Fish and Wildlife Service
UST = underground storage tank
VOC = volatile organic compound

1.2.2 Operable Unit Designation

Initially, operable units (OU) were designated for groups of sites or POIs that could be similarly characterized, or for which response actions could be conducted in a combined effort, as described below:

- OU 1: RI sites (includes IRP-01, IRP-02, IRP-03, POI-06, POI-19, POI-23, POI-25, POI-26, POI-28, POI-30, POI-42, POI-44, POI-45)
- OU 2: Transformer Substation System (equivalent to POI-48, established after the EBS; includes POI-01, POI-03, POI-05, POI-08, POI-10, POI-18, POI-24, POI-27, POI-29, POI-31, POI-36, POI-37, POI-38, POI-41)
- OU 3: Dry Well Network (POI-47; includes POI-05, POI-07, POI-09, POI-15, POI-16, POI-19, POI-27, POI-28, POI-29, POI-31, POI-33, POI-34, POI-35, POI-36, POI-37, POI-39, POI-42, POI-43);
- OU 4: Petroleum USTs and ASTs (includes IRP-01, POI-02, POI-06, POI-08, POI-10, POI-13, POI-15, POI-16, POI-17, POI-19, POI-20, POI-21, POI-22, POI-25, POI-26, POI-27, POI-34, POI-35, POI-36, POI-37, POI-39, POI-41, POI-42). These sites were not regulated or addressed under CERCLA due to the petroleum exclusion. See Appendix A for further information regarding the UST sites.
- OU 5: Regional Groundwater System (POI-49)

The OU designations of the sites are shown in Table 1-1; however, because OU designations were revised as restoration activities proceeded, these designations are seldom referred to in the follow-on investigation reports prepared for these sites.

1.3 SUMMARY OF COCS

In general, the contaminants of concern (COC) identified at the POI sites were total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCB), polynuclear aromatic hydrocarbons (PAH), dioxins, pesticides, and metals. The COCs for the sites requiring land use controls (LUC) are also shown in Table 1-1.

1.4 SUMMARY OF SITE INVESTIGATION STATUS

This section identifies the status of each site. Some of the IRP, POI, and additional sites went through the CERCLA process (site investigations [SI], RIs, removal actions, etc), and other sites (such as UST sites, AST sites, or “housekeeping” sites) were addressed outside of the CERCLA process. The investigations, removal actions, and final status of the three IRP sites, 49 POI sites, and three additional sites are discussed further below and in Table 1-1.

1.4.1 Sites Requiring Housekeeping Actions Only or Addressed Outside CERCLA, or Addressed as Part of a Basewide CERCLA Site

Following the EBS, the BCT determined that some of the sites identified in the EBS could be cleaned up via “housekeeping” actions (such as removal of solid waste or isolated drums/containers), or could be addressed through programs other than CERCLA (such as UST or AST sites). The petroleum USTs and ASTs at former NAS Barbers Point were not regulated or addressed under CERCLA due to the petroleum exclusion. The term “hazardous substance" is defined in CERCLA Section 101(14) to include substances listed under CERCLA Section 102(a). The definition excludes "petroleum, including crude oil or any fraction thereof," unless specifically listed or designated under CERCLA. USTs and ASTs at former NAS Barbers Point were regulated under Hawaii Administrative Rule (HAR) 11-451 and HAR 11-281. In addition, there were several POI sites for which transformers or dry wells were the only environmental concern. All of the dry wells were

addressed separately as basewide POI-47, and all of the transformers throughout former NAS Barbers Point were addressed as basewide POI-48. Table 1-2 identifies all of those sites for which a separate CERCLA investigation was not conducted. Figure 1-2 identifies these sites as "No Further Action" sites. Additional information on the USTs located within the POI sites is provided in Appendix A of this report.

Table 1-2: Sites Requiring Housekeeping Actions Only, Addressed Outside of CERCLA, or Addressed as Part of a Basewide CERCLA Site

POI	Site Name	Program Status (Housekeeping, another Non-CERCLA Program, or Basewide POI Sites)	Reference Document Number[a]
POI-01	Building 72, Transformer Substation A	Transformers addressed as POI-48	MS03 MS09
POI-02	USTs N1, BP17, BP18, BP19, BP20	UST Site[b]	MS03 MS09
POI-03	Building 273, Transformer Substation B	Transformers addressed as POI-48	MS03 MS09
POI-04	Building 105 Area	Housekeeping	MS03 MS09
POI-05	Building 184, Substation 184	Transformers addressed as POI-48 Dry wells addressed as POI-47	MS03 MS09
POI-07	PWC Maintenance, Building 116	Dry wells addressed as POI-47	MS03 MS09
POI-08	Building 91and Surrounding Area, and Substation P	Transformers addressed as POI-48	MS03 MS09
POI-09	PWC Transportation Yard	Dry wells addressed as POI-47	MS03 MS09
POI-10	Buildings 19, 1829, and BEQs (USTs and Substation 1789)	UST Site[b] Transformers addressed as POI-48	MS03 MS09
POI-11	Buildings 446 and 454	Housekeeping	MS03 MS09
POI-13	USTs BP81, BP82, BP83	UST Site[b]	MS03 MS09
POI-16	Hawaii Air National Guard Building 1923	Dry wells addressed as POI-47	MS03 MS09
POI-18	Building 1759, Substation 1759	Transformers addressed as POI-48	MS03 MS09
POI-20	Abandoned Roads near Ewa Airstrip	UST Site[b]	MS03 MS09
POI-21	COMPATWINGSPAC (Buildings 972, 1822, and USTs BP54, BP55, and BP101)	UST Site[b]	MS03 MS09
POI-24	Runway Sites, Transformer HH36 and Building 1911	Transformer addressed as POI-48	MS03 MS09

Table 1-2: Sites Requiring Housekeeping Actions Only, Addressed Outside of CERCLA, or Addressed as Part of a Basewide CERCLA Site (Continued)

POI	Site Name	Program Status (Housekeeping, another Non-CERCLA Program, or Basewide POI Sites)	Reference Document Number[a]
POI-27	U.S. Coast Guard	UST Site[b] Transformers addressed as POI-48 Dry wells addressed as POI-47	MS03 MS09
POI-29	Hangars 110 and 111, Substation S110	Transformers addressed as POI-48 Dry wells addressed as POI-47	MS03 MS09
POI-31	Buildings 140 (Substation S140), 141, and 142	Transformers addressed as POI-48 Dry wells addressed as POI-47	MS03 MS09
POI-32	Building 690	Housekeeping	MS03 MS09
POI-33	Building 144	Dry wells addressed as POI-47	MS03 MS09
POI-34	Airfield Services Refueler Operations Building 145, Self Help Facility Building 156	UST Site[b] Dry wells addressed as POI-47	MS03 MS09
POI-35	Engine Test Cell, Building 175	UST Site[b] Dry wells addressed as POI-47	MS03 MS09
POI-36	Building 117 and associated Buildings (1749, 1818, 1898, and 1220)	UST Site[b] Transformers addressed as POI-48 Dry wells addressed as POI-47	MS03 MS09
POI-37	Current Fuel Farm	UST Site[b] Transformers addressed as POI-48 Dry wells addressed as POI-47	MS03 MS09
POI-38	Building 66, Substation C	Transformers addressed as POI-48	MS03 MS09
POI-39	Hangar 282	Addressed as the “National Guard Property”	MS03 MS09
POI-40	Oily Waste Landfarm	Non-CERCLA program (RCRA site)	MS03 MS09
POI-41	Buildings 1681 and 1684, Substations S1681 and S1684; and former UST BP57	UST Site[b] Transformers addressed as POI-48	MS03 MS09

Notes:
[a] = See Table 8-1 in Section 8 of the report for list of former NAS Barbers Point reference documents.
[b] = USTs and ASTs were not regulated under CERCLA. See Appendix A for further information regarding the UST sites.
BEQ = Bachelor Enlisted Quarter
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
COMPATWINGSPAC = Commander, Patrol Wings U.S. Pacific Fleet
POI = point of interest
PWC = Public Works Center
RCRA = Resource Conservation and Recovery Act
UST = underground storage tank

1.4.2 Summary of CERCLA Investigation and Activities

CERCLA SIs and RIs were conducted, for those sites not listed as UST and AST sites or “housekeeping” sites, from 1994 through 2004. In addition, if dry wells or transformers were the only environmental concern at the site, the RIs were conducted under POI-47 or POI-48. A list of reference documents prepared for sites at former NAS Barbers Point is presented in Section 8 of this report.

Some of the sites located on Navy-retained land at former NAS Barbers Point are still under investigation, as discussed in Table 1-1 and shown on Figure 1-2. These sites include:

- IRP-03: Sanitary Landfill and Drum Crushing Area
- POI-43: Golf Course
- POI-46: Revetments

SI and RI activities completed for the remaining sites are summarized in Table 1-1 and are discussed further in Section 3. Based on the results of the investigations, response actions were not required at all, or a portion of, 15 of the sites, as presented in Section 3, Table 3-1, and as shown on Figure 1-2 (identified as "CERCLA No Further Action" sites):

- IRP-02: Ordy Pond
- POI-06: Navy Exchange (NEX) Service Station – Building 129 AST
- POI-15: Auto Hobby Shop
- POI-17: Area South of Building 1570
- POI-22: Fleet Imaging Center (Buildings 1767 and 1769)
- POI-23: Runway 11 Clear Zone
- POI-26: Former Sewage Treatment Plant (STP)
- POI-30: Former Fuel Farm
- POI-43: Golf Course Battery Shop and Golf Course Maintenance Shop
- POI-44: MGR No. 3
- POI-45: Coral Pit 3
- POI-47: Dry Well Network
- POI-48: Transformer Substations A, C, HH-36, HH-37, HH-39, EMH47, EMH49C, S724, S1820, and S1835
- POI-49: Regional Groundwater System
- National Guard Property

Based on the results of the SIs and RIs for the sites, removal actions were completed at several of the sites. Following the removal actions, no further action is required for all, or a portion of, eight of the sites, as presented in Section 3, Table 3-2, and as shown on Figure 1-2:

- POI-19: Morale, Welfare, and Recreation (MWR) Warehouse Complex
- POI-28: Stormwater Drainage Ditch
- POI-42: Old Engine Test Cells Area
- POI-44: Former NTSR
- POI-44: MGR No. 4
- POI-44: Carbine and Pistol Range
- POI-48: Transformer Substations P, TV-8, S92, S1681, S1684, S1761, S1789, and S1844
- Former HW6

Removal actions were also conducted at all or a portion of six of the seven sites listed below; the Fire Fighting Training Pits did not have a removal action. LUCs have been implemented at these seven remaining sites and are further discussed in Section 3, Table 3-3, and as shown on Figure 1-2.

- IRP-01: Coral Sea Road (CSR) Coral Pit
- POI-12: Coral Pit 1
- POI-14: Coral Pit 2
- POI-25: Fire Fighting Training Pits
- POI-44: Southern Trap and Skeet Range
- POI-48: Transformer Substations B, S110, S117, S140, S184, S1759, and S1860
- Consolidation Unit

1.4.3 Records of Decision and Decision Documents

To document the final response actions for the CERCLA sites, RODs or DDs were prepared for each of the sites where a CERCLA RI or removal action was conducted. For sites where an SI was the only investigation to take place, a ROD or DD was generally not prepared. In addition, RODs or DDs were not prepared for the Sanitary Landfill, Drum Crushing Area, Golf Course, or Revetments because these sites are still under investigation; The RODs and DDs for the closed sites are located in the administrative record file for former NAS Barbers Point and are summarized in Table 1-3.

Table 1-3: Records of Decision and Decision Documents Prepared for Sites at Former NAS Barbers Point

POI	Document	Prepared By	Date	Reference Document Number[a]
POI- 06: Navy Exchange Service Station Building 129 AST POI-19: MWR Warehouse Complex POI-23: Runway 11 Clear Zone POI-25: Fire Fighting Training Pits POI-30: Former Fuel Farm POI-45: Coral Pit 3 POI-47: Dry Well Network POI-48: Transformer Substations C, HH37, HH39, EMH47, EMH49C, S724, S1820, and S1835 POI-49: Regional Groundwater System	Record of Decision for No Action and Restricted Land Use Sites, NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Apr-99	NARLU01
POI-48: Transformer Substations A, B, P, HH36, TV-8, S92, S110, S117, S140, S184, S1681, S1684, S1759, S1789, S1844, S1860	Record of Decision, Sixteen Transformer Substations, NAS Barbers Point, Oahu, Hawaii.	Department of Navy	May-99	TS10
POI-28: Stormwater Drainage Ditch	Record of Decision, Stormwater Drainage Ditch, NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Jun-99	SWDD07
POI-06: NEX Service Station - Building 129 AST POI-45: Coral Pit 3	Record of Decision Amendment, Coral Pit 3 and NEX Service Station - Building 129 AST, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-99	CP3AST02
POI-44: Former Firing Ranges: Carbine and Pistol Range, MGR No. 3, and MGR No. 4	Record of Decision, Three Former Firing Ranges, Former NAS Barbers Point, Oahu Hawaii.	Department of Navy	Sep-01	FFR12

Table 1-3: Records of Decision and Decision Documents Prepared for Sites at Former NAS Barbers Point (Continued)

POI	Document	Prepared By	Date	Reference Document Number[a]
POI-42: Old Engine Test Cells Area	Record of Decision, Old Engine Test Cells Area, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Sep-01	OETCA08
IRP-01: CSR Coral Pit	Record of Decision, Coral Sea Road Coral Pit, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-02	CSRCP13
Former Hazardous Waste Accumulation Area 6	Decision Document, Former Hazardous Waste Accumulation Area 6, Former NAS Barbers Point, Oahu,	Department of Navy	Oct-03	HW605
POI-26: Former Sewage Treatment Plant	Record of Decision, Former Sewage Treatment Plant, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Jan-04	FSTP04
POI-12: Coral Pit 1 POI-14: Coral Pit 2	Decision Document, Coral Pit 1 and Coral Pit 2, Former NAS Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	Sep-05	NRP13
POI-19: Morale, Welfare, and Recreation Complex	Decision Document, MWR Warehouse Complex, Former NAS Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	Sep-05	NRP14
POI-44: Former Northern Trap and Skeet Range	Decision Document, Former Northern Trap and Skeet Range, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-07	FNTSR13
POI-44: Former Southern Trap and Skeet Range	Decision Document, Former Southern Trap and Skeet Range, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-07	FSTSR08
IRP-02: Ordy Pond	Decision Document, Ordy Pond, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Jan-07	OP10
CU: Consolidation Unit	Draft Decision Document, Consolidation Unit, NAVFAC Hawaii Solid Waste Management Facility, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Dec-07	CU10

Notes:
[a] = See Table 8-1 in Section 8 of the report for list of former NAS Barbers Point reference documents.
AST = aboveground storage tank
CSR = Coral Sea Road
IRP = Installation Restoration Program
MGR = Machine Gun Range
MWR = Morale, Welfare, and Recreation
NAS = Naval Air Station
NAVFAC = Naval Facilities Engineering Command
NEX = Navy Exchange
POI = point of interest

1.5 SITES REQUIRING LAND USE CONTROLS

Several sites at former NAS Barbers Point required LUCs to remain protective of human health and the environment. Sites that require LUCs include: CSR Coral Pit; Coral Pit 1; Coral Pit 2; Fire Fighting Training Pits; Southern Trap and Skeet Range; Transformer Substations B, S110, S117, S140, S184, S1759, and S1860; and the CU. These sites are discussed further in Section 3.3 of this report. Details on the LUCs at these sites are provided in Section 5.

2. Remedial Action Objectives

This section discusses the remedial action objectives for all sites requiring a response action.

2.1 General Remedial Action Objectives for Former NAS Barbers Point Sites

The Navy's goal for former NAS Barbers Point sites was to remediate each site to unrestricted or residential use, if attainable and cost-effective, and to facilitate property transfers with unrestricted use. To achieve this goal, the soil at most of the sites was remediated to unrestricted cleanup levels (typically, the EPA Region 9 residential preliminary remediation goals **[**PRG]). If the residential PRGs could not be attained, the next goal was to achieve industrial reuse goals (typically, the EPA Region 9 industrial PRGs) or goals suitable for the intended use of the property. In addition to meeting industrial reuse goals or other suitable goals, LUCs were implemented to protect human health. All sites not listed or discussed in Section 2.2 did not require a removal action and are suitable for unrestricted or residential use.

All of the initial response actions conducted at former NAS Barbers Point were conducted as removal actions, with the exception of one site (Fire Fighting Training Pits). Therefore, for purposes of this document, the term "remedial action objectives" has been replaced with "removal action objectives (RAO)" in the table below. The only remedial actions conducted at former NAS Barbers Point are LUCs, and sites where LUCs are the final remedy are discussed further in Section 3.

2.2 Site-Specific Removal Action Objectives

Table 2-1 presents the site-specific RAOs for sites at former NAS Barbers Point.

Table 2-1: **Site-Specific Removal Action Objectives**

POI	Site Name	Removal Action Objectives	Reference Document Number[a]
IRP-01	CSR Coral Pit	The RAOs for the CSR Coral Pit were: • For the removal action, to remove soil and debris with contaminant concentrations above the project cleanup levels (EPA Region 9 PRGs for industrial soil). Recreational reuse PRGs have not been established for all COCs; thus, generally, the industrial PRGs were used to evaluate this site for reuse as recreational open space. • For the solid waste removal activities, to remove solid waste (including metal, asphalt, OE, and OE scrap). The removal of solid waste, with the exception of asbestos-containing material found during the removal action, was a non-CERCLA action. The cleanup levels for the COCs were the EPA Region 9 PRGs for industrial soil (EPA 1999) for PCBs, PAHs, and metals; DOH Tier 1 SAL (DOH 2000) for TPH; and the EPA Region 9 PRG for residential soil (noncancer) (EPA 1999) for arsenic only. • Benzo(a)anthracene: 2.9 mg/kg • Benzo(a)pyrene: 0.29 mg/kg • Benzo(b)fluoranthene: 2.9 mg/kg • Dibenz(a,h)anthracene: 0.29 mg/kg • PCBs: 1 mg/kg • TPH - diesel: 5,000 mg/kg • TPH - oil: 5,000 mg/kg • Arsenic: 22 mg/kg • Cadmium: 810 mg/kg • Chromium: 450 mg/kg • Lead: 1,000 mg/kg • Manganese: 32,000 mg/kg	CSRCP03 CSCRP11 CSRCP12 CSRCP13

Table 2-1: **Site-Specific Removal Action Objectives (Continued)**

POI	Site Name	Removal Action Objectives	Reference Document Number[a]
POI-12	Coral Pit 1	The RAO at Coral Pit 1 was to reduce to acceptable levels the risk associated with metals, PAHs, and PCBs identified in the SI by restricting pathways for human exposure to contaminants through the implementation of LUCs.	NRP08 NRP13
POI-14	Coral Pit 2	The RAO at Coral Pit 2 was to reduce to acceptable levels the risk associated with metals, PAHs, and PCBs identified in the SI by restricting pathways for human exposure to contaminants through the implementation of LUCs.	NRP08 NRP13
POI-19	MWR Warehouse Complex	The primary RAOs at the MWR Warehouse Complex were to reduce to acceptable levels the risk associated with the COCs (arsenic and heptachlor epoxide) identified in the SI by removing pathways for human exposure to contaminants and to: • Achieve CERCLA preference for treatment if practicable. • Dispose of or contain waste streams generated by the removal action. For actions that leave contaminants in place, the RAO was to achieve a residual cancer risk of 1 x 10-6, or non-cancer hazard index less than 1 for residential use. The cleanup levels for the COCs were the EPA Region 9 PRGs for residential soil (noncancer) (EPA 2004). • Arsenic: 22 mg/kg • Heptachlor epoxide: 0.053 mg/kg	NRP06 NRP10 NRP14
POI-25	Fire Fighting Training Pits	The RAO at the Fire Fighting Training Pits was to reduce to acceptable levels the risk associated with VOCs, SVOCs, PAHs, fuel constituents, pesticides, PCBs, dioxins, furans, and metals identified in the RI by restricting pathways for human exposure to contaminants through the implementation of LUCs. LUCs are only required at a portion of the site (unlined pits) as shown in Appendix B.	NARLU01
POI-28	Stormwater Drainage Ditch	The RAO at the Stormwater Drainage Ditch was to remove sediment from the stormwater drainage system that contains TPH, PCBs, and metals at concentrations that may pose a risk to human health and the environment. The cleanup levels for the COCs were the EPA Region 9 PRG for residential soil (EPA 1998) for lead, DOH Tier 1 action levels for soil (DOH 1995) for TPH and PCBs, or the RCRA TCLP criteria (Title 40 CFR Part 261) for hazardous waste for metals. • Lead: 400 mg/kg • TPH: 5,000 mg/kg • PCBs: 1 mg/kg • Metals: RCRA TCLP	SWDD02 SWDD03 SWDD07 SWDD08
POI-42	Old Engine Test Cells Area	The RAOs at the Old Engine Test Cells Area were to: • Remove soil mixed with ACM, to reduce the risk resulting from asbestos fibers at the 5-acre portion of the Old Engine Test Cells Area site to an acceptable level given unrestricted future land use. • Package, transport, and dispose of removed ACM wastes, in accordance with applicable requirements. • Restore the site to acceptable (safe) final grade. The cleanup criteria used were: • No visible ACM observed. • Air monitoring results at the excavation area equal to, or less than, baseline air monitoring results along the perimeter area. The cleanup criteria were based on asbestos cleanup regulations, Title 40 CFR, Parts 763.90(i)(1) and 763.90(i)(3), and human health considerations.	OETCA04 OETCA05 OETCA07 OETCA08

Table 2-1: **Site-Specific Removal Action Objectives (Continued)**

POI	Site Name	Removal Action Objectives	Reference Document Number[a]
POI-44	CPR	The RAOs at the CPR were to attain the EPA Region 9 PRGs for residential soil (EPA 2000) as shown below. • Lead: 400 mg/kg	FFR02 FFR05 FFR07 FFR08 FFR12
	MGR No. 4	The RAOs at the MGR No. 4 were to attain the EPA Region 9 PRGs for residential soil (EPA 2000) as shown below. • Lead: 400 mg/kg • Antimony: 30 mg/kg	FFR02 FFR05 FFR07 FFR08 FFR12
	Former NTSR	The RAOs at the former NTSR were to attain the EPA Region 9 PRGs for residential soil (EPA 2002) as shown below. • Lead: 400 mg/kg • Benzo(a)pyrene: 0.062 mg/kg • Benzo(b)fluoranthene: 0.62 mg/kg • Dibenz(a,h)anthracene: 0.062 mg/kg	FNTSR07 FNTSR08 FNTSR11 FNTSR13
	Former STSR	The RAOs for the Former STSR were: • Remove lead- and arsenic-contaminated soil from the site. • Reduce the risk from lead and arsenic contamination to below the site-specific human health and ecological risk-based cleanup levels. If attainable and cost-effective, the objective was to clean the site to unrestricted reuse, based on the EPA Region 9 PRG for residential soil for lead, and the EPA Region 9 PRG for residential soil (noncancer) for arsenic. • Remove PAH-contaminated soil and clay pigeons from the clay pigeon area. • Reduce the risk from PAH contamination in the clay pigeon area to below the EPA Region 9 PRGs for industrial soil. If attainable and cost-effective, the objective was to clean the clay pigeon area to unrestricted reuse, based on the EPA Region 9 PRGs for residential soil for PAHs. • Preserve the archaeological features within the Former STSR. • Establish LUCs around the archaeological features and buffer zones. The primary cleanup levels for metals and PAHs were the EPA Region 9 PRGs for residential soil (EPA 2002). For several PAHs (anthracene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and fluoranthene), the EPA Region 9 PRGs for industrial soil (EPA 2002) were also used when the EPA Region 9 PRGs for residential soil could not be attained. Several PAHs (acenaphthylene, benzo(g,h,i)perylene, 2-methylnapthalene, and phenanthrene) do not have specified cleanup levels. • Arsenic: 0.39 mg/kg/21.6 mg/kg (residential); 1.6 mg/kg/260 mg/kg (industrial) • Lead: 400 mg/kg (residential); 750 mg/kg (industrial) • Acenaphthene: 3,700 mg/kg; 29,000 mg/kg (industrial) • Acenaphthylene: NS • Anthracene: 21,900 mg/kg (residential); 100,000 mg/kg (industrial) • Benzo(a)anthracene: 0.621 mg/kg (residential); 2.1 mg/kg (industrial) • Benzo(a)pyrene: 0.0621 mg/kg (residential); 0.210 mg/kg (industrial) • Benzo(b)fluoranthene: 0.621 mg/kg (residential); 2.1 mg/kg (industrial) • Benzo(g,h,i)perylene: NS • Benzo(k)fluoranthene: 6.21 mg/kg (residential); 21 mg/kg (industrial) • Chrysene: 62.1 mg/kg (residential); 210 mg/kg (industrial)	FSTSR03 FSTSR04 FSTSR06 FSTSR08

Table 2-1: **Site-Specific Removal Action Objectives (Continued)**

POI	Site Name	Removal Action Objectives	Reference Document Number[a]
POI-44 (cont'd)	Former STSR (cont'd)	• Dibenz(a,h)anthracene: 0.062 mg/kg (residential); 0.21 mg/kg (industrial) • Fluoranthene: 2,290 mg/kg (residential); 22,000 mg/kg (industrial) • Fluorene: 2,700 mg/kg (residential); 25,000 mg/kg (industrial) • Indeno(1,2,3-cd)pyrene: 0.621 mg/kg (residential); 2.1 mg/kg (industrial) • 2-Methylnapthalene: NS • Naphthalene: 56 mg/kg (residential); 190 mg/kg (industrial) • Phenanthrene: NS • Pyrene: 2,310 mg/kg (residential); 29,000 mg/kg (industrial)	FSTSR03 FSTSR04 FSTSR06 FSTSR08
POI-48	Transformer Substation System (includes Substations B, P, TV-8, S110, S117, S140, S184, S1681, S1684, S1759, S1761, S1789, S1844, and S1860)	The RAOs for Substations B, P, TV-8, S117, S1681, S1684, S1759, S1761, S1789, and S1844 were to remediate PCB-contaminated soil and concrete surfaces and attain the following cleanup levels. The cleanup levels were the DOH Tier 1 SALs for residential areas (i.e., unrestricted use) (DOH 1995) and the TSCA risk-based nonrestricted-access cleanup requirement (EPA 1990). • Soil: 1 mg/kg • Concrete wipe: 10 µg/100 cm^2 Deviations from these objectives were made for Substations S110, S140, S184, and S1860 because the RAOs for the residential use/nonrestricted access requirements could not be met. Although DOH has not established a SAL for industrial settings, in the past the DOH prescribed a cleanup level of 10 mg/kg for soil. In addition, the TSCA restricted-access cleanup requirement (EPA 1990) was used for concrete surfaces in the underground utility vaults at these substations. The RAOs for underground utility vaults at Substations S110, S140, S184, and S1860 were to remediate PCB-contaminated soil and concrete surfaces and attain the following cleanup levels: • Soil: 10 mg/kg • Concrete wipe: 100 µg/100 cm^2	TS01 TS02 TS03 TS04 TS08 TS09 TS10 TS13 TS15 TS16 TS17
Former HW6	Former Hazardous Waste Accumulation Area 6	The RAOs at former HW6 were to attain the following RME EPCs in HW6 Cell 1 and Cell 6 for soil. The cleanup levels were the EPA Region 9 PRGs for residential soil (EPA 2002), unrestricted use for arsenic and cadmium, and the DOH Tier 1 SALs (DOH 1995) and the TSCA high occupancy cleanup level for PCBs. • Arsenic: 22 mg/kg (noncancer) • Cadmium: 37 mg/kg • PCBs: less than 1 mg/kg, DOH Tier 1 SAL and the TSCA high occupancy cleanup level	HW602 HW604 HW605
CU/ Monofill	CU/Monofill	Although a removal action was not necessary for the Monofill area, removal actions were necessary for the multiple cleanup sites at former NAS Barbers Point based on the results of the pre-removal action risk evaluations conducted for each cleanup site. RAOs for the cleanup sites are summarized as follows: • Disposal of waste streams from each removal action in a CU • Implementation of LUCs at the CU to restrict pathways for human exposure to contaminants.	CU02 CU07 CU10

Sources:
[a] = See Table 8-1 in Section 8 of the report for list of former NAS Barbers Point reference documents.
DOH. 1995. Technical Guidance Manual for Underground Storage Tank Sites. August.
———. 1996. Risk-Based Corrective Action and Decision-Making at Sites with Contaminated Soil and Groundwater, State of Hawaii. Revised June.
EPA. 1990. Guidance on Remedial Actions for Superfund Sites with PCB Contamination. EPA/540/G-90/007. August.
———. 1998. Region 9 Preliminary Remediation Goals. May.
———. 1999. Region 9 Preliminary Remediation Goals. October.
———. 2000. EPA Region 9 Preliminary Remediation Goals. November.
———. 2002. EPA Region 9 Preliminary Remediation Goals. October.
———. 2004. EPA Region 9 Residential Preliminary Remediation Goals. October.

Table 2-1: **Site-Specific Removal Action Objectives (Continued)**

Sources (Continued):
Title 40 of the CFR Part 761. Disposal of Polychlorinated Biphenyls.
Title 40 of the CFR Part 261. Identification and Listing of a Hazardous Waste.
Notes:
µg/100 cm^2 = microgram per 100 square centimeters
ACM = asbestos-containing material
CERCLA = Comprehensive, Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
COC = contaminant of concern
CPR = Carbine and Pistol Range
CSR = Coral Sea Road
CU = consolidation unit
DOH = State of Hawaii Department of Health
EPA = U.S. Environmental Protection Agency
EPC = exposure point concentration
IRP = Installation Restoration Program
LUC = land use control
mg/kg = milligrams per kilogram
MGR = Machine Gun Range
MWR = Morale, Welfare, and Recreation
NAS = Naval Air Station
NS = not specified
NTSR = Northern Trap and Skeet Range
OE = ordnance and explosive
PAH = polynuclear aromatic hydrocarbon
PCB = polychlorinated biphenyl
POI = point of interest
PRG = preliminary remediation goal
RAO = removal action objective
RI = remedial investigation
RME = reasonable maximum exposure
RCRA = Resource Conservation and Recovery Act
SAL = soil action level
SI = site investigation
STSR = Southern Trap and Skeet Range
SVOC = semivolatile organic compound
TCLP = toxicity characteristic leaching procedure
TPH = total petroleum hydrocarbon
TSCA = Toxic Substances Control Act
VOC = volatile organic compound

3. Remedial Actions

This section describes the remedial/removal actions taken at each site to meet the remedial action objectives discussed in Section 2.

3.1 CERCLA SITES THAT DID NOT REQUIRE A RESPONSE ACTION

Table 3-1 summarizes the CERCLA sites that did not require a response action. These sites do not pose any risks to human health or the environment, are suitable for unrestricted land use, and have been closed.

3.2 CERCLA SITES WHERE THE REMOVAL ACTIONS WERE THE FINAL ACTION

Table 3-2 summarizes the removal actions conducted at CERCLA sites where the removal actions were the final action. These sites are eligible for unrestricted use, and no further action is required.

3.3 REMOVAL/REMEDIAL ACTIONS AT CERCLA SITES WHERE LAND-USE CONTROLS WERE THE FINAL ACTION

Table 3-3 summarizes the removal/remedial actions or site investigation conducted at each CERCLA site that led to the determination of LUCs as the final remedy, including the remedial action objectives and the final action chosen for each site. LUCs were selected as the final remedy for IRP-01 (CSR Coral Pit); POI-12 (Coral Pit 1); POI-14 (Coral Pit 2); POI-25 (Fire Fighting Training Pits); POI-44 (Former Southern Trap and Skeet Range); POI-48 (Transformer Substation System - Substations B, S110, S117, S140, S184, S1759, and S1860); and the CU/Monofill because unrestricted land use was not attainable.

Table 3-1: Summary of CERCLA Sites That Did Not Require a Response Action

POI	Site Name	Summary of Investigations	Final Action	Reference Document Number[a]
IRP-02	Ordy Pond	An SI and verification phase confirmation study were conducted in 1982 and 1983, respectively, to determine if potential contamination existed at the site that could pose a health risk to humans. These studies did not address potential risks to animals and plants. An EBS was conducted in 1993 to identify areas within the former NAS Barbers Point, including Ordy Pond, where chemicals may have been historically stored, used, and/or released to the environment. An RI was conducted from 1994 to 1998 to assess whether contamination was present in site sediment, groundwater, surface water, and fish tissue at levels that pose a health risk to humans, animals, and plants. Environmental monitoring was conducted during two sampling events in 1998 and 1999 to further characterize the extent of chemicals detected in groundwater, surface water and sediment at the site, and determine whether concentrations of these chemicals are increasing over time. Data collected during these monitoring events were used to conduct updated site risk assessments. Shoreline soil sampling was performed in 2005 to determine if surface soil along the south shore of the pond had been contaminated by pond water overflows, which occur during heavy rain and flood events. Human health and ecological risk assessments were conducted in 2005 to verify and update the results of the RI based on subsequent site monitoring data and revised regulatory screening criteria and evaluate use of the pond for university research. Chemicals (metals, SVOCs, cyanide, and pesticides) were detected in surface water and sediment during the multiple environmental sampling events; however, the concentrations of these chemicals do not appear to be increasing with time. The results of the human health risk assessment indicated that Ordy Pond is safe for future unrestricted land use. The results of the ecological risk assessment indicated that there are no significant health risks to semi-aquatic birds that inhabit or visit the pond and that aquatic life in the pond appears to be thriving. A no-action DD was signed for Ordy Pond in 2007.	Completed investigation determined no response action necessary.	OP04 OP07 OP08 OP10
POI-06	Navy Exchange (NEX) Service Station - Building 129 AST	An RI was conducted in 1995. Surface and subsurface soil samples were collected from the site. The results of the RI indicated that soil samples collected from the site contained fuel-related VOCs, SVOCs, TPH, PCBs, and metals above screening levels. The petroleum hydrocarbon concentrations were at levels that did not require further action; however, a single soil sample contained lead above its PRG (400 mg/kg) for unrestricted reuse. Based on the intended commercial/industrial reuse of the site, the RI report concluded that the site did not pose a threat to human health. However, based solely on RI data, a land use restriction was placed on this site to restrict the area from being used for residential purposes. The land use restriction was documented in a ROD in 1999. In February 1999, the Navy collected soil samples at the site to reevaluate the findings of the 1995 RI. Results of subsequent sampling indicated that the single exceedance of lead was an anomaly and that no action is required and the site is suitable for all reuse scenarios. The land use restriction was removed from this site. The site also does not pose a threat to the environment based on the results of the RI and subsequent sampling. A no-action ROD amendment was signed for the NEX Service Station - Building 129 AST in 1999.	Completed investigation determined no response action necessary.	AST01 CP3AST01 MS10 MUS01 NARLU01

Table 3-1: Summary of CERCLA Sites That Did Not Require a Response Action (Continued)

POI	Site Name	Summary of Investigations	Final Action	Reference Document Number[a]
POI-15	Auto Hobby Shop	An SI was conducted in 2000. Soil samples were collected from biased locations selected during the VSI and field investigation. One monitoring well was installed at this site to evaluate whether potential impacts to groundwater from historical site use occurred. Analytical results showed the presence of COCs (arsenic, chromium, and manganese) in soil. No COCs were identified in the groundwater. Based on the findings from the SI, no further action is needed to protect human health at the Auto Hobby Shop; however, the SI identified a potential ecological risk. The Navy performed a Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Auto Hobby Shop site in accordance with Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at the Auto Hobby Shop is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near the site. The Auto Hobby Shop is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Auto Hobby Shop was recommended for no further action. Concurrence was received from the DOH on April 6, 2005, for the BERA, and the Navy is in the process of seeking further written concurrence from DOH that this site does not require further investigation or other response action and can be considered closed.	Completed investigation determined no response action necessary.	NRP02 NRP07
POI-17	Area South of Building 1570 (MWR Recycling Center Area)	An SI was conducted in 2000. Soil samples were collected from biased locations selected during the VSI and field investigation. Analytical results showed the presence of a COC (arsenic) in soil. Based on the findings from the SI, no further action is needed to protect human health at the Area South of Building 1570; however, the SI report identified a potential ecological risk. The Navy prepared a draft Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Area South of Building 1570 site in accordance with U.S. Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The Area South of Building 1570 is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Area South of Building 1570 was recommended for no further action. Concurrence was received from the DOH for the BERA, and the Navy is in the process of seeking further written concurrence from DOH that this site does not require further investigation or other response action and can be considered closed.	Completed investigation determined no response action necessary.	NRP02 NRP07
POI-22	Fleet Imaging Center (Buildings 1767 and 1769)	An SI was conducted in 2000. Surface and subsurface soil samples were collected. One monitoring well was installed to evaluate whether groundwater had been affected, and one groundwater sample was collected from the monitoring well. Analytical results showed the presence of COCs (arsenic and manganese) in soil. No COCs were identified in the groundwater. Based on the findings from the SI, no further action is needed to protect human health at the Fleet Imaging Center; however, the SI report identified a potential ecological risk. The Navy prepared a draft Tier 2, Step 3a BERA and recommended an appropriate SMDP for the Fleet Imaging Center site in accordance with U.S. Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The Fleet Imaging Center is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Fleet Imaging Center was recommended for no further action. Concurrence was received from the DOH for the BERA, and the Navy is in the process of seeking further written concurrence from DOH that this site does not require further investigation or other response actions and can be considered closed.	Completed investigation determined no response action necessary.	NRP02 NRP07

Table 3-1: Summary of CERCLA Sites That Did Not Require a Response Action (Continued)

POI	Site Name	Summary of Investigations	Final Action	Reference Document Number[a]
POI-23	Runway 11 Clear Zone	An RI was conducted in 1995 at Runway 11 Clear Zone. Surface and subsurface soil and groundwater samples were collected from the site. Analytical results showed the presence of low levels of VOCs, SVOCs, TPH, and metals above screening levels in a few shallow soil samples. Most of the identified chemicals were in a small area of shallow soil and in sandblasting grit that spilled onto the site from the adjacent property. These constituents were evaluated for human health and ecological risk. The RI report concluded that no action was required for the Runway 11 Clear Zone site to be suitable for any reuse scenario. A no-action ROD was signed for Runway 11 Clear Zone in 1999.	Completed investigation determined no response action necessary.	RCZ01 MS10 NARLU01
POI-26	Former Sewage Treatment Plant (STP)	An RI was conducted at the former STP from 1994 to 1995. Soil and groundwater samples were collected and analyzed for VOCs, SVOC, TPH, PCBs, and metals. Nearly all the contamination detected at the site was restricted to subsurface soil beneath the southernmost sludge drying bed. Soil analytical results were screened against residential screening levels. All concentrations detected in the surface soil samples were well below the screening levels. TPH-diesel, TPH-lubricant oil, and benzo(a)pyrene were present in subsurface samples above residential PRGs. Contaminant concentrations detected in borings advanced around the perimeter of the drying beds were well below the screening levels except arsenic. The risk evaluation documented that (1) the site does not pose unacceptable health risks to human receptors based on the present condition of the facility, and (2) no significant ecological risks are associated with exposure to chemical stressors at the site. However, the RI recommended additional characterization of the clarifier and sludge drying beds because these units were still in use and the soil beneath them had not been investigated. This recommendation was made based on the future land use scenario in which the existing structures are decommissioned and site land use has changed. After oily waste storage at the facility was discontinued, additional sampling was conducted in 2000 and 2001 to assess the full nature and extent of contamination in subsurface soil and groundwater. Additional subsurface soil samples were collected within the sludge drying beds and beneath the base of the clarifier; groundwater samples were collected from a well downgradient of the clarifier, and from borings within the sludge drying beds. Prior to sampling, wastes from the clarifier were removed and disposed of, and the interior concrete surfaces of the clarifier were cleaned. Field work for the supplemental RI was completed in May 2001. The results of investigative sampling showed no evidence of unacceptable levels of TPH, VOCs, SVOCs, metal, or PCB contamination at the former STP. Because the data indicate that conditions at the former STP do not pose unacceptable risks to human health or the environment under the unrestricted reuse scenario, no action under CERCLA is necessary at this site. Results of the RI conducted in 1994 and 2000 indicated that low concentrations of arsenic, SVOCs, and TPH were present in the soil from releases of oily wastes at concentrations that do not pose a threat to human health or the environment. Low concentrations of TPH were also detected in the groundwater in the area. No further action is required at the site for CERCLA hazardous substances. All TPH contamination is located at the southernmost drying bed. The soil containing petroleum hydrocarbons is greater than 2 feet below the ground surface and does not pose a risk to human health or the environment; however, DOH regulations address the presence of TPH as an environmental nuisance, and a non-CERCLA notification and covenant are required for this site. A no-action ROD was signed for the former STP in 2002.	Completed investigation determined no response action necessary; however, a non-CERCLA notification and covenant are required for this site.	FSTP01 FSTP03 FSTP04
POI-30	Former Fuel Farm	An RI was conducted in 1995 at the Former Fuel Farm. Surface and subsurface soil and groundwater samples were collected from the site. Analytical results showed the presence of TPH in soil and one groundwater monitoring sample. VOCs and SVOCs were also identified in soil above screening levels. These constituents were evaluated for human health and ecological risk. The RI report concluded that no action was required for the Former Fuel Farm site to be suitable for any reuse scenario. A no-action ROD was signed for the Former Fuel Farm in 1999.	Completed investigation determined no response action necessary.	FFF01 MS10 NARLU01

Table 3-1: Summary of CERCLA Sites That Did Not Require a Response Action (Continued)

POI	Site Name	Summary of Investigations	Final Action	Reference Document Number[a]
POI-43	Golf Course Battery Shop	An SI was conducted at the Golf Course Battery Shop in 2000. Surface and subsurface soil samples were collected. One monitoring well was installed to evaluate whether groundwater had been affected and one groundwater sample was collected from the monitoring well. Analytical results showed the presence of COCs (arsenic, chromium, and manganese) in soil. No COCs were identified in the groundwater. Based on the findings from the SI, no further action is needed to protect human health at the Golf Course Battery Shop; however, the SI report identified a potential ecological risk. The Navy prepared a draft Tier 2, Step 3a BERA and recommended an appropriate SMDP for the site in accordance with U.S. Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The Golf Course Battery Shop is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Golf Course Battery Shop was recommended for no further action. Concurrence was received from the DOH for the BERA, and the Navy is in the process of seeking further written concurrence from DOH that this site does not require further investigation or other response action and can be considered closed.	Completed investigation determined no response action necessary.	NRP02 NRP07
	Golf Course Maintenance Shop	An SI was conducted in 2000 at this site. Surface and subsurface soil samples were collected. One monitoring well was installed to evaluate whether groundwater had been affected and one groundwater sample was collected from the monitoring well. Analytical results showed the presence of COCs (arsenic, lead, and manganese) in soil. No COCs were identified in the groundwater. Based on the findings from the SI, no further action is needed to protect human health at the Golf Course Maintenance Shop (Earth Tech 2001a); however, the SI report identified a potential ecological risk. The Navy prepared a draft Tier 2, Step 3a BERA and recommended an appropriate SMDP for the site in accordance with U.S. Navy and EPA guidance. Results of Step 3a of the Tier 2 BERA indicate that the level of potential risk to ecological receptors at this site is acceptable based on current environmental conditions; furthermore, there are no federal- or state-listed endangered or threatened species or critical or sensitive habitats known to exist at or near this site. The Golf Course Maintenance Shop is recommended to be eliminated from further concern with regard to ecological risk. Based on the results of the SI and the BERA, which were prepared in coordination with DOH, the Golf Course Maintenance Shop was recommended for no further action. Concurrence was received from the DOH for the BERA, and the Navy is in the process of seeking further written concurrence from DOH that this site does not require further investigation or other response action and can be considered closed.	Completed investigation determined no response action necessary.	NRP02 NRP07
POI-44	MGR No. 3	An RI was conducted at the MGR No. 3 in 1994. Based on data collected during the RI, the MGR No. 3 was determined to be suitable for short-term recreational land use; however, a further health risk evaluation or response action would be warranted if the use were to change to an unrestricted, residential scenario. In 1999, an additional RSE was conducted at MGR No. 3 to evaluate the extent of contamination at the site. Samples were collected from the ground floor and the northern berm of the site and analyzed for lead and antimony. Sampling results were below the removal action objective cleanup levels for lead (400 mg/kg) and antimony (31 mg/kg). An EE/CA addendum determined that MGR No. 3 was suitable for unrestricted, residential use. A no action ROD was signed for the MGR No. 3 in 2001.	Completed investigation determined no response action necessary.	FFR01 FFR04 FFR05 FFR06 FFR12 MS10

Table 3-1: Summary of CERCLA Sites That Did Not Require a Response Action (Continued)

POI	Site Name	Summary of Investigations	Final Action	Reference Document Number[a]
POI-45	Coral Pit 3	An RI was conducted in 1995 at Coral Pit 3. Surface and subsurface soil and groundwater samples were collected from the site. The results of the RI indicated that soil samples collected from the site contained fuel-related VOCs, SVOCs, TPH, and metals. No site-related chemicals were found in the groundwater. VOCs, SVOCs, and TPH concentrations were at levels that did not require further action; however, a single soil sample contained lead above its PRG (400 mg/kg). Based on the intended commercial/industrial reuse of the site, the RI report concluded that the site did not pose a threat to human health or the environment. However, based solely on RI data, a land use restriction was placed on this site to restrict the area from being used for residential purposes. The land use restriction was documented in a ROD in 1999. In February 1999, the Navy collected soil samples at the site to reevaluate the findings of the 1995 RI. Results of subsequent sampling indicated that the single exceedance of lead was an anomaly and that no action is required, and the site is suitable for all reuse scenarios. The land use restriction was removed from this site, and no further action was recommended. The site also does not pose a threat to the environment based on the results of the RI and subsequent sampling. A no-action ROD amendment was signed for Coral Pit 3 in 1999.	Completed investigation determined no response action necessary.	CP301 CP3AST01 MS10 MUS01 NARLU01
POI-47	Dry Well Network (industrial waste discharge and hazardous substance runoff)	An RI was conducted at the Dry Well Network. Results of the investigation indicated that sediments in several dry wells contained hazardous substances; however, the impacted sediments posed no threat to human health or the environment because the sediments are not affecting regional groundwater quality and there is no potential for direct contact with the sediments in the dry wells. A no-action ROD was signed in 1999 for the Dry Well Network.	Completed investigation determined no response action necessary.	DW01 NARLU01
POI-48	Substation A	Substation A required no removal action for protection of human health and the environment. As part of the 1995 RI, concrete core samples, surface soil samples, and concrete wipe samples were collected and analyzed for PCBs at Substation A. An RME concentration was calculated using soil sampling results. The RME concentration (0.08 mg/kg) was below the cleanup level for PCBs (1 mg/kg) for unrestricted use. An RME concentration was also calculated using concrete sampling results from the indoor ground floor, outdoor ground floor, and underground utility vault. The RME concentrations (2.9 µg/100 cm^2, 5.7 µg/100 cm^2, and 8.0 µg/100 cm^2) were below the cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	Completed investigation determined no response action necessary.	TS01 TS05 TS10 NARLU01
	Substations C, HH-37, HH-39, EMH47, EMH49C, S724, S1820, and S1835	Substations C, HH37, HH39, EMH47, EMH49C, S724, S1820, and S1835 required no removal action for protection of human health and the environment. RIs were conducted at the eight substations in 1995. Surface soil and concrete sampling was performed, and the sampling results were below the cleanup levels for PCBs (1 mg/kg for soil or 10 µg/100 cm^2 for concrete surfaces) for unrestricted use. A no-action ROD was signed for the eight substations in 1999.		
	Substation HH-36 (POI-24)	Substation HH-36 required no removal action for protection of human health and the environment. Soil sampling was conducted for PCBs during the RI in an area surrounding Substation HH-36. An RME concentration was calculated using concrete sampling results from the underground vault. The RME concentration (2.7 µg/100 cm^2) was below the cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.		

Table 3-1: Summary of CERCLA Sites That Did Not Require a Response Action (Continued)

POI	Site Name	Summary of Investigations	Final Action	Reference Document Number[a]
POI-48 cont'd	Substation S92	Substation S92 required no removal action for protection of human health and the environment. Sampling was conducted as part of a pre-construction investigation in 1998. Concrete sampling was conducted on the concrete floor inside Substation S92. An RME concentration was calculated using concrete wipe sampling results. The RME concentration (2.1 µg/100 cm^2) was below the cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	See above.	See above.
POI-49	Regional Groundwater System	Regional groundwater quality at former NAS Barbers Point was investigated during the RI for basewide POI-49. Hazardous substances were detected in groundwater in several localized areas; however, they were detected at low concentrations that posed no threat to human health or the environment. In 1999, a no-action ROD was signed for the Regional Groundwater System.	Completed investigation determined no response action necessary.	GW01 NARLU01
National Guard Property	National Guard Property	The Hawaii Army National Guard conducted a Phase II EBS. PCBs were detected in several discrete and composite samples that warranted additional evaluation. Chemicals were also detected in the drainage swale near HW6, but this was addressed under the HW6 investigation. The Navy conducted an SI in 2003 to investigate the five areas identified as requiring further evaluation. Results of the SI indicated that PCB concentrations in the three PCB areas do not pose a risk to human health. There were no chemical concentrations detected near the JP-5 Fuel Line, or from the groundwater near Hangar 282. Arsenic and PCB was detected at concentrations exceeding screening criteria near HW2, but risk assessment results indicate these concentrations do not pose a risk to human health. Chemical concentrations detected from the fuel spill area do not exceed screening criteria. Therefore, the SI report recommended no additional investigation or action at these five areas and the areas are suitable for unrestricted use.	Completed investigation determined no response action necessary.	NGP01 NGP02

Notes:
[a] = See Table 8-1 in the report for list of former NAS Barbers Point reference documents.
µg/100 cm^2 = microgram per 100 square centimeters
AST = aboveground storage tank
BERA = baseline ecological risk assessment
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
COC = contaminant of concern
DD = decision document
EBS = environmental baseline survey
EE/CA = engineering evaluation/cost analysis
DOH = State of Hawaii Department of Health
HW2 = Hazardous Waste Accumulation Area 2
HW6 = Hazardous Waste Accumulation Area 6
IRP = Installation Restoration Program
mg/kg = milligram per kilogram
MGR = machine gun range
NAS = Naval Air Station
PCB = polychlorinated biphenyl
POI = point of interest
PRG = preliminary remediation goals
RI = remedial investigation
RME = reasonable maximum exposure
ROD = record of decision
RSE = removal site evaluation
SI = site investigation
SMDP = scientific management decision point
SVOC = semivolatile organic compound
TPH = total petroleum hydrocarbon
VOC = volatile organic compound
VSI = visual site inspection

Table 3-2: Summary of CERCLA Sites Where the Removal Actions Were the Final Action

POI	Site Name	Removal Actions Conducted at the CERCLA Site	Final Action	Reference Document Number[a]
POI-19	MWR Warehouse Complex	A removal action was conducted at the MWR Warehouse Complex from May through August 2005. Approximately 961 cy of arsenic- and heptachlor epoxide-contaminated soil, concrete, and asphalt was excavated and transported off-island for disposal at a CERCLA-approved disposal facility. Results for samples collected during the removal action indicate that the cleanup levels for arsenic (22 mg/kg) and heptachlor epoxide (0.053 mg/kg) were met and the site no longer poses a threat to human health or the environment. It was concluded that the removal action objectives have been met and that no further response action is required to be protective of human and ecological receptors, and the site is suitable for unrestricted use. A no-further-response-action DD was signed for the MWR Warehouse Complex in 2005.	No further response action necessary.	NRP14 NRP16
POI-28	Stormwater Drainage Ditch	A removal action was conducted at the Stormwater Drainage Ditch from February 1999 to April 1999. Approximately 747 cy of PCB-contaminated sediment and bedrock were removed from the following locations: (1) the Stormwater Drainage Ditch, (2) a manhole associated with the drain line connected to the Stormwater Drainage Ditch, and (3) the dry wells at the base of the Stormwater Drainage Ditch. The sediment and bedrock removed from the Stormwater Drainage Ditch was stored, and then placed in the CU. Soil confirmation samples were collected from the base and sidewalls of the ditch. The confirmation samples were analyzed for SVOCs, TPH, PCBs, and metals. Arsenic was detected in three samples at concentrations above preliminary screening levels. The three areas with elevated arsenic concentrations were further excavated in March 1999, and additional confirmation samples were collected and analyzed. Arsenic concentrations in the additional confirmation samples and the remaining confirmation sample data were used to conduct risk assessments. The risk assessment evaluation completed indicates that all current and future human health risks and hazard indices are at acceptable levels. The result of the ecological risk assessment indicates that the site does not pose a risk to ecological receptors. The Navy determined that the overall condition of the site is protective of human health and the environment, and the site is suitable for unrestricted reuse. A no-further-action ROD was signed for the Stormwater Drainage Ditch in 1999.	No further action necessary.	SWDD03 SWDD07 SWDD08 SWDD09
POI-42	Old Engine Test Cells Area	A removal action was conducted at the Old Engine Test Cells Area from November 2000 to February 2001. Approximately 9,000 cy of soil mixed with ACM was excavated from 5 acres of the site. The soil mixed with ACM was disposed of in the CU. The removal action objective was to meet the criteria of no visible observation of ACM and no airborne asbestos fibers above background levels. The cleanup criteria were based on asbestos cleanup regulations and human health considerations. Air samples were collected before, during, and after completing the soil and ACM removal action. Sampling results show that the airborne concentration of asbestos fibers did not exceed the background levels, and the site was visually inspected for ACM after the removal action work was completed, and none was observed. In addition, background levels and levels in air samples collected at the end of the removal action were non-detect. As a result, no further response action is necessary to ensure protection of human health and the environment under any reuse scenario. A no-further-action ROD was signed for the Old Engine Test Cells Area in 2001.	No further action necessary.	OETCA07 OETCA08

Table 3-2: Summary of CERCLA Sites Where the Removal Actions Were the Final Action (Continued)

POI	Site Name	Removal Actions Conducted at the CERCLA Site	Final Action	Reference Document Number[a]
POI-44	Carbine and Pistol Range	A removal action was conducted at the CPR between November 1999 and April 2000 to remove lead-contaminated soil. Results for confirmation soil samples indicate that the removal action objective cleanup level for lead (400 mg/kg) was met and the site no longer poses a threat to human health or the environment and is suitable for unrestricted reuse. Approximately 730 cy of soil was removed, stockpiled, and placed in the CU. A no-further-action ROD was signed for the CPR in 2001.	No further action necessary.	FFR08 FFR12
	Machine Gun Range No. 4.	A removal action was conducted at the MGR No. 4 between November 1999 and April 2000 to remove lead and antimony-contaminated soil. Results for confirmation soil samples indicate that the removal action objective cleanup levels for lead (400 mg/kg) and antimony (30 mg/kg) were met and the site no longer poses a threat to human health or the environment, and is suitable for unrestricted reuse. Approximately 462 cy of soil was removed, stockpiled, and placed in the CU. A no-further-action ROD was signed for the MGR No. 4 in 2001.		
	Former NTSR	A removal action was conducted at the former NTSR between October 2003 and April 2004. Approximately 52,000 cy of lead and PAH-contaminated soil was stabilized with TSP, excavated, and processed through mechanical screens. Of the 52,000 cy of excavated material, approximately 43,000 cy of stabilized material passed the screens and was transported and placed in the existing CU. The approximately 9,000 cy of uncontaminated material retained on the screens was used for site restoration. Soil within ‘akoko clusters with high densities of ‘akoko plants were manually excavated to preserve the plants. Confirmation samples were collected and analyzed for total lead and PAHs. All lead concentrations were below the cleanup level (400 mg/kg). An RME concentration was calculated for each PAH detected in soil. The RME concentrations of all PAHs were below the cleanup levels. Based on the post-removal laboratory data and RME calculations, the former NTSR is suitable for unrestricted reuse and no further action is necessary at the site. A no-further-response-action DD was signed for the former NTSR in 2007.	No further response action necessary.	FNTSR11 FNTSR13
POI-48	Substation P (POI-08)	A removal action was conducted for PCBs at Substation P from August 1998 to October 1998. Approximately 2 ft^2 of concrete floor inside of Substation P was cleaned by solvent extraction; approximately 1 ft^2 of concrete surface inside Substation P was scabbled and 5 ft^2 was encapsulated with concrete. PCB concentrations in the soil associated with Substation P were below the cleanup level for PCBs (1 mg/kg) for unrestricted use. An RME concentration was calculated using concrete wipe confirmation sample results. The RME concentration (3.57 µg/100 cm^2) was below the removal action objective cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	No further action necessary.	TS09 TS10
	Substation TV-8 (POI-03)	A removal action was conducted at Substation TV-8 in August 1998. Approximately 0.2 cy of PCB-contaminated soil was excavated. PCB concentrations in concrete wipe samples taken at the concrete slab were below the cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (0.19 mg/kg) was below the removal action objective cleanup level for PCBs (1 mg/kg) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	No further action necessary.	TS09 TS10 TS15 TS16

Table 3-2: Summary of CERCLA Sites Where the Removal Actions Were the Final Action (Continued)

POI	Site Name	Removal Actions Conducted at the CERCLA Site	Final Action	Reference Document Number[a]
POI-48 (cont'd)	Substation S1681 (POI-41)	A removal action was conducted at Substation S1681 from August 1998 to October 1998. Approximately 118 cy of soil was excavated. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (0.92 mg/kg) was below the removal action objective cleanup level for PCBs (1 mg/kg) for unrestricted use. In addition, solvent extraction was conducted on the concrete pad. Approximately 44 ft^2 of concrete transformer pad was cleaned. An RME concentration was calculated using concrete wipe confirmation sample results. The RME concentration (4 µg/100 cm^2) was below the removal action objective cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	No further action necessary.	TS08 TS10 TS15 TS16
	Substation S1684 (POI-41)	A removal action was conducted at Substation S1684 from August 1998 to October 1998. Approximately 31 cy of soil was excavated. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (0.37 mg/kg) was below the removal action objective cleanup level for PCBs (1 mg/kg) for unrestricted use. In addition, solvent extraction was conducted on the concrete transformer pad. Approximately 20 ft^2 of concrete transformer pad was cleaned. An RME concentration was calculated using concrete wipe confirmation sample results. The RME concentration (6.9 µg/100 cm^2) was below the removal action objective cleanup level for PCBs (10µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	No further action necessary.	TS08 TS10 TS15 TS16
	Substation S1761	A removal action was conducted at Substation S1761 from April 2004 to June 2004. Approximately 224 bcy of PCB-contaminated soil was excavated and approximately 290 lcy of PCB-contaminated soil was treated (includes overexcavated volume) by thermal desorption treatment in 2004. All soil confirmation sample results met the cleanup level for PCBs (1 mg/kg) for unrestricted use. A no-further-response-action DD was prepared for Substation S1761 in 2007. The DD is anticipated to be signed in 2007.	No further action necessary.	TS15 TS15 TS16 TS17
	Substation S1789 (POI-10)	A removal action was conducted at Substation S1789 in August 1998. Soil sampling was conducted in an area surrounding Substation S1789 as part of removal action activities for PCBs. An RME concentration was calculated using soil sampling results. The RME concentration (0.02 mg/kg) was below the removal action objective cleanup level for PCBs (1 mg/kg) for unrestricted use. In addition, approximately 12 ft^2 of the transformer pad was cleaned by solvent extraction. An RME concentration was calculated using concrete wipe confirmation sample results. The RME concentration (0.11 µg/100 cm^2) was below the removal action objective cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	No further action necessary.	TS09 TS10

Table 3-2: Summary of CERCLA Sites Where the Removal Actions Were the Final Action (Continued)

POI	Site Name	Removal Actions Conducted at the CERCLA Site	Final Action	Reference Document Number[a]
POI-48 (cont'd)	Substation S1844	A removal action was conducted at Substation S1844 in August 1998. Approximately 1.25 cy of PCB-contaminated soil was excavated. In addition, concrete wipe sampling was conducted on the concrete transformer pad. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (0.015 mg/kg) was below the removal action objective cleanup level for PCBs (1 mg/kg) for unrestricted use. An RME concentration was also calculated using concrete wipe confirmation sample results. The RME concentration (0.5 µg/100 cm^2) was below the removal action objective cleanup level for PCBs (10 µg/100 cm^2) for unrestricted use. This no-further-action site was included in the Sixteen Transformer Substations ROD signed in 1999.	No further action necessary.	TS09 TS10 TS15 TS16
Former HW6	Former Hazardous Waste Accumulation Area 6	A removal action was conducted at the Former HW6 site from August to September 2001. Approximately 80 cy of PCB-contaminated soil was excavated from HW6 Cell 1. An RME concentration was calculated using confirmation soil sample results. The RME concentration for PCBs (0.5 mg/kg) was below the removal action objective cleanup level (1 mg/kg). Approximately 80 cy of cadmium-contaminated soil was excavated from HW6 Cell 1 and placed in the CU. An RME concentration was calculated using confirmation soil sample results. The RME concentration for cadmium (3.7 mg/kg) was below the removal action objective cleanup level (37 mg/kg). Approximately 140 cy of arsenic-contaminated soil was excavated from HW6 Cell 6 and placed in the CU. An RME concentration was calculated using confirmation soil sample results. The RME concentration for arsenic (3.5 mg/kg) was below the removal action objective cleanup level (22 mg/kg). Approximately 5 cy of arsenic-contaminated soil was excavated from the swale and placed in the CU. An RME concentration was calculated using confirmation soil sample results. The RME concentration for arsenic (16.7 mg/kg) was below the removal action objective cleanup level (22 mg/kg). As a result of the removal actions at HW6, no further response action is necessary to ensure protection of human health and the environment and the site is suitable for unrestricted reuse. A no-further-action DD was signed for former HW6 in 2003.	No further action necessary.	HW604 HW605

Notes:
[a] = See Table 8-1 in the report for list of former NAS Barbers Point reference documents.
µg/100 cm^2 = microgram per 100 square centimeters
ACM = asbestos-containing material
bcy = bulk cubic yard
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
COC = contaminant of concern
CPR = Carbine Pistol Range
CU = Consolidation Unit
cy = cubic yard
DD = decision document
ft^2 = square feet
HW6 = Hazardous Waste Accumulation Area 6
lcy = loose cubic yard
mg/kg = milligram per kilogram
MGR = Machine Gun Range
MWR = Morale, Welfare, and Recreation
NAS = Naval Air Station
NTSR = Northern Trap and Skeet Range
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyl
POI = point of interest
RME = reasonable maximum exposure
ROD = record of decision
SVOC = semivolatile organic compound
TPH = total petroleum hydrocarbon
TSP = triple super phosphate

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
IRP-01	CSR Coral Pit	A removal action was conducted between November 2000 and December 2001 at the CSR Coral Pit. Approximately 119,000 cy of contaminated soil, vegetative debris (i.e., wood chips), and solid waste debris were excavated and removed from the site and transferred to the CU. In addition, a trenching and sampling investigation was performed from March 2001 to May 2001 on the West Floor of the CSR Coral Pit to characterize the extent of oil and oily sheen that was observed in limestone bedrock and on the groundwater surface during 2000–2001 removal action activities. During the investigation, 34 test pits were excavated. Visual observations and soil and groundwater samples collected from the trenches were used to evaluate the extent of oil in the West Floor area. Observations made during the investigation suggest that the lateral extent of oil is limited to a small part of the West Floor and that PCBs are associated with the oil. Because of the limited lateral extent of oil and the low likelihood of exposure due to its occurrence in bedrock materials, the oil and associated PCBs identified in the West Floor trenches were determined to require no action. Verification sampling results following the 2000–2001 removal action showed that the removal action objective cleanup levels for the COCs were achieved. The cleanup levels were selected assuming restricted land use. Because the data indicate that current conditions (after the 2000–2001 removal action) do not pose unacceptable risks to human health or the environment under the restricted land use scenario, additional cleanup is not necessary at the site. A DD was signed for the CSR Coral Pit in 2001. LUCs, as presented in Section 5 (Table 5-1), apply to the CSR Coral Pit.	The final RAO at the CSR Coral Pit was to protect human health from site COCs. Although COCs are present at the site under the final response action, use restrictions will be put in place to protect future site visitors and workers from exposures above the acceptable risk range.	The selected final remedy for the CSR Coral Pit is the application of LUCs for restricted future land use. See Section 5 (Table 5-1) for a discussion of the LUCs.	CSRCP06 CSRCP11 CSRCP13
POI-12	Coral Pit 1	A removal action was completed at Coral Pit 1 in September 2005 consisting of the implementation of LUCs to restrict the area to industrial use to address human health risks at the site. A DD was signed for Coral Pit 1 in 2005. LUCs, as presented in Section 5 (Table 5-1), apply to Coral Pit 1. A survey showing the LUC boundaries for Coral Pit 1 is included in Appendix B.	The primary RAO at Coral Pit 1 was to reduce to acceptable levels the risk associated with metals, PAHs, and PCBs identified during the SI by restricting pathways for human exposure to contaminants through the implementation of LUCs.	The selected final remedy for Coral Pit 1 is the implementation of LUCs to restrict the future use of the area to industrial. See Section 5 (Table 5-1) for a discussion of the LUCs.	NRP08 NRP12 NRP13
POI-14	Coral Pit 2	A removal action was completed at Coral Pit 2 in September 2005 consisting of the implementation of LUCs to restrict the area to industrial use to address human health risks at the site. A DD was signed for Coral Pit 2 in 2005. LUCs, as presented in Section 5 (Table 5-1), apply to Coral Pit 2. A survey showing the LUC boundaries for Coral Pit 2 is included in Appendix B.	The primary RAO at Coral Pit 2 was to reduce to acceptable levels the risk associated with metals, PAHs, and PCBs identified during the SI by restricting pathways for human exposure to contaminants through the implementation of LUCs.	The selected final remedy for Coral Pit 2 is the implementation of LUCs to restrict the future use of the area to industrial. See Section 5 (Table 5-1) for a discussion of the LUCs.	NRP08 NRP12 NRP13

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
POI-25	Fire Fighting Training Pits	A remedial action for the Fire Fighting Training Pits consisted of implementing LUCs to restrict use of the site to industrial. The unlined Fire Fighting Training Pits site does not pose a threat to human health or the environment based on the intended use of the property (industrial use, such as a restricted area adjacent to a runway). Based on the RI data and the results of the risk assessment and data evaluation process, a restricted land use decision was made for the site. A restricted land use ROD was signed for the Fire Fighting Training Pits in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the Fire Fighting Training Pits site where contamination still exists above residential cleanup levels. A survey showing the LUC boundaries for the unlined pits is included in Appendix B. The portion of the Fire Fighting Training Pits site that contained the lined concrete pit was considered suitable for unrestricted use.	The primary RAO at the Fire Fighting Training Pits was to reduce to acceptable levels the risk associated with VOCs, SVOCs, PAHs, fuel constituents, pesticides, PCBs, dioxins, furans, and metals identified during the RI by restricting pathways for human exposure to contaminants through the implementation of LUCs.	The remedial action for the Fire Fighting Training Pits is the implementation of LUCs for restricted future land use (industrial use). See Section 5 (Table 5-1) for a discussion of the LUCs.	NARLU01
POI-44	Former STSR	A removal action was conducted at the Former STSR from December 2000 to July 2003. Approximately 70,000 cy of material was stabilized with TSP, excavated, and processed through mechanical screens. Of that material, approximately 42,000 cy of lead-, arsenic-, and PAH-contaminated soil was passed through screens, transported, and disposed of in the existing CU, and approximately 28,000 cy of uncontaminated material was retained on the screens for site restoration activities. Lead- and arsenic-contaminated soil within the archaeological feature areas was not removed in order to preserve the archaeological features. PAH-contaminated soil within the clay pigeon area was removed to meet cleanup levels for industrial land use. A DD was signed for the Former STSR in 2007. LUCs, as presented in Section 5 (Table 5-1), apply to the two areas at the Former STSR (archaeological features and the clay pigeon area) where contamination in soil still exists above residential cleanup levels. A survey showing the LUC boundaries for the Former STSR is included in Appendix B.	The RAOs for the Former STSR were as follows: • Removal of contaminated soil to meet the approved cleanup goals that will reduce the risk via lead, arsenic, and PAH exposure pathways through dermal contact, ingestion, and inhalation by human receptors • Removal of contaminated soil to meet the approved cleanup goal that will reduce the risk via lead exposure pathways of ingestion of soil and food species by ecological receptors • Disposal of waste streams from the 2000–2003 removal action • Implementation of LUCs for the clay pigeon area and the archaeological features areas	The primary remedy selected for the former STSR site was stabilization, excavation, and removal of the contaminated soil to meet the EPA Region 9 (2002) residential soil PRGs for unrestricted land use. The excavated soil was treated (stabilized) to render it non-hazardous prior to its consolidation in an existing CU. LUCs were selected as the final remedy for the portions of Former STSR where unrestricted land use was not attainable, either because the area could not be excavated (for preservation of archaeological features) or because the residential cleanup goal was either unattainable or not cost-effective (i.e., the area with clay pigeon target fragments). See Section 5 (Table 5-1) for a discussion of the LUCs.	FSTSR05 FSTSR06 FSTSR08 FSTSR09

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
POI-48	Substation B (POI-03)	A removal action was conducted at Substation B from August 1998 to January 1999. Approximately 22 cy of contaminated soil was excavated near Building 273; approximately 23 ft^2 of concrete in the utility trench was treated by solvent extraction; and approximately 6 ft^2 of concrete was scabbled and encapsulated with concrete. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. RME concentrations were calculated using soil confirmation samples and concrete wipe confirmation sample results from the indoor ground floor, outdoor ground floor, and underground utility vault using. The RME concentrations for soil and for concrete wipe samples were below the removal action objective cleanup levels (1 mg/kg for soil and 10 µg/100 cm^2 for concrete wipes) for unrestricted use. An RME concentration was also calculated using concrete wipe confirmation sample results from the utility conduit. The RME concentration (77 µg/100 cm^2) was above the removal action objective cleanup level (10 µg/100 cm^2) for unrestricted use. A ROD was signed for Substation B in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the concrete utility conduit (trench) where concrete wipe confirmation sample results were above the cleanup level.	The RAOs for Substations B, P, TV-8, S117, S1681, S1684, S1759, S1761, S1789, and S1844 were to remediate PCB-contaminated soil and concrete surfaces and attain the following cleanup levels. The cleanup levels were the DOH Tier 1 SALs for residential areas (i.e., unrestricted use) (DOH 1995) and the TSCA risk-based nonrestricted-access cleanup requirement (EPA 1990). • Soil: 1 mg/kg • Concrete wipe: 10 µg/100 cm^2 Deviations from these objectives were made for Substations S110, S140, S184, and S1860 because the RAOs for the residential use/nonrestricted access requirements could not be met. Although DOH has not established a SAL for industrial settings, in the past the DOH prescribed a cleanup level of 10 mg/kg for soil. In addition, the TSCA restricted-access cleanup requirement (EPA 1990) was used for concrete surfaces in the underground utility vaults at these substations. Therefore, the RAOs for underground utility vaults at Substations S110, S140, S184, and S1860 were to remediate PCB-contaminated soil and concrete surfaces and attain the following cleanup levels: • Soil: 10 mg/kg • Concrete wipe: 100 µg/100 cm^2	The selected final remedy for the seven transformer Substations B, S110, S117, S140, S184, S1759, and S1860 is the implementation of institutional controls. Section 5 (Table 5-1) for a discussion of the LUCs.	TS09 TS10 TS15 TS16
	Substation S110 (POI-29)	A removal action was conducted at Substation S110 from August 1998 to February 1999. Approximately 60 ft^2 of concrete floor inside of Building 110 was treated by solvent extraction. An RME concentration was calculated for soil surrounding Substation S110. The RME concentration (0.52 mg/kg) did not exceed the cleanup level (1 mg/kg) for unrestricted use. An RME concentration was calculated for soil in a 1-foot-by-1-foot opening in the concrete floor of the underground vault. The RME concentration (3.2 mg/kg) met the removal action objective cleanup level (10 mg/kg) for restricted (i.e., industrial) use, but was above the cleanup level (1 mg/kg) for unrestricted use. The RME concentrations for concrete were below the removal action objective cleanup levels (10 µg/100 cm^2 and 100 µg/100 cm^2) for unrestricted use. A ROD was signed for Substation S110 in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to a 1-foot by 1-foot soil patch within the opening of the concrete floor in the underground vault of Substation S110.			TS08 TS10

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
POI-48 (cont'd)	Substation S117 (POI-36)	A removal action was conducted at Substation S117 from August 1998 to February 1999. Approximately 280 ft^2 of concrete floor in the downstairs transformer room was scabbled and approximately 295 ft^2 was encapsulated with concrete. Approximately 280 ft^2 of the concrete floor in the upstairs transformer room was scabbled and encapsulated with concrete. An RME concentration was calculated for the concrete floor of the downstairs transformer room of Substation S117. The RME concentration (3.45 µg/100 cm^2) did not exceed the removal action objective cleanup level (10 µg/100 cm^2) for unrestricted use. The RME concentration was calculated for the concrete floor of the upstairs transformer room of Substation S117. The RME concentration (10.70 µg/100 cm^2) slightly exceeded the removal action objective cleanup level (10 µg/100 cm^2) for unrestricted use. A ROD was signed for Substation S117 in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the concrete floor in the upstairs transformer room of Substation S117.	Following removal action activities, PCB-contaminated soil and concrete were stockpiled awaiting treatment. The project cleanup goals for thermal desorption treatment were based on cleanup levels for PCBs derived from the TSCA and the DOH as follows: • Soil: 1 mg/kg (PCBs [high occupancy, residential]) • Soil: 10 mg/kg (PCBs [low occupancy, industrial) • Concrete wipe: 10 µg/100 cm^2 (PCBs [high-contact solid surfaces or low-contact, indoor, impervious solid surfaces]) • Concrete wipe: 100 µg/100 cm^2 (PCBs [low-contact outdoor surfaces (both impervious and nonimpervious]) • Concrete: 1 mg/kg (PCB bulk remediation waste [high-occupancy areas]) • Concrete: 25 mg/kg (PCB bulk remediation waste [low-occupancy areas])	See above	TS09 TS10
	Substation S140 (POI-31)	A removal action was conducted at Substation S140 from September 1998 to January 1999. Less than 1 cy of contaminated soil in the underground vault was excavated. As presented in the RVR, approximately 114 ft^2 and 78 ft^2 (totals 192 ft^2) of concrete was treated by solvent extraction and 54 ft^2 of concrete was scabbled on the concrete surface of the ground floor of the substation; and approximately 63 ft^2 of concrete was treated by solvent extraction in the underground utility vault. The ROD states that 60 ft^2 of concrete was treated by solvent extraction. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (83 mg/kg) was above the removal action objective cleanup level (1 mg/kg) for unrestricted use. No further action is necessary or feasible because all of the loose soil was removed and continued removal of soil was impractical as grounding wires and cables enter the ground in this area. An RME concentration was calculated for the concrete floor on the ground level using concrete wipe confirmation sample results. The RME concentration (10.14 µg/100 cm^2) was slightly above the removal action objective cleanup level (10 µg/100 cm^2) for unrestricted use.			TS09 TS10 TS15 TS16

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
POI-48 (cont'd)	Substation S140 (POI-31) (cont'd)	An RME concentration was calculated for the concrete surface of the underground vault and utility trench using concrete wipe confirmation sample results. The RME concentration (61.16 µg/100 cm^2) met the removal action objective cleanup level (100 µg/100 cm^2) for restricted use (i.e., underground vault); however, it was above the cleanup level (10 µg/100 cm^2) for unrestricted use. A ROD was signed for the Substation S140 in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the 1-foot by 1-foot soil patch within the opening of the concrete floor in the underground vault; to the concrete floor on the ground level; and to the concrete in the underground vault and utility trench.	See above	See above	TS09 TS10 TS15 TS16
	Substation S184 (POI-05)	A removal action was conducted at Substation S184 from September 1998 to October 1998. Approximately 1,161 cy of soil was excavated and less than 1 cy of sand and soil was excavated from the underground vault; approximately 53 ft^2 of the concrete floor in the underground vault was cleaned by solvent extraction and 1 ft^2 of concrete was scabbled and encapsulated with concrete; and approximately 45 ft^2 of the concrete floor inside Substation S184 was cleaned by solvent extraction and 4 ft^2 was scabbled and encapsulated with concrete. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (0.77 mg/kg) for soil surrounding the substation was below the cleanup level (1 mg/kg) for unrestricted use. A sample from the last scoop of soil removed from the area surrounding the dry well in the underground concrete vault was 75 mg/kg; No further soil removal is necessary or feasible because all of the loose soil has been removed and access to any remaining soil located at the bottom of a hole in the floor of the underground vault is limited. An RME concentration was calculated using concrete wipe confirmation sample results from concrete outside Substation S184. The RME concentration (0.72 µg/100 cm^2) was below the cleanup level (10 µg/100 cm^2) for unrestricted use. An RME concentration was calculated using underground vault concrete wipe confirmation sample results. The RME concentration (33 µg/100 cm^2) met the removal action objective cleanup level (100 µg/100 cm^2) for restricted (i.e., industrial) use; however, was above the cleanup level (10 µg/100 cm^2) for unrestricted use.			TS08 TS10 TS15 TS16

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
POI-48 (cont'd)	Substation S184 (POI-05) (cont'd)	An RME concentration was calculated using concrete wipe confirmation sample results collected from the ground floor inside Substation S184. The RME concentration (6 µg/100 cm^2) was below the removal action objective cleanup level (10 µg/100 cm^2) for unrestricted use. A ROD was signed for the Substation S184 in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the 1.5-foot by 1.5–foot patch of soil at the bottom of a hole in the floor of the underground vault., and to the concrete in the underground vault.	See above	See above	TS08 TS10 TS15 TS16
	Substation S1759 (POI-18)	A removal action was conducted at Substation S1759 from September 1998 to January 1999. Approximately 315 cy of soil was excavated from an area surrounding Substation S117, and approximately 110 ft^2 of concrete was scabbled and encapsulated with concrete. The excavated area was backfilled with clean soil to prevent exposure to the PCB levels above 1 mg/kg. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004. An RME concentration was calculated using soil confirmation sample results. The RME concentration (2.9 mg/kg) met the removal action objective cleanup level (10 mg/kg) for restricted (i.e., industrial) use; however, was above the cleanup level (1 mg/kg) for unrestricted use. Further excavation could not be performed due to structural instability of adjacent chiller and coolers. An RME concentration was calculated using concrete wipe confirmation sample results. The RME concentration (49.43 µg/100 cm^2) was above the removal action objective cleanup level (10 µg/100 cm^2) for unrestricted use. A ROD was signed for the Substation S1759 in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the soil surrounding the transformer substation pad, the concrete transformer substation pad, and the soil beneath the concrete slab.			TS09 TS10 TS15 TS16
	Substation S1860 (POI-37)	A removal action was conducted at Substation S1860 from August 1998 to October 1998. Approximately 341 cy of soil was excavated from an area surrounding Substation S1860.. Excavated soil was stockpiled at former NAS Barbers Point awaiting treatment. The stockpiled soil was treated by thermal desorption treatment in 2004.			TS08 TS10 TS13 TS15 TS16

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

POI	Site Name	Summary of Removal Actions	Remedial Action Objectives	Final Action	Reference Document Number[a]
POI-48 (cont'd)	Substation S1860 (POI-37)	An RME concentration was calculated using soil confirmation sample results. The RME concentration (9.4 mg/kg) was below the removal action objective cleanup level (10 mg/kg) for restricted (i.e., industrial) use; however, was above the cleanup level (1 mg/kg) for unrestricted use. An RME concentration was calculated using concrete wipe confirmation sample results. The RME concentration (0.5 µg/100 cm^2) was below the removal action objective cleanup level (10µg/100 cm^2) for unrestricted use. A ROD was signed for the Substation S1860 in 1999. LUCs, as presented in Section 5 (Table 5-1), apply to the soil within the fuel farm complex where Substation S1860 is located, which is restricted to industrial use only. A survey showing the LUC boundaries for Substation S1860 is included in Appendix B.	See above.	See above.	TS08 TS10 TS13 TS15 TS16
CU/Monofill	CU/Monofill	The construction of the CU was implemented at former NAS Barbers Point between October 2000 and July 2005 to dispose of the material generated from removal actions at various sites beneath an engineered low-permeability cover system. The cover system eliminates the health risks associated with direct contact and incidental ingestion of contaminated media at the surface, and provides a barrier to stormwater that minimizes the potential contamination of groundwater by leachate. The protective measures include: • *Cover and Drainage Structures*. Surface water drainage structures were installed at the site during construction of the landfill cover to channel stormwater away from the CU to an infiltration basin. • *Methane Gas Collection and Venting System*. A passive methane gas collection and venting system was installed during the construction of the landfill cover to address methane gas generation from potential decomposition of wastewater treatment sludge in the Monofill or organic solid waste (i.e., wood chips) disposed of in the CU. • *Access Controls.* Lockable gates and signage at all road access points to the NAVFAC Hawaii Solid Waste Management Facility restrict public access to the landfill area. In addition, a 6-foot-high chain-link fence parallel to the adjacent runway and taxiway limits access along the northeast corner of the NAVFAC Hawaii Solid Waste Management Facility. A draft DD was prepared for the CU/Monofill in 2007. The DD is anticipated to be signed in 2008. LUCs, as presented in Section 5 (Table 5-1), apply to the CU/Monofill.	Although a response action was not necessary for the Monofill area, response actions were necessary for the multiple cleanup sites at former NAS Barbers Point based on the results of the pre-removal action risk evaluations conducted for each cleanup site. Removal action objectives for the cleanup sites are summarized as follows: • Disposal of waste streams from each removal action in a CU • Implementation of LUCs at the CU to restrict pathways for human exposure of contaminants.	The final remedy selected for the CU/Monofill is the institution of LUCs to restrict access and use of the CU, and long-term monitoring and maintenance of the CU. The elements of the selected final remedy for the CU/Monofill site include the following: • Conduct long-term CU maintenance and methane gas and groundwater monitoring throughout a 30-year, post-closure care period to ensure that CU structures remain operable and effective. • Administer and monitor LUCs. See Section 5 (Table 5-1) for a discussion of the LUCs.	CU02 CU05 CU06 CU07 CU10

Table 3-3: Summary of Removal/Remedial Actions Conducted at CERCLA Sites Where Land-Use Controls Were the Final Action (Continued)

Notes:
[a] = See Table 8-1 in the report for list of former NAS Barbers Point reference documents.
µg/100 cm^2 = microgram per 100 square centimeters
COC = contaminant of concern
CSR = Coral Sea Road
CU = Consolidation Unit
cy = cubic yard
DD = decision document
DOH = State of Hawaii Department of Health
EPA = U.S. Environmental Protection Agency
IRP = Installation Restoration Program
LUC = land use control
mg/kg = milligram per kilogram
NAS = Naval Air Station
NAVFAC = Naval Facilities Engineering Command
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyl
POI = point of interest
PRG = preliminary remediation goals
RAO = removal action objective
RME = reasonable maximum exposure
ROD = record of decision
SAL = soil action level
SI = site investigation
STSR = Southern Trap and Skeet Range
SVOC = semivolatile organic compound
TPH = total petroleum hydrocarbon
TSCA = Toxic Substances Control Act
TSP = triple super phosphate
VOC = volatile organic compound

4. Demonstration of Completion

The removal/remedial action activities at former NAS Barbers Point were performed in accordance with project plans prepared and approved for each of the sites by the Navy and reviewed by members of the BCT. The removal action activities and the findings from those activities are presented in the various reports listed in Section 8. EPA Region 9 PRGs, Toxic Substances Control Act (TSCA), and DOH Tier 1 action levels were used for screening purposes during the removal actions, as discussed in Sections 2 and 3, to ensure that RAOs of protecting human health and the environment were achieved. For the sites where unrestricted reuse objectives were not achieved, LUCs were necessary. These sites are discussed further in Section 5 of this report. All other sites were remediated to unrestricted reuse (residential), are considered closed, and are documented in the DDs and RODs for each site.

5. Ongoing Activities

LUCs were implemented at all, or a portion of, seven of the sites at former NAS Barbers Point because either (1) it was not feasible or cost effective to achieve cleanup levels for unrestricted use during the removal actions, or (2) the LUCs that were implemented without conducting any other response action were appropriate for the intended reuse of the property. The LUC sites are: IRP-01 (CSR Coral Pit); POI-12 (Coral Pit 1); POI-14 (Coral Pit 2); POI-25 (Fire Fighting Training Pits); POI-44 (Former Southern Trap and Skeet Range); POI-48 (Transformer Substation System - Substations B, S110, S117, S140, S184, S1759, and S1860); and the CU/Monofill. The LUCs implemented at these sites are considered the final remedy and fulfill the applicable or relevant and appropriate requirements (ARAR) to the extent practicable, as required by Title 40 Code of Federal Regulations (CFR) 300.415(i) of the NCP.

LUCs are necessary to protect human health or welfare or the environment from actual or threatened release of pollutants. The LUCs at these former NAS Barbers Point sites minimize human exposure to contaminants by restricting land use and imposing restrictions on the sites. Five-year reviews are required for these sites to ensure that the LUCs are in place and that the current land use (such as industrial, non-residential/non-camping purposes) is consistent with the intended reuse. These LUCs should be applicable to all future landowners and occupants in perpetuity until it is shown that the sites no longer pose an unacceptable risk to human health or the environment, assuming unrestricted land use.

Table 5-1 presents a brief summary of the LUCs, operation and maintenance (O&M), and 5-year review schedule for these sites. Appendix B presents the surveyed boundaries for some of the sites with LUCs.

