DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N. H. 03804-5000

IN REPLY REFER TO:

September 8, 2000

MEMORANDUM

FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD (RAB) CERCLA REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

The next RAB meeting will be held on Thursday, September 21, 2000 at 7 p.m. at the Courtyard Marriott in Portsmouth, NH. There will be presentations on the draft No Further Action Decision Documents for Sites 26 and 27 and the cut-off barrier component of the OU3 Feasibility Study Report.

Your participation is greatly appreciated. If you are unable to attend the meeting, please call me at (207) 438-3830. I look forward to seeing you at the RAB meeting.

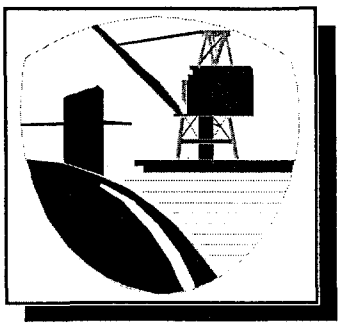
Sincerely,

Ken

Ken Plaisted
Navy Co-Chairman
Restoration Advisory Board

Distribution:

Doug Bogen
Michele Dionne
Phil McCarthy
Roger Wells
Jeff Clifford
Eileen Foley
Jack McKenna
Carolyn Lepage
Mary Menconi
Mary Marshall
Onil Roy
Johanna Lyons
EPA Region I (M. Cassidy)
MEDEP (Iver MacLeod)
NOAA (K. Finkelstein)
MEDMR (D. Card)
NHFG (C. McBane)
USFWS (K. Munney)
North Div (F. Evans)
COMSUBGRU TWO (R. Jones)
Portsmouth Naval Shipyard (Codes 106, 106.3, 106.3R, 100PAO, 105, 105.5, NRRO)



PORTSMOUTH NAVAL SHIPYARD

RESTORATION ADVISORY BOARD

AGENDA

Date - September 21, 2000

Place - Courtyard Marriott, Portsmouth, NH

Time - 7 p.m. - 9 p.m.

Introductions

Status of Work

Regulator Updates

No Further Action Decision Documents for Sites 26 & 27

Cutoff Barriers Component of the draft final OU3 Feasibility Study Report

Other Issues as Required

PORTSMOUTH NAVAL SHIPYARD
INSTALLATION RESTORATION PROGRAM
STATUS OF WORK
21 SEPTEMBER 2000

SITE STATUS

OU 1 (SITES 10, Battery Acid Tank, & 21, Acid/Alkaline Tank #28)

Data Quality Objective meeting to be scheduled to determine additional work is needed at Site 10.

OU 2 (SITES 6, DRMO, & 29, Incinerator Site)

A removal action has been completed for Site 6 for slope stabilization along the shoreline. Closeout Report and Action Memorandum to be issued.

A risk assessment has been submitted for review and comment.

OU 3 (SITES 8, Jamaica Island Landfill, 9, Mercury Burial Vaults, & 11, Waste Oil Tanks)

The Multi-Sensor Towed Array Detection System report is undergoing review and comment.

Test pit excavations completed. Preliminary Test pitting Package submitted on March 25, 1999. The draft Test Pitting Report has submitted for review and comment.

The draft final Feasibility Study is undergoing review and comment.

Removal action taken at Mercury Burial Vault II. Closeout Report and Action Memorandum to be issued.

OU 4 (Areas off-shore that were potentially impacted by on-shore IRP sites and Sites 5 and 26)

The third round of interim off-shore monitoring was completed in August 2000.

The draft No Further Action Decision Document for Site 26 has been submitted for review and comment.

OU 5 (SITE 27, Berth 6 Industrial Area [formerly Fuel Oil Spill Area])

The draft No Further Decision Document for Site 27 has been submitted for review and comment.

Site Screening Areas:

SITES 30, Galvanizing Plant (Building 184): 31, West Timber Basin; 32, Topeka Pier.

Site 30 Subfloor investigation scheduled for Fall 2000.

SITE 34, Oil Gasification Plant (Building 62)

The ash pile was covered with geotextile liner, top soil and grass mat to prevent erosion. A closeout report and Action Memorandum will be prepared.

PORTSMOUTH NAVAL SHIPYARD
INSTALLATION RESTORATION PROGRAM
STATUS OF WORK
21 SEPTEMBER 2000

DOCUMENT STATUS

INTERIM MONITORING PLAN

PURPOSE – To establish monitoring methods to determine whether the remedial action objectives of the interim record of decision are being met.

STATUS – Provide responses to comments on the final interim monitoring plan.

OU 3 FEASIBILITY STUDY (FS)

PURPOSE – To establish remedial action objectives, screen remedial technologies, and assemble, evaluate, and compare remedial alternatives that will be used in selecting an alternative for OU3.

STATUS – Comments on draft final Feasibility Study report received.

NEXT ACTION – Respond to comments on draft final FS and issue final FS.

OU 3 TEST PITTING REPORT

PURPOSE – To summarize results of test pitting performed at Jamaica Island Landfill in February 2000.

STATUS –Comments received on draft report.

NEXT ACTION – Respond to comments on draft report and issue draft final report

OU2 REVISED RISK ASSESSMENT

PURPOSE: - To calculate and evaluate the risk to likely human receptors under current and potential future land use scenarios.

STATUS: - Draft final report submitted for review and comment.

NEXT ACTION: - Receive comments on the draft final report.

AMENDED SITE MANAGEMENT PLAN (SMP)

PURPOSE: - The SMP serves as the schedule for implementation of the Installation Restoration Program.

STATUS: - Received comments on draft final SMP.

NEXT ACTION: - Respond to comments and issue final SMP.

