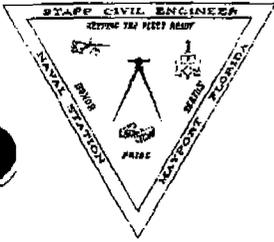


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MINUTES FOR RESTORATION ADVISORY BOARD MEETING HELD 16 NOVEMBER 1995
WITH TRANSMITTAL NS MAYPORT FL
12/13/1995
NAVAL STATION MAYPORT



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

NAVSTA Mayport Administrative Record
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MEMORANDUM

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

Subj: MINUTES OF NOVEMBER MEETING

1. Enclosed are the minutes of the November 16, 1995 meeting and the tentative agenda for the January 18, 1996 meeting. If you have any questions or comments, please call. Thank you,

Copy to:
NAVSTA N004, 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
NOVEMBER 16, 1996

MINUTES

MEMBERS PRESENT

Jay Carver
Jim Cason
David Driggers
Patricia Lauderdale
Cheryl Mitchell (Navy Co-Chair)
Paul Perez

MEMBERS ABSENT

Edwin Cordes, Excused
Bob Weiss (Community Co-Chair), Excused

I. CALL TO ORDER The meeting, part of an on-going orientation series, was called to order at 6:32 p.m.

II. APPROVAL OF OCTOBER MEETING MINUTES The meeting minutes were approved. Revised copies of the September minutes were handed out.

III. GENERAL BUSINESS - Discussion continued on the preferable format for document review. Ms. Lauderdale, Mr. Perez and Mr. Weiss have stated that they prefer the summarized version of the documents. Mr. Carver and Mr. Cordes should review the summaries (Group II RFI, Group II CMS, and Group I RFI) and determine for discussion at the next meeting whether they prefer the summary or the entire document.

The revised Corrective Action Management Plan (CAMP) will be mailed with this meeting's minutes. Changes were made to Submittal Dates for a few of the documents and are highlighted on the schedule.

IV. PRESENTATIONS - Both overhead presentations were given by Frank Lesesne of ABB-ES.

1. Summary version of the Corrective Measures Study (CMS) for Group II SWMUs.
2. Summary version of the Group I RFI report.

V. ALTERNATE MEMBERS Although Ms. Mitchell did not contact all proposed alternate members (Bernard Kane, Charles Metzler, Richard Partridge and Donald Wolfson) she did contact them after the meeting and they have all agreed to serve as alternate members. I will be providing each of them with some of the handouts and presentation materials that members have received over the past year. I'm sure they will be able to read and understand it in no time at all!

VI. AVAILABILITY SESSION - Community members were asked to review the tentative set-up of the session to see if they had a preference for a certain subject. Ms. Lauderdale has indicated an interest in the Natural Resources section. More information will be made available in the upcoming meetings as we get more into the planning of this session.

VII. DATE SCHEDULED FOR NEXT MEETING The next regularly scheduled RAB meeting is January 18, 1996 at 6:30 p.m. in the Atlantic Beach City Hall Council Chambers at 800 Seminole Road.

VIII. ADJOURNMENT The meeting was adjourned at 7:50 p.m.

Report Summary

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY INVESTIGATION (RFI) REPORT GROUP I 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 I Solid Waste Management Units (SWMUs). RFI activities conducted at Group I 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 I are:

SWMU 2: Landfill B
SWMU 3: Landfill D
SWMU 4: Landfill E
SWMU 5: Landfill F
SWMU 13: Old Firefighting Training Area
SWMU 22: Building 1600 Blasting Area

These SWMUs were grouped together in Group I because of their proximity to each other, common drainage to the Sherman Creek watershed, similarity of past waste disposal activities, and the potential for similar or related corrective measures. SWMUs 2, 3, 4, 5, and 22 were all evaluated together in the RFI because they share a similar hydrogeologic setting and are affected by similar inorganic contaminants. SWMU 13 is being evaluated separately because it is located in a different hydrogeologic setting.