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
IRP-01	CSR Coral Pit	Entire site	• The transferee shall be notified that contamination is present in soil, limestone bedrock, and groundwater, and that if any excavated soil, limestone bedrock, or groundwater is removed from the site; the material must be handled, tested, and disposed of in accordance with applicable federal, state, and local regulations. • The transferee shall notify all parties performing excavation activities at the site of the potential presence of contaminants in the soil, limestone bedrock, and groundwater remaining at the site. • The transferee shall be prohibited from using the CSR Coral Pit area for residential purposes or overnight stays. • The deed or other instrument for the transfer of the property shall require the U.S. Navy to perform 5-year reviews to ensure that the LUCs are in place and to confirm that current land use is consistent with the intended reuse.	Y	Y; June and August 2004; Next 5-year Review: 2009	N/A	N/A	LUCs are in place.	None.	CSRCP13 MS12
POI-12 and POI-14	Coral Pit 1 and Coral Pit 2	Entire sites	• The use of the sites consisting of Coral Pit 1 and Coral Pit 2 shall be limited to industrial use only. As used herein, “industrial use” shall mean any use except residential use. “Residential use” means use as adult and child dwelling(s), including camping, and other facilities, which are occupied by children on a consistent basis. As used herein, “consistent” means 250 days per year for 6 years or greater.	Y	N; 2010	N/A	N/A	N/A	N/A	NRP12 NRP13

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-12 and POI-14 (cont.)	Coral Pit 1 and Coral Pit 2	Entire sites	• The landowner shall ensure that any land modifications (e.g., vegetation clearing, excavation, landscaping, and construction of any structures) affecting the sites and involving the handling and/or disposal of potentially contaminated soil shall be performed in accordance with all applicable laws and regulations. Consistent with this obligation, the landowner shall notify any party proposing to do any land modification affecting the sites that the soil on the sites is or may be contaminated and shall require the party to handle and/or dispose of any contaminated soil in accordance with all applicable laws and regulations. Prior to the commencement of the proposed land modification work, the landowner shall require the party to demonstrate to the landowner's satisfaction how contaminated soil will be handled and/or disposed of in accordance with all applicable laws and regulations. The landowner will include in its annual and five-year review reports discussions on any permitted land modifications and the manner in which contaminated soil was handled and/or disposed of in order to comply with all applicable laws and regulations.	Y	N; 2010	N/A	N/A	N/A	N/A	NRP12 NRP13

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-25	Fire Fighting Training Pits	Unlined pits area (See Appendix B for land survey)	Restrict future land use at the unlined pits at the Fire Fighting Training Pits to non-residential and non-camping purposes.	Y	Y; 1 June and July 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place. The site is surrounded by a 6-foot-high chain-link fence that is secured; however, the fence is not part of the LUCs. The fence was in good condition. The site is open land adjacent to a runway and shows no indication of vandalism.	None.	NARLU01 MS12
POI-44	Former Southern Trap and Skeet Range	Archaeo-logical features areas (See Appendix B for land survey)	• The landowner shall prohibit any land use of the archaeological feature areas. • The landowner shall inspect and maintain the integrity of the protective structures (berms and fencing) surrounding the archaeological features areas intended to restrict site access. • The landowner shall only allow archaeologists and maintenance crews properly trained for hazardous material operations access to the archaeological features areas. • The landowner shall include in its annual LUC Compliance Certificates and five-year review reports, submitted to the Navy for its review and approval, confirmation of the integrity of the protective structures surrounding the archaeological features areas and, if maintenance of the structures is required, a discussion of any actions required to reestablish and maintain the structures.	Y	N; 2011	N/A	N/A	N/A	N/A	FSTSR08 FSTSR09

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-44 (cont.)	Former Southern Trap and Skeet Range	Area with clay pigeon target fragments (See Appendix B for land survey)	• The landowner shall prohibit the development or use of any portion of the clay pigeon area as residential housing, day care, school or playground facilities. • The landowner shall prohibit any soil disturbing land modifications (e.g., excavation clearing, regrading) within the clay pigeon area except by personnel properly trained for hazardous material operations and who have been informed of the potential hazards associated with the clay pigeon area. • The landowner shall require that the disposal of any soil taken from within the clay pigeon area be properly characterized, manifested and transported by appropriately licensed transporters, and disposed of at an appropriate TSD facility. • The landowner shall include in its annual LUC Compliance Certificates and five-year review reports, confirmation that the land use within the clay pigeon area is for industrial purposes only, and a description of any land modifications performed within the clay pigeon area.	Y	N; 2011	N/A	N/A	N/A	N/A	FSTSR08 FSTSR09
		Entire Site	• The landowner shall allow the Navy and its contractors free and unhindered access to the former STSR for purposes of verifying implementation of the LUCs							
POI-48	Substation B (POI-03)	Concrete utility trench	• Concrete encapsulation of scabbled areas. • PCB caution label in trench. Metal plate covers over utility trench. • Fence with locked gate. • Maintain the concrete encapsulant, PCB caution label, metal plate covers over utility trench, and fence with locked gate.	Y	Y; July and September 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place; however, a PCB caution label is missing from the trench.	Place a caution label indicating PCBs are present inside of the trench at the substation.	TS10 MS12

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-48	Substation S110 (POI-29)	1-foot by 1-foot soil patch of concrete floor in the underground vault.	• Manhole cover over vault access. • Maintain manhole cover over underground vault. • Restrict underground vault use to utility vault activities.	Y	Y; September 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place. The manhole cover over the underground vault was intact and in good condition.	None.	TS10 MS12
POI-48	Substation S117 (POI-36)	Concrete floor in the upstairs transformer room.	• Concrete encapsulation of scabbled areas. • PCB caution labels on concrete encapsulation floor. • Door with lock. • Maintain the concrete encapsulant, PCB caution labels, and door with lock. • Restrict transformer substation to industrial use.	Y	Y; September 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place. The concrete floor is intact and in good condition. The door lock was in good condition. The PCB caution labels were intact and visible.	None.	TS10 MS12

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-48	Substation S140 (POI-31)	1-foot by 1-foot patch of soil at the bottom of a hole in the floor of the underground vault.	• Manhole cover over underground vault access. • Fenced enclosure with a locked gate. • Maintain manhole cover over underground vault, fenced enclosure and locked gate. • Restrict underground vault use to utility vault.	Y	Y; September 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place. The fencing, gate, and lock are all in good condition. The concrete floor is intact and in good condition. The metal trench covers are intact and in good condition. The metal manhole cover which covers the underground vault is intact and in good condition. The PCB caution labels are intact and visible.	None.	TS10 MS12
		Concrete floor on the ground level	• Fenced enclosure with a locked gate. • Concrete encapsulation of scabbled areas. • PCB caution label on concrete encapsulated floor. • Maintain fenced enclosure and locked gate, concrete encapsulant, and PCB caution label. • Restrict transformer substation to industrial use.							
		Concrete in the underground vault and utility trench.	• Fenced enclosure with a locked gate. • Manhole cover over underground vault access. • Metal plate covers over utility trench. • PCB caution labels on concrete floor and adjacent to utility trench. • Maintain fenced enclosure and locked gate, manhole cover over underground vault, metal plate covers over utility trench, and PCB caution labels. • Restrict underground vault use to utility vault access. Restrict utility trench use to utility trench activities.							

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-48	Substation S184 (POI-05)	1.5-foot by 1.5-foot soil patch within opening of concrete floor in the underground vault.	• Manhole cover over underground vault access. • Door with lock. • Maintain manhole cover over underground vault and door and lock. • Restrict underground vault use to utility vault activities.	Y	Y; September 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place. The building lock was removed for the purposes of the inspection and will be replaced with a new lock. The concrete floor is intact and in good condition. The wooden cover which covers the underground vault is intact and in good condition. The PCB caution label is intact and visible. The site is used only as a transformer substation (industrial use).	None.	TS10 MS12
		Concrete in the underground vault.	• Manhole cover over underground vault access. • PCB caution label on concrete floor. • Maintain manhole cover over underground vault, PCB caution label, and door with lock. • Restrict underground vault use to utility vault activities. • Door with lock.							

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
POI-48	Substation S1759 (POI-18)	Soil surrounding transformer substation pad.	• Soil encapsulation of excavated areas. • Maintain the soil encapsulation. • Restrict area to nonresidential use.	Y	Y; September 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place. The soil cover was intact, the concrete slab was intact, the fence and locked gate were intact, and the area is currently unused. The soil cover, concrete slab, fence, and locked gate were in good condition. The PCB caution label was missing from the concrete surface of the substation.	Place a caution label indicating PCBs are present in the concrete at the substation.	TS10 MS12
		Concrete transformer substation pad and soil beneath the concrete slab.	• Concrete encapsulation of scabbled areas. • PCB caution label on concrete encapsulated slab. • Fence with locked gate. • Maintain the concrete encapsulant, PCB caution label, and fence with locked gate. • Restrict transformer substation to industrial use.							
POI-48	Substation S1860 (POI-37)	Soil within the fuel farm complex. (See Appendix B for land survey)	• Restrict area to industrial use. • There are no engineering controls for this site.	Y	Y; June 2004 Next 5-year Review: 2009	N/A	N/A	LUCs are in place.	None.	TS10 MS12

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
N/A	CU/ Monofill	Entire site	• All future landowners and site users shall be notified that contaminated media is present within the CU (not suitable for any reuse) and that the contained media, cover system, methane monitoring structures, and stormwater drainage structures shall not be disturbed and/or excavated. • The integrity and effectiveness of structures intended to restrict site access (i.e., fencing), the CU/Monofill cover (i.e., erosion control layer), methane gas venting structures (i.e., gas probes, gas vents), monitoring wells (MW-01, CU-MW-05, CU-MW-06, CU-MW-07, and CU-MW-08), and surface drainage structures (i.e., swales, infiltration pond, diversion berm, and all drainage outlets) shall be inspected and maintained in accordance with the Long-Term Monitoring and Maintenance Plan, Consolidation Unit, Navy PWC Solid Waste Management Facility. • Only allow monitoring and maintenance crews properly trained for hazardous material operations shall be granted access to the CU/Monofill to conduct the long-term monitoring and maintenance activities.	Y	N; 2011	N/A	N/A	N/A	N/A	CU05 CU10 CU11

Table 5-1: LUCs, Operation and Maintenance (O&M), and 5-Year Review Schedule for Seven CERCLA Sites (Continued)

POI	Site Name	Areas Requiring LUCs[a]	Deed Restrictions, Engineering Controls, Institutional Controls	Are 5-year reviews required? (Y/N)	Has 5-year review been completed? (Y/N) If yes, what was the date of last review? If no, when is the first scheduled review?	Results of O&M	O&M Recom-mendations	Results of 5-Year Review	5-Year Review Recom-mendations	Reference Document Number[b]
N/A	CU/ Monofill (cont'd)	Entire site	• Annual LUC Compliance Certificates and 5-year review reports shall include confirmation of the integrity of the CU/Monofill site restrictive structures, CU/Monofill cover, methane gas venting structures, monitoring wells, and surface drainage structures and, if maintenance is required, a discussion of any actions required to reestablish and maintain the structures. • The development or use of any portion of the CU/Monofill as residential housing, day care, school, playground, retail, commercial or industrial facilities shall be prohibited. • Any soil-disturbing land modifications (e.g., excavation clearing, regrading) within any portion of the CU/Monofill site that would compromise the integrity of the CU/Monofill cover system, monitoring systems or control structures shall be prohibited. • If any soil, debris or other waste is removed from within the CU/Monofill site, it shall be properly characterized, manifested and transported by appropriately licensed transporters, and disposed of at an appropriate TSD facility. • The Navy, regulators, and its contractors shall be allowed free and unhindered access to the CU/Monofill site for purposes of verifying and maintaining the integrity of the LUCs.	Y	N; 2011	N/A	N/A	N/A	N/A	CU05 CU10 CU11

Notes:
[a] = See Appendix B for land surveys showing the LUC boundaries for some of these sites.
[b] = See Table 8-1 in the report for list of former NAS Barbers Point reference documents.
CSR = Coral Sea Road
CU = Consolidation Unit
IRP = Installation Restoration Program
LUC = land use control
N/A = not applicable
NAS = Naval Air Station
O&M = operations and maintenance
PCB = polychlorinated biphenyl
POI = point of interest
PWC = Public Works Center
TSD = treatment, storage, and disposal
Y/N = yes/no

6. Community Relations

Public participation in decision making for environmental activities at former NAS Barbers Point has been encouraged continually throughout the environmental restoration and site closure processes. In an effort to involve the public in the decision-making process, the Restoration Advisory Board (RAB) for former NAS Barbers Point was established in 1994. The former NAS Barbers Point RAB was composed of 17 members, including representatives from community groups, the BCT, the DoD Base Transition Coordinator, and elected and government officials. These RAB meetings were held periodically each year to inform and update the community regarding the on-going environmental restoration activities at former NAS Barbers Point.

The Navy has also held several public meetings, as well as issued proposed plans and fact sheets that summarize the site investigations and response action activities. Copies of the proposed plans and fact sheets were also mailed to the RAB members, property recipients, regulatory agencies, and other interested parties who requested copies of the documents. These public meetings were held during the 30-day public comment period for the proposed plans for the various sites. Written comments were also accepted by mail during the public comment periods. Table 6-1 lists all the public meetings held for remedial actions conducted at former NAS Barbers Point.

Table 6-1: Summary of Public Meetings Held for Remedial Actions taken at Various Sites at Former NAS Barbers Point Sites

Date	POI	Meeting Topic(s)
February 19, 1999	POI-06; POI-19; POI-23; POI-25; POI-30; POI-45; POI-47; POI-48; POI-49	MWR Warehouse Area; Runway 11 Clear Zone; Former Fuel Farm; Regional Groundwater System; Dry Well Network; Transformer Substation System (Substations C, HH37, HH39, EMH47, EMH49C, S274, S1820, S1835); Coral Pit 3; NEX Service Station-Building 129 AST; Fire Fighting Training Pits
March 23, 1999	POI-48	Sixteen Transformer Substations (Substations A, B, P, HH-36, TV-8, S92, S110, S117, S140, S184, S1681, S1684, S1759, S1789, S1844, and S1860)
May 10, 1999	POI-06; POI-45; POI-28	Coral Pit 3 and NEX Service Station- Building 129 AST; Stormwater Drainage Ditch
June 28, 2001	POI-26; POI-44; POI-42	Former Sewage Treatment Plant; Three Former Firing Ranges (CPR, MGR No. 3, and MGR No. 4); Old Engine Test Cells Area
June 4, 2002	IRP-01	CSR Coral Pit; Former HW6
August 23, 2005	POI-12; POI-14	Coral Pit 1, Coral Pit 2, and the MWR Warehouse Complex
September 26, 2005	POI-44	Former STSR; Former NTSR
July 12, 2006	CU	Ordy Pond; Consolidation Unit/Monofill at NAVFAC Hawaii Solid Waste Management Facility

Notes:
AST = aboveground storage tank
CPR = Carbine and Pistol Range
CSR = Coral Sea Road
CU = Consolidation Unit
HW6 = Hazardous Waste Accumulation Area 6
MGR = Machine Gun Range
MWR = Morale, Welfare, and Recreation
NAVFAC = Naval Facilities Engineering Command
NEX = Navy Exchange
NTSR = Northern Trap and Skeet Range
POI = point of interest
STSR = Southern Trap and Skeet Range

The general public was given access to all project documents, including work plans, technical reports, fact sheets, and other materials relating to all former NAS Barbers Point response action activities. The documents can be found in the information repository for former NAS Barbers Point, at the following location:

Ewa Beach Public and School Library
91-950 North Road
Ewa Beach, Hawaii 96706
Reference Desk Telephone: (808) 689-1204

Additional project information is included in the administrative record file located at NAVFAC, Pacific in Pearl Harbor:

Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
Pearl Harbor, Hawaii 96860-3134

7. Certification Statement

The U.S. Navy has determined that this final RACR contains complete and accurate information regarding all remedial actions taken at the former NAS Barbers Point sites discussed herein, and that all objectives for these remedial actions were met.

Eric Shigaki
Remedial Project Manager
NAVFAC Hawaii

2/14/08
Date

8. References

Due to the volume of reports generated for former NAS Barbers Point sites, a table of reference documents was prepared rather than including a list of references as usually presented in previous reports. Reference documents were organized by site and placed in chronological order. For example, all documents generated for POI-42, the Old Engine Test Cells Area, were grouped and placed in chronological order. Once the documents were grouped and placed in order, each reference document was assigned a unique reference document number, which was used to easily refer the reader to the entire reference document throughout the final RACR report (for example, references OETCA01 through OETCA08 refer to reference documents prepared for the Old Engine Test Cells Area).

Table 8-1 presents a list of reference documents prepared for sites at former NAS Barbers Point. References to some of these documents were included throughout this report.

Table 8-1: Former NAS Barbers Point Reference Documents

Reference Document Number	Site	Area	Document	Prepared By	Date
AST01	POI-06	NEX Service Station - Building 129 AST	Remedial Investigation Report for BRAC-Related Activities, NEX Service Station - Building 129 AST, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
CP301	POI-45	Coral Pit 3	Remedial Investigation Report for BRAC-Related Activities, Coral Pit 3, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
CP3AST01	POI-06; POI-45	Coral Pit 3 and NEX Service Station - Building 129 AST	Amended Proposed Plan for Coral Pit 3 and NEX Service Station, Naval Air Station Barbers Point.	Department of Navy	Apr-99
CP3AST02	POI-06; POI-45	Coral Pit 3 and NEX Service Station - Building 129 AST	Record of Decision Amendment, Coral Pit 3 and NEX Service Station - Building 129 AST, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-99
CSRCP01	IRP-01	CSR Coral Pit	Final Expanded Site Inspection Report for the Barbers Point Naval Air Station, Coral Sea Road Coral Pit, Barbers Point, Oahu, Hawaii.	Argonne National Laboratory	Dec-92
CSRCP02	IRP-01	CSR Coral Pit	RI Report for BRAC-Related Activities, Coral Sea Road Coral Pit, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Sep-99
CSRCP03	IRP-01	CSR Coral Pit	Engineering Evaluation/Cost Analysis, Removal Action at Coral Sea Road Coral Pit, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Oct-99
CSRCP04	IRP-01	CSR Coral Pit	Draft Screening Ecological Risk Assessment for BRAC-Related Activities, Coral Sea Road Coral Pit, Naval Air Station Barbers Point, Oahu, Hawaii. Pearl Harbor, Hawaii: PACNAVFACENGCOM.	Ogden	Nov-99
CSRCP05	IRP-01	CSR Coral Pit	Draft Removal Site Evaluation Report, Coral Sea Road Coral Pit, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Sep-00

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
CSRCP06	IRP-01	CSR Coral Pit	Action Memorandum for Removal Action at the Coral Sea Road Coral Pit, Former Naval Air Station Barbers Point, Oahu, Hawaii. Pearl Harbor, Hawaii.	Department of Navy	Nov-00
CSRCP07	IRP-01	CSR Coral Pit	Memo to Tom Kam: Summary of Coral Sea Road Coral Pit, West End TPH Investigation. Honolulu.	Earth Tech	May-01
CSRCP08	IRP-01	CSR Coral Pit	Draft Ordnance and Explosives Technical Services During Remedial Action Activities, Coral Sea Road Coral Pit, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Environmental Chemical Corporation	Mar-02
CSRCP09	IRP-01	CSR Coral Pit	Proposed Plan, Coral Sea Road Coral Pit, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Pearl Harbor, Hawaii.	Department of Navy	May-02
CSRCP10	IRP-01	CSR Coral Pit	Reasonable Maximum Exposure Calculations, Coral Sea Road Coral Pit, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Pearl Harbor, Hawaii: PACNAVFACENGCOM.	IT Corporation	May-02
CSRCP11	IRP-01	CSR Coral Pit	Final Remediation Verification Report, Coral Sea Road Coral Pit, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Pearl Harbor, Hawaii: PACNAVFACENGCOM.	IT Corporation	Jul-02
CSRCP12	IRP-01	CSR Coral Pit	Engineering Evaluation/Cost Analysis (EE/CA) Addendum, Coral Sea Road Coral Pit, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Aug-02
CSRCP13	IRP-01	CSR Coral Pit	Record of Decision, Coral Sea Road Coral Pit, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-02
CSRCP14	IRP-01, IRP-02, and IRP-03	Ordy Pond, CSR Coral Pit, and Sanitary Landfill	Final Report, Verification Phase Confirmation Study Sites 1, 2, 3 – NAS Barbers Point Coral Sea Road Coral Pit, Ordy Pond, and Sanitary Landfill, Pearl Harbor Naval Base, Oahu, Hawaii.	Aqua Terra Technologies, Inc	Mar-88
CSRCP15	IRP-01 and IRP-2	Ordy Pond and CSR Coral Pit	Final Sampling and Analysis Plan Environmental Monitoring at Ordy Pond and Coral Sea Road Coral Pit, Part I: Field Sampling Plan, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Apr-98
CSRCP16	IRP-01 and IRP-2	Ordy Pond and CSR Coral Pit	Final Sampling and Analysis Plan Environmental Monitoring at Ordy Pond and Coral Sea Road Coral Pit, Part II: Quality Assurance Project Plan, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Apr-98
CSRCP17	IRP-01 and IRP-2	Ordy Pond and CSR Coral Pit	Environmental Monitoring at Coral Sea Road Coral Pit and Ordy Pond, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Mar-99
CSRCP18	IRP-01 and IRP-2	Ordy Pond and CSR Coral Pit	1999 Environmental Monitoring at Coral Sea Road Coral Pit and Ordy Pond, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Draft.	Earth Tech	Aug-03

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
CU01	CU	Multiple Sites	Summary of Investigation Results, Selection of CU Location, CLEAN II CTO 40, Former Naval Air Station Barbers Point, Oahu, Hawaii. Memorandum from William M. Knight, P.E. to Pacific Division, Naval Facilities Engineering Command.	Earth Tech	Jan-00
CU02	CU	Consolidation Unit	Action Memorandum for Contaminated Soil and Debris Consolidation Unit, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Oct-00
CU03	CU	Consolidation Unit	Performance Design Package, Consolidation Unit Navy Public Works Center Solid Waste Management Facility, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech.	Oct-00
CU04	CU	Consolidation Unit	Performance Design Package, Revision 1, Consolidation Unit Navy Public Works Center Solid Waste Management Facility, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Feb-02
CU05	CU	Consolidation Unit	Long-Term Monitoring and Maintenance Plan, Consolidation Unit, Navy Public Works Center Solid Waste Management Facility, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jul-03
CU06	CU	Consolidation Unit	Draft Baseline Groundwater Sampling Report, Long-Term Monitoring and Maintenance, Consolidation Unit, Navy Public Work Center Solid Waste Management Facility, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Environet	Sep-04
CU07	CU	Consolidation Unit	Remediation Verification Report Construction of the Consolidation Unit at the Navy PWC Solid Waste Management Facility, Naval Air Station Barbers Point, Oahu, Hawaii.	Shaw Environmental	Nov-06
CU08	CU	Consolidation Unit	Consolidation Unit, Annual Maintenance and Monitoring Report, Navy Public Works Center Solid Waste Management Facility, Former NAS Barbers Point, Oahu, Hawaii.	Environet	Nov-06
CU09	CU	Consolidation Unit	Proposed Plan, Consolidation Unit, Naval Facilities Engineering Command, Hawaii, Solid Waste Management Facility, Former Naval Air Station Barbers Point, Oahu, Hawaii. Honolulu.	Department of Navy	Jul-06
CU10	CU	Consolidation Unit	Draft Decision Document, Consolidation Unit, NAVFAC Hawaii Solid Waste Management Facility, Former Naval Air Station, Barbers Point Oahu, Hawaii.	Department of Navy	Dec-07
CU11	CU	Consolidation Unit	Draft Land Use Control Work Plan, Consolidation Unit and Monofill, NAVFAC Hawaii Solid Waste Management Facility, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Dec-07

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
DCA01	IRP-03	Drum Crushing Area	Action Memorandum, Excavation, Treatment, and Disposal of Contaminated Soil from the Former Drum Crushing Area, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-02
DW01	POI-47	Dry Well Network	Dry Well Network Investigation Report for BRAC-Related Activities, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
FFF01	POI-30	Former Fuel Farm	Remedial Investigation Report for BRAC-Related Activities, Former Fuel Farm, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
FFR01	POI-44	Former Firing Ranges	Field Notes, Removal Site Evaluation at Four Former Firing Ranges, Naval Air Station, Barbers Point, Oahu, Hawaii. Pearl Harbor, Hawaii: Pacific Division, Naval Facilities Engineering Command.	Earth Tech	Jun-98
FFR02	POI-44	Former Firing Ranges	Engineering Evaluation/Cost Analysis Former Firing Ranges, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jan-99
FFR03	POI-44	Former Firing Ranges	Action Memorandum, Removal Action for Former Firing Ranges, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jun-99
FFR04	POI-44	Former Firing Ranges	Technical Memorandum, A Site-Specific Ecological Risk Evaluation for the Carbine and Pistol Range, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jun-99
FFR05	POI-44	Former Firing Ranges	Engineering Evaluation/Cost Analysis Addendum, Former Machine Gun Ranges, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Aug-99
FFR06	POI-44	Former Firing Ranges	Remedial Investigation Report for BRAC-Related Activities, Former Firing Ranges, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Sep-99
FFR07	POI-44	Former Firing Ranges	Action Memorandum, Removal Action for Former Machine Gun Ranges, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Nov-99
FFR08	POI-44	Former Firing Ranges	Remediation Verification Report, Removal of Lead and Antimony at Former Firing Ranges, Former Naval Air Station, Barbers Point, Oahu Hawaii.	Earth Tech	Sep-00
FFR09	POI-44	Former Firing Ranges	Draft Removal Report, Removal of Live Small Arms Rounds from Former Firing Ranges, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	IT Corporation	Feb-01
FFR10	POI-44	Former Firing Ranges	Closure Report, Temporary Stockpile Area, Former Firing Ranges Removal Action, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Honolulu.	Earth Tech	April-01

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
FFR11	POI-44	Former Firing Ranges	Proposed Plan, No Further Action at Three Former Firing Ranges, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Honolulu.	Department of Navy	April-01
FFR12	POI-44	Former Firing Ranges	Record of Decision, Three Former Firing Ranges, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Sep-01
FFTP01	POI-25	Fire Fighting Training Pits	Remedial Investigation Report for BRAC-Related Activities, Fire Fighting Training Pits, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
FNTSR01	POI-44	Former Northern Trap and Skeet Range	Field Activities, Removal Site Evaluation. Honolulu. 11-27.	Earth Tech	May-98
FNTSR02	POI-44	Former Northern Trap and Skeet Range	Field Activities, Removal Site Evaluation. Honolulu.	Earth Tech	Apr-99
FNTSR03	POI-44	Former Northern Trap and Skeet Range	Work Plan Addendum, Soil Stabilization Treatability Study for the Northern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Honolulu.	Earth Tech	Feb-02
FNTSR04	POI-44	Former Northern Trap and Skeet Range	Archaeological Survey and Testing at the Northern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Mar-03
FNTSR05	POI-44	Former Northern Trap and Skeet Range	Conservation/Work Plan for ‘Akoko (Chamaesyce skottsbergii var. kalaeloana) in Response to Cleanup Action in the Former Northern Trap and Skeet Range (NTSR), Former Naval Air Station Barbers Point. Honolulu.	Department of Navy	May-03
FNTSR06	POI-44	Former Northern Trap and Skeet Range	Technical Memorandum: Risk of Exposure to Residual Lead-Contaminated Soil in ‘Akoko Clusters, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Honolulu. July.	Earth Tech	July-03
FNTSR07	POI-44	Former Northern Trap and Skeet Range	Engineering Evaluation/Cost Analysis Addendum No. 3, Former Northern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Oct-03
FNTSR08	POI-44	Former Northern Trap and Skeet Range	Action Memorandum for Removal Action at the Former Northern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Oct-03
FNTSR09	POI-44	Former Northern Trap and Skeet Range	Trip Report, Post Review Discovery, Former Northern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Dec-03
FNTSR10	POI-44	Former Northern Trap and Skeet Range	Sinkhole Summary Report, Post-Review Discovery, Former Northern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Sept-04

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
FNTSR11	POI-44	Former Northern Trap and Skeet Range	Remediation Verification Report, Non-Time Critical Removal Action, Former Northern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii. Honolulu: Naval Facilities Engineering Command, Pacific.	Shaw Environmental	Jan-05
FNTSR12	POI-44	Former Northern Trap and Skeet Range	Proposed Plan, Former Northern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Sep-05
FNTSR13	POI-44	Former Northern Trap and Skeet Range	Decision Document, Former Northern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-07
FOST01	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the West Oahu Community Federal Credit Union, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST02	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the Housing and Community Development Corporation of Hawaii, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST03	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the Honolulu Community College, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST04	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the State of Hawaii Department of Education, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST05	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the City and County of Honolulu Board of Water Supply, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST06	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the State of Hawaii Department of Transportation, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST07	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to The Estate of James Campbell, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
FOST08	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the Department of the Interior for Conveyance to the Department of Hawaiian Home Lands, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-99
FOST09	Misc.	FOST	Finding of Suitability to Transfer Roadway Property to be Transferred - Revision 1, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Nov-01

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
FOST10	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to the City and County of Honolulu Department of Parks and Recreation, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-02
FOST11	Misc.	FOST	Finding of Suitability to Transfer, Wastewater System to be Transferred to the City and County of Honolulu, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Nov-02
FOST12	Misc.	FOST	Draft Finding of Suitability to Transfer, Property to be Transferred by Conservation Conveyance, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Jun-03
FOST13	Misc.	FOST	Finding of Suitability to Transfer, Property to be Transferred to State of Hawaii, Department of Transportation, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-03
FSTP01	POI-26	Former Sewage Treatment Plant	Remedial Investigation Report for BRAC-Related Activities, Former Sewage Treatment Plant, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Jun-99
FSTP02	POI-26	Former Sewage Treatment Plant	Proposed Plan, No Further Action at the Former Sewage Treatment Plant, Former Naval Air Station, Barbers Point, Oahu, Hawaii. Honolulu.	Department of Navy	Jun-01
FSTP03	POI-26	Former Sewage Treatment Plant	Remedial Investigation Report Addendum, Former Sewage Treatment Plant, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech, Inc. and Wil Chee Planning, Inc.	Jan-02
FSTP04	POI-26	Former Sewage Treatment Plant	Record of Decision, Former Sewage Treatment Plant, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Jan-04
FSTSR01	POI-44	Former Southern Trap and Skeet Range	Archaeological Survey Report, Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Dec-00
FSTSR02	POI-44	Former Southern Trap and Skeet Range	Archaeological Monitoring Plan, Removal Action for Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Feb-01
FSTSR03	POI-44	Former Southern Trap and Skeet Range	Engineering Evaluation/Cost Analysis Addendum No. 2, Former Southern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Nov-00 (rev'd. May-01)
FSTSR04	POI-44	Former Southern Trap and Skeet Range	Soil Stabilization Treatability Study, Former Southern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Mar-01

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
FSTSR05	POI-44	Former Southern Trap and Skeet Range	Action Memorandum for Removal Action for the Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Aug-01
FSTSR06	POI-44	Former Southern Trap and Skeet Range	Remediation Verification Report, Non-Time-Critical Removal Action, Former Southern Trap and Skeet Range, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Shaw Environmental	Apr-04
FSTSR07	POI-44	Former Southern Trap and Skeet Range	Proposed Plan, Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Sept-05
FSTSR08	POI-44	Former Southern Trap and Skeet Range	Decision Document, Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-07
FSTSR09	POI-44	Former Southern Trap and Skeet Range	Land Use Controls Work Plan, Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-07
GW01	POI-49	Regional Groundwater System	Remedial Investigation Report for BRAC-Related Activities, Regional Groundwater System, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
HW601	HW6	Former Hazardous Waste Accumulation Area 6	Survey and Sampling of Miscellaneous Units, Former Hazardous Waste Accumulation Area 6, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	July-99
HW602	HW6	Former Hazardous Waste Accumulation Area 6	Action Memorandum, Subject: Removal Action for Former Hazardous Waste Accumulation Area 6, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Apr-01
HW603	HW6	Former Hazardous Waste Accumulation Area 6	Proposed Plan, No Further Action at Former Hazardous Waste Accumulation Area 6, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	May-02
HW604	HW6	Former Hazardous Waste Accumulation Area 6	Remediation Verification Report, Removal Action, Former Hazardous Waste Accumulation Area 6, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	Oct-03
HW605	HW6	Former Hazardous Waste Accumulation Area 6	Decision Document, Former Hazardous Waste Accumulation Area 6, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Oct-03
HW606	HW6	Former Hazardous Waste Accumulation Area 6	Site Inspection Report, Former Hazardous Waste Accumulation Area 6, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	Jun-04

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
MS01	Misc.	Miscellaneous	Initial Assessment Study of Naval Air Station Barbers Point, Hawaii.	Department of Navy	Jun-83
MS02	Misc.	Miscellaneous	Base Realignment and Closure Cleanup Plan, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Mar-94
MS03	Misc.	Miscellaneous	Environmental Baseline Survey Report, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Jun-94
MS04	Misc.	Miscellaneous	Community Environmental Response Facilitation Act, Department of Defense Report for Barbers Point, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Jul-94
MS05	Misc.	Miscellaneous	BRAC Cleanup Plan for Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Feb-95
MS06	Misc.	Miscellaneous	Base Realignment and Closure Cleanup Plan for Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-97
MS07	Misc.	Miscellaneous	Environmental Restoration Program Community Relations Plan (FINAL), Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Oct-97
MS08	Misc.	Miscellaneous	Environmental Restoration Program Community Relations Plan Step-by-Step Implementation Handbook (Final), Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Oct-97
MS09	Misc.	Miscellaneous	Base Realignment and Closure Cleanup Plan, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-98
MS10	Misc.	Miscellaneous	Screening Ecological Risk Assessment, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Jun-99
MS11	Misc.	National Guard Property	Final Record of Closure: Closure of Airfield Hydrant Fueling System, Naval Air Station Barbers Point, Volume I and II. Hawaii. Pearl Harbor, Hawaii: PACNAVFACENGCOM.	IT Corporation	May-00
MS12	Misc.	Miscellaneous	Draft, Five-Year Review Report, First Five-Year Review, Coral Sea Road Coral Pit, Fire Fighting Training Pits, and Seven Network Transformers (B, S110, S117, S140, S184, S1759, and S1860), Former Naval Air Station Barbers Point, Oahu, Hawaii.	Environet	Sep-05
MUS01	HW6	Misc Units Sampling	Draft Survey and Sampling of Miscellaneous Units Letter Report, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	May-99

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
NARLU01	POI-06; POI-19; POI-23; POI-25; POI-30; POI-45; POI-47; POI-48; POI-49	Miscellaneous (MWR Warehouse, Runway 11 Clear Zone, Former Fuel Farm, Regional Groundwater System, Dry Well Network, Coral Pit 3, NEX Service Station, Fire Fighting Training Pits, and Various Transformer Substations)	Record or Decision for No Action and Restricted Land Use Sites, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Apr-99
NGP01	National Guard Property	National Guard Property	Phase II Environmental Baseline Survey for a Portion of the Former Naval Air Station Barbers Point, Oahu, Hawaii.	Belt Collins Hawaii	Feb-01
NGP02	National Guard Property	National Guard Property	Site Investigation Report, National Guard Property, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	Mar-05
NRP01	POI-19	MWR Warehouse Complex	Remedial Investigation Report for BRAC-Related Activities, MWR Warehouse Area, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
NRP02	POI-12; POI-14; POI-15; POI-17; POI-19; POI-22; POI-43; POI-46	Coral Pit 1, Coral Pit 2, Auto Hobby Shop, Area South of Building 1570, MWR Warehouse Complex, Fleet Imaging Center Golf Course, Revetments	Site Investigation Report, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Apr-01
NRP03	POI-12; POI-14; POI-19; POI-43; POI-46	Coral Pit 1, Coral Pit 2, MWR Warehouse Complex, Golf Course, Revetments	Draft Engineering Evaluation/Cost Analysis for Six Sites, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Aug-01
NRP04	POI-43	Golf Course	Engineering Evaluation/Cost Analysis, Sandblast Grit Use Areas of the Golf Course, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Aug-02

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
NRP05	Navy-retained property	All	Site-Specific Environmental Baseline Survey, Northern Portion of Navy-Retained Property, Former Naval Air Station, Barbers Point, Oahu, Hawaii.	Earth Tech	Oct-02
NRP06	POI-19	MWR Warehouse Complex	Engineering Evaluation/Cost Analysis MWR Warehouse Complex, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	May-05
NRP07	POI-12; POI-14; POI-15; POI-17; POI-19; POI-22; POI-43; POI-46	Coral Pit 1, Coral Pit 2, Auto Hobby Shop, Area South of Building 1570, MWR Warehouse Complex, Fleet Imaging Center Golf Course, Revetments	Baseline Ecological Risk Assessment Step 3a Scientific Management Decision Point (SMDP #2), Former NAS Barbers Point, Oahu, Hawaii.	Earth Tech	May-05
NRP08	POI-12; POI-14	Coral Pit 1 Coral Pit 2	Action Memorandum for Land Use Controls at Coral Pit 1 and Coral Pit 2 at Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	May-05
NRP09	POI-12; POI-14	Coral Pit 1 Coral Pit 2	Proposed Plan for Coral Pit 1 and Coral Pit 2 at Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	May-05
NRP10	POI-19	MWR Warehouse Complex	Action Memorandum for Excavation and Disposal of Contaminated Soil at the Morale, Welfare, and Recreation Warehouse Complex, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-05
NRP11	POI-19	MWR Warehouse Complex	Proposed Plan for Morale, Welfare, and Recreation Warehouse Complex, Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	Aug-05
NRP12	POI-12; POI-14	Coral Pit 1 Coral Pit 2	Land Use Controls Remedial Action Work Plan, Coral Pit 1 and Coral Pit 2, Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Earth Tech	Sep-05
NRP13	POI-12; POI-14	Coral Pit 1 Coral Pit 2	Decision Document, Coral Pit 1 and Coral Pit 2, Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	Sep-05
NRP14	POI-19	MWR Warehouse Complex	Decision Document, Morale, Welfare, and Recreation Warehouse Complex, Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	Sep-05

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
NRP15	POI-43	Golf Course	Final Focused Feasibility Study, Golf Course Sand Blast Grit Use Area, Former NAS Barbers Point, Kalaeloa, Oahu, Hawaii.	Earth Tech	Apr-07
NRP16	POI-19	MWR Warehouse Complex and Golf Course	Remediation Verification Report, Removal Actions at the MWR Warehouse Complex and Golf Course, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	May-07
OETCA01	POI-42	Old Engine Test Cells Area	Site Reconnaissance Activities, Old Engine Test Cells Area, Former Naval Air Station Barbers Point.	Earth Tech and Tetra Tech	1999
OETCA02	POI-42	Old Engine Test Cells Area	Remedial Investigation Report for BRAC-Related Activities, Old Engine Test Cells Area, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
OETCA03	POI-42	Old Engine Test Cells Area	4-Acre Site Asbestos Assessment Report, Old Engine Test Cells Area, NASBARPT, Oahu, Hawaii.	IT Corporation	Sep-99
OETCA04	POI-42	Old Engine Test Cells Area	Engineering Evaluation/Cost Analysis, Old Engine Test Cells Area, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	Sep-00
OETCA05	POI-42	Old Engine Test Cells Area	Action Memorandum for Removal Action at the Old Engine Test Cells Area, Former Naval Air Station Barbers Point, Oahu, Hawaii. November.	Department of Navy	Nov-00
OETCA06	POI-42	Old Engine Test Cells Area	Proposed Plan, Old Engine Test Cells Area, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Jun-01
OETCA07	POI-42	Old Engine Test Cells Area	Final Remediation Verification Report for Removal of Soil Mixed with Asbestos-Containing Materials, Old Engine Test Cells Area, Former Naval Air Station Barbers Point, Oahu, Hawaii.	IT Corporation	Sep-01
OETCA08	POI-42	Old Engine Test Cells Area	Record of Decision, Old Engine Test Cells Area, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Sep-01
OP01	IRP-02	Ordy Pond	Site Inspection Report, Ordy Pond, Barbers Point, Naval Air Station, Oahu, Hawaii. Prepared for United States Environmental Protection Agency.	Ecology and Environment, Inc.	1982
OP02	IRP-02	Ordy Pond	Final Sampling and Analysis Plan Environmental Monitoring at Ordy Pond and Coral Sea Road Coral Pit:: Field Sampling Plan and Quality Assurance Project Plan, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Apr-98
OP03	IRP-02	Ordy Pond	Draft Report Environmental Monitoring at Coral Sea Road Coral Pit and Ordy Pond, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Nov-98
OP04	IRP-02	Ordy Pond	RI Report for BRAC-Related Activities, Ordy Pond, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
OP05	IRP-02	Ordy Pond	In-Progress Draft 1999 Environmental Monitoring at Coral Sea Road Coral Pit and Ordy Pond, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jun-99
OP06	IRP-02	Ordy Pond	Letter Report, Surface Soil Sampling Collected South of Ordy Pond Shoreline Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Mar-05
OP07	IRP-02	Ordy Pond	Ecological Risk Assessment, Ordy Pond, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Aug-05
OP08	IRP-02	Ordy Pond	Human Health Preliminary Risk Evaluation for Ordy Pond, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Aug-05
OP09	IRP-02	Ordy Pond	Proposed Plan, Naval Facilities Engineering Command, Hawaii, Ordy Pond, Former Naval Air Station, Barbers Point Oahu, Hawaii.	Department of Navy	July-06
OP10	IRP-02	Ordy Pond	Decision Document, Ordy Pond, Former NAS Barbers Point, Oahu, Hawaii.	Department of Navy	Jan-07
RCZ01	POI-23	Runway 11 Clear Zone	Remedial Investigation Report for BRAC-Related Activities, Runway 11 Clear Zone, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
SL01	IRP-03	Sanitary Landfill	Remedial Investigation Report for BRAC-Related Activities, Sanitary Landfill, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Dec-99
SSEBS01	N/A	SSEBS	Site-Specific Environmental Baseline Survey for the Electrical Distribution System, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	Apr-99
SSEBS02	N/A	SSEBS	Transfer Disclosure Document for the Electrical Distribution System, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech and Tetra Tech	Apr-99
SWDD01	POI-28	Storm-Water Drainage Ditch	Field Investigation Letter Report, Stormwater Drainage System, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Dec-98
SWDD02	POI-28	Storm-Water Drainage Ditch	Action Memorandum, Request for a Removal Action at the Stormwater Drainage System at NAS Barbers Point, City and County of Honolulu, Oahu, Hawaii.	Department of Navy	Jan-99
SWDD03	POI-28	Storm-Water Drainage Ditch	Removal Verification Report for Stormwater Drainage System at Naval Air Station Barbers Point.	OHM	Mar-99
SWDD04	POI-28	Storm-Water Drainage Ditch	Remedial Investigation Report for BRAC-Related Activities, Storm-Water Drainage Ditch, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Apr-99
SWDD05	POI-28	Storm-Water Drainage System	Risk Assessment Letter Report, Stormwater Drainage System, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Apr-99

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
SWDD06	POI-28	Storm-Water Drainage System	Proposed Plan, Stormwater Drainage System, NAS Barbers Point.	Department of Navy	Apr-99
SWDD07	POI-28	Storm-Water Drainage Ditch	Record of Decision, Stormwater Drainage Ditch, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Jun-99
SWDD08	POI-28	Storm-Water Drainage System	Action Memorandum Addendum for Disposal of Soil and Sediment from the Removal Action at the Stormwater Drainage System, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	Jan-01
SWDD09	POI-28	Storm-Water Drainage System	Closure Report, Disposal of Soil and Sediment from Time-Critical Removal Action at Stormwater Drainage System, Former NAS Barbers Point, Oahu, Hawaii.	Earth Tech	May-04
TS01	Misc.	Multiple Transformer Substations	Engineering Evaluation/Cost Analysis Report (Final) for Fourteen Transformer Substations.	Earth Tech	Oct-97
TS02	Misc.	Substation S1789	Engineering Evaluation/Cost Analysis Addendum (Final) for Substation S1789, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jan-98
TS03	Misc.	Multiple Transformer Substations	Action Memorandum. Subject: Removal Action for Thirteen Transformer Substations, Naval Air Station, Barbers Point, Oahu, Hawaii.	Department of Navy	Feb-98
TS04	Misc.	Substation S92	Final Engineering Evaluation/Cost Analysis Addendum No. 2, Substation S92, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Jul-98
TS05	Misc.	Multiple Transformer Substations	Remedial Investigation Report for BRAC-Related Activities, Transformer Substation System, Naval Air Station Barbers Point, Oahu, Hawaii.	Ogden	Feb-99
TS06	Misc.	Multiple Transformer Substations	PCB Inventory: Substation Database, Naval Air Station Barbers Point.	Earth Tech	Mar-99
TS07	Misc.	Multiple Transformer Substations	Proposed Plan for Fourteen Transformer Sites, Naval Air Station, Barbers Point, Oahu, Hawaii. March.	Earth Tech	Mar-99
TS08	Misc.	Multiple Transformer Substations	Remediation Verification Report, Transformer Sites, Naval Air Station, Barbers Point, Oahu, Hawaii.	OHM	April-99
TS09	Misc.	Multiple Transformer Substations	Remediation Verification Report - Removal of PCBs at Eight Transformer Substations, Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	May-99
TS10	Misc.	Multiple Transformer Substations	Record of Decision, Sixteen Transformer Substations, Naval Air Station Barbers Point, Oahu, Hawaii.	Department of Navy	May-99
TS11	POI-48	Multiple Transformer Substations	Engineering Evaluation/Cost Analysis, Treatment/Disposal Alternatives for Contaminated Soil, NCTAMS PAC, Former NAS Barbers Point, and Pearl Harbor Naval Complex, Oahu, Hawaii.	Earth Tech	Sep-00

Table 8-1: Former NAS Barbers Point Reference Documents (Continued)

Reference Document Number	Site	Area	Document	Prepared By	Date
TS12	Misc.	Multiple Transformer Substations	Revised PCB Inventory: Substation Database, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech	Oct-00
TS13	Misc.	Substation 1860	Final Site Closure Report, Removal Action at Transformer Substation 1860, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Shaw Environmental	Mar-04
TS14	Misc.	Substation S1761	Revised Draft Transformer Substation S-1761 Site Investigation, Former Naval Air Station Barbers Point, Oahu, Hawaii.	Earth Tech.	Apr-04
TS15	Misc.	Multiple Transformer Substations	Remediation Verification Report, Thermal Desorption Treatment of PCB Contaminated Soil, Various Navy Transformer Sites, Oahu, Hawaii.	Environmental Chemical Corporation	Jul-07
TS16	Misc.	Multiple Transformer Substations	Draft Final Consolidated Remediation Verification Report, Various Transformer Sites, Former NAS Barbers Point, NCTAMSPAC, Pearl Harbor Naval Complex, Oahu, Hawaii.	Earth Tech	Aug-07
TS17	Misc.	Substation S1761	Decision Document Transformer Substation S1761, Former Naval Air Station Barbers Point, Kalaeloa, Oahu, Hawaii.	Department of Navy	Sep-07

Notes:
AST = aboveground storage tank
Belt Collins Hawaii = Belt Collins Hawaii, Ltd.
BRAC = Base Realignment and Closure
CLEAN = Comprehensive Long-Term Environmental Action Navy
CSR = Coral Sea Road
CTO = contract task order
CU = Consolidation Unit
Earth Tech = Earth Tech, Inc.
Environet = Environet, Inc.
FOST = finding of suitability to transfer
IRP = Installation Restoration Program
Misc = miscellaneous
MWR = Morale, Welfare, and Recreation
NAS = Naval Air Station
NAVFAC = Naval Facilities Engineering Command
NCTAMS PAC = Naval Computer and Telecommunication Area Master Station Pacific
NEX = Navy Exchange
Ogden = Ogden Environmental Ogden Environmental and Energy Services Co, Inc.
OHM = OHM Remediation Services Corp.
PACNAVFACENGCOM = Naval Facilities Engineering Command, Pacific
PCB = polychlorinated biphenyl
POI = point of interest
PWC = Public Works Center
RI = remedial investigation
Shaw Environmental = Shaw Environmental, Inc.
SSEBS = site-specific environmental baseline survey
Tetra Tech = Tetra Tech EM Inc.
TPH = total petroleum hydrocarbon

Appendix A
POI Sites with USTs

Table A-1: POI Sites with USTs at Former NAS Barbers Point

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-02	USTs N1, BP17, BP18, BP19, and BP20	Navy-retained	Former UST N1 (BP92) was located on a vacant lot on the east side of Franklin Street between Franklin D. Roosevelt, Saratoga, and Valley Forge Avenues. N1 (BP92) was a 250-gallon waste oil UST constructed of steel, previously associated with Building 74.	During grading of the site for a 120-unit housing project a 250-gallon UST was discovered in an area used as personnel barracks. The tank was not damaged during excavation. Petroleum contamination was noted on the filler end cap of the UST during excavation, which appeared to have been caused by overfilling or spillage. Following removal of the tank on November 12, 1993, one soil sample was collected from the bottom of the excavation area near where the filler cap end of the UST was located and one sample was collected from the stained excavated soil. The soil sample from the excavation area tested less than 10 mg/kg for TPH-diesel, and the excavated stained soil contained 467 mg/kg TPH-diesel. Both were below DOH action levels at the time of the study. BTEX and PAHs were tested for and were all below detection limits. No further action was recommended.	TPH, BTEX, PAHs	Professional Service Industries 1993
			Former USTs BP17 and BP18 were located south of Franklin D. Roosevelt Avenue. The former USTs supported boilers at Building 55; BP17 was a 660-gallon diesel UST and BP18 was a 990-gallon fuel oil UST. Both were constructed of steel. They were installed in 1960.	The USTs were removed on January 27, 1992. Visual petroleum-contamination was noted during UST removal activities. Following removal of the USTs, soil sampling was conducted. Concentrations of BTEX and total lead in soil were below the DOH action levels. One of the final confirmation samples had 52 mg/kg TPH-diesel, which was above the 50 mg/kg TPH action level in place at the time of sampling. The 52 mg/kg TPH concentration was quite close to the cleanup level and there was no indication that contaminated soil remains at the site. The present DOH cleanup criterion for TPH-diesel is 500 mg/kg. The DOH policy allows soil to be left in place if all DOH constituents of concern are below the recommended cleanup criteria. No further action was required.	BTEX, TPH, total lead	OHM 1996b

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-02 (cont'd)	USTs N1, BP17, BP18, BP19, and BP20	Navy-retained	Former USTs BP19 and BP20 were located near Building 77. Both USTs supported a boiler at Building 77; BP19 was a 675-gallon diesel UST; BP20 was a 2,000-gallon fuel oil UST. Both were constructed of steel and were installed on April 21, 1958.	The USTs were removed on October 9, 1991. Petroleum contamination was noted during the excavation and removal of USTs BP19 and BP20 October 9, 1991. Results for soil samples collected at the time of removal indicated TPH-diesel values at 83,000 mg/kg and 27,000 mg/kg. Follow-up remedial activities were recommended. Remediation and site characterization was performed in 1994 and approximately 400 cy of petroleum contaminated soil was removed and disposed. Soil samples from the excavation pit levels of TPH-diesel as high as 37,000 mg/kg. Two monitoring wells were installed at the site. Analytical results for the soil samples indicated levels of TPH-diesel less than the DOH recommended levels. Groundwater samples had levels of TPH-diesel of 0.210 to 1.4 mg/L. A second round of groundwater sampling was recommended. In 1998, a second round of groundwater sampling was conducted and sample results were below the DOH Tier 1 action levels for BTEX, PAHs, and TPH-diesel. No further action or monitoring was recommended. Based on a third round of sampling, the levels of TPH-diesel were either non-detect or estimated at or below the MDL; therefore, the reported concentrations were considered below the MDLs or DOH Tier 1 action levels for TPH-diesel. Since the analytical results were below the DOH Tier 1 action levels and were shown to decrease for TPH, no further action or monitoring was recommended.	BTEX, TPH, total lead	OHM 1996a Ogden 2000b
POI-06	NEX Service Station Building 129 AST	BRAC	Building 129 was constructed during the original base build-out in 1945. The Building 129 service station facility formerly included a fuel dispensing facility, directly west of Building 129. Three former USTs (BP45, BP46, and BP47) were used at this site to store gasoline and MOGAS. Two of the three USTs were 7,500-gallon unleaded gasoline USTs and the third was a 10,000-gallon MOGAS UST. All three USTs were constructed of steel. The two 7,500-gallon USTs were installed in 1949, and the 10,000-gallon UST was installed in 1974. A 250-gallon AST was located on the east side of the building and was used to collect waste oil until 1994.	All three USTs were removed between September and October 1997, and the sites have been closed in accordance with regulations. The results of the RI indicated that soil samples collected from the site contained petroleum hydrocarbons and lead. The petroleum hydrocarbon concentrations were at levels that did not require further action. The AST was removed in 1995, and no further action is required.	Petroleum Hydrocarbons	Ogden 1994

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-08	Building 91 and surrounding area, and Substation P	BRAC and Navy-retained	Building 91 was constructed in 1943 as part of the original Barbers Point build-out. Former UST BP21 was a 1,100-gallon oil/water tank. The former UST was associated with Building 91. The UST was installed in 1943. Former USTs BP49, BP50, BP51, BP51B, and BP52 were also associated with Building 91; each was a 25,000-gallon tank containing waste fuel, diesel, and JP-5. The USTs were installed in 1943.	During excavation of Former UST BP49, rainwater filled the tank displacing approximately 3,300 gallons of waste fuel sludge into the 25-foot diameter pit. The contaminated soil was excavated and transferred to 55-gallon drums pending disposal. Former UST BP49 was removed in 1991. Following removal activities, the excavation was sampled and petroleum hydrocarbons were detected. A follow-on site assessment confirmed petroleum contamination to be limited to the UST excavation. Removal and disposal of petroleum-contaminated soil were to be conducted in FY 95. Former USTs BP50, BP51, BP51B, and BP52 were removed in 1998 and UST BP21 was removed on October 7, 1996. Following removal of the USTs and associated fuel pipelines, soil samples were collected. Soil samples collected from BP51 and BP52 were analyzed for TPH-diesel, BTEX, and PAHs. Soil samples collected from BP21 and BP51B were analyzed for TPH-oil, TPH-grease, VOCs, PAHs, PCBs, and total lead and cadmium. Results showed no constituents above DOH action levels except for PCBs at BP21 and BP51B. The presence of PCBs was likely a result of spillage from transformers located at the northeast corner of Building 91. The transformers were not associated with the USTs or fueling operations. The area was overexcavated to a depth of 6 feet bgs to remove the PCB-contaminated soil. A soil sample collected from a depth of 6 feet bgs contained PCBs above the action level; however, excavation activities were terminated and the site was backfilled with fill material. Based on the analytical results, the cleanup objectives for the project were achieved and no further work with regards to the UST closure activities was warranted or recommended. A no further action concurrence letter was received from DOH with regards to UST BP21.	TPH (diesel, oil, and grease), BTEX, PAHs, VOCs, PCBs, total lead, and cadmium	OHM 1996b Ogden 1995 OHM 1998a DOH 2002a

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-10	Buildings 19, 1829, and BEQs (USTs and Substation 1789)	BRAC and Navy-retained	Former UST BP02 was associated with Building 32 (Free Spirit). BP02 was a 500-gallon diesel UST constructed of concrete. The UST was installed in 1944.	The UST was removed in September 1996, and no further action is required.	TPH (diesel)	Ogden 1994 DON 1999
			Former USTs BP03 and BP04 were located west of Building 34 (Police Station) and northeast of Yorktown Road. BP03 was a 990-gallon fuel UST constructed of steel and BP04 was a 660-gallon diesel UST constructed of steel. The USTs were installed in 1960 to fuel boilers at Building 34.	Former USTs BP03 and BP04 were removed in February 1992. During tank excavation, visual evidence of soil contamination was identified at BP03. The contaminated soil was contained within plastic liners at the original tank site and the area was backfilled pending future corrective action. As part of remediation and additional site characterization at BP03, the site was excavated and soil samples were collected. Analytical results for confirmation samples collected from the excavation pit walls and floor were below the applicable contract action level for TPH (50 mg/kg). The site was restored and no further action was recommended.	TPH	OHM 1996a
			Former UST BP05 and BP06 were located east of Building 36 (BEQ) at the intersection of Yorktown and Enterprise Roads. BP05 was a 660-gallon diesel UST constructed of steel and BP06 was a 990-gallon fuel UST constructed of steel. The USTs were installed in 1960 to fuel boilers at Building 36.	Former USTs BP05 and BP06 were removed on November 18, 1991. During tank excavation activities, a leak was identified at the UST sites. As part of remediation activities at BP05 and BP06, soil samples were collected. Final confirmation sample results were below the applicable contract action level for TPH (50 mg/kg). The sites were restored and no further action was recommended.	TPH	OHM 1996a
			Former UST BP07 and BP08 were located west of Building 37 (BEQ) and east of Saipan Road. BP07 was a 990-gallon fuel UST constructed of steel and BP08 was a 660-gallon diesel UST constructed of steel. The USTs were installed in 1960 to fuel boilers at Building 37.	Former USTs BP07 and BP08 were removed in October 1991.and replaced with an AST. During tank excavation, visual evidence of soil contamination was identified, During the EBS, evidence of contamination was not identified.	TPH	Ogden 1994

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-10 (cont'd)	Buildings 19, 1829, and BEQs (USTs and Substation 1789)	BRAC and Navy-retained	Former USTs BP09 and BP10 were located west of Building 39 (BEQ) and south of Shangri-La, between Saigon and Bunker Hill Road. BP09 was a 660-gallon diesel UST constructed of steel and BP10 was a 990-gallon fuel UST constructed of steel. The USTs were installed in 1960 to fuel boilers at Building 39.	Former USTs BP09 and BP10 were removed on October 14, 1991. During tank excavation activities, a leak was identified at the UST sites. As part of remediation activities at BP09 and BP10, soil samples were collected. Confirmation sample results were below the applicable contract action level for TPH (50 mg/kg). The sites were restored and no further action was recommended.	TPH	OHM 1996a
			Former USTs BP11 and BP12 were located east of Building 48 (BEQ) on the west side of Hancock Road. BP11 was a 660-gallon diesel UST constructed of steel and BP12 was a 990-gallon fuel UST constructed of steel. The USTs were installed in 1960 to fuel boilers at Building 48.	Former USTs BP11 and BP12 were removed on December 19, 1991. During tank excavation activities, a leak was identified at the UST sites. As part of remediation activities at BP11 and BP12, soil samples were collected. Confirmation sample results were below the applicable contract action level for TPH (50 mg/kg). The sites were restored and no further action was recommended.	TPH	OHM 1996a
			Former USTs BP13 and BP14 were located east of Building 46 (BEQ) on the east side of Hancock Road. BP13 was a 990-gallon fuel UST constructed of steel and BP14 was a 660-gallon diesel UST constructed of steel. The USTs were installed in 1960 to fuel boilers at Building 46.	Former USTs BP13 and BP14 were removed on January 9, 1992. During tank excavation activities, a leak was identified at the UST sites. As part of remediation activities at BP13 and BP14, soil samples were collected. Confirmation sample results were below the applicable contract action level for TPH (50 mg/kg). The sites were restored and no further action was recommended.	TPH	OHM 1996a
			Former UST BP59 was located southwest of Building 1756 (BEQ) and east of Bunker Hill Road. BP59 was a 1,000-gallon diesel UST constructed of steel. The UST was installed in 1969 to fuel a boiler in Building 1756.	Former UST BP59 was removed on January 29, 1992. During tank excavation activities, a leak was identified at the UST site. As part of remediation activities at BP59, soil samples were collected. Confirmation sample results were below the applicable contract action level for TPH (50 mg/kg). The site was restored and no further action was recommended.	TPH	OHM 1996a
			Former UST BP61 was located east of Building 1788 (BEQ Lounge/Laundromat Facility) and west of Enterprise Road. BP61 was a 950-gallon diesel UST constructed of steel. The UST was installed in 1974 to fuel a boiler in Building 1788.	Former UST BP61 was removed on January 24, 1991. During tank excavation, a leak was identified at the UST site. No further information is available regarding the leak, contamination observed at the site, soil sampling, or remedial action.	TPH	Ogden 1994

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-10 (cont'd)	Buildings 19, 1829, and BEQs (USTs and Substation 1789)	BRAC and Navy-retained	Former UST BP62 was located southeast of Building 1829 (Naval Medical Clinic). BP62 was a 500-gallon diesel UST constructed of steel. The UST was installed in 1977 to fuel a standby generator in Building 1829.	Former UST BP62 was removed on June 20, 1993. Following removal of BP62, soil samples were collected from the excavation area. Analytical results showed petroleum hydrocarbons below DOH action levels. No further action was required.	TPH	Structural Dynamics 1993
			Former USTs BP88 and BP89 were located south of Building 19 (Fitness Center/Mess Hall) and west of Enterprise Road. BP88 and BP89 were 1,000-gallon diesel USTs constructed of steel. The installation date is unknown. The USTs were used to store diesel fuel for the boilers at Building 19.	Former UST BP88 was removed in December 1998. Former UST BP89 was removed on September 6, 1996 and had a release of petroleum to the soil and groundwater. Soil remediation was conducted in accordance with the Hawaii Revised Statutes Chapter 342L, HAR Chapter 11-281, and DOH's "Technical Guidance Manual for UST Closure and Release Response." Residual petroleum hydrocarbons are present between 9 feet bgs and the groundwater table and in the groundwater near BP-89. The groundwater in the vicinity of the BP-89 was monitored in accordance with the DOH guidance for fuel releases from USTs.	TPH	Ogden 1994 DON 1999 DON 2001
POI-13	USTs BP81, BP82, BP83	Navy-retained	USTs BP81, BP82, and BP83 are located north of the intersection of Saratoga Road and Bataan Road. The NEX Touch-N-Go has four bays and three fuel dispenser islands. BP81, BP82, and BP83 were each 10,000-gallon tanks containing MOGAS, installed in 1987.	A petroleum release occurred in 1994 from the piping system of USTs. The release amount was estimated to be 6,000 to 14,000 gallons of gasoline. Shallow samples were collected from borings in October 1994. Results for the boring samples identified the highest petroleum contamination levels at the fuel dispenser islands. In November 1994, 150 cubic yards of soil was excavated, soils samples were collected, and a monitoring well (MW01) was installed. The piping system was removed and replaced with double-walled pipes with interstitial monitoring. In 1995, a Phase II Site Investigation was performed. Fourteen borings were advanced, seven monitoring wells were installed, and soil and groundwater sampling was conducted. The investigation report recommended remediation options. A second round of groundwater sampling was conducted in 1998. Analytical results were below the DOH Tier 1 action levels and were shown to decrease for BTEX constituents. The addendum report recommended no further action or monitoring. A third round of sampling was conducted in 2000. Analytical results were below the DOH Tier 1 action levels and the levels of BTEX constituents have considerably decreased since 1995. Based on the analytical results from the third round of sampling at BP81, BP82, and BP83, no further action or monitoring is recommended.	MOGAS	BES 1994 OHM 1994 Ogden 1996 Ogden 1998 Ogden 2000a
POI-15	Auto Hobby Shop (Building 1869)	Navy-retained	The Auto Hobby Shop was used as a vehicle maintenance shop. Hydraulic fluid was stored in an UST that has since been removed.	Neither the location of the UST nor the date of removal was available.	Petroleum Hydrocarbons	Ogden 1994

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-16	Hawaii Air National Guard Building 1923	BRAC	Three former USTs (BP84, BP85, BP85A [also identified as UST N2]) were associated with Building 1923 and previously stored waste oil and diesel. The USTs were 1,000-gallon tanks and were installed in 1987.	The USTs were removed in 1995, and no further action is required. Any further assessment and cleanup on the property is the tenant's responsibility	Hydraulic fluid, waste oil, battery acid	Ogden 1994 DON 1999
POI-20	Abandoned Roads near Ewa Airstrip	BRAC and Navy-retained	Former USTs BP71, BP72, and BP73 were also associated with Building 1545. The USTs were 50,000 gallon tanks constructed of reinforced concrete, and contained AVGAS. The tanks were installed in 1942.	The USTs were removed in September 1996, and no further action is required.	Petroleum Hydrocarbons	Ogden 1994 DON 1999
POI-21	COMPAT-WINGSPAC (Buildings 972, 1822, and USTs BP54, BP55, and BP101 [also identified as BP96])	Navy-retained	Building 972 and Building 1822 were located northeast of the intersection of Kasaan Bay and Vinson Roads. Former USTs BP54 and BP55, each a 2,500-gallon tanks containing diesel, previously fueled a standby generator in Building 972.	USTs BP54 and BP55 were taken out of service upon discovery of a leak; the tanks were removed September 23, 1996. Following removal of the USTs, two soil samples were taken from the tank excavation site. The samples were analyzed for TPH-diesel, BTEX, and PAHs. TPH-diesel was detected in the soil at 1,000 mg/kg and 67 mg/kg, which were below the 5,000 mg/kg DOH action level at the time of the study. All other analytes were below the CRDLs. No further action is required. A no further action concurrence letter was received from DOH with regards to these USTs.	TPH-diesel, BTEX, and PAHs	OHM 1997a DOH 2002b
			Former UST BP101 (also identified as BP96) was a 500-gallon UST containing diesel which fueled and emergency generator in Building 1822.	UST BP101 (also identified as BP96) was removed on September 25, 1996. Following removal of the UST, one soil sample was taken from the excavation and was analyzed for TPH-diesel, BTEX, and PAHs. Contaminant concentrations were nondetect thus below the DOH action levels. No further action is required.	TPH-diesel, BTEX, and PAHs	OHM 1997c
POI-22	Fleet Imaging Center (Buildings 1767 and 1769 and USTs BP68, BP69, and BP70)	Navy-retained	Former USTs BP68, BP69, and BP70 contained diesel to fuel four generators previously located within Building 1769. The three USTs were 2,500-gallon, single-walled, steel-constructed, diesel USTs. The USTs were installed in 1970.	Former USTs BP68 and BP69 were removed on September 25, 1996. Confirmation soil samples were taken from the excavation and pipeline trenches and were analyzed for TPH-diesel and motor oil, BTEX, and PAHs. Confirmation soil samples contained no detectable concentrations of TPH-diesel but contained low levels of TPH-motor oil. Confirmation soil samples from the pipeline trenches contained motor oil at concentrations of 220 mg/kg and 380 mg/kg. All TPH concentrations were well below the 5,000 mg/kg DOH action level at the time of the study. BTEX and PAH compounds were not detected in confirmation soil samples. No further action is required.	Petroleum Hydrocarbons	OHM 1997b
				UST BP70 was removed on January 27, 1992. Soil samples were taken and analyzed for TPH and BTEX. Results revealed that TPH was below action levels and BTEX was below levels of detection. No further action is required.	Petroleum Hydrocarbons	Ogden 1995

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-27	U.S. Coast Guard	BRAC	Three USTs (BP 63, BP 66, and BP 67) were used at this site to store MOGAS, wastewater, and waste oil. There are also seven ASTs located on the compound, ranging in size from 250 to 1,100 gallons.	The USTs were removed in 1990, and no further action is required. Any further assessment and cleanup on the property is the tenant's responsibility	Petroleum Hydrocarbons	Ogden 1994 DON 1999
POI-29	Hangars 110 and 111, Substation S110	BRAC	Former USTs BP22 and BP23 were installed in 1984 and used at this site to store diesel fuel. The USTs were 163 and 375 gallons, respectively, and were constructed of steel.	The USTs were removed in 1996, and no further action is required.	Petroleum Hydrocarbons	Ogden 1994 DON 1999
POI-30	Former Fuel Farm	BRAC	Twenty-six former USTs (H01 through H26) were used at this site to store AVGAS, diesel, and MOGAS. The USTs were 25,000 gallon, steel-constructed, and were installed in 1943. By 1979, tanks at the fuel farm were removed from service.	The USTs were removed, and no further action is required.	Petroleum Hydrocarbons	Ogden 1994 DON 1999
POI-35	Engine Test Cell, Building 175	BRAC	Former USTs BP41 and BP42 were 10,000-gallon, steel-constructed, AVGAS USTs. The tanks were installed in 1960.	The USTs were removed in 1995, and no further action is required.	AVGAS	Ogden 1994 DON 1999
POI-36	Building 117 and associated Buildings (1749, 1818, 1898, 1220)	BRAC	Former USTs BP24 and BP25 were 2,500-gallon, concrete-constructed, waste oil USTs. The tanks were installed in 1944. In addition, this site also had hydraulic fluid pits that were closed under the UST program.	The USTs were installed in 1944, abandoned, and replaced with ASTs.	Waste oil	Ogden 1994 DON 1999
POI-37	Current Fuel Farm	BRAC	Former USTs BP48, BP93 (N3), and BP94 (N4) were used for waste oil/fuel storage. BP48 was installed in 1943. No installation date was provided for BP93 or BP94. Four ASTs were removed in October 2000, and the remaining 5 ASTs (Tanks 1864, 1865, 1860-1, 1860-2, and 1866) have been closed.	The USTs were removed in 1996, and no further action is required.	Petroleum Hydrocarbons	Ogden 1994 DON 1999

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-41	Buildings 1681 and 1684, Substations S1681 and S1684; and former UST BP57	BRAC	The former UST was located between Buildings 1680 and 1681, near the intersection of Kitty Hawk and Coral Sea Roads. Former UST BP57 provided fuel for an emergency generator located within Building 1681. The former UST was a 1,000-gallon, single-walled, steel-constructed, diesel UST. The UST was installed in 1964 and removed on August 28, 1996, and replaced with a 250-gallon AST.	Following removal of the UST, two soil samples were taken from the base of the excavation and were analyzed for TPH-diesel, BTEX, and PAHs. Contaminant concentrations were nondetect thus below the DOH action levels. No further action is required. A no further action concurrence letter was received from DOH with regards to this UST.	TPH-diesel, BTEX	OHM 1997d DOH 2004
POI-42	Old Engine Test Cells Area; USTs BP27,BP27A, BP28, and BP29 through BP40	BRAC	Former USTs BP29 through BP40 were located adjacent to Building 173. The USTs ranged in size from 1,500- to 10,000-gallons, were constructed of concrete, and contained fuel oil and waste oil. The USTs were installed in 1945 and have been removed.	Former USTs BP27, BP27A, and BP28 were removed between September 1996 and February 1997. Petroleum was released from BP28. Soil remediation was conducted in accordance with the Hawaii Revised Statutes Chapter 342L, HAR Chapter 11-281, and DOH's "Technical Guidance Manual for UST Closure and Release Response." Residual petroleum hydrocarbons may be present in groundwater in the vicinity of BP28. The groundwater in the vicinity of these USTs was monitored in accordance with the DOH's guidance for fuel releases from USTs. DOH has indicated that no further action is warranted for any remaining groundwater contamination. The extent of remaining soil contamination is limited and situated at the groundwater interface, 23 feet bgs. In addition, the former UST BP28 excavation was backfilled with imported fill material and clean native material in September 2000 (OHM 2000). There is no direct exposure pathway for the remaining petroleum contamination located 23 feet bgs and exposure would not be likely unless the soil is encountered and placed on the surface during future redevelopment activities. No further action is recommended.	Oil, fuel	Ogden 1994 OHM 1996b OHM 1998b OHM 2000b Earth Tech 2007
			Former USTs BP29 through BP40 were located adjacent to Buildings 174, 175, and 176. The 12 USTs ranged in size from 260 to 25,000 gallons, were constructed of steel, and contained AVGAS. The 15 USTs were installed in 1945 and were removed in April 1992.	Former USTs BP29 through BP40 were removed in April 1992. During tank removal and demolition activities at the site, approximately 400 gallons of JP-4 jet fuel was released from a 6-inch fuel line. As a result, the former USTs were excavated as one large pit. Stained soil was excavated to approximately 22 feet bgs. At the limits of the excavation, residual TPH–diesel contamination was still present (2,100 mg/kg, 7,400 mg/kg, and 11,000 mg/kg), which was above the applicable contract action level for TPH (50 mg/kg). At the direction of the Navy, two monitoring wells were installed at the site. Additional site characterization and remediation was conducted and contaminant concentrations were below the DOH action levels. A no further action concurrence letter was received from DOH with regards to these USTs.	TPH–diesel	OHM 1996b DOH 2006

Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

POI	Site Name	BRAC or Navy-retained Property	Description/Characteristics	History	COCs	Source
POI-43	Golf Course, Golf Course Maintenance Shop (Building 1089), Golf Course Battery Shop (Buildings 1855 and 1881), and UST BP77	Navy-retained	Former UST BP77 was associated with Building 1089 and located at the intersection of Bismark Sea Road and Gamier Road. BP77 was a 25,000-gallon AVGAS UST constructed of concrete. The UST was installed in 1942 and previously stored aviation gasoline for fueling aircraft.	Former UST BP77 was removed on March 11, 1992. Following removal of the UST, soil samples were taken and analyzed for TPH, BTEX, and organic lead. Results revealed that BTEX was below action levels and TPH and organic lead were below levels of detection. No further action is required.	TPH, BTEX	Ogden 1994
POI-46	Revetments	BRAC and Navy-retained	Former USTs BP74, BP75, and BP76 were 25,000-gallon AVGAS USTs constructed of concrete. The USTs were installed in 1942.	Former USTs BP74, BP75, and BP76 were removed on September 9, 1996. Closure documents were completed and no further action is required. A no further action concurrence letter was received from DOH with regards to these USTs.	TPH-gasoline, BTEX, and total lead	DON 1999 DOH 1998
			Former UST BP78 was located east of Bismark Sea Road. BP78 was a 50,000-gallon AVGAS UST constructed of concrete. The UST was installed in 1942.	Former UST BP78 was removed on September 12, 1996. Following removal BP78, soil samples were analyzed for TPH-gasoline, BTEX, and total lead. Field screening and confirmation sample results were collected and results were below the contract action limit. No further action is required.	TPH-gasoline, BTEX, and total lead	OHM 2000a
			Former UST BP79 was located east of Bismark Sea Road. BP79 was a 50,000-gallon AVGAS UST constructed of construction. The UST was installed in 1942.	Former UST BP79 was removed on March 11, 1992. Following removal of the BP79, soil samples were analyzed for TPH-diesel, BTEX, PAHs, and total lead. Field screening and confirmation sample results were collected at 20 feet bgs and results were below the contract action limit. No further action is required.	TPH-diesel, BTEX, PAHs, and total lead	OHM 1996b

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Table A-1: POI Sites with USTs at Former NAS Barbers Point (Continued)

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———. 1996b. *Final Record of Closure (Addendum), Remediation of Former Underground Storage Tank Sites BP-17/18, BP-29 to 40, BP-49, and BP-79, Naval Air Station Barbers Point, Oahu, Hawaii.* August.
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Notes:
AST = aboveground storage tank
AVGAS = aviation gasoline
BES = Brewer Environmental Services
BEQ = Bachelor Enlisted Quarters
bgs = below ground surface
BRAC = Base Realignment and Closure
BTEX = benzene, toluene, ethylbenzene, xylene
COC = contaminant of concern
COMPATWINGSPAC = Commander, Patrol Wings U.S. Pacific Fleet
CRDL = contract required detection limits
DOH = State of Hawaii Department of Health
DON = Department of Navy
Earth Tech = Earth Tech, Inc.
EBS = environmental baseline survey
FY = fiscal year
HAR = Hawaii Administrative Rule
MDL = method detection limit
mg/kg = milligram per kilogram
mg/L = milligram per liter
MOGAS = motor gasoline
NAS = Naval Air Station
NEX = Navy Exchange
Ogden = Ogden Environmental and Energy Services Co.
OHM = OHM Remediation Services Corp.
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyl
POI = point of interest
RI = remedial investigation
Structural Dynamics = Structural Dynamics, Inc.
TPH = total petroleum hydrocarbon
UST = underground storage tank
VOC = volatile organic compound

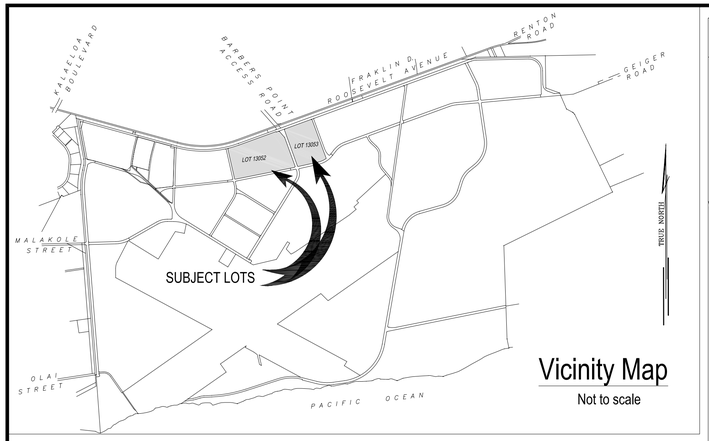
Appendix B
Land Surveys for Sites with LUCs

Coral Pit 1 (Lot 13052) and Coral Pit 2 (Lot 13053)

Fire Fighting Training Pits (Lot 13072)

Former Southern Trap and Skeet Range (Lot 13058-G)

Transformer Substation S1860 (Lot 13061)

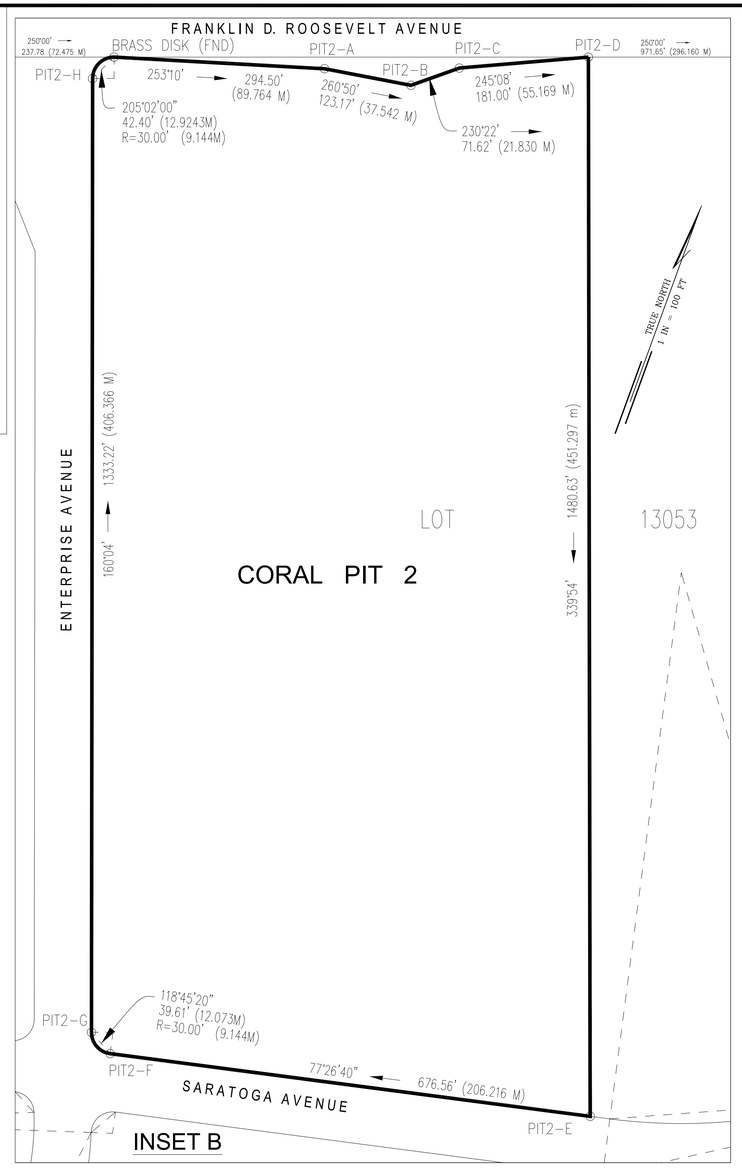


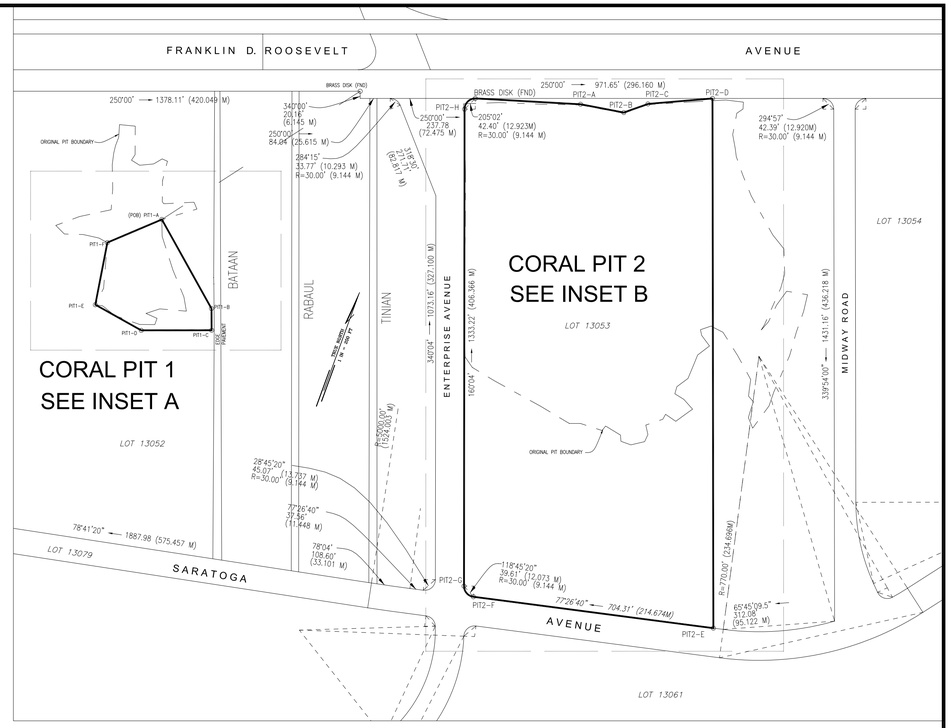
CORAL PIT 2 (Kapuai New △)					
COURSE	AZIMUTH	DISTANCE		NORTHING	EASTING
BRASS DISK (FND) PIT2–A	253°10'	294.50 FT.	89.764 M	(–) 18768.57 (–) 18683.29	1740.14 2022.02
PIT2–B	260°50'	123.17 FT.	37.542 M	(–) 18663.66	2143.62
PIT2–C	230°22'	71.62 FT.	21.830 M	(–) 18617.98	2198.78
PIT2–D	245°08'	181.00 FT.	55.169 M	(–)18541.87	2363.00
PIT2–E	339°54'	1480.63 FT.	451.297 M	(–) 19932.32	2871.83
PIT2–F	77°26'40"	676.56 FT.	206.216 M	(–) 20079.39	2211.45
PIT2–G	118°45'20"	39.61 FT. R=30.00 FT.	12.073 M 9.144 M	(–) 20060.34	2176.72
PIT2–H	160°04'	1333.22 FT.	406.366 M	(–) 18806.99	1722.19
BRASS DISK (FND)	205°02'	42.40 FT. R=30.00 FT.	12.924 M 9.144 M	(–) 18768.57	1740.14
AREA = 987,895 Sq. FT. = 22.679 Acres = 91,779 Sq. M					

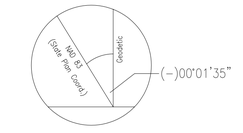
CORAL PIT 2 (SPC – NAD 83)					
COURSE	AZIMUTH	DISTANCE		NORTHING	EASTING
BRASS DISK (FND) PIT2–A	253°11'35""	294.50 FT.	89.764 M	57443.98 57529.13	1617515.60 1617797.52
PIT2–B	260°51'35'	123.17 FT.	37.542 M	57548.70	1617919.13
PIT2–C	230°23'35"	71.62 FT.	21.830 M	57594.36	1617974.31
PIT2–D	245°09'35"	181.00 FT.	55.169 M	57670.40	1618138.56
PIT2–E	339°55'35"	1480.63 FT.	451.297 M	56279.71	1618646.75
PIT2–F	77°28'15"	676.56 FT.	206.216 M	56132.94	1617986.30
PIT2–G	118°46'55"	39.61 FT. R=30.00 FT.	12.073 M 9.144 M	56152.01	1617951.59
PIT2–H	160°05'35"	1333.22 FT.	406.366 M	57405.57	1617497.63
BRASS DISK (FND)	205°03'35"	42.40 FT. R=30.00 FT.	12.924 M 9.144 M	57443.98	1617515.60
AREA = 987,895 Sq. FT. = 22.679 Acres = 91,779 Sq. M					

CORAL PIT 1 (Kapuai New △)					
COURSE	AZIMUTH	DISTANCE		NORTHING	EASTING
BRASS DISK (FND) (POB) PIT1–A	37°07'04"	660.04 FT.	210.181 M	(–) 18859.69 (–) 19386.01	1430.84 1032.53
PIT1–B	310°53'40"	285.09 FT.	86.896 M	(–) 19572.65	1248.03
PIT1–C	339°29'	60.59 FT.	18.468 M	(–) 19629.40	1269.27
PIT1–D	69°52'40"	196.66 FT.	59.942 M	(–) 19697.05	1084.61
PIT1–E	99°09'30"	147.00 FT.	44.806 M	(–) 19673.65	939.49
PIT1–F	170°54'10"	176.89 FT.	53.916 M	(–) 19498.99	911.52
PIT1–A	226°58'	165.55 FT.	50.460M	(–) 19386.01	1032.53
AREA = 68,721 Sq. FT. = 1.578 Acres = 6,384 Sq. M					

CORAL PIT 1 (SPC – NAD 83)					
COURSE	AZIMUTH	DISTANCE		NORTHING	EASTING
BRASS DISK (FND) (POB) PIT1–A	37°08'39	660.04 FT.	210.181 M	57353.00 56826.87	1617206.25 1616807.70
PIT1–B	310°55'15"	285.09 FT.	86.896 M	56640.13	1617023.12
PIT1–C	339°30'35"	60.59 FT.	18.468 M	56583.38	1617044.33
PTC1–D	69°54'15"	196.66 FT.	59.942 M	56515.80	1616859.64
PTC1–E	99°11'05"	147.00 FT.	44.806 M	56539.27	1616714.53
PTC1–F	170°55'45"	176.89 FT.	53.916 M	56713.95	1616686.64
PIT–A	226°59'35"	165.55 FT.	50.460M	56826.87	1616807.70
AREA = 68,721 Sq. FT. = 1.578 Acres = 6,384 Sq. M					







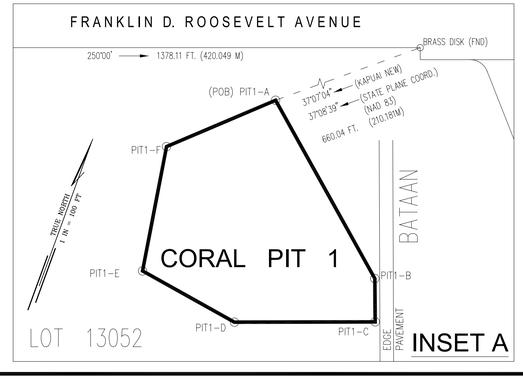
GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

30 0 15 30 60 120

(IN METER)
1 : 1200



PLAN SHOWING

BOUNDARIES FOR CORAL PIT 1 AFFECTING LOT 13052 (MAP 957) OF LAND COURT APPLICATION 1069 AND FOR CORAL PIT 2 AFFECTING LOT 13053 (MAP 957) OF LAND COURT APPLICATION 1069

Honouliuli, Ewa, Oahu, Hawaii

This work was prepared by me or under my direct supervision

By: _____
WILFRED CHIN
Licensed Professional Land Surveyor
Certificate Number 3499 LS
License Expire 4/06

FN: 95279-32.dwg
TMK: 9-1-13: 12, 13
Job: 95279-32

Coral Pit 1

Being a portion of Lot 13052 as shown on Map 957 of Land Court Application 1069.