PORTSMOUTH NAVAL SHIPYARD
INSTALLATION RESTORATION PROGRAM
STATUS OF WORK
21 SEPTEMBER 2000

BUILDING 184 SUBFLOOR INVESTIGATION WORKPLAN

PURPOSE: - Investigate acid/caustic pit inside building.

STATUS: - Received comments on draft work plan.

NEXT ACTION: - Respond to comments on draft work plan.

NO FURTHER ACTION DECISION DOCUMENTS FOR SITES 26 & 27

PURPOSE: - Document serves as the statement and basis of selection for No Further Action under CERCLA for these two sites.

STATUS: - Draft reports submitted for review and comment.

NEXT ACTION: - Receive comments on draft reports.

PORTSMOUTH NAVAL SHIPYARD
INSTALLATION RESTORATION PROGRAM
STATUS OF WORK
21 SEPTEMBER 2000

DOCUMENT SCHEDULE

Seep/Sediment Report	**COMPLETED**
Site Screening Report, Sites 30, 31, and 32	**COMPLETED**
MTADS Survey Report Issue final report	November 2000
OU2 Revised Risk Assessment Receive comments on draft final report	October 7, 2000
OU3 Feasibility Study Submit final FS	October 11, 2000
OU4 Interim Monitoring Plan Respond to comments on final report	August 2000
Site Management Plan Issue final SMP	
Building 184 Subfloor Investigation Respond to Comments	
No Further Action Decision Documents Sites 26 &27 Receive comments on draft report	October 13, 2000
OU 3 Test Pitting Report Receive comments on draft report	September 18, 2000
OU4 Interim Monitoring Issue Round 2 Data package Issue PRG Development Report	 October 3, 2000 November 18, 2000

NO FURTHER ACTION DECISION DOCUMENTS FOR SITES 26 AND 27

Portsmouth Naval Shipyard

Restoration Advisory Board Meeting

September 21, 2000

OBJECTIVES OF PRESENTATION

- Review description and information on Sites 26 and 27.
- Provide reasons for No Further Action Decisions under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for Sites 26 and 27.
- Identify the programs or plans that sites will be referred to following No Further Action Decisions under CERCLA.

P109802.rev

Site 26 Location and Description

Site 26 (Portable Oil/Water Tanks)

Location:

- Tanks generally located within the Dry Docks Area of Concern (AOC).
- Only potential offshore impacts, therefore, included in Operable Unit (OU) 4.

Description:

- Consists of portable tanks.
- Used from 1960 to present for cleaning liquid from submarine bilges and various other processes.
  - Resulting oily wastes were pumped to railroad tank cars and disposed of off-base.
  - Currently, oily wastes are transferred to the hazardous waste transfer facility for off-base disposal.

P109802.rev

Site 26 Location and Description Continued

Description - continued

- Operations have been modified and equipment improved to prevent spillage and to improve handling methods.
- Any potential impacts from spills, which occurred before improvements, are being addressed as part of OU4.
- The only wastes associated with Site 26 are petroleum wastes.

P109802.rev

Site 27 Location and Description

Site 27 (Berth 6 Industrial Area)

Location:

- Located in the southwestern portion of PNS.
- Located in Berth 6 in the Controlled Industrial Area.
- Only site included in OU5.

Description:

- Consists of TPH-contaminated soil surrounding a former petroleum pipeline.
- The site is covered with asphalt.
- Groundwater is brackish/saline and is not used for drinking.

P109802.rev

Site 27 Location and Description Continued

Description - continued

- A risk assessment was conducted to evaluated future potential risks for occupational exposure of subsurface soils. The cumulative cancer and non-cancers risks were less than USEPA target or acceptable risk levels and less than MEDEP risk guidelines.
- Onshore/offshore contaminant fate and transport modeling indicated that groundwater migration is not impacting the offshore.
- The only potential contaminant of concern at Site 27 is petroleum product.
- Tank farm demolition removed or properly abandoned all fuel oil piping in place. Soil samples in area meet MEDEP criteria for an industrial site

P109802.rev

Reasons for NFA Decisions

The only contaminant of concern related to Site 26 and Site 27 is petroleum product. Petroleum product is exempt from the definition of hazardous substances, pollutants, and contaminants under CERCLA §101. Therefore, Site 26 and Site 27 are recommended for No Further Action under CERCLA.

