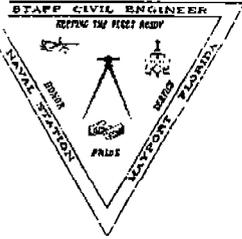


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MINUTES FOR RESTORATION ADVISORY BOARD MEETING HELD 19 OCTOBER 1995
WITH TRANSMITTAL NS MAYPORT FL
11/9/1995
NAVAL STATION MAYPORT

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STAFF CIVIL ENGINEER DEPARTMENT
NAVAL STATION
MAYPORT, FLORIDA 32228-0067

IN REPLY REFER TO:
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N4E4
9 Nov 95

MEMORANDUM

From: Cheryl Mitchell, Navy Co-Chair
To: RAB Members

Subj: MINUTES OF OCTOBER MEETING

1. Enclosed are the minutes of the October 19, 1995 meeting and the tentative agenda for the November 16, 1995 meeting. If you have any questions or comments, please call. Thank you,

Copy to:
NAVSTA N0Q4, N4E, N4A, N4, 00
SOUTHNAVFACENGCOM (Code 1852)
ABB-ES (T. Hansen/F. Lesesne/A. Power)
FDEP Tallahassee (J. Cason)
USEPA (M. Berry)
COMNAVBASE Jacksonville (N3)

NAVSTA MAYPORT RESTORATION ADVISORY BOARD

ORIENTATION MEETING OCTOBER 19, 1995

MINUTES

MEMBERS PRESENT

Jay Carver
Jim Cason
David Driggers
Patricia Lauderdale
Cheryl Mitchell (Navy Co-Chair)
Bob Weiss (Community Co-Chair)

MEMBERS EXCUSED

Edwin Cordes, Excused
Paul Perez, Excused

I. CALL TO ORDER The meeting, part of an on-going orientation series, was called to order at 6:35 p.m.

II. APPROVAL OF AUGUST MEETING MINUTES The meeting minutes were approved with one correction: Mr. Carver commented that in paragraph V of the minutes regarding his comment on quality control data, he was requesting the quality control data on **duplicate samples**. The minutes will be revised to indicate this and will be distributed at the next meeting.

III. GENERAL BUSINESS A recommendation from the RAB community members: due to the amount of information in the reports that references other documents/reports perhaps the documents could be marked somehow to indicate that a document is a reference document or is a precursory document and therefore should be read or referred back to for subsequent documents. Ms. Mitchell agreed to develop some way of labeling the documents as such.

IV. PRESENTATIONS

1. Richard Stevens, Project Chemist for NAVSTA Mayport with ABB-Environmental Services (ABB-ES), gave a presentation on Data Validation and Quality Control. Mr. Stevens verifies the analytical procedures assessing the performance of the laboratories and the external data validation services that are used. Mr. Stevens reviewed the process of environmental sampling from getting the sample, labeling it and tracking it from the field through the laboratory including such steps as calibration of lab equipment, methods of analysis, analytical results, data validation and quality control procedures used throughout the process. He also discussed what protocols the analytical process follows. Mr. Stevens provided handouts on his talk which included examples of typical analytical results and data validation marks that would normally be expected and seen during this process and in the reports themselves.

2. Cheryl Mitchell gave a presentation on the Navy Environmental

Leadership Program (NELP). Naval Station Mayport (NAVSTA) was named the East Coast base along with North Island Naval Air Station in San Diego, California. NAVSTA will serve as a "test bed" for innovative technology and management practices in the environmental pillars of C3P2 or Compliance, Conservation, Clean-up and Pollution Prevention. Ms. Mitchell provided handouts which further described the program and the technologies which will be demonstrated later this year and early next year.

V. DISTRIBUTION OF DOCUMENTS Further discussion was held on the distribution of documents - in its entirety or as a summary. The summary will include the document Cover Sheet and Table of Contents and a brief summary of the document including information on the sites and the final recommendations and conclusions. Members will be given a chance to read the summary of the *RCRA Facility Investigation Report for Group II SWMUs* (distributed during this meeting) and discuss this subject again at the next meeting.

VII. ALTERNATE MEMBERS The top three choices (from review of 10 applications) of the community members were listed and by process of a majority of the votes the members arrived at 4 choices - Donald Wolfson (3 votes), Richard Partridge (3 votes), Charles Metzler (2 votes), Bernard Kane (2 votes). Ms. Mitchell will call to verify their interest in the program and see if they would be willing to serve as an alternate member on the Board.