Situate at Honouliuli, Ewa, Oahu, Hawaii.

Beginning at the North corner of parcel of land, the true azimuth and distance from a "Brass Disk" at the most Northerly corner of Lot 13052 as shown on Map 957 of Land Court Application 1069 being: 37° 07' 04" 660.04 feet, to the point of beginning, the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAPUAI NEW" being 19,386.01 feet South and 1,032.53 feet East and running by azimuths measured clockwise from true South:

1.	310°	53'	40"	285.09 feet along the remainder of Lot 13052 (Map 957) of Land Court Application 1069;
2.	339°	29'		60.59 feet along the remainder of Lot 13052 (Map 957) of Land Court Application 1069;
3.	69°	52'	40"	196.66 feet along the remainder of Lot 13052 (Map 957) of Land Court Application 1069;
4.	99°	09'	30"	147.00 feet along the remainder of Lot 13052 (Map 957) of Land Court Application 1069;
5.	170°	54'	10"	176.89 feet along the remainder of Lot 13052 (Map 957) of Land Court Application 1069;
6.	226°	58'		165.55 feet along the remainder of Lot 13052 (Map 957) of Land Court Application 1069 to the point of beginning and containing an area of 68,721 square feet.

WILFRED Y.K. CHIN
LICENSED PROFESSIONAL LAND SURVEYOR
No. 3499
HAWAII, U.S.A.

Wilfred Y.K. Chin

September 20, 2005
Honolulu, Hawaii

Wilfred Y.K. Chin
Licensed Professional Land Surveyor
Certificate Number 3499
License Expires 4/06

Coral Pit 2

Being a portion of Lot 13053 as shown on Map 957 of Land Court Application 1069.

Situate at Honouliuli, Ewa, Oahu, Hawaii.

Beginning at a "Brass Disk" at the Northwest corner of this parcel of land, and on the Southerly side of Lot 13076 as shown on Map 957 of Land Court Application 1069 (Franklin Roosevelt Avenue), the coordinates of said point of beginning referred to Government Survey Triangulation Station "KAPUAI NEW" being 18,768.57 feet South and 1,740.14 feet East and running by azimuths measured clockwise from true South:

1.	253°	10'		294.50 feet	along the remainder of Lot 13053 (Map 957) of Land Court Application 1069;
2.	260°	50'		123.17 feet	along the remainder of Lot 13053 (Map 957) of Land Court Application 1069;
3.	230°	22'		71.62 feet	along the remainder of Lot 13053 (Map 957) of Land Court Application 1069;
4.	245°	08'		181.00 feet	along the remainder of Lot 13053 (Map 957) of Land Court Application 1069;
5.	339°	54'		1,480.63 feet	along the remainder of Lot 13053 (Map 957) of Land Court Application 1069;
6.	77°	26'	40"	676.56 feet	along the Northerly side of Saratoga Avenue;
7.	Thence along the North corner of Saratoga and Enterprise Avenues, on a curve to the right with a radius of 30.00 feet, the chord azimuth and distance being: 118° 45' 20" 39.61 feet;				
8.	160°	04'		1,333.22 feet	along the Northeasterly side of Enterprise Avenue;

9. Thence along the East corner of Franklin Roosevelt and Enterprise Avenues, on a curve to the right with a radius of 30.00 feet, the chord azimuth and distance being: 205° 02' 42.40 feet to the point of beginning and containing an area of 987,895 square feet.

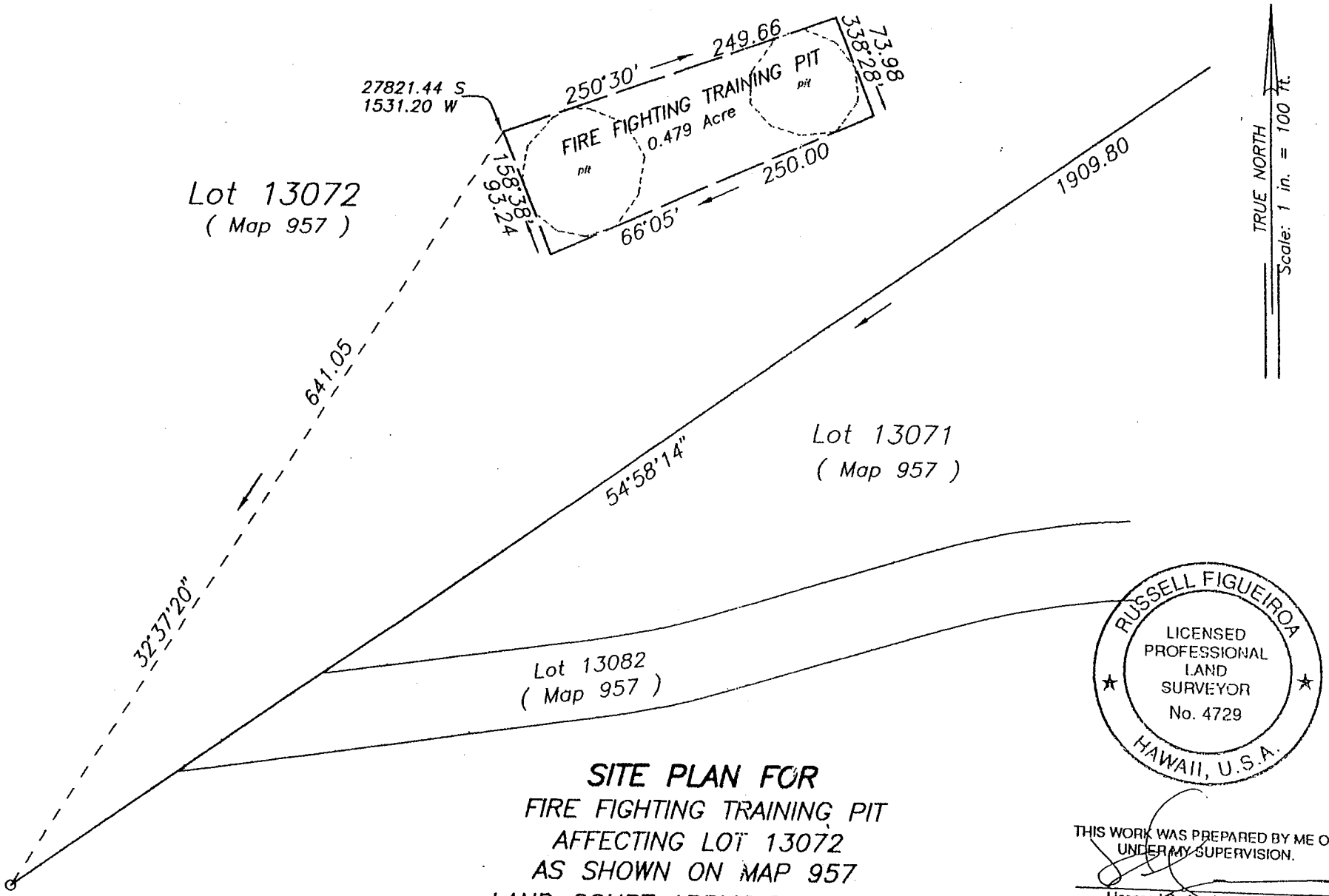


Wilfred Y.K. Chin

Wilfred Y.K. Chin
Licensed Professional Land Surveyor
Certificate Number 3499
License Expires 4/06

September 20, 2005
Honolulu, Hawaii

WO\95279-33 Coral Pit 2
Control Point Surveying, Inc.
1150 South King Street, Suite 102
Honolulu, Hawaii 96814



SITE PLAN FOR
FIRE FIGHTING TRAINING PIT
AFFECTING LOT 13072
AS SHOWN ON MAP 957
LAND COURT APPLICATION 1069
AT N.A.S. BARBERS POINT
OAHU, HAWAII

RUSSELL FIGUEIROA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 4729
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

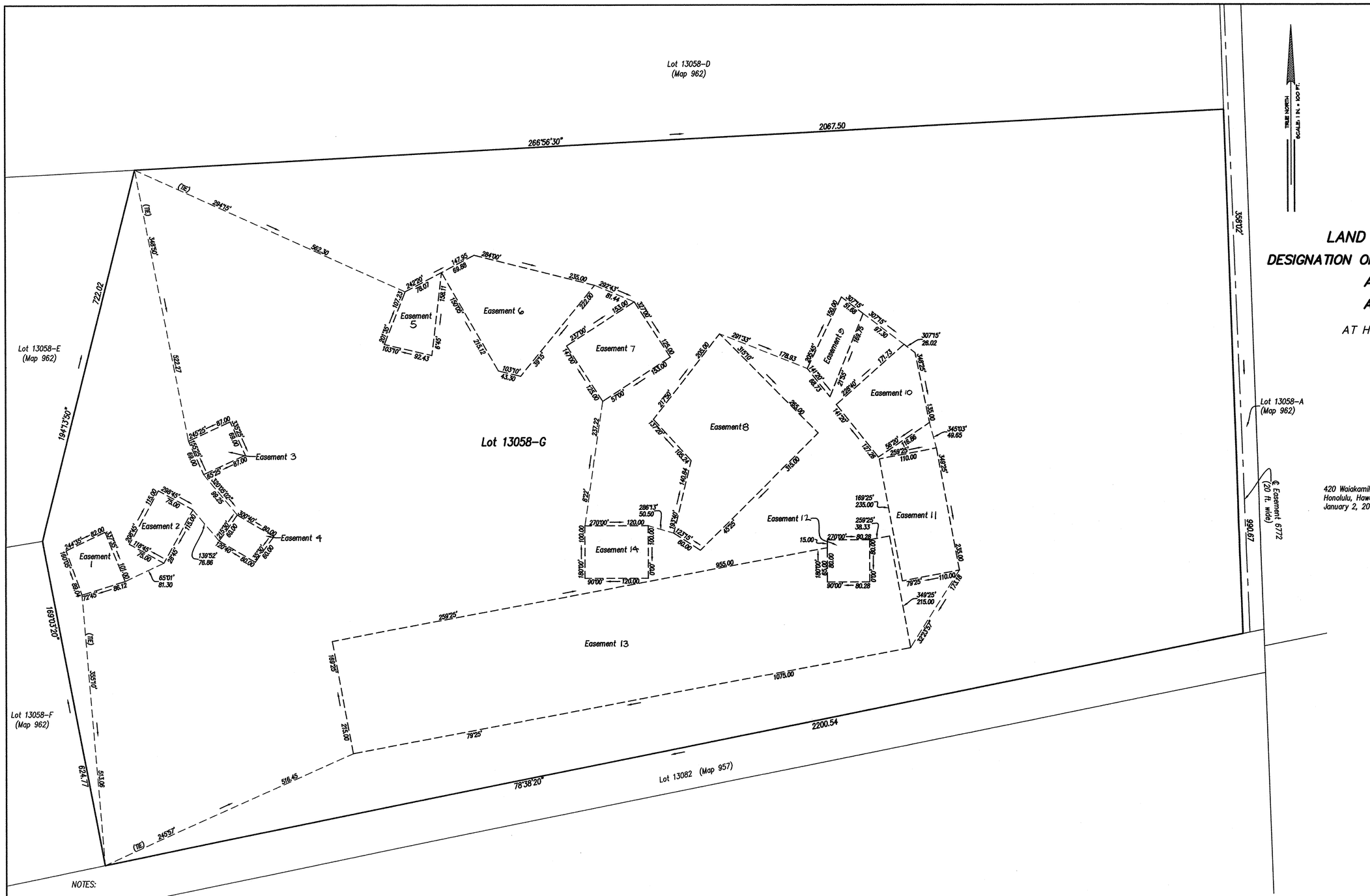
Licensed Professional Surveyor
Certificate Number 4729

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-156

R.M. TOWILL CORPORATION
Surveyors–Engineers–Planners
Photogrammetrists–Environmental Services
420 Waiakamilo Road
Honolulu, Hawaii 96817
June 23, 1999

MAP



LAND COURT

STATE OF HAWAII

LAND COURT APPLICATION 1069

DESIGNATION OF EASEMENTS 1 TO 14, INCLUSIVE AFFECTING LOT 13058-G AS SHOWN ON MAP 962

AT HONOULIULI, EWA, OAHU, HAWAII

RYAN M. SUZUKI
LICENSED PROFESSIONAL LAND SURVEYOR
No. 10059
HAWAII, U.S.A.

R. M. TOWILL CORPORATION

420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817
January 2, 2004

Ryan M. Suzuki EXP: 4/30/06
Ryan M. Suzuki
Licensed Professional Land Surveyor
Certificate Number 10059
Land Court Certificate Number 280

Owner: United States of America
Transfer Certificate of Title: 529,664

AUTHORIZED AND APPROVED BY ORDER OF THE JUDGE
OF THE LAND COURT DATED _____
BY ORDER OF THE COURT.

_____
REGISTRAR OF THE LAND COURT

NOTES:

Area of Easements:

Easement 1	= 0.183 Acre
Easement 2	= 0.198 Acre
Easement 3	= 0.138 Acre
Easement 4	= 0.110 Acre
Easement 5	= 0.229 Acre
Easement 6	= 0.815 Acre
Easement 7	= 0.439 Acre
Easement 8	= 1.446 Acres
Easement 9	= 0.204 Acre
Easement 10	= 0.478 Acre
Easement 11	= 0.593 Acre
Easement 12	= 0.275 Acre
Easement 13	= 5.320 Acres
Easement 14	= 0.147 Acre

UTILITY SYSTEM IMPROVEMENTS

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE

Tax Map Key: 9-1-43: 32 (1st Division)

STATE PROJECT NO. HOS0021-17

21' x 2.92' = 4.7 Sq. Ft.

FIRE FIGHTING TRAINING PIT

AFFECTING LOT 13072

(AS SHOWN ON MAP 957)

LAND COURT APPLICATION 1069

Beginning at the northwest corner of this parcel of land, the azimuth and distance to the southeast corner of Lot 13072 and also the southwest corner of Lot 13071 being 32° 37' 20" 641.05 feet, the coordinates of said point of beginning referred to Government Survey Triangulation Station "Kapuai New" being 27821.44 feet South and 1531.20 feet West and thence running by azimuths measured clockwise from True South:

1.	250°	30'	249.66	feet;
2.	338°	28'	73.98	feet;
3.	66°	05'	250.00	feet;
4.	158°	38'	93.24	feet to the point of beginning and containing an area of 0.479 Acre.

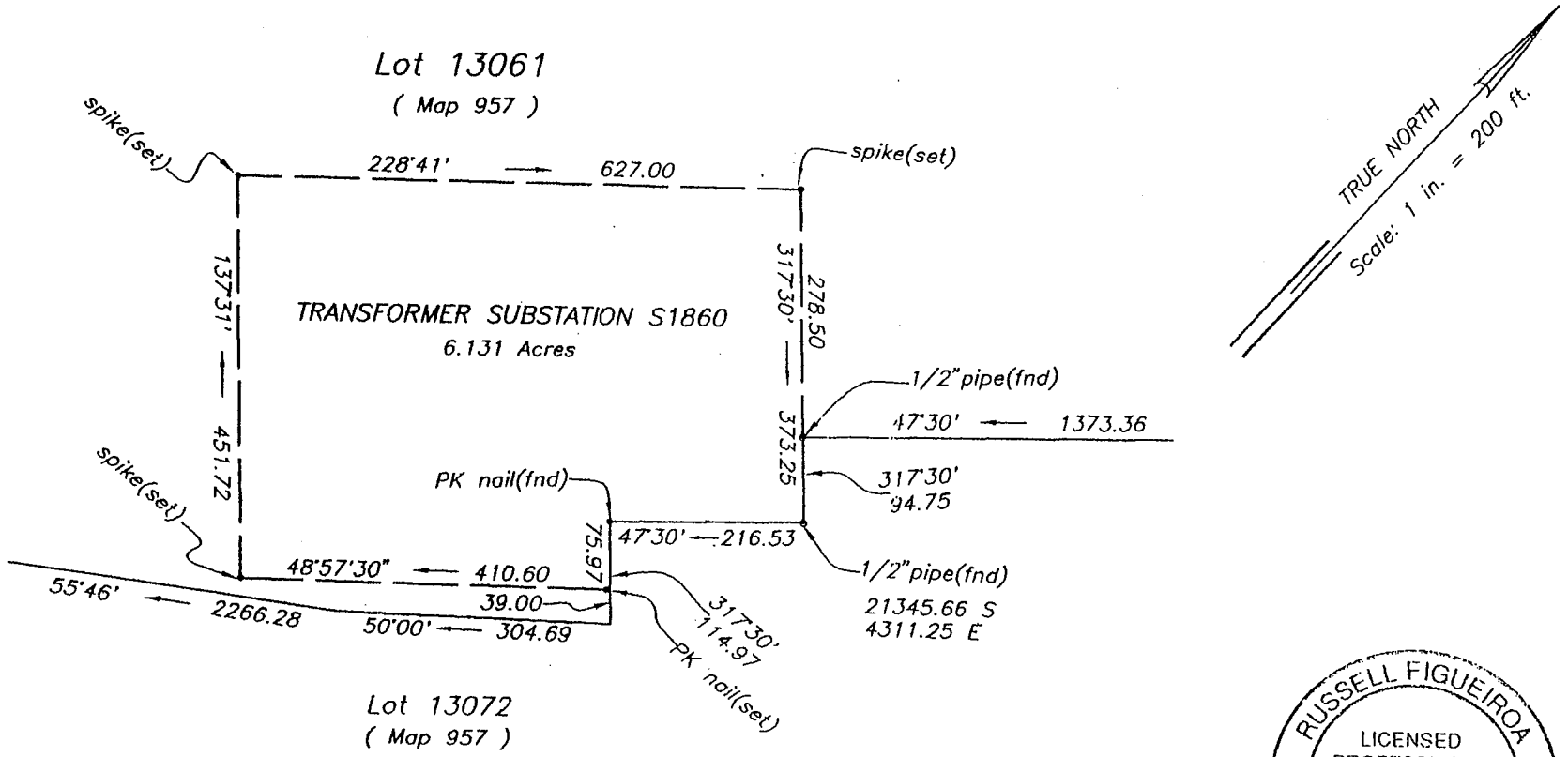
The above described Fire Fighting Training Pit is not a parcel of record.

R. M. TOWILL CORPORATION

Description Prepared by:

420 Waiakamilo Rd., #411
Honolulu, Hawaii 96817-4941
June 23, 1999

Russell Figueiroa
Licensed Professional Land Surveyor
Certificate Number 4729



SITE PLAN FOR
TRANSFORMER SUBSTATION S1860
AFFECTING LOT 13061
AS SHOWN ON MAP 957
LAND COURT APPLICATION 1069
AT N.A.S. BARBERS POINT
OAHU, HAWAII

RUSSELL FIGUEIROA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 4729
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Licensed Professional Surveyor
Certificate Number 4729

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-162

R.M. TOWILL CORPORATION
Surveyors–Engineers–Planners
Photogrammetrists–Environmental Service

420 Waiakamilo Road
Honolulu, Hawaii 96817

June 23, 1999

TRANSFORMER SUBSTATION S1860
AFFECTING LOT 13061
(AS SHOWN ON MAP 957)
LAND COURT APPLICATION 1069

Beginning at a ½" pipe at the east corner of this parcel of land being also the east corner of Lot 13061 and the northwest corner of Lot 13072, the coordinates of said point of beginning referred to Government Survey Triangulation Station "Kapuai New" being 21345.66 feet South and 4311.25 feet East, thence running by azimuth measured clockwise from True South:

1.	47°	30'		216.53	feet along Lot 13072, Ld. Ct. App. 1069 to a PK nail;
2.	317°	30'		75.97	feet along Lot 13072, Ld. Ct. App. 1069 to a PK nail;
3.	48°	57'	30"	410.60	feet to a spike;
4.	137°	31'		451.72	feet to a spike;
5.	228°	41'		627.00	feet to a spike;
6.	317°	30'		373.25	feet to the point of beginning and passing over a ½" pipe at 278.50 feet; and containing an area of 6.131 Acres.

The above described Transformer Substation S1860 is not a parcel of record.

R. M. TOWILL CORPORATION

Description Prepared by:

420 Waiakamilo Rd., #411
Honolulu, Hawaii 96817-4941
June 23, 1999

Russell Figueiroa
Licensed Professional Land Surveyor
Certificate Number 4729

NOV - 5 1998

11/9/98

11/9/98

R990041

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
BARBERS POINT, HAWAII 96862-5050

5090
Ser OOL-L10.161/2093
November 2, 1998

Ms. Roxanne Kwan
State of Hawaii
Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
919 Ala Moana Boulevard, Room 212
Honolulu, HI 96814

Dear Ms. Kwan:

Subj: CONFIRMED RELEASE NOTIFICATION FOR UST NUMBER BP65
FACILITY ID 9-102254

OHM Remediation Services Corporation (OHM) has been contracted for the removal of various underground storage tanks (UST's) specified under Remedial Action Contract (RAC) N62742-93-D-0610, Delivery Order (D.O.) No. 0022. Initial attempts to locate the "Abandoned UST" failed at that time.

During another Polychlorinated Biphenyl (PBC) clean-up project, UST BP65 was accidentally discovered. The UST was excavated and removed on September 29, 1998. The UST was in good condition with no apparent holes. However, laboratory analytical results received on October 5, 1998 detected the presence of cadmium, lead, diesel, motor oil and PCBs.

The concentrations were below the State of Hawaii, Department of Health action levels. A telephonic report was made to you on November 2, 1998. Enclosure (1) is forwarded as required in 40 CFR 280.52. This project was funded by non-DERA funds.

If you any questions, please contact Mr. Henry Rimas at 684-1800.

Sincerely,

DAVID GEORGES
Lieutenant Commander, U.S. Navy
Public Works Officer
By direction of the Commanding Officer

5090
Ser OOL-L10.161/2093
November 2, 1998

Encl: (1) Department of Health (DOH) Form Confirmed Release Notification (CRN), BP65 Facility ID 9-102254 (Vicinity of S184)

Copy to:
ROICC, MIDPAC Code R4 (Dennis Makabe)
PACNAVFACENGCOM, Code 1822A
OHM (Robyn Matsumoto)

APPENDIX 5-A

CONFIRMED RELEASE NOTIFICATION FORM

STATE USE ONLY			
Facility ID:	Release ID:	Date Sent:	Date Received: NOV - 5 1998

GENERAL INFORMATION AND INSTRUCTIONS

This form should be completed immediately and only after reporting a confirmed release by telephone within 24-hours to the Hawai'i DOH UST Section. Completion of this notice will serve to fulfill part of the notification requirements of 40 CFR §280.61. Please type or print in ink all items except "Signature" in Section III. This form must be completed for each UST release occurrence. Completed form must be mailed to: Department of Health, Solid and Hazardous Waste Branch, 5 Waterfront Plaza, Suite 250, 500 Ala Moana Boulevard, Honolulu, Hawai'i 96813

I. REPORTING PARTY AND FACILITY INFORMATION

24-Hour Reporting Party Name, Title, & Affiliation:

HENRY RIMAS, Environmental Engineer, Staff Civil Engineer, Code L12

Facility Name & Address:

NAVAL AIR STATION BARBERS POINT, STAFF CIVIL ENGINEER, BARBERS POINT, HI 96862-5050

Facility Contact Person, Affiliation, & Address:

HENRY RIMAS, Environmental Engineer, Staff Civil Engineer, Code L12

Facility Information: (Check only one item)

___Gas Station	___Aircraft Owner	___State Government	___Commercial	___Utilities
___Petroleum Distributor	___Auto Dealership	___Federal Non-Military	___Industrial	___Other
___Airline	___County Government	_X_Federal Military	___Truck/ Transportation	

II. RELEASE INFORMATION (Circle all that apply in items A-H)

A. Source of the Release: Piping (Tank(s)) Spill Overfill

If "Tank(s)" list tank sizes: BP65, 17.5' long w/ 5.5' diameter (DOH FAC ID# 9-102254)

B. Method of Discovery & Confirmation: (Closure) Monthly Release Detection Tightness Test Site Check

Other (Specify):

C. Estimated Quantity of Substance Released: Gallons (Unknown)

D. Type of Substance Released: Unleaded Gas Leaded Gas (Diesel) (Used or Waste Oil) Hazardous Substance

Other (Specify):

E. Immediate Hazards: Explosion Fire Vapor Exposure Recoverable Free Product Drinking Water Threat

Other (Specify): none

F. Release Impact: Surface Water Ground Water (Soil) Air

G. Migration Pathways: None Utility Conduits Subsurface Drains Sewer Lines (Unknown)

Other (Specify):

H. Actions Taken: Evacuated Nearby Area (Removed UST Contents) Recovered Free Product (Excavated Soils) Ground Water/Recovery

Other (Specify): UST REMOVED

III. UST OWNER OR OPERATOR CERTIFICATION (Read and sign after completing all sections to the extent possible)

I certify under penalty of law that I have examined and am familiar with the information submitted in this notice, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true and accurate.

Name, Title, & Company:
HENRY RIMAS, Environmental Engineer, NAVAL AIR STATION BARBERS POINT

Signature: [signature] Date: 11/2/1998

DOH Form CRN (8/92)

Confirmation Soil Samples Analytical Results
Naval Air Station Barbers Point
UST NABP-65

Sample ID			NABP-65-S-001		NABP-65-S-002		NABP-65-S-003	
Sample Depth (ft bgs)			7.5		7.5		Dup. of -002	
COC Number			184073		184073		184073	
Date Collected			09/29/98		09/29/98		09/29/98	
Parameter	**EPA Method**	**Action Level (mg/kg)**	**Concentration, mg/kg**					
Total Petroleum Hydrocarbons	**8015M**							
TPH as Gasoline		**2000**	1.1	U	1.1	U	1.1	U
TPH as Diesel		**5000**	24		7.0	J	11	
TPH as Motor Oil		**5000**	36		15		40	
Volatile Organic Compounds	**8260**							
Acetone		**5.8**	0.11	U	0.66		0.80	
Benzene		**1.7**	0.0053	U	0.0055	U	0.0055	U
Bromobenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
Bromochloromethane		**NS**	0.0053	U	0.0055	U	0.0055	U
Bromodichloromethane		**NS**	0.0053	U	0.0055	U	0.0055	U
Bromoform		**NS**	0.0053	U	0.0055	U	0.0055	U
Bromomethane		**NS**	0.0053	U	0.0055	U	0.0055	U
2-Butanone		**NS**	0.11	U	0.11	U	0.11	U
n-Butylbenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
sec-Butylbenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
tert-Butylbenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
Carbon disulfide		**NS**	0.0053	U	0.0055	U	0.0055	U
Carbon tetrachloride		**1.9**	0.0053	U	0.0055	U	0.0055	U
Chlorobenzene		**0.08**	0.0053	U	0.0055	U	0.0055	U
Chloroethane		**NS**	0.0053	U	0.0055	U	0.0055	U
Chloroform		**2.8**	0.0053	U	0.0055	U	0.0055	U
Chloromethane		**NS**	0.0053	U	0.0055	U	0.0055	U
2-Chlorotoluene		**NS**	0.0053	U	0.0055	U	0.0055	U
4-Chlorotoluene		**NS**	0.0053	U	0.0055	U	0.0055	U
1,2-Dibromo-3-chloropropane		**NS**	0.0053	U	0.0055	U	0.0055	U
Dibromochloromethane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,2-Dibromoethane		**NS**	0.0053	U	0.0055	U	0.0055	U
Dibromomethane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,2-Dichlorobenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
1,3-Dichlorobenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
1,4-Dichlorobenzene		**NS**	0.0053	U	0.0055	U	0.0055	U
Dichlorodifluoromethane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,1-Dichloroethane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,2-Dichloroethane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,1-Dichloroethene		**0.47**	0.0053	U	0.0055	U	0.0055	U
cis-1,2-Dichloroethene		**NS**	0.0053	U	0.0055	U	0.0055	U
trans-1,2-Dichloroethene		**NS**	0.0053	U	0.0055	U	0.0055	U
1,2-Dichloropropane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,3-Dichloropropane		**NS**	0.0053	U	0.0055	U	0.0055	U
1,1-Dichloropropene		**NS**	0.0053	U	0.0055	U	0.0055	U
2,2-Dichloropropane		**NS**	0.0053	U	0.0055	U	0.0055	U
cis-1,3-Dichloropropene		**NS**	0.0053	U	0.0055	U	0.0055	U

Confirmation Soil Samples Analytical Results
Naval Air Station Barbers Point
UST NABP-65

Sample ID			NABP-65-S-001		NABP-65-S-002		NABP-65-S-003	
Sample Depth (ft bgs)			7.5		7.5		Dup. of -002	
COC Number			184073		184073		184073	
Date Collected			09/29/98		09/29/98		09/29/98	
Parameter	EPA Method	Action Level (mg/kg)	Concentration, mg/kg					
trans-1,3-Dichloropropene		NS	0.0053	U	0.0055	U	0.0055	U
Ethylbenzene		0.5	0.0053	U	0.0055	U	0.0055	U
Hexachlorobutadiene		NS	0.0053	U	0.0055	U	0.0055	U
Isopropylbenzene		NS	0.0053	U	0.0055	U	0.0055	U
p-Isopropyltoluene		NS	0.0053	U	0.0055	U	0.0055	U
MTBE		NS	0.011	U	0.011	U	0.011	U
4-Methyl-2-Pentanone		NS	0.0053	U	0.0055	U	0.0055	U
Methylene chloride		0.003	0.0053	U	0.0055	U	0.0055	U
Naphthalene		NS	0.0053	U	0.0055	U	0.0055	U
n-Propylbenzene		NS	0.0053	U	0.0055	U	0.0055	U
Styrene		NS	0.0053	U	0.0055	U	0.0055	U
1,1,1,2-Tetrachloroethane		NS	0.0053	U	0.0055	U	0.0055	U
1,1,2,2-Tetrachloroethane		NS	0.0053	U	0.0055	U	0.0055	U
Tetrachloroethene		5	0.0053	U	0.0055	U	0.0055	U
Toluene		34	0.0053	U	0.0055	U	0.0055	U
Total xylenes		23	0.0053	U	0.0055	U	0.0055	U
1,2,3-Trichlorobenzene		NS	0.0053	U	0.0055	U	0.0055	U
1,2,4-Trichlorobenzene		NS	0.0053	U	0.0055	U	0.0055	U
1,1,1-Trichloroethane		3	0.0053	U	0.0055	U	0.0055	U
1,1,2-Trichloroethane		NS	0.0053	U	0.0055	U	0.0055	U
Trichloroethene		1.5	0.0053	U	0.0055	U	0.0055	U
Trichlorofluoromethane		NS	0.0053	U	0.0055	U	0.0055	U
1,2,3-Trichloropropane		NS	0.0053	U	0.0055	U	0.0055	U
1,2,4-Trimethylbenzene		NS	0.0053	U	0.0055	U	0.0055	U
1,3,5-Trimethylbenzene		NS	0.0053	U	0.0055	U	0.0055	U
Vinyl chloride		0.18	0.0053	U	0.0055	U	0.0055	U
PAHs	8270							
Acenaphthene		18	0.53	U	1.1	U	1.1	U
Benzo(a)pyrene		1	0.53	U	1.1	U	1.1	U
Fluoranthene		11	0.53	U	1.1	U	1.1	U
Naphthalene		41	0.53	U	1.1	U	1.1	U
PCBs	8082							
Aroclor 1016		1	0.11	U	0.11	U	0.055	U
Aroclor 1221		1	0.21	U	0.22	U	0.11	U
Aroclor 1232		1	0.11	U	0.11	U	0.055	U
Aroclor 1242		1	0.11	U	0.11	U	0.055	U
Aroclor 1248		1	0.11	U	0.11	U	0.055	U
Aroclor 1254		1	0.053	U	0.055	U	0.027	U
Aroclor 1260		1	0.96		0.99		0.65	
Total Metals	200.7							
Total Cadmium		38	0.14	J	0.25		0.26	
Total Lead		400	6.4		37		37	

Notes:
ft bgs - feet below ground surface
mg/kg- milligrams per kilogram
TPH - Total Petroleum Hydrocarbons
PAHs - polynuclear aromatic hydrocarbons
PCBs - Polychlorinated biphenyls
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
Action Level - State of Hawaii Department of Health Tier 1 Action Levels for sites where rainfall is less than 200 centimeters per year and drinking water source is not threatened.
NS - No Standard

Stockpile Soil Samples Analytical Results
Naval Air Station Barbers Point
UST NABP-65

Sample ID			NABP-65-S-004		NABP-65-S-005	
Sample Depth (ft bgs)			NA		NA	
COC Number			184073		184073	
Date Collected			09/29/98		09/29/98	
Parameter	**EPA Method**	**Action Level (mg/kg)**	**Concentration, mg/kg**			
Total Petroleum Hydrocarbons	**8015M**					
TPH as Gasoline		2000	1.2	U	1.2	U
TPH as Diesel		5000	13		12	U
TPH as Motor Oil		5000	52		11	J
Volatile Organic Compounds	**8260**					
Acetone		5.8	0.56		0.12	U
Benzene		1.7	0.0058	U	0.0061	U
Bromobenzene		NS	0.0058	U	0.0061	U
Bromochloromethane		NS	0.0058	U	0.0061	U
Bromodichloromethane		NS	0.0058	U	0.0061	U
Bromoform		NS	0.0058	U	0.0061	U
Bromomethane		NS	0.0058	U	0.0061	U
2-Butanone		NS	0.12	U	0.12	U
n-Butylbenzene		NS	0.0058	U	0.0061	U
sec-Butylbenzene		NS	0.0058	U	0.0061	U
tert-Butylbenzene		NS	0.0058	U	0.0061	U
Carbon disulfide		NS	0.0058	U	0.0061	U
Carbon tetrachloride		1.9	0.0058	U	0.0061	U
Chlorobenzene		0.08	0.0058	U	0.0061	U
Chloroethane		NS	0.0058	U	0.0061	U
Chloroform		2.8	0.0058	U	0.0061	U
Chloromethane		NS	0.0058	U	0.0061	U
2-Chlorotoluene		NS	0.0058	U	0.0061	U
4-Chlorotoluene		NS	0.0058	U	0.0061	U
1,2-Dibromo-3-chloropropane		NS	0.0058	U	0.0061	U
Dibromochloromethane		NS	0.0058	U	0.0061	U
1,2-Dibromoethane		NS	0.0058	U	0.0061	U
Dibromomethane		NS	0.0058	U	0.0061	U
1,2-Dichlorobenzene		NS	0.0058	U	0.0061	U
1,3-Dichlorobenzene		NS	0.0058	U	0.0061	U
1,4-Dichlorobenzene		NS	0.0058	U	0.0061	U
Dichlorodifluoromethane		NS	0.0058	U	0.0061	U
1,1-Dichloroethane		NS	0.0058	U	0.0061	U
1,2-Dichloroethane		NS	0.0058	U	0.0061	U
1,1-Dichloroethene		0.47	0.0058	U	0.0061	U

Stockpile Soil Samples Analytical Results
Naval Air Station Barbers Point
UST NABP-65

Sample ID			NABP-65-S-004		NABP-65-S-005	
Sample Depth (ft bgs)			NA		NA	
COC Number			184073		184073	
Date Collected			09/29/98		09/29/98	
Parameter	EPA Method	Action Level (mg/kg)	Concentration, mg/kg			
cis-1,2-Dichloroethene		NS	0.0058	U	0.0061	U
trans-1,2-Dichloroethene		NS	0.0058	U	0.0061	U
1,2-Dichloropropane		NS	0.0058	U	0.0061	U
1,3-Dichloropropane		NS	0.0058	U	0.0061	U
1,1-Dichloropropene		NS	0.0058	U	0.0061	U
2,2-Dichloropropane		NS	0.0058	U	0.0061	U
cis-1,3-Dichloropropene		NS	0.0058	U	0.0061	U
trans-1,3-Dichloropropene		NS	0.0058	U	0.0061	U
Ethylbenzene		0.5	0.0058	U	0.0061	U
Hexachlorobutadiene		NS	0.0058	U	0.0061	U
Isopropylbenzene		NS	0.0058	U	0.0061	U
p-Isopropyltoluene		NS	0.0058	U	0.0061	U
MTBE		NS	0.012	U	0.012	U
4-Methyl-2-Pentanone		NS	0.0058	U	0.0061	U
Methylene chloride		0.003	0.0058	U	0.0061	U
Naphthalene		NS	0.0058	U	0.0061	U
n-Propylbenzene		NS	0.0058	U	0.0061	U
Styrene		NS	0.0058	U	0.0061	U
1,1,1,2-Tetrachloroethane		NS	0.0058	U	0.0061	U
1,1,2,2-Tetrachloroethane		NS	0.0058	U	0.0061	U
Tetrachloroethene		5	0.0058	U	0.0061	U
Toluene		34	0.0058	U	0.0061	U
Total xylenes		23	0.0058	U	0.0061	U
1,2,3-Trichlorobenzene		NS	0.0058	U	0.0061	U
1,2,4-Trichlorobenzene		NS	0.0058	U	0.0061	U
1,1,1-Trichloroethane		3	0.0058	U	0.0061	U
1,1,2-Trichloroethane		NS	0.0058	U	0.0061	U
Trichloroethene		1.5	0.0058	U	0.0061	U
Trichlorofluoromethane		NS	0.0058	U	0.0061	U
1,2,3-Trichloropropane		NS	0.0058	U	0.0061	U
1,2,4-Trimethylbenzene		NS	0.0058	U	0.0061	U
1,3,5-Trimethylbenzene		NS	0.0058	U	0.0061	U
Vinyl chloride		0.18	0.0058	U	0.0061	U
PAHs	**8270**					
Acenaphthene		18	1.2	U	1.2	U

Stockpile Soil Samples Analytical Results
Naval Air Station Barbers Point
UST NABP-65

Sample ID			NABP-65-S-004		NABP-65-S-005	
Sample Depth (ft bgs)			NA		NA	
COC Number			184073		184073	
Date Collected			09/29/98		09/29/98	
Parameter	**EPA Method**	**Action Level (mg/kg)**	**Concentration, mg/kg**			
Benzo(a)pyrene		1	1.2	U	1.2	U
Fluoranthene		11	1.2	U	1.2	U
Naphthalene		41	1.2	U	1.2	U
PCBs	**8082**					
Aroclor 1016		1	0.058	U	0.061	U
Aroclor 1221		1	0.12	U	0.12	U
Aroclor 1232		1	0.058	U	0.061	U
Aroclor 1242		1	0.058	U	0.061	U
Aroclor 1248		1	0.058	U	0.061	U
Aroclor 1254		1	0.029	U	0.030	U
Aroclor 1260		1	0.31		0.064	
Total Metals	**200.7**					
Total Cadmium		38	0.24		0.27	
Total Lead		400	30		12	

Notes:

ft bgs - feet below ground surface

mg/kg- milligrams per kilogram

TPH - Total Petroleum Hydrocarbons

PAHs - polynuclear aromatic hydrocarbons

PCBs - Polychlorinated biphenyls

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit

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Action Level - State of Hawaii Department of Health Tier 1 Action Levels for sites where rainfall is less than 200 centimeters per year and drinking water source is not threatened.

NS - No Standard

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
OHM Remediation Services (Hawaii)
Attention: David Kaneko
91238 Kalaeloa Blvd.
Kapolei HI 96707
Tel: (808)682-1800 Fax: (808)682-1880

Service ID #: 801-985259
Collected by:
Collected on: 09/29/98

Received: 09/30/98
Extracted: 9/30-10/1/98
Tested: 09/30-10/02/98
Reported: 10/02/98

Sample Description: Soil and Water from Barbers Point, HI
Project Description: 18009 DO 22

Analysis of Water and Soil Samples

I. Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result Trip Blank 98-05259-6
Dilution Factor				1
PHC AS GASOLINE	M8015V	mg/L	0.05	<0.05
VOLATILE ORGANICS				
Dilution Factor				1
ACETONE	8260	µg/L	100	<100
BENZENE	8260	µg/L	5	<5
BROMOBENZENE	8260	µg/L	5	<5
BROMOCHLOROMETHANE	8260	µg/L	5	<5
BROMODICHLOROMETHANE	8260	µg/L	5	<5
BROMOFORM	8260	µg/L	5	<5
BROMOMETHANE	8260	µg/L	5	<5
METHYL ETHYL KETONE	8260	µg/L	100	<100
N-BUTYLBENZENE	8260	µg/L	5	<5
SEC-BUTYLBENZENE	8260	µg/L	5	<5
T-BUTYLBENZENE	8260	µg/L	5	<5
CARBON DISULFIDE	8260	µg/L	5	<5
CARBON TETRACHLORIDE	8260	µg/L	5	<5
CHLOROBENZENE	8260	µg/L	5	<5
DIBROMOCHLOROMETHANE	8260	µg/L	5	<5
CHLOROETHANE	8260	µg/L	5	<5
CHLOROFORM	8260	µg/L	5	<5
CHLOROMETHANE	8260	µg/L	5	<5
2-CHLOROTOLUENE	8260	µg/L	5	<5
4-CHLOROTOLUENE	8260	µg/L	5	<5
1,2-DIBROMO-3-CHLOROPROPANE	8260	µg/L	5	<5
1,2-DIBROMOETHANE (ETHYLENE DIB	8260	µg/L	5	<5
DIBROMOMETHANE	8260	µg/L	5	<5
1,2-DICHLOROBENZENE	8260	µg/L	5	<5
1,3-DICHLOROBENZENE	8260	µg/L	5	<5
1,4-DICHLOROBENZENE	8260	µg/L	5	<5
DICHLORODIFLUOROMETHANE	8260	µg/L	5	<5
1,1-DICHLOROETHANE	8260	µg/L	5	<5
1,2-DICHLOROETHANE	8260	µg/L	5	<5
1,1 DICHLOROETHENE	8260	µg/L	5	<5
CIS-1,2-DICHLOROETHYLENE	8260	µg/L	5	<5
TRANS-1,2-DICHLOROETHENE	8260	µg/L	5	<5
1,2-DICHLOROPROPANE	8260	µg/L	5	<5
1,3-DICHLOROPROPANE	8260	µg/L	5	<5

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Component Analyzed	Method	Unit	PQL	Analysis Result Trip Blank 98-05259-6
2,2-DICHLOROPROPANE	8260	µg/L	5	< 5
1,1 DICHLOROPROPENE	8260	µg/L	5	< 5
CIS-1,3-DICHLOROPROPENE	8260	µg/L	5	< 5
TRANS-1,3 DICHLOROPROPENE	8260	µg/L	5	< 5
ETHYLBENZENE	8260	µg/L	5	< 5
HEXACHLOROBUTADIENE	8260	µg/L	5	< 5
ISOPROPYLBENZENE (CUMENE)	8260	µg/L	5	< 5
P CYMENE (P-ISOPROPYLTOLUENE)	8260	µg/L	5	< 5
METHYLENE CHLORIDE	8260	µg/L	5	< 5
METHYL ISOBUTYL KETONE (4-METHY	8260	µg/L	50	< 50
TERT-BUTYL METHYL ETHER	8260	µg/L	10	< 10
NAPHTHALENE	8260	µg/L	5	< 5
N-PROPYLBENZENE	8260	µg/L	5	< 5
STYRENE	8260	µg/L	5	< 5
1,1,1,2-TETRACHLOROETHANE	8260	µg/L	5	< 5
1,1,2,2-TETRACHLOROETHANE	8260	µg/L	5	< 5
TETRACHLOROETHYLENE(PCE)	8260	µg/L	5	< 5
TOLUENE	8260	µg/L	5	< 5
1,2,3-TRICHLOROBENZENE	8260	µg/L	5	< 5
1,2,4-TRICHLOROBENZENE	8260	µg/L	5	< 5
1,1,1-TRICHLOROETHANE	8260	µg/L	5	< 5
1,1,2-TRICHLOROETHANE	8260	µg/L	5	< 5
TRICHLOROETHYLENE (TCE)	8260	µg/L	5	< 5
TRICHLOROFLUOROMETHANE	8260	µg/L	5	< 5
1,2,3-TRICHLOROPROPANE	8260	µg/L	5	< 5
1,2,4-TRIMETHYLBENZENE	8260	µg/L	5	< 5
1,3,5 TRIMETHYLBENZENE (MESITYL	8260	µg/L	5	< 5
VINYL CHLORIDE	8260	µg/L	5	< 5
O-XYLENE (1,2-DIMETHYLBENZENE)	8260	µg/L	5	< 5
M,P-XYLENE (SUM OF ISOMERS)	8260	µg/L	5	< 5
XYLENES, TOTAL	8260	µg/L	5	< 5

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APCL Analytical Report

II . Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result NABP-65-S 001 98-05259-1	NABP-65-S-002 98-05259 2
MOISTURE, PERCENT IN SOIL	ASTM-D2216	%Moisture	0.5	5.0	9.2
CADMIUM, CD. BY ICP	200.7	mg/kg	0.2	0.141	0.25
LEAD, PB. BY ICP	200.7	mg/kg	0.2	6.4	37.4
Dilution Factor				1	1
PHC AS GASOLINE	M8015V	mg/kg	1	< 1.1	< 1.1
Dilution Factor				1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	10	24	7J
Dilution Factor				1	1
MOTOR OILS	M8015E	mg/kg	10	36	15
VOLATILE ORGANICS					
Dilution Factor				1	1
ACETONE	8260	µg/kg	100	< 110	660
BENZENE	8260	µg/kg	5	< 5.5	< 5.5
BROMOBENZENE	8260	µg/kg	5	< 5.5	< 5.5
BROMOCHLOROMETHANE	8260	µg/kg	5	< 5.5	< 5.5
BROMODICHLOROMETHANE	8260	µg/kg	5	< 5.5	< 5.5
BROMOFORM	8260	µg/kg	5	< 5.5	< 5.5
BROMOMETHANE	8260	µg/kg	5	< 5.5	< 5.5
METHYL ETHYL KETONE (2-BUTANONE	8260	µg/kg	100	< 110	< 110
N-BUTYLBENZENE	8260	µg/kg	5	< 5.5	< 5.5
SEC-BUTYLBENZENE	8260	µg/kg	5	< 5.5	< 5.5
T-BUTYLBENZENE	8260	µg/kg	5	< 5.5	< 5.5
CARBON DISULFIDE	8260	µg/kg	5	< 5.5	< 5.5
CARBON TETRACHLORIDE	8260	µg/kg	5	< 5.5	< 5.5
CHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.5
DIBROMOCHLOROMETHANE	8260	µg/kg	5	< 5.5	< 5.5
CHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.5
CHLOROFORM	8260	µg/kg	5	< 5.5	< 5.5
CHLOROMETHANE	8260	µg/kg	5	< 5.5	< 5.5
2-CHLOROTOLUENE	8260	µg/kg	5	< 5.5	< 5.5
4-CHLOROTOLUENE	8260	µg/kg	5	< 5.5	< 5.5
1,2 DIBROMO-3-CHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.5
1,2-DIBROMOETHANE (ETHYLENE DIB	8260	µg/kg	5	< 5.5	< 5.5
DIBROMOMETHANE	8260	µg/kg	5	< 5.5	< 5.5
1,2-DICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.5
1,3-DICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.5
1,4-DICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.5
DICHLORODIFLUOROMETHANE	8260	µg/kg	5	< 5.5	< 5.5
1,1-DICHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.5
1,2-DICHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.5
1,1-DICHLOROETHENE	8260	µg/kg	5	< 5.5	< 5.5
CIS-1,2-DICHLOROETHYLENE	8260	µg/kg	5	< 5.5	< 5.5
TRANS-1,2-DICHLOROETHENE	8260	µg/kg	5	< 5.5	< 5.5
1,3 DICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.5
1,3 DICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.5
2,2-DICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.5
1,1-DICHLOROPROPENE	8260	µg/kg	5	< 5.5	< 5.5

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13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result NABP-65-S-001 98-05259-1	Analysis Result NABP-65-S-002 98-05259-2
CIS 1,3-DICHLOROPROPENE	8260	µg/kg	5	< 5.3	< 5.5
TRANS-1,3-DICHLOROPROPENE	8260	µg/kg	5	< 5.3	< 5.5
ETHYLBENZENE	8260	µg/kg	5	< 5.3	< 5.5
HEXACHLOROBUTADIENE	8260	µg/kg	5	< 5.3	< 5.5
ISOPROPYLBENZENE (CUMENE)	8260	µg/kg	5	< 5.3	< 5.5
P-CYMENE (P-ISOPROPYLTOLUENE)	8260	µg/kg	5	< 5.3	< 5.5
METHYLENE CHLORIDE	8260	µg/kg	5	< 5.3	< 5.5
METHYL ISOBUTYL KETONE (4-METHY	8260	µg/kg	50	< 53	< 55
TERT-BUTYL METHYL ETHER	8260	µg/kg	10	< 11	< 11
NAPHTHALENE	8260	µg/kg	5	< 5.3	< 5.5
N PROPYLBENZENE	8260	µg/kg	5	< 5.3	< 5.5
STYRENE	8260	µg/kg	5	< 5.3	< 5.5
1,1,1,2-TETRACHLOROETHANE	8260	µg/kg	5	< 5.3	< 5.5
1,1,2,2-TETRACHLOROETHANE	8260	µg/kg	5	< 5.3	< 5.5
TETRACHLOROETHYLENE(PCE)	8260	µg/kg	5	< 5.3	< 5.5
TOLUENE	8260	µg/kg	5	< 5.3	< 5.5
1,2,3-TRICHLOROBENZENE	8260	µg/kg	5	< 5.3	< 5.5
1,2,4-TRICHLOROBENZENE	8260	µg/kg	5	< 5.3	< 5.5
1,1,1-TRICHLOROETHANE	8260	µg/kg	5	< 5.3	< 5.5
1,1,2-TRICHLOROETHANE	8260	µg/kg	5	< 5.3	< 5.5
TRICHLOROETHYLENE (TCE)	8260	µg/kg	5	< 5.3	< 5.5
TRICHLOROFLUOROMETHANE	8260	µg/kg	5	< 5.3	< 5.5
1,2,3-TRICHLOROPROPANE	8260	µg/kg	5	< 5.3	< 5.5
1,2,4-TRIMETHYLBENZENE	8260	µg/kg	5	< 5.3	< 5.5
1,3,5-TRIMETHYLBENZENE (MESITYL	8260	µg/kg	5	< 5.3	< 5.5
VINYL CHLORIDE	8260	µg/kg	5	< 5.3	< 5.5
O-XYLENE (1,2-DIMETHYLBENZENE)	8260	µg/kg	5	< 5.3	< 5.5
M,P-XYLENE (SUM OF ISOMERS)	8260	µg/kg	5	< 5.3	< 5.5
XYLENES, TOTAL	8260	µg/kg	5	< 5.3	< 5.5
SEMI-VOLATILE, PAH					
Dilution Factor				1	2
ACENAPHTHENE	8270	µg/kg	500	< 530	< 1100
ACENAPHTHYLENE	8270	µg/kg	500	< 530	< 1100
ANTHRACENE	8270	µg/kg	500	< 530	< 1100
BENZO(A)ANTHRACENE	8270	µg/kg	500	< 530	< 1100
BENZO(A)PYRENE	8270	µg/kg	500	< 530	< 1100
BENZO(B)FLUORANTHENE	8270	µg/kg	500	< 530	< 1100
BENZO(G,H,I)PERYLENE	8270	µg/kg	500	< 530	< 1100
BENZO(K)FLUORANTHENE	8270	µg/kg	500	< 530	< 1100
CHRYSENE	8270	µg/kg	500	< 530	< 1100
DIBENZ(A,H)ANTHRACENE	8270	µg/kg	500	< 530	< 1100
FLUORANTHENE	8270	µg/kg	500	< 530	< 1100
FLUORENE	8270	µg/kg	500	< 530	< 1100
INDENO(1,2,3 C,D)PYRENE	8270	µg/kg	500	< 530	< 1100
2-METHYLNAPHTHALENE	8270	µg/kg	500	< 530	< 1100
NAPHTHALENE	8270	µg/kg	500	< 530	< 1100
PHENACETIN	8270	µg/kg	500	< 530	< 1100
PHENANTHRENE	8270	µg/kg	500	< 530	< 1100
PYRENE	8270	µg/kg	500	< 530	56.1

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result NABP-65-S-001 98-05259-1	NABP-65-S-002 98-05259-2
PCBS					
Dilution Factor				2	2
PCB-1016 (AROCHLOR 1016)	8082	µg/kg	50	<110	<110
PCB-1221 (AROCHLOR 1221)	8082	µg/kg	100	<210	<220
PCB-1232 (AROCHLOR 1232)	8082	µg/kg	50	<110	<110
PCB-1242 (AROCHLOR 1242)	8082	µg/kg	50	<110	<110
PCB-1248 (AROCHLOR 1248)	8082	µg/kg	50	<110	<110
PCB-1254 (AROCHLOR 1254)	8082	µg/kg	25	<53	<55
PCB-1260 (AROCHLOR 1260)	8082	µg/kg	25	960	990

Component Analyzed	Method	Unit	PQL	Analysis Result NABP-65-S-003 98-05259-3	NABP-65-S-004 98-05259-4	NABP-65-S-005 98-05259-5
MOISTURE, PERCENT IN SOIL	ASTM-D2216	%Moisture	0.5	8.3	13.9	17.8
CADMIUM, CD, BY ICP	200.7	mg/kg	0.2	0.26	0.24	0.27
LEAD, PB, BY ICP	200.7	mg/kg	0.2	37.3	30.0	11.7
Dilution Factor				1	1	1
PHC AS GASOLINE	M8015V	mg/kg	1	<1.1	<1.2	<1.2
Dilution Factor				1	1	1
PHC AS DIESEL FUEL	M8015E	mg/kg	10	11	13	<12
Dilution Factor				1	1	1
MOTOR OILS	M8015E	mg/kg	10	40	52	11J
VOLATILE ORGANICS						
Dilution Factor				1	1	1
ACETONE	8260	µg/kg	100	800	560	<120
BENZENE	8260	µg/kg	5	<5.5	<5.8	<6.1
BROMOBENZENE	8260	µg/kg	5	<5.5	<5.8	<6.1
BROMOCHLOROMETHANE	8260	µg/kg	5	<5.5	<5.8	<6.1
BROMODICHLOROMETHANE	8260	µg/kg	5	<5.5	<5.8	<6.1
BROMOFORM	8260	µg/kg	5	<5.5	<5.8	<6.1
BROMOMETHANE	8260	µg/kg	5	<5.5	<5.8	<6.1
METHYL ETHYL KETONE	8260	µg/kg	100	<110	<120	<120
N BUTYLBENZENE	8260	µg/kg	5	<5.5	<5.8	<6.1
SEC BUTYLBENZENE	8260	µg/kg	5	<5.5	<5.8	<6.1
T-BUTYLBENZENE	8260	µg/kg	5	<5.5	<5.8	<6.1
CARBON DISULFIDE	8260	µg/kg	5	<5.5	<5.8	<6.1
CARBON TETRACHLORIDE	8260	µg/kg	5	<5.5	<5.8	<6.1
CHLOROBENZENE	8260	µg/kg	5	<5.5	<5.8	<6.1
DIBROMOCHLOROMETHANE	8260	µg/kg	5	<5.5	<5.8	<6.1
CHLOROETHANE	8260	µg/kg	5	<5.5	<5.8	<6.1
CHLOROFORM	8260	µg/kg	5	<5.5	<5.8	<6.1
CHLOROMETHANE	8260	µg/kg	5	<5.5	<5.8	<6.1
2-CHLOROTOLUENE	8260	µg/kg	5	<5.5	<5.8	<6.1

Applied P & Ch Laboratory
13780 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result NABP-65-S-003 98-05259-3	NABP-65-S-004 98-05259-4	NABP-65-S-005 98-05259-5
4-CHLOROTOLUENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2-DIBROMO 3 CHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2 DIBROMOETHANE (ETHYLENE DIB	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
DIBROMOMETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2-DICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,3-DICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,4-DICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
DICHLORODIFLUOROMETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1-DICHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2-DICHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1-DICHLOROETHENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
CIS-1,2-DICHLOROETHYLENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
TRANS 1,2-DICHLOROETHENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2-DICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,3-DICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
2,2-DICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1 DICHLOROPROPENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
CIS-1,3-DICHLOROPROPENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
TRANS-1,3-DICHLOROPROPENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
ETHYLBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
HEXACHLOROBUTADIENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
ISOPROPYLBENZENE (CUMENE)	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
P-CYMENE (P-ISOPROPYLTOLUENE)	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
METHYLENE CHLORIDE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
METHYL ISOBUTYL KETONE (4-METHY	8260	µg/kg	50	< 55	< 58	< 61
TERT-BUTYL METHYL ETHER	8260	µg/kg	10	< 11	< 12	< 12
NAPHTHALENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
N-PROPYLBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
STYRENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1,1,2-TETRACHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1,2,2 TETRACHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
TETRACHLOROETHYLENE(PCE)	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
TOLUENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2,3 TRICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2,4-TRICHLOROBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1,1-TRICHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,1,2 TRICHLOROETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
TRICHLOROETHYLENE (TCE)	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
TRICHLOROFLUOROMETHANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2,3-TRICHLOROPROPANE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,2,4-TRIMETHYLBENZENE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
1,3,5 TRIMETHYLBENZENE (MESITYL	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
VINYL CHLORIDE	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
O-XYLENE (1,2-DIMETHYLBENZENE)	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
M,P-XYLENE (SUM OF ISOMERS)	8260	µg/kg	5	< 5.5	< 5.8	< 6.1
XYLENES, TOTAL	8260	µg/kg	5	< 5.5	< 5.8	< 6.1

Applied P & Ch Laboratory
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Tel: (909) 590-1828 Fax: (909) 590-1498

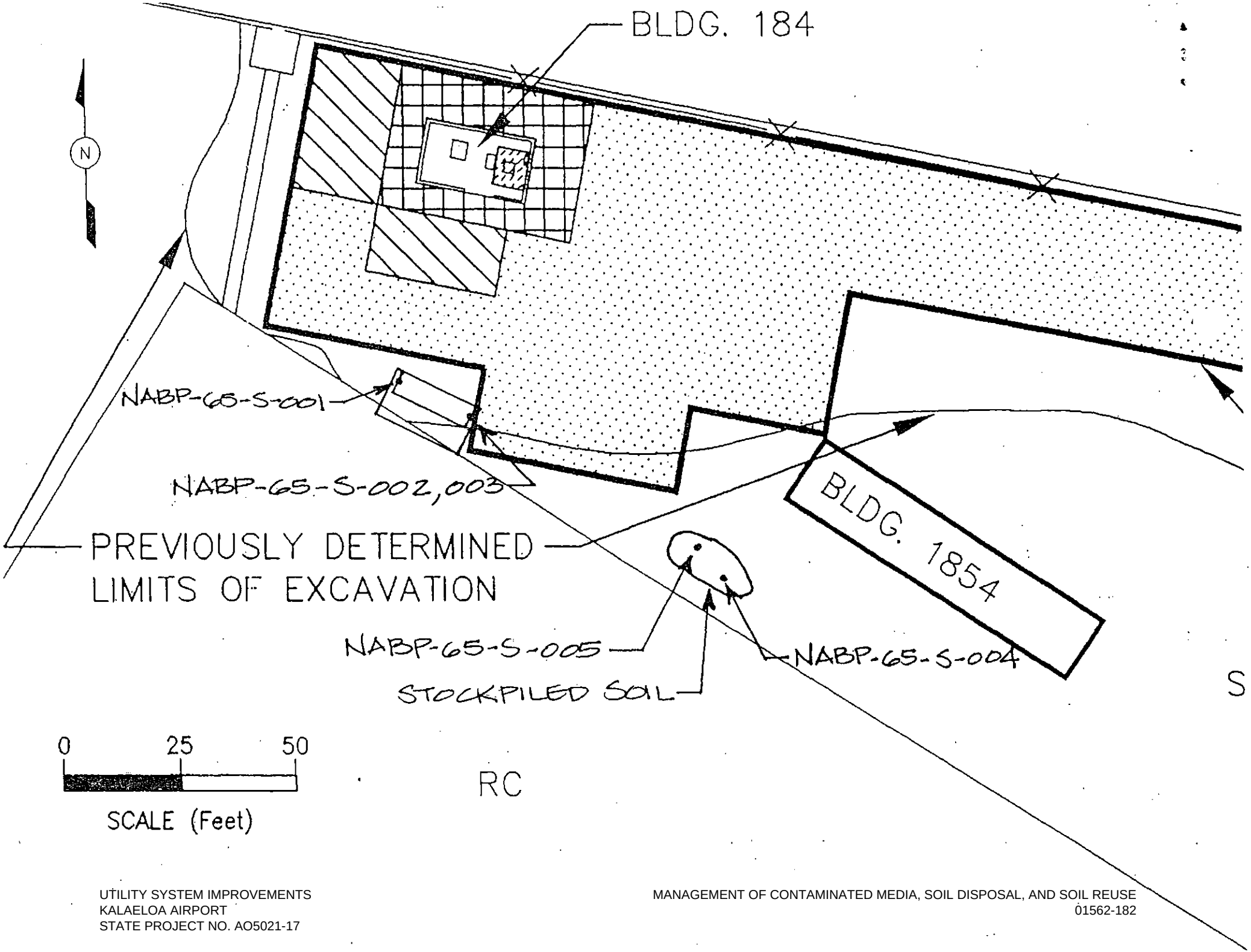
APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result NABP-65-S-003 98-05259-3	NABP-65-S-004 98-05259-4	NABP-65-S-005 98-05259-5
SEMI-VOLATILE, PAH						
Dilution Factor				2	2	2
ACENAPHTHENE	8270	µg/kg	500	<1100	<1200	<1200
ACENAPHTHYLENE	8270	µg/kg	500	<1100	<1200	<1200
ANTHRACENE	8270	µg/kg	500	<1100	<1200	<1200
BENZO(A)ANTHRACENE	8270	µg/kg	500	<1100	<1200	<1200
BENZO(A)PYRENE	8270	µg/kg	500	<1100	<1200	<1200
BENZO(B)FLUORANTHENE	8270	µg/kg	500	<1100	<1200	<1200
BENZO(G,H,I)PERYLENE	8270	µg/kg	500	<1100	<1200	<1200
BENZO(K)FLUORANTHENE	8270	µg/kg	500	<1100	<1200	<1200
CHRYSENE	8270	µg/kg	500	<1100	<1200	<1200
DIBENZ(A,H)ANTHRACENE	8270	µg/kg	500	<1100	<1200	<1200
FLUORANTHENE	8270	µg/kg	500	<1100	<1200	<1200
FLUORENE	8270	µg/kg	500	<1100	<1200	<1200
INDENO(1,2,3-C,D)PYRENE	8270	µg/kg	500	<1100	<1200	<1200
2-METHYLNAPHTHALENE	8270	µg/kg	500	<1100	<1200	<1200
NAPHTHALENE	8270	µg/kg	500	<1100	<1200	<1200
PHENACETIN	8270	µg/kg	500	<1100	<1200	<1200
PHENANTHRENE	8270	µg/kg	500	<1100	<1200	<1200
PYRENE	8270	µg/kg	500	<1100	<1200	<1200
PCBS						
Dilution Factor				1	1	1
PCB-1016 (AROCHLOR 1016)	8082	µg/kg	50	<55	<58	<61
PCB 1221 (AROCHLOR 1221)	8082	µg/kg	100	<110	<120	<120
PCB 1232 (AROCHLOR 1232)	8082	µg/kg	50	<55	<58	<61
PCB-1242 (AROCHLOR 1242)	8082	µg/kg	50	<55	<58	<61
PCB-1248 (AROCHLOR 1248)	8082	µg/kg	50	<55	<58	<61
PCB 1254 (AROCHLOR 1254)	8082	µg/kg	25	<27	<29	<30
PCB 1260 (AROCHLOR 1260)	8082	µg/kg	25	650	310	64

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
† All results are reported on dry basis for soil samples.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory


BLDG. 184
N
NABP-65-S-001
NABP-65-S-002,003
PREVIOUSLY DETERMINED
LIMITS OF EXCAVATION
BLDG. 1854
NABP-65-S-005
NABP-65-S-004
STOCKPILED SOIL
S
0
25
50
SCALE (Feet)
RC

STANDARD INTERVIEW FORM - UST CONFIRMED/SUSPECTED RELEASE

Facility ID number: 9-102254

A. Complete for Confirmed and Suspected Release:

1. Person reporting release (name, company, address, phone):

Henry Rimas # 684-1800

2a. Facility name and address:

NAS - BP Structure
Tank BP 65, ~~Bldg 1588~~ NA 184

2b. Facility contact person name, address, phone:

96862-5050

3. Responsible Party (name, mailing address, phone):

~~Code 110~~
Henry Rimas
NAS - BP
Staff Civil Engineer Office,
Code C10
B.P. HI 96862-5050

B. Complete only if suspected release:

Description and date:

Was release confirmed? Yes or No
(If yes, complete Confirmed release portion)

C. Complete for Confirmed Releases:

Release Number: 990041
Quad Number:

1a. Date release discovered: 9/28/98 Sample Taken 1b. Date release reported: 10/1/98

2. Clean-up initiated (check all that apply) Date cleanup initiated: 9/29/98

N/A Contaminated soil stockpiled
___ Contaminated Soil removed
___ Free product removed
___ Other

3. How was the release detected (complete A or B)?

A. Directly Detected (activity: _____).
(e.g., UST removal, excavation, free product/vapors at surface, etc.)

Apparent extent of contamination (significant, moderate, low (see attached table); field screening results)?

Soil:

Groundwater:

(eff 10/1/95)

B. Indirectly Detected (method: _____).
(e.g., leak detection system, tank tightness test, etc.)

Date tank will be closed: _____.
(*Facility should notify DOH of site conditions during tank closure)

4. Immediate fire, explosion or vapor hazards (Y/N)? N

5. Public health/nuisance complaint (Y/N)? N

6. Product released (gasoline, diesel, waste oil, etc.): unk- abandoned

7. Distance to nearest body of surface water (circle one): <300' 300'-1000' >1000'
Water body type (stream, lagoon, coastline, etc.):

8. Site location (residential, school, light/heavy industrial, etc.): empty lot close to the ~~Airport~~ runway

9. Site actively being developed (Y/N)?

10. Site pending development or pending a property transaction (Y/N)?

11. Additional UST(s) information:

Number of USTs:

UST(s) capacity:

UST(s)/piping construction:

UST(s)/piping integrity (cracks, corrosion holes, etc.)

12. Send additional copies of correspondences to:

OTHER COMMENTS: cd .14, .25, .26 ppm
Total lead ~~30 ppm~~ 64, 37, 37 ppm
PCB .31 ; .064 ppm from stockpile
TPH 36, 50, 40 ppm under Tank

QUICK RESPONSE RANK (directly detected releases only, circle one): HIGH MOD LOW

Signature _____ Date 11/2/98

* Not funded by DERA

during clean-up of PCB, found this abandoned UST.

UST dimensions - 17.5 feet long
5.5 feet diameter

(eff 10/1/95)

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
258 MAKALAPA DR., STE. 100
PEARL HARBOR, HI 96860-3134

MAY - 1 2000

5/3/2000

5090.II
Ser ENV1814/ 1053

28 APR 2000

Mr. Steven Y.K. Chang, Chief
Solid and Hazardous Waste Branch
State of Hawaii
Department of Health
919 Ala Moana Boulevard, Rm. 212
Honolulu, HI 96814

Subj: UNDERGROUND STORAGE TANK (UST) BP-48, FORMER NAVAL AIR STATION, BARBERS POINT (STATE OF HAWAII FACILITY ID NO. 9-102239)

UST No. BP-48, State of Hawaii Facility ID No. 9-102239, and associated piping were removed on January 28, 1999. The work was performed under Contract No. N62742-93-D-0610 by OHM Remediation Services Corporation. The UST was a 567,000-gallon, concrete and steel field constructed tank, which was used to store JP-5 fuel. The site location map and site plan are included as enclosures (1) and (2).

The procedures from the State of Hawaii, Department of Health's "Technical Guidance Manual for Underground Storage Tank Closure and Release Response were followed for this closure action.

The UST was in good condition with no apparent holes. Following the removal of the UST, eight confirmation samples were collected. Five samples were collected from the excavation and three samples from the piping trench. One sample collected from the excavation floor reported total xylene at an approximate concentration of 0.0009 mg/kg. One sample collected from the pipeline trench reported TPH as motor oil at concentration of 21 mg/kg. All other contaminants of concern were not detected at the laboratory's reporting limits. The sample location map and analytical results are included in enclosures (3) through (5).

Based on site observations, field screening results, and the analytical results, the site meets Department of Health criteria for closure. No further action is recommended at this site.

EPA Form 7530-1 is attached as enclosure (6).

5090.II
Ser ENV1814/ 1053

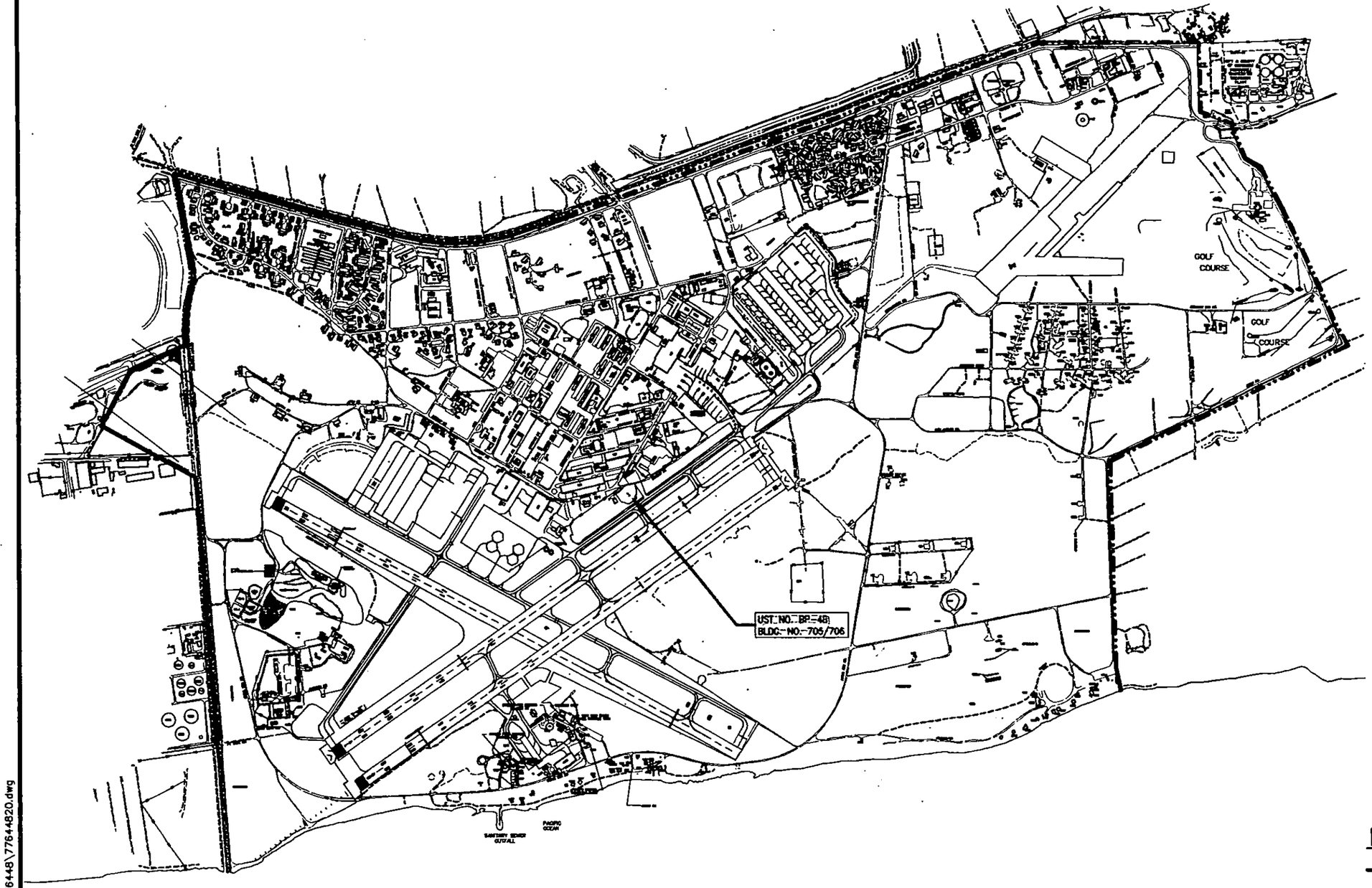
Should you have any questions or require a copy of the record or closure, please contact Mr. Gerald Akai of our Environmental Compliance Division at 474-4506.

Sincerely.

Melvin Z. Waki

MELVIN Z. WAKI, P.E.
Head
Environmental Engineering Department

Encl:
(1) Site Location Map
(2) Site Plan
(3) Sample Location Map
(4) Table F-1 - Excavation Confirmation Samples
(5) Table F-2 - Pipeline Confirmation Samples
(6) EPA Form 7530-1



LEGEND

NAS BARBERS POINT BOUNDARY

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME	PACNAVFACENGCOM
DRAWN BY / DATE	K. LA BRYER 5/11/99
CHECKED BY / DATE	D. KANEKO 5/11/99
APPROVED BY / DATE	A. MATUTE 5/11/99
PROJECT MANAGER / DATE	B. ROBSON 5/11/99
AUTOCAD FILE No.	7764820
SCALE	AS NOTED
SHEET / OF	1 of 1
DOCUMENT CONTROL No.	
OHM PROJECT No.	776448
DRAWING No.	FIG 2

OHM Remediation Services Corp.
KAPOLEI, HI

SITE LOCATION MAP
UST NO. BP-48

NAVAL AIR STATION BARBERS POINT
OAHU, HAWAII

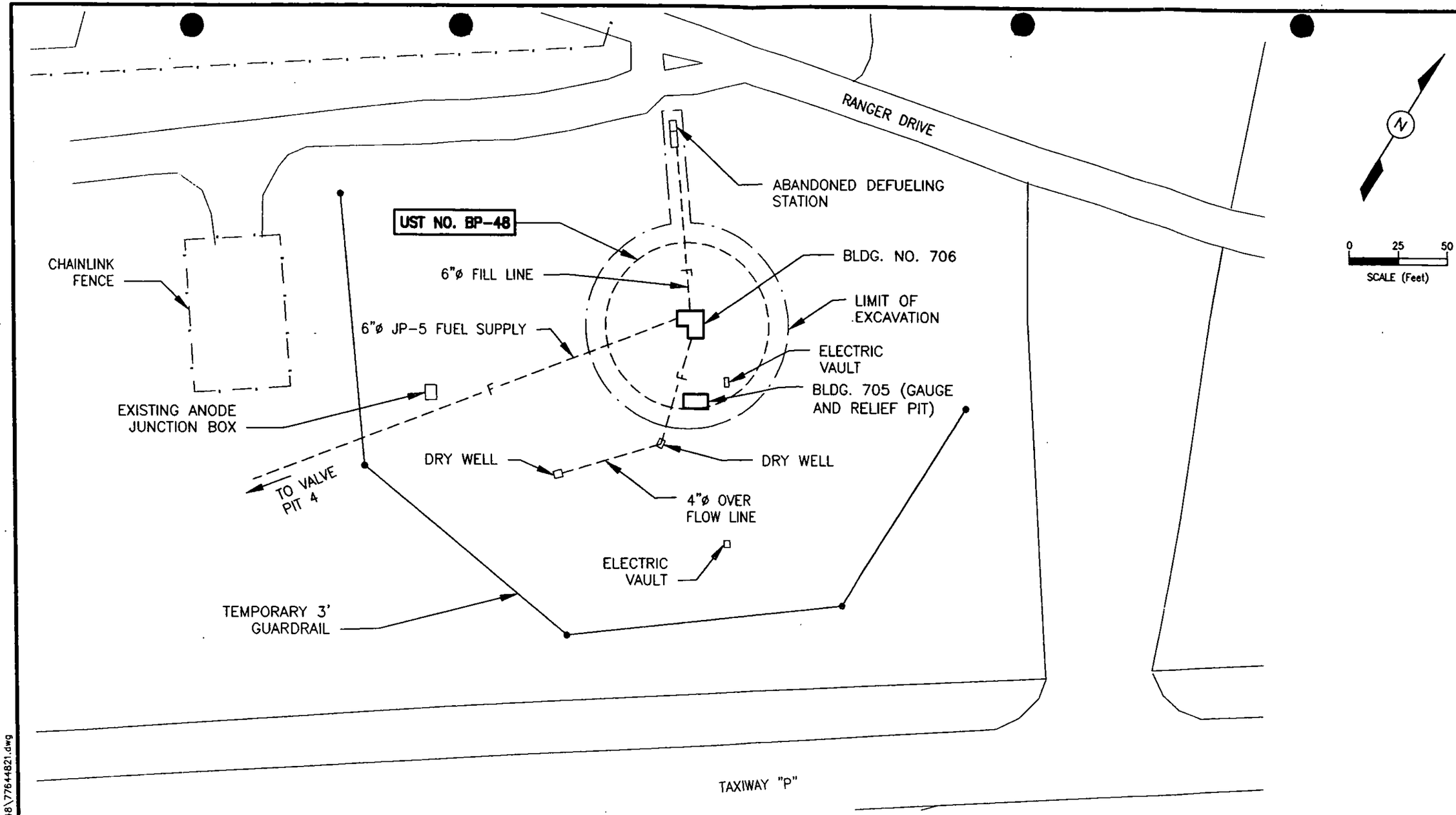
UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL AND SOIL REUSE
01562-137

SOURCE: R.M. TOWELL FIELD SURVEY, U.S. NAVY, PUBLIC WORKS CENTER DRAWINGS.

ENCLOSURE (1)

6, 1999 - 18:10:11 E:\Keith\776448\7764820.dwg



REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME	PACNAVFACENGCOM
DRAWN BY / DATE	K. LA BRYER 5/13/99
CHECKED BY / DATE	D. KANEKO 5/13/99
APPROVED BY / DATE	A. MATUTE 5/13/99
PROJECT MANAGER / DATE	B. ROBSON 5/13/99
AUTOCAD FILE No.	77644821
SCALE	AS NOTED
SHEET	1
OF SHEETS	1
DOCUMENT CONTROL No.	
OHM PROJECT No.	776448
DRAWING No.	FIG 3

OHM Remediation Services Corp.
KAPOLEI, HI

SITE PLAN
UST NO. BP-48

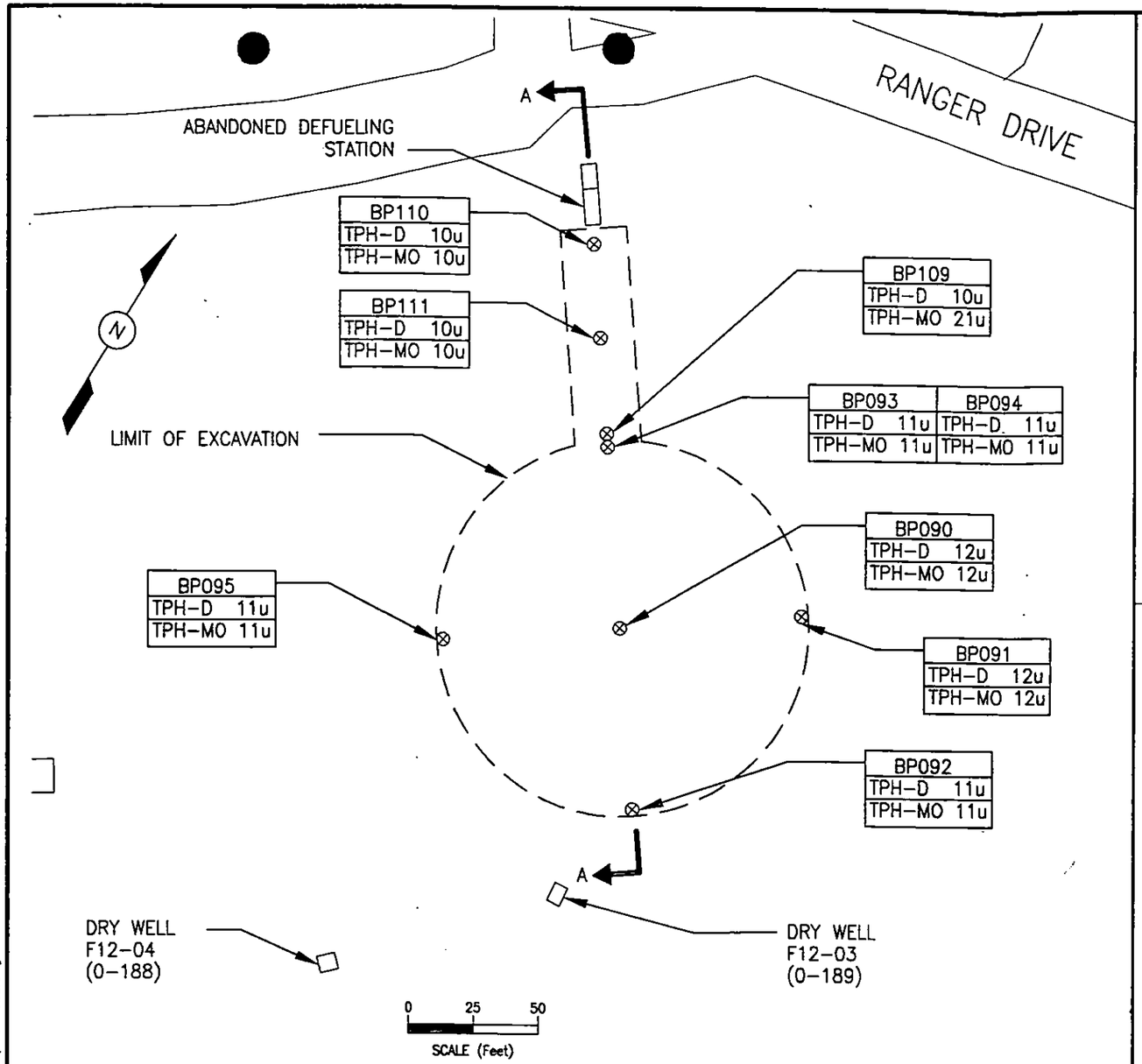
NAVAL AIR STATION BARBERS POINT
OAHU, HAWAII

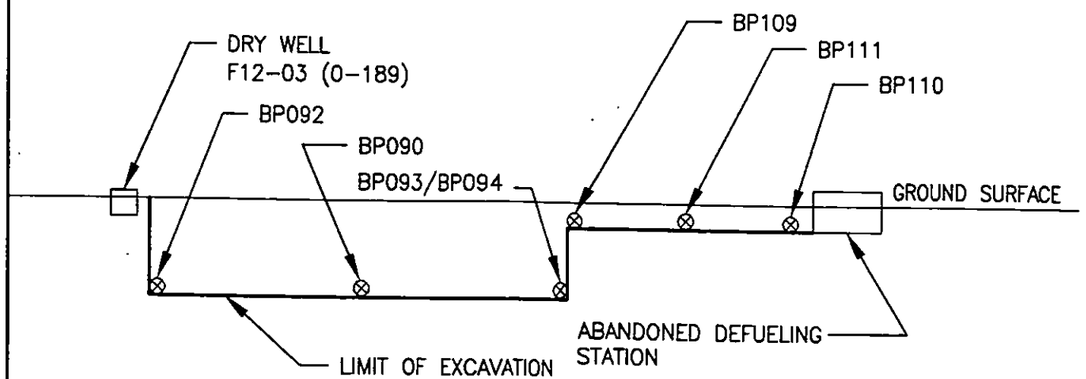
UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO3021-17

MANAGEMENT OF UST ABANDONMENT, SOIL DISPOSAL AND SOIL REUSE
01562-188

ENCLOSURE(2)

May 19, 1999 - 14:36:32 E:\Keith\776448\77644821.dwg





A-A SECTION

SCALE 1"=30'

LEGEND

BP095	SAMPLE WELL NO.
TPH-D	TPH AS DIESEL
TPH-MO	TPH AS MOTOR OIL
U	ANALYTE NOT DETECTED ABOVE THE INDICATED SAMPLE QUANTITATION LIMIT
⊗	SAMPLE LOCATION

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
1	Legend revised	8/1	

CONTRACT NAME: PACNAVFACENGCOM

OHM Remediation Services Corp. KAPOLEI, HI

DRAWN BY: K. LA BRYER	DATE: 5/13/99
CHECKED BY: D. KANEKO	DATE: 5/13/99
APPROVED BY: A. MATUTE	DATE: 5/13/99
PROJECT MANAGER: B. ROBSON	DATE: 5/13/99
AUTOCAD FILE No.: 77644822	
SCALE: AS NOTED	SHEET: 1 OF 1
DOCUMENT CONTROL No.	OHM PROJECT No.: 776448
DRAWING No.: FIG 4	

SAMPLE LOCATION MAP AND A-A SECTION FOR UST NO. BP-48

NAVAL AIR STATION BARBERS POINT OAHU, HAWAII

Aug 03, 1999 - 16:22:40 D:\PROJECTS\776448\77644822.dwg

UTILITY SYSTEM IMPROVEMENTS KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL AND SOIL REUSE
01562-189

ENCLOSURE(3)

Table F-1

Laboratory Results- Excavation Confirmation Samples

Sample ID			BP090		BP091		BP092		BP093		BP094		BP095	
Location			BP-48 Excavation		BP-48 Excavation		BP-48 Excavation		BP-48 Excavation		Field Duplicate of BP093		BP-48 Excavation	
Depth			19' bgs		19' bgs		19' bgs		19' bgs		19' bgs		19' bgs	
COC Number			184150		184150		184150		184150		184150		184150	
Date Collected			02/16/99		02/16/99		02/16/99		02/16/99		02/16/99		02/16/99	
Analyte	EPA Method	Action Limit (mg/kg)	Concentration, mg/kg											
Total Petroleum Hydrocarbons														
TPH as Diesel	8015M	5000	12	U	12	U	11	U	11	U	11	U	11	U
TPH-Motor Oil	8015M	5000	12	U	12	U	11	U	11	U	11	U	11	U
BETX	8021													
Benzene		1.7	0.0059	U	0.0058	U	0.0055	U	0.0054	U	0.0053	U	0.0054	U
Ethylbenzene		0.5	0.0059	U	0.0058	U	0.0055	U	0.0054	U	0.0053	U	0.0054	U
Toluene		34	0.0059	U	0.0058	U	0.0055	U	0.0054	U	0.0053	U	0.0054	U
Xylenes, Total		23*	0.0009	J	0.018	U	0.017	U	0.016	U	0.016	U	0.016	U
PNAs	8270C													
Benzo(a)pyrene		1.0	0.091	U	0.090	U	0.085	U	0.083	U	0.082	U	0.083	U
Naphthalene		41	0.059	U	0.058	U	0.055	U	0.054	U	0.053	U	0.054	U
Acenaphthene		18	0.059	U	0.058	U	0.055	U	0.054	U	0.053	U	0.054	U
Fluoranthene		11	0.050	U	0.049	U	0.046	U	0.045	U	0.045	U	0.045	U

Notes:

Action Limit is DOH Tier 1 Soil Action Limits, rainfall <200 cm/yr, drinking water source not threatened

mg/kg- milligrams per kilogram

TPH denotes total petroleum hydrocarbons.