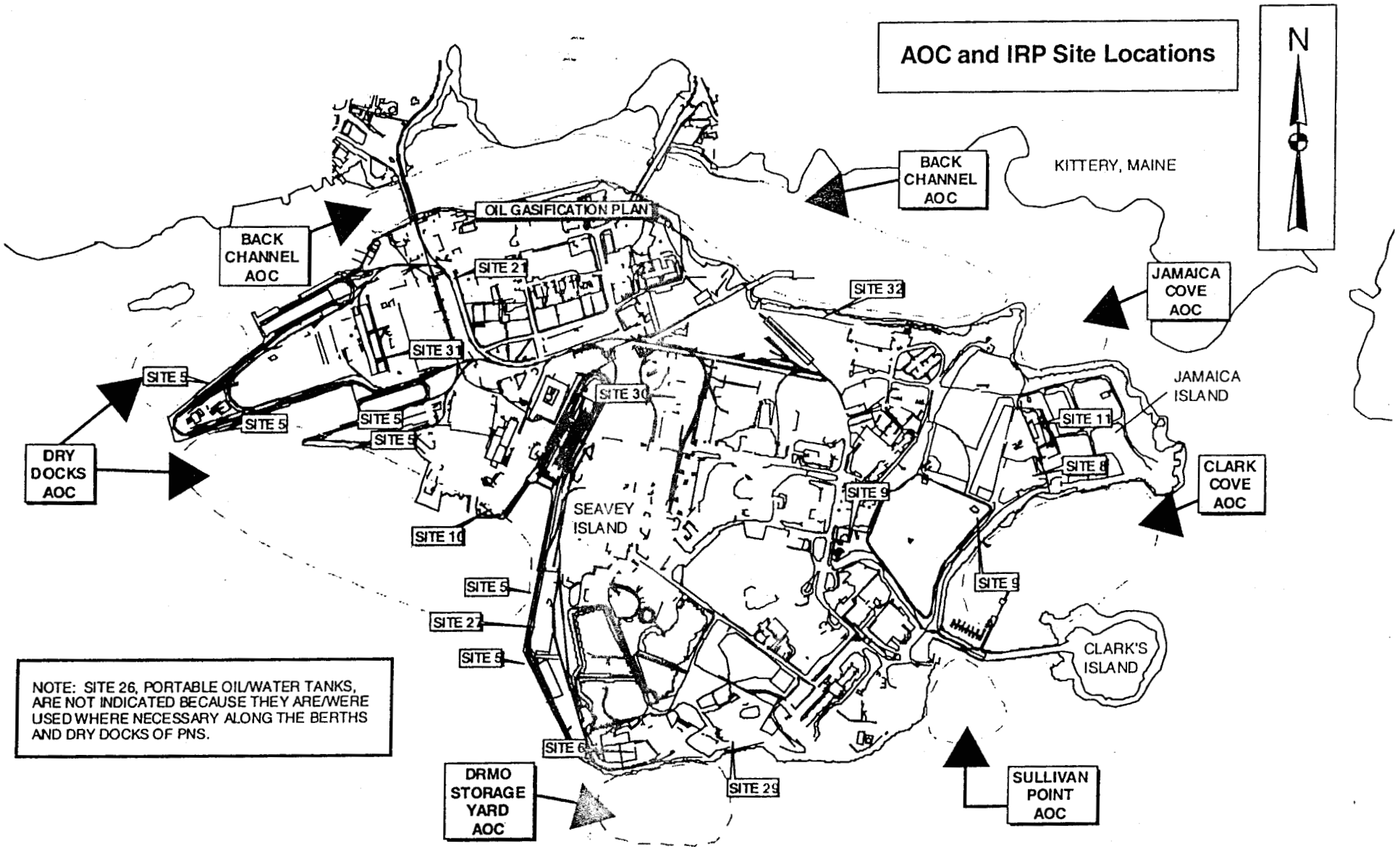
P109802.rev

What programs/plans will handle the sites?

- The portable waste oil tanks of Site 26 are managed under the PNS Oil Spill Prevention Control and Countermeasure Plan. Site 26 is not referred to another regulatory program because no additional action is necessary to protect human health and the environment.

- Site 27 is referred to the State of Maine's petroleum program.

P109802.rev


AOC and IRP Site Locations
N
BACK CHANNEL AOC
KITTERY, MAINE
OIL GASIFICATION PLAN
BACK CHANNEL AOC
SITE 21
SITE 32
JAMAICA COVE AOC
SITE 31
SITE 5
JAMAICA ISLAND
SITE 30
SITE 5
SITE 5
SITE 11
SITE 5
SITE 8
DRY DOCKS AOC
CLARK COVE AOC
SEAVEY ISLAND
SITE 9
SITE 10
SITE 5
SITE 9
SITE 27
CLARK'S ISLAND
SITE 5
NOTE: SITE 26, PORTABLE OIL/WATER TANKS, ARE NOT INDICATED BECAUSE THEY ARE/WERE USED WHERE NECESSARY ALONG THE BERTHS AND DRY DOCKS OF PNS.
SITE 6
SITE 29
DRMO STORAGE YARD AOC
SULLIVAN POINT AOC

ACRONYM LIST

AOC	Area of Concern
AWQC	Ambient Water Quality Criteria
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
FS	Feasibility Study
GRA	General Response Action
MEDEP	Maine Department of Environmental Protection
O&M	Operation and Maintenance
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PNS	Portsmouth Naval Shipyard
RAO	Remedial Action Objective
SWQC	Statewide Water Quality Criteria
TPH	Total Petroleum Hydrocarbons
USEPA	U.S. Environmental Protection Agency