VIII. AVAILABILITY SESSION - Discussion was held on a possible postponement of the availability session from the December 7 date that had been previously discussed. Ms. Mitchell discussed several reasons that a possible postponement would be preferable: 1) The NELP technologies that were supposed to be discussed/showcased during the Availability Session have been delayed, 2) Ms. Mitchell wants the RAB members to be comfortable discussing the environmental program at NAVSTA, and 3) December is a busy time of the year. The suggestion has been to delay the session until the March/April timeframe. A handout was provided to the members on a possible outline of the session with suggested topics for each booth/table. Ms. Mitchell asked the community members to review this outline and see which of the sections they would feel comfortable with. The members agreed to postpone the Availability Session until the Spring.

IX. DATE SCHEDULED FOR NEXT MEETING The next regularly scheduled RAB meeting is 16 November 1995 at 6:30 p.m. in the Atlantic Beach City Hall Council Chambers at 800 Seminole Road. We also agreed on taking the month of December off and having the next meeting on January 18, 1996.

X. ADJOURNMENT The meeting was adjourned at 8:40 p.m.

An Introduction to the
*Navy Environmental
Leadership Program*
NELP

October 19, 1995

Naval Station Mayport
Restoration Advisory Board

**Four Pillars of the Environmental
Program: C3P2**

- **Cleanup**
of past hazardous waste sites and other spill areas
- **Compliance**
with federal, state, and local environmental laws
and regulations
- **Conservation**
of natural resources
- **Pollution Prevention**

Naval Station Mayport
Restoration Advisory Board

Overview of NELP

- NELP is an initiative of the Chief of Naval Operations (CNO)
- NELP will create a blueprint for future environmentally sound Naval installations
- NELP is being implemented at two major Naval installations:
 - Naval Station Mayport
 - Naval Air Station North Island

Naval Station Mayport
Restoration Advisory Board

NELP Objectives

- Expedite compliance and cleanup activities
- Use innovative technologies
- Implement all elements of an environmental management program
- Export program successes Navy-wide

Naval Station Mayport
Restoration Advisory Board

Innovative Technologies

- Innovative technologies are a key part of NELP implementation at Naval Station Mayport.
- Innovation comes not just from using newer technologies, but from using traditional technologies in new ways.
- Innovative technologies must work properly, be proven effective, and be ready to use.

Naval Station Mayport
Restoration Advisory Board

The Navy and NELP

- The Navy is committed to being an environmental leader while effectively executing naval operations.
- NELP activities will serve as test beds for new and innovative technology and focused management to address the full spectrum of environmental issues and will export successes throughout the Navy.

Naval Station Mayport
Restoration Advisory Board

Our Vision: NELP at Naval Station Mayport

- Naval Station Mayport will provide an integrated environmental program which will be visionary and innovative in dealing with environmental issues; provide responsible leadership which is *responsive to the Navy and the public*; provide a catalyst to promote environmental awareness and knowledge; and serve as a focal point for innovative environmental initiatives for the Navy.

Naval Station Mayport
Restoration Advisory Board

NELP Charter

- Elements of Naval Station Mayport's NELP charter include:
 - Quick resolution of environmental compliance and remediation issues
 - Integration of environmental compliance into daily operations
 - Advertisement of environmental accomplishments to Navy and local community
 - Employment of new technology for C3P2

Naval Station Mayport
Restoration Advisory Board

NELP Structure

- A "Focus Group" handles most NELP issues at Naval Station Mayport and includes representatives from base Public Works, the Navy Public Works Center for the Jacksonville area, FDEP, Southern Division, and Naval Station Mayport tenant commands
- The Focus group oversees innovative technologies demonstrations, HAZMIN program, P2 equipment procurement

Naval Station Mayport
Restoration Advisory Board

NELP Projects Selected

- Four NELP projects using innovative technologies have been selected to be implemented at Naval Station Mayport, three for use in cleanup activities, and one as a pollution prevention tool.
- At Naval Station Mayport, the Navy has committed over \$850,000 to use innovative technologies as part of the NELP process.