PNAs denotes polynuclear aromatic compounds.

U denotes the analyte was analyzed for, but was not detected above the reported sample quantitation limit

J denotes the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**DOH Tier 1 Soil Action Level for xylenes is based on total xylenes (o,m,p-xylenes).*

Values in BOLD are above the Action Level.

ENCLOSURE(4)

Table F-2
Laboratory Results - Pipeline Confirmation Samples

Sample ID			BP109		BP110		BP111	
Location			Pipeline		Pipeline		Pipeline	
Depth			4' bgs		7' bgs		5' bgs	
COC Number			184165		184165		184165	
Date Collected			02/26/99		02/26/99		02/26/99	
Analyte	EPA Method	Action Limit (mg/kg)	Concentration, mg/kg					
Total Petroleum Hydrocarbons								
TPH as Diesel	**8015M**	**5000**	10	U	10	U	10	U
TPH-Motor Oil	**8015M**	**5000**	21		10	U	10	U
BETX	**8021B**							
Benzene		**1.7**	0.0051	U	0.0051	U	0.0051	U
Ethylbenzene		**0.5**	0.0051	U	0.0051	U	0.0051	U
Toluene		**34**	0.0051	U	0.0051	U	0.0051	U
Xylenes, Total		**23**	0.015	U	0.015	U	0.015	U
PNAs	**8270C**							
Benzo(a)pyrene		**1.0**	0.046	U	0.046	U	0.046	U
Naphthalene		**41**	0.51	U	0.51	U	0.51	U
Acenaphthene		**18**	0.51	U	0.51	U	0.51	U
Fluoranthene		**11**	0.51	U	0.51	U	0.51	U

Notes:

Action Limit is DOH Tier 1·Soil Action Limits, rainfall <200 cm/yr, drinking water source not threatened.

mg/kg denotes milligrams per kilogram.

TPH denotes total petroleum hydrocarbons.

PNAs denotes polynuclear aromatic compounds.

U denotes the analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J denotes that the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**DOH Tier 1 Soil Action Level for xylenes is based on total xylenes (o,m,p-xylenes).*

Values in BOLD are above the Action Level.

EXHIBIT(S)

United States
Environmental Protection Agency
Washington, DC 20460

Form Approved.
OMB No. 2050-0068
Approval expires 3/31/98

Notification for Underground Storage Tanks

State Agency Name and Address: Solid and Hazardous Waste Branch
919 Ala Moana Blvd. Room 212
Honolulu, HI 96814

STATE USE ONLY
ID NUMBER: 9-102234
DATE RECEIVED: 5/1/2000
A. Date Entered into Computer
pic 5/3/2000

TYPE OF NOTIFICATION

☐ A. NEW FACILITY ☐ B. AMENDED ☒ C. CLOSURE

No. of tanks ___1___ at facility

____ No. of continuation sheets attached

INSTRUCTIONS

Please type or print in ink all items except "signature" in section V. This form must be completed for each location containing underground storage tanks. If more than five (5) tanks are owned at this location, photocopy the following sheets, and staple continuation sheets to the form.

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or in the absence of such records, you knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means--

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for storage, use, or dispensing of regulated substances, and

in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before discontinuation of its use.

(c) If the State so requires, any facility that has underground any changes to facility information or tank system status (only amended tank information needs to be included).

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in Section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Send completed forms to:
Department of Health
Solid and Hazardous Waste Branch
919 Ala Moana Blvd. Room 212
Honolulu, HI 96814

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use. 3. If the State requires notification of any amendments to facility, send information to State agency immediately.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
Naval Air Station Barbers Point

Street Address
Staff Civil Engineer

Buildings 705 and 706

City	State	Zip Code
Barbers Point	HI	96862

County
Honolulu

Number (include Area Code)
Contact: Will Sims (808) 684-0750

II. LOCATION OF TANK(S)

If required by State, give the geographic location of tanks by degrees, minutes, and seconds. Examples Lat. 42, 36, 12 N Long. 85, 24, 17 W
Latitude _____ Longitude _____

Facility Name of Company Site Identifier, as applicable
Naval Air Station Barbers Point

(if same as Section I, mark box here) ☐

Street Address
Tank BP-48, Buildings 705 and 706, Midway and Ranger

City	State	Zip Code
Barbers Point	HI	96862

County	Municipality
Honolulu	-

United States
Environmental Protection Agency
Washington, DC 20460

Form Approved.
OMB No. 2050-0068
Approval expires 3/31/98

Notification for Underground Storage Tanks

III. TYPE OF OWNER

- [x] Federal Government
- [ ] State Government
- [ ] Local Government
- [ ] Commercial
- [ ] Private

IV. INDIAN LANDS

Tanks are located on land within an Indian Reservation or on other trust lands. [ ]

Tribe or Nation:

Tanks are owned by native American nation, tribe, or individual. [ ]

V. TYPE OF FACILITY

- [ ] Gas Station
- [ ] Petroleum Distributor
- [ ] Air Taxi (Airline)
- [ ] Aircraft Owner
- [ ] Auto Dealership
- [ ] Railroad
- [ ] Federal - Non-Military
- [x] Federal - Military
- [ ] Industrial
- [ ] Contractor
- [ ] Trucking/Transport
- [ ] Utilities
- [ ] Residential
- [ ] Farm
- [ ] Other (Explain) _____

VI. CONTACT PERSON IN CHARGE OF TANKS

Name:	Job Title:	Address:	Phone Number (Include Area Code):
Will Sims	Environmental Protection Specialist	NAS Barbers Point Staff Civil Engineer, Building 117 Barbers Point, HI 96862	(808) 684-0750

VII. FINANCIAL RESPONSIBILITY

[ ] I have met the financial responsibility requirements in accordance with 40 CFR Subpart H

Check All that Apply

- [x] Self Insurance
- [ ] Commercial Insurance
- [ ] Risk Retention Group
- [ ] Guarantee
- [ ] Surety Bond
- [ ] Letter of Credit
- [ ] State Funds
- [ ] Trust Fund
- [ ] Other Method Allowed - Specify

VIII. CERTIFICATION (Read and sign after completing all section)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative (Print)	Signature	Date Signed
	Will Sims	04/23/99

Paperwork Reduction Act Notice

EPA estimates public reporting burden for this form to average 30 minutes per response including time for reviewing instructions, gathering and maintaining the data needed and completing and reviewing the form. Send comments regarding this burden estimate to Chief, Information Policy Branch (2136), U.S. Environmental Protection Agency, 401 M Street, Washington D.C. 20460, marked "Attention Desk Officer for EPA." This form amends the previous notification form as printed in 40 CFR Part 280, Appendix I. Previous editions of this notification form may be used while supplies last.

United States
Environmental Protection Agency
Washington, DC 20460

Form Approved.
OMB No. 2050-0068
Approval expires 3/31/98

Notification for Underground Storage Tanks

DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification Number	Tank No. BP-48	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (mark only one)					
Currently In Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☐	☐	☐	☐
Amendment of Information	☐	☐	☐	☐	☐
2. Date of Installation (mo./year)	Unknown				
3. Estimated Total Capacity (gallons)	500,000				
4. Material of Construction (mark all that apply)					
Asphalt Coated or Bare Steel	☒	☐	☐	☐	☐
Cathodically Protected Steel	☐	☐	☐	☐	☐
Epoxy Coated Steel	☐	☐	☐	☐	☐
Composite (Steel with Fiberglass)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Lined Interior	☐	☐	☐	☐	☐
Double Walled	☒	☐	☐	☐	☐
Polyethylene Tank Jacket	☐	☐	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Excavation Liner	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please specify					
Has tank been repaired?					
5. Piping (Material) (mark all that apply)					
Bare Steel	☒	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Copper	☒	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Double Walled	☐	☐	☐	☐	☐
Secondary Containment	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. Piping (Type) (mark all that apply)					
Suction: no valve at tank	☒	☐	☐	☐	☐
Suction: valve at tank	☒	☐	☐	☐	☐
Pressure	☒	☐	☐	☐	☐
Gravity Feed	☐	☐	☐	☐	☐
Has piping been repaired?					

United States
Environmental Protection Agency
Washington, DC 20460

Form Approved.
OMB No. 2050-0068
Approval expires
3/31/98

Notification for Underground Storage Tanks

k Identification Number	Tank No. BP-48	Tank No.	Tank No.	Tank No.	Tank No.
7. Substance Currently or Last Stored in Greatest Quantity by Volume					
Gasoline	☐	☐	☐	☐	☐
Diesel	☐	☐	☐	☐	☐
Gasohol	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Heating Oil	☐	☐	☐	☐	☐
Used Oil	☒	☐	☐	☐	☐
Other	JP-5				
Please Specify					
Hazardous Substance	☐	☐	☐	☐	☐
CERCLA name and/or					
CAS number					
Mixture of Substances	☐	☐	☐	☐	☐
Please Specify					

X. TANKS OUT OF USE, OR CHANGE IN SERVICE

Closing of Tank					
A. Estimated date last used (mo./day/year)	1994				
B. Estimated date tank closed (mo./day/year)	01/28/99				
C. Tank was removed from ground	☒	☐	☐	☐	☐
D. Tank was closed in ground	☐	☐	☐	☐	☐
E. Tank filled with inert material	☐	☐	☐	☐	☐
Describe					
F. Change in service	☐	☐	☐	☐	☐
2. Site Assessment Completed	☒	☐	☐	☐	☐
Evidence of a leak detected	☐	☐	☐	☐	☐

EPA Form 7530-1 (Rev. 8-94) Electronic and Paper versions acceptable.
Previous editions may be used while supplies last.

United States
Environmental Protection Agency
Washington, DC 20460

Form Approved.
OMB No. 2050-0068
Approval expires 3/31/98

Notification for Underground Storage Tanks

ERTIFICATION OF COMPLIANCE (COMPLETE FOR ALL NEW AND UPGRADED TANKS AT THIS LOCATION)

Tank Identification Number	Tank No. ____	Tank No. ____	Tank No. ____	Tank No. ____	Tank No. ____
1. Installation					
A. Installer certified by tank and piping manufacturers	☐	☐	☐	☐	☐
B. Installer certified or licensed by the implementing agency	☐	☐	☐	☐	☐
C. Installation inspected by a registered engineer	☐	☐	☐	☐	☐
D. Installation inspected and approved by implementing agency	☐	☐	☐	☐	☐
E. Manufacturer's installation checklists have been completed	☐	☐	☐	☐	☐
F. Another method allowed by State agency. Please specify.	_____	_____	_____	_____	_____
2. Release Detection (Mark all that apply)	TANK / PIPING	TANK / PIPING	TANK / PIPING	TANK / PIPING	TANK / PIPING
A. Manual tank gauging	☐	☐	☐	☐	☐
B. Tank tightness testing	☐	☐	☐	☐	☐
C. Inventory Controls	☐	☐	☐	☐	☐
D. Automatic tank gauging	☐	☐	☐	☐	☐
E. Vapor monitoring	☐	☐	☐	☐	☐
F. Groundwater monitoring	☐	☐	☐	☐	☐
G. Verify monitoring/secondary containment	☐	☐	☐	☐	☐
H. Automatic line leak detectors	☐	☐	☐	☐	☐
I. Line tightness testing	☐	☐	☐	☐	☐
J. Other method allowed by implementing agency.	☐	☐	☐	☐	☐
Please specify	_____	_____	_____	_____	_____
3. Spill and Overfill Protection					
A. Overfill device installed	☐	☐	☐	☐	☐
B. Spill device installed	☐	☐	☐	☐	☐

OATH: I certify the information concerning installation that is provided in section XI is true to the best of my belief and knowledge.

Installer: _____ (Name) _____ (Signature) _____ (Date)

_____ (Position) _____ (Company)

Form 7530-1 (Rev. 8-94) Electronic and Paper versions acceptable.
Previous editions may be used while supplies last.

Hawaii DOH UST Checklist for Final Release Response Reports

Please provide the following information:

Facility ID number assigned by DOH: No. 9-102239 Leak ID number:

Facility name and address: Naval Air Station (NAS) Barbers Point
UST BP-48, Bldgs. 705, 706
Barbers Point, Hawaii 96862-5050

Facility contact name, address, and phone number: Will Sims
NAS Staff Civil Engineer
Building 117
NAS Barbers Point, Hawaii 96862-5050
Phone: (808) 808-684-1800

Title of submitted final report: Record of Closure

Date submitted: July 1999

Report prepared by (name, address, phone): OHM Remediation Services Corp./IT Group
91-238 Kalaeloa Blvd.
Kapolei, HI 96707
Ph. (808) 682-1800

CHECKLIST FOR CLOSURE, RELEASE RESPONSE & REMEDIAL ACTIONS

I. STATUS OF SITE AND RECOMMENDATION (check one):

	X	a. No further action requested - Tier 1, DOH-recommended soil and groundwater action levels adhered to.
		b. No further action requested - Tier 2, site-specific soil action levels generated and adhered to (required documentation submitted).
		c. No further action requested - Tier 3 risk assessment prepared and adhered to (required documentation submitted).

Check the appropriate box (Option blocked out if not acceptable).

yes	no	NA	II. FACILITY INFORMATION	Ref#
			Contacts:	
X			a. Facility name, address, telephone number, and DOH identification number listed.	App. A
X			b. Name, title, address, and telephone number of facility owner listed.	App. A
X			c. Name, title, address, and telephone number of responsible party listed.	App. A
			Site Description:	
X			a. Site location and surrounding area described, including nearby surface water bodies and the location of populations that could be affected by the release, if any.	Sec. 2
X			b. Vicinity map, topographic map, and site plan map (to scale) provided.	Fig. 2, 3, 4
X			c. Future intended use of site discussed.	Sec. 2.1
			III. UST INFORMATION	
			A. UST System Description:	
X			a. Amended Notification Form included (EPA Form 7530).	App. A
X			b. Map showing former locations of USTs removed from site and/or UST systems closed in place provided.	Fig. 3
X			c. Complete description of UST system provided (number of USTs, age, construction, capacity, storage history, piping, etc.).	App.A Sec. 3.3
		X	d. Results of release-detection testing performed on the closed USTs summarized.	
			B. UST System Closure Information:	
X			a. Procedures followed to remove UST system or close in place described.	Sec. 3.2, 3.3
X			b. Date UST(s) and associated piping excavated and removed or closed in place noted.	Sec. 3.3
X			c. Bottom depth of UST(s) noted.	Sec. 3.3
X			d. Integrity of UST(s) and associated piping on removal described (photos included).	Sec. 3.3
X			e. Type and extent of fill material originally enclosing UST(s) described.	Sec. 3.3
X			f. Type, source, and volume of material used to backfill UST excavation described. Description and results of compaction testing (if any) provided.	Sec 3.4
			C. UST Cleaning:	
X			a. Actions taken to inert UST system (e.g., displacement, evacuation) and monitor lower explosive limit (LEL) during UST system removal described.	Sec. 3.2
X			b. Procedures followed to clean UST(s) and associated pipings noted.	Sec. 3.2
X			c. Product, sludge, and rinsate removed from UST(s) properly recycled, reused, or disposed of (include manifests, and determination of hazardous waste characteristics as per 40 CFR Part 261). Hazardous Waste Section of DOH notified if more than 27 gallons of hazardous waste was left on site.	Sec. 5
X			d. Type, volume, and treatment/disposal method for other investigation derived waste generated during UST system cleaning activities described.	Sec. 5
			D. UST System Disposal:	
X			a. UST(s) and associated piping removed from site properly disposed of, reused, or recycled. Copy of the disposal/recycled certificate or manifests showing name of company, disposal date, and place tanks and pipings were taken to provided.	Sec. 5

yes	no	NA	IV. INITIAL RELEASE RESPONSE/CONFIRMATION	Ref#
X			a. Confirmed Release Notification Form submitted to DOH.	NA
X			b. Source, cause, estimated duration and quantity (if known), and discovery date of the release discussed.	Sec. 3.2
X			c. Degree and extent of soil and/or groundwater contamination on initial removal/investigation of UST(s) described.	Sec. 3.3
X			d. Location and results of field screening tests described and included on a site map(s) and a cross section(s) as necessary.	Sec. 3.3
X			e. Actions taken to prevent further migration of released substance described (e.g., source removed, soil excavated, free product recovery, etc.).	Sec. 3.2
		X	f. Methods and results of free product recovery, treatment, and disposal discussed.	
X			g. Status of excavation(s) (left open, backfilled, etc.) described.	Sec. 3.4
			V. STOCKPILED SOIL	
X			a. Design and management procedures for soil stockpiles described (including design of stockpile cell, volume of stockpiled soil, segregation of soils, etc.)	Sec. 3.2
			VI. SITE INVESTIGATION/CHARACTERIZATION	
			A. Local Geology, Hydrogeology, and Well Information:	
X			a. Local and regional geology characterized.	Sec. 2.2
X			b. Important geologic and/or manmade preferential migration pathways delineated and described.	Sec. 2.2
X			c. Local and regional hydrogeology characterized in accordance with HIDOH guidelines (1992, 1995b, and any updates). (Including known or estimated depth to uppermost aquifer, water quality and status of aquifer, groundwater flow direction, etc.)	Sec. 2.3
X			d. Nearby groundwater extraction wells denoted and well usages described if groundwater impacted or potentially impacted.	Sec. 2.1
X			e. Surface water bodies within 1/4 mile of the site noted and characterized.	Sec. 2.3
X			f. Approximate annual rainfall for site discussed.	Sec. 2.4
			B. Soil and Groundwater Sampling Procedures:	
X			a. Field screening instrument type(s), calibrations, and sampling procedures described.	Sec. 3.3
X			b. Field screening results summarized and sample locations and depths noted.	Sec. 3.3
X			c. Procedures, equipment, and methods of taking soil and groundwater samples for laboratory analysis clearly described. Sampling methods followed TGM or other DOH-approved guidelines.	Sec. 4.1
		X	d. Monitoring well(s) design described and included on boring log(s).	NA
		X	e. Method used for monitoring well development (e.g., surging, overpumping, etc.) and purging prior to groundwater sample collection, volume of water removed, and results of field measurements for standard water quality parameters (i.e., turbidity, temperature, pH, specific conductance, etc.) described.	NA
X			f. Samples to be tested for TPH-gasoline, TPH-diesel, VOCs, HVOCs and volatile PAHs minimally disturbed and not composited.	Sec. 4.1
X			g. Confirmatory soil samples for vadose-zone impact not taken below groundwater interface.	Sec. 4.1
X			h. Sample preservation, documentation, and shipping information provided (including copy of Chain of Custody form(s)).	App. F

yes	no	NA	VI. SITE INVESTIGATION/CHARACTERIZATION (Cont.)	Ref #
X			i. Methods for chemical analyses denoted (8015M, 8010, etc.).	Sec. 4.1
X			j. Holding times met and laboratory QA/QC within acceptable range.	App. G
X			k. Formal laboratory reports including in appendix. (Chromatograms required only if requested by DOH.)	App. F
			C. Soil Investigation:	
X			a. Site map showing all soil sample locations presented (location of closed UST system(s) included).	Fig. 4
X			b. Summary of all laboratory analysis results presented in table form (including sample ID number, laboratory reporting limits, depth at which sample was taken, target cleanup criteria, etc.).	App. G
X			c. Lateral and vertical extent and magnitude of impacted soil determined in accordance with HIDOH guidelines (1992, 1995a, 1995b, and any updates). Extent of contamination described in text and clearly denoted on site map(s) drawn to scale. Vertical extent of impact denoted on map (use isopachs if necessary) drawn to scale and/or in cross sections. Sample locations included on map(s) and, if applicable, on cross section(s).	Sec. 4.1.1
			D. Groundwater/Surface water Investigation:	
		X	a. Site map showing groundwater sample locations and depths presented (location of closed UST system(s) included). Surface water sampling results included if applicable. Potentiometric surface contour maps illustrating water level measurements at monitoring well location, groundwater gradient(s) and general direction(s) of groundwater flow across site included. Tidal influence, if any, on groundwater gradient and flow direction at site discussed.	
		X	b. Extent and magnitude of impacted groundwater and utility of impacted or potentially impacted groundwater determined in accordance with HIDOH guidelines (1992, 1995a, 1995b, 1995c, and any updates). Extent of contamination described in text and clearly denoted on site map(s) drawn to scale. Sample locations included on map(s).	
		X	c. Vertical extent of solvent or other dense, nonaqueous-phase-liquids (DNAPLs) contamination defined and depicted on map (use isopachs if necessary) drawn to scale and/or in representative cross section(s) through site.	
			VII. REMEDIAL ACTIONS	
X			a. Extent and depth of all excavations clearly denoted on map drawn to scale. Locations of confirmatory samples noted. Volume and type of excavated material described in text.	Fig. 4
X			b. Design and results of treatment/disposal methods clearly described and supported by confirmatory laboratory analyses.	Sec. 4
X			c. Final disposition of remediated media described. Manifests and/or bills of lading for all contaminated media remediated offsite provided in appendix.	Sec. 3.5
X			d. Type, source, and volume of backfill material described. (Include compaction test results, if any.)	Sec. 3.4
		X	e. Generation of site-specific Tier 2 soil action levels followed guidelines set forth in DOH document "Risk-Based Corrective Actions and Decision Making at Sites With Contaminated Soil and Groundwater (HIDOH, 1995a)." Tier 3 risk assessment followed guidance set forth in DOH TGM (HIDOH, 1992), above noted document, USEPA document "Risk Assessment Guidance for Superfund (EPA/540/1-89)," and additional procedures as otherwise directed or approved by DOH. Tier 3 risk assessment summarizes all previous work at the site and is a "stand alone" document.	
X			f. All contaminated media that exceed Tier 1, 2, or 3 action levels applied to the site have been remediated.	Sec. 4

yes	no	NA	VII. REMEDIAL ACTIONS (Cont.)	Ref #
		X	g. Monitoring wells not to be reused in the future properly sealed and decommissioned.	
X			VIII. REPORT SIGNED AND DATED	

REMARKS:

BIBLIOGRAPHY OF SUPPORTING DOCUMENTS:

1.

SIGNATURES:

FACILITY RESPONSIBLE PARTY: Will Sims Date: 7/26/99

Title:

PREPARER OF REPORT: U.B. Rabon Date: 7-23-99

Title: Project Manager

MAY - 5 1986

Notification for Underground Storage Tanks

FORM APPROVED OMB NO. 2050-0049 APPROVAL EXPIRES 6-30-88

STATE USE ONLY

I.D. Number 9100975

Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means:

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances; and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must by completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached: 13

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)

DEPT. OF THE NAVY

Street Address

NAVAL AIR STATION (NAS)

County

BARBERS POINT

City: BARBERS POINT, HAWAII State: HAWAII ZIP Code: 96862-5050

Area Code: 808 Phone Number: 684-8201

Type of Owner (Mark all that apply ☒)

- ☐ Current
- ☐ Former
- ☐ State or Local Gov't
- ☒ Federal Gov't (GSA facility I.D. no. UIC # N00334)
- ☐ Private or Corporate
- ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section I, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State ZIP Code

Indicate number of tanks at this location: 67

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☐) Job Title Area Code Phone Number

JERRY YOGI, ENVIRONMENTAL ENGINEER, 808 - 684-8201

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative: LCDR GARY M. FITZPATRICK, CEC

Signature

Date Signed: 5/2/86

CONTINUE ON REVERSE SIDE

By DIRECTION OF THE COMMANDING OFFICER

REPRODUCED AT GOVERNMENT EXPENSE

UST SYSTEM MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL AND SOIL REUSE

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 1	Tank No. 2	Tank No. 3	Tank No. 4	Tank No. 5
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☒	☒	☒	☒
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	8	42	26	26	26
3. Estimated Total Capacity (Gallons)	2,000	500	990	660	660
4. Material of Construction (Mark one ☒)					
Steel	☐	☐	☒	☒	☒
Concrete	☐	☒	☐	☐	☐
Fiberglass Reinforced Plastic	☒	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☐	☐	☐	☐
Unknown	☐	☐	☒	☒	☒
Other, Please Specify		4 COATS SILICATE OF SODA			
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☒	☐	☐	☐
Unknown	☐	☐	☒	☒	☒
Other, Please Specify	PEA GRAVEL BACKFILL				
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☒	☒	☐	☒	☒
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify			FUEL OIL		
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., cement, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 6	Tank No. 7	Tank No. 8	Tank No. 9	Tank No. 10
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☒	☒	☒	☒
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	26	26	26	26	26
3. Estimated Total Capacity (Gallons)	990	990	660	660	990
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☒	☒
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☒	☒	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	FUEL OIL	FUEL OIL			FUEL OIL
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. NAVY Location (from Section II) NAS BARBERS PT Page No. 4 of 15 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 11	Tank No. 12	Tank No. 13	Tank No. 14	Tank No. 15
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☒	☒	☒	☐
Temporarily Out of Use	☐	☐	☐	☐	☒
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	26	26	26	26	26
3. Estimated Total Capacity (Gallons)	660	990	990	660	660
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☒	☒
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☒	☐	☐	☒	☒
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify		FUEL OIL	FUEL OIL		
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) US Navy Location (from Section II) NAS Barbers Pt

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 16	Tank No. 17	Tank No. 18	Tank No. 19	Tank No. 20
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☐	☐	☐	☒	☒
Temporarily Out of Use	☒	☒	☒	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	26	26	26	28	28
3. Estimated Total Capacity (Gallons)	990	660	990	675	2,000
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☒	☒
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☒	☐	☒	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	FUEL OIL		FUEL OIL		FUEL OIL
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. Navy Location (from Section II) NAS Barbers Pt

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 21	Tank No. 22	Tank No. 23	Tank No. 24	Tank No. 25
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☒	☒	☒	☒
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	43	2	2	42	42
3. Estimated Total Capacity (Gallons)	1,100	163	375	2,500	2,500
4. Material of Construction (Mark one ☒)					
Steel	☐	☒	☒	☐	☐
Concrete	☒	☐	☐	☒	☒
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☒	☒	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☐	☐	☐	☐
Unknown	☐	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☒	☒	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☐	☐	☒	☒
Unknown	☐	☐	☐	☐	☐
Other, Please Specify		SURROUND BY SAND OR PEA GRAVEL	SURROUND BY SAND OR PEA GRAVEL		
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☒	☒	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☒	☒
Other, Please Specify	OIL/WATER MIX				
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. Navy Location (from Section II) NAS Barbers Pt

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 26	Tank No. 27	Tank No. 28	Tank No. 29	Tank No. 30
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☐	☒	☒	☒	☒
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	32	41	41	41	41
3. Estimated Total Capacity (Gallons)	55	5,000	10,000	25,000	25,000
4. Material of Construction (Mark one ☒)					
Steel	☐	☒	☐	☒	☒
Concrete	☐	☐	☒	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify	GALVANIZED IRON				
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☒	☒
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☒	☐	☐
Unknown	☒	☒	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☒	☒
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☐	☐	☐
Other, Please Specify			NONE		
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☒	☐	☐
Other, Please Specify	FUEL OIL	FUEL OIL		AVGAS	AVGAS
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	2/79	2/77	2/77	2/77
b. Estimated quantity of substance remaining (gal.)		1	1	1	1
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. NAVY Location (from Section II) NAS BARBERS PT

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 31	Tank No. 32	Tank No. 33	Tank No. 34	Tank No. 35
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☒	☒	☒
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	41	41	41	41	41
3. Estimated Total Capacity (Gallons)	5,000	5,000	5,000	5,000	260
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☒	☒
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☒	☒	☒	☒	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☒
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☒	☒	☒	☒	☒
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	AVGAS	AVGAS	AVGAS	AVGAS	AVGAS
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	2/77	2/77	2/77	2/77	2/77
b. Estimated quantity of substance remaining (gal.)	1	1	1	1	1
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. Navy Location (from Section II) NAS Barbers Pt

V. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 36	Tank No. 37	Tank No. 38	Tank No. 39	Tank No. 40
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☒	☒	☒
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	41	41	41	41	41
3. Estimated Total Capacity (Gallons)	260	260	300	300	300
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☒	☒
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☒	☒	☒
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☒	☒	☒	☒	☒
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	AVGAS	AVGAS	AVGAS	AVGAS	AVGAS
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	2/77	2/77	2/77	2/77	2/77
b. Estimated quantity of substance remaining (gal.)	1	1	1	1	1
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. NAVY Location (from Section II) NAS BARBERS PT

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 41	Tank No. 42	Tank No. 43	Tank No. 44	Tank No. 45
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☐	☐	☒	☒	☒
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	26	26	39	39	12
3. Estimated Total Capacity (Gallons)	10,000	10,000	6,000	5,000	10,000
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☒	☒
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☒	☒	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☒	☒	☒
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	AVGAS	AVGAS	UNLEADED	UNLEADED	
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U. S. NAVY Location (from Section II) NAS BARBERS P Page No. 11 of 15 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 46	Tank No. 47	Tank No. 48	Tank No. 49	Tank No. 50
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☒	☒	☐	☐
Temporarily Out of Use	☐	☐	☐	☒	☒
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	37	37	43	43	43
3. Estimated Total Capacity (Gallons)	7,500	7,500	567,000	25,000	25,000
4. Material of Construction (Mark one ☒)					
Steel	☒	☒	☒	☐	☐
Concrete	☐	☐	☐	☒	☒
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☒	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☒	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☐	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☒	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☐	☐	☒	☒	☒
Unknown	☒	☒	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☒	☒	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	UNLEADED		JP-5	WASTE FUEL	WASTE FUEL
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	10 / 81	10 / 81
b. Estimated quantity of substance remaining (gal.)				1	1
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. Navy Location (from Section II) NAS Barbers Pt

VII. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 51	Tank No. 52	Tank No. 53	Tank No. 54	Tank No. 55
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☒	☒	☒	☒	☒
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	43	43	22	28	28
3. Estimated Total Capacity (Gallons)	25,000	25,000	500	2,500	2,500
4. Material of Construction (Mark one ☒)					
Steel	☐	☐	☒	☒	☒
Concrete	☒	☒	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☒	☒	☒
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☒	☒	☒
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☒	☒	☒	☒	☒
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify					
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR					
Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 56	Tank No. 57	Tank No. 58	Tank No. 59	Tank No. 60
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	X	X		X	X
Temporarily Out of Use			X		
Permanently Out of Use					
Brought into Use after 5/8/86					
2. Estimated Age (Years)	25	22	19	17	16
3. Estimated Total Capacity (Gallons)	1,000	1,000	110	1,000	550
4. Material of Construction (Mark one ☒)					
Steel	X	X		X	X
Concrete					
Fiberglass Reinforced Plastic					
Unknown			X		
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None					
Unknown	X	X	X	X	X
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection					
Painted (e.g., asphaltic)					
Fiberglass Reinforced Plastic Coated					
None					
Unknown	X	X	X	X	X
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel					
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown	X	X	X	X	X
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty					
b. Petroleum					
Diesel	X	X	X	X	X
Kerosene					
Gasoline (including alcohol blends)					
Used Oil					
Other, Please Specify					
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance OR Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	10/84	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., concrete)	N/A				

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. NAVY Location (from Section II) NAS BARBERS PT. Page No. 14 of 15 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 61	Tank No. 62	Tank No. 63	Tank No. 64	Tank No. 65
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	X	X	X	X	X
Temporarily Out of Use					
Permanently Out of Use					
Brought into Use after 5/8/86					
2. Estimated Age (Years)	12	9	UNKNOWN	42	42
3. Estimated Total Capacity (Gallons)	950	360	280	2,000	3,000
4. Material of Construction (Mark one ☒)					
Steel	X	X	X	X	X
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None					
Unknown	X	X	X	X	X
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection					
Painted (e.g., asphaltic)					
Fiberglass Reinforced Plastic Coated					
None					
Unknown	X	X	X	X	X
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel					
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown	X	X	X	X	X
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty					
b. Petroleum					
Diesel	X	X			
Kerosene					
Gasoline (including alcohol blends)					
Used Oil					
Other, Please Specify			AVGAS	AVGAS	AVGAS
c. Hazardous Substance					
Please Indicate Name of Principal CERCLA Substance					
OR					
Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)					

REPRODUCED AT GOVERNMENT EXPENSE

Owner Name (from Section I) U.S. NAVY Location (from Section II) NAS BARBERS PT. Page No. 15 of 15 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential Number (e.g., 1,2,3...)	Tank No. 66	Tank No. 67	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply ☒)					
Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☒	☒	☐	☐	☐
Permanently Out of Use	☐	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	1	1			
3. Estimated Total Capacity (Gallons)	2,000	2,000			
4. Material of Construction (Mark one ☒)					
Steel	☐	☐	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐
Unknown	☒	☒	☐	☐	☐
Other, Please Specify					
6. External Protection (Mark all that apply ☒)					
Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒)					
Bare Steel	☐	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☒	☒	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒)					
a. Empty	☐	☐	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify	NEW BUILDING + TANK EMPTY	NEW BUILDING + TANK EMPTY			
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
OR					
Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service)					
a. Estimated date last used (mo/yr)	/	/	/	/	/
b. Estimated quantity of substance remaining (gal.)					
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

REPRODUCED AT GOVERNMENT EXPENSE

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM

PLAN OF ACTION FOR EPA/DOH RELEASE DETECTION COMPLIANCE

Attachment (1): Master UST Inventory
Attachment (2): Plan of Action: Category I Tanks
Attachment (3): Plan of Action: Category II Tanks
Attachment (4): Plan of Action: Category III Tanks
Attachment (5): Plan of Action: Category IV Tanks
Attachment (6): Plan of Action: Category V Tanks
Attachment (7): Plan of Action: Category VI Tanks

1. Attachment (1) to this enclosure provides a revised list of USTs at NAS Barbers Point. These USTs can be grouped into six categories, each of which will require different actions to bring them into compliance with Federal and State release detection requirements. The intent of this plan is to detail the actions required to bring all the tanks in each category into compliance. The six categories are:

a. Category I: USTs to be Permanently Closed under Contract N62472-87-C0080.

b. Category II: USTs to be Replaced with New Above Ground Tanks with Release Detection under Contract N62741-90-C-2325.

c. Category III: USTs Eligible for Navy Pollution Abatement (PA) Program Funding for Installation of Release Detection, Cathodic Protection, and Spill/Overfill Prevention Equipment.

d. Category IV: USTs Not Eligible for PA Program Funding Requiring Removal and Replacement.

e. Category V: USTs Not Eligible for PA Program Funding Requiring Permanent Closure

f. Category VI: USTs Not Eligible for PA Program Funding Requiring Retrofit for Installation of Release Detection, Cathodic Protection, and Spill/Overfill Prevention Equipment.

The plan of actions for the USTs in each of these categories are detailed in attachments (2) through (7) of this plan.

Attachment (1)

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
MASTER UST INVENTORY
SORTED BY TANK NUMBER

TS AI NT KE	P_ N D_ AN IN SD	S_ T_ VO TO	BLDG NO.	TANK OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS RI EP SE	PP	FUEL	TEST DATE	PR DM IO VV	RC ED PN LT	PC CL RO _S	PL CD RE _T	PR CF RI _T	LEAK DET	PE AL _I _G	C A T
BP	1	1 1	4	NAS	ADMIN	11/11/78	2000	FG	ACT	S	DIES	06/01/90	N	N	N	Y	N	NONE	Y	3
BP	2	2 2	32	NAS		11/11/44	500	CO	ACTV	S	DIES	06/01/90	N	N	N	N	N	NONE	N	4
BP	3	3 4	34	NAS	SECURITY	11/11/60	990	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	4	4 3	34	NAS	SECURITY	11/11/60	660	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	5	5 5	36	NAS	SUPPLY	11/11/60	660	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	6	6 6	36	NAS	SUPPLY	11/11/60	990	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	7	7 7	37	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	8	8 8	37	NAS	SUPPLY	04/21/60	660	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	9	9 10	39	NAS	SUPPLY	04/21/60	660	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	10	10 9	39	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	11	14 11	48	NAS	SUPPLY	04/21/60	660	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	12	13 12	48	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	13	12 13	46	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	14	11 14	46	NAS	SUPPLY	04/21/60	660	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	15	15 16	50	NAS	SUPPLY	04/21/60	666	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
BP	16	16 15	50	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	Y	N	N	Y	Y	NONE	N	1
BP	17	17 18	55	NAS	SUPPLY	04/21/60	660	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
BP	18	18 17	55	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	Y	N	N	Y	Y	NONE	N	1
BP	19	19 20	77	NAS	SUPPLY	04/21/58	675	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	20	20 19	77	NAS	SUPPLY	04/21/58	2000	ST	ACTV	S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	21	21 21	91	NAS		04/22/43	1100	CO	HS	P	OI/W	06/01/90	N	N	N	N	N	NONE	N	4
BP	22	22 0	110	NAS	VQ-3	04/21/84	163	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	Y	3
BP	23	23 23	110	NAS	VQ-3	04/12/84	375	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	Y	3
BP	24	24 25	117	NAS	AIMD	04/21/44	2500	CO	ACTV	S	W/O	06/01/90	N	N	N	Y	Y	NONE	N	4
BP	25	25 24	117	NAS	AIMD	04/21/44	2500	CO	ACTV	S	W/O	06/01/90	N	N	N	N	N	NONE	N	4
BP	26	26 26	169	NAS	SUPPLY	04/21/54	55	GI	ACTV	S	FUEL	/ /	N	N	N	N	N	NONE	N	4
BP	27	27 28	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	FUEL	/ /	A	N	Y	N	N	NONE	N	5
BP	28	28 27	174	NAS	AIMD	04/21/45	10000	CO	ABAN	NE	W/O	/ /	A	N	Y	N	N	NONE	N	5
BP	29	29 29	174	NAS	AIMD	04/21/45	25000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	30	30 30	174	NAS	AIMD	04/21/45	25000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	31	31 31	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	32	32 32	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	33	33 33	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	34	34 34	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	35	35 35	174	NASW	AIMD	04/21/45	260	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	36	36 36	174	NAS	AIMD	04/21/45	260	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	37	37 37	174	NAS	AIMD	11/11/45	260	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	38	38 38	174	NAS	AIMD	11/11/45	300	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	39	39 39	174	NAS	AIMD	11/11/45	300	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	40	40 40	174	NAS	AIMD	11/11/45	300	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	41	41 41	175	NAS	AIMD	11/11/60	10000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	42	42 42	175	NAS	AIMD	11/11/60	10000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	43	43 43	680	NAS	SUPPLY	11/11/70	6000	ST	ACTV	S	U/GS	/ /	Y	N	N	Y	Y	NONE	N	1
BP	44	44 44	680	NAS	SUPPLY	11/11/47	5000	ST	ACTV	S	U/GS	/ /	Y	N	N	Y	Y	NONE	N	1
BP	45	45 45	686	PWC	PWC	11/11/74	10000	ST	ACTV	S	P/GS	/ /	N	N	N	Y	Y	NONE	N	4
BP	46	46 47	686	PWC	NEX	11/11/49	7500	ST	ACTV	S	U/GS	/ /	N	N	N	Y	Y	NONE	N	4
BP	47	47 46	686	PWC	NEX	11/11/49	7500	ST	ACTV	S	R/GS	/ /	N	N	N	Y	Y	NONE	N	4

9-10 2239	BP	48	48	48	706	NAS			11/11/43	567000	ST	ACTV	S	JP5	/ /	N	N	N	N	NONE	N	6
	BP	49	49	49	91	NAS			11/11/43	25000	CD	ABAN	S	W/O	/ /	Y	N	Y	N	NONE	N	1
9-102240	BP	50	50	50	91	NAS			11/11/43	25000	CD	ABAN	S	W/O	/ /	N	B	Y	N	NONE	N	2
	BP	51	51	51	91	NAS			11/11/43	25000	CD	ACTV	S	DIES	06/01/90	N	N	N	N	NONE	N	4
	BP	52	52	52	91	NAS			11/11/43	25000	CD	ACTV	S	DIES	06/01/90	N	N	N	N	NONE	N	4
9-102244	BP	53	53	53	947	NAS			11/11/64	500	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	NONE	N	4
9-102245	BP	54	54	54	972	NAS	NTCC		11/11/58	2500	ST	CLOS	S	DIES	06/01/90	N	N	N	Y	NONE	N	4
	BP	55	55	55	972	NAS	NTCC		11/11/58	2500	ST	CLOS	S	DIES	06/01/90	N	N	N	Y	NONE	N	4
102246	BP	56	0	56	1667	NAS			11/11/61	1000	ST	ACTV	S	DIES	/ /	Y	N	N	Y	NONE	N	1
102247	BP	57	57	57	1681	NAS			11/11/64	1000	ST	ACTV	S	DIES	/ /	Y	N	N	Y	NONE	N	1
102248	BP	58	58	58	1744	NAS	MCDONALDS		11/11/67	110	UK	ABAN	UK	UK	/ /	A	N	N	N	NONE	N	5
102249	BP	59	59	59	1756	NAS	AIR RES		11/11/69	1000	ST	ACTV	S	DIES	/ /	N	Y	N	Y	NONE	N	2
102250	BP	60	60	0	1762	NAS	CSD		11/11/70	550	OT	ACTV	S	DIES	06/01/90	N	Y	N	Y	NONE	N	2
102251	BP	61	61	61	1788	NAS	SUPPLY		11/11/74	950	ST	ACTV	S	DIES	/ /	N	Y	N	Y	NONE	N	2
102252	BP	62	62	0	1869	NAVMED	MEDICAL		11/11/77	360	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	NONE	Y	3
102253	BP	63	63	63	1833	NAS	AIMD		/ /	280	ST	ACTV	S	U/GS	/ /	N	N	N	Y	NONE	N	4
102254	BP	64	64	64	1868	NAS	FLY CLUB		11/11/44	2000	ST	ACTV	S	AVGS	/ /	Y	N	N	Y	NONE	N	1
	BP	65	65	65	1868	NS	FLY CLUB		11/11/44	3000	ST	ACTV	S	AVGS	/ /	A	N	N	Y	NONE	N	5
102256	BP	66	66	66	1907	NAS-CG	COAST GUAR		11/11/85	2000	FG	ACTV	S	UK	/ /	N	N	N	Y	NONE	Y	3
	BP	67	67	67	1907	NAS-CG	COAST GUAR		11/11/85	2000	FG	ACTV	S		/ /	N	N	N	Y	NONE	Y	3
	BP	68	70	0	1769	OCSYS	COMOCENSYS		11/11/70	2500	ST	ACTV	S	DIES	/ /	Y		N	Y	NONE	N	1
100998	BP	69	0	0	1769	OCSYS	COMOCENSYS		11/11/70	2500	ST	ACTV	S	DIES	/ /	N	N	N	N	NONE	N	4
	BP	70	0	0	1769	OCSYS	COMOCENSYS		11/11/70	2500	ST	ACTV	S	DIES	/ /	N	N	N	N	NONE	N	4
	BP	71	71	71	1545	NAS			/ /	50000	CD	ABAN	UK	AVGS	/ /	Y	N	Y	N	NONE	N	1
102003	BP	72	72	72	1545	NAS									/	A	N	Y	N	NONE	N	5
	BP	73	73	0	1545	NAS									/	A	N	Y	N	NONE	N	5
1000897	BP	74	74	74	1262	NAS									/	A	N	Y	N	NONE	N	5
9102232	BP	75	75	75	1265	NAS									/	A	N	Y	N	NONE	N	1
102236	BP	76	76	76	1264	NAS									/	A	N	Y	N	NONE	N	5
102241	BP	77	77	77	1089	NAS									/	Y	N	Y	N	NONE	N	1
102242	BP	78	78	78	1289	NAS									/	A	N	Y	N	NONE	N	5
102243	BP	79	79	79	1297	NAS									/	Y	N	Y	N	NONE	N	1
9102255	BP	80	80	80	9999	NAS									/	A	N	Y	N	NONE	N	5
	BP	81	81	81	1927	NAS									1/90	N	N	N	Y	NONE	Y	3
9102499	BP	82	82	82	1927	NAS									1/90	N	N	N	Y	NONE	Y	3
	BP	83	83	83	1927	NAS									1/90	N	N	N	Y	NONE	Y	3
9102500	BP	84	84	0	1923	NAS									/	N	N	N	Y	UNK	N	4
	BP	85	85	0	1923	NAS									/	N	N	N	Y	UNK	N	4
9102501	BP	86	86	0	1874	NAS									/	N	N	N	Y	UNK	N	3
9102502	BP	87	87	0	1875	NAS									/	N	N	N	Y	NONE	N	3
9N2503	BP	88	88	0	19	NAS									/	N	N	N	N	NONE	N	4
	BP	89	89	0	19	NAS									/	N	N	N	N	NONE	N	4
9N102504	BP	90	68	0	1765	NAS									/	N	N	N	Y	NONE	N	4
	BP	91	69	0	1765	NAS									/	N	N	N	Y	NONE	N	4
9200476	IP	1	1	1	6863	NAS	NEX		[illegible]	[illegible]	ST	ACTV	S	GAS	1/90	A	N	N	Y	NONE	N	4
	IP	2	2	2	6863	NAS	NEX		11/11/66	5000	ST	ACTV	S	GAS	06/01/90	A	N	N	Y	NONE	N	4
	IP	3	3	3	6863	NAS	NEX		11/11/74	10000	ST	ACTV	S	GAS	06/01/90	A	Y	N	Y	NONE	N	4
	*** Total ***																					
	** ** ** ****								******													*

BP 71 - BP 91
10/24/91 - spoke w/ H O'connor - will send in not forms
meanwhile, created files on these lists
10/24/91

9-102239	BP	48	48	48	706	NAS			11/11/43	567000	ST	ACTV	S	JP5	/ /	N	N	N	N	N	NONE	N	6
	BP	49	49	49	91	NAS			11/11/43	25000	CO	ABAN	S	W/O	/ /	Y	N	Y	N	N	NONE	N	1
9-102240	BP	50	50	50	91	NAS			11/11/43	25000	CO	ABAN	S	W/O	/ /	N	B	Y	N	N	NONE	N	2
	BP	51	51	51	91	NAS			11/11/43	25000	CO	ACTV	S	DIES	06/01/90	N	N	N	N	N	NONE	N	4
	BP	52	52	52	91	NAS			11/11/43	25000	CO	ACTV	S	DIES	06/01/90	N	N	N	N	N	NONE	N	4
9-102244	BP	53	53	53	947	NAS			11/11/64	500	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	N	4
9-102245	BP	54	54	54	972	NAS	NTCC		11/11/58	2500	ST	CLOS	S	DIES	06/01/90	N	N	N	Y	Y	NONE	N	4
	BP	55	55	55	972	NAS	NTCC		11/11/58	2500	ST	CLOS	S	DIES	06/01/90	N	N	N	Y	Y	NONE	N	4
102246	BP	56	0	56	1667	NAS			11/11/61	1000	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
102247	BP	57	57	57	1681	NAS			11/11/64	1000	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
102248	BP	58	58	58	1744	NAS	MCDONALDS		11/11/67	110	UK	ABAN	UK	UK	/ /	A	N	N	N	N	NONE	N	5
102249	BP	59	59	59	1756	NAS	AIR RES		11/11/69	1000	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
102250	BP	60	60	0	1762	NAS	CSD		11/11/70	550	OT	ACTV	S	DIES	06/01/90	N	Y	N	Y	Y	NONE	N	2
102251	BP	61	61	61	1788	NAS	SUPPLY		11/11/74	950	ST	ACTV	S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
102252	BP	62	62	0	1869	NAVMED	MEDICAL		11/11/77	360	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	Y	3
102253	BP	63	63	63	1833	NAS	AIMD		/ /	280	ST	ACTV	S	U/GS	/ /	N	N	N	Y	Y	NONE	N	4
102254	BP	64	64	64	1868	NAS	FLY CLUB		11/11/44	2000	ST	ACTV	S	AVGS	/ /	Y	N	N	Y	Y	NONE	N	1
	BP	65	65	65	1868	NS	FLY CLUB		11/11/44	3000	ST	ACTV	S	AVGS	/ /	A	N	N	Y	Y	NONE	N	5
102256	BP	66	66	66	1907	NAS-CG	COAST GUAR		11/11/85	2000	FG	ACTV	S	UK	/ /	N	N	N	Y	Y	NONE	Y	3
	BP	67	67	67	1907	NAS-CG	COAST GUAR		11/11/85	2000	FG	ACTV	S		/ /	N	N	N	Y	Y	NONE	Y	3
	BP	68	70	0	1769	OCSYS	COMOCENSYS		11/11/70	2500	ST	ACTV	S	DIES	/ /	Y		N	Y	Y	NONE	N	1
100998	BP	69	0	0	1769	OCSYS	COMOCENSYS		11/11/70	2500	ST	ACTV	S	DIES	/ /	N	N	N	N	N	NONE	N	4
	BP	70	0	0	1769	OCSYS	COMOCENSYS		11/11/70	2500	ST	ACTV	S	DIES	/ /	N	N	N	N	N	NONE	N	4
	BP	71	71	71	1545	NAS			/ /	50000	CO	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
102003	BP	72	72	72	1545	NAS			/ /	5000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
	BP	73	73	0	1545	NAS			/ /	5000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
1000897	BP	74	74	74	1262	NAS			/ /	25000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
9102232	BP	75	75	75	1265	NAS			/ /	25000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	1
102236	BP	76	76	76	1264	NAS			/ /	25000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
102241	BP	77	77	77	1089	NAS			/ /	25000	CO	ABAN	UK	UK	/ /	Y	N	Y	N	N	NONE	N	1
102242	BP	78	78	78	1289	NAS			/ /	50000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
102243	BP	79	79	79	1297	NAS			/ /	50000	CO	ABAN	UK	UK	/ /	Y	N	Y	N	N	NONE	N	1
9102255	BP	80	80	80	9999	NAS			/ /	40000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
	BP	81	81	81	1927	NAS	NEX		11/11/85	10000	FG	ACTV	UK	GAS	06/01/90	N	N	N	Y	N	NONE	Y	3
9102499	BP	82	82	82	1927	NAS	NEX		11/11/85	10000	FG	ACTV	UK	GAS	06/01/90	N	N	N	Y	N	NONE	Y	3
	BP	83	83	83	1927	NAS	NEX		11/11/85	10000	FG	ACTV	UK	GAS	06/01/90	N	N	N	Y	N	NONE	Y	3
9102500	BP	84	84	0	1923	NAS	AIRNATGRD		/ /	1	FG	ACTV	UK	UNK	/ /	N	N	N	Y	N	UNK	N	4
	BP	85	85	0	1923	NAS	AIRNATGRD		/ /	1000	FG	ACTV	UN	UNK	/ /	N	N	N	Y	N	UNK	N	4
9102501	BP	86	86	0	1874	NAS	FASD		01/01/82	500	FG	ACTV	UN	DIES	/ /	N	N	N	Y	N	UNK	N	3
9102502	BP	87	87	0	1875	NAS	CPW2-GSE		01/01/82	500	FG	ACTV	UN	HYDR	/ /	N	N	N	Y	N	NONE	N	3
9102503	BP	88	88	0	19	NAS	SUPPLY:GAL		/ /	0	UN	ACTV	UN	UNK	/ /	N	N	N	N	N	NONE	N	4
	BP	89	89	0	19	NAS	SUPPLY-GAL		/ /	0	UN	ACTV	UN	UNK	/ /	N	N	N	N	N	NONE	N	4
9102504	BP	90	68	0	1765	NAS	PWC		01/01/70	2500	ST	ACTV		DIES	/ /	N	N	N	Y	Y	NONE	N	4
	BP	91	69	0	1765	NAS	PWC		01/01/70	2500	ST	ACTV		DIES	/ /	N	N	N	Y	Y	NONE	N	4
9200476	IP	1	1	1	6863	NAS	NEX		11/11/66	5000	ST	ACTV	S	GAS	06/01/90	A	N	N	Y	Y	NONE	N	4
	IP	2	2	2	6863	NAS	NEX		11/11/66	5000	ST	ACTV	S	GAS	06/01/90	A	N	N	Y	Y	NONE	N	4
	IP	3	3	3	6863	NAS	NEX		11/11/74	10000	ST	ACTV	S	GAS	06/01/90	A	Y	N	Y	Y	NONE	N	4
	*** Total ***																								
	**	**	**	****						******													*		

Attachment (2)

Plan of Action: Category I Tanks

USTs to be Permanently Closed under Contract N62472-87-C0080.

1. The tanks included in this category are listed in Appendix A to this Attachment.

2. The N62472-87-C0080 contract is currently at the 100% design point. It is scheduled to be awarded in May 1991, and has a completion date of December . The scope of this contract includes evacuation and disposal of tank contents; cleaning of the tanks and piping and disposal of rinsate; excavation, removal and disposal of tanks, piping, fuel system appurtenances; restoration of each tank site; and incidental related work.

3. The plan of action for the USTs scheduled to be permanently closed under Navy contract N62472-87-C0080 is as follows:

a. Notify the State Department of Health (DOH) that the tanks are to be permanently closed.

b. Award, execute and complete the subject contract to remove the tanks.

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
CATEGORY I TANKS
PERMANENT CLOSURE UNDER CONTRACT N62472-87-C0080

TS AI NT KE	N AN SO	P_ D_ IN VO	S_ T_ AN TO	BLDG TANK NO.	OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS	PP RI EP SE	FUEL	TEST DATE	PR DM IO VV	RC EO PN LT	PC CL RO _S	PL CD RE _T	PR CF RI _T	LEAK DET	PE AL _I _G	C A T
BP	15	15	16	50	NAS	SUPPLY	04/21/60	666	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
BP	16	16	15	50	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	Y	N	N	Y	Y	NONE	N	1
BP	17	17	18	55	NAS	SUPPLY	04/21/60	660	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
BP	18	18	17	55	NAS	SUPPLY	04/21/60	990	ST	ACTV	S	FOIL	/ /	Y	N	N	Y	Y	NONE	N	1
BP	29	29	29	174	NAS	AIMD	04/21/45	25000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	30	30	30	174	NAS	AIMD	04/21/45	25000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	31	31	31	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	32	32	32	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	33	33	33	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	34	34	34	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	35	35	35	174	NASW	AIMD	04/21/45	260	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	36	36	36	174	NAS	AIMD	04/21/45	260	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	37	37	37	174	NAS	AIMD	11/11/45	260	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	38	38	38	174	NAS	AIMD	11/11/45	300	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	39	39	39	174	NAS	AIMD	11/11/45	300	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	40	40	40	174	NAS	AIMD	11/11/45	300	ST	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	41	41	41	175	NAS	AIMD	11/11/60	10000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	42	42	42	175	NAS	AIMD	11/11/60	10000	ST	ABAN	S	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	43	43	43	680	NAS	SUPPLY	11/11/70	6000	ST	ACTV	S	U/GS	/ /	Y	N	N	Y	Y	NONE	N	1
BP	44	44	44	680	NAS	SUPPLY	11/11/47	5000	ST	ACTV	S	U/GS	/ /	Y	N	N	Y	Y	NONE	N	1
BP	49	49	49	91	NAS		11/11/43	25000	CO	ABAN	S	W/O	/ /	Y	N	Y	N	N	NONE	N	1
BP	56	0	56	1667	NAS		11/11/61	1000	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
BP	57	57	57	1681	NAS		11/11/64	1000	ST	ACTV	S	DIES	/ /	Y	N	N	Y	Y	NONE	N	1
BP	64	64	64	1868	NAS	FLY CLUB	11/11/44	2000	ST	ACTV	S	AVGS	/ /	Y	N	N	Y	Y	NONE	N	1
BP	68	70	0	1769	OCSYS	COMOCENSYS	11/11/70	2500	ST	ACTV	S	DIES	/ /	Y		N	Y	Y	NONE	N	1
BP	71	71	71	1545	NAS		/ /	50000	CO	ABAN	UK	AVGS	/ /	Y	N	Y	N	N	NONE	N	1
BP	75	75	75	1265	NAS		/ /	25000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	1
BP	77	77	77	1089	NAS		/ /	25000	CO	ABAN	UK	UK	/ /	Y	N	Y	N	N	NONE	N	1
BP	79	79	79	1297	NAS		/ /	50000	CO	ABAN	UK	UK	/ /	Y	N	Y	N	N	NONE	N	1
*** Total ***																					
	**	**	**	****				287486													*

Attachment (3)

Plan of Action Category II Tanks

USTs to be Replaced with New Aboveground Tanks with Release Detection under Contract N62741-90-C-2325.

1. The USTs included in this category are listed in Appendix (A) to this Attachment.

2. The N62741-90-C2235 contract is currently out to bid with an contract award date expected by March 1991. The expected contract completion date is December 1991. The scope of this contract includes removal of the existing underground fuel storage tanks and installation of aboveground, fiberglass reinforced plastic (FRP) fuel storage tanks with leak detection equipment.

3. The plan of action for the USTs scheduled to be replaced under Navy contract N62741-90-C2235 is to award, execute and complete the subject contract to replace the tanks.

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
CATEGORY II USTS
USTS TO BE REPLACED UNDER CONTRACT N62741-90-C2325

TS AI NT KE	P_ N AN SO	S_ D_ IN VO	T_ AN TO	BLDG NO.	TANK OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS PP RI EP SE	FUEL	TEST DATE	PR DM VV	RC EO LT	PC CL _S	PL CD _T	PR CF _T	LEAK DET	PE AL _I _G	C A T
BP	3	3	4	34	NAS	SECURITY	11/11/60	990	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	4	4	3	34	NAS	SECURITY	11/11/60	660	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	5	5	5	36	NAS	SUPPLY	11/11/60	660	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	6	6	6	36	NAS	SUPPLY	11/11/60	990	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	7	7	7	37	NAS	SUPPLY	04/21/60	990	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	8	8	8	37	NAS	SUPPLY	04/21/60	660	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	9	9	10	39	NAS	SUPPLY	04/21/60	660	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	10	10	9	39	NAS	SUPPLY	04/21/60	990	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	11	14	11	48	NAS	SUPPLY	04/21/60	660	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	12	13	12	48	NAS	SUPPLY	04/21/60	990	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	13	12	13	46	NAS	SUPPLY	04/21/60	990	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	14	11	14	46	NAS	SUPPLY	04/21/60	660	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	19	19	20	77	NAS	SUPPLY	04/21/58	675	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	20	20	19	77	NAS	SUPPLY	04/21/58	2000	ST	ACTV S	FOIL	/ /	N	Y	N	Y	Y	NONE	N	2
BP	50	50	50	91	NAS		11/11/43	25000	CO	ABAN S	W/O	/ /	N	B	Y	N	N	NONE	N	2
BP	59	59	59	1756	NAS	AIR RES	11/11/69	1000	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
BP	60	60	0	1762	NAS	CSD	11/11/70	550	OT	ACTV S	DIES	06/01/90	N	Y	N	Y	Y	NONE	N	2
BP	61	61	61	1788	NAS	SUPPLY	11/11/74	950	ST	ACTV S	DIES	/ /	N	Y	N	Y	Y	NONE	N	2
*** Total ***																				
	**	**	**	6031				40075												*

Attachment (4)

Plan of Action: Category III Tanks:

USTs Eligible for Navy Pollution Abatement (PA) Program Funding for Installation of Release Detection, Cathodic Protection, and Spill/Overfill Prevention Equipment.

1. The USTs included in this category are listed in Appendix A to this Attachment.

2. The Navy Pollution Abatement (PA) program is a centrally managed program to fund projects which correct existing pollution problems or prevent future pollution from occurring. Projects are funded in priority order, with the priority determined by the severity of the problem. This program includes the retrofit of USTs to comply with EPA and State UST requirements. Navy policy is to retrofit only those USTs which are 15 years old or less.

3. The Category III USTs listed in Appendix A are scheduled to be retrofitted with leak detection, cathodic protection, and spill/overfill equipment. However, since the receipt date of the funding for this retrofit project is not known at this time, monthly inventory control and annual leak testing will be required until these tanks are retrofitted. The actual release detection method to be used will be determined on a tank by tank basis as part of the design process for the retrofit contract.

4. The plan of action for Category III USTs is as follows:

a. Install flow meters on fuel tanks to assist in monthly inventory monitoring. Estimated completion: April 1991.

b. Conduct monthly inventory control: Estimated completion: April 1991.

c. Conduct annual testing. Estimated completion: August 1991.

d. Revise Navy pollution control reports (PCRs) to request PA retrofit funds.

e. Upon receipt of PA funds, develop and execute project to retrofit tanks with leak detection, cathodic protection and spill/overfill prevention equipment.

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
CATEGORY III USTs
USTs ELIG FOR PA FUNDING FOR RETROFITTING

TS AI NT KE	N AN SD	P_ D_ IN VD	S_ T_ AN TO	BLDG NO.	TANK OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS RI EP SE	PP	FUEL	TEST DATE	PR DM VV	RC EQ PN LT	PC CL RO _S	PL CD RE _T	PR CF RI _T	LEAK DET	PE AL _G	C A T
BP	1	1	1	4	NAS	ADMIN	11/11/78	2000	FG	ACT	S	DIES	06/01/90	N	N	N	Y	N	NONE	Y	3
BP	22	22	0	110	NAS	VQ-3	04/21/84	163	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	Y	3
BP	23	23	23	110	NAS	VQ-3	04/12/84	375	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	Y	3
BP	62	62	0	1869	NAVMED	MEDICAL	11/11/77	360	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	Y	3
BP	66	66	66	1907	NAS-CG	COAST GUAR	11/11/85	2000	FG	ACTV	S	UK	/ /	N	N	N	Y	Y	NONE	Y	3
BP	67	67	67	1907	NAS-CG	COAST GUAR	11/11/85	2000	FG	ACTV	S		/ /	N	N	N	Y	Y	NONE	Y	3
BP	81	81	81	1927	NAS	NEX	11/11/85	10000	FG	ACTV	UK	GAS	06/01/90	N	N	N	Y	N	NONE	Y	3
BP	82	82	82	1927	NAS	NEX	11/11/85	10000	FG	ACTV	UK	GAS	06/01/90	N	N	N	Y	N	NONE	Y	3
BP	83	83	83	1927	NAS	NEX	11/11/85	10000	FG	ACTV	UK	GAS	06/01/90	N	N	N	Y	N	NONE	Y	3
BP	86	86	0	1874	NAS	FASO	01/01/82	500	FG	ACTV	UN	DIES	/ /	N	N	N	Y	N	UNK	N	3
BP	87	87	0	1875	NAS	CPW2-GSE	01/01/82	500	FG	ACTV	UN	HYDR	/ /	N	N	N	Y	N	NONE	N	3
*** Total ***																					
	**	**	**	****				37898													*

Attachment (5)

Plan of Action for Category IV Tanks:

USTs Not Eligible for PA Program Funding Requiring Removal and Replacement.

1. The USTs included in this category are listed in Appendix A to this Attachment.

2. Due to the age of many of the USTs at NAS Barbers Point, some USTs are not eligible for retrofit funding under the Navy PA program. Because of their age, these tanks should be replaced rather than retrofitted with leak detection, cathodic protection, or spill/overfill equipment. These tank replacements will have to be funded by COMNAVAIRPAC or NAS Barbers Point facilities maintenance funding. However, since the receipt date of the funding for these replacement projects is not known at this time, monthly inventory control and annual leak testing will be required until these tanks are replaced.

3. The plan of action for Category IV USTs is as follows:

a. Develop cost estimate for tank replacement. Submit project to/request funds from COMNAVAIRPAC. Estimated completion: February 1991.

b. Install flow meters on fuel tanks to assist in monthly inventory monitoring. Estimated completion: April 1991.

c. Conduct monthly inventory control: Estimated completion: April 1991.

d. Conduct annual tightness. Estimated completion: August 1991.

e. Upon receipt of tank replacement funds, develop and execute project to replace Category IV tanks.

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
CATEGORY IV USTs
USTs NOT ELIG FOR PA FUNDS REQUIRING REMOVAL AND REPLACEMENT

TS AI NT KE	P_ N D_ IN VO	S_ T_ AN TO	BLDG NO.	TANK OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS RI EP SE	PP	FUEL	TEST DATE	PR DM IO VV	RC EO PN LT	PC CL RO _S	PL CD RE _T	PR CF RI _T	LEAK DET	PE AL _I _G	C A T
BP	2	2	32	NAS		11/11/44	500	CO	ACTV	S	DIES	06/01/90	N	N	N	N	N	NONE	N	4
BP	21	21	91	NAS		04/22/43	1100	CO	HS	P	OI/W	06/01/90	N	N	N	N	N	NONE	N	4
BP	24	25	117	NAS	AIMD	04/21/44	2500	CO	ACTV	S	W/O	06/01/90	N	N	N	Y	Y	NONE	N	4
BP	25	24	117	NAS	AIMD	04/21/44	2500	CO	ACTV	S	W/O	06/01/90	N	N	N	N	N	NONE	N	4
BP	26	26	169	NAS	SUPPLY	04/21/54	55	GI	ACTV	S	FUEL	/ /	N	N	N	N	N	NONE	N	4
BP	45	45	686	PWC	PWC	11/11/74	10000	ST	ACTV	S	P/GS	/ /	N	N	N	Y	Y	NONE	N	4
BP	46	47	686	PWC	NEX	11/11/49	7500	ST	ACTV	S	U/GS	/ /	N	N	N	Y	Y	NONE	N	4
BP	47	46	686	PWC	NEX	11/11/49	7500	ST	ACTV	S	R/GS	/ /	N	N	N	Y	Y	NONE	N	4
BP	51	51	91	NAS		11/11/43	25000	CO	ACTV	S	DIES	06/01/90	N	N	N	N	N	NONE	N	4
BP	52	52	91	NAS		11/11/43	25000	CO	ACTV	S	DIES	06/01/90	N	N	N	N	N	NONE	N	4
BP	53	53	947	NAS		11/11/64	500	ST	ACTV	S	DIES	06/01/90	N	N	N	Y	Y	NONE	N	4
BP	54	54	972	NAS	NTCC	11/11/58	2500	ST	CLOS	S	DIES	06/01/90	N	N	N	Y	Y	NONE	N	4
BP	55	55	972	NAS	NTCC	11/11/58	2500	ST	CLOS	S	DIES	06/01/90	N	N	N	Y	Y	NONE	N	4
BP	63	63	1833	NAS	AIMD	/ /	280	ST	ACTV	S	U/GS	/ /	N	N	N	Y	Y	NONE	N	4
BP	69	0	1769	OCSYS	COMOCENSYS	11/11/70	2500	ST	ACTV	S	DIES	/ /	N	N	N	N	N	NONE	N	4
BP	70	0	1769	OCSYS	COMOCENSYS	11/11/70	2500	ST	ACTV	S	DIES	/ /	N	N	N	N	N	NONE	N	4
BP	84	84	0	1923	NAS	AIRNATGRD	/ /	1	FG	ACTV	UK	UNK	/ /	N	N	N	Y	N	UNK	N	4
BP	85	85	0	1923	NAS	AIRNATGRD	/ /	1000	FG	ACTV	UN	UNK	/ /	N	N	N	Y	N	UNK	N	4
BP	88	88	0	19	NAS	SUPPLY:GAL	/ /	0	UN	ACTV	UN	UNK	/ /	N	N	N	N	N	NONE	N	4
BP	89	89	0	19	NAS	SUPPLY-GAL	/ /	0	UN	ACTV	UN	UNK	/ /	N	N	N	N	N	NONE	N	4
BP	90	68	0	1765	NAS	PWC	01/01/70	2500	ST	ACTV		DIES	/ /	N	N	N	Y	Y	NONE	N	4
BP	91	69	0	1765	NAS	PWC	01/01/70	2500	ST	ACTV		DIES	/ /	N	N	N	Y	Y	NONE	N	4
IP	1	1	1	6863	NAS	NEX	11/11/66	5000	ST	ACTV	S	GAS	06/01/90	A	N	N	Y	Y	NONE	N	4
IP	2	2	2	6863	NAS	NEX	11/11/66	5000	ST	ACTV	S	GAS	06/01/90	A	N	N	Y	Y	NONE	N	4
IP	3	3	3	6863	NAS	NEX	11/11/74	10000	ST	ACTV	S	GAS	06/01/90	A	Y	N	Y	Y	NONE	N	4
*** Total ***																				
	**	**	**	****			118436													*

Attachment (6)

Plan of Action for Category V Tanks

USTs Not Eligible for PA Program Funding
Requiring Permanent Closure

1. The USTs included in this category are listed in Appendix A to this Attachment.

2. Numerous abandoned tanks exist at NAS Barbers Point which require permanent closure, but were not included under the N62742-87-C0080 tank closure contract. These tanks will have to be removed and closed under a separate PACNAVFACENGCOM or NAS Barbers Point contract. This tank closure contract will have to be funded by COMNAVAIRPAC or NAS Barbers Point facilities maintenance funding. Upon receipt funding, a project will be developed to permanently close and remove these tanks.

3. The plan of action for Category V USTs is as follows:

a. Request PACNAVFACENGCOM include these tanks in contract N62472-87-C0080 or a follow-on closure contract.

b. Develop a cost estimate for tank closure; request funding from COMNAVAIRPAC.

c. Upon receipt of funding, develop and execute a contract to remove and permanently close these tanks.

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
CATEGORY V USTs
USTs NOT ELIG FOR PA FUNDS REQUIRING PERMANENT CLOSURE

TS AI NT KE	N AN SO	P_ D_ IN VO	S_ T_ AN TO	BLDG NO.	TANK OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS RI EP SE	PP	FUEL	TEST DATE	PR DM IO VV	RC EQ PN LT	PC CL RO _S	PL CD RE _T	PR CF RI _T	LEAK DET	PE AL _I _G	C A T
BP	27	27	28	174	NAS	AIMD	04/21/45	5000	ST	ABAN	S	FUEL	/ /	A	N	Y	N	N	NONE	N	5
BP	28	28	27	174	NAS	AIMD	04/21/45	10000	CO	ABAN	NE	W/O	/ /	A	N	Y	N	N	NONE	N	5
BP	58	58	58	1744	NAS	MCDONALDS	11/11/67	110	UK	ABAN	UK	UK	/ /	A	N	N	N	N	NONE	N	5
BP	65	65	65	1868	NS	FLY CLUB	11/11/44	3000	ST	ACTV	S	AVGS	/ /	A	N	N	Y	Y	NONE	N	5
BP	72	72	72	1545	NAS		/ /	5000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
BP	73	73	0	1545	NAS		/ /	5000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
BP	74	74	74	1262	NAS		/ /	25000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
BP	76	76	76	1264	NAS		/ /	25000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
BP	78	78	78	1289	NAS		/ /	50000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
BP	80	80	80	9999	NAS		/ /	40000		ABAN	UK	UK	/ /	A	N	Y	N	N	NONE	N	5
*** Total ***																					
	**	**	**	****				168110													*

Attachment (7)

Plan of Action: Category VI Tanks:

USTs Not Eligible for Navy Pollution Abatement (PA) Program Funding for Installation of Release Detection, Cathodic Protection, and Spill/Overfill Prevention Equipment.

1. The UST included in this category is listed in Appendix A to this Attachment.

2. Of all the USTs ineligible for PA retrofit funding due to age, only one large concrete aviation fuel storage tank is recommended for retrofitting with the required release detection, cathodic protection, and spill/overfill prevention equipment. (Note: the rest will be replaced.)

3. The funding for this retrofitting will have to come from COMNAVAIRPAC or Station maintenance funds. However, since the receipt date of the funding for this retrofit project is not known at this time, monthly inventory control and annual leak testing will be required until the tank can be retrofitted. The actual release detection method to be used will be determined as part of the design process for the retrofit contract.

4. The plan of action for Category VI USTs is as follows:

a. Conduct monthly inventory control. Estimated completion: Ongoing.

b. Conduct annual tightness testing. Estimated completion: Ausgust 1991.

c. Upon receipt of PA funds, develop and execute project to retrofit tank with leak detection, cathodic protection and spill/overfill prevention equipment.

NAS BARBERS POINT
UNDERGROUND STORAGE TANK PROGRAM
CATEGORY VI USTs
USTs NOT ELIGIBLE FOR PA FUNDS REQUIRING RETROFIT

TS AI NT KE	P_ N D_ IN VO	S_ T_ AN TO	BLDG NO.	TANK OWNER	DEPARTMENT	DATE INST	TC AA NP KT	TT YA PN EK	STATUS	PP RI EP SE	FUEL	TEST DATE	PR DM IO VV	RC EO PN LT	PC CL RO _S	PL CD RE _T	PR CF RI _T	LEAK DET	PE AL _I _G	C A T
BP	48	48	48	706	NAS		11/11/43	567000	ST	ACTV	S	JP5	/ /	N	N	N	N	N	NONE	N	6
*** Total ***																					
	48	48	48	706				567000													6

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
BARBERS POINT, HAWAII 96862-5050

JAN 24 1991

5090
Ser 00L-L11/0263
17 JAN 1991

State of Hawaii
Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Five Waterfront Plaza Suite 250
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Attn: Ms. Arlene Kabei

1. In response to your letter of 22 October, 1990, NAS Barbers Point has developed an Underground Storage Tank (UST) program. The Station is committed to implementing this program and achieving full compliance with all applicable Environmental Protection Agency and State of Hawaii Department of Health UST requirements.

2. As required, enclosure (1) forwards the "Self Certification of Compliance" forms for the USTs at NAS Barbers Point.

3. Since most of our USTs and their associated piping do not meet the release detection requirements by the given deadlines, Enclosure (2) forwards our plan of action to comply with the release detection requirements.

4. Please note that some of the tanks listed in your letter no longer belong to NAS Barbers Point, but rather Naval Station, Pearl Harbor. The five tanks located at Ford Island and listed with a "Facility ID" number of 9-100995 should be registered as belonging to Naval Station, Pearl Harbor.

5. If you have any questions on our UST program, contact Mr. Stan Kato, our Environmental Engineer, or Ltjg Kevin O'Connor, our UST Program Manager, at 684-8201.

Dan King
LCDR,CEC,USN
Staff Civil Engineer

Enclosure (1): UST Self Certification Forms
Enclosure (2): UST Plan of Action for EPA/DOH Release Detection Compliance

cc:
COMNAVAIRPAC (Code 51) Encl (2) only
COMPATWINGSPAC (Code 80) Encl (2) only
PACNAVFACENGCOM (Code 114)
Naval Station, Pearl Harbor (SCE)

DOH Form (9/90)

DEPARTMENT OF HEALTH - UNDERGROUND STORAGE TANK SECTION

SELF-CERTIFICATION OF COMPLIANCE WITH FEDERAL RELEASE DETECTION REQUIREMENTS ON UNDERGROUND STORAGE TANKS SYSTEMS

Return this form to: State of Hawaii
Department of Health
Solid and Hazardous Waste Branch
Five Waterfront Plaza, Suite 250
500 Ala Moana Blvd.
Honolulu, Hawaii 96813
Attn: UST Section (SC)

For State Use Only

Facility ID No.: _____

Date Received: _____

Please type or print in ink all items. A certification form should be completed for the underground storage tank systems located at one facility only.

I. Tank Owner Information:

DEPARTMENT OF THE NAVY
Owner Name (Corporation, Individual, Government, or Other Entity)

NAVAL AIR STATION (NAS)
Mailing Address

BARBERS POINT		HI	96862
City	County	State	Zip Code

LTJG KEVIN O'CONNOR	UNDERGROUND STORAGE TANK COORDINATOR	684-3231
Contact Person	Job Title	Phone Number

II. Tank Operator Information:

DEPARTMENT OF THE NAVY
Operator Name (Corporation, Individual, Government, or Other Entity)

NAVAL AIR STATION (NAS)
Mailing Address

BARBERS POINT		HI	96862
City	County	State	Zip Code

ALAN MATSUOKA	FUELS OFFICER	684-9275
Contact Person	Job Title	Phone Number

III. Location of Tank(s):

DEPARTMENT OF THE NAVY
Facility Name

NAVAL AIR STATION (NAS)
Facility Address

BARBERS POINT		HI	96862
City	County	State	Zip Code

K. O'CONNOR	UST COORDINATOR	684-3231
Contact Person	Job Title	Phone Number

Please provide complete information for all tank(s) and piping(s) under which this self-certification form is applicable. If more than 4 tanks or pipings are being certified, please photocopy pages 2 & 3 and continue providing the information for the additional tanks or pipings.

IV. A. Tank Information

9-100975

Tank Identification Number	BP1			
Date of Installation (mm\dd\yy)	11/1/78			
Capacity of Tank (gallons)	2000			
Substance Stored	Diesel			

B. Release Detection

Indicate with an (X), the following applicable method(s) used for each tank being certified.

Manual Tank Gauging (only tanks less than 1,000 gal.)				
Tank Tightness Testing Plus Inventory Control				
Automatic Tank Gauging				
Vapor Monitoring				
Ground Water Monitoring				
Interstitial Monitoring (Double-walled)				
Interstitial Monitoring (Secondary containment)				

V. A. Piping Information

Piping Identification Number	BP1 P			
Indicate (P) for Pressurized or (S) for Suction	S			

B. Release Detection

Indicate with an (X), the following applicable method(s) used for each set of piping being certified.

Vapor Monitoring				
Ground Water Monitoring				
Interstitial Monitoring (Double-walled piping)				
Interstitial Monitoring (Secondary containment)				
Line Tightness Testing				
Automatic Shutoff Device				
Automatic Flow Restrictor				
Continuous Leak Alarm System				

GOVERNMENT EXPENSE

VI. **A. UST System Removal Information*** Identify those tank(s) and\or piping(s) which have been removed.

Indicate (T) for Tank, (P) for Piping, or (B) for Both				
Identification Number				
Date of Removal				

B. UST System Closure-in-Place Information* Identify those tank(s) and\or piping(s) which have been closed-in-place.

Indicate (T) for Tank, (P) for Piping, or (B) for Both				
Identification Number				
Date of Closure-in-Place				

* The federal regulations state that underground storage tank systems which cannot comply with applicable release detection requirements must permanently close. Owners and operators are required to notify the Department of Health (DOH) of their intent to close a tank system at least 30 days prior to beginning closure. In addition, an amended notification form (EPA Form 7530-1) should be submitted to the DOH within 30 days after tank system closure.

VII. **Certification:**

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents and diagrams, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete, and hereby certify that the underground storage tanks(s) and associated piping(s) identified above in Parts IV and V are in compliance with the federal requirements for release detection as specified in 40 CFR Part 280, Subpart D.

DAN KING LCDR, CEC, USN
Name of Owner, Operator, or Authorized Representative

STAFF CIVIL ENGINEER
Title

Signature

JANUARY 17, 1991
Date

SCHEFFLER ENVIRONMENTAL

OCT 26 1998

DEPARTMENT OF THE NAVY
PACIFIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
(MAKALAPA, HI)
PEARL HARBOR, HAWAII 96860-7300

U10106 GKD

5090.IL.
Ser 1822/ 3931
22 OCT 1998

Mr. Steven Chang
State of Hawaii
Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Underground Storage Tank Section
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

Dear Mr. Chang:

Subj: REMOVAL AND UPGRADES OF UNDERGROUND STORAGE TANKS (UST) AT NAVAL AIR STATION BARBERS POINT

The Navy recently awarded a contract to OHM Remediation Services Corporation to permanently close 5 USTs at Naval Air Station, Barbers Point. UST BP-1 serves an emergency generator, which is located inside Building 4. USTs BP-50 and 48 are large concrete field constructed tanks. UST BP-86 is an emergency spill and containment system tank. This tank is expeditiously emptied after any use. UST BP-88 is a boiler tank for the enlisted dining facility. Although, UST Nos. BP-50, 48, 86, and 88 are not regulated, the removal will follow the requirements of 40 CFR 280 and the "Technical Guidance Manual for Underground Storage Tank Closure and Release Response," State of Hawaii, Department of Health (SOHDOH), as amended. A description of the USTs to be closed is provided below:

UST NO	STATE ID	TANK TYPE	CAPACITY	PRODUCT
1	9-100975	FRP	3,000 Gal	Diesel
50	9-102240	Concrete	25,000 Gal	JP-5
86	9-102502	FRP	500 Gal	Waste Oil
88	9-102503	Steel	1,000 Gal	Diesel
48	9-102239	Concrete	13,500 BBL	JP-5

The UST closure work will commence in mid November with completion anticipated around May 1999.

In general, the work will include the following:

a. Evacuation of the tank contents and profiling to determine suitability for recycling or appropriate disposal options.

5090.IL.
Ser 1822/ 3931

b. Tank cleaning and sludge/rinseate sampling and analyses to determine disposal options.

c. Soil and groundwater sampling and analyses to be based on the product stored, and conducted in accordance with applicable section of the "Technical Guidance Manual for Underground Storage Tank Closure and Release Response," State of Hawaii, Department of Health (SOHDOH), as amended.

d. Testing of excavated soils for volatile organic compounds and petroleum hydrocarbons with field measurement devices and off-site laboratory analyses.

e. Segregation of contaminated material from clean material and stockpiling on-site with appropriate run-off controls.

f. Remediation of petroleum contamination to the levels specified in the SOHDOH Risk Based Corrective Action and Decision Making at Sites with Contaminated Soil and Groundwater, December 1995.

g. Disposal of UST systems.

h. UST closure documentation and notifications. The tank owner as required by 40 CFR 280.74 would maintain the record of closure. Upon completion of the work the Navy will forward EPA Form 7530-1, Notification of Underground Storage Tans to the SOHDOH.

Should you have any questions, please contact Mr. Gerald Akai of our Environmental Restoration Branch at (808) 474-4506.

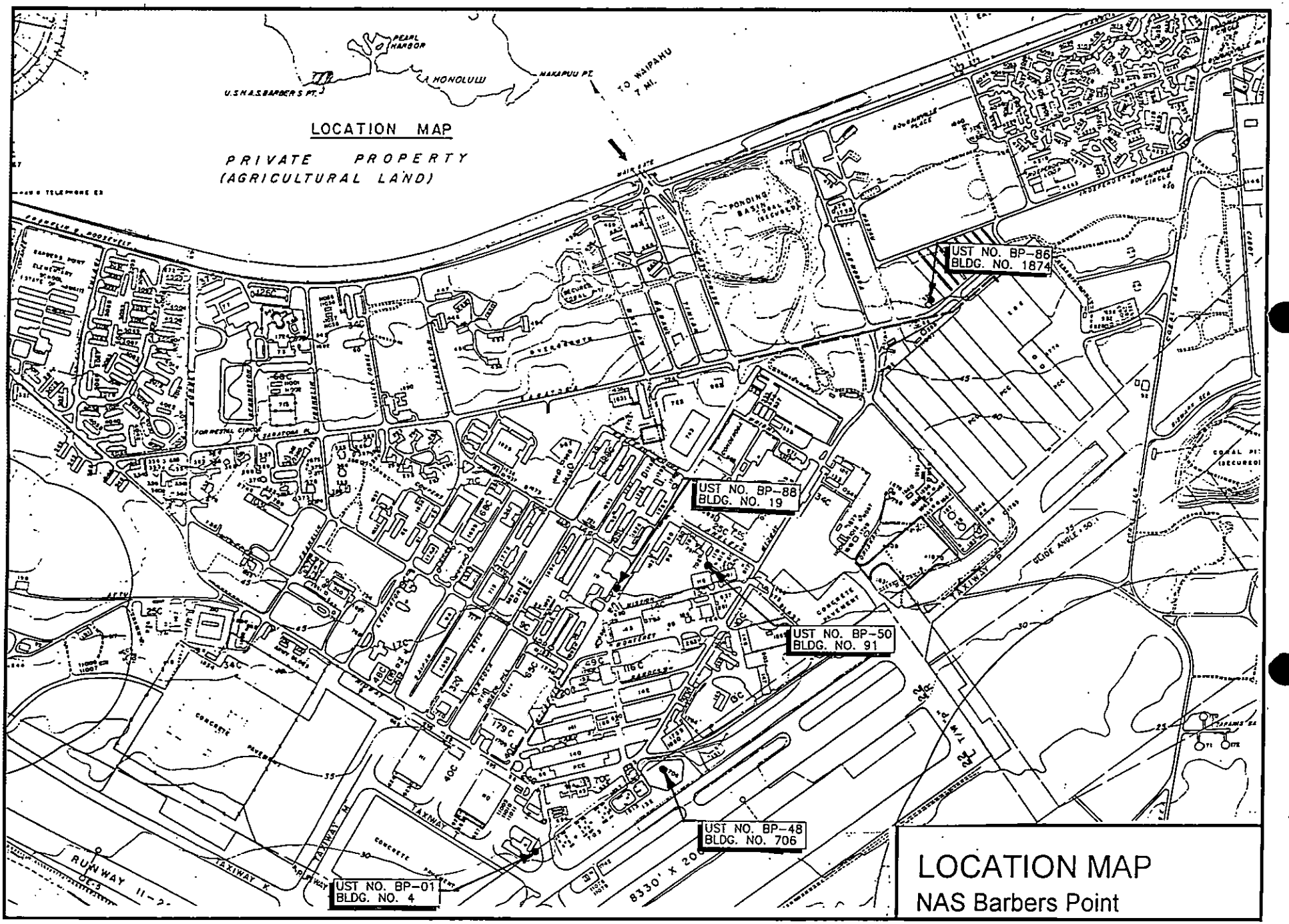
Sincerely,

Melvin Z. Waki

MELVIN Z. WAKI
Director
Environmental Division

Encl:
(1) Location Map

Copy to:
NAS Barbers Point



Enclosure (1)

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-239

no card
no file

DEPARTMENT OF THE NAVY
NAVAL AIR STATION
BARBERS POINT, HAWAII 96862-5050

JAN 14 1998

1/26/98 ltr

5090
Ser OOL-L12.008/0046
12 Jan 1998

Ms. Roxanne Kwan
State of Hawaii
Department of Health
Solid and Hazardous Waste Branch
Underground Storage Tank Section
919 Ala Moana Boulevard, Rm 212
Honolulu, Hawaii 96814

Subj: UNDERGROUND STORAGE TANK BP01 (HIDOH FACILITY ID: 9-100975)
NAVAL AIR STATION (NAS), BARBERS POINT

This letter is in response to a telephone inquiry by Richard Takaba, Department of Health, State of Hawaii (HIDOH), Underground Storage Tank Section on December 3, 1997, regarding the status of BP01.