OPERABLE UNIT 3 (OU3) FEASIBILITY STUDY (FS) COMPONENTS TO ADDRESS GROUNDWATER MIGRATION

Portsmouth Naval Shipyard

Restoration Advisory Board Meeting

September 21, 2000

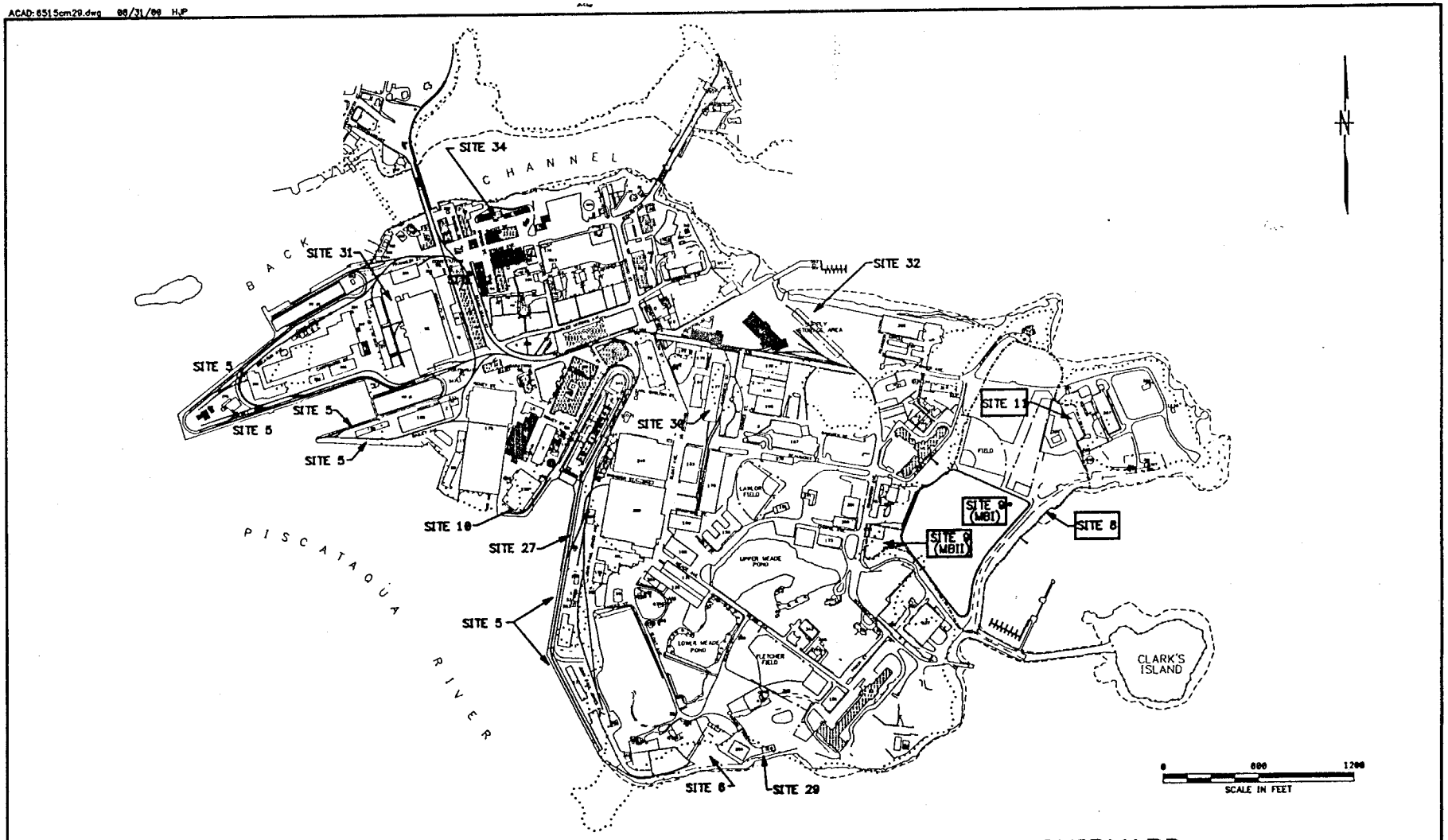


FIGURE 1: FACILITY MAP FOR PORTSMOUTH NAVAL SHIPYARD

SOURCE: FIGURE 1-2 OF FEASIBILITY STUDY REPORT

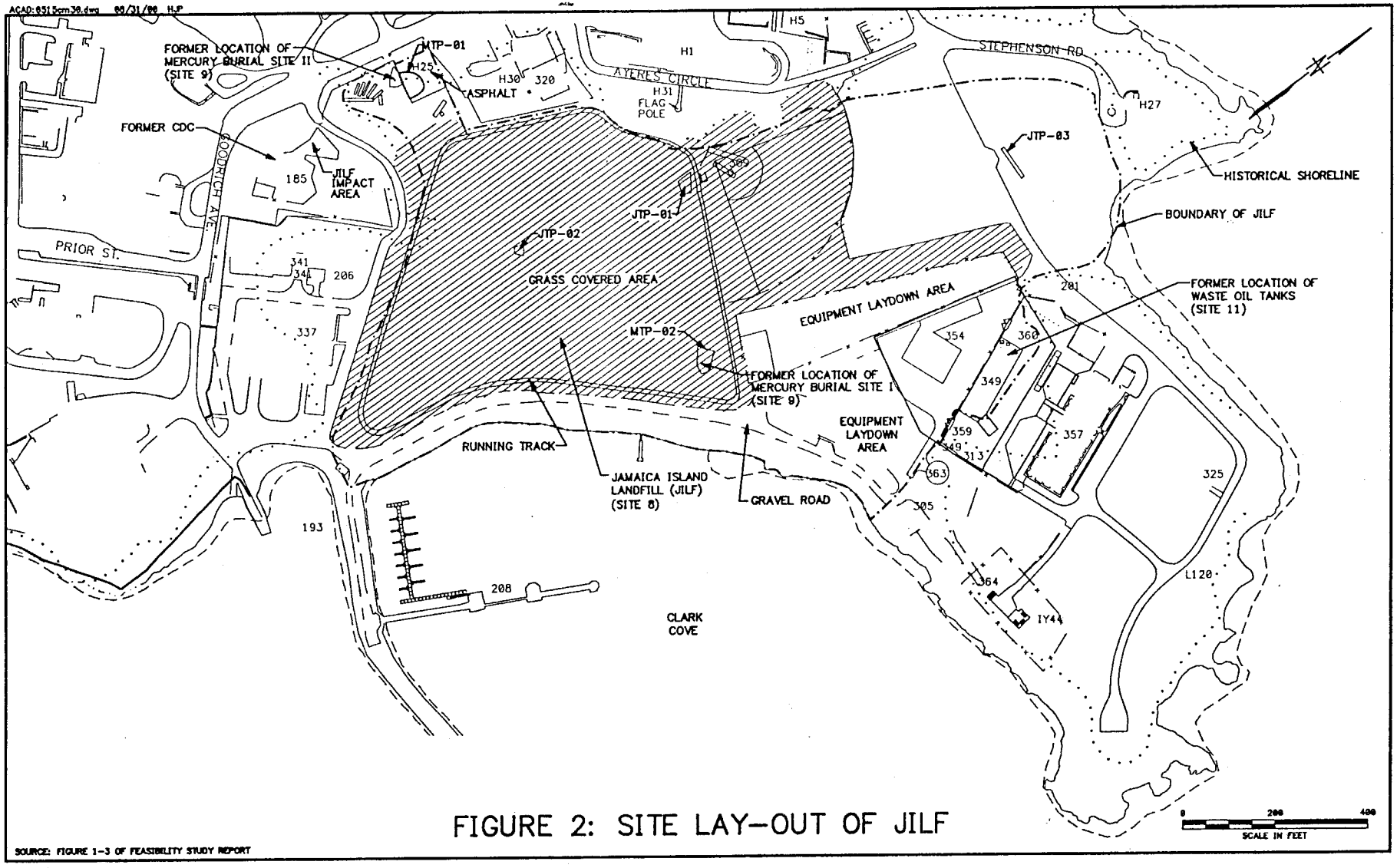


FIGURE 2: SITE LAY-OUT OF JILF

SOURCE: FIGURE 1-3 OF FEASIBILITY STUDY REPORT

Presentation Objectives

- Provide rationale for technology screening
  - Review Contaminants of Concern (COCs), Remedial Action Objective (RAO) and General Response Actions (GRAs)
- Present and screen technologies to address groundwater migration
- Develop alternatives to include retained technologies

P090001

Brackish/Saline Groundwater COCs

- Offshore risks in the vicinity of OU3: Low
- Contaminant Fate and Transport Modeling indicated that surface water concentrations would not exceed AWQCs or SWQCs
- Available surface water data from Piscataqua River support modeling prediction
- Seep concentrations meet AWQCs or SWQCs with appropriate dilution (DDD exception at one Clark Cove location)
- DDD not present in groundwater at comparable levels
- COCs for brackish/saline groundwater are: Copper, Chromium, Lead, Nickel, Mercury, Zinc and PCBs

P090001

Remedial Action Objective

"Ensure that offsite migration of groundwater contaminants do not adversely impact the offshore environment, that is, ensure that AWQC and SWQC are being met at all compliance points based on full mixing."

P090001

General Response Actions to Address Groundwater Migration

- Control using vertical barrier (Slurry wall containment)
- Control using permeable reactive barrier
- Control using upgradient trench
- Monitoring

P090001

Slurry Wall Containment- Circumferential

- Function: Controls groundwater migration entering/leaving the site and controls tidal intrusion

Advantages

1. Maximum containment
2. Minimal O&M compared to other technologies

Disadvantages

1. Short-term concerns during installation
2. Long-term effectiveness for saline/tidal water

P090001

Slurry Wall Containment- Upgradient

- Function: Controls groundwater migration entering the site only

Advantages

1. Fewer short-term concerns during installation
2. Fewer long-term concerns
3. Fewer O&M concerns and lower cost than circumferential

Disadvantages

1. Limited containment (tidal intrusion)
2. Potential change in steady-state conditions

P090001

Permeable Reactive Barriers

- Function: Removes contaminants before groundwater leaves the site

Advantages