During 1993 and 1994 field activities occurred at the Group I 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 I 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 2, 3, 4, 5, and 22**

SWMUs 2, 3, 4, 5, and 22 in the Group I area are collectively referred to as the Landfill Area SWMUs. In most cases these landfills were trenches or pits where material, such as waste oil, transmission fluid and other contaminants used during shipboard and onshore activities, were disposed.

➤ **Landfill B (SWMU 2)**

The SWMU 2 landfill area was in operation from 1960 to 1964, and again from 1979 to 1980. Using aerial photographs, it was determined that SWMU 2 was approximately two acres in size, and was a trench and fill landfill in the 1960's, and was used for surface disposal from 1979 to 1980. The site is currently paved and is used as a nonexplosive ordnance storage yard. The SWMU 2 PCB sites is located across the street in a field area.

➤ **Landfill D (SWMU 3)**

The SWMU 3 landfill area was in operation from 1963 to 1965. It has been determined that SWMU 3 was approximately four acres in size, and was a pit type landfill. The site is currently covered by a wooded area and the Eastern Dredge Material Holding Area.

➤ **Landfill E (SWMU 4)**

The SWMU 4 landfill area was in operation from 1963 to 1966, and again from 1974 to 1980. Using aerial photographs, it was determined that SWMU 4 was approximately 11 acres in size, and was a trench and fill landfill in the 1960's, and was used for surface disposal in the 1970's. The site is currently divided by a drainage ditch. The northern part of the site is used as a laydown yard by contractors at NAVSTA Mayport. The southern area is an overgrown field and has numerous small mounds left from disposal operations.

➤ **Landfill F (SWMU 5)**

The SWMU 5 landfill area was in operation from 1965 to 1985. Using aerial photographs, it was determined that SWMU 5 was approximately 24 acres in size, and was used as a trench and fill landfill as well as for surface disposal. The site currently has an area that is used for vehicle storage by active duty and retired Navy personnel. The Navy and the U.S. Coast Guard have electronic installations at this site.

➤ **Old Firefighting Training Area (SWMU 13)**

SWMU 13 consists of three distinct areas used for firefighting training exercises from 1972 to 1983. These areas consisted of earthen berms on top of an abandoned asphalt runway. To conduct training, water was pumped into the berms, and a flammable material, such as aviation fuel, was pumped on top of the water. The material was then ignited and extinguished as a training exercise. The firefighting training area no longer exists; the site is now covered by Navy service buildings, helicopter hangars, and a parking lot.

➤ **Building 1600 Blasting Area (SWMU 22)**

SWMU 22 consists of a small sheet metal Quonset hut on a concrete pad. From 1985 to 1992 equipment and vehicles were cleaned at the site using an abrasive blasting material known as Black Beauty™.

RESULTS OF RCRA FACILITY INVESTIGATION (RFI)

The RCRA Facility Investigation (RFI) for Group I 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.

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 2, 3, 4, 5, AND 22: LANDFILL AREA

➤ Release Characteristics

The RFI data suggest that the landfill Area has not significantly impacted the surrounding environment. Additionally, the inorganic materials affecting the soil, sediment, and groundwater in the Landfill Area cannot be definitely linked to the landfills, and may come from the Dredge Material Holding Area (SWMU 50).

There are no indications of releases from the Building 1600 Blasting Area (SWMUs 22).

➤ Human Health Risk Assessment (HHRA)

The HHRA evaluated unfiltered groundwater associated with the Landfill 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, beryllium, bromodichloromethane, dibromochloromethane. All other samples from the surface water, sediment, surface soil, and subsurface soil contained no contaminants exceeding USEPA guidelines.

The non-cancer risk associated with potential future domestic use of groundwater from the Landfill Area exceeds the USEPA target. Antimony and magnesium are the major contributors to this. A noncancerous risk associated with potential future domestic use of surface water also exceeds the USEPA target. Antimony, arsenic, and iron are the major contributors to surface water contamination.