The information that Mr. Takaba needed was provided in the telephone conversation. However, upon his request, this information is provided:

NAS Barbers Point is located on the southwestern coast of the island of Oahu, Hawaii. The UST is located adjacent to building 4 and the current plan is to remove the UST as shown in the Vicinity and Site Plans, enclosure (1). A new Aboveground Storage Tank (AST) will replace the existing UST. The construction is estimated to be completed by October 1998.

The UST is classified as an active UST. It stores diesel fuel, which is used solely for emergency power generation. The tank construction is made of fiberglass reinforced plastic (FRP), while piping is made of steel and cathodically protected. The rest of the information is consistent with your UST Database (UST and LUST Listings, dated July 1997). This UST is deferred from release detection, 40 CFR Part 280, Subpart D.

If you have any questions, please contact Mr. Henry Rimas, the UST Program Coordinator, at 684-1800.

DAVID GEORGES
By direction of
the Commanding Officer

Encl:
(1) Site/Vicinity Map for Removal/Closure of UST BP01

NOV - 5 1998

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
EMD/SHW

October 30, 1998 U10106GKO

Mr. Melvin Z. Waki
Director-Environmental Division
Department of the Navy-Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-7300

Dear Mr. Waki:

Subject: Naval Air Station Barbers Point
Barbers Point, Honolulu
Facility I.D. Nos.: Various

This is in response to a letter dated October 22, 1998 to the Department of Health (DOH) Underground Storage Tank Section notifying us of your intent to close underground storage tanks (USTs) located at the subject's various facilities as follows:

Facility ID No. 9-100975
Building 4
one (1) 3,000 gallon diesel UST

Facility ID No. 9-102240
Large concrete field constructed tank
one (1) 25,000 gallon JP-5 UST

Facility ID No. 9-102502
Emergency spill and containment system tank
one (1) 500 gallon waste oil UST

Facility ID No. 9-102503
Boiler tank
one (1) 1,000 gallon diesel UST

Facility ID No. 9-102239
Large concrete field constructed tank
one (1) 13,500 BBL JP-5 UST

The U.S. Environmental Protection Agency's final regulations on USTs became effective on December 22, 1988, and are set forth in Title 40 of the **Code of Federal Regulations** (40 CFR Part 280) (see Enclosure A). These federal UST regulations include, among other things, specific requirements that UST owners and operators must meet when closing their UST system (refer to 40 CFR Part 280 Subpart G of Enclosure A). In addition, DOH is providing additional guidance on UST closure (see Enclosure B).

In particular, you should note that owners and operators are required to measure for the presence of a release where contamination is most likely to be present at the UST site before completing UST closure. If an UST release is discovered, owners and operators must report the discovery of the release to DOH within 24 hours and immediately begin release response actions in accordance with the federal UST regulations (40 CFR Part 280 Subpart F) and DOH guidelines.

Finally, upon completion of UST closure, an amended "Notification for Underground Storage Tanks" form (EPA Form 7530-1, 9/89) reflecting the closure of UST system should be submitted to DOH within 30 days. For each permanently closed UST, Part X of the notification form should be completed in its entirety. A copy of the notification form is found in Enclosure C.

Should you have any questions regarding the UST closure, please contact our Underground Storage Tank Section at (808)586-4226.

Sincerely,

Gregory K. Olmsted

GREGORY K. OLMSTED, SUPERVISOR
Underground Storage Tank Section
Solid and Hazardous Waste Branch

GKO:alk

Enclosures (3)

c: Mr. Attilio Leonardi, Fire Chief, Honolulu Prevention Fire Bureau

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

NOV 23 1998

12/14/98

MEMORANDUM FOR HAWAII DEPARTMENT OF HEALTH
Solid and Hazardous Waste Branch
Underground Storage Tank Section
919 Ala Moana Blvd., Room 212
Honolulu, Hawaii 96814

SUBJECT: Notice of Intent to Close Underground Storage Tanks, Underground Storage Tank and Soil Removal, Site Restoration Soil Remediation Project, Barbers Point Naval Air Station (NAS), Oahu, Hawaii

1. The attached form serves as notification of underground storage tank (UST) closure in compliance with federal requirement (40 CFR 280.71) that owners and operators of USTs must notify the Department of Health at least 30 days before beginning permanent closure of USTs.

2. Under its current Remediation Action Contract (RAC), the Navy plans to install 1 aboveground storage tank (AST) and remove 4 USTs and its associated appurtenances from sites on Barbers Point Naval Air Station during the period of December 1998 and January 1999.

3. EPA form 7530-1 will be completed for each tank removed. Documentation of closure and site assessment activities will be compiled in conformance with the Technical Guidance Manual for Underground Storage Tank Closure and Release Response.

Barry Robson

BARRY ROBSON
Senior Project Manager
OHM Remediation Services Corp.

CF: Mr. Dennis Makabe, NTR, ROICC, NAVFAC

Attachments:
1. Department of Health's Notice of Intent to Close Form
2. UST System Description System
3. Site maps

NOV 23 1998

Notice of Intent to Close Underground Storage Tanks

Mail this form to:
Solid and Hazardous Waste Branch
Hawai'i Department of Health
919 Ala Moana Boulevard #212
Honolulu, Hawai'i 96814

or fax it to: (808) 586-7509

Notice of intent to close a UST must be provided to the Department of Health at least 30 days prior to the actual date of closure. If you have any questions regarding this notice, call our office at (808) 586-4226.

UST Facility Description - Provide a description of the UST facility.

Facility ID	Facility Name	Facility Address
	See Attached Sheets	

UST System Description - Provide a description of the UST(s) to be closed. Use additional sheets as needed.

Tank ID	Tank Capacity (gallons)	Substance Stored (gasoline, diesel, etc.)	Material of Tank Construction (steel, FRP, etc.)	Projected Date of Closure
		See Attached Sheets		

Contact Information - Provide information on the UST owner, UST operator or authorized representative; i.e. a person legally responsible for the UST(s). **We will send official correspondence regarding the UST closure to this person.**

Name / Title	Dennis Makabe / Navy Technical Representative
Company Name	U.S. Navy
Mailing Address	ROICC NAVFAC 4262 Radford DR Honolulu, HI 96818-3296
Phone / Fax Numbers	PHONE: (808) 474-3882 ext. 255 FAX: (808) 471-8713

Contractor Information - Provide information on the contractors and consultants who will close the UST(s). Use additional sheets as needed.

Contact Name / Title	Barry Robson / Sr. Project Manager
Company Name	OHM Remediation Services Corp.
Mailing Address	OHM Remediation Services Corp 91-238 Kalaeloa Blvd. Kapolei, HI 96707
Phone / Fax Numbers	PH: (808) 682-1800 FAX: (808) 682-1880

Notice Provided By:

Barry Robson	OHM Remediation Services Corp.	B. Robson	11/19/98
Name	Company	Signature	Date

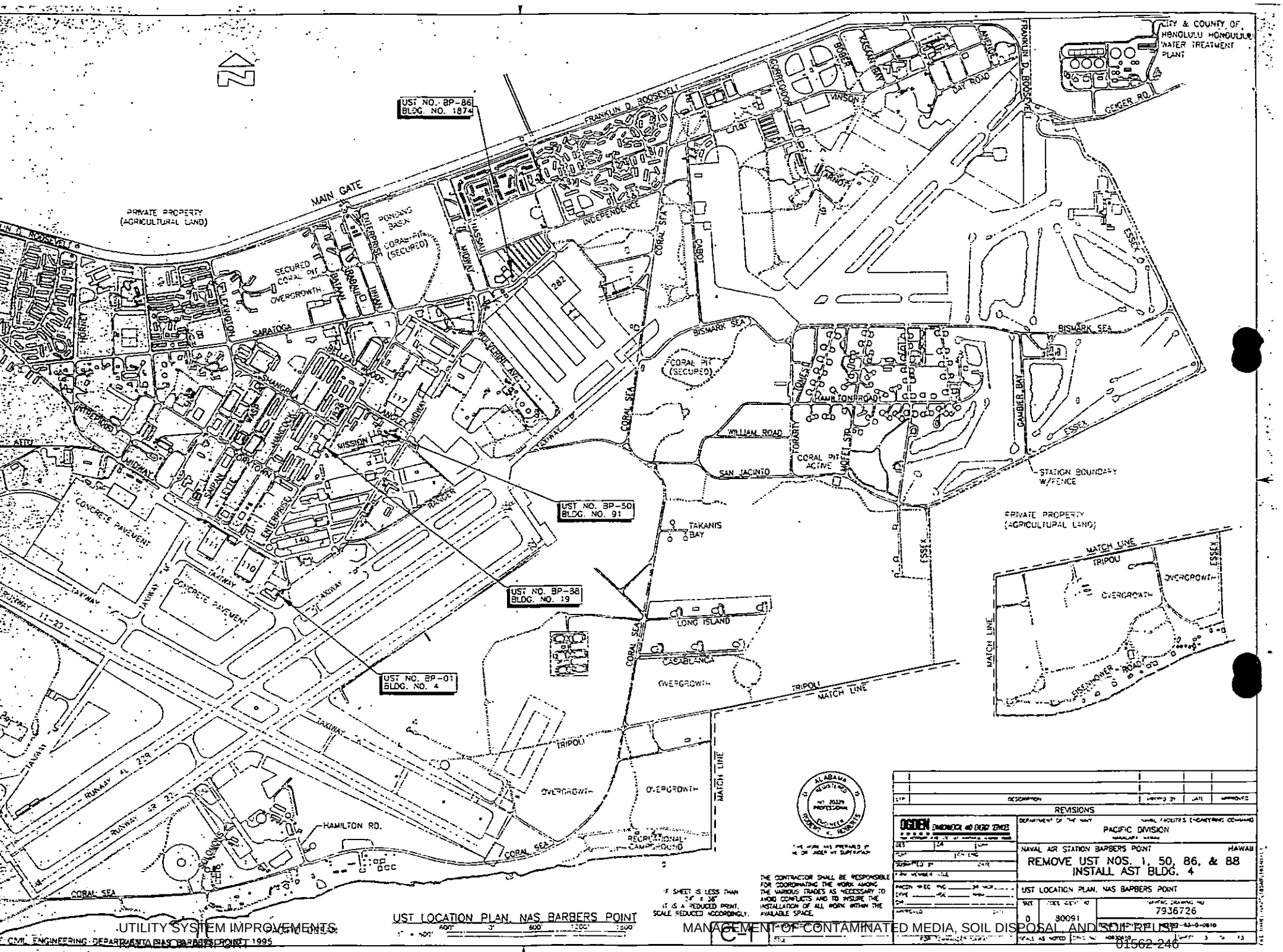
DOH Form UST-CLOSURE (4/97)

UST System Description

Location	Tank ID	Substance Stored	Material of Construction	Capacity (gallons)	Projected Date of Closure
NAS Barbers Point, Building 4	BP-01	Diesel	FRP	3,000	December 31, 1998
NAS Barbers Point, Building 19	BP-88	Diesel	Steel	1,000	December 31, 1998
NAS Barbers Point, Building 91	BP-50	JP-5	Concrete	25,000	December 31, 1998
NAS Barbers Point, Building 1874	BP-86	Waste Oil	FRP	500	December 31, 1998

9-100975
91-13486
9-102240
9-102501

U12069 GKD



UST LOCATION PLAN, NAS BARBERS POINT

1" = 400'

IF SHEET IS LESS THAN 24" x 36" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THE INSTALLATION OF ALL WORK WITHIN THE AVAILABLE SPACE.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ALABAMA REGISTERED PROFESSIONAL ENGINEER ROBERT K. ROBERTS NO. 20329

REVISIONS

NO.	DESCRIPTION	INITIAL BY	DATE	APPROVED

OGDEN ENVIRONMENT AND ENERGY SERVICES

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
PACIFIC DIVISION
HONOLULU, HAWAII

NAVAL AIR STATION BARBERS POINT HAWAII

REMOVE UST NOS. 1, 50, 86, & 88
INSTALL AST BLDG. 4

UST LOCATION PLAN, NAS BARBERS POINT

DATE	CODE IDENT NO	DRAWING NO
0	80091	7936726

SCALE AS NOTED

UTILITY SYSTEM IMPROVEMENTS
CIVIL ENGINEERING DEPARTMENT, NAS BARBERS POINT 1995
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-246

DEC 21 1998

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
EMD/SHW

December 16, 1998

U12069GKO

Mr. Dennis Makabe
Navy Technical Representative
United States Navy
ROICC/NAVFAC
4262 Radford Drive
Honolulu, Hawaii 96818-3296

Dear Mr. Makabe:

Subject: NAS Barbers Point
Various
Facility I.D. Nos.: Various

This is in response to a letter dated November 19, 1998 from Barry Robson of OHM Remediation Services Corporation to the Department of Health (DOH) Underground Storage Tank Section notifying us of your intent to close four (4) underground storage tanks (USTs) located at the subject's facilities as follows:

1) Facility ID No. 9-100975, Building 4
one (1) 3,000 gallon diesel underground storage tank

2) Facility ID No. 9-103486, Building 19
one (1) 1,000 gallon diesel underground storage tank

3) Facility ID No. 9-102240, Building 91
one (1) 25,000 gallon JP-5 underground storage tank

4) Facility ID No. 9-102501, Building 1874
one (1) 500 gallon waste oil underground storage tank

The U.S. Environmental Protection Agency's final regulations on USTs became effective on December 22, 1988, and are set forth in Title 40 of the **Code of Federal Regulations** (40 CFR Part 280) (see Enclosure A). These federal UST regulations include, among other things, specific requirements that UST owners and operators must meet when closing their UST system (refer to 40 CFR Part 280 Subpart G of Enclosure A). In addition, DOH is providing additional guidance on UST closure (see Enclosure B).

In particular, you should note that owners and operators are required to measure for the presence of a release where contamination is most likely to be present at the UST site before completing UST closure. If an UST release is discovered, owners and operators must report the discovery of the release to DOH within 24 hours and immediately begin release response actions in accordance with the federal UST regulations (40 CFR Part 280 Subpart F) and DOH guidelines.

Finally, upon completion of UST closure, an amended "Notification for Underground Storage Tanks" form (EPA Form 7530-1, 9/89) reflecting the closure of UST system should be submitted to DOH within 30 days. For each permanently closed UST, Part X of the notification form should be completed in its entirety. A copy of the notification form is found in Enclosure C.

Should you have any questions regarding the UST closure, please contact our Underground Storage Tank Section at (808)586-4226.

Sincerely,

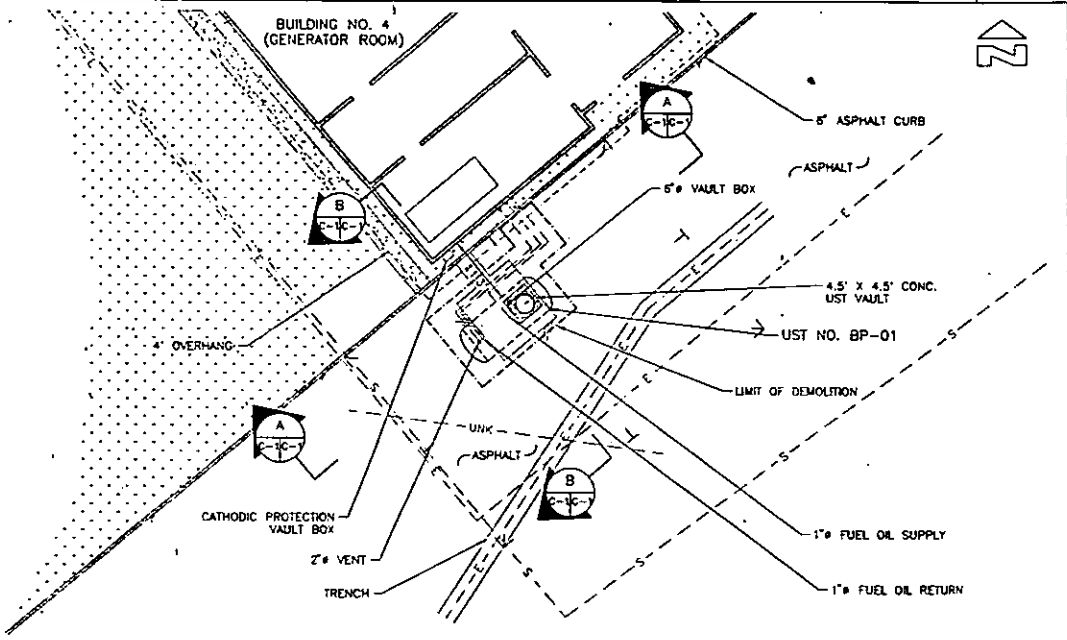
Gregory K. Olmsted

GREGORY K. OLMSTED, SUPERVISOR
Underground Storage Tank Section
Solid and Hazardous Waste Branch

GKO:alk

Enclosures (3)

c: Mr. Attilio Leonardi, Fire Chief, Honolulu Prevention Fire Bureau



SITE PLAN, BLDG. NO. 4, (UST NO. BP-01)
SCALE: 1" = 10'

SCOPE OF DEMOLITION:

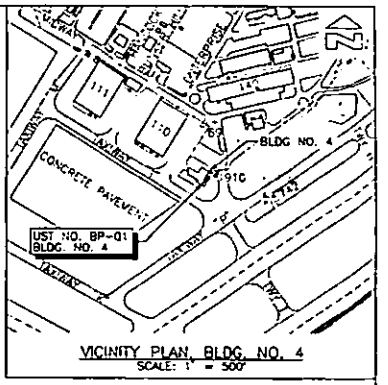
1. FIELD VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF UNDERGROUND STORAGE TANK, ELECTRICAL UTILITIES, AND ANCILLARY PIPING PRIOR TO ANY DEMOLITION. REMOVE AND RELOCATE INTERFERING PORTION OF TOPSOIL AND/OR ASPHALT OVERLYING TANK AS DIRECTED BY NTR. PROTECT OR REROUTE UTILITIES AS REQUIRED TO MAINTAIN OPERATION.
2. EVACUATE AND DISPOSE OF DIESEL FUEL (IF ANY) FROM TANK AND ANCILLARY PIPING.
3. CUT AND CAP ANCILLARY PIPING AT THE LIMIT OF DEMOLITION.
4. CUT AND CAP ELECTRICAL CONDUIT AT LIMIT OF DEMOLITION. REMOVE ALL EXISTING WIRES FROM CONDUIT REMAINING IN PLACE. LOCATE ELECTRICAL PANEL IN BUILDING AND IDENTIFY ASSOCIATED CIRCUIT BREAKERS.
5. SUPPORT EXCAVATION WALLS AS APPROPRIATE TO PROTECT BUILDING FOUNDATION
6. REMOVE AND DISPOSE OF UST, ANCILLARY PIPING, CONCRETE TIE DOWN SLAB, AND APPURTENANCES WITHIN LIMIT OF DEMOLITION.

SCOPE OF RESTORATION:

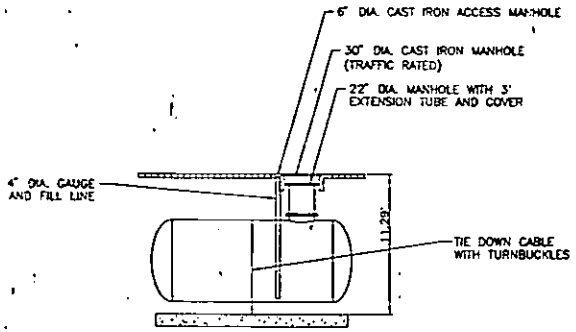
1. BACKFILL AND COMPACT EXCAVATION IN ACCORDANCE WITH SPECIFICATIONS.
2. GRADE DEMOLITION AREAS TO MATCH SURROUNDING AREAS AND TO ENSURE PROPER DRAINAGE. PROVIDE TOPSOIL AND SEED ALL AREAS DISTURBED DURING CONSTRUCTION AS NECESSARY WITH GRASS.
3. RESTORE ASPHALT CONCRETE WHERE REMOVED OR DAMAGED DURING CONSTRUCTION TO MATCH SURROUNDING AREAS.

SPECIAL CONDITIONS:

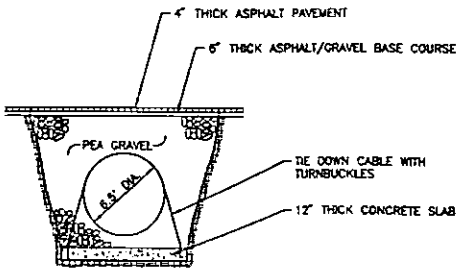
1. FIELD VERIFY LOCATION OF UNDERGROUND UTILITIES, TANKS, AND ANCILLARY PIPING PRIOR TO CONSTRUCTION.
2. PROTECT UNDERGROUND UTILITIES AND BUILDING FOUNDATION (IF NECESSARY) DURING CONSTRUCTION.
3. FURNISH AND INSTALL TEMPORARY VEHICLE AND PEDESTRIAN BARRIERS TO PROTECT WORK AREA AND MAINTAIN SITE SECURITY DURING CONSTRUCTION.



VICINITY PLAN, BLDG. NO. 4
SCALE: 1" = 500'



SECTION A
SCALE: 1" = 5'



SECTION B
SCALE: 1" = 5'

GRAPHIC SCALES

1" = 5' 5' 0' 5' 10' 15'
1" = 10' 10' 0' 10' 20' 30'
1" = 500' 500' 0' 500' 1000' 1500'

IF SHEET IS LESS THAN 24" X 36" IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THE INSTALLATION OF ALL WORK WITHIN THE AVAILABLE SPACE.

C-1

SOURCE: NAVY PUBLIC WORKS CENTER, NAVFAC DWG. NOS. 7485563 AND 7019487

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

REVISIONS

LTR	DESCRIPTION	PREP'D BY	DATE	APPROVED

OGDEN ENGINEERS AND DESIGN SERVICES

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
PACIFIC DIVISION

NAVY INSTALLATIONS — HAWAII

REMOVAL AND CLOSURE OF ASTs, USTs, AND AIRFIELD HYDRANT FUELING SYSTEMS

SITE PLAN, BLDG. NO. 4 (UST NO. BP-01)

SCALE	CONTRACT NO	DRAWING NO
D	80091	7923154

SCALE AS NOTED | APPROVED | SHEET 3 OF 63

100% SUBMITTAL JULY 26, 1996

FIGURE ( )

≠ 975 1X 64.5%

PRIVATE PROPERTY

RUNWAY WIND COVERAGE IN PERCENT
WIND IN KNOTS

WIND ROSE DIAGRAM - NAS BARBERS POINT
Period of Record 1949-1967

CITY & COUNTY OF HONOLULU
HONOLULU WASTE WATER
TREATMENT PLANT

RUNWAY 11-29 8330' x 200'
RUNWAY 4L-22R 8911' x 200'
RUNWAY 4R-22L

29 THRU 40

PACIFIC OCEAN

MAKAKOLE ROAD

TANK NO.	CAPACITY IN GALLONS	MATERIALS STORED PRESENTLY	MATERIALS STORED PREVIOUSLY	MAP GRID REFERENCE
1	2,000	DIESEL		F-13
2	500	DIESEL		H-13
3	990	FUEL OIL		H-13
4	660	DIESEL		H-13
5	660	DIESEL		H-13
6	990	FUEL OIL		H-13
7	990	FUEL OIL		H-14
8	660	DIESEL		H-14
9	660	DIESEL		H-13
10	990	FUEL OIL		H-13
11	660	DIESEL		J-13
12	990	FUEL OIL		J-13
13	990	FUEL OIL		J-13
14	660	DIESEL		J-13
15	660	DIESEL		J-13
16	990	FUEL OIL		J-12
17	660	DIESEL		J-12
18	990	FUEL OIL		K-15
19	675	DIESEL		K-16
20	2,000	FUEL OIL		K-16
21	1,100	OIL & WATER MIXTURE		H-12
22	165	DIESEL		F-14
23	275	DIESEL		F-14
24	2,500	WASTE OIL		J-12
25	2,500	WASTE OIL		J-12
26	55	FUEL		H-10
27	5,000	FUEL OIL FOR BOILER		F-09
28	10,000	RAINWATER	AVGAS	F-09
29	25,000	RAINWATER	AVGAS	F-09
30	25,000	RAINWATER	AVGAS	F-09
31	5,000	RAINWATER	AVGAS	F-09
32	5,000	RAINWATER	AVGAS	F-09
33	5,000	RAINWATER	AVGAS	F-09
34	5,000	RAINWATER	AVGAS	F-09
35	260		AVGAS	F-09
36	260		AVGAS	F-09
37	260		AVGAS	F-09
38	300		AVGAS	F-09
39	300		AVGAS	F-09
40	300		AVGAS	F-09
41	10,000		AVGAS	H-12
42	10,000		AVGAS	H-12
43	6,000	UNLEADED GAS		H-13
44	5,000	UNLEADED GAS		H-13
45	5,000	PREMIUM GAS		H-13
46	7,500	UNLEADED GAS		H-13
47	7,500	REGULAR GAS		H-13
48	567,506	JP-5		F-12
49	25,000		WASTE FUEL	H-12
50	25,000		WASTE FUEL	H-12
51	25,000	DIESEL		H-12
52	25,000	DIESEL		H-12
53	500	DIESEL		C-08
54	2,500	DIESEL		B-05
55	2,500	DIESEL		B-05
56	1,000	DIESEL		B-11
57	1,000	DIESEL		B-07
58	100			B-14
59	1,000	DIESEL		B-13
60	550	DIESEL		B-13
61	550	DIESEL		J-12
62	300	DIESEL		J-14
63	200	UNLEADED GAS		C-13
64	2,000	AVGAS		B-16
65	2,000	AVGAS		B-16
66	2,000	EMPTY		C-14
67	2,000	EMPTY		C-14
68	2,500	DIESEL		B-14
69	2,000	DIESEL		B-04
70	2,000	DIESEL		B-04
71	50,000		AVGAS	L-7
72	5,000		AVGAS	L-7
73	5,000		AVGAS	L-7
74	25,000		AVGAS	J-7
75	25,000		AVGAS	J-7
76	25,000		AVGAS	J-7
77	25,000		AVGAS	J-5
78	50,000		AVGAS	J-5
79	50,000		AVGAS	H-4
80	40,000		FUEL OIL	B-16
81	10,000	UNLEADED GAS		B-13
82	10,000	PREMIUM GAS		B-13
83	10,000	REGULAR GAS		B-13
84	1,000	DIESEL		C-11
85	1,000	UNLEADED GAS		C-11
86	500	FUEL OIL		K-16
87	500	WASTE OIL		K-16
88				H-13
89				H-13
90	5,000	DIESEL		J-8
91	5,000	DIESEL		J-8

COLOR CODE:
- OPERATIONAL
- ABANDONED

LEGEND:
TANK NO. (4)
LOCATION

GRAPHIC SCALE IN FEET
500 250 0 500 1000 1500 2000

NASBARPT DWG. NO. SCEBP-24-87
W/S NO.
DES
DRAWN
CHECKED
DEPUTY SCE
APPROVED DATE
STAFF CIVIL ENGINEER
SATISFACTORY TO DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
U.S. NAVAL AIR STATION
BARBERS POINT, OAHU, HAWAII

UNDERGROUND STORAGE TANK
LOCATION MAP

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DWG. NO.
CONSTR. CONTR. NO.
SCALE: | SPEC. | SHEET 1 OF 1

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-250

PRIVATE PROPERTY

WIND ROSE DIAGRAM - NAS BARBERS POINT
Period of Record 1949-1967

RUNWAY WIND COVERAGE IN PERCENT
WIND IN KNOTS

CITY & COUNTY OF HONOLULU
HONOULIULI WASTE WATER
TREATMENT PLANT

PRIVATE PROPERTY

PRIVATE PROPERTY

PACIFIC OCEAN

RUNWAY 11-29 — 8330' X 200'

RUNWAY 4L-22R — 8911' X 200'

RUNWAY 4R-22L

NOTES:

1. LAND AREA ENCLOSED BY STATION BOUNDARY 3,614.744 ACRES.
2. ORIGIN OF COORDINATES:
   a. HAWAIIAN PLANE COORD. SYSTEM-ZONE-3
3. OUTLEASE UNDER CONTRACT:
   a. NASBARPT ELEMENTARY SCHOOL OWNED AND OPERATE BY DEPARTMENT OF PUBLIC INSTRUCTION, STATE OF HAWAII. NOy(R)60487 14.203 ACRES.
   b. AEC OUTLEASE UNDER CONTRACT NOy(R)9878I 27.480 ACRES
   c. OTHERS
      BANK OF HAWAII ..... NOy(R) 54613 0.360 ACRES
      FAA OUTER MARKER ..... NOy(R) 60886 0.164 ACRES
      U.S. COAST GUARD ..... NOy(R) 98828 47.985 ACRES
      STANDARD OIL RANGE MARKER . NOy(R) 68126
4. THIS PLAN SUPERSEDES P.W. DWG. NOS. NI-87, 11000-530 AND 11000-675.

LEGEND

- STRUCTURE
- STATION BOUNDARY
- STATION FENCE
- SHORELINE
- RUNWAY APPROACH ZONE
- CORAL ROAD
- DRAINAGE CANAL
- MAIN GATE
- PAVED ROAD
- RAILROAD
- SECURE WALK-THRU GATE
- SECURE VEHICLE
- ROAD CLOSE

—	Q	REVISION APRIL 28, 1983 BY J. SANCHEZ	4/28/83	amake
K,IO	P	REVISION OCTOBER 1981 BY J. TAMURA	10/7/81	amake
—	O	REVISION MARCH 1980 BY R. UYENO	3/12/80	amake
—	M	REVISION SEPTEMBER 1979 BY R. UYENO	10/4/79	amake
—	N	REVISION JUNE 1978 BY R. UYENO	7/10/78	amake
—	L	REVISED AND CORRECTED AS OF 8 APRIL 1977 BY UYENO	4/18/77	amake
—	K	REVISED AND CORRECTED AS OF 10 MAY 1976	5/10/76	amake
—	J	REVISED AND CORRECTED AS OF 21 OCT 1974 BY W. RAPOSA	10/22/74	RE Uyeno
ZONE	LTR	DESCRIPTION OF AMENDMENT OR CORRECTION	DATE	APPROVED

PWO DWG. NO. 11000-855

R/S NO. 2156
DES Raposa
DRAWN Raposa
CHECKED A.A.
BR. ENGINEER A. Abe
DESIGN DIRECTOR A. Abe

APPROVED DATE
William D. Hisaoka 12/19/66
PUBLIC WORKS OFFICER

APPROVED DATE
A. F. Farwell 12/23/66
COMMANDING OFFICER

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
U.S. NAVAL AIR STATION
BARBERS POINT, OAHU, HAWAII

STATION PLOT PLAN

SIZE F | CODE IDENT NO. 80091 | FEC DRAWING NO.

SCALE: 1"=500' | SHEET 1 OF 1

GRAPHIC SCALE IN FEET
500 250 0 500 1000 1500 2000

R M TOWILL CORPORATION
233 MERCHANT STREET
HONOLULU, HAWAII
DATUM OF CONTOURS MEAN SEA LEVEL

ORIGIN OF COORD. HAWAIIAN PLANE COORD SYSTEM-ZONE 3
1039 ⊙ DENOTES HORIZONTAL CONTROL POINT
COMPILED BY PHOTOGRAMMETRIC METHOD
FROM PHOTOGRAPHY TAKEN ——— 1:10-00

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-251

Comprehensive Long-Term Environmental Action Navy (CLEAN) II
Contract No. N62742-94-D-0048
Contract Task Order No. 0066

Finding of Suitability of Transfer

Property to be Transferred to the State of Hawaii Department of Transportation Naval Air Station Barbers Point, Oahu, Hawaii

Prepared for:

Department of the Navy
Commander, Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860-3134

Prepared by: Earth Tech, Inc.
700 Bishop Street, Suite 900
Honolulu, Hawaii 96813

and

Tetra Tech EM Inc.
2828 Paa Street, Suite 3080
Honolulu, Hawaii 96819

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May 1999

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ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
AST	aboveground storage tank
AvGas	Aviation Gasoline
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
DoD	Department of Defense
Earth Tech	Earth Tech, Inc.
EBS	Environmental Baseline Survey
ECP	Environmental Condition of Property
EPA	Environmental Protection Agency
EIS	Environmental Impact Statement
FOST	Finding of Suitability to Transfer
HDOH	State of Hawaii Department of Health
HDOT	State of Hawaii Department of Transportation
IRP	Installation Restoration Program
LBP	lead-based paint
LRA	Local Reuse Authority
mg/kg	milligrams per kilogram
MoGas	Motor Gasoline
NAS	Naval Air Station
NEPA	National Environmental Policy Act
Ogden	Ogden Environmental and Energy Services Co., Inc.
OHM	OHM Remediation Services
PCB	polychlorinated biphenyl
POI	point of interest
RI	Remedial Investigation
SPCC	Spill Prevention Control and Countermeasures
UIC	underground injection well
U.S.	United States
USC	United States Code
UST	underground storage tank

1. INTRODUCTION

1.1 PURPOSE

The purpose of this Finding of Suitability to Transfer (FOST) is to document the environmental findings and suitability for transfer of real property at Naval Air Station (NAS) Barbers Point, Oahu, Hawaii, to the State of Hawaii Department of Transportation (HDOT). This parcel became available through the Base Closure and Realignment Act (BRAC) and is being transferred under Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 United States [U.S.] Code [USC] Section 9620 (h)). The Navy will transfer the property to HDOT for use as an airport and support facility, which is its current use.

1.2 BACKGROUND DOCUMENT REVIEW

The basewide Environmental Baseline Survey (EBS) provided overall descriptions of environmental issues at NAS Barbers Point, but did not describe the site-specific environmental conditions at the individual parcel summarized in this FOST (Ogden 1994). Since completion of the basewide EBS in 1994, environmental conditions may have changed, and additional investigations and remediation activities have been performed. This document is based on information from the basewide EBS, parcel-specific EBS data gathered for the FOST, as well as a review of the documents listed in Section 12.

During the investigative activities performed for this FOST, the basewide EBS information was updated by:

- Conducting a follow-up site reconnaissance in January 1999 of parcels covered by this FOST to identify any factors or changes that have occurred since completion of the basewide EBS (Ogden 1994)
- Interviewing Navy personnel and contractors regarding the presence of hazardous wastes and other environmental factors

2. PROPERTY DESCRIPTION

The property consists of approximately 753 acres with 24 buildings in the central/southern portion of NAS Barbers Point. In addition to the 24 buildings, the parcel also contains three runways, 32 former underground storage tanks (UST) sites, 4 aboveground storage tanks (AST) sites, 31 dry wells, 8 electrical substations, and other structures associated with an airport. The property will be used as an airport and support facility. Figure 1 shows the property boundaries of the proposed HDOT parcel. Table 1 provides a list of facilities on the parcel.

3. NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

Environmental impacts of the proposed disposal and reuse of Naval Air Station Barbers Point have been analyzed in an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (NEPA) of 1969. The draft EIS was released for public comment in August 1998. The proposed transfer will not have a significant impact on existing environmental contamination or public health and safety. The final EIS was completed in February 1999, and the Record of Decision is expected to be signed in May 1999.

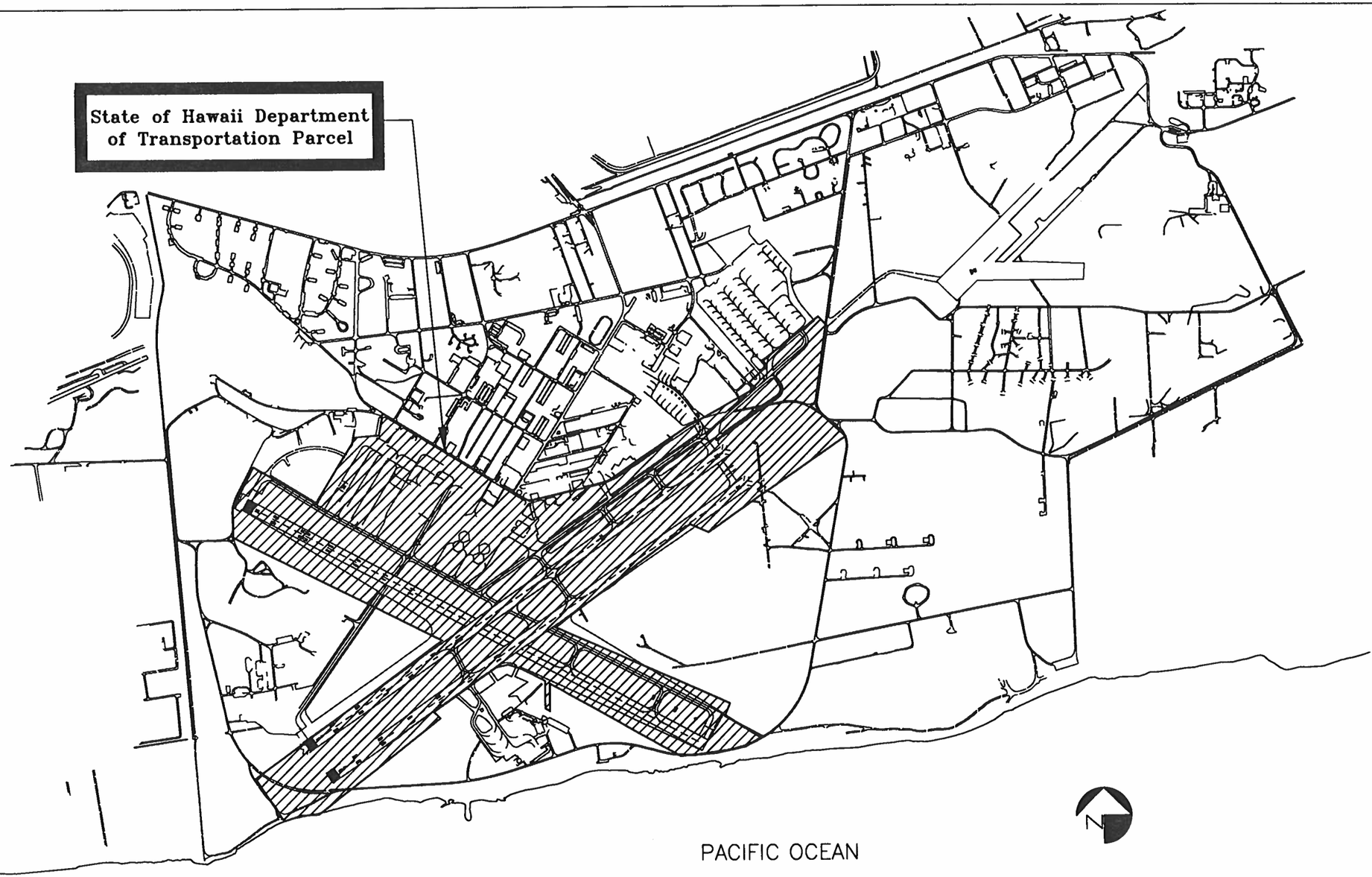


FIGURE 1

LOCATION OF STATE OF HAWAII DEPARTMENT OF TRANSPORTATION PARCEL, NAS BARBERS POINT

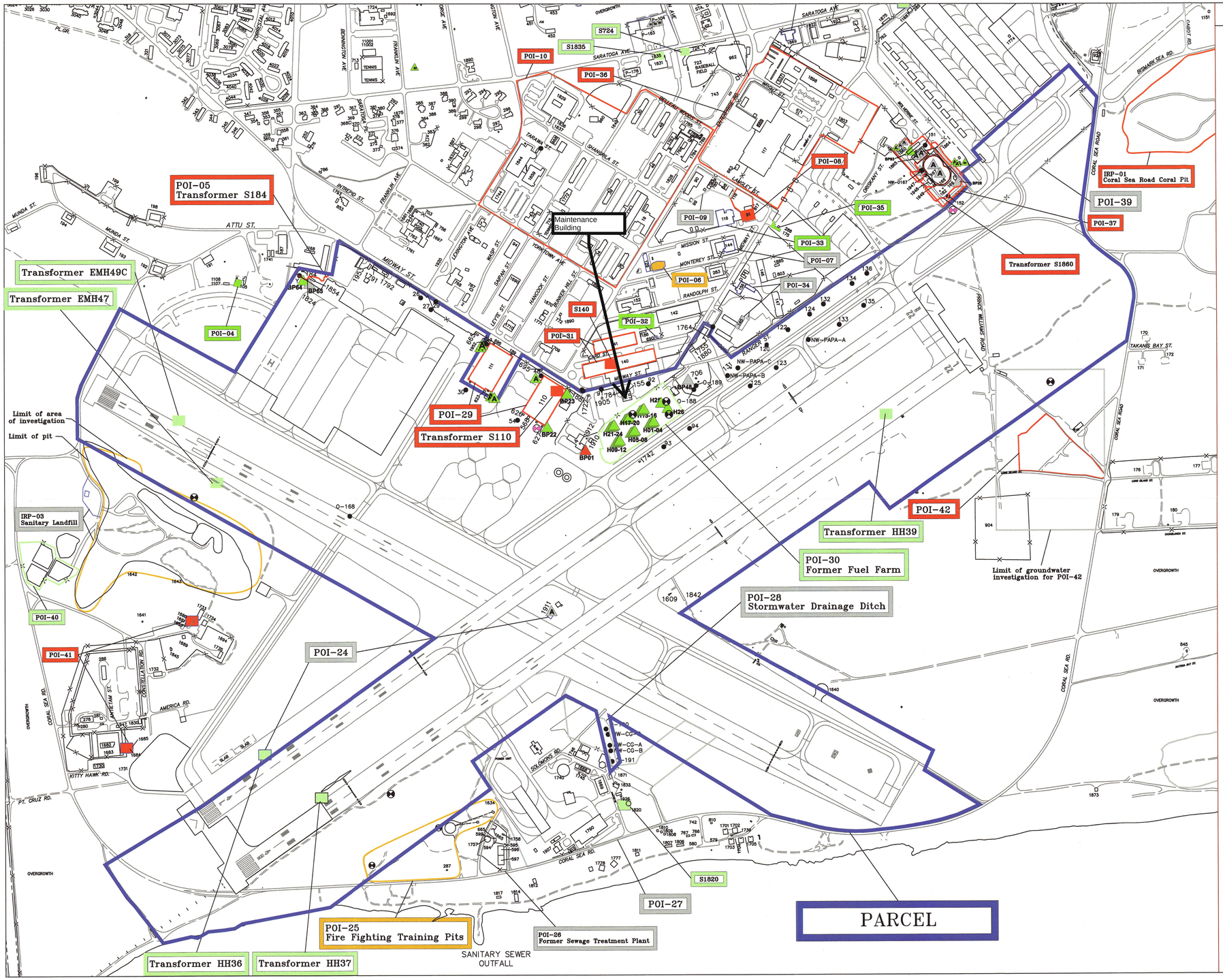

POI-05
Transformer S184
Transformer EMH49C
Transformer EMH47
POI-04
POI-29
Transformer S110
Limit of area of investigation
Limit of pit
IRP-03
Sanitary Landfill
POI-40
POI-41
POI-24
POI-25
Fire Fighting Training Pits
Transformer HH36
Transformer HH37
SANITARY SEWER OUTFALL
POI-26
Former Sewage Treatment Plant
POI-27
S1820
PARCEL
POI-30
Former Fuel Farm
Transformer HH39
POI-42
Limit of groundwater investigation for POI-42
POI-28
Stormwater Drainage Ditch
Maintenance Building
POI-10
POI-36
POI-08
POI-09
POI-35
POI-33
POI-07
POI-06
POI-34
POI-32
POI-31
S140
S724
S1835
IRP-01
Coral Sea Road Coral Pit
POI-39
POI-37
Transformer S1860
SARATOGA AVE
MIDWAY ST.
ATTU ST.
MUNDA ST.
TARAWA ST.
SHANGRILA ST.
YORKTOWN AVE
RANGER ST.
MISSION ST.
MONTEREY ST.
RANDOLPH ST.
CORAL SEA RD.
AMERICA RD.
KITTY HAWK RD.
PT. CRUZ RD.
SCAMONS RD.
TAKANIS BAY ST.
BISMARK SEA RD.
CAROL SEA ROAD
FRANKLIN AVE
LEXINGTON AVE
HANCOCK ST.
ENTERPRISE RD.
HORNET ST.
LANGLEY AVE.
ORISKANY ST.
PRINCE WILLIAMS ROAD
CONSTELLATION RD.
OVERGROWTH
TENNIS
BASEBALL FIELD
NW-PAPA-A
NW-PAPA-B
NW-PAPA-C
NW-CC-1
NW-CC-2
NW-CC-A
NW-CC-B
NW-191
H01-04
H05-08
H09-12
H13-16
H17-20
H21-24
H25
H26
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BP127
BP128
BP129
BP130
BP131
BP132

Table 1: Buildings on Parcel to be Transferred to the Hawaii Department of Transportation

Building/ Facility No.	Building/Facility Description	Year of Construction	Area (ft^2)	No. of Stories
4	Operation Tower	1942	17,238	4
110 (POI-29)	Maintenance Hangar	1942	107,021	1
115	Weapons Administration/ Operations Office	1942	7,280	1
131	Runway/Lighting Switching Station	1943	55	2
155	Ready Magazine	1944	110	NA
184 (POI-05)	Transformer Station	1943	336	1
188	Ready Magazine	1943	90	NA
568	Aircraft Line Maintenance Shack	1962	256	1
626	Storage Locker	1943	165	NA
627	Storage	1943	165	NA
665	Squadron Storage	1949	450	Unknown
695	Ready Magazine	1943	90	NA
784	Electrical Substation	1943	375	1
1609	Navigation Aid	1943	Unknown	NA
1722	Transformer Station	1945	Unknown	NA
1755	Aircraft/Structural Fire/ Crash Station	1969	10,348	1
1764	Transformer Station	1969	Unknown	NA
1791	Aircraft Line Operations Building	1973	1,029	Unknown
1792	Line Operations Building	1981	960	1
1824	Fuel Storage Wooden Structure	Unknown	1,350	Unknown
1880	Structural/Aircraft Fire Station	1982	960	1
1905	Aircraft Display	1985	Unknown	Unknown
1910	Radar Operational Facility	1985	960	1
1911 (POI-24)	Precision Approach Radar	1985	150	1
1935	Shed	2,460	Unknown	NA
1953	Toilet Facility - T-line Heads	Unknown	Unknown	Unknown

Notes:
ft^2 Square feet
gal/yr gallons per year

4. ENVIRONMENTAL CONDITION OF THE PROPERTY

The Department of Defense (DoD) established seven environmental condition for property (ECP) area types to assess whether a particular property is suitable for transfer:

Area Type 1	Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)
Area Type 2	Areas where only release or disposal of petroleum products has occurred
Area Type 3	Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response
Area Type 4	Areas where release, disposal, and/or migration of hazardous substances has occurred and all removal or remedial actions to protect human health and the environment have been taken
Area Type 5	Areas where release, disposal, and/or migration of hazardous substances has occurred and removal or remedial actions are under way to protect human health and the environment are underway, but all required remedial actions have not been taken
Area Type 6	Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented
Area Type 7	Areas that are not evaluated or require additional evaluation

The DoD ECP area type classifications describe the potential for environmental contamination of property and the property's suitability for transfer in accordance with CERCLA. Of the seven classifications, ECP area types 1 through 4 are eligible for transfer without deferral of required environmental covenants described in Section 10. The proposed HDOT parcel has been subdivided and has several ECP area types based on the different point of interest (POI) sites. The ECP area types for the parcel to be transferred to the HDOT are based on information gathered during activities described in Section 1.2. Table 2 summarizes the ECP area type rationales for areas within the parcel.

The 12 POIs that are within or intersect the parcel's property boundary are separately discussed under each appropriate ECP area type. The overall ECP area type classification for the property is 4, areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken. The ECP area type classifications for each POI within or intersecting the parcel to be transferred to the HDOT is described below.

Table 2: Environmental Condition of Property Area Type Classification Rationale

POI Designation	Site Description	USTs and ASTs	ECP Area Type Category	Rationale for ECP Classification
POI-05	Substation S184, Building 184	None	4	POI-05 is classified as ECP area type 4 because response actions necessary to protect human health and the environment have been taken. POI-05 is available for transfer.
POI-24	Runway Sites Transformer HH36 and Building 1911	AST: 1911	3	POI-24 is classified as ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system (see POI-49). There has been no release of hazardous substances or petroleum products specifically at POI-24. POI-24 is available for transfer.
POI-25 (partial)	Fire Fighting Training Pits	None	3	POI-25 is classified as ECP area type 3 because it is an area where release of hazardous substances has occurred and are present at concentrations that do not require a removal or remedial action. POI-25 is also ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system (see POI-49). POI-25 is available for transfer.
POI-27 (partial)	U.S. Coast Guard	None	3	The portion of POI-27 within the HDOT property boundary is classified as ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system (see POI-49). There has been no release of hazardous substances or petroleum products in this portion of POI-27. This portion of POI-27 is available for transfer.
POI-28	Stormwater Drainage Ditch	None	4	POI-28 is classified as ECP area type 4 because response actions necessary to protect human health and the environment have been taken. POI-28 is available for transfer.
POI-29 (partial)	Hangars 110 and 111, Substation S110	USTs: BP-64 and BP-65 ASTs: 110, 111A, and 111B	4	The portion of POI-29 within the HDOT property boundary is classified as ECP area type 4 because response actions necessary to protect human health and the environment in this portion have been taken. POI-29 is available for transfer.
POI-30	Former Fuel Farm	USTs: H01 through H30, and BP-48	2	POI-30 is classified as ECP area type 2 because only petroleum products were released from the Former Fuel Farm. No action is required. POI-30 is available for transfer.
POI-39 (partial)	Hangar 282	None	3	The portion of POI-39 within the HDOT property boundary is classified as ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system (see POI-49). There has been no release of hazardous substances or petroleum products in this portion of POI-39. This portion of POI-39 is available for transfer.
POI-42 (partial)	Old Engine Test Cells Area	None	3	The portion of POI-42 within the HDOT property boundary is classified as ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system (see POI-49). This portion of POI-42 is available for transfer.
POI-47 (basewide)	Dry Well Network	NA	3	POI-47 is classified as ECP area type 3 because it is an area where release of hazardous substances has occurred and are present at concentrations that do not require a removal or remedial action. POI-47 areas within the HDOT parcel are available for transfer.

Table 2: Environmental Condition of Property Area Type Classification Rationale (Continued)

POI Designation	Site Description	USTs and ASTs	ECP Area Type Category	Rationale for ECP Classification
POI-48 (basewide)	Transformer Substation System	NA	3 and 4	There are 7 substations on the HDOT parcel that are part of POI-48. Two of the substations on the HDOT parcel (S110 and S184) are classified as ECP area type 4 because response actions necessary to protect human health and the environment have been taken. The remaining 5 substations on the HDOT parcel (EMH47, EMH49C, HH36, HH37, and HH39) are classified as ECP area type 3 because they are areas where a release of hazardous substances has occurred and are present at concentrations that do not require a removal or remedial action. POI-48 areas within the HDOT parcel are available for transfer.
POI-49 (basewide)	Regional Groundwater System	NA	3	POI-49 is classified as ECP area type 3 because it is an area where release of hazardous substances has occurred and are present at concentrations that do not require a response action. Annual groundwater monitoring is anticipated to continue until 2003.

Notes:
AST Aboveground storage tank
ECP Environmental condition of property
NA Not applicable
POI Point of interest
UST Underground storage tank

4.1 ECP Area Type 2 Property: POI-30

ECP area type 2 designates an area where only releases of petroleum products have occurred. There is one POI site on the HDOT property that is classified as ECP area type 2. POI-30 is the Former Fuel Farm, which is located on the north side of Runway 22R near Building 4. Twenty-seven USTs were used to store Motor gasoline (MoGas), Aviation Gasoline (AvGas), and diesel fuel from the 1940s to 1979. Further information on USTs at POI-30 is provided in Section 5.1.2. A 3,000-gallon MoGas leak was reported in the early 1970s near the site. During the RI conducted in 1995, hydrocarbon-related compounds were detected in soil at concentrations that do not pose a threat to human health and the environment under any reuse scenario. Cleanup is not required at this site.ECP area type 2 designates an area where only releases of petroleum products have occurred.

4.2 ECP Area Type 3 Property: Portions of POI-24, POI-25, POI-27, POI-39, POI-42, POI-47 (Basewide), POI-48 (Basewide), and POI-49 (Basewide)

ECP area type 3 designates areas where a release of hazardous substances have occurred, but at concentrations that do not require a removal or remedial action. Portions of eight POIs, POI-24 (Runway Sites, Transformer HH36, and Building 1911), POI-25 (the Fire Fighting Training Pits), POI-27 (U.S. Coast Guard), POI-39 (Hangar 282), POI-42 (Old Engine Test Cells Area), POI-47 (Dry Well Network [basewide]), POI-48, (Transformer Substation System [basewide]), and POI-49 (Regional Groundwater System [basewide]), are classified as ECP area type 3.

ECP area type 3 property are eligible for transfer without deferral of required environmental covenants described in Section 10. The ECP area type for the property to be transferred to the HDOT, which includes portions of POI-24, POI-25, POI-27, POI-39, POI-42, POI-47, POI-48, and POI-49 is based on information gathered during activities described in Section 1.2. Although there is no record of a release or a disposal of hazardous substances at some of these areas, they are classified as ECP type 3 because low concentrations of hazardous substances were detected in the regional groundwater system in groundwater underlying NAS Barbers Point.

4.2.1 Portion of POI-24 - Runway Sites, Transformer HH36, and Building 1911

POI-24 is located in the middle of the property to be transferred on the southeast side of Runway 4L. Substation HH36 was investigated under POI-48 and was recommended for no action. There is a 55-gallon aboveground storage tank (AST) at Building 1911. This AST will be cleaned and assessed prior to base closure and transfer. There has been no evidence of a release at POI-24. This POI is an ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system.

4.2.2 Portion of POI-25 - Fire Fighting Training Pits

The POI-25 investigation area intersects with the HDOT property boundary, in the south section of the parcel near Runway 4R. Two unlined pits, which were approximately 30 feet in diameter, were used from the early 1960s to 1984 for fire fighting training exercises. From 1984 to 1994, exercises were conducted at a 100-foot-diameter concrete-lined pit located approximately 700 feet east of the original pits. A portion of this site (in the vicinity of the unlined pits) is included in the HDOT parcel.

Results of a RI conducted from 1994 to 1995 indicated that fuel constituents, polychlorinated biphenyls (PCB), dioxins, arsenic, manganese, and lead are contaminants of potential concern at the site. However, concentrations present at the site are at low enough levels that it is suitable for its

intended industrial use, and no cleanup is required. Deed restrictions will be imposed to prevent use of the site for residential or long-term recreational (i.e., camping) purposes. This POI is an ECP area type 3 due to the low concentrations of contaminants detected at the site, as well as the regional groundwater.

4.2.3 Portion of POI-27 - U.S. Coast Guard

The POI-27 investigation area extends into the southern portion of the HDOT property near Runway 4R. The portion of POI-27 within the HDOT parcel poses no environmental concerns. This POI is an ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system.

4.2.4 Portion of POI-39 - Hangar 282

POI-39 is located in the northeast section of the HDOT parcel. The portion of POI-39 that intersects the HDOT parcel does not have any environmental concerns. Minor aircraft maintenance and aircraft washing is conducted on a concrete apron adjacent to Hangar 282. There are dry wells and ASTs associated with the POI, but the dry wells and ASTs are located outside the HDOT property boundary. This POI is an ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system.

4.2.5 Portion of POI-42 - Old Engine Test Cells Area

The portion of POI-42 that is included in the parcel does not contain any major environmental concerns. Asbestos-containing transite tiles and petroleum products were detected in soil at POI-42 outside the HDOT parcel boundary. The transite will be removed or encapsulated in 1999 to ensure that it does not pose a threat to human health or the environment as it weathers over time.

There is one groundwater monitoring well associated with POI-42 in the HDOT parcel. This is an upgradient well installed to monitor background conditions and is not expected to be affected by the fuel release at POI-42. This POI is an ECP area type 3 due to low concentrations of hazardous substances in the regional groundwater system.

4.2.6 POI-47 - Dry Well Network (Basewide)

The property to be transferred to HDOT contains dry wells associated with POI-47, the basewide Dry Well Network. The sediment in the dry wells contained contaminants at concentrations that do not pose a threat to human health and the environment. The dry wells on the property to be transferred to HDOT are categorized as ECP area type 3.

4.2.7 POI-48 - Transformer Substation System (Basewide)

Seven transformer substations on the HDOT property are part of the basewide Transformer Substation System. Of the seven substations, five (EMH47, EMH49C, HH36 (part of POI-24), HH37, and HH39) were determined to require no action and the property on which they are located may be used in their current condition for their intended reuse, as well as for unrestricted reuse. These transformers are categorized as ECP area type 3.

4.2.8 POI-49 - Regional Groundwater System (Basewide)

POI-49, Regional Groundwater System is discussed in Section 5.1.3. The groundwater contains some hazardous substances, but does not pose a threat to human health and the environment. Due to

low concentrations of contaminants in groundwater, the regional groundwater system is categorized as ECP area type 3.

4.3 ECP AREA TYPE 4: POI-05, POI-28, AND PORTIONS OF POI-29 AND POI-48 (BASEWIDE)

ECP area type 4 designates areas where all remedial actions necessary to protect human health and the environment have been taken. There are four POIs within or intersecting the parcel's property boundary that are classified as ECP area type 4. The four POIs are POI-05, POI-28, portion of POI-29, and POI-48 (basewide).

4.3.1 POI-05 - Substation S184, Building 184

Substation S184 is located at the edge of a concrete apron in the northwestern corner of the HDOT parcel. PCBs were detected in the concrete floor of Building 184, in concrete and soil inside an underground vault in Building 184, and in soil surrounding the building. All required remedial actions at this POI have been completed, and most of the substation is suitable for unrestricted use. Use restrictions will be required for the underground vault.

4.3.2 POI-28 - Stormwater Drainage Ditch

The stormwater drainage ditch, POI-28, is on the southeast side of Runway 11. The drainage ditch has received runoff water from hangar and runway areas via a culvert since the 1950s or 1960s. It is still in operation. The ditch is approximately 20 feet wide, 10 feet deep, 430 feet long, and has no outlet. There are seven dry wells located on the bottom of the ditch to aid seepage into the subsurface. Over the years, fuels, solvents, and metals were deposited in sediments in the ditch via washwater and/or potential spills at the hangars and runways. Further contamination of the site is not anticipated if preventive practices are continued (e.g., spill prevention, use of oil/water separators, etc.). All sediments in the drainage ditch and dry wells, as well as six inches of underlying bedrock have been excavated to remove the contaminated media. All response actions required at this site have been completed, and the site is suitable for unrestricted use. The cleanup activities are documented in the Remediation Verification Report in March 1999.

4.3.3 Portion of POI-29 - Hangars 110 and 111

Only Hangar 110 and Substation 110 are within the HDOT property boundary of the parcel in POI-29. Hangar 111 is a separate property being transferred to the Honolulu Community College.

Oil/water separators, dry wells, transformers, and storage tanks are present within the POI. The oil/water separators were inspected, and soil samples were collected from around each oil water separator during the miscellaneous units survey and sampling in February 1999. Concentrations of contaminants in all soil samples collected did not exceed screening levels. Oil/water separators will be cleaned prior to property transfer, as discussed in Section 5.2.2. The dry wells at the site were assessed as part of the Dry Well Network (POI-47) (see Sections 4.2.6 and 5.1.6). PCBs were detected in the concrete floor and in concrete and soil in an underground vault at Substation S110, which is located inside Hangar 110. Substation S110 was cleaned up as part of the Transformer Substation System (POI-48) removal action (see Section 5.1.1). A use restriction will be required for the substation to restrict use of the underground vault and the land underneath the substation to industrial purposes. The storage tanks have been removed (see Section 5.1.2) and there has been no evidence of a release.

4.3.4 POI-48 - Transformer Substation System (Basewide)

Two of the seven transformer substations located in the HDOT parcel required cleanup. All cleanup actions required at these substations have been completed. As discussed in Sections 4.3.1 and 4.3.3, Substation S184 (POI-05) and Substation S110 in POI-29 were cleaned up as part of POI-48. For further discussion of the Transformer Substation System, see Section 5.1.1.

5. DEED RESTRICTIONS AND NOTIFICATIONS

The documents listed in Section 12 were evaluated to identify environmental factors and resources that may warrant constraints on certain activities to substantially minimize or eliminate any threat to human health and the environment. Such constraints are described in a FOST as restrictions to be included in the deed or as specific notifications in the deed or other documents supporting the transfer of the property. The environmental factors and resources considered for this FOST are described in the following sections and listed in Table 3. Figure 2 presents the environmental features for this property.

Table 3: Environmental Factors, HDOT Parcel

Deed Restriction or Notification Required?		Environmental Factors Considered
No	Yes	
Environmental Restoration, Hazardous Substances, and Petroleum		
X		Hazardous Materials/Hazardous Wastes
	X	Installation Restoration Program (IRP)/Point of Interest (POI) Sites
	X	Petroleum Products and Derivatives (Storage Tanks)
X		Medical/Biohazardous Waste
X		Oil/Water Separators
X		Unexploded Ordnance
X		Radioactive and Mixed Wastes
	X	Groundwater System
X		Pesticides
Disclosure Factors/Resources		
	X	Asbestos-Containing Materials (ACM)
X		Drinking Water Quality
X		Lead-Based Paint (Housing)
	X	Lead-Based Paint (Facilities other than Housing)
X		Polychlorinated Biphenyls (PCBs)
X		Radon
Other Factors		
X		Air Conformity/Air Permits
X		Wastewater/Stormwater/Surface Water
	X	Dry Wells
X		Cultural Resources
X		Threatened and Endangered Species
X		Septic Tanks
X		Wetlands

Notes:
AST = aboveground storage tank.
UST = underground storage tank.

Environmental factors and resources that require deed notifications and restrictions are discussed in Section 5.1 and each item identified with an "X" in the "Yes" column is discussed below. Environmental factors and resources that do not pose a threat to human health or the environment and, as a result, require neither deed restrictions nor notifications to the transferee are discussed in Section 5.2 because they are disclosure issues or document the environmental status of the property.

5.1 Environmental Factors and Resources That Pose Constraints

Based on an evaluation of the documents listed in Section 1.2 and consideration of the environmental factors and resource conditions discussed below, certain constraints on the use of property by the transferee are required. The restrictions and notifications resulting from the evaluation of the factors requiring constraints are presented in the following section.

5.1.1 Installation Restoration Program Sites and Environmental Points of Interest

Twelve environmental POI sites within or intersecting the HDOT property were identified in the EBS performed at NAS Barbers Point. These sites (POI-05, POI-24, POI-25, POI-27, POI-28, POI-29, POI-30, POI-39, POI-42, POI-47, POI-48, and POI-49) are discussed in Section 4. Remedial investigations were conducted in accordance with CERCLA at POI-25, POI-30, POI-47, POI-48 (including POI-05 and POI-29), and POI-49. Notifications and restrictions associated with POI-47 and POI-49 are discussed in further detail in Sections 5.1.6 and 5.1.3, respectively. The results of the investigations and removal actions conducted at NAS Barbers Point indicated that portions of sites POI-24, POI-27, POI-28, POI-30, POI-39, POI-42, POI-47, and POI-49 within the HDOT property boundary require no further action to protect human health and the environment under any future land use scenario. Use restrictions will be required for POI-25, the Fire Fighting Training Pits, and portions of POI-48, the Transformer Substation System (basewide), specifically Substation S184 (POI-05) and Substation S110 (part of POI-29).

Transformer substations suspected of being contaminated with PCBs were investigated as basewide POI-48, the Transformer Substation System. Seven transformer substations in the parcel (S110, S184, EMH47, EMH49C, HH36, HH37, and HH39) were sampled for PCBs during the RI. PCB concentrations were determined to be below the cleanup criteria for concrete surfaces with unrestricted access, as defined in the Toxic Substances Control Act (TSCA) Spill Cleanup Policy, at five substations (EMH47, EMH49C, HH36, HH37, and HH39). Cleanup actions were taken at the remaining sites. The concrete floor in S110, located in Hangar 110, was cleaned up using solvent extraction. The concrete floor and underground vault in S184, located in Building 184, was cleaned by both scabbling and solvent extraction. Solvent extraction was also used on a concrete sidewalk located near the substation. PCB-contaminated soil outside of Building 184 was removed from the sites, and stockpiled off site until an ultimate disposal alternative can be identified. All response actions necessary to protect human health and the environment have been completed at POI-48 sites within the parcel. Cleanup activities were documented in a draft Remediation Verification Report in December 1998.

Due to the nature of the current use of the parcel by the Navy and the future use of the parcel by the HDOT as an airport and support facilities, it was determined that the following deed notification and restrictions would be necessary.

Notification

- Transferee will be notified that any remedial actions necessary after the date of transfer regarding hazardous substances located on the property after the date of transfer will be taken by the Navy, except if the response action is required as a result of an act or omission by the Transferee that resulted in a new release of hazardous substances.

Restriction

- The transferee is prohibited from using the Fire Fighting Training Pits area (POI-25) for residential or camping purposes unless transferee undertakes response action to make property suitable for such uses.
- Transferee will be notified that the underground vault at electrical substation S184 and the land beneath it are restricted for use as a utility vault. Transferee will be notified that the underground vault at electrical substation S110 and the land beneath it are restricted for industrial use. PCBs are present in the concrete or soil in underground vaults where there is very limited access. The transferee is prohibited from using these substations for unrestricted use unless transferee undertakes those actions necessary to make the property suitable for such uses.
- Should the transferee demolish the underground vaults at substations S110, and S184, the transferee is responsible for testing concrete for disposal. Transferee will be responsible for testing exposed soil beneath the concrete to determine if the site is suitable for its new reuse. Transferee is responsible for any cleanup actions necessary to make the property suitable for uses requiring stricter cleanup levels.
- Transferee shall not move soil outside of the boundaries of the areas described above, unless it is tested and disposed of in accordance with applicable Federal, state, and local regulations.

5.1.2 Storage Tanks

The following subsections discuss USTs and ASTs and associated fuels lines at the parcel.

Underground Storage Tanks. Table 4 presents the status of all USTs formerly located on the HDOT parcel. All USTs in the HDOT parcel were removed, and no further action is required. The sites have been closed in accordance with 40 Code of Federal Regulations (CFR) 280 and the Hawaii Underground Storage Tank Act, Section 342L.

Aboveground Storage Tanks. Table 5 provides a description of each of the former and current ASTs located within the property to be transferred to the HDOT. The only active AST being transferred to HDOT is the one located at Building 1911 (POI-24). The AST is constructed of steel with a capacity of 55 gallons and contains diesel fuel. This AST was installed within the past five years and is inspected for leaks annually. There is no documented evidence of releases from this AST, and no evidence of a release was observed during the site reconnaissance. Operational ASTs at NAS Barbers Point must be in compliance with 40 CFR 112, which requires that facilities with a total AST capacity of greater than 1,320 gallons have secondary containment of sufficient capacity for the largest single container, plus freeboard for precipitation. Operators are required to regularly inspect the tanks for leaks and to periodically test the integrity of the tank and associated piping system.

Table 4: Underground Storage Tanks

	UST Number	POI	Building/ Location	Year Installed	Capacity (gallons)	Type of Construction	Contents	Status	Cleanup Action
1	BP-01	NA	4	1978	2,000	Unknown	Diesel	Removed	No further action required.
2	BP-22	29	110	1985	160	Steel	Diesel	Removed	No further action required.
3	BP-23	29	110	1985	375	Steel	Diesel	Removed	No further action required.
4	BP-48	30	706	1943	567,000	Concrete	JP-5	Removed	No further action required.
5	BP-64	05	184	1944	4,300	Steel	AvGas	Removed	No further action required.
6	BP-65	05	1868	1944	3,000	Steel	AvGas	Removed	No further action required.
7	H01	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
8	H02	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
9	H03	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
10	H04	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
11	H05	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
12	H06	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
13	H07	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
14	H08	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
15	H09	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
16	H10	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
17	H11	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
18	H12	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
19	H13	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
20	H14	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
21	H15	30	4	1943	25,000	Steel	Diesel	Removed	No further action required.
22	H16	30	4	1943	25,000	Steel	Diesel	Removed	No further action required.
23	H17	30	4	1943	25,000	Steel	MoGas	Removed	No further action required.
24	H18	30	4	1943	25,000	Steel	MoGas	Removed	No further action required.
25	H19	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
26	H20	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
27	H21	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
28	H22	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
29	H23	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
30	H24	30	4	1943	25,000	Steel	AvGas	Removed	No further action required.
31	H25	30	4	1943	25,000	Steel	MoGas	Removed	No further action required.
32	H26	30	4	1943	25,000	Steel	MoGas	Removed	No further action required.

Notes:
NA Not applicable
POI Point of interest
UST Underground storage tank

FOST is missing BP26, BP56, BP93, and BP94

Table 5: Aboveground Storage Tanks

Building/ Location	Capacity (gallons)	Type of Construction	Contents	Further Response Actions
110 (POI-29)	250	Double-walled welded steel	Waste fuel oil	Tank removed. No further action required.
111A and 111B (POI-29)	Two each at 250	Double-walled welded steel	Waste oil	Tank removed. No further action required.
1911 (POI-24)	55	Steel	Diesel	If AST is not removed at base closure, HDOT will be responsible for all maintenance and future releases at the AST after property transfer.

Notes:
HDOT State of Hawaii Department of Transportation
POI Point of interest

The AST will remain in use until base closure, at which time they will be cleaned and assessed for leaks. If the tanks still exhibit no evidence of leaks at base closure, they will be transferred to the HDOT. If the tanks should leak prior to property transfer, they will be taken out of service and any associated contamination will be remediated. The active AST at Building 1911 is constructed with the proper containment requirements; based on the visually observed physical condition of the AST, it is unlikely that the tank will leak before base closure.

Fuel Lines. There are fuel lines on the property being transferred to HDOT. The fuel lines that transport fuel to the airport area from offbase will remain in operation until June 1999. From July to October 1999, the Navy will require access to the property to flush, cut, and grout the fuel lines, and perform necessary sampling to close them in place. Fuel lines associated with ASTs and USTs were drained of free product and removed or closed in place at tank sites no longer operational. Fuel lines associated with ASTs still in operation will be inspected and cleaned (if necessary.)

Notifications

- The Navy and its designated contractor will require access to the to property to flush, cut, and grout the fuel lines, and perform necessary sampling to close them in place. The Navy will be responsible for all contamination associated with the fuel lines on the property being transferred to HDOT.
- The transferee will be responsible for all maintenance and future releases at ASTs. If the tanks show evidence of releases in June 1999 when they are no longer required by the base, then they will be removed. Any necessary remediation will be conducted by the Navy in late 1999.

Restriction

- The Navy will require access to conduct all necessary investigations and remedial actions at the AST near Building 1911, if leaks are detected when the base closes.

5.1.3 Regional Groundwater System

Regional groundwater quality at NAS Barbers Point was investigated during the RI for basewide POI-49. Hazardous substances were detected in groundwater in several localized areas; however, they were detected at low concentrations that posed no threat to human health or the environment.

Furthermore, concentrations of hazardous substances in groundwater appear consistent throughout the aquifer underlying NAS Barbers Point, and with the exception of one area not included in the property to be transferred to the HDOT, do not appear to be the result of releases attributed to base activities. Groundwater underlying NAS Barbers Point is not currently used for domestic water supply purposes and requires desalination before use as drinking water. Regional groundwater monitoring will continue at NAS Barbers Point until cleanup actions at all sites on NAS Barbers Point being addressed to support property transfer have been completed. Nine monitoring wells are present on the property to be transferred to the HDOT (see Figure 2). In addition to these wells, there is an additional well north of the Sanitary Landfill (in the northeastern corner of the parcel). The Navy will require access to these wells to conduct monitoring after the property is transferred.

Notification

- Transferee will allow the Navy and the regulatory agencies access to the property for environmental groundwater monitoring activities at regional monitoring wells until 2003. Transferee will allow the Navy and regulatory agencies access to the property for groundwater monitoring activities at the well associated with the Sanitary Landfill indefinitely.

Restriction

- Transferee is prohibited from extracting groundwater from the property for any purpose until regional groundwater monitoring activities are completed unless the transferee notifies the Navy before installing a well(s) and performs sampling required under all applicable regulations and standards, including the Safe Drinking Water Act.

5.1.4 Lead-Based Paint

DoD policy for lead-based paint (LBP) states that the Navy must comply with all applicable federal, state, and local laws and regulations regarding LBP hazards. The Federal Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of Public Law 102-550) (the Act), applies only to the transfer of "target housing" on federal property. The Act provides for regulation of the abatement of lead hazards from LBP, lead-contaminated dust, and lead-contaminated soil for target housing only. The Act defines "target housing" as "any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any child who is less than 6 years of age resides or is expected to reside in such housing for the elderly or persons with disabilities) and 0-bedroom dwelling" (such as a dwelling that does not have separate bedrooms in each residential unit). In addition, 35 CFR 745, requires that any seller or lessor must disclose known LBP or LBP hazards on residential housing built before 1978. Because the proposed transfer of NAS Barbers Point will not involve any "target housing," the Navy has not implemented a LBP abatement program.

The Navy conducted LBP surveys at 500 structures at NAS Barbers Point in 1993 and 1994; 60 percent of the surveyed buildings contained LBP. Table 6 provides the results of the surveys for the HDOT parcel. Since the facilities are not "target housing" as defined by the Federal Residential Lead-Based Paint Hazard Reduction Act of 1992, no abatement actions are required or planned.

Table 6: Summary of Asbestos and Lead-Based Paint Surveys

Facility Number	Facility Description	Results of LBP Survey	Results of Asbestos Survey	Required Action
4	Aircraft Operation	Some LBP observed to be in damaged condition (5,075 ft^2).	ACM identified in caulking on the roof was noted to be damaged. ACM identified in other floor tiles, mastic, linoleum, roof tar, flashing, and duct insulation were noted to be in good condition.	Repair or replacement of caulking was completed.
110 (POI-29)	Maintenance Hangar	LBP observed to be in good condition (89,010 ft^2).	ACM identified in putty was noted to be significantly damaged. ACM identified in floor tiles were noted to be damaged. ACM identified in mastic, and flashing were noted to be in good condition.	700 ft^2 of duct ceiling material was repaired or replaced. 840 ft^2 of floor tile was replaced.
115	Weapons Admin/ Operations Office	LBP observed to be in damaged condition.	ACM identified in building 115 were all noted to be in good condition. The materials pose a low potential for exposing building occupants to airborne asbestos fibers.	None
131	Runway Lighting/ Switching Building	LBP observed to be in damaged condition.	No asbestos detected.	None
155	Ready Magazine	LBP observed to be in good condition (110 ft^2).	No material suspected of containing asbestos was identified.	None
184 (POI-05)	Transformer Building	Lead not detected in paint.	No material suspected of containing asbestos was identified.	None
188	Ready Magazine	LBP observed to be in damaged condition (710 ft^2).	No material suspected of containing asbestos was identified.	None
568	Aircraft Line Maintenance Shack	LBP observed to be in good condition (710 ft^2).	ACM identified in floor tiles were noted to be in good condition.	None
626	Storage Locker	Some LBP observed to be in significantly damaged condition (430 ft^2).	No material suspected of containing asbestos was identified.	None
627	Storage Locker	LBP observed to be in significantly damaged condition (1,220 ft^2).	No asbestos detected.	None
665	Squadron Storage	LBP observed to be in damaged condition (2,000 ft^2).	No material suspected of containing asbestos was identified.	None
695	Ready Magazine	LBP observed to be in damaged condition (540 ft^2).	No material suspected of containing asbestos was identified.	None
784	Electrical Substation	No LBP on exterior. Interior not tested for lead.	ACM identified in panels were noted to be in good condition.	None
1609	Navigation Aid	Not Tested	No material suspected of containing asbestos was identified.	None
1722	Transformer Station	Not Tested	No material suspected of containing asbestos was identified.	None

Table 6: Summary of Asbestos and Lead-Based Paint Surveys (Continued)

Facility Number	Facility Description	Results of LBP Survey	Results of Asbestos Survey	Required Action
1755	Aircraft/Structural Fire/Crash Station	Lead not detected in paint.	ACM identified in mastic and floor tile was noted to be in good condition.	None
1764	Transformer Station	Not Tested	No material suspected of containing asbestos was identified.	None
1791	Aircraft Line Operations Building	Lead not detected in paint in 1791. LBP on exterior of 1791A and 1791B observed to be in significantly damaged condition.	ACM identified in floor tile mastic was noted to be in good condition.	None
1792	Line Operations Building	No LBP detected.	ACM identified in floor tile was noted to be in good condition. Upon further inspection no additional ACM's were identified.	None
1824	Fuel Storage	LBP observed to be in damaged condition (2,200 ft^2).	No material suspected of containing asbestos was identified.	None
1880	Structural/Aircraft Fire Station	Not Tested	No material suspected of containing asbestos was identified.	None
1905	Aircraft Display	Not Tested	No information available.	None
1910	Radar Operations Facility	Lead not detected in paint.	No asbestos detected.	None
1911 (POI-24)	Precision Approach Radar	LBP observed to be in good condition (300 ft^2).	ACM identified in linoleum backing and HVAC insulation on roof was noted to be in good condition.	None
1935	Shed	LBP observed (12 ft^2)	No survey conducted (not expected to contain asbestos).	None
1953	Hose Restrooms	Lead not detected in paint.	No survey conducted (not expected to contain asbestos).	None

Notes:
Surveys were conducted in December 1993, Fall 1994, and in June 1998. Some materials were assumed to contain asbestos, based upon inspectors' judgment.
ACM Asbestos-containing material
LBP Lead-based paint
POI Point of interest

Sources:
"Asbestos Inspection Report for Naval Air Station Barbers Point, Oahu Hawaii." February 1998.
"Lead-Based Paint Report for Naval Air Station Barbers Point, Oahu Hawaii." Ogden. August 1998.
"Asbestos Reinspection Report for Naval Air Station Barbers Point, Oahu Hawaii." Ogden. February 1999.

Notification

- LBP may be present in facilities built prior to 1978. Lead exposure is especially harmful to young children and pregnant women. The transferee will be responsible for managing all LBP and potential LBP in compliance with all applicable federal, state, and local laws and regulations.

Restriction

- Transferee is prohibited from using existing structures on the property for residential habitation and any occupancy by children under 6 years of age unless transferee removes all LBP hazards and all potential LBP hazards from the structures.

5.1.5 Asbestos-Containing Materials

Asbestos surveys were conducted in 1993, 1994, and 1998 to identify asbestos-containing material (ACM) in facilities to be transferred. Table 6 provides a summary of the asbestos surveys performed in the parcel and a description of ACM identified in each of the facilities in the parcel. Friable, accessible, and damaged asbestos identified during the 1998 survey was either repaired or replaced in November and December 1998. ACM found to be in good condition was not removed or replaced. See Table 6 for details on ACM condition and maintenance in buildings and structures at the HDOT parcel.

Notification

Transferee will be notified that ACM are or may be present in some portions of the buildings on the HDOT parcel at NAS Barbers Point. Transferee will be responsible for managing and complying with all applicable federal, state, and local laws and regulations relating to ACM.

5.1.6 Dry Well Network

The Dry Well Network at NAS Barbers Point is used mainly to facilitate stormwater runoff; however, domestic sewage and industrial wastes were discharged to several of the dry wells located near buildings and airplane hangars. Dry wells are classified as underground injection control (UIC) wells, as defined by the Safe Drinking Water Act. An RI was conducted at the Dry Well Network at NAS Barbers Point (referred to as basewide POI-47). Results of the investigation indicated that sediments in several dry wells contained hazardous substances; however, the impacted sediments posed no threat to human health or the environment, and no further action was required under CERCLA. In 1998 and early 1999, the Navy removed sediments containing hazardous substances at levels that could pose a disposal problem to future property owners (i.e., exceeded hazardous waste levels). Table 7 provides a list of the 31 dry wells located within the HDOT parcel, and indicates whether sediments were removed from each dry well.

Table 7: Dry Wells

Well Number[a]	CLEAN II Permitting Number	CLEAN I Permitting Number	Contaminant of Concern	Action	
26	G15-03	26	Cr, Pb	Removed sediments.	1
27	G15-04	27	Pb	Removal not required.	
29	G15-05	29	Pb	Removal not required.	
30	F15-01	30	Cd, Cr, Pb, TPH	Removed sediments.	2
48	F14-02	30	Cd, Cr, Pb, TPH	Removed sediments.	3
54	F14-05	54	Ba, Cr, Pb	Removed sediments.	4
91	F13-02	91	Cr, Pb	Removal not required.	
92	F13-01	92	Pb	Removal not required.	
93	F13-03	93	Pb, TPH	Removed sediments.	5
94	F12-05	94	None	Removal not required.	
120	G12-10	120	Pb	Removal not required.	
122	G12-09	122	None	Removal not required.	
123	G12-12	123	Pb	Removal not required.	
124	G11-05	124	None	Removal not required.	
125	F12-02	125	Pb	Removal not required.	
132	G11-03	132	None	Removal not required.	
133	G11-06	133	None	Removal not required.	
134	G11-02	134	None	Removal not required.	
135	G11-04	135	None	Removal not required.	
NW-CG-A (POI-28)	C13-02	NW-CG-A	Pb, Ag	Removal not required.	
NW-CG-B (POI-28)	C13-03	NW-CG-B	Pb, Ag	Removal not required.	
NW-CG-D(POI-28)	C13-05	NW-CG-D	Cd, Cr, Pb, Ag, TPH	Removed sediments.	6
NW-PAPA-A	G11-07	NW-PAPA-A	None	Removal not required.	
NW-PAPA-B	F12-01	NW-PAPA-B	Cr, Pb	Removal not required.	
NW-PAPA-C	G12-11	NW-PAPA-C	Pb, TPH	Removed sediments.	7
O-168	E16-01	O-168	Pb	Removal not required.	
O-188	F12-04	O-188	None	Removal not required.	
O-189	F12-03	O-189	Cr, Pb, TPH	Removed sediments.	8
O-190 (POI-28)	C13-01	O-190	Cd, Cr, Pb, Ag, TPH	Removed sediments.	9
O-191 (POI-28)	C13-04	O-191	Cd, Cr, Pb, Ag	Removal not required.	
Y (POI-05)	G16-01	Y	None	Removal not required.	

Notes:

a All dry wells were investigated under POI-47. Some dry wells may be included in other POIs. The POI number is shown in parentheses next to the dry well number to provide the well with a physical location.

Pb Lead
Cr Chromium
Cd Cadmium
Ag Silver
TPH Total petroleum hydrocarbons
POI Point of interest

Notifications

- The transferee shall apply for UIC permits with the State of Hawaii Department of Health (HDOH) for dry wells on the property. The transferee will be responsible for complying with the requirements of the permits.
- The transferee is notified that if sediment is removed from the dry wells on the property, the transferee is required to dispose of the sediment offsite in an appropriate facility in accordance with applicable laws and regulations.

5.2 Environmental Factors and Resources That Pose No Constraints

Based on an evaluation of the documents listed in Section 12 and consideration of the environmental factors and resources discussed below, no specific restrictions in the transfer document are required with respect to these factors, which are discussed in the following sections.

5.2.1 Hazardous Materials/Wastes Management

Past activities on the property to be transferred to the HDOT did include hazardous waste generation activities. Hazardous substance notification information, as well as a description of hazardous substances previously associated with the property, is presented in Section 6. Three 90-day hazardous waste accumulation areas (HW-4, 5, and 7) were inspected in February 1999 during the survey and sampling of miscellaneous units. Based on the inspection, there was no indication of a breach in the accumulation area which would lead to an unauthorized release. Therefore, no sampling was performed for these areas.

5.2.2 Oil/Water Separators

There are two active and two inactive oil/water separators present at NAS Barbers Point. There is one oil/water separator in the HDOT parcel in the vicinity of Building 1824. The oil/water separator was visually inspected for cracks and breaches and a soil sample was collected from the adjacent area. Concentrations of contaminants in the soil collected did not exceed EPA Region IX residential PRGs or State of Hawaii Department of Health (HDOH) Tier 1 Soil Action Levels. The oil/water separator will be cleaned out immediately prior to base closure. If HDOT does not intend to use it, the oil/water separator will be filled with gravel.

5.2.3 Radioactive Contamination

A Historical Radiological Assessment and Survey was conducted by the Naval Sea Systems Command in February 1999 to identify potential, likely, or known sources or radioactive material and radioactive contamination at NAS Barbers Point. The HDOT parcels were not identified as an area of potential radioactive contamination.

5.2.4 Pesticides

Pesticides are used at NAS Barbers Point to control mosquitoes, termites, and other pests. Herbicides are applied on runways and around landing lights and fencing to prevent vegetation growth. Table 8 provides a list of commonly used insecticides and herbicides at NAS Barbers Point. Records do not indicate the specific types of insecticides and herbicides used in the vicinity of the HDOT parcel. Insecticides and herbicides, such as DDT and Malathion, that are currently banned, are no longer used at NAS Barbers Point.

Table 8: Pesticides Used at NAS Barbers Point Since 1966

Insecticides	Herbicides
Aldrin	Monuron
Dieldrin	Atrazine
DDT	Amitrol
Chlordane	DSMA
Pentachlorophenol	Dalapon
Diazinon	Simazine
Malathion	2-4,D
Baygon	Krovar
Paris Green	Tordon 22K
Carbaryl	Pyrethrum
Resmethrin	

5.2.5 Polychlorinated Biphenyls

The Navy is required to remove or replace equipment containing PCBs at concentrations greater than 50 milligrams per kilogram (mg/kg), or to reduce concentrations to below this level. The Navy conducted a survey of equipment at NAS Barbers Point from 1998 to 1999 to determine whether the equipment contains PCBs at concentrations greater than 50 mg/kg. There is no evidence of any transformers or other equipment containing PCBs at concentrations greater than 50 mg/kg on the property to be transferred to HDOT.

5.2.6 Radon

Radon is of concern in buildings where it may potentially accumulate and pose a human health risk. The regional geologic conditions at NAS Barbers Point indicate that areas of naturally occurring granitic material (the source of radon) are absent; as a result, radon is not expected to be a concern at NAS Barbers Point. Limited surveys of radon were conducted in 1991 and as part of the EBS in 1993. Buildings 110 and 115 on the HDOT parcel were surveyed and sampled. Analytical results were all non-detect for radon gas (<0.50 pCi/L). No federal, state, or local requirements currently exist for surveying and abating radon, so no further survey or abatement actions are required or planned.

5.2.7 Migration of Hazardous Substances from Adjacent Areas

The following section evaluates the potential for hazardous substances to migrate onto the property to be transferred to the HDOT from adjacent areas.