1. Fewer O&M concerns compared to other technologies
2. Less potential for changes in steady-state conditions

Disadvantages

1. Limited demonstrated effectiveness for inorganics
2. Limited demonstrated effectiveness for saline/tidal
3. Short-term installation concerns
4. Cost effective only for containment of defined plumes

P090001

Upgradient Trench

- Function: Diverts upgradient groundwater around the site

Advantages

1. Fewer short-term concerns during installation
2. Fewer long-term concerns
3. Less expensive than slurry walls

Disadvantages

1. Limited containment (tidal intrusion)
2. Preferential pathway for upgradient petroleum contamination
3. Potential change in steady-state conditions

P090001

Monitoring

- Function: Provides a method to measure the effects of groundwater migration and/or to ensure a remedy is working effectively

Advantages

1. Minimal concerns during installation
2. No effects on steady-state conditions
3. Less expensive than active control and potential for greater saving

Disadvantage

1. Not an active control mechanism

P090001

Technologies Retained to Address Groundwater Migration

- Circumferential slurry wall as vertical barrier:
  - Alternative 5 component
- Monitoring:
  - Alternatives 2, 3, 4 and 5 component

P090001

Summary

- COCs, the RAO, and GRAs were discussed to identify and screen technologies to address groundwater migration
- Advantages and disadvantages of groundwater control technologies and monitoring were discussed
- Vertical Barriers and Monitoring were retained
  - Alternatives 2, 3 and 4 employ monitoring only
  - Alternative 5 employs circumferential slurry wall and monitoring

P090001

ACRONYM LIST

AOC	Area of Concern
AWQC	Ambient Water Quality Criteria
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
FS	Feasibility Study
GRA	General Response Action
MEDEP	Maine Department of Environmental Protection
O&M	Operation and Maintenance
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PNS	Portsmouth Naval Shipyard
RAO	Remedial Action Objective
SWQC	Statewide Water Quality Criteria
TPH	Total Petroleum Hydrocarbons
USEPA	U.S. Environmental Protection Agency

DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N. H. 03804-5000

IN REPLY REFER TO:

November 2, 2000

MEMORANDUM

FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD CERCLA REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Enclosed please find the draft minutes from the September 21, 2000 Restoration Advisory Board meeting for your review and comment.

Comments are requested by November 20, 2000. You may provide your comments to me at (207) 438-3830.