➤ **Ecological Risk Assessment**

Potential risks for ecological receptors were evaluated for exposures to chemicals in surface soil, surface water, and sediment. Comparison of the average and maximum exposure concentrations of each chemical with available criteria and toxicity benchmarks is the basis of the risk characterization.

There is no risk to ecological receptors from surface soil at the Landfill Area because there are no present terrestrial receptors. Levels of contaminants in the soil are too low to adversely impact soil invertebrates and plants.

An analysis of the samples of surface water and sediment in the Landfill Area again indicates no risk to terrestrial receptors. A risk was identified to the aquatic food chain from heavy metals found in sampling points along the ditch that bisects SWMU 4. These metals included cadmium, mercury, silver, zinc, arsenic, beryllium, selenium, and chromium.

SWMU 13: OLD FIREFIGHTING TRAINING AREA

➤ **Release Characteristics**

There are no indications that there have been any releases from the Old Firefighting Training Area. Sampling conducted in 1992 and 1994 indicates no substantial contamination. All contaminants in the soil are below USEPA standards, groundwater is affected by antimony, iron, manganese, and sodium.

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

The HHRA identified no cancerous human health contaminants, and relatively low noncancerous risk at SWMU 13. Additionally, no risk was associated with subsurface soil at SWMU 13. Unfiltered groundwater associated with SWMU 13 was also evaluated. For hypothetical future land use, cleanup levels were developed for four contaminants exceeding USEPA guidelines: antimony, iron, manganese, and sodium.

➤ **Ecological Risk Assessment**

No ecological risk assessment was performed at SWMU 13 because there are no ecological receptors present nor are there available exposure pathways.

RECOMMENDATIONS

➤ **SWMUs 2, 3, 4, 5, and 22**

No Further Action was recommended for soil, sediment, and groundwater in the landfill area. Because of adverse ecological risk, the drainage ditch that bisects SWMU 4 should be filled as an interim corrective measure to reduce the exposure of ecological receptors to potentially harmful sediments. Additional sampling will be conducted to assess the effective of filling the ditch.

➤ **SWMU 13**

No Further Action is recommended for SWMU 13. Any contaminants in the soil pose no potential risk to human health or the environment, and have not migrated to the water table.

An Overview of the
RCRA Facility Investigation (RFI)
Group I Solid Waste Management Units

November 16, 1995

Naval Station Mayport
Restoration Advisory Board

**What is the purpose of a RCRA
Facility Investigation (RFI)?**

- An RFI is conducted to:
 - determine the nature, extent, and fate of environmental releases
 - provide information to conduct a human health and ecological risk assessment
 - recommend corrective measures, if required, for solid waste management units (SWMUs) evaluated in the RFI

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Restoration Advisory Board

How will the RFI be used?

- The RFI represents the second step in the cleanup process.
- The report identifies SWMUs needing cleanup, which is assessed in a corrective measures study (CMS).
- A corrective measure study identifies different technologies which could be used to clean up contamination which poses a threat to human or ecological receptors.

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**SWMUs 2, 3, 4, 5, and 22
Landfill Area**

- These SWMUs were evaluated together because they share a similar *hydrogeologic setting* and are affected by similar *inorganic contaminants*.
- SWMUs 2, 3, 4, and 5, all landfills, were mostly trenches and pits where materials from shipboard and onshore activities were disposed.
- SWMU 22 was a blasting area where Black Beauty™ was used to clean equipment and vehicles.

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**SWMUs 2, 3, 4, 5, and 22
Landfill Area (cont.)**

- Risks associated with a hypothetical use of groundwater were identified and attributed to arsenic, beryllium, bromodichloromethane, and dibromochloromethane.
- Risks associated with surface water and sediment were identified and attributed to antimony, arsenic, and iron.
- Risks associated with soil were identified and attributed to benzo(a)pyrene, arsenic, and beryllium.

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**SWMUs 2, 3, 4, 5, and 22
Landfill Area (cont.)**

- There is no unacceptable risk to the terrestrial receptors or plant life from contact with chemicals in soil, sediment, or surface water at the Landfill Area. A risk was identified to the aquatic food chain from metals found in the ditch bisecting SWMU 4.
- Because it is unlikely that groundwater under the Landfill Area would be used as a source of drinking water, no further action is recommended for SWMUs 2, 3, 4, 5, and 22.