Parcel A. Parcel A is adjacent to property to be transferred to the HDOT on the northern boundary. Areas of potential concern in Parcel A consist of (1) AST 1762 (Building 1762), and (2) the location of former UST BP-60, both to the north of the HDOT property. AST 1762 is a 660-gallon AST used to store diesel fuel near Building 1762. This AST is currently operational. This AST is inspected annually and there is no evidence of a release. Although highly unlikely, if the AST releases hazardous substances into groundwater in this area, they may potentially migrate into the HDOT parcel. UST BP-60 was removed, and there was no evidence of a release from this UST.

Parcel C. Parcel C is adjacent to property to be transferred to the HDOT on the western boundary. Areas of potential concern in Parcel C consist of: (1) IRP-03 (Sanitary Landfill); and (2) POI-40 (Oily Waste Landfarm), both to the north, south, and west of the HDOT parcel. If hazardous substances are present in groundwater in this area, they may potentially migrate south toward the Pacific Ocean into the HDOT parcel. The Sanitary Landfill contains no significant contamination due to municipal wastes and asbestos disposed there. The Navy will conduct further assessment in 2006 of a small portion of the site that was used for rinsing pesticide drums. No further investigative or cleanup actions are required for the rest of the site. The Navy is conducting ongoing compliance monitoring at the Sanitary Landfill and the Oily Waste Landfarm. Groundwater contamination related to activities at these sites has not been identified.

Parcel G. Parcel G is adjacent to property to be transferred to the HDOT on the northern boundary. Areas of potential concern in Parcel G consist of (1) POI-31 (Buildings 140 and 141 and Substation S140), (2) POI-32 (Building 690), (3) POI-34 (Buildings 145 and 156), and (4) the location of an operational AST and former location of an AST at Building 145, all of which are located north of the HDOT parcel. Of these areas, the operational AST location and former location of a removed AST are the only areas that require further assessment and may require remediation. The ASTs are inspected annually and there is no evidence of releases. Although highly unlikely, if these sites release hazardous substances into groundwater in this area, they may potentially migrate into the HDOT parcel.

Parcel I. Parcel I is adjacent to property to be transferred to the HDOT on the southern boundary. Areas of potential concern in Parcel I consist of (1) S1820, which is part of POI-48 (Transformer Substation) and (2) the locations of three former USTs and four operational ASTs, all of which are located south of the HDOT parcel. Of these areas, the AST locations are the only ones that require further assessment and may require remediation. However, hazardous substances present at these sites are unlikely to migrate north into the HDOT parcel because groundwater in this portion of the base flows south toward the Pacific Ocean.

Parcel N. Two sections of Parcel N are adjacent to property to be transferred to the HDOT on the southwestern and eastern boundaries. The only areas of potential concern in these sections of Parcel N are the locations of former UST BP-56 and an operational AST at Building 1668, both to the north, south, and east of the HDOT parcel. However, of these areas, the AST location is the only one that requires further assessment. The AST is inspected annually and there is no evidence of a release. Although highly unlikely, if the AST releases hazardous substances into groundwater in this area, they may potentially migrate into the HDOT parcel. As previously stated in Section 5.1.2, the Navy will assess the AST for leaks upon base closure and take all response actions necessary to prevent risk to human health and the environment for the intended reuse, or to prevent potential migration (if necessary).

Parcel R. Parcel R is adjacent to property to be transferred to the HDOT on the eastern boundary. The only area of potential concern in Parcel R is POI-42, which includes the locations of several former USTs and asbestos-containing transite tiles, to the east of the HDOT parcel. Fuel releases were detected at the USTs, and the Navy is continuing to monitor groundwater in the vicinity. Migration of hazardous substances from this area into the HDOT parcel is not likely because it is downgradient of the adjacent parcel. Upgradient monitoring wells are located in the HDOT parcel, and the Navy will continue groundwater monitoring at the site (expected to be until 2003).

Parcel S. Parcel S is adjacent to property to be transferred to the HDOT on the southern boundary. There are no areas of potential concern in Parcel S.

Parcel T. Parcel T is adjacent to property to be transferred to the HDOT on the southern boundary. Areas of potential concern in Parcel T consist of (1) portion of POI-25 (Fire Fighting Training Pits), (2) POI-26 (Former Sewage Treatment Plant), and (3) the location of an operational AST (at Building 1847), all of which are south of the HDOT parcel. Hazardous substances were not detected at concentrations that pose a threat to human health or the environment under the intended reuse scenario at the Fire Fighting Training Pits or the Former Sewage Treatment Plant. Further investigation will be conducted at POI-26 in June and July 1999. Of these areas, the AST locations and POI-26 are the only areas that require further assessment and may require remediation. However, hazardous substances present at these sites are unlikely to migrate north into the HDOT parcel because groundwater in this portion of the base flows south toward the Pacific Ocean. The AST is inspected annually and there is no evidence of a release. As previously stated in Section 5.1.2, the Navy will assess the AST for leaks upon base closure and take all response actions necessary to prevent risk to human health and the environment for the intended reuse, or to prevent potential migration (if necessary). Leaks are not considered to be likely.

Parcel U. Parcel U is adjacent to property to be transferred to the HDOT on the western boundary. The only areas of potential concern in Parcel U consist of (1) POI-41 (Buildings 1681 and 1684), and (2) the locations of two former USTs (BP-53 and BP-57) and one operational AST (Tank 1681), all of which are north, south, and west of the HDOT parcel. Hazardous substances were not detected at concentrations that pose a risk to human health or the environment at POI-41. Of these areas, the AST locations are the only areas that require further assessment. The ASTs are inspected annually and there is no evidence of releases. Although highly unlikely, if hazardous substances are present in groundwater in this area, they may potentially migrate into the HDOT parcel. As previously stated in Section 5.1.2, the Navy will assess contamination associated with ASTs upon base closure and take all response actions necessary to prevent risk to human health and the environment for the intended reuse, or to prevent potential migration (if necessary).

Parcel W. Parcel W is adjacent to property to be transferred to the HDOT on the northwestern boundary. There are no areas of potential concern in Parcel W.

Parcel X. Parcel X is adjacent to property to be transferred to the HDOT on the northern boundary. The only area of potential concern in Parcel X is POI-04 (Building 105), which is north of the HDOT parcel. The hazardous substances stored at POI-04 were removed as part of routine housekeeping activities. Therefore, there is no potential for migration from this area onto the HDOT parcel. (Note: POI-05 and BP-64 are located on the HDOT parcel).

Parcel AK. Parcel AK is adjacent to property to be transferred to the HDOT on the northern boundary. The only areas of potential concern on Parcel AK consist of the locations of former USTs (BP-05, BP-06, and BP-59) and operational ASTs (Tank 36 and Tank 1756), all of which are north of the HDOT parcel. Of these areas, the AST locations are the only areas that require further assessment and may require remediation. The ASTs are inspected annually, and there is no evidence of releases. Although highly unlikely, if the ASTs release hazardous substances into groundwater in this area, they may potentially migrate to the HDOT parcel. As previously stated in Section 5.1.2, the Navy will assess contamination associated with ASTs upon base closure and take all response actions necessary to prevent risk to human health and the environment for the intended reuse, or to prevent potential migration (if necessary).

Parcel AM. Parcel AM is adjacent to property to be transferred to the HDOT on the northern boundary. There are no areas of potential concern on Parcel AM.

6. NOTICE OF HAZARDOUS SUBSTANCES

CERCLA Section 120(h)(3) requires that each deed entered into for the transfer of federal property on which hazardous substances were stored, released, or disposed of shall include a notice of the type and quantity of hazardous substances and of the time at which such storage, release, or disposal took place. This notice requirement was codified in 40 CFR Part 373, which provides that the notice requirement applies only when hazardous substances are or have been stored in quantities greater than or equal to 1,000 kilograms (1 kilogram if an "acutely" hazardous waste) or the hazardous substance's CERCLA reportable quantity. Hazardous substances in quantities greater than or equal to 1,000 kilograms (1 kilogram if an "acutely" hazardous waste) or the hazardous substance's CERCLA reportable quantity may have been stored on the property for 1 year or more. Hazardous substances are known to have been released on the property.

Past activities on the property to be transferred to the HDOT did include hazardous waste generation activities. Table 9 identifies the limited information available on hazardous substances used at facilities within the parcel. From the information available it is not known if storage of hazardous substances in quantities exceeding 40 Code of Federal Regulations (CFR) Part 373 levels has taken place. Only information on hazardous substances at Buildings 4, 110, and 1775 is available and is based on inventory data collected during the preparation of the EBS. There were no reported releases of hazardous substances at these buildings.

7. REGULATORY AGENCY COORDINATION

As part of the President's 5-year plan for transferring excess federal property to local communities, the U.S. EPA, State of Hawaii Department of Health (HDOH) and Navy have organized a Base Realignment and Closure (BRAC) Cleanup Team (BCT) to coordinate remedial efforts at NAS Barbers Point. The U.S. EPA and HDOH were notified in November 1998 of the initiation of the FOST process. The draft FOST was provided to the BCT on March 12, 1999, for review and comment. Regulatory agency comments were received and addressed in the final version of this document. The regulatory agencies will be provided with the final version of the FOST to ensure their comments have been adequately addressed.

8. UNRESOLVED REGULATORY AGENCY COMMENTS

There are no unresolved regulatory agency comments.

9. PUBLIC COMMENTS

On March 10, 1999, public notice of the proposed transfer of the property to the HDOT was provided by publication in the Honolulu Advertiser and Honolulu Star Bulletin. No comments were received from members of the public although the property recipient did provide comments.

Table 9: Hazardous Substances Notification

Building No.	Building Description	Material Name	Physical State	Maximum Quantity	Container	Secondary Containment
4	NAVOCEANCOMDET	Pine oil	Liquid	1-gallon	Manufacturer container	Locker
4	NAVOCEANCOMDET	Simple Green	Liquid	1-gallon	Manufacturer container	Locker
4	NAVOCEANCOMDET	Window cleaner	Liquid	1-gallon	Manufacturer container	Locker
4	NAVOCEANCOMDET	Dishwashing soap, hand	Liquid	4-gallon	Manufacturer container	Locker
4	NAVOCEANCOMDET	Never Dull	Liquid	1-can	Manufacturer container	Locker
4	NAVOCEANCOMDET	Correction fluid	Liquid	3-dozen	Manufacturer container	Locker
4	NAVOCEANCOMDET	Detergent	Liquid	16-ounces	Manufacturer container	Locker
4	NAVOCEANCOMDET	Desk Cleaner	Liquid	4-bottles	bottles	Locker
4	NAVOCEANCOMDET	Markerboard cleaner	Liquid	4-bottles	bottles	Locker
4	NAVOCEANCOMDET	Avionic cleaner	Liquid	1-can	can	Locker
4	NAVOCEANCOMDET	Insecticide	Liquid	11-cans	cans	Locker
4	NAVOCEANCOMDET	Ink, red standard	Liquid	3-bottles	bottles	Locker
4	NAVOCEANCOMDET	GST oil 46	Liquid	6-quarts	unknown	Locker
4	NAVOCEANCOMDET	Fabric cleaner	Liquid	1-can	can	Locker
4	NAVOCEANCOMDET	Armor All	Liquid	1-bottle	bottle	Locker
4	NAVOCEANCOMDET	Adhesive	Liquid	1-bottle	bottle	Locker
4	NAVOCEANCOMDET	Adhesive (cyanocrylate)	Liquid	1-dozen	tubes	Locker
4	NAVOCEANCOMDET	Penetrating fluid	Liquid	1-can	can	Locker
4	NAVOCEANCOMDET	Scouring powder	Solid	4-cans	cans	Locker
4	NAVOCEANCOMDET	Deodorant	Liquid	7-cans	cans	Locker
4	NAVOCEANCOMDET	Furniture polish	Liquid	1-bottle	bottle	Locker
4	NAVOCEANCOMDET	Paint, latex	Liquid	2-gallons	1-gallon can	Locker
4	NAVOCEANCOMDET	Paint, latex plastic	Liquid	2-gallons	1-gallon can	Locker
4	NAVOCEANCOMDET	Paint enamel	Liquid	1-gallon	1-gallon can	Locker
4	NAVOCEANCOMDET	Spray paint	Liquid	41-cans	cans	Locker
4	NAVOCEANCOMDET	Isopropyl alcohol	Liquid	3-bottles	bottles	Locker
4	NAVOCEANCOMDET	Paint thinner	Liquid	1-gallon	metal can	Locker
4	NAVOCEANCOMDET	Sulfuric acid batteries	Liquid	20-batteries	plastic casing	Palletized
4	Operation Tower	Photo developing solution	Liquid	2,500-gallons/ year	unknown	Unknown
4	NAVOCEANCOMDET	Diesel	Liquid	unknown	tanks built into unit	self contained
110	Hanger 110 corrosion office	Freon	Liquid	<55 gallons	unknown	Unknown

Table 9: Hazardous Substances Notification (Continued)

Building No.	Building Description	Material Name	Physical State	Maximum Quantity	Container	Secondary Containment
1755	Fire Station	Oil	Liquid	3-55gallon drums	55-gallon oil drum	Connex
1755	Fire Station	Paint	Liquid	30-gallons	1-gallon count	Flame Locker
1755	Fire Station	Solvent	Liquid	1-drum; 1-can	55-gal drum; 5-gal can	Connex
1755	Fire Station	Lubricants	Liquid	100-quarts	1-quart plastic	Locker

Source:
"Environmental Baseline Survey (EBS) Report, Naval Air Station, Oahu, Hawaii." Ogden. June 1994

10. REQUIRED ENVIRONMENTAL COVENANTS

Factors or resources that require deed restrictions for the transfer of the HDOT parcel at NAS Barbers Point have been identified in Section 5.1. The parcel covered by this FOST may be transferred in accordance with the Base Closure and Realignment Act. The deed for the transfer will contain the deed covenant required by CERCLA Section 120 (h)(3). The deed for the transfer of this parcel will include the following provisions:

a. A covenant warranting that

> All remedial action necessary to protect human health and the environment with respect to any substances remaining on the property due to the Navy has been taken before the date of such t ansfer.
>
> Any additional remedial actions resulting from Navy activities found to be necessary after the date of such transfer shall be conducted by the United States.

b. A clause granting

> the United States access to the property in any case in which remedial action or corrective action is found necessary at the property after the date of such transfer.

11. FINDING OF SUITABILITY TO TRANSFER

The property to be transferred to the HDOT has been adequately assessed and evaluated for (a) the presence of hazardous substances and contamination on the property and (b) environmental impacts anticipated from intended use of the property. The future use of this property does not present a risk to human health or the environment. Therefore, the property is suitable for transfer.

R V Marshall

6/8/1999

P.W. MARSHALL
RADM, CEC, USN
Commander, Pacific Division
Naval Facilities Engineering Command

Date

12. SUPPORTING ENVIRONMENTAL DOCUMENTS

This FOST is the result of a comprehensive analysis of information contained in the following documents listed in chronological order:

1. "Initial Assessment Study of Naval Air Station Barbers Point, Hawaii." Naval Energy and Environmental Support Activity 13-048. June 1983.
2. "Environmental Baseline Survey (EBS) Report, Naval Air Station Barbers Point, Oahu, Hawaii." Ogden Environmental and Energy Services Co., Inc. (Ogden). June 1994.
3. "Record of Closure, Removal of Underground Storage Tanks, Underground Storage Tank BP-3, BP-5/6, BP-9/10, BP-11/12, BP-13/14, BP-17/18, BP-19/20, BP-29 to BP-40, BP-49, BP-59, BP-79, Naval Air Station Barbers Point, Oahu, Hawaii." OHM Remediation Services (OHM). August 1996.
4. "Community Redevelopment Plan, Naval Air Station, Barbers Point, Oahu, Hawaii." Helber, Hastert, and Fee Planners. March 1997.
5. "Record of Closure, Removal of Underground Storage Tanks, Underground Storage Tank BP-22, BP-23, BP-53, BP-57, Naval Air Station Barbers Point, Oahu, Hawaii." OHM. March 1997.
6. " Record of Closure, Removal of Underground Storage Tanks, Underground Storage Tank BP-93 and BP-94, Naval Air Station Barbers Point, Oahu, Hawaii." OHM. April 1997.
7. "Engineering Evaluation/Cost Analysis (Final) for Fourteen Transformer Substations at Naval Air Station Barbers Point, Oahu, Hawaii." Earth Tech Inc. (Earth Tech). October 1997.
8. "Community Redevelopment Plan, Amendment 1, Naval Air Station, Barbers Point, Oahu, Hawaii." Helber, Hastert, and Fee Planners. December 1997.
9. "Natural Resources Management Plan, Naval Air Station, Barbers Point." Department of the Navy (Navy). December 1997.
10. "Base Realignment and Closure (BRAC) Cleanup Plan (BCP) (Final) for Naval Air Station Barbers Point, Oahu, Hawaii." Navy. January 1998.
11. "Asbestos Inspection Report (Final) for Naval Air Station, Barbers Point, Oahu, Hawaii." Ogden. February 1998.
12. "Aerial Photograph of Airport Parcel to be Transferred to the State of Hawaii Department of Transportation.' Navy. June 1998.
13. "Lead-Based Paint Inspection Report (Final) for Naval Air Station, Barbers Point, Oahu, Hawaii." Ogden. August 1998.
14. "Field Investigation Letter Report, Stormwater Drainage System, Naval Air Station Barbers Point, Oahu, Hawaii." Earth Tech. December 1998.
15. "Remediation Verification Report, Transformer Sites, Naval Air Station Barbers Point, Oahu, Hawaii." OHM. December 1998.
16. "Oil Spill Prevention Control and Countermeasures (SPCC) Plan for Naval Air Station, Barbers Point." Navy. January 1999.

17. "Asbestos Reinspection Report (Final) for Naval Air Station, Barbers Point, Oahu, Hawaii." Ogden. February 1999.

18. "Final Summary Report, Removal and Restoration of Asbestos Materials, NAS Barbers Point, Oahu, Hawaii." OHM Remediation Services (OHM). February 1999.

19. "Final Environmental Impact Statement for the Disposal and Reuse of Naval Air Station Barbers Point, Hawaii." Navy. February 1999.

20. "Historical Radiological Assessment and Survey Plan, Final Status Survey, Naval Air Station, Barbers Point, Hawaii." Naval Sea Systems Command Detachment Radiological Affairs Support Office. March 1999.

21. "PCB Inventory: Equipment Database, Naval Air Station, Barbers Point." Earth Tech. March 1999.

22. "PCB Inventory: Substation Database, Naval Air Station, Barbers Point." Earth Tech. March 1999.

23. "Draft Record of Decision, Removal of PCBs at Sixteen Transformer Substations, Naval Air Station, Barbers Point, Oahu, Hawaii." Earth Tech. March 1999.

24. "Stormwater Channel Sediment Removal, Naval Air Station, Barbers Point, Oahu, Hawaii." Remediation Verification Report. OHM. March 1999.

25. "Cultural Resources Management Plan: Naval Air Station Barbers Point." Navy. March 1999.

26. "Draft Remedial Investigation Report for BRAC-Related Activities, Regional Groundwater System." Ogden. April 1999.

27. "Remedial Investigation Report for BRAC-Related Activities, Fire Fighting Training Pits, Naval Air Station Barbers Point, Oahu, Hawaii." Ogden. April 1999.

28. "Dry Well Network Investigation Report for BRAC-Related Activities, Naval Air Station Barbers Point, Oahu, Hawaii." Ogden. April 1999.

29. "Remedial Investigation Report for BRAC-Related Activities, Transformer Substation System, Naval Air Station Barbers Point, Oahu, Hawaii." Ogden. February 1999.

30. "Remedial Investigation Report for BRAC-Related Activities, Former Fuel Farm, Naval Air Station, Barbers Point, Oahu, Hawaii." Ogden. April 1999.

31. "Draft Record of Decision for Stormwater Drainage System, Naval Air Station Barbers Point, Oahu, Hawaii." Earth Tech and Tetra Tech EM Inc (Tetra Tech). April 1999.

32. "Draft Record of Decision for No Action and Restricted Land Use Sites, Naval Air Station Barbers Point, Oahu, Hawaii." Ogden. April 1999.

33. "Annotated Base Realignment and Closure Cleanup Plan, Naval Air Station Barbers Point, Oahu, Hawaii." Navy. May 1999.

34. "Survey and Sampling of Miscellaneous Units Letter Report (Draft), Naval Air Station Barbers Point, Oahu, Hawaii." Earth Tech and Tetra Tech. May 1999

#1131

Comprehensive Long-Term Environmental Action Navy

CLEAN

Contract No. N62742-90-D-0019

CTO No. 0137

ABBREVIATED RI REPORT
FOR
BRAC - RELATED ACTIVITIES
(DRAFT)

FORMER FUEL FARM

NAVAL AIR STATION BARBERS POINT
OAHU, HAWAII

Prepared for:

Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii 96860

Prepared by:

Ogden Environmental and Energy Services Co., Inc.
680 Iwilei Road, Suite 660
Honolulu, Hawaii 96817

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LIST OF ACRONYMS

ACOE	United States Army Corps of Engineers
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances Disease Registry
AvGas	Aviation gasoline
bgs	Below ground surface
BRAC	Base Realignment and Closure
BTEX	Benzene, toluene, ethylbenzene, and xylene
Cal-EPA	California Environmental Protection Agency
CEM	Conceptual evaluation model
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
COC	Chain-of-custody
COPC	Chemicals of potential concern
CTO	Contract Task Order
DOT	Department of Transportation
EBS	Environmental Baseline Study
EPA	United States Environmental Protection Agency
ERA	Ecological Risk Assessment
GC	Gas chromatograph
HDOH	Hawaii Department of Health
HI	Hazard index
IAS	Initial Assessment Study
IDW	Investigation-derived waste
MCL	Maximum contaminant level
MoGas	Automotive gasoline
MS	Mass spectrometry
msl	Mean sea level
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan

NEESA	Naval Energy and Environmental Support Activity
NFESC	Naval Facilities Engineering Service Center (formerly NEESA)
PACNAVFACENGCOM	Pacific Division, Naval Facilities Engineering Command
PAH	Polycyclic aromatic hydrocarbon
ppmv	Parts per million by volume
PRE	Preliminary risk evaluation
PRG	Preliminary Remediation Goal
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QC	Quality control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RME	Reasonable maximum exposure
RO	Reverse osmosis
SAL	Soil Action Level
SARA	Superfund Amendments and Reauthorization Act
SCUR	Sample-condition-upon-receipt
SSL	Soil Screening Level
SVOC	Semi-volatile organic compound
TBC	To Be Considered criteria
TFH	Total fuel hydrocarbons
TPH	Total petroleum hydrocarbons
UCL	Upper confidence limit
UIC	Underground injection control
USDA	United States Department of Agriculture
UST	Underground storage tank
VOC	Volatile organic compound

EXECUTIVE SUMMARY

This document presents the results of an Abbreviated Remedial Investigation (RI) conducted as part of Base Realignment and Closure (BRAC) activities at the Former Fuel Farm, located at Naval Air Station (NAS) Barbers Point on the island of Oahu, Hawaii. The objective of the Abbreviated RI at the Former Fuel Farm was to assess whether contamination related to fuel farm activities is present within soils and ground water at levels which pose an unacceptable risk to human health or the ecological environment. The purpose of this report is to provide information that will aid in decision making related to the environmental status and potential reuse of the land occupied by NAS Barbers Point.

Site Background

The Former Fuel Farm was built in the 1940s and was located immediately north of the eastern half of Runway 4. The fuel system included a group of 24 underground storage tanks (USTs) numbered H1 through H24, each with a capacity of 25,000 gallons. Records indicate that at the time of their removal in 1985, 20 tanks contained aviation gasoline, 2 contained automotive gasoline (MoGas), and 2 contained diesel fuel (PACNAVFACENGCOM 1985). Two additional MoGas USTs, numbered J2 and J3, were located immediately east of USTs H1 through H24.

In the early 1970s, 3,000 gallons of MoGas reportedly leaked from one of the USTs located within the Former Fuel Farm (Naval Energy and Environmental Support Activity [NEESA] 1983). Although it is unclear which tank experienced the leak, based on available information regarding the contents of the former USTs, the leaking tank was most likely H17, H18, J2, or J3 (PACNAVFACENGCOM 1985). The leaking tank was abandoned in place shortly after the spill was discovered (NEESA 1983).

Abbreviated RI Activities

Abbreviated RI activities at the Former Fuel Farm were conducted from January through May 1995 and included a soil gas survey, a soil investigation, and the installation of ground-water monitoring wells. The soil gas survey consisted of the collection and analysis of a total of 193 soil gas samples, which were collected at 110 locations. A total

of 65 soil samples were collected and analyzed from 11 soil borings conducted in the vicinity of the former USTs. Three monitoring wells were installed, developed, and sampled at the Former Fuel Farm. This draft RI report has been prepared based on three quarterly ground-water sampling events; the fourth and final ground-water sampling event will be included in the final RI report.

Soil gas samples were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and fixed gases (oxygen, carbon dioxide, and methane). Soil and ground-water samples were analyzed for VOCs, semi-volatile organic compounds (SVOCs), and total fuel hydrocarbons (TFH). In addition, ground-water samples were analyzed for total organic carbon and general minerals.

Nature and Extent of Contamination

VOCs (benzene and ethylbenzene) were present in only one soil gas sample; however, TPH was detected in numerous soil gas samples. TPH in soil gas was detected at relatively low concentrations throughout the fuel farm area; however, the number and concentration of TPH detections were higher in the immediate vicinity of two areas associated with former MoGas USTs H17/H18 and J2/J3.

Compounds detected in soils within the Former Fuel Farm include certain VOCs, SVOCs, and TFH. The only compound that was detected at concentrations exceeding United States Environmental Protection Agency (EPA) Region IX residential or industrial Preliminary Remediation Goals (PRGs) was benzo(a)pyrene. TFH was also frequently detected, but at relatively low levels. EPA Region IX has not established a PRG for TFH because of the low toxicity of most TFH constituents. The health effects associated with TFH were evaluated by assessing detections of the VOCs and SVOCs that are constituents of fuels.

In general, detected contaminants were reported at low concentrations in all borings. However, TFH was detected more frequently and at slightly higher concentrations in the area near the former J2/J3 MoGas UST location.

Compounds detected in ground water at the Former Fuel Farm are limited to TFH and bis(2-ethylhexyl)phthalate, an SVOC considered to be a laboratory contaminant. No VOCs were present at levels above the detection limit. Bis(2-ethylhexyl)phthalate was present only in the sample from well MW-03, located near former USTs H17 and H18, and at a concentration indicative of laboratory contamination. TFH was present only in the sample from well MW-01, located downgradient of former USTs H17 and H18.

Risk Evaluations

Human Health Risk Evaluation

A conservative screening phase preliminary risk evaluation (PRE) was performed for the Former Fuel Farm. Because current land use at the site is industrial, and future land use has not yet been determined, both industrial and residential land use were considered. Ground water was not evaluated in the PRE because the only analytes detected in ground water were TFH (which does not have a PRG) and bis(2-ethylhexyl)phthalate (which is a common laboratory contaminant). In addition, the risk-driving VOCs or SVOCs associated with fuel hydrocarbons were not detected in ground water.

The excess cancer risks for exposure to surface and subsurface soil under an industrial scenario are 8E-07 and 2E-09, respectively. These risk levels are less than both the 1E-06 point-of-departure risk level and the 1E-04 remediation trigger level. The noncarcinogenic hazard indices (HIs) for exposure to surface and subsurface soil under an industrial scenario are 3.4E-05 and 1.1E-04, respectively. These are considerably less than the level of concern of 1.

The excess cancer risks for exposure to surface and subsurface soil under a residential scenario are 3E-06 and 8E-09, respectively. The surface soil risk level is slightly greater than the 1E-06 point-of-departure risk level, but significantly less than the 1E-04 remediation trigger level. The subsurface soil risk level is significantly less than the point-of-departure risk. The HIs for exposure to surface and subsurface soil under a residential scenario are 3.5E-04 and 9.9E-04, respectively. These are considerably less than the level of concern of 1.

Ecological Risk Evaluation

Evaluation of risks to the ecological environment primarily focused on effects on rare and/or endangered species and sensitive habitats. No such species or habitats were resident at or in the vicinity of the site. As a result, the presence of the chemical compounds detected at the site does not pose a significant risk to the ecological environment.

Recommendations

A conservative screening phase PRE indicates that constituents detected at the Former Fuel Farm do not pose a significant risk to human health under either industrial or residential exposure scenarios. Additionally, due to the lack of target receptors, the site does not present a significant risk to the ecological environment.

Based on the evaluation presented in this report, no further investigative or remedial actions are warranted at the Former Fuel Farm.

SECTION 1
INTRODUCTION

This document presents the results of an Abbreviated Remedial Investigation (RI) conducted at the Former Fuel Farm, located at Naval Air Station (NAS) Barbers Point on the island of Oahu, Hawaii (Figure 1-1). This site is under investigation as part of Base Realignment and Closure (BRAC) activities at NAS Barbers Point. The Abbreviated RI was conducted in accordance with the *Work Plan for BRAC-Related Activities, Naval Air Station Barbers Point, Oahu, Hawaii, Addendum (Draft)* (Ogden 1994a) and the *Field Sampling Plan for BRAC-Related Activities, Naval Air Station Barbers Point, Oahu, Hawaii, Addendum (Draft)* (Ogden 1994b).

The performance of this Abbreviated RI was authorized by Pacific Division, Naval Facilities Engineering Command (PACNAVFACENGCOM), in accordance with Contract Number N62742-90-D-0019 under the Comprehensive Long-Term Environmental Action Navy (CLEAN) program, Contract Task Order (CTO) 0137.

1.1 Abbreviated RI Objectives

The objective of the Abbreviated RI at the Former Fuel Farm was to assess whether contamination related to fuel farm activities is present within soils and ground water at levels which pose an unacceptable risk to human health or the ecological environment. Information from this Abbreviated RI will be used by the BRAC Cleanup Team (BCT) to make decisions regarding cleanup requirements based on potential reuse of the land occupied by NAS Barbers Point.

1.2 Site Location, Description, and History

The Former Fuel Farm was built in the 1940s and was located immediately north of the eastern half of Runway 4 (Figure 1-2). The fuel system included a group of 24 underground storage tanks (USTs), designated H1 through H24, each with a capacity of 25,000 gallons. By 1979, the tanks at the fuel farm had been removed from service (Naval Energy and Environmental Support Activity [NEESA] 1983), and in 1985, the

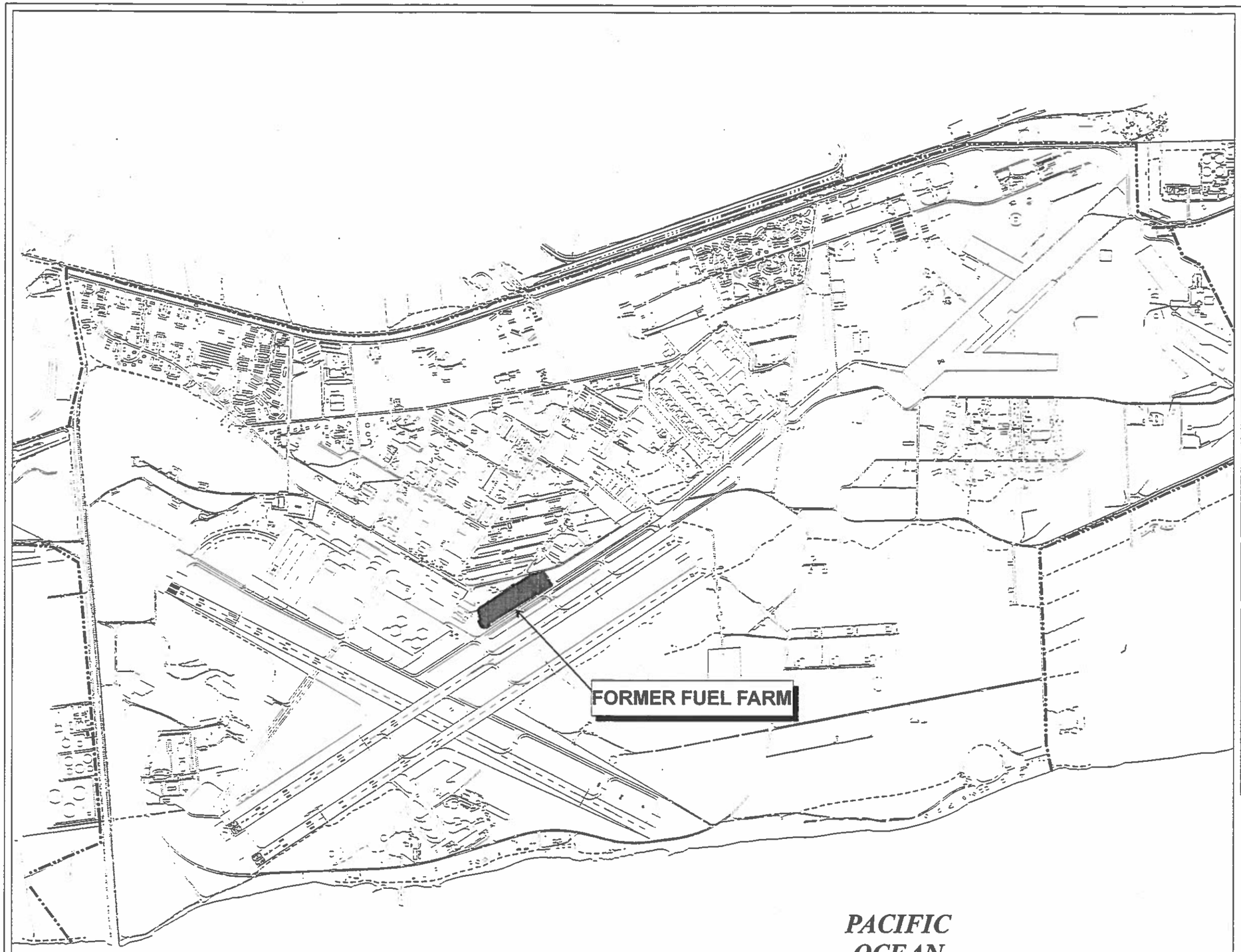
fuel facilities were demolished. Tanks and associated fill stands, aboveground piping, concrete slabs, and pits were removed. Underground piping was abandoned in place, while all drains, clean outs, and dry wells were plugged and capped with concrete (PACNAVFACENGCOM 1985). There are no records that indicate soil investigation or remediation were performed during the UST removal.

Demolition drawings indicate that at the time of removal, 20 tanks contained aviation gasoline (AvGas), 2 contained automotive gasoline (MoGas), and 2 contained diesel fuel (PACNAVFACENGCOM 1985). Two additional USTs, designated J2 and J3, were located immediately east of USTs H1 through H24. These two tanks were labeled MoGas Tanks A and B on PACNAVFACENGCOM drawings. It is not clear if these tanks were installed at the same time as the other 24 USTs. Although these tanks do not appear on the tank inventory list included with the demolition drawings, they were likely removed with the other 24 tanks during demolition activities.

In the early 1970s, 3,000 gallons of MoGas reportedly leaked from one of the USTs located within the Former Fuel Farm (NEESA 1983). Although it is unclear which tank experienced the leak, based on available information regarding the contents of the former USTs, the leaking tank was most likely H17, H18, J2, or J3 (PACNAVFACENGCOM 1985). According to NEESA, the leaking tank was abandoned in place shortly after the spill was discovered.

1.3 Previous Investigations

The Naval Energy and Environmental Support Activity (NEESA) conducted an Initial Assessment Study (IAS) at NAS Barbers Point in 1981 (NEESA 1983). An Environmental Baseline Survey (EBS) was conducted at the base in 1993 (Ogden 1993, 1994d). The IAS and EBS documented existing conditions through site visits, records review, and personnel interviews; both reports addressed the Former Fuel Farm as well as other facilities at NAS Barbers Point. No environmental sampling had been conducted at the Former Fuel Farm prior to this Abbreviated RI.



LEGEND

APPROXIMATE SITE BOUNDARY

BASE BOUNDARY

NOTES

1. THE ACCURACY OF THIS DOCUMENT IS LIMITED TO THE QUALITY OF THE SOURCE INFORMATION AND IS NOT SUITABLE FOR MAPPING ENGINEERING APPLICATIONS AND IS NOT TO BE USED FOR "AS BUILT"
2. PROJECTION IS IN STATE PLANE COORDINATE SYSTEM, HAWAII ZONE 3
3. PROJECT NUMBER 110190137
4. FILE...\GIS\BARBSPT\REPORT\SITES.CDR PAGE 5

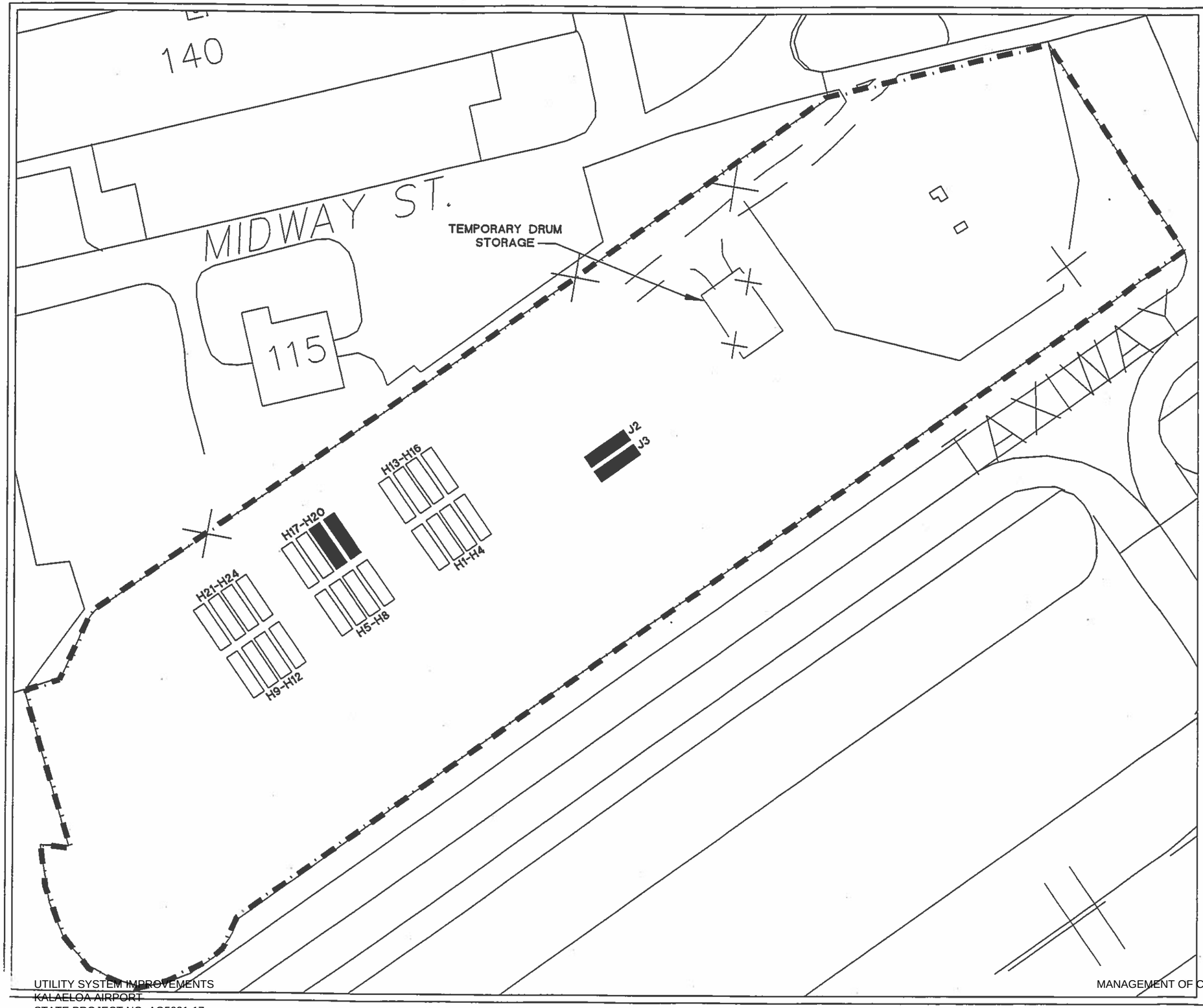
PACNAVFACENGCOM 1992
USGS 7.5' EWA, HAWAII QUADRANGLE, 1983
DLNR GROUND WATER INDEX 8/26/92

SITE AND FACILITY LOCATION MAP
FORMER FUEL FARM
NAS BARBERS POINT

N

FEET
1600 0 3200 6400

FIGURE
1-1



LEGEND

—X—X— FENCE

APPROXIMATE SITE BOUNDARY

J2-J3 FORMER MOGAS UNDERGROUND STORAGE TANKS

H21-H24 FORMER AVGAS UNDERGROUND STORAGE TANKS

NOTES

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SOURCES

R.M. TOWILL FIELD SURVEY
U. S. NAVY, PUBLIC WORKS CENTER DRAWINGS:
7482762.DWG

TITLE

SITE PLAN
FORMER FUEL FARM
NAS BARBERS POINT

N

FEET
50 0 100 200

FIGURE
1-2

1.4 POTENTIAL CONTAMINANT SOURCES

Based on previous environmental reconnaissance investigations and available background information, spills of petroleum products at the Former Fuel Farm may have contributed to soil and ground-water contamination. AvGas, MoGas, and diesel fuel were stored in underground tanks at the site over a period of at least 30 years, and there has been a known spill of approximately 3,000 gallons of MoGas. The RI soils and ground-water investigations focused on potential impacts due to the MoGas spill; the RI soil gas investigation focused on sitewide impacts.

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SECTION 2
FIELD INVESTIGATION SUMMARY

This section describes the field activities performed in support of the Abbreviated RI conducted at the Former Fuel Farm from January to May 1995, as well as subsequent quarterly ground-water monitoring conducted through early 1996. The activities are discussed in the order conducted. Field activities were performed in accordance with the *Field Sampling Plan for BRAC-Related Activities, Naval Air Station Barbers Point, Oahu, Hawaii, Addendum (Draft)* (Ogden 1994b). Figure 2-1 presents a site plan depicting soil gas sampling locations; soil and ground-water sampling locations are depicted in Figure 2-2.

Field sampling procedures for the CLEAN program are described in more detail in the CLEAN *Project Procedures Manual* (Ogden 1994c). References to the manual in this report are provided in the form of standard operating procedures.

2.1 BIOLOGICAL RESOURCES RECONNAISSANCE

In September 1994, two biologists surveyed the Former Fuel Farm. The purpose of this activity was to identify and characterize biological resources on and in the vicinity of the site, identify sensitive resources, and assess potential disturbances to these resources that would result from Abbreviated RI field activities. The reconnaissance was also performed to verify existing biological information, to document potential ecological receptors and potential exposure pathways, and to look for evidence of contaminant effects in the field. The biological resources identified during the reconnaissance are described in Section 3.9.

2.2 ARCHAEOLOGICAL RECONNAISSANCE

No archaeological reconnaissance was performed at the Former Fuel Farm, because the entire site had been disturbed during the construction, use, and demolition of the fuel farm.

2.3 Utility Clearance

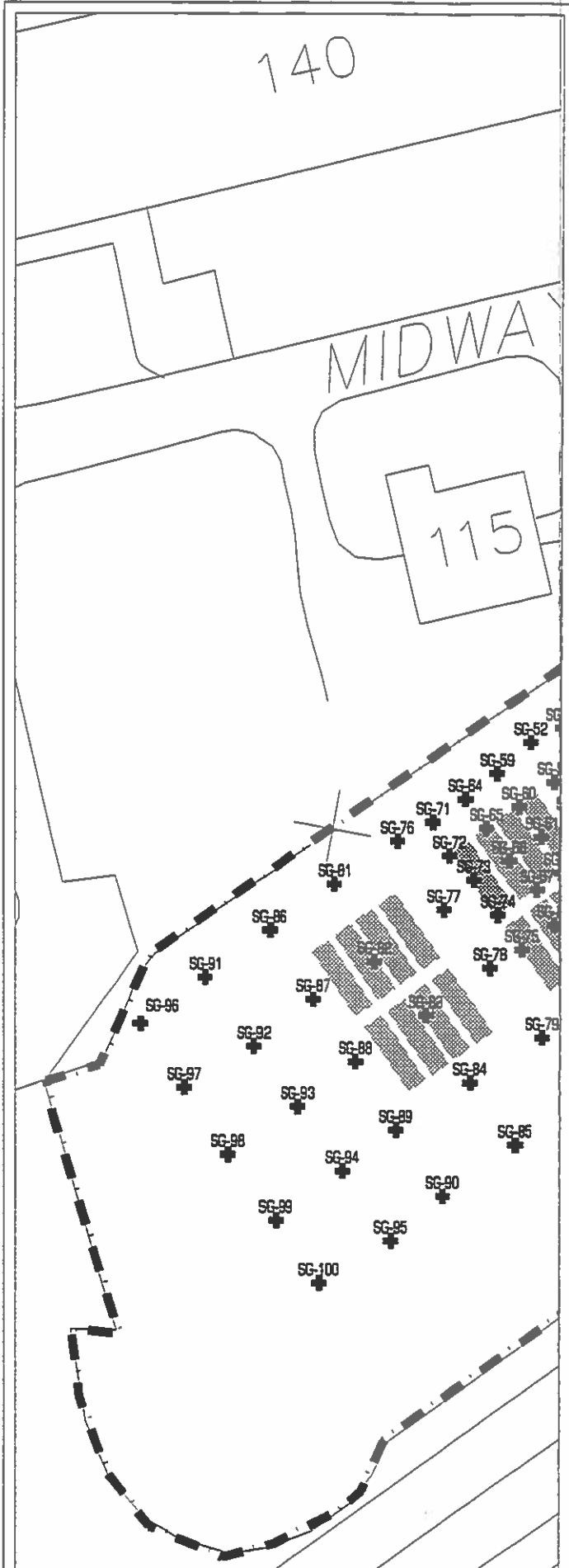
Between January 5 and 18, 1995, a utility clearance survey was conducted to delineate utility lines which might impact drilling and soil gas survey operations. Utility location work was conducted in accordance with the methods outlined in procedure FP-B-7, *Utility Clearance* (Ogden 1994c).

2.4 Soil Gas Survey

Between January 10 and 19, 1995, a soil gas survey was conducted at the Former Fuel Farm to assess whether subsurface soils were impacted with volatile compounds and to identify areas where these chemicals were spatially concentrated. Soil gas sampling locations are depicted in Figure 2-1. The soil gas investigation was geared toward assessing the sitewide distribution of petroleum impacts (if any), whereas the soil and ground-water investigations (described below) focused on investigating the possible locations of the MoGas spill.

Soil gas sampling was conducted according to procedure FP-C-3, *Soil Gas Survey* (Ogden 1994c), with several modifications (discussed in Section 2.10). The analytical plan summary (which lists the soil gas and associated quality control samples collected, sample depths, and analyses performed) and the analytical report from the soil gas survey contractor are presented in Appendix A. Soil gas survey results are summarized in Section 4.1.

A total of 193 soil gas samples were collected from 110 locations at the Former Fuel Farm. Sampling locations were established on a 50x50-foot grid over the entire fuel farm area. In addition, sampling locations were established on a 25x25-foot grid to better delineate potential contamination in the two areas immediately surrounding the former MoGas UST locations (H17/H18 and J2/J3).



LEGEND

SG-32 SOIL GAS SAMPLE LOCATION

FENCE

APPROXIMATE SITE BOUNDARY

FORMER UNDERGROUND STORAGE TANKS

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SOURCES

R.M. TOWILL FIELD SURVEY
U.S. NAVY, PUBLIC WORKS CENTER DRAWING
7462792.DWG

TITLE

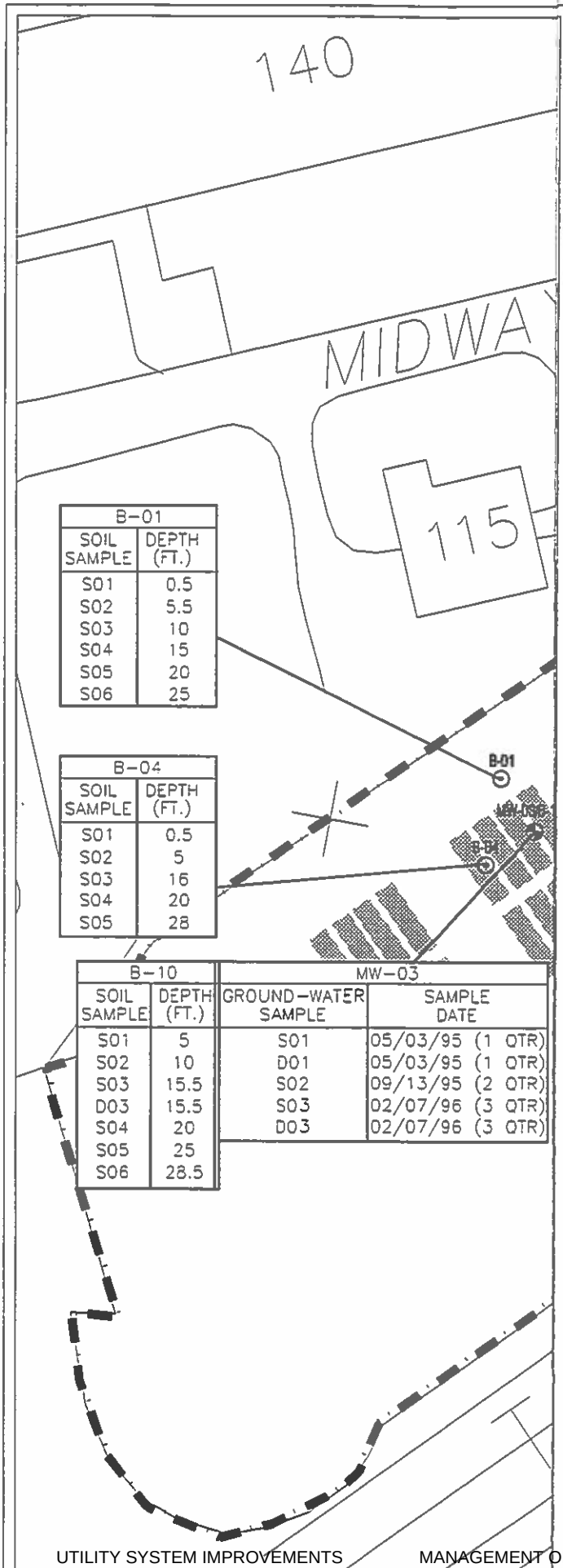
SOIL GAS SAMPLE LOCATIONS FORMER FUEL FARM NAS BARBERS POINT

N

FEET

50 0 100 200

FIGURE 2-1



LEGEND

MW-32	MONITORING WELL LOCATION
B-09	BORING LOCATION
S01	PRIMARY SAMPLE NUMBER
D01	DUPLICATE SAMPLE NUMBER
—X—X—	FENCE
	APPROXIMATE SITE BOUNDARY
	FORMER UNDERGROUND STORAGE TANKS

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SOURCES

R.M. TOWILL FIELD SURVEY
U.S. NAVY, PUBLIC WORKS CENTER DRAWING
7462792.DWG

TITLE

MONITORING WELL AND SOIL BORING LOCATIONS FORMER FUEL FARM NAS BARBERS POINT

N

FEET
50 0 100 200

FIGURE 2-2

It was initially proposed that soil gas samples be collected at a shallow depth of approximately 5 feet bgs and at an intermediate depth of approximately 15 feet bgs at each survey location. Additionally, 25 deep zone samples were proposed to be collected from selected locations at 25 to 30 feet bgs. However, very hard limestone bedrock and/or debris in the fill prohibited sample collection in many portions of the site. A total of 193 soil gas samples were collected: 116 shallow samples from 1.5 to 5 feet below ground surface (bgs); 57 intermediate depth samples from 7.5 to 15 feet bgs; and 20 deep samples from 18 to 25 feet bgs.

Soil gas samples were analyzed at an offsite laboratory. Each sample was injected from the collection syringe directly into an SRI 8610 gas chromatograph (GC) and analyzed for:

- Chlorinated volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8010;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020;
- Total petroleum hydrocarbons (TPH) by EPA Method 8015 modified; and
- Fixed gases (carbon dioxide and oxygen).

Detection limits were 1 part per million by volume (ppmv) for methane and TPH and 0.001 ppmv for the remaining analytes.

The TPH method used for soil gas and the TFH method used for soil and ground water are similar methods; however, the TFH method is typically used for estimating heavier fuel components, whereas the TPH method has a broader range and can detect lighter fuels.

2.5 Soil Investigation

Both surface and subsurface soil samples were collected from soil borings. All soil sampling and drilling equipment was decontaminated between locations, following procedure FP-D-5, *Equipment Decontamination* (Ogden 1994c). Soil sampling was

conducted in accordance with procedure FP-C-2, *Soil Sampling* (Ogden 1994c). The soil samples were logged and classified in the field as described in procedure FP-C-1, *Soil Classification* (Ogden 1994c). Site geology is discussed in Section 3.6. Soil sample analytical results are summarized in Section 4.2. Copies of surface soil sample logs, trench logs, trench wall diagrams, and the soil boring logs are provided in Appendix B.

A total of 65 soil samples were collected from 11 soil borings between March 15 and 28, 1995. Soil sampling locations are depicted in Figure 2-2. Four soil borings were advanced at the perimeter of each of the former MoGas UST locations (H17/H18 and J2/J3), and one boring was drilled in the center of each of these areas, to assess the horizontal extent and vertical profile of potential petroleum hydrocarbon impacts in the unsaturated zone. The last soil boring was advanced downgradient of the two former MoGas UST locations, primarily to accommodate a downgradient monitoring well and to acquire lithologic information from outside the disturbed tank farm area. Soil sampling was conducted in accordance with procedure FP-C-2, *Soil Sampling* (Ogden 1994c).

All soil samples were analyzed for potential site contaminants, using the following analyses:

- EPA Contract Laboratory Program (CLP) Method OLM01.8V for VOCs, using gas chromatography and mass spectrometry (GC/MS);
- CLP Method OLM01.8B for semi-volatile organic compounds (SVOCs), using GC/MS; and
- EPA Method 8015B/OG for total fuel hydrocarbons (TFH), modified for the detection of long-chain hydrocarbons.

The analytical plan summary, which lists the soil, ground-water, and quality control samples collected and the analyses performed, is presented in Table 2-1. Sample management is described in Section 2.8.

2.6 GROUND-WATER INVESTIGATION

Characterization of ground-water conditions in the vicinity of the Former Fuel Farm required monitoring well installation and development, ground-water sampling, and ground-water level monitoring, which are described in the following sections. Sample management is described in Section 2.8. Site ground-water conditions are described in Section 3.8. Ground-water analytical results are presented in Section 4.3. Appendix C contains a copy of the well development logs.

2.6.1 Monitoring Well Installation and Development

Three monitoring wells were installed at the Former Fuel Farm. All three wells were constructed with 15-foot screened intervals placed from approximately 5 feet above to 10 feet below the ground-water table surface. Monitoring well installation and development were conducted in accordance with procedures FP-D-1, *Monitoring Well Installation* and FP-D-2, *Monitoring Well Development* (Ogden 1994c).

Monitoring well MW-01 was developed on March 31, 1995; monitoring wells MW-02 and MW-03 were developed on April 3, 1995. Each well was first surged using a surge block for 15 minutes, then bailed using a PVC bailer. During well development, measurements of pH, specific conductance, and temperature were taken after every five to ten gallons of water removal. Development continued until three borehole volumes of water had been removed, the measured parameters had stabilized, and the purged ground water was relatively clear and free of sediment.

2.6.2 Ground-Water Sampling

Ground-water samples were collected from each of the monitoring wells on May 3, 1995, September 13, 1995, and February 7, 1996, according to procedure FP-D-3, *Monitoring Well Sampling* (Ogden 1994c). A fourth and final round of ground-water sampling was conducted in April 1996. Validated data from the first two sampling events are currently available; unvalidated data is available for the third sampling event. Data from the April 1996 sampling round will be included in the Final Abbreviated RI Report. Monitoring

Table 2-1

ANALYTICAL PLAN SUMMARY
FORMER FUEL FARM
NAS BARBERS POINT

						Analyses Performed		
EPA ID	RI ID	SDG	Date Sampled	Matrix	Depth (feet)	CLP VOC	CLP SVOC	TFH
Soil								
SL205	FFBS01S01	SN078	3/15/95	Soil	0.5	X	X	X
SL206	FFBS01S02	SN078	3/15/95	Soil	5.5	X	X	X
SL207	FFBS01S03	SN078	3/15/95	Soil	10	X	X	X
SL208	FFBS01S04	SN078	3/15/95	Soil	15	X	X	X
SL209	FFBS01S05	SN078	3/15/95	Soil	20	X	X	X
SL210	FFBS01S06	SN078	3/15/95	Soil	25	X	X	X
SL211	FFBS02S01	SN078	3/15/95	Soil	0.5	X	X	X
SL212	FFBS02S02	SN078	3/15/95	Soil	7	X	X	X
SL213	FFBS02S03	SN078	3/15/95	Soil	11	X	X	X
SL214	FFBS02S04	SN078	3/15/95	Soil	15	X	X	X
SL215	FFBS02S05	SL215	3/15/95	Soil	20	X	X	X
SL216	FFBS02S06	SL215	3/15/95	Soil	25	X	X	X
SL219	FFBS03S01	SL215	3/16/95	Soil	0.5	X	X	X
SL220	FFBS03D01	SL215	3/16/95	Soil	0.5	X	X	X
SL221	FFBS03S02	SL215	3/16/95	Soil	6	X	X	X
SL222	FFBS03S03	SL215	3/16/95	Soil	10	X	X	X
SL223	FFBS03S04	SL215	3/16/95	Soil	15	X	X	X
SL224	FFBS03S05	SL215	3/16/95	Soil	25	X	X	X
SL225	FFBS04S01	SL215	3/16/95	Soil	0.5	X	X	X
SL226	FFBS04S02	SL215	3/16/95	Soil	5	X	X	X
SL227	FFBS04S03	SL215	3/16/95	Soil	16	X	X	X
SL228	FFBS04S04	SL215	3/16/95	Soil	20	X	X	X
SL229	FFBS04S05	SL215	3/16/95	Soil	28	X	X	X
SL230	FFBS05S01	SL215	3/16/95	Soil	1	X	X	X
SL231	FFBS05S02	SL215	3/16/95	Soil	9	X	X	X
SL232	FFBS05S03	SL215	3/16/95	Soil	15	X	X	X
SL235	FFBS05S04	SL235	3/17/95	Soil	21.5	X	X	X
SL236	FFBS05S05	SL235	3/17/95	Soil	27.5	X	X	X
SL239	FFBS06S01	SL237	3/22/95	Soil	0.5	X	X	X
SL240	FFBS06D01	SL237	3/22/95	Soil	0.5	X	X	X

Table 2-1 (continued)

ANALYTICAL PLAN SUMMARY
FORMER FUEL FARM
NAS BARBERS POINT

						Analyses Performed		
EPA ID	RI ID	SDG	Date Sampled	Matrix	Depth (feet)	CLP VOC	CLP SVOC	TFH
Soil (continued)								
SL241	FFBS06S02	SL237	3/22/95	Soil	5.5	X	X	X
SL242	FFBS06S03	SL237	3/22/95	Soil	10.5	X	X	X
SL243	FFBS06S04	SL237	3/22/95	Soil	15.5	X	X	X
SL244	FFBS06S05	SL237	3/22/95	Soil	23	X	X	X
SL245	FFBS06S06	SL237	3/22/95	Soil	25	X	X	X
SL246	FFBS07S01	SL237	3/22/95	Soil	0.5	X	X	X
SL247	FFBS07S02	SL237	3/22/95	Soil	5.5	X	X	X
SL248	FFBS07S03	SL237	3/22/95	Soil	10.5	X	X	X
SL249	FFBS07S04	SL237	3/22/95	Soil	15	X	X	X
SL250	FFBS07S05	SL237	3/22/95	Soil	20.5	X	X	X
SL251	FFBS07S06	SL237	3/22/95	Soil	25	X	X	X
SL252	FFBS08S01	SL237	3/22/95	Soil	1	X	X	X
SL253	FFBS08D01	SL237	3/22/95	Soil	1	X	X	X
SL254	FFBS08S02	SL237	3/22/95	Soil	5	X	X	X
SL255	FFBS08S03	SL237	3/22/95	Soil	10	X	X	X
SL256	FFBS08S04	SL237	3/22/95	Soil	15	X	X	X
SL257	FFBS08S05	SL257	3/22/95	Soil	20	X	X	X
SL258	FFBS08S06	SL257	3/22/95	Soil	25	X	X	X
SL261	FFBS09S01	SL257	3/24/95	Soil	1	X	X	X
SL262	FFBS09S02	SL257	3/24/95	Soil	5	X	X	X
SL263	FFBS09S03	SL257	3/24/95	Soil	10	X	X	X
SL265	FFBS09S04	SL257	3/24/95	Soil	14.5	X	X	X
SL266	FFBS09S05	SL257	3/24/95	Soil	20	X	X	X
SL267	FFBS09S06	SL257	3/24/95	Soil	25	X	X	X
SL270	FFBS10S01	SL268	3/28/95	Soil	5	X	X	X
SL271	FFBS10S02	SL268	3/28/95	Soil	10	X	X	X
SL272	FFBS10S03	SL268	3/28/95	Soil	15	X	X	X
SL273	FFBS10D03	SL268	3/28/95	Soil	15.5	X	X	X
SL274	FFBS10S04	SL268	3/28/95	Soil	20	X	X	X
SL275	FFBS10S05	SL268	3/28/95	Soil	25	X	X	X

Table 2-1 (continued)

ANALYTICAL PLAN SUMMARY
FORMER FUEL FARM
NAS BARBERS POINT

						Analyses Performed		
EPA ID	RI ID	SDG	Date Sampled	Matrix	Depth (feet)	CLP VOC	CLP SVOC	TFH
Soil (continued)								
SL276	FFBS10S06	SL268	3/28/95	Soil	28.5	X	X	X
SL277	FFBS11S01	SL268	3/28/95	Soil	0.5	X	X	X
SL280	FFBS11S02	SL268	3/29/95	Soil	10	X	X	X
SL281	FFBS11S03	SL268	3/29/95	Soil	15	X	X	X
SL282	FFBS11S04	SL268	3/29/95	Soil	25.5	X	X	X
Ground Water								
SL284	FFMW01S01	OE012	5/3/95	Water	N/A	X	X	X
SL285	FFMW03S01	OE012	5/3/95	Water	N/A	X	X	X
SL286	FFMW03D01	OE012	5/3/95	Water	N/A	X	X	X
SL700	FFMW02S01	OE120	5/3/95	Water	N/A	X	X	X
SL288	FFMW01S02	OE120	9/13/95	Water	N/A	X	X	X
SL289	FFMW02S02	OE120	9/13/95	Water	N/A	X	X	X
SL290	FFMW03S02	OE130	9/13/95	Water	N/A	X	X	X
SL292	FFMW01S03	OE130	2/7/96	Water	N/A	X	X	X
SL293	FFMW02S03	OE130	2/7/96	Water	N/A	X	X	X
SL294	FFMW03S03	OE130	2/7/96	Water	N/A	X	X	X
SL295	FFMW03D03	OE012	2/7/96	Water	N/A	X	X	X
Quality Control								
SL203	FFQW01E01	SN078	3/15/95	Water	N/A	X	X	X
SL204	FFQW01T01	SN078	3/15/95	Water	N/A	X		
SL218	FFQW01T02	SL215	3/16/95	Water	N/A	X		
SL233	FFQW01E03	SL215	3/17/95	Water	N/A	X	X	X
SL234	FFQW01T03	SL215	3/17/95	Water	N/A	X		
SL238	FFQW01T04	SL215	3/22/95	Water	N/A	X		
SL259	FFQW01E05	SL237	3/24/95	Water	N/A	X	X	X
SL260	FFQW01T05	SL237	3/24/95	Water	N/A	X		
SL264 (1)	FFQW01F01	SL257	3/24/95	Water	N/A	X	X	X

Table 2-1 (continued)

ANALYTICAL PLAN SUMMARY
FORMER FUEL FARM
NAS BARBERS POINT

						Analyses Performed		
EPA ID	RI ID	SDG	Date Sampled	Matrix	Depth (feet)	CLP VOC	CLP SVOC	TFH
Quality Control (continued)								
SL269	FFQW01T06	SL257	3/28/95	Water	N/A	X		
SL278	FFQW01E07	SL257	3/29/95	Water	N/A	X	X	X
SL279	FFQW01T07	SL268	3/29/95	Water	N/A	X		
SL283 (1)	FFQW01F02	SL268	4/10/95	Water	N/A	X	X	X
SL287	FFQW01T08	SL268	5/3/95	Water	N/A	X		
SL291	FFQW01T09	SL268	9/13/95	Water	N/A	X		
SL296	FFQW01T10	SL283	2/7/96	Water	N/A	X		

Notes

Abbreviations for requested chemical analyses are as follows:

SDG - Sample Delivery Group
CLP - Contact Laboratory Program
VOC - Volatile Organic Compound(s)
SVOC - Semi-Volatile Organic Compound(s)
TFH - Total Fuel Hydrocarbons

Refer to the draft Quality Assurance Project Plan (QAPP) for a discussion of the appropriate laboratory test methods and for a listing of the compounds tested for by each method.

(1) These fields blanks were also used as QC samples for other NAS Barbers Point investigations. In most cases, they were analyzed using other methods, in addition to the methods indicated in the table.

well locations are depicted in Figure 2-2. A summary of the samples collected in the first three sampling events is presented in Table 2-1

Prior to sampling, each well was purged to obtain ground-water samples that were representative of the aquifer. Measurements of temperature, pH, and specific conductance were taken at appropriate intervals throughout the purging process. Purging continued until three well casing volumes of water were removed and until the parameters had stabilized. Both purging and sampling were conducted using dedicated, 2-inch-diameter polyvinyl chloride (PVC) bladder pumps. Appendix C contains copies of the monitoring well purging and sampling logs. Dedicated sampling pumps and disposable filters were utilized during ground-water sampling; therefore, no decontamination procedures were necessary. Equipment for measuring field parameters, such as pH, temperature, and specific conductance, did not come in contact with the ground-water samples and were rinsed with distilled water after each measurement.

2.6.3 Ground-Water Level Monitoring

Water levels in all three monitoring wells at the Former Fuel Farm were measured periodically with an electronic water level sounder as part of basewide ground-water level monitoring activities (Ogden 1995). The basewide ground-water level monitoring included 56 wells installed as part of site-specific activities and as part of the Regional Ground-Water System RI. Water level monitoring was performed monthly to provide sufficient data over a long enough time period that temporal ground-water level variations could be discerned. Field readings were recorded on a form that included the well number, date and time of reading, top of casing elevation, depth to water, and water level elevation. The ground-water level monitoring data for 1995 are presented in Appendix C.

2.7 Land Surveying

The locations and elevations of the soil gas sampling, surface soil sampling, and monitoring well locations were surveyed by a State of Hawaii–registered land surveyor on May 18, 1995. Horizontal locations were referenced to a statewide coordinate system. Elevations were referenced to mean sea level (msl). Vertical elevation surveying

accuracy was to the nearest 0.01 feet. The elevations of the monitoring wells were measured to permanent marks at the top of the well PVC casing and top of the steel monument. These marks provided a stable datum from which ground-water elevations could be measured.

2.8 Investigation-Derived Waste Management

Field investigation activities resulted in the generation of both potentially hazardous and nonhazardous wastes. Investigation-derived wastes (IDW) generated during field activities at the Former Fuel Farm included soil cuttings, monitoring well development and purge water, equipment decontamination water, and used personal protective equipment and plastic sheeting.

During field activities, IDW was placed in Department of Transportation (DOT)-approved, 55-gallon steel drums and labeled, tagged, and inventoried in accordance with procedure FP-B-8, *IDW Management* (Ogden 1994c). Drummed wastes generated during the investigation were stored in a fenced and secure enclosure at the site.

2.9 Sample Management

Field sample naming, handling, and quality control (QC) activities were conducted according to procedures FP-B-10, *Sample Naming*; FP-F-2, *Field QC Samples*; FP-F-6, *Record Keeping, Sample Labeling, and Chain-of-Custody*; and FP-F-7, *Sample Handling, Storage, and Shipping* (Ogden 1994c).

2.9.1 Sample Labeling and Handling

Samples collected for chemical analysis were tracked using two numbering systems. The first system, the EPA sample identification (ID) number, is a sequential number consisting of two letters (in this case the letters "SL") followed by three numbers. Samples were generally numbered consecutively in the order collected.

The second convention used to identify Abbreviated RI samples is illustrated by the following example of a subsurface soil sample number:

FFBS01S01

where:	FF	=	Former Fuel Farm
	BS	=	Boring soil sample
	01	=	Boring number 01
	S01	=	Sample 01 collected from boring 01

Similar sample numbers were selected for ground-water samples. For example, ground-water samples collected from a monitoring well were labeled with the letters "MW" and the corresponding well number.

Adhesive labels were placed on the sample containers immediately following sample collection, and the following information was recorded on the labels using a waterproof marker:

- EPA sample number;
- Date and time of collection;
- Sampler's initials;
- Sample preservatives (if applicable); and
- Analyses to be performed on the sample.

Labels were then covered with clear adhesive tape to prevent loss of labels and information. Sample container and preservative requirements are outlined in the *Quality Assurance Project Plan for Naval Air Station Barbers Point* (Ogden 1994e).

2.9.1.1 Soil Samples

When possible, soil samples were collected in 6-inch-long by 2-inch-diameter stainless-steel sleeves. Immediately following acquisition, each sample was sealed by covering the ends with Teflon™ film, plastic endcaps, and adhesiveless silicon tape. Soil

samples collected from the 1.5-inch-diameter split-spoon were transferred with as little disturbance as possible into pre-cleaned glass jars for shipment.

2.9.1.2 Ground-Water Samples

Ground-water samples were collected in pre-cleaned glass and polyethylene containers appropriate for each specific analysis performed. For analyses requiring preservatives, sample containers were pre-preserved by the laboratory. Ground-water sample bottles were filled directly from the Teflon™-lined, polyethylene discharge tubing of a dedicated bladder pump in the monitoring well. The bladder pump was also used to collect the filtered metals samples by attaching a disposable filter to the outflow end of the discharge tubing.

2.9.2 Sample Storage, Custody, and Shipment

Following collection and labeling, samples were immediately placed in coolers, with glass sample containers packaged in bubble wrap. Blue ice was placed between and on top of the samples. The samples were in the continuous custody of the sampling crew.

Custody procedures were performed in accordance with procedure FP-F-6, *Record Keeping, Sample Labeling, and Chain-of-Custody* (Ogden 1994c). Sample information was immediately logged into a field chain-of-custody (COC) log book, and a COC form was filled out at the end of each day. The sample date and time, RI sample number, and the corresponding EPA sample number were recorded in the field log book. Information recorded on the COC form included the EPA sample identification number, sample matrix, date and time, container type, preservative, and requested analyses. Each form consisted of several carbonless copy sheets, one of which was retained by the field crew. The remaining copies were placed in a self-sealing plastic bag and taped to the inside of the sample cooler lid.

Sample coolers were then closed, sealed with tape, and two signed and dated custody seals were placed across the lid opening to enable the detection of tampering. The pertinent shipping airbill and a commercial invoice were attached to each cooler. For coolers containing soil samples, copies of the United States Department of Agriculture

(USDA) Permit to Move Soil were affixed to the top of coolers. After appropriate packing procedures were completed, the coolers were delivered to DHL Worldwide Express for overnight shipment to the laboratory.

2.9.3 Laboratory Custody Procedures

A designated sample custodian took custody of the samples upon their arrival at the laboratory. The custodian inspected sample labels and custody forms to ensure that the information matched and that the labels and forms had been properly completed. The custodian also measured the temperature of samples within the coolers with a temperature blank (containing water). The condition of the samples was noted on a sample-condition-upon-receipt (SCUR) form. Information contained on these forms included:

- Signs of damage or tampering;
- Broken or leaking containers;
- Presence of headspace in water sample bottles;
- Any exceedance of sample holding times; and
- Presence of COC forms.

A copy of the SCUR form was transmitted to the Quality Assurance/Quality Control (QA/QC) Coordinator on a daily basis. The custodian then assigned a unique laboratory identification number (accession number) to each sample and placed the samples in a walk-in, refrigerated storage area maintained at 4 degrees Celsius. The laboratory accession number, client name, date received, and number of samples received were manually logged onto a sample receipt checklist. A copy of the signed shipping bill and COC form were retained by the custodian.

Analytical laboratory personnel were responsible for the care and custody of samples from the time of their receipt at the laboratory until they had been analyzed and disposed. Samples were logged in and out on internal laboratory COC forms each time they were removed from storage for extraction or analysis. Whenever the samples were not being

extracted or analyzed, they were returned to the storage area. Samples were generally retained by the laboratory for 180 days following the completion of sample analyses to allow for possible re-analysis.

2.9.4 Decontamination Procedures

Equipment used to obtain samples was decontaminated prior to each use, according to procedure FP-D-5, *Equipment Decontamination* (Ogden 1994c). Due to the unavailability of distilled or deionized water, water purified by a reverse osmosis (RO) process obtained from Aloha Water Company was used for decontamination. Equipment decontamination involved a five-step wash process, as described in Table 2-2.

The ground surface beneath the decontamination line was covered with plastic sheeting to contain any decontamination water spills and excess soil removed from sampling equipment. Equipment cleaned on the decontamination line was either placed in a metal rack for drying, in plastic bags, or in clean 5-gallon buckets and covered with plastic until used. Plastic sheeting and decontamination water and/or debris were disposed in 55-gallon, DOT-approved drums.

Step No.	Wash Compound	Wash Device
1.	Liquinox™ detergent in RO water	Plastic 5-gallon bucket with nylon brushes
2.	RO water	Plastic 5-gallon bucket
3.	Isopropyl alcohol	Plastic spray bottle
4.	RO water	Plastic 5-gallon bucket
5.	RO water	Plastic spray bottle

2.10 Field Quality Control Samples

Field QC samples collected during the project included trip blanks, equipment rinsates, field blanks, and field duplicates. Field QC samples were collected in accordance with

Naval Facilities Engineering Service Center (NFESC) Level D QC requirements and procedure FP-F-2, *Field QC Samples (Water, Soil)* (Ogden 1994c). The field QC samples collected are listed in Table 2-1.

2.10.1 Trip Blanks

Trip blanks were used during the field investigation to assess whether any cross-contamination occurred between samples during storage and shipment. A trip blank, consisting of organic-free water preserved with hydrochloric acid, was included in each cooler containing samples to be analyzed for VOCs. The trip blanks were supplied by the analytical laboratory in two 40-milliliter glass bottles. The number of trip blanks required on a daily basis was minimized by grouping samples intended for VOC analyses in one cooler.

2.10.2 Equipment Rinsates and Field Blanks

Equipment rinsate samples were routinely collected during the field investigation by rinsing decontaminated sampling equipment with purified water and collecting the rinsate for analysis. Equipment rinsate samples were collected to monitor the efficiency of field decontamination procedures and assess the potential for cross-contamination associated with field equipment.

Sampling equipment was cleaned in accordance with the standard decontamination procedure prior to collecting the rinsate sample. RO water obtained from Aloha Water Company was used for rinsate sample collection. The equipment rinsate samples were collected and sent to the laboratory on a daily basis, but were analyzed on a frequency of every other day.

Field blank samples of the RO water were also collected from each lot of water obtained in order to assess the quality of the water used for field decontamination.

2.10.3 Duplicate Samples

Duplicate samples of soil and ground water were collected approximately every ten samples. The purpose of collecting duplicates was to assess the homogeneity of sample matrices. The duplicate samples were submitted to the laboratory as blind duplicates. A total of four duplicate soil samples were collected from soil borings BS-03, BS-06, BS-08, and BS-10.

Monitoring wells throughout NAS Barbers Point were sampled during the basewide quarterly monitoring program; for this reason, a ground-water duplicate sample was not always collected from any one particular site. One duplicate ground-water sample was collected from the Former Fuel Farm in May 1995.

2.11 Deviations in Planned Field Activities

As discussed in Section 2.6, fewer soil gas samples were collected than anticipated because very hard limestone bedrock and/or debris in the fill prevented access to deeper soils.

Monitoring well MW-01 was originally proposed to be located to the south of the H17/H18 former MoGas UST location. Preliminary soil sampling results indicated that TPH levels were significantly higher at the J2/J3 former MoGas UST location than at the H17/H18 former MoGas UST location. In addition, there appeared to be elevated TPH levels at J2/J3 near the ground-water table. Since the purpose of MW-01 was to assess downgradient ground-water quality, the well was moved eastward, to a location south of J2/J3.

The soil gas procedure FP-C-3, *Soil Gas Survey* (Ogden 1994c) was modified in the field; key modifications include the following:

- Nylon tubing with a threaded metal connector at the end was inserted into the hollow pipe assembly from the ground surface and was threaded onto the endpoint holder at the base of the lowermost pipe segment to prevent the soil gas sample from contacting the pipe assembly.

- A volume of gas equal to four times the "dead" volume within the tubing was withdrawn and discarded in order to flush the tubing and fill it with *in situ* soil gas.
- A 20-cubic centimeter (cc) soil gas sample volume was then drawn into the syringe instead of a 10-cc volume.

SECTION 3
SITE PHYSICAL CHARACTERISTICS

The physical characteristics of the Former Fuel Farm are described in this section, with emphasis on site-specific information. A more detailed description of the regional physical characteristics is provided in the *Work Plan for BRAC-Related Activities, Naval Air Station Barbers Point, Volume I - Background Information* (Ogden 1995b).

3.1 Underground Utilities and Subsurface Features

Utility-locating methods were used to determine the surface trace of detectable buried utilities at the Former Fuel Farm. The USTs formerly located at the site have been removed, but their associated piping and utilities were abandoned in place. Boring and soil gas sampling locations were chosen to avoid interference with the underground utilities, and no utility lines or pipes were encountered during sampling or drilling.

3.2 Physiography and Topography

The physiography of Oahu is dominated by four geomorphic features: the Koolau Range, Waianae Range, the Schofield Plateau, and the coastal plain. The Schofield Plateau occupies the central portion of Oahu, between the Koolau and Waianae Ranges. The coastal plains are topographically low-lying areas at the northern and southern ends of the Schofield Plateau. The southern coastal plain consists of broad, elevated coral reef deposits that are partially buried by alluvium eroded from upland areas. NAS Barbers Point is situated on the southern coastal plain of Oahu, locally referred to as the Ewa Plain.

NAS Barbers Point is located on a gentle, southerly sloping section of the Ewa Plain and ranges in elevation from 65 feet msl at the northern base boundary to sea level at Nimitz Beach along the southern base boundary. No perennial streams or major drainage ways are present on NAS Barbers Point. The only major topographic depressions on base are several coral pits, excavated during the 1950s and 1960s.

The Former Fuel Farm site is generally flat, with a very slight downward trend, sloping towards the Pacific Ocean to the south. The average elevation at the site is about 29 feet msl.

3.3 CLIMATE AND METEOROLOGY

The climate of Oahu is influenced by its subtropical location, topography, and by the surrounding Pacific Ocean. Precipitation on Oahu is primarily associated with the prevailing, moisture-laden, northeasterly winds (known as trade winds), which are intercepted and forced upwards at the Koolau Range (NEESA 1983). Because NAS Barbers Point lies in the rain shadow of the Koolau Range, annual rainfall averages only 20 inches. The trade winds are less pronounced on the leeward, southern coastal plain of Oahu in the vicinity of NAS Barbers Point; thus, local land and sea breezes prevail most of the year.

Average temperatures on Oahu range from 72 degrees Fahrenheit (°F) in January to 78.5°F in August. The average daily temperature variation in the vicinity of NAS Barbers Point is approximately 13°F (NEESA 1983).

Rainfall at the base is generally concentrated in heavy showers during the months of October through April, during which time 89 percent of the annual rainfall is recorded. January is the wettest month, averaging 4.7 inches of rain, while June and July are the driest months, averaging 0.3 inches of rain (PACNAVFACENGCOM 1985).

3.4 SURFACE WATER HYDROLOGY

NAS Barbers Point is located south of the Honouliuli and Ewa Beach Watersheds; however, there is no surface water flow onto the base from either of these watersheds. There are no streams which enter or exit NAS Barbers Point, because rainfall infiltrates rapidly into the highly permeable karst limestone. Storm water runoff is controlled by diversion to a series of approximately 250 dry wells located throughout the facility. Storm water entering the dry wells percolates into the underlying limestone.

The only perennial surface water feature at NAS Barbers Point is Ordy Pond, in the southeastern portion of the facility. Ordy Pond, which supports wetland communities, is less than 1.5 acres in surface area, and the water level is approximately 1 foot msl. In addition to Ordy Pond, several of the excavated coral pits at NAS Barbers Point act as drainage sinks and exhibit seasonal standing water (NEESA 1983).

The nearest surface water body to the Former Fuel Farm is the Pacific Ocean, which is located approximately 2,500 feet south. Ordy Pond is located just over a mile southeast of the Former Fuel Farm.

Surface water is controlled at the Former Fuel Farm site by designed drainages along Taxiway P on the seaward side of the site, along the edge of the tarmac on the west end of the site, and along a topographic depression on the east end of the site. Additionally, the shallow coralline limestone and sandstone exhibit characteristics of high permeability. Therefore, infiltration of rain water is expected to be rapid, thereby minimizing surface ponding and overland surface flow. During occasional heavy showers witnessed during field activities, no puddling, ponding, or overland flow occurred.

3.5 Regional Geology

The Hawaiian Islands consist primarily of basaltic lavas that emerged from fractures on the sea floor (MacDonald *et al.* 1990). The island of Oahu was formed through the emergence and coalescence of two large shield volcanoes, Waianae and Koolau, that arose during the early Tertiary Period. about 70 million years ago. The Waianae Volcano created the western half of Oahu. and the Koolau Volcano formed the Schofield Plateau and Koolau Range in the central and eastern parts of the island, respectively. The coastal plains at the northern and southern edges of the Schofield Plateau are composed of coral reef limestone and alluvial volcanic sediments. Fluctuations in sea level have produced alternating layers of marine and terrestrial sedimentary rock types in the coastal plain areas such as NAS Barbers Point (NEESA 1983).

The geologic units which occur beneath NAS Barbers Point have been determined based on deep borings drilled in the vicinity of the base (NEESA 1983). The rock units fall into

three primary categories: Recent-age unconsolidated sediments, Pleistocene-age caprock, and Tertiary- to early Pleistocene-age volcanic rock.

3.5.1 Recent-Age Deposits

The Recent-age deposits at NAS Barbers Point consist of unconsolidated beach sand and alluvium. The sand is comprised predominantly of calcareous grains of coral, coralline algae, and other shell material. The alluvium consists of silts and clays derived from the upland volcanic rocks north of the base.

3.5.2 Pleistocene-Age Deposits

The Pleistocene-age sedimentary rock at NAS Barbers Point, referred to by local geologists as caprock, is thought to range from 50 to 400 feet in thickness along the northern boundary of the facility and from 750 to 1,000 feet in thickness along the coast. The upper 100 feet of caprock is comprised of marine sediment, mainly coralline reef limestone with minor layers of shell fragment limestone and beach sands. Beneath this uppermost layer, alternating layers of alluvial and marine sediments are present. Alluvial layers vary from 5 to 95 feet in thickness and consist of poorly sorted clays, silts, sands, and gravels of volcanic origin. The alternating marine layers are somewhat thicker.

3.5.3 Tertiary-Age and Early Pleistocene-Age Deposits

Two series of Tertiary-age and early Pleistocene-age volcanic rocks exist beneath the caprock. The younger of the two, the Koolau volcanic series, formed from basaltic flows from the Koolau Volcano. The relatively porous basaltic rocks of the Koolau volcanic series yield high quantities of water to wells, tunnels, and springs. A major portion of the drinking water supply on Oahu is produced from the Koolau volcanic series. The Waianae volcanic series lies beneath the Koolau volcanic series, and consists primarily of three basalt members.

3.5.4 Soil

NAS Barbers Point generally has little to no significant soil cover. Roughly 60 percent of the base surface has been mapped by the USDA as coral outcrop. This coral outcrop is the surface expression of the uppermost caprock unit at NAS Barbers Point. Across nearly the entire facility, soil cover consists only of a thin layer of friable, red soil material, present in cracks, crevices, and depressions in the coral outcrop.

A Mamala soil, formed in shallow alluvial deposits over the coralline limestone, is present along the western and northern edges of the facility (USDA 1972). This soil is a dark reddish brown, stony, silty, clay loam, neutral to mildly alkaline, with moderate permeability and slight to moderate erosion potential (USDA 1972). The Mamala soil and sandy beach areas (derived from coral and sea shells) cover about 20 percent of the area of NAS Barbers Point.

The remaining 20 percent of the installation surface has been disturbed by grading or filling, mostly to level airstrips and adjacent areas (NEESA 1983). The bulk of the fill material used during construction was limestone mined from several large pits on base.

At the Former Fuel Farm, a shallow layer of fill (less than 1 foot thick) is present throughout the site. The fill layer is several feet thick in the areas where USTs were removed and the excavations backfilled.