Sincerely,

Marty Raymond for

Ken Plaisted
Navy Co-Chairman
Restoration Advisory Board

Distribution:
Doug Bogen
Jeff Clifford
Michele Dionne
Eileen Foley
Carolyn Lepage
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EPA (M. Cassidy)
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NHF&G (C. McBane)
MEDEP (I. McLeod)
NORTHDIV (F.Evans)
COMSUBGRU TWO (R. Jones)
Tetra tech NUS (L. Klink, D. Cohen)
PNS (Codes 106, 106.3, 106.3R, 100PAO, 105, 105.5, NRRO)

RESTORATION ADVISORY BOARD MEETING
PORTSMOUTH NAVAL SHIPYARD
MARRIOTT COURTYARD, PORTSMOUTH, NH
SEPTEMBER 21, 2000

The meeting began at 7:10 p.m. and ended at 9:50 p.m. Community members attending were: Doug Bogen, Onil Roy, Michele Dionne, Johanna Lyons, Jeff Clifford, Mary Marshall, Jack McKenna, and Roger Wells; Navy members Ken Plaisted and Fred Evans; and regulatory members Meghan Cassidy (EPA) and Iver McLeod (MEDEP). Others attending were Marty Raymond and Debbie White from Portsmouth Naval Shipyard (PNS) and Carolyn LePage, the Seacoast Anti-Pollution League Technical Advisor. Among the guests were Deborah Cohen and J.P. Kumar from Tetra Tech NUS, Inc. (TtNUS), Kristen Wandland from ENSR and Jennifer Saunders, a reporter for Foster's Daily Democrat and Macy Morse. Community members Phil McCarthy, Mary Menconi, and Eileen Foley were absent.

INTRODUCTION

Ken Plaisted, the Navy co-chair welcomed the Restoration Advisory Board (RAB) and introduced the primary topics of the evening; the No Further Action Decision Documents for Site 26 and 27 and a presentation on the components to address groundwater migration in the draft final Operable Unit 3 (OU3) Feasibility Study (FS).

STATUS OF WORK

Fred Evans provided a handout summarizing the work status. The Navy finalized two documents; the Seep/Sediment Summary Report and the Site Screening Report for Sites 30, 31, and 32. Comments have been received on the draft final OU3 FS and the draft OU3 Test Pitting Report. MTADS Survey Report is scheduled to be issued as a final report in November 2000. Comments on the draft final OU2 risk assessment and the draft No Further Action Decision Documents for Sites 26 and 27 (October 7 and October 13, respectively). The Round 2 Data package and PRG Development Report for OU4 Interim Monitoring will be issued October 3 and November 18, respectively.

The Navy conducted a tour of the Jamaica Island Landfill (JILF) seeps on August 28, 2000. RAB member Johanna Lyons participated. The Navy, EPA, and MEDEP conducted a technical meeting on the OU3 FS seeps/conceptual monitoring on September 13, 2000. The meeting was attended by RAB member Jeff Clifford, who noted that the meeting was informative and provided him with a new perspective of the Navy/regulator interactions. Ken Plaisted encouraged RAB members to participate in such opportunities.

REGULATOR UPDATES

EPA --- Meghan Cassidy presented the RAB with recent EPA activities. EPA has been focusing on finalizing the OU3 Feasibility Study. Comments were submitted during the second week of September. EPA believes that the alternatives presented in OU3 FS are good. The EPA's attorney is currently reviewing MEDEP's additional comments on the draft final FS related to Applicable or Relevant and Appropriate Requirements (ARARs)

to ensure that the issue will be resolved. A technical meeting on the monitoring of the seeps was attended by EPA as well as by Ken Finkelstein (NOAA) and Ken Munney (US Fish and Wildlife Service), who serve as federal natural trustees. Both are comfortable that the seeps pose no significant exposure, and believe that the potential issues outstanding are not significant uncertainties in the risk assessment. Monitoring of the seeps should provide information necessary to reduce the uncertainties and resolve the issue of potential risk. Meghan reiterated that the EPA was ready for remedy selection for OU3.

MEDEP --- Iver McLeod presented the RAB with recent MEDEP activities. MEDEP has responded to the Navy's response to comments on the OU4 Standard Operating Procedures, and the Amended Site Management Plan. The No Further Action Decision Documents for Sites 26 and 27 are currently being reviewed. Iver described the seep technical meeting as productive, and relayed that MEDEP is trying to determine where the Ambient Water Quality Criteria (AWQC) should be applied to the seeps, and whether or not there are exceedences. To date MEDEP feels that it is a data gap, rather than an uncertainty. MEDEP is hopeful to sign a Record of Decision (ROD) that has language that covers their concerns, and does not want a data requirement to hold up the ROD process. Ideally, MEDEP would like to have separate RODs for the groundwater issues and the capping issues at OU3, but acknowledges the time constraints.

NO FURTHER ACTION DECISION DOCUMENTS FOR SITES 26 AND 27

Debbie Cohen of Tetra Tech NUS presented the No Further Action Decision Documents for Sites 26 and 27. The draft documents were distributed in mid-August, and comments are due by October 13, 2000.

Site 26 is the Portable Oil/Water Tanks. The tanks are generally used in the dry dock and berth areas within the Controlled Industrial Area (CIA), but are portable; therefore, Site 26 does not have a specific location. Site 26 is included in OU4, because potential impacts from the site would be to the offshore area. The tanks were used from 1960 to present for temporary storage of liquid removed during processes including cleaning of submarine bilges. All wastes generated at Site 26 are petroleum wastes. The oily waste from the tanks were historically pumped to railroad tank cars and disposed of off-base. Currently, all oily waste is transferred to the hazardous waste transfer facility for off-base disposal. Prior to shipment for disposal, wastes are sampled and characterized. Information from pre-1991 indicated spills had occurred during tank filling. The CIA is paved; therefore, any spills would have run off to the surface water (offshore area). Operations have been modified and equipment improved to prevent future spillage and to improve handling methods. Some modifications include installation of sight level gauges, requirement of a third party to watch tanks for potential overflow, and requirement of the operator to verify liquid level prior to using the tanks. According to the PNS spill logs, one spill at the tanks has occurred since 1996; approximately one pint of oil spilled and was immediately cleaned (no runoff to surface waters occurred).