Naval Station Mayport
Restoration Advisory Board

Cleanup: SWMU 15 Old Pesticide Handling Area

- **Technology:** BAC-TERRA Remediation
- **Cost:** \$309,600
- **Description:** On-site remediation works by enhancing the soil with nutrients, a process known as *bioaugmentation*. The nutrients are distributed into the soil through a trenched system, and contaminants are metabolized.
- Cleanup will start in November and is anticipated to last up to six months.

Naval Station Mayport
Restoration Advisory Board

Cleanup: SWMU 14 Fleet Training Center

- **Technology:** MICROBIAL Bioremediation
- **Cost:** \$22,078
- **Description:** Certain microbes are applied to the surface of the concrete at the site, and then move into the contaminated areas. The microbes digest hydrocarbons, removing contamination.

Naval Station Mayport
Restoration Advisory Board

Cleanup: SWMUs 6, 7, and 8 Oily Waste Treatment Plant Area

- **Technology:** Low Temperature Thermal Desorber
- **Cost:** \$198,000
- **Description:** Hydrocarbon contaminated soil is loaded into a low-temperature thermal desorber. Petroleum substances separated from the soil are then burned in the machine, the cleaned soil is then tested and returned to the site.
- 500 tons of soil a day can be treated.

*Naval Station Mayport
Restoration Advisory Board*

Pollution Prevention: Oily Waste Treatment Plant

- **Technology:** Ultraviolet light/advanced oxidation water treatment
- **Cost:** \$333,700
- **Description:** This technology is not yet mainstream, but functions effectively to treat water contaminated with oily wastes with ozone and ultraviolet light instead of chemicals.

*Naval Station Mayport
Restoration Advisory Board*

Summary

- NELP is designed to improve the environmental restoration process throughout the Navy. The technologies tested today play an important part in how cleanup will be conducted in the future.

*Naval Station Mayport
Restoration Advisory Board*

Report Summary

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY INVESTIGATION (RFI) REPORT GROUP II SOLID WASTE MANAGEMENT UNITS (SWMUs)

The Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report documents the activities, findings, conclusions, and recommendations developed for Group II Solid Waste Management Units (SWMUs). RFI activities conducted at Group II SWMUs provide data to:

- determine the *nature and extent* of contaminant releases from the SWMUs;
- characterize the *potential pathways* of contaminant migration in the soil, surface water, and groundwater;
- identify *potential receptors*;
- assess *potential risks* to human health and the environment; and
- determine whether or not contaminants released from a SWMU require *corrective measures* to mitigate the risk to human health or the environment.

SWMUs evaluated as part of Group II are:

SWMU 6: Waste Oil Pit
SWMU 7: Oily Waste Treatment Plant (OWTP) Sludge Drying Beds
SWMU 8: OWTP Percolation Pond
SWMU 9: Oily Waste Treatment Plant (OWTP)
SWMU 10: RCRA Hazardous Waste Storage Area
SWMU 11: Fuel Spill Area
SWMU 12: Neutralization Basin
SWMU 15: Old Pesticide Handling Area
SWMU 16: Old Transformer Storage Yard

SWMUs 6, 7, 8, 9, 10, and 11 were all evaluated as part of the OWTP area based on proximity and similarity of site-related contaminants. Full descriptions and histories of the SWMUs are provided in this Report Summary.

During 1993 and 1994 field activities occurred at the Group II SWMUs. These activities included:

- monitoring well and piezometer installation;
- topographic surveys;
- testing of aquifer properties at selected monitoring wells and piezometers;
- tidal studies;
- monthly groundwater elevation measurements;
- biological inventory of terrestrial and aquatic habitats; and,
- laboratory analyses of selected Appendix IX groundwater monitoring list compounds

All environmental samples collected during the 1993 and 1994 field activities were analyzed for volatile and semivolatile organic compounds, pesticides, PCBs, metals, and cyanide. Samples were collected from surface soil, subsurface soil, groundwater, sludge, surface water, and sediment.

After the data was collected, they were validated following USEPA and Navy guidelines. Upon completion of the validation, the data were evaluated for precision, accuracy, representativeness, comparability, and completeness (PARCCs).

The geologic setting of NAVSTA Mayport and other physical characteristics are described in detail in the Group II RFI Report including analyses of geology, hydrogeology, tidal influences, and physical characteristics of soil are provided in the report.