3.6 Site Geology

The following description of the Former Fuel Farm site geology is based on data collected during the Abbreviated RI field investigation, which included lithologic logging at 11 soil borings. Three of these borings were subsequently completed as ground-water monitoring wells: MW-01, MW-02, and MW-03. The locations of the borings and monitoring wells are depicted in Figure 2-2. The depth of the borings ranged from 28 to 41 feet bgs. Units encountered in the borings consisted of fill, coralline limestone, and clastic coralline sandstone. Saturated conditions, reflecting the ground-water table, were

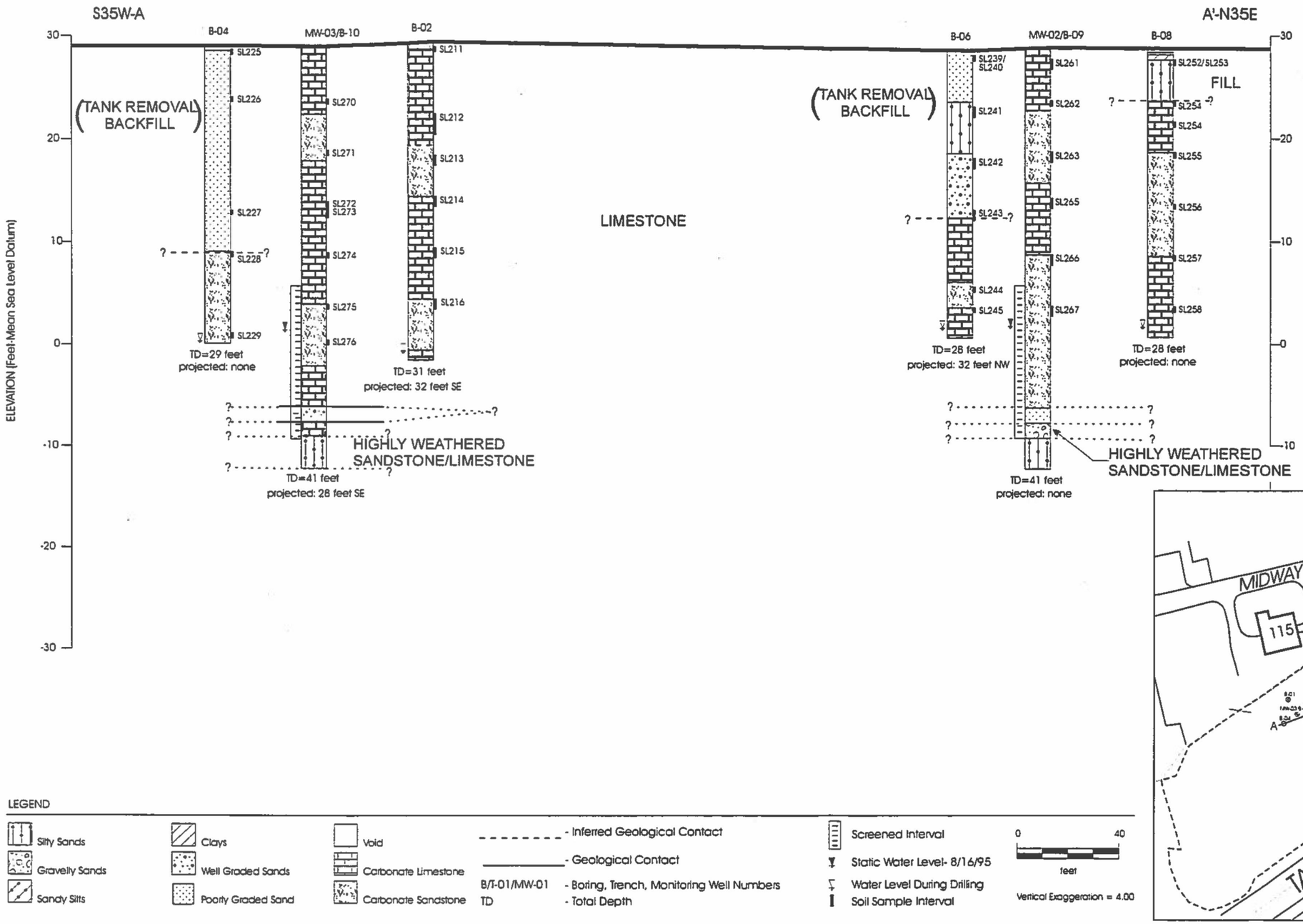
encountered in each of the borings at depths varying between approximately 25 and 30 feet bgs.

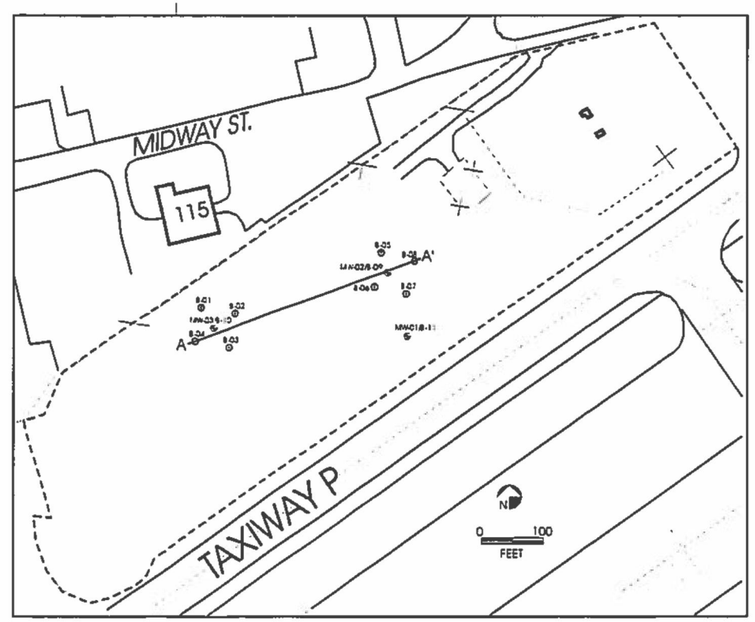
The thickness and horizontal distribution of lithologic units are depicted in geologic cross sections (Figures 3-1 and 3-2). Cross Section A-A' extends east-northeast from the H17/H18 former MoGas UST location to the J2/J3 former MoGas UST location (Figure 3-1). Cross Section B-B' extends south-southeast from the J2/J3 former MoGas UST location to the MW-01 location. The stratigraphic interpretation is based on the Abbreviated RI data and is presented solely for illustrative purposes. Subsurface conditions can change over small distances, and features may exist between sampling locations that cannot be represented.

A shallow thickness (2 to 8 inches) of crushed-limestone grade fill was encountered in every boring conducted at the site. As shown in Figure 3-1, poorly graded, loose sand fill was encountered in borings B-04 and B-06 at depths of 16.5 and 5.0 feet bgs, respectively. The fill in these two borings is probably backfill material placed into a former UST pit.

Shallow bedrock, comprised of coralline limestone with alternating intervals of clastic coralline sandstone, was interpreted to reflect alternating reef and beach facies. The limestone was generally white to very pale brown in color, and massive to blocky in texture. Variable amounts of coral shells and other bioclastic debris within a calcareous matrix characterized much of the limestone, although alternating massive intervals also prevailed. Dissolution features were also present within the coralline bedrock. The degree of dissolution ranged from small cavities to larger voids. Dissolution features generally became more prevalent and fully developed with increased depth.

The coralline limestone bedrock was typically hard to very hard at the ground surface and within the vadose zone. At the capillary fringe (generally observed at approximately 2 to 3 feet above the water table) the hardness and integrity decreased significantly, whereas friability and secondary porosity increased markedly. Within the capillary fringe, calcite





LEGEND

- Silty Sands
- Gravelly Sands
- Sandy Silts
- Clays
- Well Graded Sands
- Poorly Graded Sand
- Void
- Carbonate Limestone
- Carbonate Sandstone
- Inferred Geological Contact
- Geological Contact
- B/T-01/MW-01 - Boring, Trench, Monitoring Well Numbers
- TD - Total Depth
- Screened Interval
- Static Water Level- 8/16/95
- Water Level During Drilling
- Soil Sample Interval

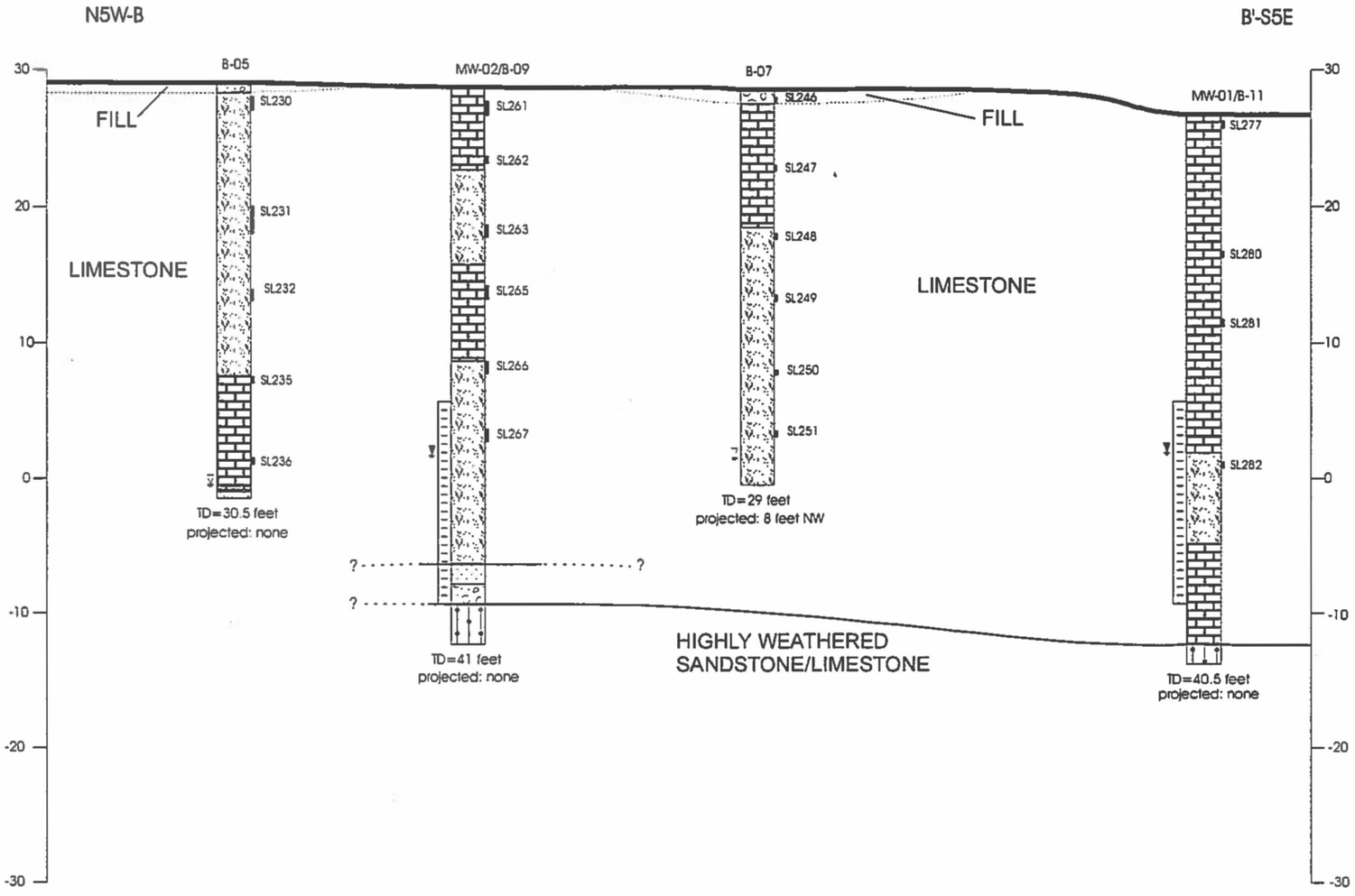
0 40 feet

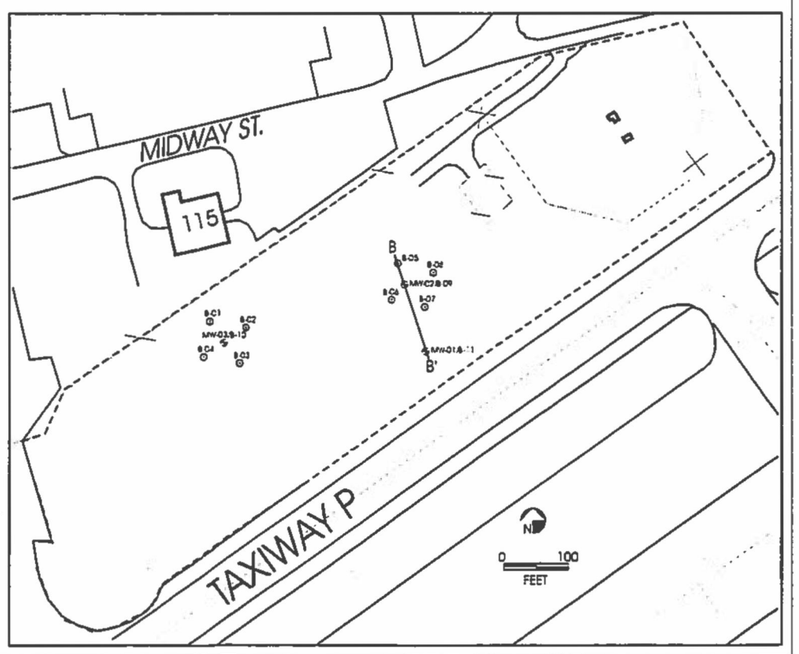
Vertical Exaggeration = 4.00

file:g:\gis\barbspt\report\tiff\A-A'.cdr

Geological Cross Section A-A' Former Fuel Farm

FIGURE 3-1





LEGEND

- Silty Sands
- Gravelly Sands
- Sandy Silts
- Clays
- Well Graded Sands
- Poorly Graded Sand
- Void
- Carbonate Limestone
- Carbonate Sandstone
- Inferred Geological Contact
- Geological Contact
- B/T-01/MW-01 - Boring, Trench, Monitoring Well Numbers
- TD - Total Depth
- Screened Interval
- Static Water Level- 8/16/95
- Water Level During Drilling
- Soil Sample Interval

0 20 feet

Vertical Exaggeration = 2.00

UTILITY SYSTEM IMPROVEMENTS
KALAELOA AIRPORT
STATE PROJECT NO. AO5021-17

Geological Cross Section B-B' Former Fuel Farm

MANAGEMENT OF CONTAMINATED MEDIA, SOIL DISPOSAL, AND SOIL REUSE
01562-341

FIGURE 3-2

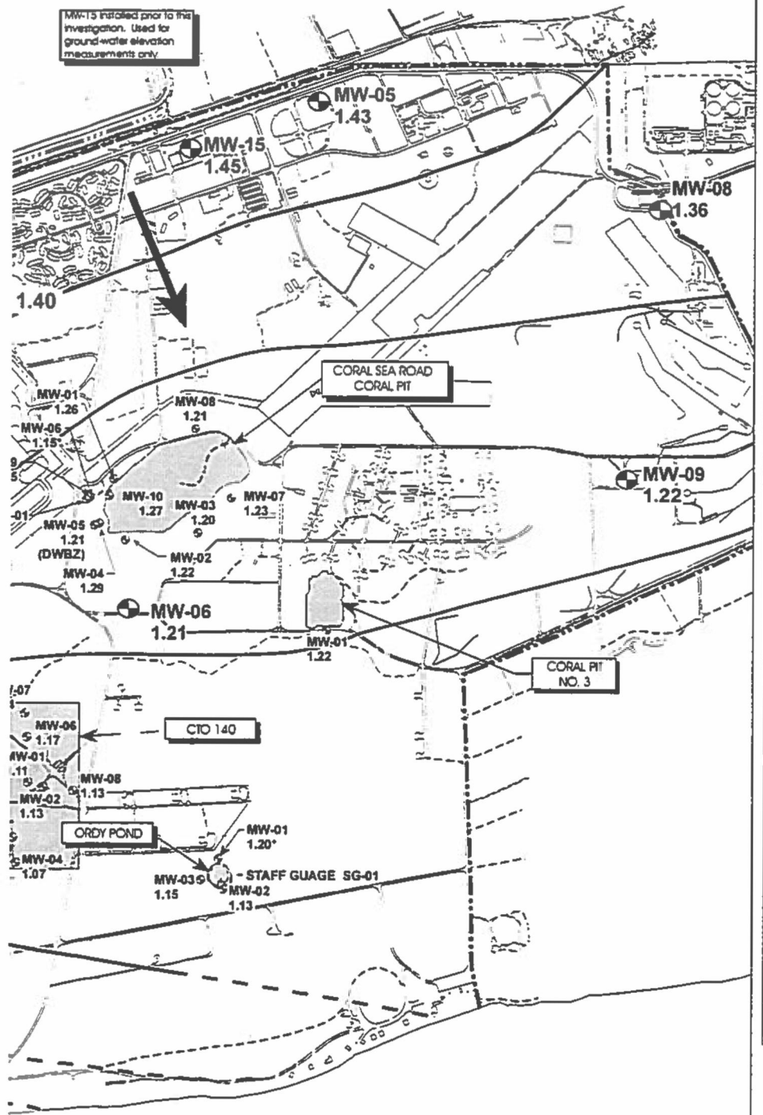
recrystallization was also prevalent. Below the water table, the rock was highly weathered, of low strength and integrity, with well-developed secondary dissolution porosity.

The interbedded sandstone intervals were moderately well cemented, massive, very pale brown, and composed of fine- to medium-grained coralline limestone clasts. The sandstone intervals varied in thickness from 2 to 15 feet thick. The coralline sandstone was generally hard to moderately hard above the saturated zones, yet loose when located in the saturated zone. Diagenetic textures in the form of calcite recrystallization were observed in some intervals, primarily in the lower portion of the vadose zone and within the capillary fringe. Diagenesis within the capillary zone and below the water table was observed to cause reduced distinction of character between the sandstones and the weathered limestones.

3.7 Regional Hydrogeology

Three types of ground-water bodies serve as the primary water sources for Oahu: the basal aquifer, dike-impounded ground water, and perched ground water. Along the coast, where lower permeability marine and alluvial deposits cover the island, artesian conditions may exist for ground water contained within basal aquifers, which consist of volcanic rocks confined by caprock. Dike-impounded ground water generally occurs under confined conditions in permeable volcanic rocks situated between low-permeability intrusion dikes. Perched ground water occurs under unconfined conditions and is separated from the underlying basal water body by an unsaturated zone, such as ash beds or other low-permeability materials.

The shallow ground water beneath NAS Barbers Point is perched ground water occurring within caprock. The caprock at NAS Barbers Point consists of alternating layers of permeable marine sedimentary rock and alluvial deposits which overlie the basal volcanic aquifer. Caprock water is largely separate from the deeper basal ground water, occurring above and frequently within caprock sediments and extending from the ocean edge to approximately a mile inland (Wentworth 1951). This type of ground water is usually interconnected with the ocean, and as a result is commonly brackish to salty.



LEGEND

- REGIONAL GROUND-WATER SYSTEM RI MONITORING WELL LOCATION
- SITE SPECIFIC RI MONITORING WELL LOCATION
- STAFF GAUGE LOCATION
- 1.40 – CONTOUR LINES
- INFERRED CONTOUR LINES
- GENERALIZED GROUND-WATER FLOW DIRECTION
- * BASED ON A REVIEW OF ENTIRE GROUND-WATER DATA SET, WATER LEVELS MEASURED IN THESE WELLS ARE NOT CONSIDERED REPRESENTATIVE DUE TO APPARENT TOPOGRAPHIC SURVEY AND/OR WATER LEVEL SURVEY ERRORS

NOTES

1. THE ACCURACY OF THIS DOCUMENT IS LIMITED TO THE QUALITY OF THE SOURCE INFORMATION AND IS NOT SUITABLE FOR MAPPING ENGINEERING APPLICATIONS AND IS NOT TO BE USED FOR "AS BUILT"
2. DATUM IS MEAN SEA LEVEL = 0.00 FEET
3. ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL
4. CONTOUR INTERVAL=0.10 FEET
5. (DWBZ) WELLS INFLUENCED FROM A DEEPER WATER BEARING ZONE
6. PROJECTION IS IN STATE PLANE COORDINATE SYSTEM, HAWAII ZONE 3
7. PROJECT NUMBER 110190137
8. FILE: ..\GIS\BARBSPT\REPORT\DRYWELL\CONTOURS\05299610.CDR

SOURCES

R.M. TOWILL FIELD SURVEY
U.S. NAVY, PUBLIC WORKS CENTER DRAWINGS:
7462792.DWG

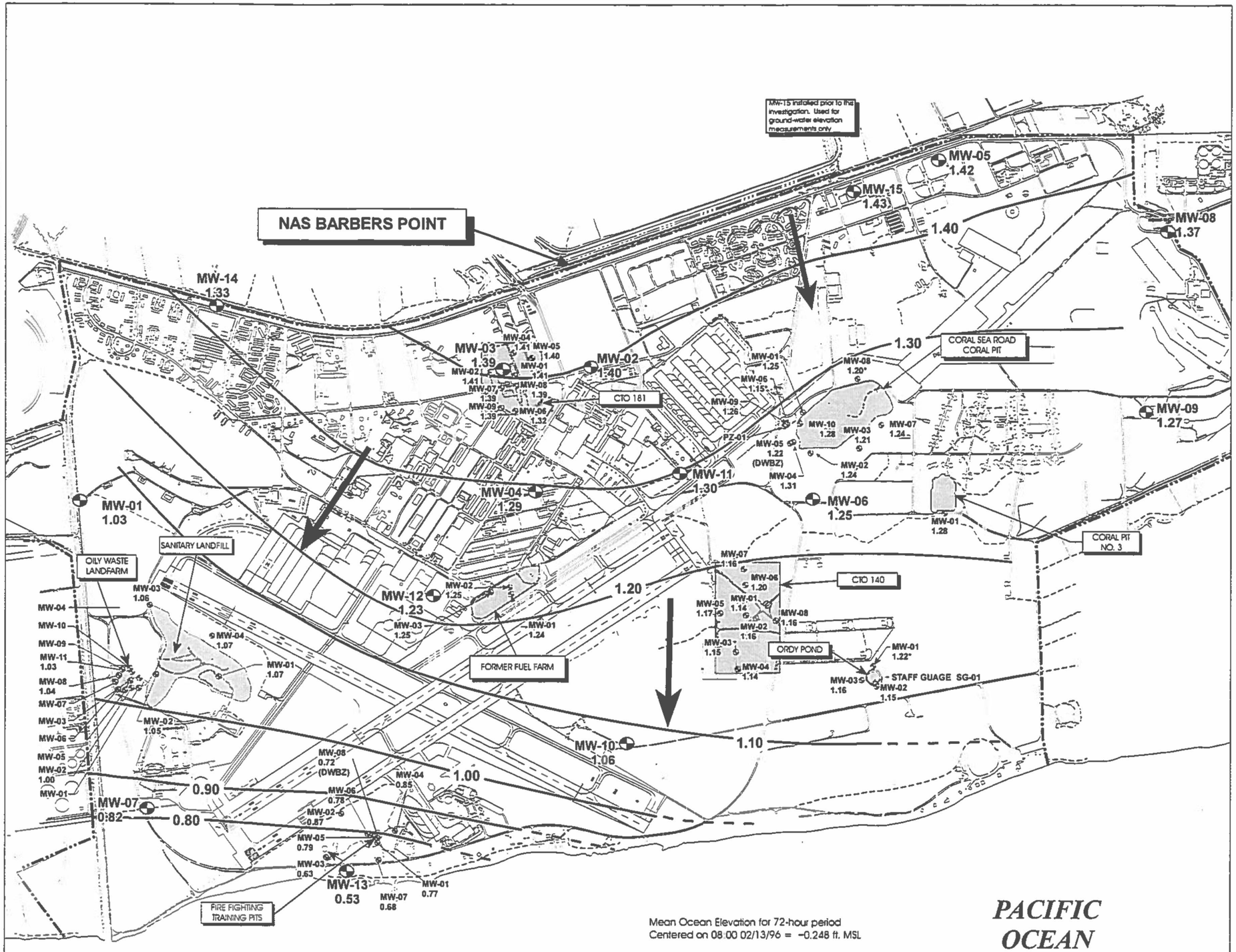
TITLE

UNFILTERED GROUND-WATER ELEVATION CONTOUR MAP FEBRUARY 13, 1996 NAS BARBERS POINT

N

FEET
800 0 1600 3200

FIGURE 3-3



LEGEND

- REGIONAL GROUND-WATER SYSTEM RI MONITORING WELL LOCATION
- SITE SPECIFIC RI MONITORING WELL LOCATION
- STAFF GAUGE LOCATION
- 1.40 – CONTOUR LINES
- INFERRED CONTOUR LINES
- GENERALIZED GROUND-WATER FLOW DIRECTION
- * BASED ON A REVIEW OF ENTIRE GROUND-WATER DATA SET, WATER LEVELS MEASURED IN THESE WELLS ARE NOT CONSIDERED REPRESENTATIVE DUE TO APPARENT TOPOGRAPHIC SURVEY AND/OR WATER LEVEL SURVEY ERRORS

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3. ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL
4. CONTOUR INTERVAL=0.10 FEET
5. (DWBZ) WELLS INFLUENCED FROM A DEEPER WATER BEARING ZONE
6. PROJECTION IS IN STATE PLANE COORDINATE SYSTEM, HAWAII ZONE 3
7. PROJECT NUMBER 110190137
8. FILE:..\GIS\BARBSPT\REPORT\DRYWELL\CONTOURS\05299609.CDR

SOURCES

R.M. TOWILL FIELD SURVEY
U.S. NAVY, PUBLIC WORKS CENTER DRAWINGS:
7462792.DWG

TITLE

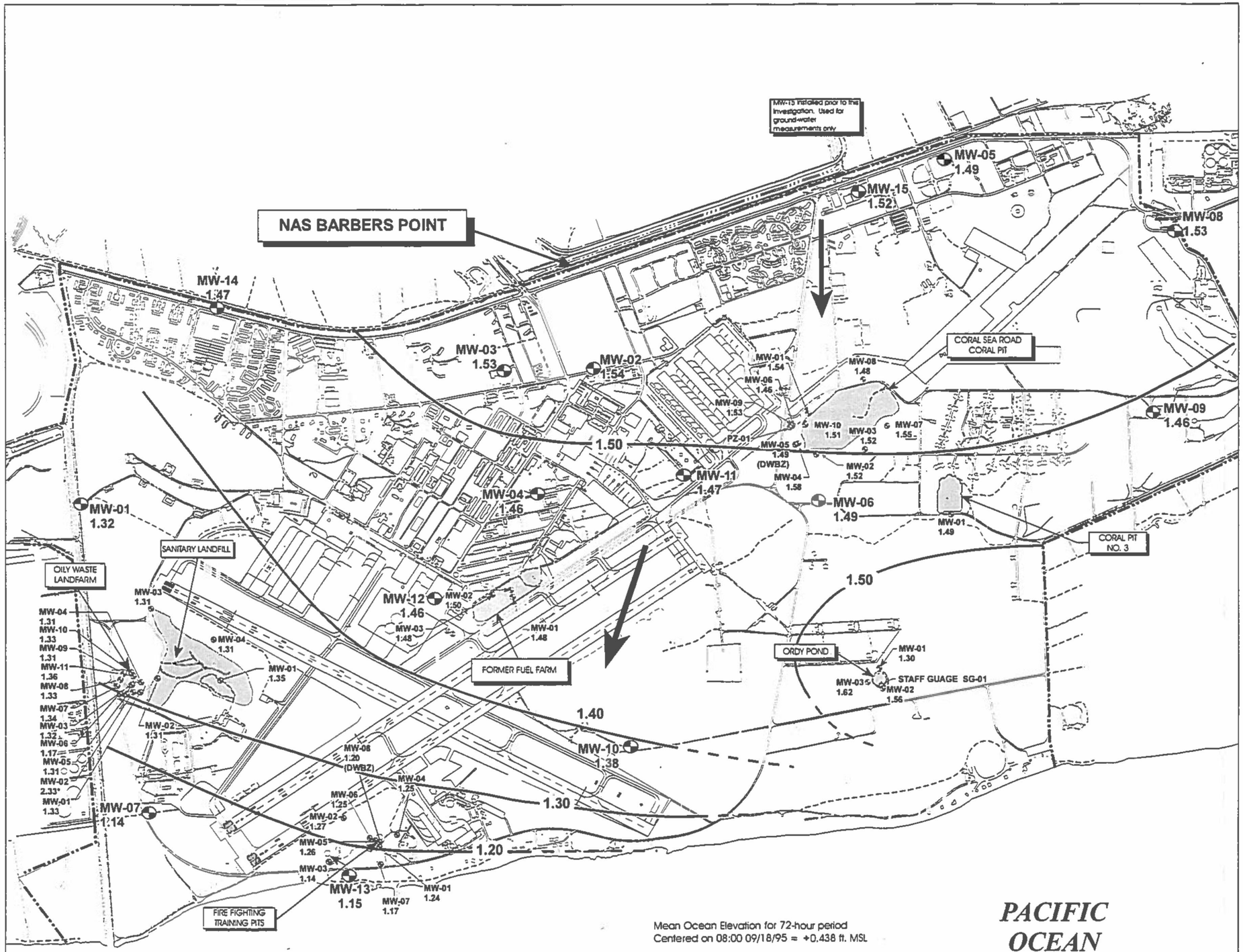
FILTERED GROUND-WATER ELEVATION CONTOUR MAP FEBRUARY 13, 1996 NAS BARBERS POINT

N

FEET

800 0 1600 3200

FIGURE 3-5



LEGEND

- REGIONAL GROUND-WATER SYSTEM RI MONITORING WELL LOCATION
- SITE SPECIFIC RI MONITORING WELL LOCATION
- STAFF GAUGE LOCATION
- 1.40 – CONTOUR LINES
- INFERRED CONTOUR LINES
- GENERALIZED GROUND-WATER FLOW DIRECTION
- * BASED ON A REVIEW OF ENTIRE GROUND-WATER DATA SET, WATER LEVELS MEASURED IN THESE WELLS ARE NOT CONSIDERED REPRESENTATIVE DUE TO APPARENT TOPOGRAPHIC SURVEY AND/OR WATER LEVEL SURVEY ERRORS

NOTES

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2. DATUM IS MEAN SEA LEVEL = 0.00 FEET
3. ELEVATIONS ARE FEET ABOVE MEAN SEA LEVEL
4. CONTOUR INTERVAL = 0.10 FEET
5. (DWBZ) WELLS INFLUENCED FROM A DEEPER WATER BEARING ZONE
6. PROJECTION IS IN STATE PLANE COORDINATE SYSTEM, HAWAII ZONE 3
7. PROJECT NUMBER 110190137
8. FILE: ..\GIS\BARBSPT\REPORT\DRYWELL\CONTOURS\05299612.CDR

SOURCES

R.M. TOWILL FIELD SURVEY
U.S. NAVY, PUBLIC WORKS CENTER DRAWINGS:
7462792.DWG

TITLE

FILTERED GROUND-WATER ELEVATION CONTOUR MAP SEPTEMBER 18, 1995 NAS BARBERS POINT

N

FEET
800 0 1600 3200

FIGURE 3-6

do occur. In the area of the Former Fuel Farm site, the prevailing hydraulic gradient has been calculated to be very flat, with an approximate magnitude of 0.0001 ft/ft.

The Hawaii Department of Health (HDOH) has established an administrative boundary called the underground injection control (UIC) line. Water injected to the subsurface landward of the UIC line must be potable. Seaward of the UIC line, injected water need not meet potable water standards. As shown in Figure 3-7, the Former Fuel Farm is located seaward of the UIC line. For this reason, and because of its high salinity, ground water underlying the site is not currently considered a potable water source. However, future ground-water resource development is feasible in view of a recently constructed pilot desalination plant northwest of NAS Barbers Point which uses shallow ground water as a raw water source.

Figure 3-7 indicates the location of known ground-water production wells. All known wells are located at substantial distances from the Former Fuel Farm, and none are located in the prevailing downgradient direction.

3.9 Biological Resources

Information on vegetation and wildlife at the Former Fuel Farm was obtained from literature searches and interviews with base personnel. This information was supplemented by a qualitative field reconnaissance survey conducted in September 1994. The focus of the survey was to identify sensitive biological resources and provide information on the biological communities found at the site.

3.9.1 Habitat Types

The Former Fuel Farm primarily consists of disturbed habitat. Disturbed habitat is loosely defined as habitat that has been impacted by human activities and/or disrupted by the introduction and encroachment of multiple species which threaten the native community structure. Many of the species in this community are similar to those found in non-native grasslands; however, disturbed habitats also have a greater percentage of non-grass species and only sparse vegetative coverage. Disturbed habitat at the Former

Fuel Farm is dominated by *Achyranthes aspera* (an introduced weed), khaki weed (*Alternanthera pungens*), buffel grass (*Cenchrus ciliaris*), Chinese violet (*Asystasia gangetica*), swollen fingergrass (*Chloris barbata*), weedy heliotrope (*Heliotropium procumbens*), and koa haole (*Leucaena leucocephala*) seedlings.

3.9.2 Wildlife

Based on information obtained during the site reconnaissance, there are no viable wildlife habitats within the Former Fuel Farm site which can maintain wildlife populations. Due to the extent of onsite disturbance, the potential for developing a viable habitat is negligible.

3.9.3 Sensitive Species

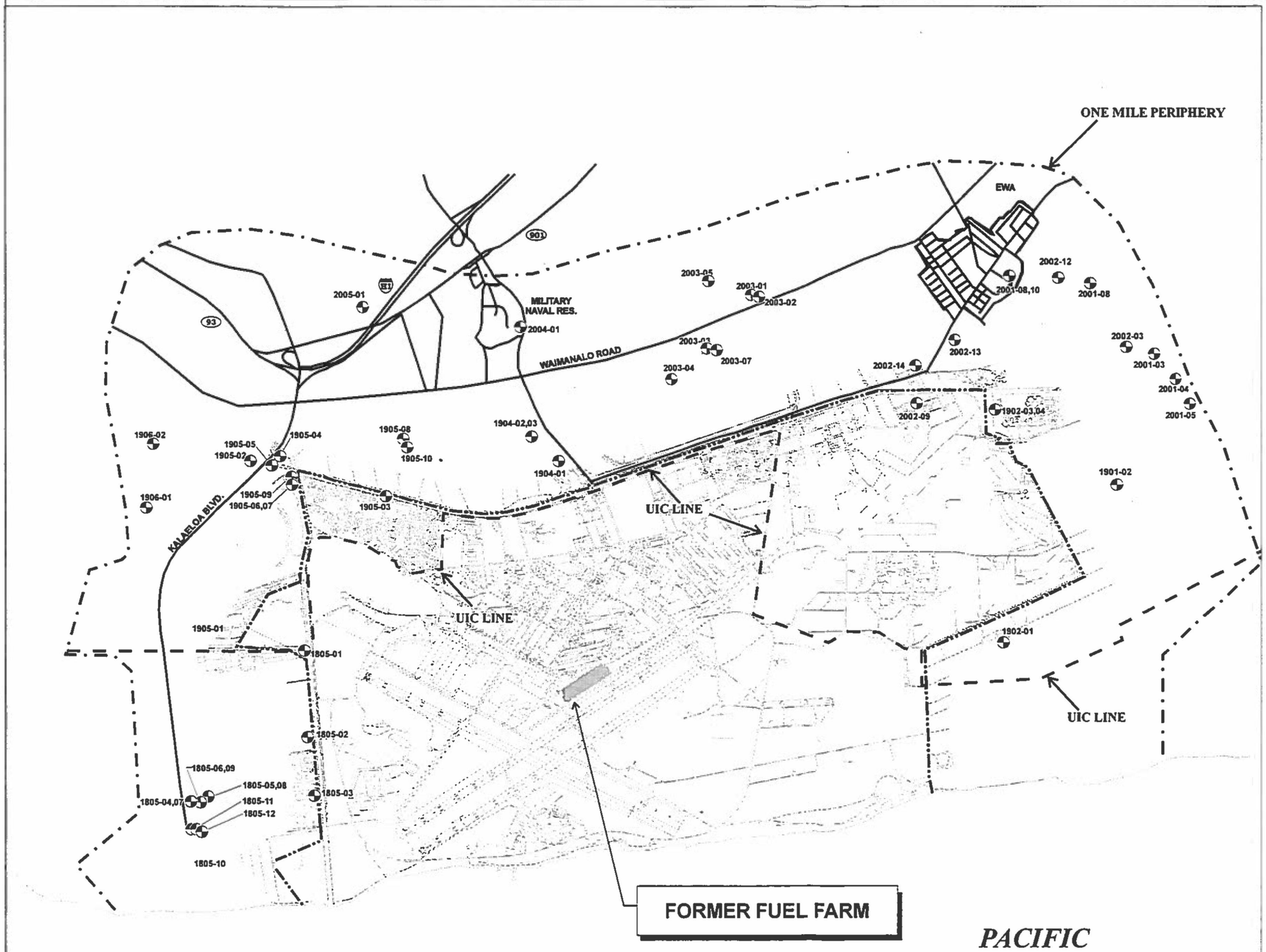
Sensitive species include plants or animals that are considered rare within the region or receive regulatory protection. No sensitive species were identified at the site or in the vicinity of the site. Due to the disturbed nature of the site, no sensitive species are expected in the vicinity.

3.10 Cultural Resources

No cultural remains are present at the site, because the entire site was disturbed during the construction, use, and demolition of the fuel farm facility. No cultural remains have been identified near the site during previous archaeological surveys of the base (Ogden 1995b).

3.11 Land Use Practices

The Former Fuel Farm has been completely dismantled and consists of unused grassland. The site is not currently being used, and future site uses have not been determined.



LEGEND

- 2001-07 — PRODUCTION WELL LOCATION
- NAS BARBERS POINT BOUNDARY
- UNDERGROUND INJECTION CONTROL (UIC) LINE
- ONE MILE PERIPHERY FROM NAS BARBERS POINT
- 93 — STATE ROUTE
- H1 — INTERSTATE ROUTE

NOTES

1. THE ACCURACY OF THIS DOCUMENT IS LIMITED TO THE QUALITY OF THE SOURCE INFORMATION AND IS NOT SUITABLE FOR MAPPING ENGINEERING APPLICATIONS AND IS NOT TO BE USED FOR "AS BUILT"
2. GROUND-WATER MONITORING WELLS ARE NOT SHOWN ON THIS FIGURE
3. GROUND-WATER ELEVATION CONTOUR LINES ARE INTERPRETED FROM A WATER LEVEL SURVEY CONDUCTED ON AUGUST 16, 1995
4. THE UNDERGROUND INJECTION CONTROL (UIC) LINE IS AN ADMINISTRATIVE BOUNDARY SEPARATING AREAS WHERE INJECTED WATER IS REQUIRED TO MEET POTABLE WATER QUALITY STANDARDS FROM AREAS WHERE INJECTED WATER IS NOT REQUIRED TO MEET POTABLE WATER QUALITY STANDARDS
5. THE FIRST TWO NUMBERS IN THE WATER WELL LOCATION INDICATE LATITUDE, THE SECOND TWO NUMBERS INDICATE LONGITUDE, AND THE LAST TWO NUMBERS IDENTIFY THE WELL NUMBER
6. PROJECTION IS IN STATE PLANE COORDINATE SYSTEM, HAWAII ZONE 3
7. PROJECT NUMBER 110190137
8. FILE:...\GIS\BARBSPT\REPORT\WELLS\10309505.COR -PG.12

SOURCES

PACNAVFACENGCOM 1992
USGS 7.5' EWA, HAWAII QUADRANGLE, 1983
DLNR GROUND WATER INDEX 8/26/92

TITLE

LOCATIONS OF WATER PRODUCTION WELLS AND THE UIC LINE IN THE VICINITY OF NAS BARBERS POINT

N

FEET
1600 0 3200 6400

FIGURE
3-7

3.12 Current and Future Potential Population Distributions

Under current land use, there are no onsite or nearby populations. Future land use and future onsite populations have not yet been determined.

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SECTION 4
NATURE AND EXTENT OF CONTAMINATION

The nature and horizontal and vertical extent of contamination at the Former Fuel Farm were assessed using the analytical laboratory results. The following sections discuss the results of the sampling efforts at the Former Fuel Farm. The analytical plan summary, listing the environmental media, samples collected, and the analyses performed, is presented in Table 2-1. RI sample locations are depicted in Figures 2-1 and 2-2. A complete set of soil gas sampling results is provided in Appendix A. Soil sampling logs are contained in Appendix B. A complete set of laboratory results, along with an assessment of the data quality, is presented in Appendix D. For the sake of readability, all data tables and figures referred to in Section 4 are grouped together at the end of the section.

The soil analytical data were reviewed and qualified in accordance with CLP and NFESC guidelines. This topic is discussed in more detail in Appendix D.

4.1 Soil Gas Chemical Data

The soil gas survey was performed at the Former Fuel Farm to establish whether halogenated VOCs, TPH, and certain aromatic hydrocarbons are present in vadose zone soil gas. Concentrations of these chemicals in soil gas may be related to their presence in vadose zone soils and/or ground water.

Soil gas sample results are provided in Table 4-1. The only halogenated VOCs or BTEX compounds detected in soil gas were benzene and ethylbenzene. These compounds were present in only one sample, the 22-foot bgs sample from SG-73, at concentrations of 1.1 and 1.7 ppmv, respectively. SG-73 is directly adjacent to the former location of MoGas USTs H17/H18. BTEX compounds are monoaromatic constituents of petroleum hydrocarbon products, and their presence in site soil gas samples is consistent with the presence of fuel hydrocarbons in soil samples from the same locations (see Section 4.2.3).

TPH was detected in 56 of the soil gas samples obtained at the Former Fuel Farm. Detected concentrations of TPH in shallow soil gas ranged from 1.0 ppmv in the 5-foot bgs SG-39 sample to 8.9 ppmv in the 5-foot bgs SG-50 sample. Detected TPH concentrations for the intermediate depth samples ranged from 1.1 ppmv in the 12-foot bgs SG-37 duplicate sample (the primary sample was reported as non-detected; the TPH detection limit for soil gas samples was 1.0 ppmv) to 13.8 ppmv in the 8-foot bgs SG-57 duplicate sample (the primary sample was reported as non-detected). Detected concentrations of TPH for the deeper samples ranged from 1.5 ppmv in the 25-foot bgs SG-17 primary sample (the duplicate sample was reported as non-detected) to 18.3 ppmv in the 22-foot bgs SG-50 duplicate sample (the primary sample was reported as non-detected).

Shallow soil gas TPH detections occurred throughout most of the fuel farm area, although the number and concentration of TPH detections appear to be higher in the immediate vicinity of former MoGas USTs H17/H18 and J2/J3. TPH detections within the intermediate and deep soil gas samples generally occurred within the immediate vicinity of former MoGas USTs H17/H18. Overall, detected concentrations of TPH in soil gas appear related to low concentrations of residual petroleum hydrocarbons present within vadose zone soils and are probably attributable to the former USTs.

Methane was detected in 122 samples, ranging from 1.0 ppmv to 25.6 ppmv. Reported methane levels at the site are relatively low and in general tend to correspond to detections of TPH, possibly indicating the production of methane associated with the natural biodegradation of hydrocarbon compounds. Oxygen and carbon dioxide were detected in most of the soil gas samples at concentrations that were similar to ambient levels.

4.2 Soil Chemical Data

Four soil borings were advanced at the perimeter of each of the former MoGas UST locations (H17/H18 and J2/J3), and one boring was drilled in the center of each of these areas, to assess the horizontal extent and vertical profile of potential petroleum hydrocarbon impacts in the unsaturated zone. An additional soil boring was advanced

downgradient of the two former MoGas UST locations, primarily to accommodate a downgradient monitoring well and to acquire lithologic information from outside the areas disturbed by UST removal.

4.2.1 Volatile Organic Compounds

A total of 65 subsurface soil samples were analyzed for VOCs. Six VOCs were detected at concentrations above laboratory detection limits, as listed in Table 4-2. The spatial distribution of detected VOCs is shown in Figure 4-1.

Acetone, 2-butanone, and methylene chloride were detected frequently at very low concentrations. These three compounds are common laboratory contaminants, and the pattern and magnitude of detections are consistent with laboratory contamination. For a given sample, a detected analyte was attributed to laboratory contamination if the concentration was within an order of magnitude of the analyte concentration detected in the associated laboratory blank. Using this approach, all detected concentrations of acetone, 2-butanone, and methylene chloride were determined to be due to laboratory contamination.

BTEX compounds were detected (using the VOC method) in samples from only two borings, B-04 and B-05. Benzene was not detected in any soil samples. The maximum toluene concentration (0.0350 mg/kg) was detected in the 5.0-foot bgs B-04 sample, and the maximum ethylbenzene (0.960J mg/kg) and xylene (16.0 mg/kg) concentrations were each detected in the 28-foot bgs B-04 sample. Toluene, ethylbenzene, and total xylenes were detected in the 1.0- and 9.0-foot bgs boring B-05 samples at significantly lower concentrations.

Reported detections of VOCs only occurred in samples from borings B-04 and B-05. These borings were drilled around the perimeter of former MoGas UST locations H17/H18 and J2/J3, respectively. The two highest BTEX concentrations were reported in the 28-foot bgs sample collected from boring B-04, just above the water table.

These detections probably reflect the existence of a "smear zone" that results when the water level elevation of a contaminated water table aquifer fluctuates with seasonal or

tidal influence, leaving residual hydrocarbons in unsaturated soils above the usual level of the water table. Currently, the water quality of the aquifer does not appear to be significantly impacted near these borings. Since releases from these tanks would have occurred at least ten years ago, hydrocarbons in ground water have most likely been flushed from the aquifer system. Therefore, only the hydrocarbon smear zone remains as evidence of former ground-water impact.

4.2.2 Semi-Volatile Organic Compounds

A total of 65 subsurface soil samples were analyzed for SVOCs. Sixteen different SVOCs were reported above laboratory detection limits, as shown in Table 4-3. The spatial distribution of detected SVOCs is depicted in Figure 4-2.

Thirteen of the detected SVOCs are polycyclic aromatic hydrocarbons (PAHs). PAHs are formed during incomplete combustion of oil and gas, and may be created during the refining process. The 13 PAHs detected were anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. Of the 13 PAHs, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, 2-methylnapthalene, phenanthrene, and pyrene are noncarcinogenic and exhibit relatively low toxicity. The reported concentrations of all PAH compounds were relatively low. The highest concentrations of each PAH occurred in the 0.5- and 28-foot bgs samples from boring B-04, with detections ranging from 0.0580J mg/kg (anthracene) to 0.470 mg/kg (fluoranthene). Anthracene, benzo(a)anthracene, indeno(1,2,3-c,d)pyrene, 2-methylnaphthalene, and naphthalene were not detected in samples collected from the other soil borings.

PAHs were also reported in samples collected from borings B-01, B-02, B-03, B-06, and B-08. Benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene were detected in samples from these borings at concentrations ranging from 0.0330J mg/kg (pyrene) to 0.110J mg/kg (fluoranthene).

2,6-Dinitrotoluene was detected in the 15-foot bgs boring B-11 sample at a concentration of 0.0420J mg/kg.

Two phthalate esters, diethylphthalate and bis(2-ethylhexyl)phthalate, were detected in soil samples. Diethylphthalate was detected in the 0.5-foot bgs B-02 sample at a concentration of 0.0590J mg/kg. Bis(2-ethylhexyl)phthalate was detected in 18 soil samples, at concentrations ranging from 0.0710J to 2.10J mg/kg. These phthalate esters are common laboratory contaminants, and the pattern and magnitude of these detections are consistent with laboratory contamination.

In summary, reported detections of PAHs were relatively low and corresponded to samples collected from within 1 foot of the ground surface. The magnitude and vertical extent of these detections are consistent with the general pattern of basewide fuel usage; most of the SVOCs detected at the Former Fuel Farm are components of fuels or are by-products of fuel combustion. The highest PAH concentrations were detected in samples from boring B-04, which had the highest BTEX concentrations.

4.2.3 Total Fuel Hydrocarbons

TFH results were quantified in four different ranges, according to carbon chain length: C06 to C11 (using a gasoline standard), C11 to C14 (using a kerosene standard), C14 to C20 (using a diesel standard), and C20 to C30 (using a lubricant oil standard). Results of TFH analyses are shown in Table 4-4. The spatial distribution of detected concentrations of TFH in soil samples is shown in Figure 4-3.

Detected TFH concentrations were low in magnitude, but prevalent in terms of both horizontal and vertical spatial distribution. The pattern and magnitude of TFH concentrations did not markedly differ between the borings drilled at the location of former USTs H17/H18 and those drilled at the location of former USTs J2/J3.

TFH as gasoline was detected in borings B-01, B-02, B-04, B-06, B-07, and B-08 at concentrations ranging from 3.47 to 27.7 mg/kg. Concentrations of TFH as gasoline do not vary significantly with depth. TFH as kerosene was detected only twice—in the 28-foot bgs B-04 sample at a concentration of 21.0 mg/kg, and in the 25.5-foot bgs B-11

sample at a concentration of 2.65 mg/kg. Both of these samples were obtained from near the water table surface.

TFH as diesel fuel was reported for several borings at concentrations ranging from 4.17 to 327 mg/kg. The highest detected concentration of TFH as diesel fuel, 327 mg/kg, was reported in the B-08 duplicate sample (located adjacent to former USTs J2/J3) at a depth of 1.0 feet (the primary sample from this location contained only 28.3 mg/kg). The pattern of TFH as diesel fuel detections suggests slightly higher concentrations and more prevalent distribution in the area near the former J2/J3 MoGas UST location.

TFH as lubricant oil was identified more frequently and at greater concentrations than any of the other hydrocarbon groups. Reported concentrations were generally less than 100 mg/kg, with exceptions at the following locations: the 0.5-foot bgs B-03 duplicate sample at 179 mg/kg, the 5.5-foot bgs B-06 sample at 444 mg/kg, and the 1.0-foot bgs B-08 duplicate sample at 731 mg/kg. The pattern of TFH as lubricant oil detections also suggests slightly higher concentrations and more prevalent distribution in the area near the former J2/J3 MoGas UST location.

Relatively low concentrations of all TFH compounds were detected in boring B-11, located downgradient of former USTs J2 and J3. Hydrocarbons in the gasoline (7.64 mg/kg) and kerosene (2.65 mg/kg) ranges were detected only in the deepest sample, collected near the water table at a depth of 25.5 feet. This boring is located outside the area of UST removal; TFH detected at this depth may be the result of downgradient transport in the saturated zone. The detections slightly above the water table are probably attributable to the smear zone, discussed in Section 4.2.1. Low concentrations of TFH as diesel fuel and lubricant oil were detected in all of the samples collected from this boring.

4.3 Ground-Water Chemical Data

Monitoring well MW-01 was installed in boring B-11, downgradient of the J2/J3 area. MW-02 was installed in boring B-09, in the center of the J2/J3 area, and MW-03 was installed in boring B-10, in the center of the H17/H18 area. Each of the three ground-water monitoring wells at the Former Fuel Farm was purged and sampled in order to

assess the nature of potential impacts to ground water resulting from previous site activities. Ground-water samples were analyzed for VOCs, SVOCs, and TFH.

The first of four quarterly ground-water sample acquisition events commenced in May 1995 for the three monitoring wells at the Former Fuel Farm. Subsequent sampling events were conducted in September 1995, February 1996, and May 1996. Validated analytical data are currently available only for the initial two sampling events. Data obtained from the third sampling event have not been validated, but will be discussed within this section. The final RI report will present and evaluate the validated data from each quarterly ground-water sampling event.

4.3.1 Volatile Organic Compounds

No VOCs were detected in any of the ground-water samples at concentrations above laboratory detection limits during the first three sampling events.

4.3.2 Semi-Volatile Organic Compounds

SVOC results for ground-water samples are presented in Table 4-5. Results from the first sampling event indicated that only bis(2-ethylhexyl)phthalate, a common laboratory contaminant, was detected above the laboratory detection limit. The first-quarter ground-water sample from MW-03 was reported to contain 60.0 micrograms per liter (µg/L) of bis(2-ethylhexyl)phthalate. However, this compound was reported as non-detected (the detection limit was 10.0 µg/L) for the duplicate first-quarter sample collected from this well. The detection of this compound was likely due to laboratory introduction. No SVOCs were detected above laboratory detection limits during the second and third sampling events.

4.3.3 Total Fuel Hydrocarbons

Results of the TFH analysis are presented in Table 4-5, and detected concentrations of TFH in ground-water samples are shown in Figure 4-4. Only the ground-water sample from the downgradient monitoring well MW-01 contained detectable concentrations of TFH compounds for the first three sampling events. Relatively low levels of TFH were

detected in this well: TFH as gasoline at 58.1 µg/L in September 1996; TFH as kerosene at 230 µg/L in May 1995; and TFH as diesel at 312 µg/L in May 1995. The ground water underlying the upgradient MW-02 and MW-03 wells had no detections for TFH. It is possible that any TFH that may have been transported from overlying soils at these locations has long since been flushed from the ground water; natural attenuation caused by biodegradation of TFH components is also likely to have occurred. It is not possible to determine the source of the hydrocarbons in samples from MW-01, although there might be another, as yet unidentified, source (as opposed to the H17/H18 and J2/J3 USTs).

4.4 SUMMARY

The analytical data indicated that the highest detections of organic compounds and hydrocarbons in soil and soil gas corresponded to sample locations in the vicinity of former USTs H17/H18 and J2/J3. No site-related VOCs or SVOCs were detected in ground-water samples from the three monitoring wells. Overall, TFH levels at the Former Fuel Farm are relatively low, and the extent of contamination is limited. TFH was detected in ground-water samples from monitoring well MW-01, located downgradient of the J2/J3 UST area. Nevertheless, the findings at MW-01 do not warrant further concern because of the low concentrations of TFH detected in samples from this well.

Table 4-1

COMPOUNDS DETECTED IN SOIL GAS SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location	Depth (feet)	EPA ID	Sample Date	Target Analyte (ppmv, unless otherwise noted) Benzene	Ethyl-Benzene	TPH	Methane	CO_2 (%)	O_2 (%)	CO_2/O_2 Ratio
SG-001	3	SL001	1/10/95			2.0	17.4	0.76	22.2	0.03
SG-002	5	SL002	1/10/95			1.2		2.13	20.2	0.11
SG-002	15	SL003	1/10/95			4.0	10.2	3.98	15.8	0.25
SG-003	5	SL004	1/10/95			3.4	25.6	0.32	22.5	0.01
SG-004	4	SL005	1/10/95			1.9	5.0	1.71	17.1	0.10
SG-004	15	SL006	1/10/95					4.40	16.0	0.28
SG-005	5	SL007	1/10/95				1.9	1.53	20.5	0.07
SG-006	2	SL009	1/11/95			1.3		0.07	21.9	0.00
SG-007	4	SL010	1/11/95			3.2	7.8	0.17	21.9	0.01
SG-007	4	SL011	1/11/95			1.1	3.5	0.12	21.1	0.01
SG-008	2	SL012	1/11/95				6.8	0.25	21.2	0.01
SG-009	4	SL013	1/11/95			2.0	4.1	0.43	20.3	0.02
SG-010	4	SL014	1/11/95			1.6	7.0	0.33	21.20	0.02
SG-011	2	SL015	1/11/95			2.2	1.5	0.24	20.30	0.01
SG-012	5	SL016	1/11/95			1.3	3.6	0.85	20.20	0.04
SG-013	3.5	SL022	1/11/95			6.4	8.2	1.51	20.50	0.07
SG-014	4	SL023	1/11/95			2.5	7.6	1.73	20.80	0.08
SG-015	4	SL024	1/11/95					0.42	21.90	0.02
SG-016	3	SL025	1/11/95					0.34	19.40	0.02
SG-017	5	SL026	1/11/95				3.3	2.43	23.50	0.10
SG-017	15	SL027	1/11/95					3.08	16.70	0.18
SG-017	25	SL028	1/11/95			1.5		10.09	7.90	1.28
SG-017	25	SL029	1/11/95					8.46	9.80	0.86
SG-018	5	SL030	1/11/95					0.65	19.70	0.03
SG-018	10	SL031	1/11/95			1.8		0.06	20.00	0.00
SG-019	4	SL032	1/11/95				3.1	0.13	20.30	0.01
SG-020	2	SL033	1/11/95			6.7	2.7	0.72	19.90	0.04
SG-021	4	SL034	1/11/95			4.0	4.3	0.66	19.40	0.03
SG-022	5	SL035	1/11/95				2.1	1.16	20.00	0.06
SG-022	15	SL036	1/11/95					4.54	14.50	0.31
SG-022	25	SL037	1/11/95			2.0		4.00	10.20	0.39
SG-023	5	SL039	1/12/95					2.80	18.40	0.15
SG-023	15	SL040	1/12/95					3.30	14.60	0.23
SG-023	15	SL041	1/12/95					5.30	14.40	0.37
SG-023	25	SL042	1/12/95					8.30	10.40	0.80
SG-024	4.5	SL043	1/12/95				14.5	3.20	16.60	0.19
SG-025	4	SL044	1/12/95				4.3	0.40	21.60	0.02

Table 4-1 (continued)

COMPOUNDS DETECTED IN SOIL GAS SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location	Depth (feet)	EPA ID		Target Analyte (ppmv, unless otherwise noted)						
				Benzene	Ethyl-Benzene	TPH	Methane	CO_2 (%)	O_2 (%)	CO_2/O_2 Ratio
SG-026	5	SL045	1/12/95				2.5	1.20	19.80	0.061
SG-026	7.5	SL046	1/12/95				10.8	1.40	20.50	0.068
SG-027	5	SL047	1/12/95				3.8	0.70	20.30	0.034
SG-028	4	SL048	1/12/95				1.6	1.40	21.30	0.066
SG-029	5	SL049	1/12/95				4.4	1.40	20.50	0.068
SG-030	5	SL050	1/12/95				6.1	0.60	19.60	0.031
SG-030	5	SL051	1/12/95					0.30	20.70	0.014
SG-030	9	SL052	1/12/95				1.9	1.80	19.20	0.094
SG-031	3.5	SL053	1/12/95					0.20	23.70	0.008
SG-032	5	SL054	1/12/95					0.13	20.80	0.006
SG-032	10	SL055	1/12/95					0.56	19.70	0.028
SG-033	3	SL056	1/12/95				1.3	0.52	19.60	0.027
SG-034	3.5	SL057	1/12/95			1.1	3.5	0.43	19.20	0.022
SG-035	5	SL058	1/12/95					0.38	20.50	0.019
SG-035	7.5	SL059	1/12/95					0.45	19.70	0.023
SG-036	0.5	SL185	1/18/95				5.4	0.08	19.70	0.004
SG-037	5	SL060	1/12/95			1.2	2.2	0.36	20.30	0.018
SG-037	12	SL061	1/12/95					0.54	19.70	0.027
SG-037	12	SL062	1/12/95			1.1		0.52	19.90	0.026
SG-038	5	SL063	1/12/95				1.0	0.19	20.50	0.009
SG-038	15	SL064	1/12/95				1.5	0.15	20.50	0.007
SG-038	25	SL065	1/12/95			2.0	14.3	0.30	20.20	0.015
SG-039	5	SL017	1/11/95			1.0		0.24	20.90	0.011
SG-039	9	SL018	1/11/95			3.5	3.6	0.53	19.70	0.027
SG-040	5	SL066	1/12/95					0.37	19.50	0.019
SG-040	8	SL067	1/12/95					0.91	17.70	0.051
SG-041	5	SL068	1/12/95					0.77	18.20	0.042
SG-041	15	SL069	1/12/95					1.68	15.00	0.112
SG-041	25	SL070	1/12/95					3.60	18.50	0.195
SG-042	4	SL072	1/13/95					0.12	20.20	0.006
SG-042	4	SL073	1/13/95					0.10	19.00	0.005
SG-043	5	SL074	1/13/95					0.36	19.90	0.018
SG-043	15	SL075	1/13/95			5.2		0.66	18.10	0.036
SG-043	21	SL076	1/13/95					0.61	18.10	0.034
SG-044	5	SL078	1/13/95					0.18	19.20	0.009
SG-044	10.5	SL079	1/13/95					0.46	18.90	0.024
SG-045	5	SL080	1/13/95					0.30	19.10	0.016

Table 4-1 (continued)

COMPOUNDS DETECTED IN SOIL GAS SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location	Depth (feet)	EPA ID		Target Analyte (ppmv, unless otherwise noted) Benzene	Ethyl-Benzene	TPH	Methane	CO_2 (%)	O_2 (%)	CO_2/O_2 Ratio
SG-045	13	SL081	1/13/95			6.3		0.93	16.70	0.056
SG-045	13	SL082	1/13/95			2.7		0.96	17.50	0.055
SG-046	5	SL083	1/13/95					0.56	17.80	0.031
SG-046	13.5	SL084	1/13/95					1.20	16.10	0.075
SG-047	3	SL085	1/13/95					0.27	19.40	0.014
SG-048	4	SL086	1/13/95					0.04	19.70	0.002
SG-049	4	SL087	1/13/95			7		0.13	19.90	0.007
SG-050	5	SL088	1/13/95			8.9		0.09	20.10	0.004
SG-050	15	SL089	1/13/95					0.17	19.10	0.009
SG-050	22	SL090	1/13/95					0.12	19.80	0.006
SG-050	22	SL091	1/13/95			18.3		0.21	18.30	0.011
SG-051	5	SL092	1/13/95					0.11	19.80	0.006
SG-051	8	SL093	1/13/95					0.10	19.80	0.005
SG-052	4	SL094	1/13/95					0.10	19.50	0.005
SG-053	2.5	SL186	1/18/95			1.1	8.0	0.33	19.00	0.017
SG-053	2.5	SL187	1/18/95				3.2	0.30	19.30	0.016
SG-054	2	SL188	1/18/95				6.5	0.17	19.70	0.009
SG-055	5	SL095	1/13/95			7.5		0.14	19.10	0.007
SG-056	5	SL096	1/13/95					0.11	19.60	0.006
SG-056	14	SL097	1/13/95					0.05	18.90	0.003
SG-057	5	SL098	1/13/95					0.03	20.20	0.001
SG-057	8	SL099	1/13/95					0.07	19.40	0.004
SG-057	8	SL100	1/13/95			13.8		0.07	19.80	0.004
SG-058	1.5	SL102	1/16/95				2.0	0.10	22.10	0.005
SG-059	5	SL019	1/11/95				6.0	0.87	20.60	0.042
SG-060	2.5	SL103	1/16/95			2.4	9.0	0.24	21.30	0.011
SG-061	2	SL104	1/16/95			1.4	6.2	0.29	21.30	0.014
SG-062	5	SL105	1/16/95				2.4	0.31	21.30	0.015
SG-062	15	SL106	1/16/95			8.7	7.0	0.89	20.90	0.043
SG-062	21	SL107	1/16/95				5.8	0.89	20.30	0.044
SG-063	5	SL108	1/16/95					0.20	22.20	0.009
SG-063	9	SL109	1/16/95				1.2	0.31	21.40	0.014
SG-063	9	SL110	1/16/95					0.32	21.70	0.015
SG-064	5	SL111	1/16/95				2.5	0.44	20.60	0.021
SG-064	7.5	SL112	1/16/95				3.5	0.73	21.30	0.034
SG-065	5	SL113	1/16/95					0.45	21.30	0.021
SG-065	15	SL114	1/16/95			2.1	10.6	0.60	20.10	0.030

Table 4-1 (continued)

COMPOUNDS DETECTED IN SOIL GAS SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location	Depth (feet)	EPA ID		Target Analyte (ppmv, unless otherwise noted) Benzene	Ethyl-Benzene	TPH	Methane	CO_2 (%)	O_2 (%)	CO_2/O_2 Ratio
SG-065	25	SL115	1/16/95			3.1	3.9	1.15	20.00	0.058
SG-066	5	SL116	1/16/95				15.6	0.86	19.70	0.044
SG-067	5	SL117	1/16/95					0.03	21.40	0.001
SG-067	7.5	SL118	1/16/95				3.98	0.24	21.60	0.011
SG-068	5	SL119	1/16/95				2.62	0.10	21.80	0.005
SG-068	10	SL120	1/16/95				2.33	0.04	22.00	0.002
SG-069	2	SL121	1/16/95				2.79	0.35	21.40	0.016
SG-070	5	SL122	1/16/95			4.92	6.97	0.38	21.60	0.018
SG-071	5	SL123	1/16/95				2.76	0.96	20.20	0.048
SG-071	10	SL124	1/16/95				3.02	1.58	21.50	0.073
SG-071	10	SL125	1/16/95			1.1	2.01	1.70	20.80	0.082
SG-072	5	SL126	1/16/95				2.44	0.51	20.80	0.025
SG-072	15	SL127	1/16/95				2.2	2.06	21.90	0.094
SG-072	23	SL128	1/16/95				3.3	2.20	19.80	0.111
SG-072	23	SL129	1/16/95				3.6	0.67	19.10	0.035
SG-073	5	SL130	1/16/95				2.7	0.35	19.30	0.018
SG-073	15	SL131	1/16/95			1.2	6.1	0.59	18.90	0.031
SG-073	22	SL132	1/16/95	1.1	1.7	6.8	11.3	0.70	18.90	0.037
SG-074	5	SL133	1/16/95				1.9	0.19	20.10	0.009
SG-074	8	SL134	1/16/95				2.5	0.32	20.00	0.016
SG-075	5	SL136	1/17/95				2.1	0.05	18.70	0.003
SG-075	10.5	SL137	1/17/95				2.2	0.78	20.00	0.039
SG-076	5	SL138	1/17/95				2.4	0.27	19.90	0.014
SG-077	5	SL139	1/17/95			1.3	2.4	0.25	20.60	0.012
SG-077	7.5	SL140	1/17/95			2.2	4.1	0.26	20.80	0.013
SG-078	5	SL141	1/17/95				4.1	0.26	21.00	0.012
SG-078	10	SL142	1/17/95				2.5	0.69	19.90	0.035
SG-078	20.5	SL143	1/17/95			1.8	15.5	0.59	19.40	0.030
SG-078	20.5	SL144	1/17/95			3.3	11.7	0.58	19.30	0.030
SG-079	5	SL145	1/17/95			3.0	3.9	0.16	19.90	0.008
SG-080	2.5	SL146	1/17/95				3.9	0.13	21.10	0.006
SG-081	2.5	SL147	1/17/95			1.8	5.2	0.25	20.30	0.012
SG-082	5	SL148	1/17/95				3.0	0.31	20.60	0.015
SG-082	8	SL149	1/17/95				3.1	0.48	20.20	0.024
SG-083	5	SL150	1/17/95				2.5	0.19	17.20	0.011
SG-083	13	SL151	1/17/95			2.4	4.3	0.58	18.60	0.031
SG-084	5	SL020	1/11/95					0.36	20.70	0.017

Table 4-1 (continued)

COMPOUNDS DETECTED IN SOIL GAS SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location	Depth (feet)	EPA ID		Target Analyte (ppmv, unless otherwise noted)						
				Benzene	Ethyl-Benzene	TPH	Methane	CO_2 (%)	O_2 (%)	CO_2/O_2 Ratio
SG-084	5	SL021	1/11/95					0.17	20.60	0.008
SG-085	5	SL152	1/17/95				2.5	0.26	19.50	0.013
SG-085	15	SL153	1/17/95				1.9	0.61	19.30	0.032
SG-085	18	SL154	1/17/95				3.4	0.58	17.10	0.034
SG-085	18	SL155	1/17/95				3.8	0.82	19.40	0.042
SG-086	5	SL156	1/17/95				2.1	0.12	20.80	0.006
SG-086	7.5	SL157	1/17/95				3.6	0.21	20.00	0.011
SG-087	1.5	SL189	1/18/95				3.2	0.13	19.60	0.007
SG-088	5	SL158	1/17/95				3.0	0.10	19.80	0.005
SG-088	7.5	SL159	1/17/95				2.8	0.17	20.70	0.008
SG-089	5	SL160	1/17/95				2.4	0.21	20.60	0.010
SG-089	7.5	SL161	1/17/95				2.3	0.18	20.20	0.009
SG-090	2.5	SL162	1/17/95				3.4	0.27	18.30	0.015
SG-091	4	SL164	1/18/95				5.9	0.35	20.80	0.017
SG-092	5	SL165	1/18/95				2.1	0.22	20.30	0.011
SG-092	15	SL166	1/18/95				2.0	0.75	18.70	0.040
SG-092	15	SL167	1/18/95				1.9	0.84	18.70	0.045
SG-092	25	SL168	1/18/95				2.1	0.99	18.50	0.054
SG-093	5	SL169	1/18/95			1.1	3.0	0.15	21.90	0.007
SG-093	7.5	SL170	1/18/95				3.1	0.26	20.50	0.013
SG-094	5	SL171	1/18/95				4.0	0.19	20.20	0.009
SG-094	8	SL172	1/18/95				4.8	0.39	20.30	0.019
SG-095	5	SL173	1/18/95				3.0	0.33	20.60	0.016
SG-095	15	SL174	1/18/95				2.3	0.54	20.10	0.027
SG-095	20	SL175	1/18/95			1.5	5.0	0.75	18.90	0.040
SG-096	5	SL176	1/18/95				2.6	0.23	20.50	0.011
SG-096	7	SL177	1/18/95				2.7	0.17	20.50	0.008
SG-097	4	SL178	1/18/95			3.9	4.2	0.32	20.30	0.016
SG-098	5	SL179	1/18/95				1.4	0.14	19.60	0.007
SG-098	7.5	SL180	1/18/95				3.0	0.37	19.30	0.019
SG-098	7.5	SL181	1/18/95				1.9	0.37	18.90	0.020
SG-099	5	SL182	1/18/95					0.09	20.60	0.004
SG-099	7.5	SL183	1/18/95				3.8	0.14	19.70	0.007
SG-100	3.5	SL184	1/18/95				6.6	0.17	19.30	0.009
SG-101	5	SL190	1/18/95			4.6	19.2	1.36	18.70	0.073
SG-102	5	SL191	1/18/95			4.3	8.0	1.21	17.70	0.068
SG-103	2.5	SL192	1/18/95				2.8	0.24	19.80	0.012

Table 4-1 (continued)

COMPOUNDS DETECTED IN SOIL GAS SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location	Depth (feet)	EPA ID		Target Analyte (ppmv, unless otherwise noted) Benzene	Ethyl-Benzene	TPH	Methane	CO_2 (%)	O_2 (%)	CO_2/O_2 Ratio
SG-104	4	SL193	1/18/95				4.9	0.56	18.70	0.030
SG-105	4	SL195	1/19/95					0.50	21.00	0.024
SG-106	4	SL196	1/19/95					1.25	19.80	0.063
SG-107	3.5	SL197	1/19/95					1.17	19.70	0.059
SG-108	4	SL198	1/19/95					2.40	17.20	0.140
SG-108	4	SL199	1/19/95					3.90	18.00	0.217
SG-109	5	SL200	1/19/95					2.39	18.20	0.131
SG-110	4	SL201	1/19/95			1.8	10.8	0.58	19.80	0.029
Maximum Concentration				1.1	1.7	18.3	25.6	10.1	23.7	1.277
Minimum Concentration				1.1	1.7	1.0	1.0	0.03	7.90	0.001
Number of Detections				1	1	56	122	193	193	193

Notes:
TPH - Total petroleum hydrocarbons
CO_2 - Carbon dioxide
O_2 - Oxygen

Table 4-2

VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location and Depth (feet)	Sample Number RI ID	Sample Number EPA ID	Sample Date	Target Analyte (mg/kg) 2-Butanone	Acetone	Ethylbenzene	Methylene Chloride	Toluene	Xylene (total)
B-02									
25	FFBS02S06	SL216	3/15/95				0.0040 J		
B-03									
0.5 (dup.)	FFBS03D01	SL220	3/16/95				0.0060 J		
0.5	FFBS03S01	SL219	3/16/95				0.0040 J		
6	FFBS03S02	SL221	3/16/95				0.0040 J		
10	FFBS03S03	SL222	3/16/95				0.0040 J		
15	FFBS03S04	SL223	3/16/95				0.0120		
25	FFBS03S05	SL224	3/16/95				0.0050 J		
B-04									
0.5	FFBS04S01	SL225	3/16/95				0.0040 J		
5	FFBS04S02	SL226	3/16/95	0.0130 J				0.0350	
16	FFBS04S03	SL227	3/16/95					0.0080 J	
20	FFBS04S04	SL228	3/16/95					0.0040 J	
28	FFBS04S05	SL229	3/16/95			0.960 J			16.0
B-05									
1	FFBS05S01	SL230	3/16/95			0.0030 J		0.0030 J	0.0380
9	FFBS05S02	SL231	3/16/95						0.0100
21.5	FFBS05S04	SL235	3/17/95				0.0020 J		
27.5	FFBS05S05	SL236	3/17/95				0.0020 J		
B-06									
0.5	FFBS06S01	SL239	3/22/95				0.0140		
5.5	FFBS06S02	SL241	3/22/95				0.0130		
10.5	FFBS06S03	SL242	3/22/95				0.0100 J		
15.5	FFBS06S04	SL243	3/22/95				0.0180 J		
23	FFBS06S05	SL244	3/22/95				0.0210		
25	FFBS06S06	SL245	3/22/95				0.0270		

Table 4-2 (continued)

VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location and Depth (feet)	Sample Number RI ID	Sample Number EPA ID	Sample Date	Target Analyte (mg/kg) 2-Butanone	Acetone	Ethylbenzene	Methylene Chloride	Toluene	Xylene (total)
B-06									
0.5	FFBS06S01	SL239	3/22/95				0.0140		
5.5	FFBS06S02	SL241	3/22/95				0.0130		
10.5	FFBS06S03	SL242	3/22/95				0.0100 J		
15.5	FFBS06S04	SL243	3/22/95				0.0180 J		
23	FFBS06S05	SL244	3/22/95				0.0210		
25	FFBS06S06	SL245	3/22/95				0.0270		
B-08									
1	FFBS08S01	SL252	3/22/95		2.10 J				
10	FFBS08S03	SL255	3/22/95				0.0100 J		
15	FFBS08S04	SL256	3/22/95				0.0050 J		
B-09									
5	FFBS09S02	SL262	3/24/95	0.0070 J					
B-10									
5	FFBS10S01	SL270	3/28/95	0.0030 J					
15	FFBS10S03	SL272	3/28/95	0.0020 J					
B-11									
10	FFBS11S02	SL280	3/29/95	0.0030 J					
25.5	FFBS11S04	SL282	3/29/95	0.0050 J					
Maximum Concentration				0.0130	2.10	0.960	0.0270	0.0350	16.0
Minimum Concentration				0.0020	2.10	0.0030	0.0020	0.0030	0.0100
Number of Detections				6	1	2	24	4	3

Notes:

Data have been validated. Data validation qualifiers are as follows:

"J" - The reported concentration should be considered an estimate of the true concentration.

"dup." refers to a duplicate sample.

Chemical analyses were performed for the suites of chemicals listed in the Analytical Plan Summary Table, according to the laboratory test methods specified in the Quality Assurance Project Plan (QAPP). Results listed are only for those compounds that were detected. Refer to the QAPP for a listing of chemicals tested for by each laboratory method. Detection limits are listed in the complete laboratory report.

Table 4-3

SEMI-VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location and Depth (feet)	Sample Number RI ID	Sample Number EPA ID	Sample Date	Target Analyte (mg/kg) 2,6-Dinitrotoluene	2-Methylnaphthalene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Diethylphthalate	Fluoranthene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Bis(2-ethylhexyl)phthalate
B-01																			
0.5	FFBS01S01	SL205	3/15/95						0.0410 J					0.0770 J				0.0590 J	
25	FFBS01S06	SL210	3/15/95																0.0710 J
B-02																			
0.5	FFBS02S01	SL211	3/15/95					0.0460 J	0.0890 J		0.0410 J	0.0530 J	0.0590 J	0.110 J			0.0510 J	0.120 J	
11	FFBS02S03	SL213	3/15/95																2.10 J
B-03																			
0.5 (dup.)	FFBS03D01	SL220	3/16/95					0.0490 J	0.0720 J	0.0690 J		0.0670 J		0.110 J			0.0520 J	0.100 J	0.130 J
B-04																			
0.5	FFBS04S01	SL225	3/16/95			0.0580 J	0.200 J	0.160 J	0.250 J	0.120 J	0.0840 J	0.220 J		0.470	0.0740 J		0.290 J	0.400	
5	FFBS04S02	SL226	3/16/95																0.140 J
20	FFBS04S04	SL228	3/16/95							0.0860 J									
28	FFBS04S05	SL229	3/16/95		0.250 J											0.150 J			
B-05																			
21.5	FFBS05S04	SL235	3/17/95																0.120 J
B-06																			
0.5	FFBS06S01	SL239	3/22/95																0.0730 J
5.5	FFBS06S02	SL241	3/22/95							0.0870 J								0.0330 J	0.0970 J
25	FFBS06S06	SL245	3/22/95																0.0850 J
B-08																			
1	FFBS08S01	SL252	3/22/95											0.0670 J			0.0400 J	0.0500 J	0.220 J
1 (dup.)	FFBS08D01	SL253	3/22/95							0.0850 J									0.140 J
B-09																			
1	FFBS09S01	SL261	3/24/95																0.210 J
20	FFBS09S05	SL266	3/24/95																0.450 J
25	FFBS09S06	SL267	3/24/95																0.750 J
B-10																			
5	FFBS10S01	SL270	3/28/95																0.290 J
20	FFBS10S04	SL274	3/28/95																0.190 J
B-11																			
10	FFBS11S02	SL280	3/29/95																0.250 J
15	FFBS11S03	SL281	3/29/95	0.0420 J															0.0840 J
25.5	FFBS11S04	SL282	3/29/95																0.0850 J
Maximum Concentration				0.0420	0.250	0.0580	0.200	0.160	0.250	0.120	0.0840	0.220	0.0590	0.470	0.0740	0.150	0.290	0.400	2.10
Minimum Concentration				0.0420	0.2500	0.0580	0.200	0.0460	0.0410	0.0690	0.0410	0.0530	0.0590	0.0670	0.0740	0.150	0.0400	0.0330	0.0710
Number of Detections				1	1	1	1	3	4	5	2	3	1	5	1	1	4	6	18

Notes:

Data have been validated. Data validation qualifiers are as follows:

"J" - The reported concentration should be considered an estimate of the true concentration.

"dup." refers to a duplicate sample.

Chemical analyses were performed for the suites of chemicals listed in the Analytical Plan Summary Table, according to the laboratory test methods specified in the Quality Assurance Project Plan (QAPP). Results listed are only for those compounds that were detected. Refer to the QAPP for a listing of chemicals tested for by each laboratory method. Detection limits are listed in the complete laboratory report.

Table 4-4

TOTAL FUEL HYDROCARBONS DETECTED IN SOIL SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location and Depth (feet)	Sample Number RI ID	Sample Number EPA ID	Sample Date	Target Analyte (mg/kg) C06-C11 (Gasoline Range)	C11-C14 (Kerosene Range)	C14-C20 (Diesel Range)	C20-C30 (Lubricant Oil Range)
B-01							
0.5	FFBS01S01	SL205	3/15/95	4.35			71.3
5.5	FFBS01S02	SL206	3/15/95	3.47			
10	FFBS01S03	SL207	3/15/95	4.09			
15	FFBS01S04	SL208	3/15/95	4.55			
20	FFBS01S05	SL209	3/15/95	4.93			
25	FFBS01S06	SL210	3/15/95	5.77			
B-02							
0.5	FFBS02S01	SL211	3/15/95	4.10			4.40
7	FFBS02S02	SL212	3/15/95	4.08			
11	FFBS02S03	SL213	3/15/95	27.7			
15	FFBS02S04	SL214	3/15/95	5.86			
B-03							
0.5 (dup.)	FFBS03D01	SL220	3/16/95				179.
B-04							
0.5	FFBS04S01	SL225	3/16/95	5.97		4.17	61.9
5	FFBS04S02	SL226	3/16/95	5.84		6.49	37.6
28	FFBS04S05	SL229	3/16/95	21.4	21.0	5.35	
B-05							
1	FFBS05S01	SL230	3/16/95				10.5
9	FFBS05S02	SL231	3/16/95			4.46	7.57
15	FFBS05S03	SL232	3/16/95				8.98
27.5	FFBS05S05	SL236	3/17/95				7.11
B-06							
0.5 (dup.)	FFBS06D01	SL240	3/22/95			5.86	49.6 J
0.5	FFBS06S01	SL239	3/22/95			27.7	97.2
5.5	FFBS06S02	SL241	3/22/95			83.1	444.
10.5	FFBS06S03	SL242	3/22/95			34.0	77.3
15.5	FFBS06S04	SL243	3/22/95	5.79		16.9	26.5
25	FFBS06S06	SL245	3/22/95	8.26			
B-07							
0.5	FFBS07S01	SL246	3/22/95				4.00
5.5	FFBS07S02	SL247	3/22/95	7.71			
10.5	FFBS07S03	SL248	3/22/95	4.05			
B-08							
1 (dup.)	FFBS08D01	SL253	3/22/95			327.	731.
1	FFBS08S01	SL252	3/22/95	6.55		28.3	63.7
5	FFBS08S02	SL254	3/22/95	7.09			5.47
10	FFBS08S03	SL255	3/22/95	6.30			
15	FFBS08S04	SL256	3/22/95	5.35			
B-09							
1	FFBS09S01	SL261	3/24/95			23.6	37.2
5	FFBS09S02	SL262	3/24/95			8.63	13.2
10	FFBS09S03	SL263	3/24/95			16.8	24.4
14.5	FFBS09S04	SL265	3/24/95			13.6	24.1
20	FFBS09S05	SL266	3/24/95			21.7	26.2
25	FFBS09S06	SL267	3/24/95			15.7	16.1

Table 4-4 (continued)

TOTAL FUEL HYDROCARBONS DETECTED IN SOIL SAMPLES
FORMER FUEL FARM
NAS BARBERS POINT

Sample Location and Depth (feet)	Sample Number RI ID	Sample Number EPA ID	Sample Date	Target Analyte (mg/kg) C06-C11 (Gasoline Range)	C11-C14 (Kerosene Range)	C14-C20 (Diesel Range)	C20-C30 (Lubricant Oil Range)
B-10							
15.5 (dup.)	FFBS10D03	SL273	3/28/95			5.15	15.4
5	FFBS10S01	SL270	3/28/95			6.85	19.0
10	FFBS10S02	SL271	3/28/95			10.9	22.3
15	FFBS10S03	SL272	3/28/95			5.15	16.0
20	FFBS10S04	SL274	3/28/95			21.4	39.7
25	FFBS10S05	SL275	3/28/95			5.54	15.1
28.5	FFBS10S06	SL276	3/28/95			10.1	18.5
B-11							
0.5	FFBS11S01	SL277	3/28/95			4.22	10.5
10	FFBS11S02	SL280	3/29/95			5.63	15.2
15	FFBS11S03	SL281	3/29/95			13.7	31.1
25.5	FFBS11S04	SL282	3/29/95	7.64	2.65	56.0	51.8
Maximum Concentration				27.7	21.0	327	731
Minimum Concentration				3.47	2.65	4.17	4.00
Number of Detections				22	2	27	34

Notes:

C06-C11, C11-C14, C14-C20, and C20-C30 refer to the typical carbon chain length for the respective petroleum hydrocarbon mixtures.

Data have been validated. Data validation qualifiers are as follows:

"J" - The reported concentration should be considered an estimate of the true concentration.

"dup." refers to a duplicate sample.

Chemical analyses were performed for the suites of chemicals listed in the Analytical Plan Summary Table, according to the laboratory test methods specified in the Quality Assurance Project Plan (QAPP). Results listed are only for those compounds that were detected. Refer to the QAPP for a listing of chemicals tested for by each laboratory method. Detection limits are listed in the complete laboratory report.

Table 4-5

SEMI-VOLATILE ORGANIC COMPOUNDS AND TOTAL FUEL HYDROCARBONS DETECTED IN GROUND-WATER SAMPLES FORMER FUEL FARM NAS BARBERS POINT

Sample Location	Sample Number RI ID	EPA ID	Sample Date	Target Analyte (µg/L) C06-C11 (Gasoline Range)	C11-C14 (Kerosene Range)	C14-C20 (Diesel Range)	Bis(2-ethylhexyl)phthalate
MW-01							
	FFMW01S01	SI.284	5/3/95		230.	312.	
	FFMW01S02	SI.288	9/13/95	58.1	150.	110.	
	FFMW01S03	SI.292	2/7/96		125. *J	96.4 *J	
MW-03							
	FFMW03S01	SI.285	5/3/95				60.0
Maximum Concentration				58.1	230	312	60.0
Minimum Concentration				58.1	125	96.4	60.0
Number of Detections				1	3	3	1

Notes:

C06-C11, C11-C14, and C14-C20 refer to the typical carbon chain length for the respective petroleum hydrocarbon mixtures.

First- and second-quarter data have been validated. Data validation qualifiers are as follows:

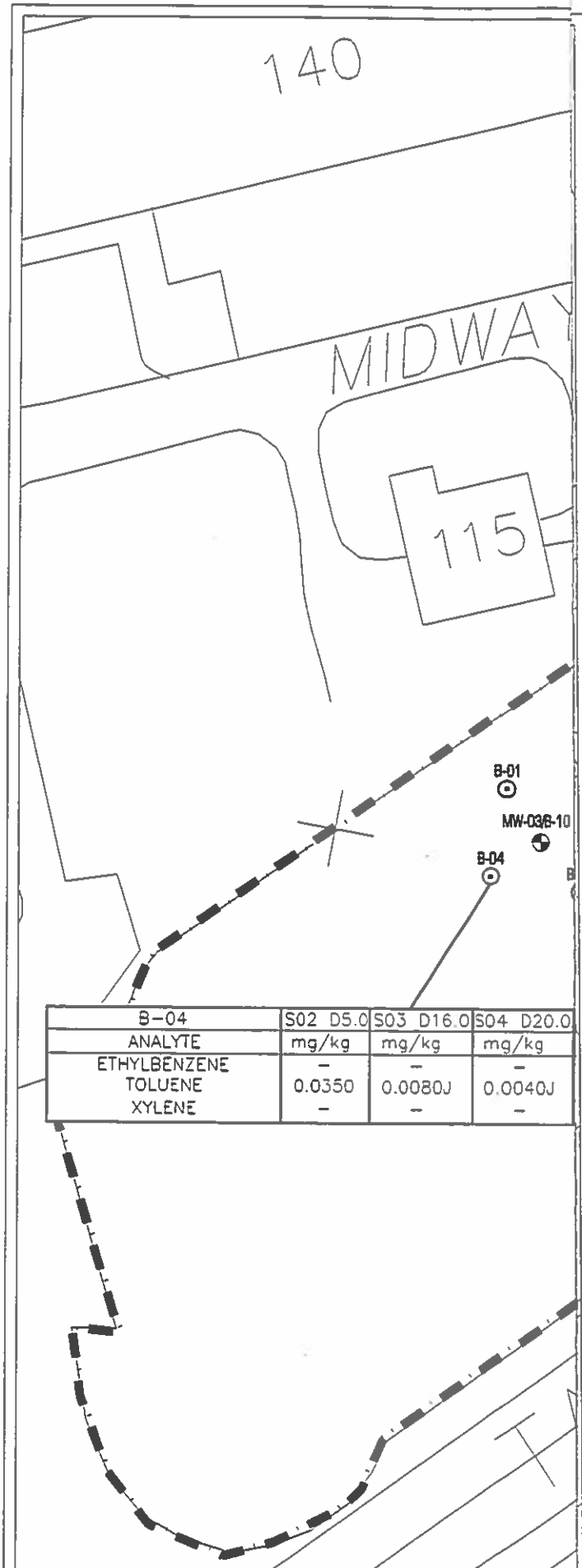
"J" - The reported concentration should be considered an estimate of the true concentration.

Third-quarter data have not been validated, and all corresponding qualifiers are preceded by an asterisk (*).

"dup." refers to a duplicate sample.

Chemical analyses were performed for the suites of chemicals listed in the Analytical Plan Summary Table, according to the laboratory test methods specified in the Quality Assurance Project Plan (QAPP). Results listed are only for those compounds that were detected. Refer to the QAPP for a listing of chemicals tested for by each laboratory method. Detection limits are listed in the complete laboratory report.