Site 27 is located in the Berth 6 Industrial Area within the CIA and is the only site included in OU5. The site consists of total petroleum hydrocarbon (TPH)-contaminated soil surrounding a former petroleum pipeline. The contamination occurred in 1978 when the pipeline broke. Soils were excavated, but results of the Remedial Investigation (RI) indicated residual TPH contamination in the soils. The site is covered with asphalt and the groundwater is brackish/saline and cannot be used as a drinking water source. A risk

assessment conducted in 1994 evaluated potential future risks for occupational exposure to subsurface soils. Cumulative cancer and non-cancer risks were less than USEPA target or acceptable risk levels and less than MEDEP risk guidelines. Future residential land use was not evaluated in the risk assessment because located in the CIA, an industrial area of the Shipyard. Since the site is located along the shoreline, onshore/offshore contaminant fate and transport modeling was conducted. The results indicated no potential impact to the offshore from migration of groundwater. Although not in the draft report, the Navy is adding information that the tank farm demolition removed or properly abandoned all fuel oil pipelines in-place that ran through Berth 6. Soil samples meet MEDEP criteria for an industrial site (2,500 parts per million TPH). The Tank Farm Closure Plan, filed with MEDEP, includes all soil TPH data, and the site will be included the Portsmouth Naval Shipyard Master Plan.

The only contaminant of concern at Sites 26 and 27 is petroleum product, which is exempt from the definition of hazardous substances, pollutants, and contaminants under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §101. Therefore, the sites are recommended for No Further Action under CERCLA. The Site 26 tanks are managed under the PNS Oil Spill Prevention Control and Countermeasure Plan, as required by the Clean Water Act. However, because no additional action is necessary to protect human health and the environment, Site 26 has not been referred to another regulatory program. OU4 monitoring offshore under CERCLA does not include petroleum products, but does include metals and polycyclic aromatic hydrocarbons (PAHs), components of petroleum product. This monitoring program includes monitoring offshore of the dry dock area, where the Site 26 tanks are used. Site 27 is referred to the State of Maine's petroleum program, which also handles the Tank Farm.

OPERABLE UNIT 3 (OU3) FEASIBILITY STUDY (FS) COMPONENTS TO ADDRESS GROUNDWATER MIGRATION

Fred Evans introduced the topic to the RAB to clarify that the presentation is based on the draft final FS. The Navy is currently reviewing comments received on the draft final and the issue of AWQC application remains outstanding at this time.

J.P. Kumar of TtNUS, the lead engineer working on the OU3 FS under Mark Perry, a State of Maine certified engineer, presented the components in the OU3 FS to address groundwater migration. Selection of technologies for development of alternatives in the FS involves evaluation of contaminants of concern (COC), the remedial action objective (RAO), or what is to be accomplished, and the general response actions (GRAs), or what the technical strategies could be used to address the problem. At OU3 saline/brackish groundwater, COCs include copper, chromium, lead, nickel, mercury, zinc, and polychlorinated biphenyls (PCBs). The RAO for groundwater migration states that the objective is the ensure groundwater migration offshore does not impact the offshore environment. To do so, groundwater must meet AWQC and State Water Quality Criteria (SWQC) at all compliance points. Four general categories of GRAs were identified for discussion in the presentation based on the GRAs retained as part of an alternative or GRAs where there were recent comments. These are:

1) Control using vertical barrier (slurry wall containment);
2) Control using permeable reactive barrier;
3) Control using an upgradient trench; and

4) Monitoring.

Of these, only the vertical barrier and monitoring were retained for alternative development in the FS. The other GRAs were screened out. Each of the GRAs and the rationale of the screening was presented.

Both circumferential and upgradient-only slurry walls were evaluated. Construction of the slurry wall involves digging a trench to the depth of the aquifer confining unit, pumping a water and bentonite slurry into the trench to prevent collapse, then back-filling the trench with a mixture of bentonite and the excavated soils. This mixture is highly impermeable to water. The wall must extend slightly into the bedrock, and would vary between 15 and 25 feet deep at OU3. The circumferential slurry wall would fully surround the JILF, controlling groundwater migration entering and leaving the site, and tidal intrusion. Advantages of this approach is that the groundwater is maximally contained (e.g., upgradient and tidal influxes are stopped) and the operating and maintenance (O&M) costs are minimal compared to other technologies. Disadvantages include an unknown long-term effectiveness of such a wall in a brackish/saline environment, and short-term concerns at the shoreline posed during construction due to limited mechanical stability and potential for erosion.

The upgradient slurry wall involves construction of a slurry wall only along the upgradient edge of the JILF, diverting the inflow of groundwater from entering the JILF. Since the wall would not be constructed along the downgradient, or shoreline edge of the JILF, there are fewer short-term concerns during installation and fewer long-term concerns because there would be limited, if any, contact with brackish/saline water. There are also fewer O&M and installation costs than the circumferential wall. Disadvantages of the upgradient wall include the lack of consideration to containing or preventing tidal intrusion. Also the hydraulic regime may change as a result of eliminating current influx of upgradient groundwater. The potential impact on COC concentrations from this change is unknown.

A question was raised as to what was the contention over the hinge line of the tidal flux, or the point at which the tide no longer affects the groundwater. The Navy and the MEDEP have some disagreement over some of the input values for the calculation of the hinge line. The understanding of the hinge line of the tidal flux may impact the engineering design of the cap, but it does not impact the evaluation of alternatives in the OU3 FS.