SITE DESCRIPTIONS AND HISTORY

➤ **Site Descriptions and Histories for SWMUs 6, 7, 8, 9, 10, and 11**

SWMUs 6, 7, 8, 9, 10, and 11 in the Group II area are associated with or located adjacent to the Oily Waste Treatment Plant (OWTP). These SWMUs are located within the northern part of NAVSTA Mayport near the shore of the St. Johns River.

➤ **Waste Oil Pit (SWMU 6)**

SWMU 6 was located beneath the westernmost bed of the four existing OWTP Sludge Drying Beds (SWMU 7). The Waste Oil Pit was used from 1973 to 1978 to store bilge water containing oily waste. Other materials, such as solvents and transformer oils, may also have been disposed of in the Waste Oil Pit. The Waste Oil Pit was triangular in shape, approximately 0.2 acres in size, and was excavated to a depth of approximately 6 feet below land surface.

Bilge water and oily waste disposed of in the unlined pit seeped into the underlying soil. It is estimated that 250,000 gallons of bilge water and several thousand gallons of waste oil were disposed of in the Waste Oil Pit. In 1979 the Waste Oil Pit was filled and covered, and the four sludge drying beds were constructed.

➤ **OWTP Sludge Drying Beds (SWMU 7)**

SWMU 7 was constructed in 1979 to receive sludge from the OWTP. Each sludge drying bed is approximately 150 feet in length and 50 feet wide, unlined, and enclosed by 8-foot earthen berms. The four sludge drying beds received sludge collected from the clarifier of the OWTP (SWMU 9) and from bilge water receiving Tanks 99 and 100, which are two of the 15 tanks that compose SWMU 51. Approximately 1,500 gallons of sludge were conveyed to the drying beds each day the OWTP was in operation (estimated at twice per week).

No sludge has been taken offsite from the drying beds since operations began. A lined, diked enclosure for three new bilge water receiving tanks was constructed in the easternmost sludge drying bed. The adjacent sludge drying bed that received the excavated sludge was taken out of service and no longer receives sludge. The two westernmost sludge drying beds received sludge until late 1994 when sludge was conveyed to a new sludge dewatering unit. After dewatering, sludge is currently collected for offsite disposal by a subcontractor.

➤ **OWTP Percolation Pond (SWMU 8)**

SWMU 8, the OWTP Percolation Pond, was originally designed to allow treated effluent to percolate into underlying sediments. The OWTP Percolation Pond is approximately 1,575 square feet in size and at one time had an earthen berm on all sides that was approximately 10 feet wide and 5 feet high.

In early 1988, the OWTP became overloaded and waste oil flowed into the OWTP Percolation Pond. The OWTP Percolation Pond and berms were excavated in order to remove the waste oil. At that time, a liner of 1 foot of gravel that covered 6 inches of compacted clay was added to the sides and bottom of the OWTP Percolation Pond. The Percolation Pond was taken out of service in September 1992 and no longer receives treated effluent. Treated effluent is currently conveyed to the waste water treatment plant.

➤ **Oily Waste Treatment Plant - OWTP (SWMU 9)**

SWMU 9 was constructed in 1979 to treat bilge water and other oily waste generated at NAVSTA Mayport and has been in operation since its construction. The OWTP consisted of the following units, which have been identified as separate SWMUs:

- 210,000-gallon receiving tanks, tanks 99, 100, and 101 (SWMU 51)
- OWTP Sludge Drying Beds, SWMU 7
- OWTP Percolation Pond, SWMU 8
- OWTP, SWMU 9

Influent to the OWTP consists of ships' bilge water from which the oily fraction is separated by the OWTP treatment process. After separation of the oily fraction, the bilge water typically contains low concentrations of inorganics such as aluminum, chromium, copper, iron, manganese, nickel, lead, and zinc, and organics such as petroleum-derived compounds and 1,1,1-trichloroethane. Effluent from the treatment plant is currently conveyed to the waste water treatment plant.

➤ **RCRA Hazardous Waste Storage Area (SWMU 10)**

SWMU 10 consists of a RCRA-regulated hazardous waste storage building and a less-than-90-day hazardous waste accumulation area constructed in 1984. The hazardous waste storage building is operated under a Florida Hazardous Waste Storage Facility Permit, No. H016-118598, issued by FDEP. The hazardous waste storage area is permitted to store a maximum of 480 55-gallon drums, holding no more than 26,400 gallons of hazardous waste. No known releases have occurred at the hazardous waste storage building or the less-than-90-day storage area.