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B-04	S02 D5.0	S03 D16.0	S04 D20.0
ANALYTE	mg/kg	mg/kg	mg/kg
ETHYLBENZENE	–	–	–
TOLUENE	0.0350	0.0080J	0.0040J
XYLENE	–	–	–

LEGEND

MW-32	MONITORING WELL LOCATION
B-01	SOIL BORING LOCATION
S01 D0.0	SAMPLE NUMBER WITH ACQUISITION DEPTH
mg/kg	ANALYTE CONCENTRATION
	APPROXIMATE SITE BOUNDARY

NOTES

1. ONLY THOSE SAMPLES WITH DETECTED ANALYTE CONCENTRATIONS ARE SHOWN IN THIS FIGURE. THE LOCATION AND ACQUISITION DEPTH RELATING TO SOIL SAMPLES REPORTED AS "NON-DETECT" ARE SHOWN IN THE CORRESPONDING SOIL BORING LOCATION MAP.
2. NON-DETECTED ANALYTES ARE SYMBOLIZED BY A DASH (-).
3. DATA VALIDATION QUALIFIER "J" INDICATES REPORTED RESULT SHOULD BE CONSIDERED AN ESTIMATE.
4. DETECTED ANALYTE CONCENTRATIONS ATTRIBUTED TO LABORATORY CONTAMINATION ARE NOT SHOWN.
5. THE ACCURACY OF THIS DOCUMENT IS LIMITED TO THE QUALITY OF THE SOURCE INFORMATION AND IS NOT SUITABLE FOR MAPPING ENGINEERING APPLICATIONS AND IS NOT TO BE USED FOR "AS BUILT"
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7. PROJECT NUMBER 110190137
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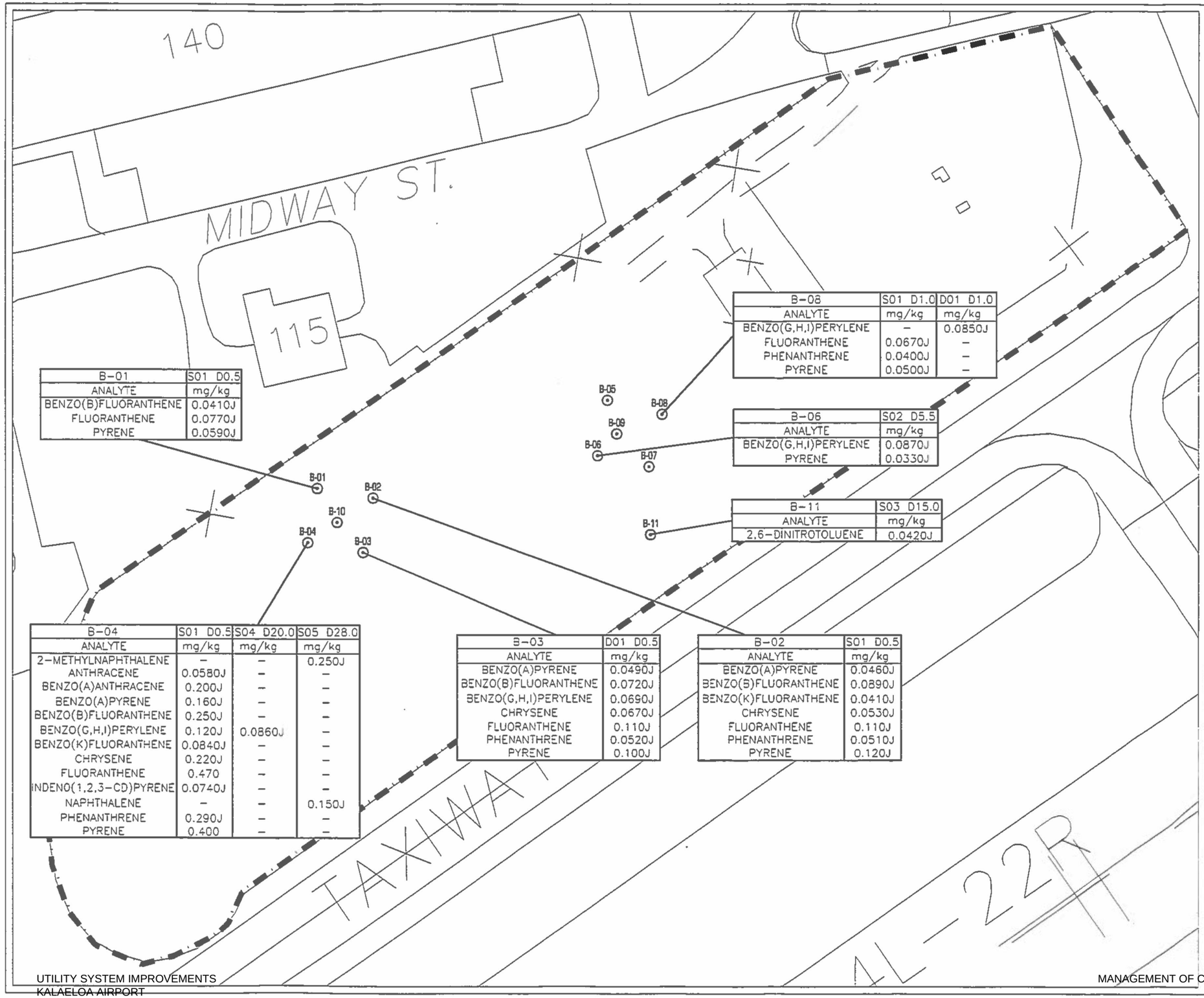
VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES FORMER FUEL FARM NAS BARBERS POINT

N

FEET

50 0 100 200

FIGURE 4-1



B-01	S01 D0.5
ANALYTE	mg/kg
BENZO(B)FLUORANTHENE	0.0410J
FLUORANTHENE	0.0770J
PYRENE	0.0590J

B-08	S01 D1.0	D01 D1.0
ANALYTE	mg/kg	mg/kg
BENZO(G,H,I)PERYLENE	–	0.0850J
FLUORANTHENE	0.0670J	–
PHENANTHRENE	0.0400J	–
PYRENE	0.0500J	–

B-06	S02 D5.5
ANALYTE	mg/kg
BENZO(G,H,I)PERYLENE	0.0870J
PYRENE	0.0330J

B-11	S03 D15.0
ANALYTE	mg/kg
2,6-DINITROTOLUENE	0.0420J

B-04	S01 D0.5	S04 D20.0	S05 D28.0
ANALYTE	mg/kg	mg/kg	mg/kg
2-METHYLNAPHTHALENE	–	–	0.250J
ANTHRACENE	0.0580J	–	–
BENZO(A)ANTHRACENE	0.200J	–	–
BENZO(A)PYRENE	0.160J	–	–
BENZO(B)FLUORANTHENE	0.250J	–	–
BENZO(G,H,I)PERYLENE	0.120J	0.0860J	–
BENZO(K)FLUORANTHENE	0.0840J	–	–
CHRYSENE	0.220J	–	–
FLUORANTHENE	0.470	–	–
INDENO(1,2,3-CD)PYRENE	0.0740J	–	–
NAPHTHALENE	–	–	0.150J
PHENANTHRENE	0.290J	–	–
PYRENE	0.400	–	–

B-03	D01 D0.5
ANALYTE	mg/kg
BENZO(A)PYRENE	0.0490J
BENZO(B)FLUORANTHENE	0.0720J
BENZO(G,H,I)PERYLENE	0.0690J
CHRYSENE	0.0670J
FLUORANTHENE	0.110J
PHENANTHRENE	0.0520J
PYRENE	0.100J

B-02	S01 D0.5
ANALYTE	mg/kg
BENZO(A)PYRENE	0.0460J
BENZO(B)FLUORANTHENE	0.0890J
BENZO(K)FLUORANTHENE	0.0410J
CHRYSENE	0.0530J
FLUORANTHENE	0.110J
PHENANTHRENE	0.0510J
PYRENE	0.120J

LEGEND

⊙B-01	SOIL BORING LOCATION
S01 D0.0	SAMPLE NUMBER WITH ACQUISITION DEPTH
D01 D0.0	DUPLICATE SAMPLE NUMBER WITH ACQUISITION DEPTH
mg/kg	ANALYTE CONCENTRATION
	APPROXIMATE SITE BOUNDARY

NOTES

1. ONLY THOSE SAMPLES WITH DETECTED ANALYTE CONCENTRATIONS ARE SHOWN IN THIS FIGURE. THE LOCATION AND ACQUISITION DEPTH RELATING TO SOIL SAMPLES REPORTED AS "NON-DETECT" ARE SHOWN IN THE CORRESPONDING SOIL BORING LOCATION MAP.
2. NON-DETECTED ANALYTES ARE SYMBOLIZED BY A DASH (-).
3. DATA VALIDATION QUALIFIER "J" INDICATES REPORTED RESULT SHOULD BE CONSIDERED AN ESTIMATE.
4. DETECTED ANALYTE CONCENTRATIONS ATTRIBUTED TO LABORATORY CONTAMINATION ARE NOT SHOWN.
5. THE ACCURACY OF THIS DOCUMENT IS LIMITED TO THE QUALITY OF THE SOURCE INFORMATION AND IS NOT SUITABLE FOR MAPPING ENGINEERING APPLICATIONS AND IS NOT TO BE USED FOR "AS BUILT"
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7. PROJECT NUMBER 110190137
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SOURCES

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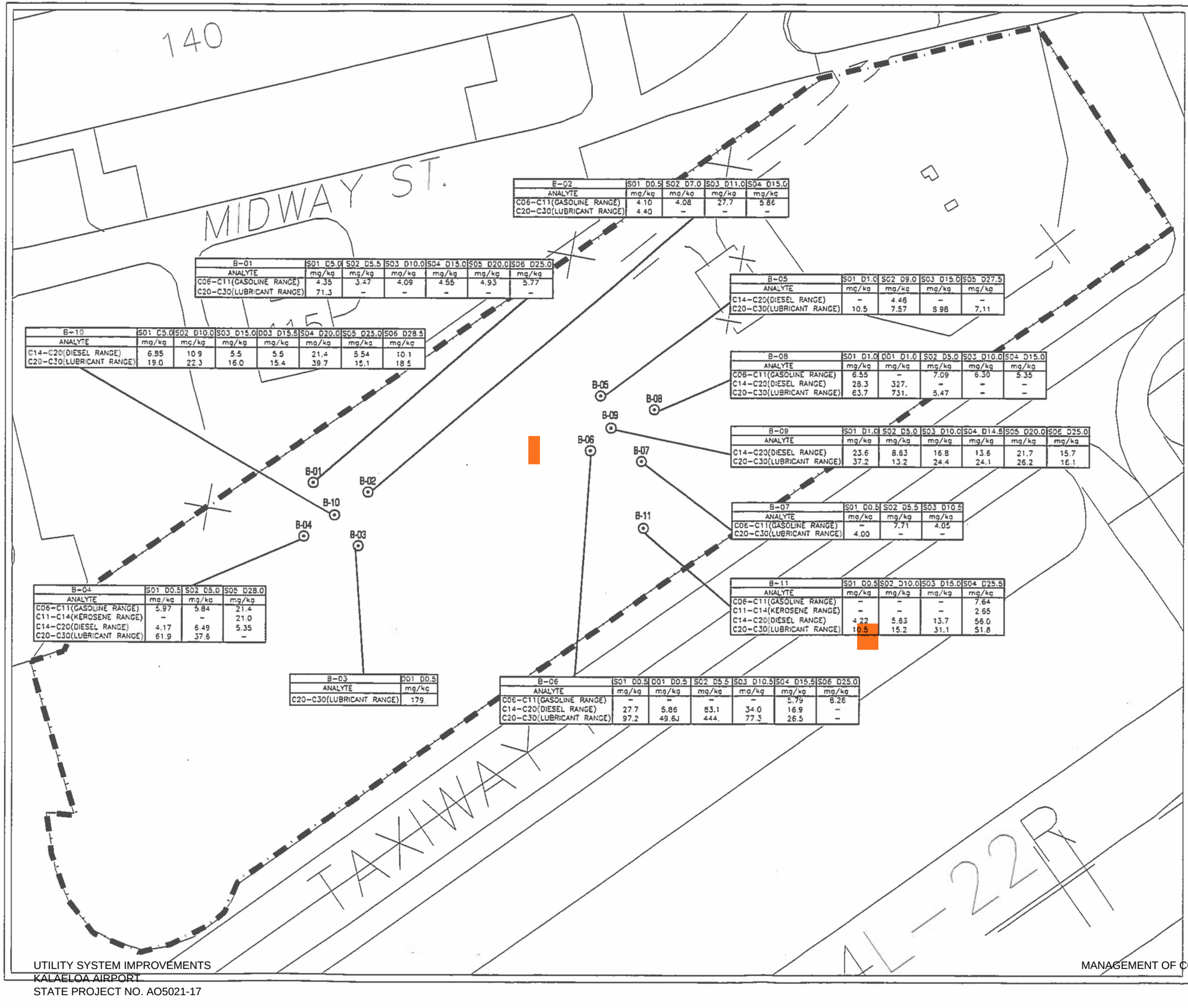
TITLE

SEMI-VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES FORMER FUEL FARM NAS BARBERS POINT

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FIGURE 4-2



B-01	S01 D5.0	S02 D5.5	S03 D10.0	S04 D15.0	S05 D20.0	S06 D25.0
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	4.35	3.47	4.09	4.55	4.93	5.77
C20-C30(LUBRICANT RANGE)	71.3	–	–	–	–	–

B-02	S01 D0.5	S02 D7.0	S03 D11.0	S04 D15.0
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	4.10	4.08	27.7	5.86
C20-C30(LUBRICANT RANGE)	4.40	–	–	–

B-03	D01 D0.5
ANALYTE	mg/kg
C20-C30(LUBRICANT RANGE)	179.

B-04	S01 D0.5	S02 D5.0	S05 D28.0
ANALYTE	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	5.97	5.84	21.4
C11-C14(KEROSENE RANGE)	–	–	21.0
C14-C20(DIESEL RANGE)	4.17	6.49	5.35
C20-C30(LUBRICANT RANGE)	61.9	37.6	–

B-05	S01 D1.0	S02 D9.0	S03 D15.0	S05 D27.5
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg
C14-C20(DIESEL RANGE)	–	4.46	–	–
C20-C30(LUBRICANT RANGE)	10.5	7.57	8.98	7.11

B-06	S01 D0.5	D01 D0.5	S02 D5.5	S03 D10.5	S04 D15.5	S06 D25.0
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	–	–	–	–	5.79	8.26
C14-C20(DIESEL RANGE)	27.7	5.86	83.1	34.0	16.9	–
C20-C30(LUBRICANT RANGE)	97.2	49.6J	444.	77.3	26.5	–

B-07	S01 D0.5	S02 D5.5	S03 D10.5
ANALYTE	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	–	7.71	4.05
C20-C30(LUBRICANT RANGE)	4.00	–	–

B-08	S01 D1.0	D01 D1.0	S02 D5.0	S03 D10.0	S04 D15.0
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	6.55	–	7.09	6.30	5.35
C14-C20(DIESEL RANGE)	28.3	327.	–	–	–
C20-C30(LUBRICANT RANGE)	63.7	731.	5.47	–	–

B-09	S01 D1.0	S02 D5.0	S03 D10.0	S04 D14.5	S05 D20.0	S06 D25.0
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C14-C20(DIESEL RANGE)	23.6	8.63	16.8	13.6	21.7	15.7
C20-C30(LUBRICANT RANGE)	37.2	13.2	24.4	24.1	26.2	16.1

B-10	S01 C5.0	S02 D10.0	S03 D15.0	D03 D15.5	S04 D20.0	S05 D25.0	S06 D28.5
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C14-C20(DIESEL RANGE)	6.85	10.9	5.5	5.5	21.4	5.54	10.1
C20-C30(LUBRICANT RANGE)	19.0	22.3	16.0	15.4	39.7	16.1	18.5

B-11	S01 D0.5	S02 D10.0	S03 D15.0	S04 D25.5
ANALYTE	mg/kg	mg/kg	mg/kg	mg/kg
C06-C11(GASOLINE RANGE)	–	–	–	7.64
C11-C14(KEROSENE RANGE)	–	–	–	2.65
C14-C20(DIESEL RANGE)	4.22	5.63	13.7	56.0
C20-C30(LUBRICANT RANGE)	10.5	15.2	31.1	51.8

LEGEND

⊙ B-09	BORING LOCATION
S01	SAMPLE NUMBER
D01	DUPLICATE SAMPLE NUMBER
mg/kg	ANALYTE CONCENTRATION
	APPROXIMATE SITE BOUNDARY

NOTES

1. ONLY THOSE SAMPLES WITH DETECTED ANALYTE CONCENTRATIONS ARE SHOWN IN THIS FIGURE. THE LOCATION AND DEPTH RELATING TO SOIL SAMPLES REPORTED AS "NON-DETECT" ARE SHOWN IN THE CORRESPONDING SOIL BORING LOCATION MAP.
2. NON-DETECTED ANALYTES ARE SYMBOLIZED BY A DASH (-).
3. DATA VALIDATION QUALIFIER "J" INDICATES REPORTED RESULT SHOULD BE CONSIDERED AN ESTIMATE.
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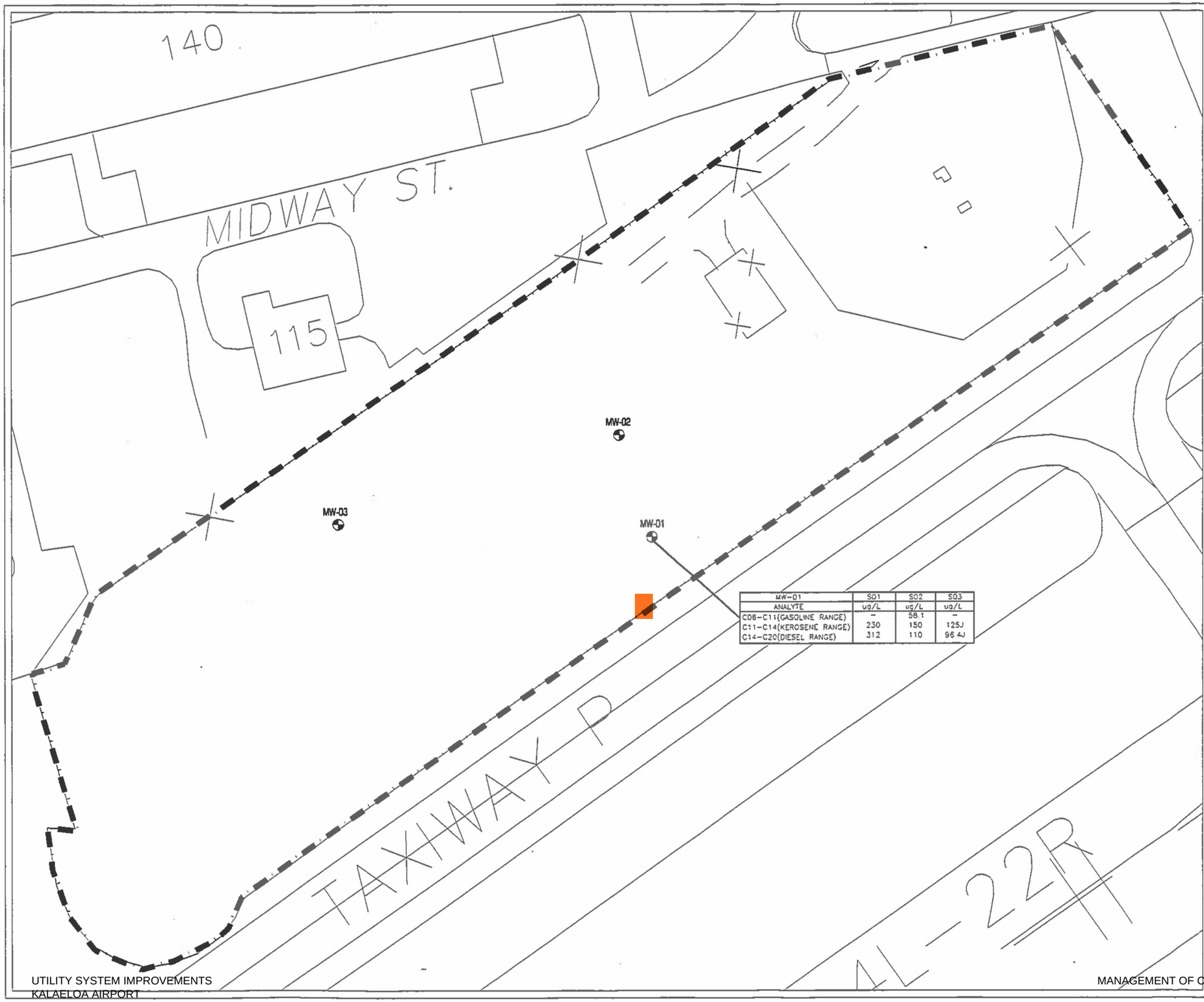
TITLE

TOTAL FUEL HYDROCARBONS DETECTED IN SOIL SAMPLES FORMER FUEL FARM NAS BARBERS POINT

N

FEET
50 0 100 200

FIGURE 4-3



MW-01	SO1	SO2	SO3
ANALYTE	ug/L	ug/L	ug/L
C06-C11(GASOLINE RANGE)	-	58.1	-
C11-C14(KEROSENE RANGE)	230	150	125J
C14-C20(DIESEL RANGE)	312	110	96 4J

LEGEND

MW-32	MONITORING WELL LOCATION
S01	SAMPLE NUMBER
D01	DUPLICATE SAMPLE NUMBER
ug/L	ANALYTE CONCENTRATION
	APPROXIMATE SITE BOUNDARY

NOTES

1. ONLY THOSE SAMPLES WITH DETECTED ANALYTE CONCENTRATIONS ARE SHOWN IN THIS FIGURE. THE LOCATION AND ACQUISITION DEPTH RELATING TO SOIL SAMPLES REPORTED AS "NON-DETECT" ARE SHOWN IN THE CORRESPONDING SOIL BORING LOCATION MAP.
2. SO3 ANALYTICAL DATA HAS NOT BEEN VALIDATED AND IS CONSIDERED PRELIMINARY.
3. NON-DETECTED ANALYTES ARE SYMBOLIZED BY A DASH (-).
4. DATA VALIDATION QUALIFIER "J" INDICATES REPORTED RESULT SHOULD BE CONSIDERED AN ESTIMATE.
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6. PROJECTION IS IN STATE PLANE COORDINATE SYSTEM, HAWAII ZONE 3
7. PROJECT NUMBER 110190137
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TITLE

TOTAL FUEL HYDROCARBONS DETECTED IN GROUND-WATER SAMPLES FORMER FUEL FARM NAS BARBERS POINT

N

FEET

50 0 100 200

FIGURE 4-4

SECTION 5
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND TO BE CONSIDERED CRITERIA

As promulgated by EPA policy, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Superfund Amendments and Reauthorization Act (SARA) of 1986, environmental investigation and remedial actions are required to attain or exceed Applicable or Relevant and Appropriate Requirements (ARARs). "Applicable requirements" are defined as those cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations promulgated under substantive federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. "Relevant and appropriate requirements" are defined as those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not directly "applicable," address problems or situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the particular site. To Be Considered criteria (TBCs) are nonpromulgated federal, state, or local advisories or guidance criteria that are not legally binding and do not have the status of ARARs.

A tabular summary of federal and state ARARs and TBCs that may apply to the Former Fuel Farm is presented in Appendix E. In this appendix, ARARs and TBCs pertinent to the Former Fuel Farm are categorized as chemical-, location-, and action-specific. Chemical-specific ARARs and TBCs are usually health- or risk-based numerical values which establish the acceptable concentration of a chemical in a given medium. Location-specific ARARs and TBCs are restrictions placed upon the concentration of hazardous substances or the conduct of activities solely because they occur in special locations. Action-specific ARARs and TBCs are technology- or activity-based requirements or limitations on remedial actions. Currently, intrusive remediation activities are not planned for the Former Fuel Farm, and action-specific ARARs and TBCs are not identified in this section. If site remediation were recommended, action-specific ARARs and TBCs relating to potential remedial activities would be identified during the feasibility study stage, in conjunction with re-evaluation of the chemical- and location-specific ARARs and TBCs.

This section qualitatively evaluates potential impacts to human health due to the presence of site-related contaminants detected during the RI. This qualitative evaluation is accomplished by comparing the numerical values of chemical- and location-specific ARARs and TBCs identified for the site to the maximum detected contaminant concentrations in soil and ground water. Site-related contaminants detected above their corresponding ARARs and TBCs may have an adverse impact on human health. Results of the qualitative evaluation are presented below and are further substantiated through the conceptual evaluation model (Section 6) and the human health preliminary risk evaluation (Section 7). Due to the lack of onsite wildlife habitat and ecological receptors, and based on results of the scoping phase ecological risk evaluation (Section 8), no ARARs or TBCs were identified for ecological concerns.

5.1 Soil Gas Medium

No federal or state ARARs or TBCs are available for the soil gas medium. Soil gas at the site was investigated to aid the assessment of vadose zone soil and ground water. Therefore, the concentrations of chemicals detected in soil gas are not compared to regulatory levels.

5.2 Soil Medium

No federal or state ARARs are available for the soil medium. Chemical- and location-specific TBCs identified for site soils include EPA Region IX Preliminary Remediation Goals (PRGs) for residential and industrial land use, EPA Soil Screening Levels (SSLs), and HDOH Tier 1 Soil Action Levels (SALs). Because future land use has not yet been determined, both residential and industrial PRGs are considered. EPA Region IX PRGs are the primary health risk-based TBCs and are considered the most pertinent in the qualitative evaluation of impacts on human health. Because EPA Region IX PRGs are based on direct contact exposure pathways (i.e., soil ingestion and dermal contact), the PRGs are generally only applicable to surface soils. However, for the purposes of this RI, EPA Region IX PRGs were conservatively assumed to also apply to subsurface soils. Generic SSLs represent indicator concentrations for the migration of soil constituents to ground water and have been created for 107 chemicals; the methodology used to develop

the SSLs is discussed in Appendix F. Tier 1 SALs are set at levels which are protective of human health in the case of direct, residential exposure to contaminated soils and to ground water impacted by contaminants that have leached from the soil. Appendix E provides additional description of these TBCs.

Table 5-1 presents the maximum detected compound concentrations in surface and subsurface soil samples from the RI and numerical values for the TBCs listed above. Results of the comparison of maximum detected concentrations to TBCs are presented below for surface and subsurface soils.

5.2.1 Surface Soil

No chemicals were detected above their respective detection limits in surface samples at the Former Fuel Farm.

5.2.2 Subsurface Soil

Ethylbenzene and benzo(a)pyrene were each detected at concentrations greater than the identified TBCs. Ethylbenzene was reported above the HDOH Tier 1 SAL, whereas benzo(a)pyrene was reported in excess of the PRGs for residential soils. Neither compound was detected at maximum concentrations above the PRGs for industrial soils.

5.3 Ground-Water Medium

Because ground water could be used in the future by a pilot desalinization plant to produce drinking water, chemical- and location-specific ARARs for ground water include maximum contaminant levels (MCLs) under the Safe Drinking Water Act (SDWA), HDOH Chapter 20 MCLs for potable water systems, and Resource Conservation and Recovery Act (RCRA) ground-water standards. Chemical- and location-specific TBCs for ground water include EPA Region IX PRGs for tap water, EPA Region IX Health Advisories, and HDOH Tier 1 Ground-Water Action Levels. Table 5-2 presents maximum detected compound concentrations in site ground-water samples and numerical

Table 5-1

SOIL MEDIUM TBCs
FORMER FUEL FARM
NAS BARBERS POINT

Detected Compound	Maximum Surface Soil Concentration [1] (mg/kg)	Maximum Subsurface Soil Concentration [2] (mg/kg)	Average Site Concentration [3] (mg/kg)	TBC: EPA Region IX PRG Residential Soil [4] (mg/kg)	TBC: EPA Region IX PRG Industrial Soil [4] (mg/kg)	TBC: EPA Soil Screening Levels [5] (mg/kg)	TBC: HDOH Soil Action Levels [6] (mg/kg)
Volatile Organic Compounds							
2-Butanone	ND	0.0130 J	0.0053	8,700.	34,000.	NS	NS
Acetone	ND	2.10 J	0.0580	2,000.	8,400.	8.0	NS
Ethylbenzene	ND	0.960 J	0.0203	690.	690.	5.0	*0.50*
Methylene Chloride	0.0140	0.0270	0.0064	11.0	25.0	0.010	NS
Toluene	ND	0.0350	0.0061	1,900.	2,800.	5.0	34.0
Xylene (total)	ND	16.0	0.252	990.	990.	74.0	23.0
Semi-Volatile Organic Compounds							
2,6-Dinitrotoluene	ND	0.0420 J	0.0420	65.0	680.	0.10	NS
2-Methylnaphthalene	ND	0.250 J	0.178	NS	NS	NS	NS
Anthracene	0.0580 J	ND	0.0580	19.0	19.0	4,300.	NS
Benz(a)anthracene	0.200 J	ND	0.176	0.61	2.6	0.70	NS
Benzo(a)pyrene	0.160 J	ND	0.0850	*0.061*	0.26	4.0	1.0
Benzo(b)fluoranthene	0.250 J	ND	0.173	0.61	2.6	4.0	NS
Benzo(g,h,i)perylene	0.120 J	0.0870 J	0.0894	NS	NS	NS	NS
Benzo(k)fluoranthene	0.0840 J	ND	0.0625	6.1	26.0	4.0	NS
bis(2-Ethylhexyl)phthalate	0.220 J	ND	0.213	32.0	140.	11.0	NS
Chrysene	0.0590 J	ND	0.173	24.0	24.0	1.0	NS
Diethylphthalate	0.470	0.0670 J	0.0590	52,000.	100,000.	110.	NS
Fluoranthene	0.0740 J	ND	0.176	2,600.	27,000.	980.	11.0
Indeno(1,2,3-cd)pyrene	ND	0.150 J	0.0740	0.61	2.6	35.0	NS
Naphthalene	0.290 J	0.0400 J	0.150	800.	800.	30.0	41.0
Phenanthrene	0.400	0.0500 J	0.172	NS	NS	NS	NS
Pyrene	0.130 J	2.10 J	0.172	2,000.	20,000.	1,400.	NS

Table 5-1 (continued)

SOIL MEDIUM TBCs
FORMER FUEL FARM
NAS BARBERS POINT

Detected Compound	Maximum Surface Soil Concentration [1] (mg/kg)	Maximum Subsurface Soil Concentration [2] (mg/kg)	Average Site Concentration [3] (mg/kg)	TBC: EPA Region IX PRG Residential Soil [4] (mg/kg)	TBC: EPA Region IX PRG Industrial Soil [4] (mg/kg)	TBC: EPA Soil Screening Levels [5] (mg/kg)	TBC: HDOH Soil Action Levels [6] (mg/kg)
Total Fuel Hydrocarbons							
C06-C11 (Gasoline Range)	5.97	27.7	3.62	NS	NS	NS	2,000.
C11-C14 (Kerosene Range)	ND	21.0	1.93	NS	NS	NS	5,000.
C14-C20 (Diesel Range)	27.7	327.	12.9	NS	NS	NS	5,000.
C20-C30 (Lubricant Oil Range)	179	731.	35.7	NS	NS	NS	5,000.

Notes:

Site sample concentrations that exceed a TBC are printed in **Bold** type. Average site concentrations that exceed an SSL are printed in **BOLD underlined** type. TBC values exceeded by site sample concentrations are printed in ***Bold Italic*** type.

(1) Maximum detected concentration in associated site samples obtained from a depth interval of 0 to 0.5 feet.
(2) Maximum detected concentration in associated site samples obtained from a depth of greater than 0.5 feet.
(3) The average site concentrations were computed by taking the average of all detectable site sample concentrations (including duplicates) as well as all non-detectable site sample concentrations at one-half the value of the laboratory detection limits. Any "non-detects" greater than twice the value of the maximum detected concentration were not included in the averaging process.
(4) Second half 1995 preliminary remediation goals (PRGs) for residential and industrial soil, as calculated by EPA Region IX (EPA 1995a).
(5) SSLs (Soil Screening Levels) were calculated by EPA (1994) as a way to assess soil chemical concentrations and the likelihood of their migration to, and degradation of, ground water. The reduction in contaminant concentration during movement through soil to ground water is expressed by the DAF (Dilution and Attenuation Factor), defined as the ratio of the soil leachate concentration to the receptor point concentration. High DAF values correspond to a high degree of dilution and attenuation of the contaminant from the leachate to the receptor point. A DAF of 10 is a conservative value that is considered to be protective of most site conditions.
(6) SALs (Soil Action Levels) were calculated by the Hawaii Department of Health in order to assess potential adverse impacts on ground water due to soil leaching, as well as potential threats to human health due to direct exposure to impacted soil.

Data have been validated. The data validation qualifier "J" indicates the reported result should be considered an estimate.

TBC - To Be Considered Criteria.
mg/kg - milligrams per kilogram.
NA - Not Analyzed.
NC - Not Calculated.
NS - No Standard was available for this analyte.
ND - Not Detected.

values for the ARARs and TBCs listed above. Validated analytical data from the first- and second-quarter 1995 ground-water sampling events, as well as unvalidated data from the third-quarter 1996 sampling event, were used in this comparison.

Bis(2-ethylhexyl)phthalate was detected in the first-quarter sample at a maximum concentration greater than the EPA Region IX PRG for tap water and the EPA Region IX Health Advisory. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant, and the detection of this compound in the sample was likely due to laboratory introduction. No other TFH-related compounds were present.

5.4 SUMMARY

Ethylbenzene and benzo(a)pyrene were the only compounds detected in soils at concentrations exceeding TBCs. Bis(2-ethylhexyl)phthalate, a common laboratory contaminant, was the only compound detected in ground water at a concentration greater than TBCs. No TFH-related risk-indicator compounds (such as BTEX or PAHs) were detected in ground water.

Table 5-2

GROUND-WATER MEDIUM HUMAN HEALTH ARARs AND TBCs
FORMER FUEL FARM
NAS BARBERS POINT

Detected Compound	Maximum Ground-Water Concentration (unfiltered samples) [1] (µg/L)	ARAR			TBC		
		SDWA MCLs[2] (µg/L)	HDOH MCLs[3] (µg/L)	RCRA Ground-Water Protection Level [4] (µg/L)	EPA Region IX PRG Tap Water [5] (µg/L)	EPA Region IX Health Advisories [6] (µg/L)	HDOH Ground-Water Action Levels [7] (µg/L)
SVOCs							
Bis(2-ethylhexyl)phthalate	**60.0**	NS	NS	NS	***4.8***	***3.0***	NS
Total Fuel Hydrocarbons							
C06 - C11 (Gasoline Range)	58.1	NS	NS	NS	NS	NS	NS
C11- C14 (Kerosene Range)	230.	NS	NS	NS	NS	NS	NS
C14 - C20 (Diesel Range)	312.	NS	NS	NS	NS	NS	NS

Notes:

(1) Maximum detected concentration in site samples. No samples were analyzed for metals; therefore, only unfiltered samples were collected at this site.

(2) Primary maximum contaminant levels (MCLs) in drinking water for organic and inorganic chemicals, Safe Drinking Water Act (SDWA) (40 CFR 141).

(3) Primary MCLs in drinking water for organic and inorganic chemicals, State of Hawaii Department of Health, HDO Hawaii Administrative Rules Title 11, Chapter 20, Potable Water Systems MCLs for Drinking Water.

(4) Maximum concentration of constituents for ground-water protection, as stipulated by the Resource Conservation and Recovery Act (RCRA) (40 CFR 141.5).

(5) Preliminary Remediation Goals (PRGs) for tap water from EPA Region IX, Second Half 1995 (EPA 1995a).

(6) Drinking water standards and health advisories from EPA Region IX, January 1995 (EPA 1995b).

(7) Ground-Water Action Levels were calculated by the HDOH and are set to be protective against potential adverse impact to surface water ecosystems.

Data have been validated. Data validation qualifiers are as follows:
"J" - The reported result should be considered an estimate.

ARAR - Applicable or Relevant and Appropriate Requirement
TBC - To Be Considered Criterion
µg/L = micrograms per liter
Site sample concentrations which exceed a TBC/ARAR are printed in **Bold** type.
TBC/ARAR values which are exceeded by site sample concentrations are printed in ***Bold Italic*** type.
NS - No Standard is reported

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SECTION 6
CONCEPTUAL EVALUATION MODEL

The conceptual evaluation model (CEM) for the Former Fuel Farm has been developed in accordance with the EPA document *Risk Assessment Guidance for Superfund* (EPA 1989a, 1991a). The CEM provides a qualitative evaluation of the potential risk posed by site contaminants and is based on an evaluation of physical, demographic, and chemical analytical information obtained during the Abbreviated RI. The CEM traces the exposure pathways through which contaminant sources may cause impacts to receptors.

The CEM provides a framework for evaluating the completeness of each potential exposure pathway. An exposure pathway analysis links the sources, locations, and types of environmental releases with receptor locations to determine the complete pathways of exposure. A complete exposure pathway consists of the following four elements (EPA 1989a):

- A source and mechanism of chemical release;
- A retention or transport medium or media;
- A point of potential receptor contact with the impacted medium, or an "exposure point"; and
- An exposure route (e.g., ingestion) at the exposure point.

This CEM considers the potential exposure of onsite receptors to onsite sources, and the potential exposure of offsite receptors to onsite contamination that is transported offsite. For the Former Fuel Farm, potential current and future receptors include both onsite and offsite human and ecological receptors.

The CEM developed for the Former Fuel Farm is presented in Table 6-1, and a graphic representation of the CEM is shown in Figure 6-1. Each source/transport mechanism/exposure route combination presented in Table 6-1 is a potential exposure pathway. Each potential exposure pathway is designated "complete," "potentially complete," "incomplete," or "insignificant." These designations are defined by the following criteria:

Table 6-1

CONCEPTUAL EVALUATION MODEL
FORMER FUEL FARM
NAS BARBERS POINT

SOIL PATHWAYS:

Source	Transport Mechanism	Exposure Route	Current Land Use: Onsite Worker	Future Land Use: Onsite Worker	Future Land Use: Onsite Resident	Rationale
Surface and Subsurface Soil	Retained in Soils for Direct Contact	Incidental Ingestion of Soil / Sediment	Complete	Potentially Complete	Potentially Complete	Site workers and future site residents are likely to be exposed through this pathway.
		Dermal Contact with Soil / Sediment	Complete	Potentially Complete	Potentially Complete	See above.
		Ingestion of Agricultural Plants / Animals (bio-uptake)	Incomplete	Incomplete	Incomplete	No agriculture takes place on the site; none is expected in the future.
	Air Transport	Inhalation of Fugitive Particulates	Insignificant	Insignificant	Insignificant	Exposure due to fugitive dust is expected to be insignificant when compared to exposure due to direct contact with soil.
		Settleout: Dermal Exposure to and Ingestion of Deposited Particulates	Insignificant	Insignificant	Insignificant	This pathway is insignificant compared to the direct contact pathway described above.
		Inhalation of Emanating VOCs	Insignificant	Insignificant	Insignificant	Significant quantities of VOCs were not detected in site soil.
	Storm Water Runoff	Incidental Ingestion of Storm Water Runoff	Insignificant	Insignificant	Insignificant	Storm water may temporarily form puddles at the site. However, workers and residents are expected to have minimal contact with storm water.
		Dermal Contact with Storm Water Runoff	Insignificant	Insignificant	Insignificant	See above.

Table 6-1 (continued)

CONCEPTUAL EVALUATION MODEL
FORMER FUEL FARM
NAS BARBERS POINT

GROUND-WATER PATHWAYS:

Source	Transport Mechanism	Exposure Route	Current Land Use: Onsite Worker	Future Land Use: Onsite Worker	Future Land Use: Onsite Resident	Rationale
Surface Soil / Subsurface Soil → Leaching → Ground Water	Flow Movement to Domestic or Agricultural Wells	Ingestion of Domestic Ground Water	Incomplete	Potentially Complete	Potentially Complete	Ground water beneath the site is not currently used as a drinking water source. However, due to the presence of a pilot desalination plant in the area, ground water could be used as a drinking water source in the future.
		Dermal Contact with Domestic Ground Water	Incomplete	Potentially Complete	Potentially Complete	See above.
		Inhalation of VOCs from Domestic Ground Water	Incomplete	Incomplete	Incomplete	VOCs were not detected in ground water samples.
		Ingestion of Agricultural Plants / Animals (bio-uptake)	Incomplete	Incomplete	Incomplete	No agricultural wells are located downgradient of the site.
	Flow Movement to Pacific Ocean	Dermal Contact with Ocean Water	Insignificant	Insignificant	Insignificant	Contaminants will be greatly diluted in the waters of the Pacific Ocean.
		Incidental Ingestion while Swimming	Insignificant	Insignificant	Insignificant	See above
		Fish Ingestion	Insignificant	Insignificant	Insignificant	See above.

Notes:
Complete: Exposure pathway currently exists for that receptor.
Potentially Complete: Exposure pathway may exist for future receptor.
Incomplete: One or more criteria for a complete pathway do not exist.
Insignificant: All criteria exist for a complete exposure pathway, but data suggest low concentrations, low exposure frequency, potential insignificant risk, or insignificant pathway in comparison to other pathways.

- **Complete** - All four elements of the exposure pathway are present, and the presence of contamination throughout the exposure pathway has been documented. Complete pathways are evaluated further.
- **Potentially Complete** - This designation is reserved for the future land use scenario. The presence of contamination throughout the exposure pathway has been documented. The other three elements of the exposure pathway may be present, depending on how the land or water resources are used in the future. Potentially complete pathways are evaluated further.
- **Incomplete** - At least one of the four elements of the exposure pathway (source, transport mechanism, exposure route, or exposure point) is not present. Incomplete pathways are not evaluated further.
- **Insignificant** - It can be demonstrated quantitatively that the risk associated with a complete pathway is insignificant. It is not necessary to conduct further evaluation if the pathway indicates an insignificant risk.

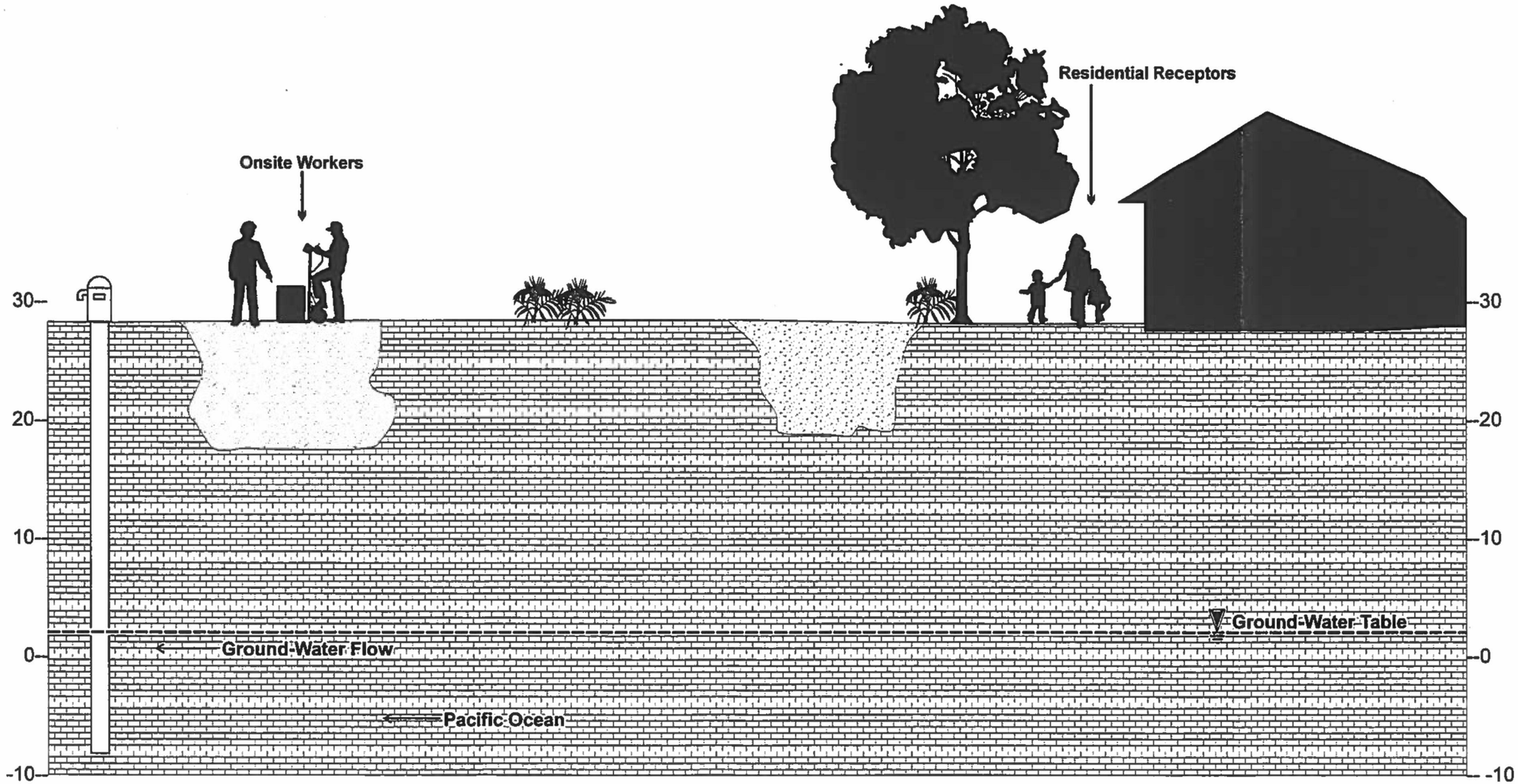
Detailed discussions of the components of the CEM are provided in the following sections.

6.1 Potential Contaminants and Sources

A 3,000-gallon MoGas leak occurred at the Former Fuel Farm in the early 1970s. Undocumented releases may have also occurred while the tank farm was active. Based on the analytical data evaluation presented in Section 4 and the ARAR and TBC comparison presented in Section 5, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, and ethylbenzene are the chemical compounds detected at the site which are of potential concern with respect to human health and the environment. All other compounds were detected at concentrations less than their respective ARARs and TBCs.

6.2 Potential Fate and Transport Mechanisms

The fate and transport of contaminants in the environment is a complex process, influenced by the physical and chemical characteristics of the contaminants and the media through which they are transported. Migration of contaminants from a source may take



Conceptual Evaluation Model
Former Fuel Farm

FIGURE 6-1

place through air, soil, sediment, surface water, and ground water. Site characteristics that may affect contaminant fate and transport include site-specific topographic, geologic, hydrogeologic, hydrologic, and meteorological conditions; these characteristics are discussed in Section 3. During transport, contaminant concentrations are typically reduced by chemical processes such as biodegradation, photodegradation, hydrolysis, or oxidation-reduction reactions, or by physical processes such as dilution. The rate of migration may be affected by partitioning between media, as measured by volatility, solubility, or adsorption. Appendix F presents information on the physical and chemical properties which influence the environmental fate and transport of identified contaminants at the Former Fuel Farm.

6.3 POTENTIAL RECEPTORS

Contaminants released to the environment may affect onsite receptors and may potentially migrate to offsite receptors. However, the processes which influence the fate and transport of fuel-related contaminants also serve to reduce the exposure of an offsite receptor relative to that of an equivalent onsite receptor. Therefore, the most conservative scenario for risk assessment purposes is direct exposure to contaminants by onsite receptors. Under this scenario, if the risks to onsite receptors are less than the level of concern, risks to offsite receptors are also considered to be acceptable, and the quantification of contaminant fate and transport is unnecessary.

Potential receptors for the Former Fuel Farm include human and ecological receptors in the vicinity of the site, as discussed in the following sections.

6.3.1 Potential Human Receptors

Current and future human receptors were identified based on land use and population distributions near the site. The evaluation includes identifying onsite and offsite receptors with the greatest potential for exposure. Site workers are the primary potentially exposed population under the current land use scenario. The nearest residential area to the site is located approximately three-quarters of a mile away, as shown in Figure 1-1. Therefore, exposure to offsite residential receptors is not

considered. Since future land use has not yet been determined, industrial and residential future land uses are considered in the CEM. Exposed populations under future land use conditions consist of adult workers, adult residents, and child residents.

6.3.2 Potential Ecological Receptors

The Former Fuel Farm consists of disturbed habitat which is dominated by *Achyranthes aspera* (an introduced weed), khaki weed, buffel grass, Chinese violet, swollen fingergrass, weedy heliotrope, and koa haole seedlings. No wildlife species were identified at the site. Due to the extent of onsite disturbance, the potential for development of viable habitat appears negligible. Therefore, ecological receptors are not considered in the CEM.

6.4 Exposure Pathway Analysis

The CEM considers two possible contaminant sources: soil and ground water. The pathway evaluation includes four possible transport mechanisms: direct contact, air transport, surface water runoff transport, and ground-water transport. As indicated in Table 6-1, potential exposure routes for the transport mechanisms include ingestion, dermal contact, and inhalation.

6.4.1 Direct Contact with Soil

Three potential exposure pathways are considered for direct contact to soil: incidental ingestion of soil, dermal contact with soil, and the ingestion of agricultural plants and animals raised onsite. The incidental ingestion and dermal contact exposure pathways are complete for current onsite workers. These exposure pathways are potentially complete for future onsite workers and residents. Because no agriculture takes place onsite and none is expected in the future, ingestion of agricultural plants and animals is an incomplete exposure pathway for all receptors.

6.4.2 Air Transport of Soil

Three potential exposure pathways have been identified involving air transport of soil: inhalation of fugitive particulates, dermal exposure to and ingestion of deposited particulates, and inhalation of VOCs.

Appreciable generation of particulates is not expected to occur, because the site is vegetated. Onsite and offsite ambient concentrations of volatilized compounds are insignificant, because only very small concentrations of VOCs were detected in site soil. Therefore, all air transport exposure routes are considered insignificant for current and future land use scenarios.

6.4.3 Soil Transport by Surface Water Runoff

Two potential exposure pathways have been identified involving soil transport by surface water runoff: incidental ingestion of and dermal contact to surface water runoff. Storm water ponding does not typically occur onsite; in addition, current onsite workers and future onsite workers and residents are expected to have minimal contact with ponded storm water. Therefore, exposure pathways associated with surface water runoff are considered insignificant for both current and future land use scenarios.

6.4.4 Ground-Water Transport

Seven possible exposure pathways have been identified involving ground-water transport: ingestion of domestic ground water, dermal contact with domestic ground water, inhalation of VOCs from domestic ground water, ingestion of agricultural plants or animals raised using ground water, dermal contact with ocean water, incidental ingestion of ocean water while swimming, and ingestion of fish caught in the ocean.

Currently, no drinking water wells are located in the vicinity of the Former Fuel Farm. Therefore, the ingestion and dermal contact to ground water pathways are currently incomplete. Due to the presence of a pilot desalination plant near the base that uses ground water as its raw water source, these exposure pathways are considered potentially

complete for future land use scenarios. Inhalation of VOCs is an incomplete pathway for both current and future receptors because no VOCs were detected in ground water samples. No agriculture takes place downgradient of the site; therefore, exposure through agricultural use of ground water is an incomplete pathway for both current and future receptors.

Ground water beneath the site flows toward the Pacific Ocean. However, the small concentrations of contaminants detected in ground water will be greatly diluted in ocean waters. Therefore, exposure pathways associated with ground-water transport to the ocean are insignificant for both current and future land use scenarios.

6.4.5 Complete Exposure Pathways

Dermal contact to soil and incidental ingestion of soil are complete exposure pathways for current receptors and potentially complete pathways for future receptors. Additionally, ingestion of domestic ground water and dermal contact to domestic ground water are potentially complete exposure pathways for future receptors. These exposure pathways are further evaluated in Section 7.

SECTION 7
PRELIMINARY RISK EVALUATION

This section describes the results of a preliminary evaluation of human health risks associated with the presence of chemical compounds at the Former Fuel Farm. The purpose of the preliminary risk evaluation (PRE) is to swiftly differentiate between sites which do not warrant further consideration in the site evaluation process and sites which require immediate remedial/removal actions or further studies to address concerns related to elevated concentrations of chemical compounds in environmental media.

The approach for this human health PRE is based on the *EPA Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Parts A and B)* (EPA 1989a, 1991a). The PRE is conducted in two phases: the first is an initial conservative screening PRE, conducted using EPA Region IX PRGs (EPA 1995a) as the comparative basis; this phase is followed, when necessary, by a more realistic site-specific PRE. The methodology for conducting a human health PRE is described in detail in Appendix G. A brief overview of the PRE process is presented below.

The initial screening PRE is performed when the complete and potentially complete exposure pathways of concern and pathway-specific exposure parameters are the same as those used in the development of the EPA Region IX PRGs (EPA 1995a; Stralka 1995). If pathways not addressed in the PRGs are complete or potentially complete at the site, or if site-specific exposure factors differ from those used in the development of the PRGs, a site-specific PRE is performed. Additionally, if the conservative PRE results indicate potentially significant health risks, a site-specific PRE is performed to derive more realistic risk levels.

7.1 METHODOLOGY FOR CONDUCTING A SCREENING PRE

The steps involved in performing a screening PRE are as follows:

- Development of a CEM;
- Identification of relevant data sets;

- Estimation of exposure point concentrations;
- Calculation of screening cumulative health risks;
- Evaluation of the screening PRE results.

Development of a Conceptual Evaluation Model

In accordance with EPA (1989a), human health PREs are intended to address only contaminants for which there is a complete or potentially complete exposure pathway under current and/or future land use conditions. Complete and potentially complete exposure pathways are identified in the CEM.

Identification of Relevant Data Sets

Identification of relevant data sets involves a review of analytical data to identify the impacted area(s) of concern within the site. To conservatively protect human health, the screening PRE focuses on data from these impacted area(s). TFH and other chemicals that do not have available EPA Region IX PRGs are not included in the PRE.

Estimation of Exposure Point Concentrations

Based on EPA Region IX recommendations (Stralka 1995), maximum and reasonable maximum exposure (RME) risk calculations are performed in the screening PRE. In the maximum risk calculation, maximum detected concentrations are used to estimate maximal health risks related to the most impacted areas. The RME is defined by the EPA as the maximum exposure that is reasonably expected at a site (EPA 1989a). The RME exposure point concentration is defined by EPA as the lesser of the 95 percent upper confidence limit (UCL) of the arithmetic mean or the maximum detected value. In some instances, the 95 percent UCL of the mean may be greater than the maximum detected value at a site, due to high sample variation or small sample size. In this case, the maximum detected concentration is selected as the RME concentration (EPA 1992a).

Calculation of Screening Cumulative Health Risks

EPA Region IX PRGs are defined as the concentrations of chemicals in environmental media that correspond to an excess cancer risk of one-in-one-million (1E-06) or a noncarcinogenic hazard index (HI) of 1. While soil PRGs are derived for both residential and industrial exposure scenarios, ground-water PRGs are based on residential exposure

only. Excess cancer risks and HIs for each chemical detected at the site are estimated using the ratio of the exposure point concentration and the carcinogenic or noncarcinogenic PRG, respectively. Assuming that the effects posed by different contaminants are additive (i.e., that no synergistic or antagonistic interactions occur) and that chemical concentrations and other exposure parameters remain constant throughout the exposure period (EPA 1989a), cumulative excess cancer risks and HIs are estimated by adding the contributions from each chemical.

Evaluation of the Screening PRE Results

The human health PRE decision tree is depicted in Figure 7-1. Possible PRE outcomes are outlined below.

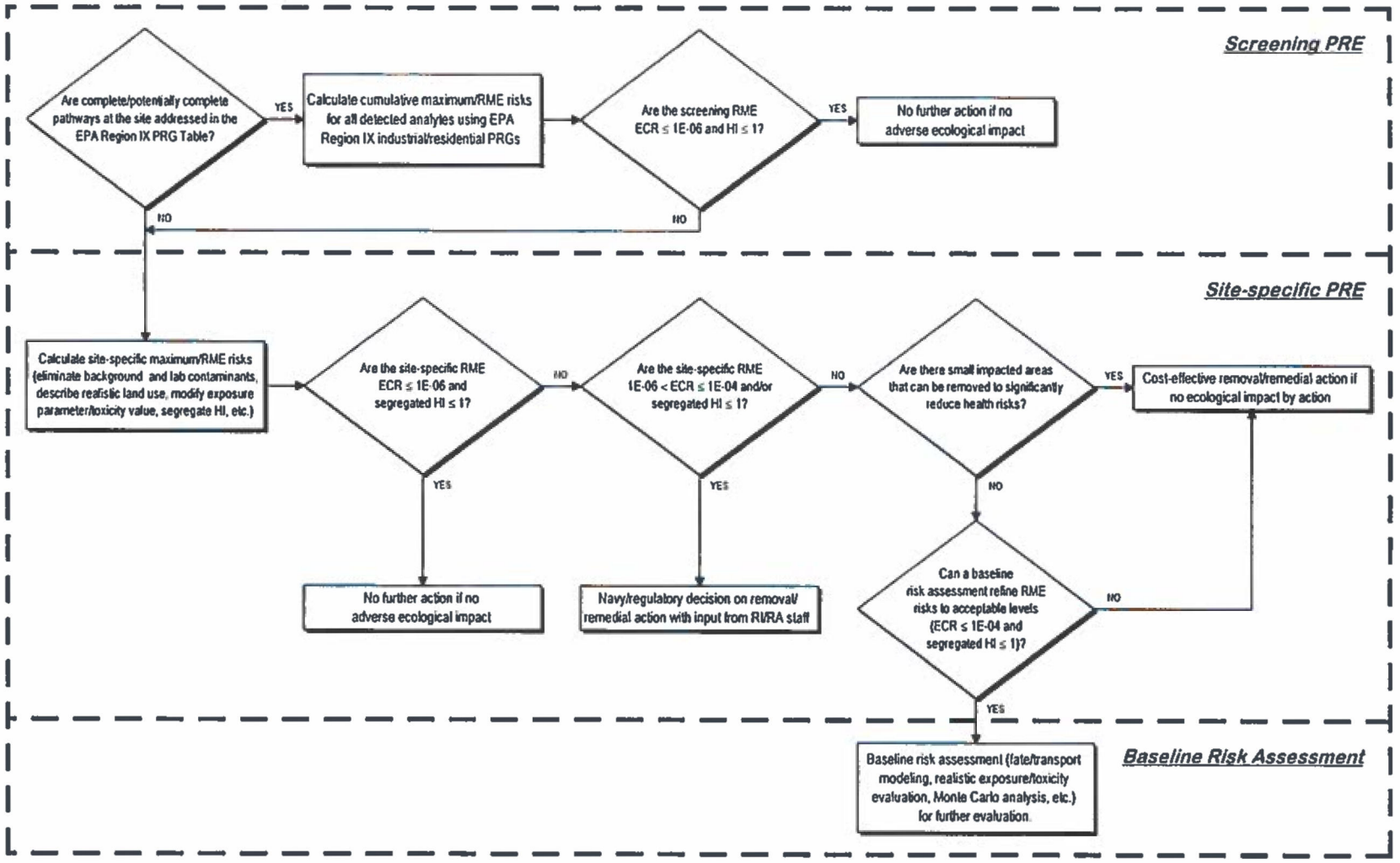
1) If the site has been adequately characterized:

   - No further action is recommended when the cumulative RME excess cancer risk is less than or equal to 1E-06 and the HI is less than or equal to 1, and if there are no adverse ecological impacts (Stralka 1995).
   - A site-specific PRE is performed when the screening cumulative RME excess cancer risk is greater than 1E-06 and/or the HI is greater than 1, as described in Section 7.2.

2) If the site has not been adequately characterized, it may be determined that additional data are needed to arrive at a more conclusive PRE for the site.

7.2 Methodology for Conducting a Site-Specific PRE

To focus the future decision-making process on chemicals that are both site related and risk driving, the site-specific PRE includes only chemicals selected as chemicals of potential concern (COPCs). COPCs are defined by EPA (1989a) as chemicals that are potentially site related and for which data are of sufficient quality for use in a quantitative risk assessment. As recommended by EPA Region IX toxicologists (Stralka 1995), chemicals with maximum detected concentrations greater than the medium-specific PRG are selected as COPCs. Common laboratory contaminants, such as acetone, aldol



Notes: ECR -- Excess Cancer Risk
HI -- Hazard Index
PRG -- Preliminary Remediation Goal
RI -- Remedial Investigation
RA -- Risk Assessment
RME -- Reasonable Maximum Exposure
PRE -- Preliminary Risk Evaluation

Human Health Preliminary Risk Evaluation Decision Tree

FIGURE
7-1

products of acetone, 2-butanone, methylene chloride, and phthalates, are not included as COPCs.

The site-specific PRE may also include the adjustment of screening health risk values for site-specific land use and exposure conditions. When the site-specific cumulative RME HI is greater than 1, segregation of the HI based on toxic effects and target organs is required (EPA 1989a).

7.3 Screening Human Health PRE for the Former Fuel Farm

This screening PRE was performed to assess actual and potential human health risks if no remedial action is taken at the Former Fuel Farm.

7.3.1 Conceptual Evaluation Model

Table 6-1 presents the CEM for the Former Fuel Farm, which contains an analysis for each receptor-specific exposure pathway under both current and future land use conditions. Current land use at the site is industrial. Since future land use has not yet been determined, both industrial and residential future land use are considered in the PRE. Incidental ingestion of and dermal contact with contaminants in soil are complete exposure pathways for current onsite workers. These exposure pathways are also potentially complete for future onsite workers and residents.

Individuals currently living or working in the vicinity are not likely to be exposed to ground water beneath the site, because it is not used as a drinking water source. Thus, current exposure pathways to ground water are incomplete. Due to the presence of a pilot desalination plant in the vicinity, ground water could be used as a drinking water source in the future. Therefore, exposure pathways involving future domestic use of ground water are potentially complete.

7.3.2 Identification of Relevant Data Sets

All data are included in the PRE, with the exception of data for TFH and other compounds without available EPA Region IX PRGs. For human health PRE purposes,

the site is considered as one exposure area, because concentrations of site-related contaminants varied little across the site. The data collected during the Abbreviated RI are considered adequate for risk assessment purposes.

7.3.3 Discussion of Screening Health Risk Results

In the screening PRE, both maximum and RME cumulative risks are estimated and presented in Tables 7-1 through 7-4. Surface soils are defined as soils which are 0 to 0.5 feet in depth. Because only the RME scenarios are used in the Superfund decision-making process, the following discussion focuses on RME risk results. In this discussion, the term "risk driver" is used to refer to chemicals which contribute approximately 10 percent or more of the cumulative excess cancer risk or HI. No further remedial or investigative action is warranted for sites with excess cancer risks less than the EPA point-of-departure risk of 1E-06. The excess cancer risk trigger level for remediation is 1E-04. Noncarcinogenic HIs of 1 or less are considered acceptable.

Exposure to Soil Under Current and Future Industrial Land Use

The RME excess cancer risk for exposure to surface soil under an industrial scenario is 8E-07, as shown in Table 7-1. This value is less than the EPA point-of-departure excess cancer risk of 1E-06. Carcinogenic PAHs, including benzo(a)pyrene, benzo(b)-fluoranthene, and benz(a)anthracene, are the cancer risk drivers in surface soil. The RME excess cancer risk for exposure to subsurface soil in an industrial scenario is 2E-09, as shown in Table 7-2. This value is also less than the EPA point-of-departure risk. Bis(2-ethylhexyl)phthalate and methylene chloride are the cancer risk drivers in subsurface soil.

The RME HI for exposure to surface soil under the industrial scenario is 3.4E-05, as shown in Table 7-1. Pyrene, fluoranthene, and bis(2-ethylhexyl)phthalate are the noncarcinogenic risk drivers in surface soil. The RME HI for exposure to subsurface soil in the industrial scenario is 1.1E-04, as shown in Table 7-2. 2,6-Dinitrotoluene, bis(2-ethylhexyl)phthalate, and naphthalene are the noncarcinogenic risk drivers in subsurface soil. Each of these HI values is much less than 1.

Table 7-1

COMPARISON OF SURFACE SOIL DATA TO EPA REGION IX INDUSTRIAL SOIL PRGs
FORMER FUEL FARM
NAS BARBERS POINT

Compound	PRG_{ca} (mg/kg)	PRG_{nc} (mg/kg)	Maximum Concentration (mg/kg) EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%	RME Concentration (mg/kg) EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%
Bis(2-ethylhexyl)phthalate	1.4E+02	1.4E+04	1.30E-01	No	No	1 E-09	0	9.5E-06	20	1.30E-01	No	No	1 E-09	0	9.5E-06	28
Diethyl phthalate	-	5.5E+05	5.90E-02	No	No			1.1E-07	0	5.90E-02	No	No			1.1E-07	0
Methylene chloride	2.5E+01	1.1E+04	1.40E-02	No	No	5 E-10	0	1.3E-06	3	8.00E-03	No	No	3 E-10	0	7.6E-07	2
Anthracene	-	1.9E+05	5.80E-02	No	No			3.1E-07	1	5.80E-02	No	No			3.1E-07	1
Benz[a]anthracene	2.6E+00	-	2.00E-01	No	No	8 E-08	9			1.86E-01	No	No	7 E-08	9		
Benzo[a]pyrene	2.6E-01	-	1.60E-01	No	No	6 E-07	75			1.60E-01	No	No	6 E-07	75		
Benzo[b]fluoranthene	2.6E+00	-	2.50E-01	No	No	1 E-07	12			2.50E-01	No	No	1 E-07	12		
Benzo[k]fluoranthene	2.6E+01	-	8.40E-02	No	No	3 E-09	0			8.40E-02	No	No	3 E-09	0		
Chrysene	2.6E+02	-	2.20E-01	No	No	8 E-10	0			2.20E-01	No	No	8 E-10	0		
Fluoranthene	-	2.7E+04	4.70E-01	No	No			1.7E-05	36	2.74E-01	No	No			1.0E-05	30
Indeno[1,2,3-cd]pyrene	2.6E+00	-	7.40E-02	No	No	3 E-08	3			7.40E-02	No	No	3 E-08	3		
Pyrene	-	2.0E+04	4.00E-01	No	No			2.0E-05	41	2.68E-01	No	No			1.3E-05	39
			TOTAL			8 E-07	100	4.8E-05	100	TOTAL			8 E-07	100	3.4E-05	100

Notes: Only analytes that have EPA Region IX PRGs and that were detected at least once in surface soils are included in this table.
RME (Reasonable Maximum Exposure) is defined as the lesser of the 95 percent upper confidence limit of the mean and the maximum detected concentration.
PRGs are EPA Region IX Preliminary Remediation Goals for Industrial Soils (EPA 1995a).
PRG_{ca} = PRG based on carcinogenic effects.
PRG_{nc} = PRG based on noncarcinogenic effects.
EPC = Exposure Point Concentration.
ECR = Excess Cancer Risk.
HI = Noncarcinogenic Hazard Index.
% column contains the percentage of the total ECR or HI contributed by that analyte.
Assuming no synergistic or antagonistic interactions, total ECRs and HIs are the sum of the individual ECRs and HIs.

Table 7-2

COMPARISON OF SUBSURFACE SOIL DATA TO EPA REGION IX INDUSTRIAL SOIL PRGs
FORMER FUEL FARM
NAS BARBERS POINT

Compound	PRG_{ca} (mg/kg)	PRG_{nc} (mg/kg)	Maximum Concentration (mg/kg)							RME Concentration (mg/kg)						
			EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%	EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%
Acetone	-	8.4E+03	2.10E+00	No	No			2.5E-04	27	3.75E-02	No	No			4.4E-06	4
Bis(2-ethylhexyl)phthalate	1.4E+02	1.4E+04	2.10E+00	No	No	2 E-08	94	1.5E-04	17	2.30E-01	No	No	2 E-09	86	1.7E-05	16
2,6-Dinitrotoluene	-	6.8E+02	4.20E-02	No	No			6.2E-05	7	4.20E-02	No	No			6.2E-05	58
Ethylbenzene	-	1.3E+04	9.60E-01	No	No			7.2E-05	8	9.43E-03	No	No			7.0E-07	1
Methylene chloride	2.5E+01	1.1E+04	2.70E-02	No	No	1 E-09	6	2.6E-06	0	7.03E-03	No	No	3 E-10	14	6.7E-07	1
2-Butanone	-	3.4E+04	1.30E-02	No	No			3.9E-07	0	5.57E-03	No	No			1.7E-07	0
Fluoranthene	-	2.7E+04	6.70E-02	No	No			2.5E-06	0	6.70E-02	No	No			2.5E-06	2
Naphthalene	-	9.5E+03	1.50E-01	No	No			1.6E-05	2	1.50E-01	No	No			1.6E-05	15
Pyrene	-	2.0E+04	5.00E-02	No	No			2.4E-06	0	5.00E-02	No	No			2.4E-06	2
Toluene	-	6.9E+03	3.50E-02	No	No			5.0E-06	1	6.46E-03	No	No			9.3E-07	1
Xylene (mixed)	-	4.6E+04	1.60E+01	No	No			3.4E-04	38	1.77E-02	No	No			3.8E-07	0
			TOTAL			2 E-08	100	9.1E-04	100	TOTAL			2 E-09	100	1.1E-04	100

Notes: Only analytes that have EPA Region IX PRGs and that were detected at least once in subsurface soils are included in this table.
RME (Reasonable Maximum Exposure) is defined as the lesser of the 95 percent upper confidence limit of the mean and the maximum detected concentration.
PRGs are EPA Region IX Preliminary Remediation Goals for Industrial Soils (EPA 1995a).
PRG_{ca} = PRG based on carcinogenic effects.
PRG_{nc} = PRG based on noncarcinogenic effects.
EPC = Exposure Point Concentration.
ECR = Excess Cancer Risk.
HI = Noncarcinogenic Hazard Index.
% column contains the percentage of the total ECR or HI contributed by that analyte.
Assuming no synergistic or antagonistic interactions, total ECRs and HIs are the sum of the individual ECRs and HIs.

Table 7-3

COMPARISON OF SURFACE SOIL DATA TO EPA REGION IX RESIDENTIAL SOIL PRGs
FORMER FUEL FARM
NAS BARBERS POINT

Compound	PRG_{ca} (mg/kg)	PRG_{nc} (mg/kg)	Maximum Concentration (mg/kg) EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%	RME Concentration (mg/kg) EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%
Bis(2-ethylhexyl)phthalate	3.2E+01	1.3E+03	1.30E-01	No	No	4 E-09	0	1.0E-04	20	1.30E-01	No	No	4 E-09	0	1.0E-04	28
Diethyl phthalate	-	5.2E+04	5.90E-02	No	No			1.1E-06	0	5.90E-02	No	No			1.1E-06	0
Methylene chloride	1.1E+01	2.1E+03	1.40E-02	No	No	1 E-09	0	6.8E-06	1	8.00E-03	No	No	7 E-10	0	3.9E-06	1
Anthracene	-	1.9E+04	5.80E-02	No	No			3.0E-06	1	5.80E-02	No	No			3.0E-06	1
Benz[a]anthracene	6.1E-01	-	2.00E-01	No	No	3 E-07	9			1.86E-01	No	No	3 E-07	9		
Benzo[b]fluoranthene	6.1E-01	-	2.50E-01	No	No	4 E-07	12			2.50E-01	No	No	4 E-07	12		
Benzo[k]fluoranthene	6.1E+00	-	8.40E-02	No	No	1 E-08	0			8.40E-02	No	No	1 E-08	0		
Benzo[a]pyrene	**6.1E-02**	-	**1.60E-01**	**YES**	No	**3 E-06**	**75**			**1.60E-01**	**YES**	No	**3 E-06**	**75**		
Chrysene	6.1E+01	-	2.20E-01	No	No	4 E-09	0			2.20E-01	No	No	4 E-09	0		
Fluoranthene	-	2.6E+03	4.70E-01	No	No			1.8E-04	36	2.74E-01	No	No			1.1E-04	30
Indeno[1,2,3-cd]pyrene	6.1E-01	-	7.40E-02	No	No	1 E-07	3			7.40E-02	No	No	1 E-07	3		
Pyrene	-	2.0E+03	4.00E-01	No	No			2.0E-04	41	2.68E-01	No	No			1.4E-04	39
			TOTAL			4 E-06	100	5.0E-04	100	TOTAL			3 E-06	100	3.5E-04	100

Notes: Only analytes that have EPA Region IX PRGs and that were detected at least once in surface soils are included in this table.
RME (Reasonable Maximum Exposure) is defined as the lesser of the 95 percent upper confidence limit of the mean and the maximum detected concentration.
PRGs are EPA Region IX Preliminary Remediation Goals for Residential Soils (EPA 1995a).
PRG_{ca} = PRG based on carcinogenic effects.
PRG_{nc} = PRG based on noncarcinogenic effects.
EPC = Exposure Point Concentration.
ECR = Excess Cancer Risk.
HI = Noncarcinogenic Hazard Index.
PRG_{ca} based on exposure to individuals from 0 to 30 years of age.
PRG_{nc} based on exposure to children from 0 to 6 years of age.
% column contains the percentage of the total ECR or HI contributed by that analyte.
Chemicals printed in bold type were detected at concentrations exceeding the residential PRGs.
Assuming no synergistic or antagonistic interactions, total ECRs and HIs are the sum of the individual ECRs and HIs.

Table 7-4

COMPARISON OF SUBSURFACE SOIL DATA TO EPA REGION IX RESIDENTIAL SOIL PRGs
FORMER FUEL FARM
NAS BARBERS POINT

Compound	PRG_{ca} (mg/kg)	PRG_{nc} (mg/kg)	Maximum Concentration (mg/kg)							RME Concentration (mg/kg)						
			EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%	EPC	> PRG_{ca}?	> PRG_{nc}?	ECR	%	HI	%
Acetone	-	2.0E+03	2.10E+00	No	No			1.0E-03	21	3.75E-02	No	No			1.8E-05	2
Bis(2-ethylhexyl)phthalate	3.2E+01	1.3E+03	2.10E+00	No	No	7 E-08	96	1.6E-03	32	2.30E-01	No	No	7 E-09	92	1.8E-04	18
2,6-Dinitrotoluene	-	6.5E+01	4.20E-02	No	No			6.4E-04	13	4.20E-02	No	No			6.4E-04	65
Ethylbenzene	-	2.9E+03	9.60E-01	No	No			3.4E-04	7	9.43E-03	No	No			3.3E-06	0
Methylene chloride	1.1E+01	2.1E+03	2.70E-02	No	No	2 E-09	4	1.3E-05	0	7.03E-03	No	No	6 E-10	8	3.4E-06	0
2-Butanone	-	8.7E+03	1.30E-02	No	No			1.5E-06	0	5.57E-03	No	No			6.4E-07	0
Fluoranthene	-	2.6E+03	6.70E-02	No	No			2.6E-05	1	6.70E-02	No	No			2.6E-05	3
Naphthalene	-	1.6E+03	1.50E-01	No	No			9.1E-05	2	1.50E-01	No	No			9.1E-05	9
Pyrene	-	2.0E+03	5.00E-02	No	No			2.6E-05	1	5.00E-02	No	No			2.6E-05	3
Toluene	-	1.9E+03	3.50E-02	No	No			1.8E-05	0	6.46E-03	No	No			3.4E-06	0
Xylene (mixed)	-	1.3E+04	1.60E+01	No	No			1.2E-03	24	1.77E-02	No	No			1.3E-06	0
			TOTAL			7 E-08	100	5.0E-03	100	TOTAL			8 E-09	100	9.9E-04	100

Notes: Only analytes that have EPA Region IX PRGs and that were detected at least once in subsurface soils are included in this table.
RME (Reasonable Maximum Exposure) is defined as the lesser of the 95 percent upper confidence limit of the mean and the maximum detected concentration.
PRGs are EPA Region IX Preliminary Remediation Goals for Residential Soils (EPA 1995a).
PRG_{ca} = PRG based on carcinogenic effects.
PRG_{nc} = PRG based on noncarcinogenic effects.
EPC = Exposure Point Concentration.
ECR = Excess Cancer Risk.
HI = Noncarcinogenic Hazard Index.
PRG_{ca} based on exposure to individuals from 0 to 30 years of age.
PRG_{nc} based on exposure to children from 0 to 6 years of age.
% column contains the percentage of the total ECR or HI contributed by that analyte.
Assuming no synergistic or antagonistic interactions, total ECRs and HIs are the sum of the individual ECRs and HIs.

Exposure to Soil Under Future Residential Land Use

Excess cancer risks under the residential land use scenario are calculated for 0- to 30-year-old individuals. The RME excess cancer risk for exposure to surface soil under the residential scenario is 3E-06, as shown in Table 7-3. This value slightly exceeds the point-of-departure excess cancer risk of 1E-06 but is less than the trigger level for remediation of 1E-04. Carcinogenic PAHs, including benzo(a)pyrene, benzo(b)-fluoranthene, and benz(a)anthracene, are the cancer risk drivers in surface soil. The RME excess cancer risk for exposure to subsurface soil under the residential scenario is 8E-09, as shown in Table 7-4. Bis(2-ethylhexyl)phthalate is the cancer risk driver in subsurface soil. The RME excess cancer risk is less than the EPA point-of-departure risk.

HI values under the residential land use scenario are calculated for 0- to 6-year-old children. The RME HI for exposure to surface soil under the residential scenario is 3.5E-04, as shown in Table 7-3. The RME HI for exposure to subsurface soil in the residential scenario is 9.9E-04, as shown in Table 7-4. Noncarcinogenic risk drivers are pyrene, fluoranthene, and bis(2-ethylhexyl)phthalate in the surface soil, and 2,6-dinitrotoluene and bis(2-ethylhexyl)phthalate in subsurface soil. Each of these HI values is much less than 1.

Bis(2-ethylhexyl)phthalate was detected in one ground-water sample at a concentration greater than the tap water PRG. Because this compound was recognized as a common laboratory contaminant and was detected only once, this detection is not considered to be significant. The only other analytes detected in ground water were TFH compounds, which do not have EPA Region IX PRGs. Therefore, ground water was not further considered in the PRE. Site-related risks are believed to be much less than the EPA trigger level for remediation and the HI level of concern.

7.4 Conclusions

The screening-level RME excess cancer risks and HIs for surface and subsurface soil are less than the EPA trigger levels for remediation in all cases. Because of the very small number of PRG exceedances in site soil samples, a site-specific PRE is not necessary. Risks to current site workers, future site workers, and future site residents from exposure to site-related contaminants are minimal.

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SECTION 8
SCOPING PHASE ECOLOGICAL RISK ASSESSMENT

An Ecological Risk Assessment (ERA) is mandated by CERCLA, as amended by SARA. An addendum to CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), requires that ERAs be performed to:

- Assess the potential for adverse effects to natural resources as a result of exposure to hazardous materials;
- Assess threats to sensitive habitats and critical habitats of species protected under the Endangered Species Act;
- Assess the degree of cleanup required at waste sites to reduce risk to acceptable levels;
- Evaluate the potential risk to the environment during selection of remedial alternatives, if remediation is deemed necessary; and
- Evaluate the effectiveness of selected alternatives, if remediation is implemented.

8.1 OBJECTIVES

The objective of this ERA is to evaluate the potential for adverse effects to biological resources resulting from exposure to environmental contaminants present at the Former Fuel Farm. The initial phase of the ERA is a scoping phase in which, based on available information, biological conditions are evaluated in relation to assessment goals in order to establish a framework for determining the potential risk of adverse effects to ecological receptors.

8.2 SCOPING

In order for a site to pose a substantive risk of adverse effects to ecological receptors, it must: 1) have ecological receptors that either utilize the site or areas in which site-related contaminants have migrated; 2) contain contaminants in concentrations that may induce

adverse effects in ecological receptors; and 3) have exposure pathways linking contaminants to receptor organisms. Furthermore, ecological receptors at the site must spend a majority of their life history at the site or derive a significant proportion of their nutritional requirements from the site, and the ecological receptors present must relate to the established assessment goals for the site. If the information available from the scoping phase is adequate to evaluate these criteria, and one or more of them are not met, the site is then recommended for no further action, at which point the ERA is considered complete and the assessment process is concluded. If all these criteria for the presence of potential ecological risk are met, the risk assessment process proceeds to the screening ecological risk assessment phase, during which adverse effects associated with contaminant exposure are quantified.

The specific tasks undertaken in this scoping phase include: 1) describing biological conditions at the site; 2) establishing goals for the risk assessment; 3) identifying target ecological receptors for the risk assessment; and 4) correlating existing biological conditions with the risk assessment goal to draw conclusions regarding potential adverse effects to ecological receptors.

8.2.1 Existing Biological Conditions

Existing biological conditions at the site are described in detail in Section 3.9. The Former Fuel Farm consists of disturbed habitat dominated by *Achyranthes aspera* (an introduced weed), khaki weed, buffel grass, Chinese violet, swollen fingergrass, weedy heliotrope, and koa haole seedlings. No wildlife species were identified at the site. Due to the extent of onsite disturbance, there currently appears to be negligible potential for development or establishment of viable habitat.

8.2.2 Target Receptor Identification

The ERA assessment goal for NAS Barbers Point is to protect species and habitats considered sensitive by natural resource trustees from adverse effects resulting from site-related contaminants.

Establishing risk assessment goals requires the identification of the ecological values which are potentially at risk (Suter 1993). These values include ecological features or resources that have substantial aesthetic, social, or economic value or are important in the biological functions or biodiversity of the ecosystem. An ecological receptor is an organism, population, community, or ecosystem that may potentially be affected by exposure to environmental stressors, such as chemical contaminants. A target receptor is an ecological receptor designated to represent the risk assessment goal established for the site, including endangered or threatened species or otherwise sensitive organisms or habitats.

Given the industrialized nature of the Former Fuel Farm and the lack of sensitive species and high-quality biological habitats, there are no ecological receptors which are consistent with the established assessment goal.

8.3 Conclusions and Recommendations

Since no target receptors were present which relate to the risk assessment goals identified for this site, there are no significant ecological risks associated with exposure to chemical stressors at the Former Fuel Farm.

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SECTION 9
SUMMARY

The Abbreviated RI at the Former Fuel Farm was conducted to assess whether environmental contamination is present within soils and ground water at levels which pose an unacceptable risk to human health or the ecological environment. The following sections provide a brief summary of the findings of the investigation and of the conclusions developed from these findings.

- Subsurface lithology at the site generally consists of a thin (2 to 8 inches thick) upper fill layer, and an underlying bedrock comprised of coralline limestone with alternating intervals of clastic coralline sandstone. Poorly graded, loose sand fill was encountered in borings B-04 and B-06 at greater depths; this sand was probably backfill placed into a former UST pit.

- The ground-water table occurs at approximately 25 to 30 feet bgs. The bedrock exhibits evidence of solution porosity; as a result, the hydraulic conductivity of the bedrock aquifer is high.

- In soil gas samples, only two VOCs, benzene and ethylbenzene, were detected. These compounds were detected in only one soil gas sample. However, TPH was detected in numerous soil gas samples. TPH in soil gas was detected at relatively low concentrations throughout the fuel farm area; however, the number and concentration of TPH detections are higher in the immediate vicinity of the two areas associated with former MoGas USTs H17/H18 and J2/J3.

- In the soil medium, detected chemicals included several VOCs, SVOCs, and TFH. The only site-related compound which was detected at concentrations exceeding EPA Region IX residential or industrial PRGs was an SVOC compound of the PAH group, benzo(a)pyrene. TFH was also frequently detected, but at relatively low levels. However, because of the low toxicity of most of the TFH constituent compounds, a PRG has not been established for TFH. The presence of toxic constituent compounds of TFH are independently analyzed by VOC and SVOC analyses. In general, detected contaminants were reported at low concentrations in all borings. The TFH results suggest slightly higher concentrations and a more prevalent distribution in the area near the former J2/J3 MoGas UST location.

- In the ground-water medium, only bis(2-ethylhexyl)phthalate (an SVOC) and TFH were present at detectable levels. No VOCs were present at levels above the detection limit. Bis(2-ethylhexyl)phthalate was present at levels exceeding its tap water PRG, but is considered a laboratory contaminant. Only the downgradient monitoring well contained detectable levels of TFH. Again, because of the relatively low toxicity of the TFH constituent compounds, a tap water PRG has not been established for TFH.

- A conservative screening PRE was performed for the Former Fuel Farm. Current and future industrial land use and future residential land use were evaluated. Ground water beneath the site is not currently used as a drinking water source. Future exposure pathways to ground water are considered potentially complete due to the presence of a pilot desalination plant near the base. However, because the only analytes detected in ground water were TFH compounds and bis(2-ethylhexyl)phthalate, a common laboratory contaminant, ground water was not further considered in the PRE. Results of the screening phase PRE are as follows:

    - The RME excess cancer risks for exposure to surface and subsurface soil under an industrial scenario are 8E-07 and 2E-09, respectively. Carcinogenic risk drivers are carcinogenic PAHs, bis(2-ethylhexyl)-phthalate, and methylene chloride. The RME HIs for exposure to surface and subsurface soil under an industrial scenario are 3.4E-05 and 1.1E-04, respectively. Noncarcinogenic risk drivers include bis(2-ethylhexyl)phthalate, 2,6-dinitrotoluene, fluoranthene, naphthalene, and pyrene.

    - The RME excess cancer risks for exposure to surface and subsurface soil under a residential scenario are 3E-06 and 8E-09, respectively. Carcinogenic risk drivers are carcinogenic PAHs and bis(2-ethylhexyl)phthalate. The RME HIs for exposure to surface and subsurface soil under a residential scenario are 3.5E-04 and 9.9E-04, respectively. Noncarcinogenic risk drivers include bis(2-ethylhexyl)-phthalate, 2,6-dinitrotoluene, fluoranthene, and pyrene.

- Evaluation of risks pertaining to the ecological environment is focused on effects to rare and/or endangered species and sensitive habitats. No such species or habitats were present at the Former Fuel Farm.

SECTION 10
CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Based on the data generated during the RI and subsequent evaluation of those data, the following conclusions have been developed.

- Although residual fuel hydrocarbon contamination is present in the vicinity of the know spill at the Former Fuel Farm, TFH levels in soil are relatively low, and ground water has not been impacted.
- The RME excess cancer risks and HIs for surface and subsurface soil are less than the EPA trigger levels for remediation in all cases. In addition, risk associated with ground water is insignificant, due to the absence of toxic analytes. Site-related contaminants in soil at the Former Fuel Farm do not pose unacceptable health risks to human receptors.
- The Former Fuel Farm does not pose a significant risk to the ecological environment, because no target ecological receptors are present.

RECOMMENDATIONS

Based on the Abbreviated RI findings, the site does not pose a significant risk to human health or the environment. Therefore, no further investigative or remedial actions are warranted at the Former Fuel Farm.

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SECTION 11
REFERENCES

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