The use of permeable reactive barriers was evaluated. The function of permeable reactive barriers is to treat the groundwater, and remove or degrade (breakdown the COC into other, less toxic chemicals) COC from the groundwater prior to discharge. Advantages to this system include fewer O&M concerns compared to other technologies and less potential for change to steady-state conditions since the hydrologic regime will be changed very minimally. For OU3, however, the disadvantages to permeable reactive barriers outweigh the advantages. The primary COC at the JILF are metals. Permeable reactive barriers, however, were developed to treat chlorinated organics, such as trichlorothene (TCE), or hexavalent chromium. Some information is available that a barrier constructed with limestone may effectively treat metals, but the technique has not been field-proven. The technology of permeable reactive barriers is new (approximately 3 to 4 years old) and has not been proven effective over the long term. The construction

of the barriers may also be difficult at JILF, due to interference of digging by debris in and near the landfill.

The use of an upgradient trench was evaluated in the FS. The design of this option is a trench constructed around the upgradient edge of the landfill, which diverts the groundwater around the landfill. Advantages to using an upgradient trench include few short-term concerns during installation, few long-term concerns, and lower cost than slurry walls. However, as with the upgradient slurry wall, the trench would not prevent tidal intrusion and has the potential to change steady-state conditions. In addition, the upgradient groundwater is contaminated with petroleum products. The trench may provide a preferential pathway for the petroleum contamination migration to the surface water.

Monitoring, as described in the FS, provides a method to measure the effects of groundwater migration, and/or serves as a tool to ensure a remedy is working effectively. There are minimal concerns associated with installation, and would not affect steady-state conditions. Additionally, the monitoring is less expensive than an active control. The major disadvantage is that monitoring is not an active control.

The draft final FS retained construction of a circumferential slurry wall as a vertical barrier in Alternative 5, and retained monitoring as a component of Alternatives 2, 3, 4, and 5.

The RAB had many questions about the proposed use of barriers in the FS. In response to several questions and comments regarding the disadvantages of constructing a circumferential slurry wall, the Navy explained that the slurry wall as the representative containment option is the engineering technology that was evaluated in the FS to allow for full containment of the groundwater at JILF. Should it be determined that groundwater must be fully contained, the slurry wall may be used in conjunction with other types of barriers, such as a sheet piling wall or upgradient trench. These other methods were not estimated in the FS, and the RAB asked the Navy to include these options. The Final FS is scheduled for completion on October 11, 2000 and with this limited amount of time, the Navy would not have adequate time to include a complete evaluation of all other containment wall options. EPA explained that there would need to be another review period and a series of revisions. The Navy agreed to include additional language in the FS that indicates that circumferential slurry wall was selected as the representative containment technology and that the specific cut-off barrier (e.g., circumferential, upgradient, or downgradient cut-off barrier) would be determined during the remedial design.

Many of the problems associated with containment wall construction are related to the heterogeneous subsurface (e.g., fill and debris) which could either interfere with wall construction or serve as a preferential pathway for groundwater migration. The RAB asked if either the debris could be removed, the downgradient edge of JILF moved back from the shore (e.g., partial debris removal), or the edge of the containment wall be beyond the JILF debris. Complete removal of debris was evaluated in the FS and determined to be infeasible due to the extremely high cost (over $1 billion). A partial removal of debris along the shoreline would likely cause additional environmental damage that may outweigh its potential benefits. Since the JILF debris abuts the shoreline, placement of a wall beyond the edge of the debris would extend both the wall and the cap into the tidal flats, causing additional environmental damage.

The Navy and EPA reiterated to the RAB that Alternative 5 would be selected regardless of cost should it be determined that groundwater must be fully contained. The decision on whether groundwater needs to be contained needs to consider risk and ARARs. The EPA indicated that the risks do not indicate the need to contain the groundwater. There are still some issues related to the ARARs that are being looked into now. The MEDEP indicated that they are evaluating the compliance point for Ambient Water Quality Criteria (AWQC) and that will affect their decision as to whether or not groundwater containment is necessary to meet ARARs. MEDEP said that they plan to have a decision soon, and will email the finding to interested RAB members on the day following MEDEP's notification to EPA and the Navy.

Because waste material will remain in place regardless of the alternative that is selected, a monitoring plan will be part of the remedy. The frequency of the monitoring and COC monitored will be decided during the data quality objective (DQO) process for the monitoring program as part of the remedial design. If, at any time in the future, conditions change or the remedy fails, the JILF remediation will need to be re-examined.

OTHER ISSUES

The Draft Proposed Plan for OU3 is currently schedule for distribution to the RAB on October 25, 2000. The Proposed Plan is a document presenting the Navy's selected alternative from the FS and does not contain specific language on the design of the remedy. A public meeting and hearing will be conducted as part of the finalization of the Proposed Plan. The review period for the Draft Proposed Plan is 30 days; comments are due by November 24, 2000. The Navy indicated that the next RAB meeting would be November 30, 2000 with topic to include the Building 184 Work Plan and Site 10 Additional Investigation. The RAB requested that the topic for the next meeting be the Proposed Plan and that the meeting be held before the end of the review period for the draft Proposed Plan.

FUTURE MEETINGS

Based on the RAB's request, the next RAB meeting is scheduled for **November 16, 2000** at the Courtyard Marriott in Portsmouth, NH so the topic for the meeting, the draft OU3 Proposed Plan, would be presented during the comment period for the draft document. **Post RAB meeting note: The next RAB meting has been rescheduled to November 30, 2000 at the Courtyard Marriott, Portsmouth, NH.**

The RAB was asked whether they had additional topics they wished to discuss, and was silent. The meeting was adjourned at 21:50.