➤ **Fuel Spill Area (SWMU 11)**

SWMU 11 is located in the Fleet Industrial Supply Center (FISC) fuel farm. The site was identified when soil samples collected for a construction project were found to have a fuel odor. The source of the fuel is unknown but is likely to have originated from either the fuel farm area or a former waste oil pit. The waste oil pit was originally documented in a 1983 report which indicated that the waste oil pit was located to the southwest of Tank 201.

➤ **Site Description and History of SWMU 12**

SWMU 12, the Neutralization Basin, is located in the northern part of NAVSTA Mayport, approximately 40 feet north of Boiler Building 1241 and 75 feet from the St. Johns River. The Neutralization Basin, constructed on the site of previously used basins in 1986, was formerly used to store treated effluent from the boiler plant.

The neutralization basin was originally constructed to receive and neutralize backwash from the boiler plant. The neutralized wastewater was then discharged to the NAVSTA Mayport sanitary sewer system. The boiler plant implemented a process to accomplish neutralization prior to discharge into the basin. In January 1992 the neutralization basin was removed from operation. At present there are no plans for future operation of the neutralization basin.

During a recent interview, a facility maintenance contractor employee indicated that in 1992 a release of sodium hydroxide occurred near SWMU 12 when the neutralization basin's sodium hydroxide tank was being removed from service. The tank's contents, approximately 300 gallons of sodium hydroxide, were released on the ground. The area surrounding the release was later identified as having stressed vegetation. Consequently, a 6- to 9-inch-thick layer of soil was placed over the release area and the soil was seeded.

➤ **Site Description and History of SWMU 15**

SWMU 15, the Old Pesticide Handling Area, is located in the northwestern part of NAVSTA Mayport, approximately 1,900 feet south of the St. Johns River and 350 feet east of the station's western boundary and the town of Mayport.

During 1963 and 1964, pesticides and pesticide application equipment were stored in a shed attached to the southwest corner of Building 484. Pesticides were mixed at the site and, after use, the application equipment may have been washed near the building. As a result, runoff from the washing and rinsing activities may have infiltrated the ground surface. Also, small quantities of pesticides may have been disposed of in the vicinity of Building 484.

➤ **Site Description and History of SWMU 16**

SWMU 16, the Old Transformer Storage Yard, is located in the northern part of NAVSTA Mayport, approximately 75 feet east of the Fleet Industrial Support center (FISC) Fuel Farm and 280 feet south of the St. Johns River. The area was used for transformer storage from 1981 to 1987. During an October 1985 site visit, approximately 20 transformers reported to contain non-PCB oil were observed at the site. It is not known if any transformers containing PCB oils were stored at this location; however, minor spills and leaks of transformer oil are reported to have occurred while the transformers were stored in this area. Much of the asphalt surface of the site was cracked or broken up. Potential contamination could reach the underlying soil through the cracks in the pavement.

The abandoned runway at SWMU 16 consisted of a base of limestone gravel that was covered with an asphalt surface. After the removal of the transformers in 1987, the area was covered with a pulverized clayey limestone to smooth the surface, and was used as a long-term parking lot. All three layers (limestone base, asphalt, and clayey limestone) were excavated in April 1995 in preparation for a new paving project scheduled in May 1995. According to facility personnel, the excavated material is stockpiled elsewhere at NAVSTA Mayport for a future paving project.

RESULTS OF RCRA FACILITY INVESTIGATION (RFI)

The RCRA Facility Investigation (RFI) for Group II SWMUs was conducted to assess possible releases to the environment from each SWMU and to determine the effects of past and present practices at the SWMU on the environment. The RFI for Group II SWMUs was separated into four sections:

- SWMUs 6, 7, 8, 9, 10, and 11
- SWMU 12
- SWMU 15
- SWMU 16

Each SWMU is discussed separately in this section, and subsections address release characteristics, the human health risk assessment, and the ecological risk assessment. The release characteristics subsection for each area compares concentrations of detected chemicals to applicable benchmark concentrations. Benchmark concentrations are risk-based concentrations and Florida standards, used to qualify detected concentrations of chemicals. Exceeding benchmark concentrations does not necessarily indicate that a human health or ecological risk exists. Risks are calculated in the human health and ecological assessments.