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SWMU 13 Old Firefighting Training Area

- No indications of a release from SWMU 13 were observed.
- No cancer risk has been identified associated with media at SWMU 13.
- A non-cancer risk associated with a hypothetical use of groundwater has been identified and is attributed to concentrations of antimony, iron, manganese, and sodium.

*Naval Station Messort
Restoration Advisory Board*

SWMU 13 Old Firefighting Training Area (cont.)

- No ecological risk assessment was performed at SWMU 13 because there are no present ecological receptors or exposure pathways.
- No contaminants in the soil at SWMU 13 were found to exceed benchmark levels.
- As there is no cancer risk and a very low non-cancer risk, no further investigation is recommended for SWMU 13.

*Naval Station Messort
Restoration Advisory Board*

Summary

- No further investigation is recommended for SWMUs 2, 3, 4, 5, and 22 (Landfill Area) or SWMU 13 (Firefighting Training Area).
- As an Interim Corrective Measure it is recommended that the ditch bisecting SWMU 4 be filled to prevent adverse ecological risk to aquatic receptors.

*Naval Station Messort
Restoration Advisory Board*

**Resource Conservation and Recovery Act (RCRA)
Corrective Measures Study (CMS)
Group II Solid Waste Management Units (SWMUs)**

Report Summary

The Corrective Measures Study (CMS) for Group II Solid Waste Management Units (SWMUs) provides the analysis for recommending a *corrective action alternative* for a SWMU(s) that requires cleanup. The analysis in the CMS will:

- Identify *corrective action objectives* or the goals for cleanup at each SWMU;
- Classify a range of technologies that could be used to cleanup each SWMU;
- Screen the technologies identified to focus on only those technologies that are effective at cleaning up the SWMU, are easy to implement, and are cost-effective;
- Evaluate technologies deemed **most** effective;
- Recommend the **best** alternative for SWMU cleanup.

The Group II RFI identified three SWMUs that require a CMS. These SWMUs are:

SWMU 6:	Waste Oil Pit
SWMU 7:	Oily Waste Treatment Plant (OWTP) Sludge Drying Beds
SWMU 15:	Old Pesticide Handling Area

SITE DESCRIPTIONS AND HISTORY

➤ **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 and groundwater. 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.

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

SWMU 7 was constructed in 1979 to receive sludge from the OWTP. The western most bed was constructed over the southern and central part of SWMU 6. 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 Tanks 99 and 100 (bilge water receiving tanks), which are two of the 15 tanks that compose SWMU 51 (Waste Oil Tanks). 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 sludge drying beds since operations began.

A lined, diked enclosure for three new bilge water receiving tanks was constructed in the easternmost sludge drying bed in the late 1980's (A. T. Kearney, 1989). Material excavated for the construction of the tank foundations and dike was placed in the adjacent sludge drying bed. This bed also was taken out of service at this time.

The two western most sludge drying beds received sludge until late 1994 when sludge was conveyed to a new sludge dewatering unit. Currently, the dewatered sludge is collected by a subcontractor for disposal offsite.

➤ **Old Pesticide Handling Area (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 48. Pesticides were reported to have been mixed at the site and, after use, the application equipment was 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 48.

CORRECTIVE ACTION OBJECTIVES

As part of the CMS, corrective action objectives (CAOs) were developed for the Group II SWMUs at NAVSTA Mayport. CAOs are *site-specific* objectives for cleanup. These objectives are based on chemicals of concern at a site, the presence of human and ecological receptors at the site, and the routes by which humans and ecological receptors can be exposed to chemicals at the site, such as inhalation or ingestion. CAOs provide the basis for selecting alternatives for correction action cleanup at each SWMU.