SWMUs 6, 7, 8, 9, 10, and 11: Oily Waste Treatment Plant (OWTP) Area

➤ Release Characteristics

The RFI data suggest that petroleum-related compounds have been released from the former Waste Oil Pit, the Sludge Drying Beds, and the Fuel Spill Area (SWMUs 6, 7, and 11). These compounds have migrated downward into subsurface soil and have spread laterally in the soil just above the water table. It has been determined that these compounds are affecting groundwater quality.

The RFI data suggest that water, which was discharged to the Percolation Pond (SWMU 8) after it was treated in the OWTP, has affected groundwater downgradient of SWMU 8. The compounds affecting groundwater quality are chemicals used in the OWTP (primarily inorganics), degradation products of hydrocarbons, and solvents.

There are no indications of releases from the Oily Waste Treatment Plant or the RCRA Hazardous Waste Storage Area (SWMUs 9 or 10).

➤ Human Health Risk Assessment (HHRA)

The HHRA evaluated unfiltered groundwater associated with the OWTP Area. For hypothetical future land use, the cancer risk associated with unfiltered groundwater exceeds the USEPA acceptable cancer risk. The cancer risk is attributable to arsenic and lead. However, the cancer slope factor for arsenic may result in an overestimate of cancer risk. USEPA risk management guidance suggests that cancer risk may be up to 10-fold lower than predicted. Furthermore, all detected arsenic concentrations were below the federal and state drinking water standards.

The non-cancer risk associated with potential future domestic use of groundwater from the OWTP Area exceeds the USEPA target. Magnesium and iron are the major contributors to this. However, the magnesium and iron concentrations in groundwater at the OWTP Area are likely the result of the diffusion of brackish or marine water into the surficial aquifer during tidal fluctuations.

➤ **Ecological Risk Assessment**

Potential risks for aquatic receptors were evaluated for exposures to chemicals in groundwater as they discharge to the St. Johns River. Comparison of the average and maximum exposure concentrations of each chemical with available criteria and toxicity benchmarks is the basis of the risk characterization.

Concentrations of phenanthrene, cyanide, iron, nickel, and mercury exceed the lowest toxicity benchmark concentrations. The presumption of no risks for aquatic life resulting from potential exposures to phenanthrene, cyanide, iron, and nickel assumes that groundwater is diluted 5 times as it is discharged to the St. Johns River. Although concentrations of mercury exceed the toxicity benchmarks, it is unlikely that mercury in groundwater is related to the OWTP Area. If concentrations of mercury in groundwater are discharged to the St. Johns River in the future, they could represent a risk for aquatic receptors.

SWMU 12: NEUTRALIZATION BASIN

➤ **Release Characteristics**

There are no indications that there have been any releases from the Neutralization Basin. However, anecdotal information from a NAVSTA Mayport employee suggests that sodium hydroxide was spilled when a storage tank was removed in 1992. Analysis of groundwater samples also indicate that this release may have affected groundwater quality. It is suggested that groundwater chemistry in the vicinity is affected by the 1992 sodium hydroxide release, causing naturally occurring inorganics in groundwater to become dissolved constituents in groundwater.

➤ **Human Health Risk Assessment (HHRA)**

The HHRA evaluated unfiltered groundwater associated with SWMU 12. For hypothetical future land use, the cancer risk associated with unfiltered groundwater exceeds the USEPA acceptable cancer risk. Arsenic is the only contaminant that contributes to the cancer risk. However, the arsenic factor used may result in an overestimate of cancer risk. USEPA risk management guidance suggests that cancer risk may be up to 10-fold lower than predicted. A single sample is responsible for the cancer risk estimate at SWMU 12; this sample may not be representative of site conditions, because the remaining samples contained arsenic at concentrations consistent with background levels. Furthermore, all three detected arsenic concentrations were below the federal and state drinking water standards.

The non-cancer risk associated with potential future domestic use of groundwater at SWMU 12 exceeds the USEPA target. Arsenic and vanadium are the major contributors to this finding. Concentrations of arsenic did not exceed Federal or state level, however, vanadium was detected in on sample and duplicate in concentrations exceeding State of Florida Groundwater Guidance concentrations

➤ **Ecological Risk Assessment**

Potential risks for aquatic receptors were evaluated for exposures to chemicals in groundwater as they discharge to the St. Johns River. Comparison of the average and maximum exposure concentrations of each chemical with available criteria and toxicity benchmarks is the basis of the risk characterization.

Exposure point concentrations of copper, lead, and nickel in groundwater exceed toxicity benchmark values. Current discharge of copper, lead, and nickel is not expected to present a risk for aquatic receptors based on a dilution of 10 times as groundwater is discharged to the St. Johns River. In addition, the fraction of metals biologically available and potentially toxic to aquatic receptors is likely to be less than the concentrations measured in the unfiltered analysis.

SWMU 15: OLD PESTICIDE HANDLING AREA

➤ **Release Characteristics**

The RFI data suggest that pesticides have been released at the Old Pesticide Storage Area (SWMU 15). The pesticides 4,4'-DDE, 4,4'-DDT, and chlordane were detected in surface soil and subsurface soil. Alpha-, beta-, and delta-BHCs were detected in groundwater.

➤ **Human Health Risk Assessment (HHRA)**

The HHRA evaluated surface soil, subsurface soil, and unfiltered groundwater at SWMU 15. For current and hypothetical future land use scenarios, the cancer risks associated with surface soil and unfiltered groundwater exceed the USEPA acceptable risk. For hypothetical future land use scenarios, the non-cancer risks associated with surface soil and unfiltered groundwater exceed the USEPA targets.

- **Surface Soil:** The total cancer risks for surface soil ingestion, dermal contact, and fugitive dust inhalation for all current and future receptors (except the adult excavation worker) exceed the USEPA acceptable risk range. The highest cancer risk for surface soil under current land use was associated with the adult occupational worker. The highest cancer risk for surface soil under hypothetical future land use was associated with the resident. Chlordane, 4,4'-DDT, and arsenic are the major contributors to the cancer risk for all receptors. However, the arsenic factor used may result in an overestimate of cancer risk. The non-cancer risk for surface soil under hypothetical future land use affects the child resident. Chlordane and 4,4'-DDT are the major contributors to this finding.

- **Subsurface Soil:** The total cancer risk for subsurface soil ingestion, dermal contact, and fugitive dust inhalation for hypothetical future land use does not exceed the USEPA acceptable cancer risk range. There is no significant noncancer risk for subsurface soil under hypothetical future land use.

▪ **Groundwater:** The total cancer risk for unfiltered groundwater ingestion under hypothetical future land use exceeds the USEPA acceptable risk range. Arsenic, alpha-BHC, beta-BHC, and bis(2-ethylhexyl)phthalate contribute to this cancer risk. However, the arsenic factor used may result in an overestimate of cancer risk. USEPA risk management guidance suggests that cancer risk may be up to 10-fold lower than predicted. The non-cancer risk for unfiltered groundwater under hypothetical future land use exceeds the USEPA target. Arsenic and manganese were the major contributors to this finding. One sample from a monitoring well immediately hydraulically downgradient of the site contained arsenic at a concentration that exceeds Federal and state levels. However, manganese findings may have been overestimated, because the factor used for manganese may be artificially low. It should be noted that the background well also contained manganese at concentrations exceeding Federal and state level. This suggests that SWMU 15 is not the source of the manganese.

➤ **Ecological Risk Assessment**

Potential adverse ecological effects were evaluated for terrestrial wildlife, terrestrial plants, and terrestrial soil invertebrates resulting from exposure to chemicals in surface soil. Risks are also characterized for aquatic receptors potentially exposed to chemicals in groundwater as they discharge to the St. Johns River in the future.

▪ **Terrestrial Wildlife:** Exposure to surface soil contamination at SWMU 15 does not pose a risk for lethal effects; however the results indicate that sublethal effects (reduction of growth and reproduction) for small insectivorous or omnivorous mammals and birds is possible, with population effects also possible. The sublethal effects predicted are associated with 4,4-DDT.

▪ **Plant Life:** Based on a comparison of literature-reported phytotoxicity values and exposure concentrations of surface soil chemicals, concentrations of chromium, mercury, and zinc may be toxic to plant life.