SWMUs 6 AND 7

Light non-aqueous phase liquid (LNAPL --petroleum products such as gasoline) was found to be present on the surface of the groundwater near SWMUs 6 and 7. It was estimated that approximately 60,000 gallons of LNAPL is currently floating on the groundwater. The Florida Administrative Code (FAC) 62-770 for petroleum contaminated site cleanup criteria indicates that LNAPL present on the groundwater surface with a thickness of more than 0.1 inch must be recovered. Therefore, the following CAO was established:

- **CAO 1: Remove LNAPL present on the water table in excess of 0.1 inch.**

The source of LNAPL is subsurface soil at the former Waste Oil Pit (SWMU 6) and surface and subsurface soil at the sludge drying beds (SWMU 7). It was estimated that there are approximately 29,800 cubic yards of sludge and soil contain hydrocarbons at concentrations that exceed FAC 62-770. Therefore, an additional CAO was established:

- **CAO 2: Eliminate the sludge and soil contributing to the presence of LNAPL on the groundwater surface at the site.**

SWMU 15

Pesticides were detected in soil (4,4'- dichlorodiphenyldichloroethylene [DDT]) and chlordane) and groundwater (benzene hexachloride [BHC]) at the site. The extent of soil containing these pesticides was identified; and is estimated to be approximately 550 cubic yards of contaminated soil at the site. However, the extent of groundwater affected by BHC at the site could not be determined, based on the current number and locations of monitoring wells at the site.

Human health and ecological risk assessments completed for the site suggest a current potential risk to human and ecological receptors as a result of contacting soil containing pesticides. The potential human health risks are due to dermal contact with 4,4'-DDT and chlordane and risks to ecological receptors were due to exposure to 4,4'-DDT.

The human health risk assessment also determined that there was a hypothetical future risk for a residential exposure to the pesticide BHC and the inorganic chemical arsenic as a result of ingesting groundwater. Based on these observations, the following CAOs were established:

- **CAO 1: Eliminate the potential for human and ecological receptor contact with pesticide-contaminated soil at the site.**
- **CAO 2: Evaluate the distribution of BHC and arsenic in groundwater at the site.**

CORRECTIVE ACTION ALTERNATIVES

The first step in identifying corrective action alternatives for contaminated media at SWMUs is to identify and screen technologies that are appropriate and will work at the site. Many technologies were considered for cleanup of the hydrocarbons detected in sludge and soil at SWMUs 6 and 7, LNAPL at SWMUs 6 and 7, and pesticides detected in soil at SWMU 15.

Corrective action alternatives were developed based on those technologies deemed most appropriate for the SWMU, depending on cost, effectiveness, and ease of implementation. Many alternatives were identified and examined as a cleanup alternative. A detailed analysis of these technologies and their implementation can be found in Chapter 5 of the CMS.

The following provides a description of the alternatives evaluated for SWMUs 6, 7, and 15.

SWMUs 6 AND 7

Chemicals and Media Requiring Remediation:
Hydrocarbons in Sludge and Soil, and LNAPL on Groundwater

Alternatives Evaluated for Remediation of Hydrocarbons Detected in Sludge and Soil

- ***Excavation with Onsite Low Temperature Thermal Treatment***
This alternative involves excavating contaminated sludge and soil, treating these materials in a thermal treatment unit, sampling and analyzing treated material, comparison of the analytical results to treatment criteria, and backfilling the excavation with treated material that have been determined to be clean based on the analytical results.
- ***Excavation with Onsite Bioremediation***
This alternative involves constructing a treatment pad for bioremediation of the sludge and soil. The alternative requires excavating the sludge and soil and placing these material on a treatment pad,

adding nutrients and water to the excavated material to promote biodegradation of the hydrocarbons, sampling and analyzing treated material, comparison of the analytical results to treatment criteria, and backfilling the excavation with treated soil and sludge that have been determined to be clean based on the analytical results.

➤ ***Excavation and Soil Recycling***

This alternative involves excavating contaminated sludge and soil, transporting the excavated material to an offsite soil recycling facility (such as an asphalt batching plant), and backfilling the excavation with soil brought in from offsite.