▪ **Soil Invertebrates:** Based on the results of toxicity testing that measure the growth and survival of test populations, the contamination present in surface soil at SWMU 15 may present an unacceptable risk for soil invertebrates.

The maximum groundwater exposure point concentrations of cyanide, lead, and mercury exceed the toxicity benchmark values. Future discharges of cyanide and lead are not expected to present a risk for aquatic receptors based on a dilution of 5 times as groundwater is discharged to the St. Johns River. In addition, the fraction of metals biologically available and potentially toxic to aquatic receptors is likely to be less than the concentrations measured in the unfiltered analysis.

Although exposure point concentrations of mercury exceed the toxicity benchmarks, it is unlikely that mercury in groundwater is associated with SWMU 15.

SWMU 16: OLD TRANSFORMER STORAGE YARD

➤ Release Characteristics

Low concentrations of PCBs detected in surface and subsurface soil samples suggest that transformers with oil containing PCBs may have been released at the site. However, most of the soil where the PCBs were detected was recently removed and the area was paved and is to be used as a parking lot for personnel on ships berthed at NAVSTA Mayport.

➤ Human Health Risk Assessment (HHRA)

The HHRA evaluated subsurface soil and unfiltered groundwater at SWMU 16. For hypothetical future land use, the cancer risks associated with subsurface soil and unfiltered groundwater do not exceed the USEPA acceptable risk range. The non-cancer risks for subsurface soil and unfiltered groundwater under hypothetical future land use also meet USEPA targets.

- **Subsurface Soil:** The total cancer risk for subsurface soil under hypothetical future land use did not exceed the USEPA acceptable risk range. The non-cancer risk for subsurface soil under hypothetical future land use also met the USEPA target.

- **Groundwater:** The total cancer risk for unfiltered groundwater under hypothetical future land use did not exceed the USEPA acceptable risk range. The non-cancer risk for unfiltered groundwater under hypothetical future land use also met the USEPA target.

➤ Ecological Risk Assessment

Potential risks for aquatic receptors were evaluated for exposures to chemicals in groundwater as they discharge to the St. Johns River. Comparison of the average and maximum exposure concentrations of each chemical with available criteria and toxicity benchmarks is the basis of the risk characterization.

Although exposure concentrations of copper exceed available screening values, future discharges of copper to the surface water of the St. Johns River are not anticipated to pose an unacceptable risk to aquatic receptors based on a dilution of 5 times as groundwater is discharged to the St. Johns River. In addition, the fraction of metals biologically available and potentially toxic to aquatic receptors is likely to be less than the concentrations measured in the unfiltered analysis.

RECOMMENDATIONS

➤ **SWMUs 6, 7, 8, 9, 10, and 11**

A Corrective Measures Study (CMS) is recommended for free-phase hydrocarbons, subsurface soil, and sludge. A portion of the sludge beds will be remediated under the Navy Environmental Leadership Program (NELP). The remainder of the sludge will be addressed during the CMS process.

➤ **SWMU 12**

No Further Action (NFA) was recommended for SWMU 12. However, a separate investigation of the sodium hydroxide spill area should be conducted to determine the effects on surrounding subsurface soil and groundwater.

➤ **SWMU 15**

A Corrective Measures Study is recommended for soil and groundwater at SWMU 15. The soil at SWMU 15 contains 4,4'-DDT and chlordane at levels that are posing unacceptable risks to human health and the environment. Groundwater in the vicinity of SWMU 15 needs to be further examined to determine the cause of the BHCs in groundwater, and to warrant if corrective action is necessary.

➤ **SWMU 16**

No Further Action is recommended for SWMU 16. Any soil that was potentially contaminated has been removed from the site in preparation for the construction of a new parking lot.

AGENDA

NAVSTA Mayport Restoration Advisory Board (RAB) Orientation Meeting November 16, 1995, 6:30 p.m.

- ▶ Welcome Cheryl Mitchell/Bob Weiss

- ▶ Questions and Answers RAB Members
RCRA Facility Investigation Group II SWMUs

- ▶ Handout and Presentation Frank Lesesne
Corrective Measures Study, Group II SWMUs

- ▶ Handout
RCRA Facility Investigation Group I SWMUs

- ▶ Alternate RAB Member Discussion RAB Members

- ▶ Other Topics RAB Members
 - Documents
 - Availability Session