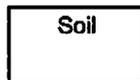
Remediation Alternatives for Sludge and Soil at SWMU 6

Excavation with Onsite Low Temperature Thermal Treatment

Excavation with Onsite Bioremediation

Excavation and Soil Recycling

Recycler



SWMUs 6 AND 7

Chemicals and Media Requiring Remediation:
Hydrocarbons in Sludge and Soil, and LNAPL on Groundwater

Alternatives Evaluated for Remediation of LNAPL

➤ ***Collection in Sumps with Total Fluids Pumping***

This alternative involves constructing five 1-meter diameter sumps at the site, installing pumps that skim water and oil from the water surface within the sump, pumping groundwater and LNAPL to a temporary storage tank, and discharging the water and LNAPL to the Oily Waste Treatment Plant (OWTP).

➤ ***Collection in Trenches with LNAPL Skimming***

This alternative involves constructing a trench(s) where LNAPL would collect, installing pumps to extract both water and LNAPL contained in the trench, and disposing of extracted water and LNAPL at the OWTP.

➤ ***Collection in Sumps with Groundwater Table Drawdown and LNAPL Skimming***

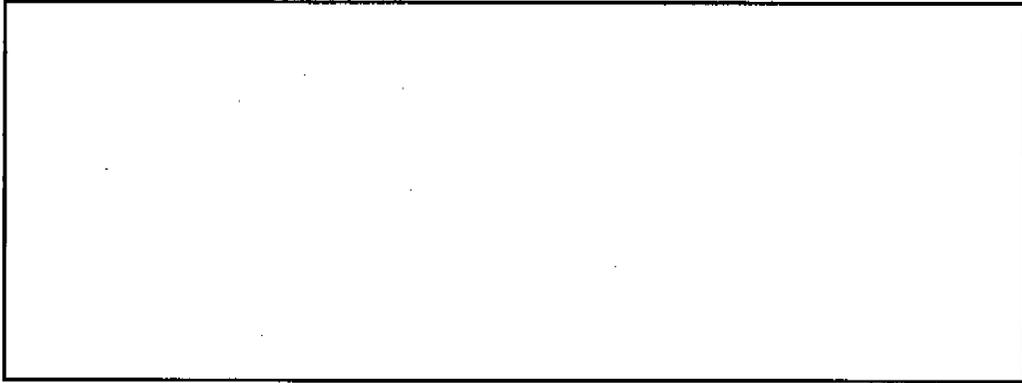
This alternative involves constructing sumps, installing two pumps in each sump: one pump to extract water and create a "cone of depression" where the LNAPL would collect, and one pump to extract the LNAPL, both pumps discharging to temporary storage tanks, and treating the recovered water and LNAPL at the OWTP.

Remediation Alternatives for LNAPL at SWMU 6

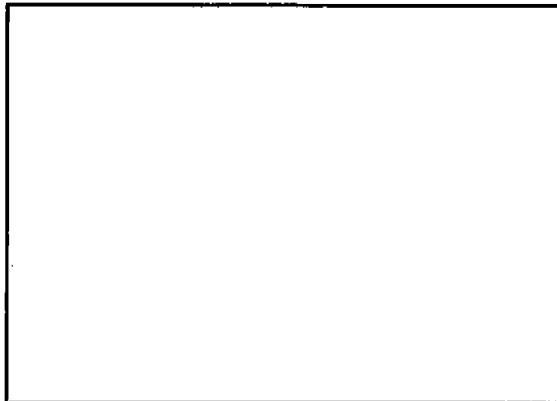
Collection in Sumps with Total Fluids Pumping



Collection in Trenches with LNAPL Skimming



Collection in Sumps with Groundwater Table Drawdown and LNAPL Skimming



SWMU 15

Chemical and Media Requiring Remediation:

Pesticides in Soil

Alternatives Evaluated for Remediation of Pesticides Detected in the Soil

➤ ***Excavation and Offsite Incineration***

This alternative involves excavating contaminated soil, transporting the soil to an offsite incinerator, and backfilling the excavation with soil from offsite.

➤ ***Construction of Parking Area***

This alternative involves constructing a parking area over the contaminated soil. This would require placing a geotextile covering on the area and covering the geotextile with a 6-inch layer of gravel.

➤ ***Excavation and Onsite Bioremediation***

This alternative involves constructing a treatment pad, excavating soil containing pesticides and placing the excavated material on the treatment pad, adding nutrients and water to promote anaerobic biodegradation, adding air to promote aerobic biodegradation, sampling and analyzing treated soil, comparing the analytical results to the treatment criteria, and backfilling the excavation with treated soil that is determined to be clean based on analytical results.

➤ ***In situ Bioaugmentation***

This alternative involves constructing a distribution system to deliver biological organisms, nutrients and water to surface soils to promote aerobic biodegradation of the pesticides. After approximately 90 days, soils samples will be collected, analyzed, and compared to the treatment criteria. This alternative is being implemented as a Technology Demonstration under the Navy Environmental Leadership Program (NELP). The analytical results will be use to determine the success of the technology and whether addition remedial measures, if any, are required.

➤ ***Groundwater Assessment***

Because it is not known what affect, if any, the bioremediation may have on the mobility of the chemicals detected in the soils and/or groundwater, additional investigation of the pesticide BHC and arsenic in groundwater will be held pending the completion of the technology demonstration.

Remediation Alternatives for Soil at SWMU 15

Excavation and Offsite Incineration

Construction of Parking Area

Excavation and Onsite Bioremediation

RECOMMENDATIONS

Alternatives recommended for corrective action for SWMUs 6, 7, and 15 are summarized and explained in this section.

SWMUs 6 AND 7

Chemicals and Affected Media:

Hydrocarbons in Sludge and Soil, and LNAPL on Groundwater

Recommended Alternative for Sludge and Soil

➤ *Excavation with Onsite Low Temperature Thermal Treatment*

This alternative is recommended because it would protect human health and the environment by removing hydrocarbons from sludge and soils and eliminate these media as a potential source of hydrocarbons that could migrate to groundwater and become LNAPL. Additionally, under the NELP program, a technology demonstration will be conducted to assess this treatment technology. This technology demonstration will allow operating parameters of the thermal treatment unit to be studied and optimized, thereby reducing treatment time of sludge and soil for this alternative. This will increase the cost effectiveness of this technology as a thermal treatment unit would already be onsite, thereby eliminating the mobilization cost of another treatment unit.

Recommended Alternative for LNAPL

➤ *Collection in sumps with total fluids pumping*

This alternative is recommended because it would remove LNAPL from the surface of water table at the site. Currently, this alternative is being implemented under interim measures and data collected suggest that this alternative is effective. A monitoring program is to be implemented to continually assess the success of this technology. If this alternative were not able to remove LNAPL to the required minimum thickness, the sumps could be equipped with two pumps: one to extract water and one to extract LNAPL. Additionally, the monitoring program will be used to assess whether LNAPL or dissolved phase hydrocarbon related chemicals are migrating toward the St. Johns River and if additional assessment or remedial activities are warranted.

SWMU 15

Chemicals and Affected Media: Pesticides in Soil and Groundwater

Recommended Alternatives for Soil and Groundwater

➤ ***In situ Bioaugmentation and/or Construction of Parking Area***

Currently, SWMU 15 is participating in a NELP technology demonstration. This NELP activity has been designed to remediate soil at the site through bioaugmentation, which is the introduction of biological organisms to reduce the amount of pesticides in the soil. This alternative should protect human health and the environment and should achieve all corrective action objectives established for the site. However, should this alternative not meet the correction action objectives, the construction of a parking lot at the site would be the preferred alternative.

➤ ***Assessment of Groundwater***

Because it is not known what affect, if any, the bioremediation may have on the mobility of the chemicals detected in the soils and or groundwater, additional investigation of the pesticide BHC and arsenic in groundwater will be conducted following completion of the technology demonstration. The results of the assessment will be used to assess the horizontal and vertical extent of the pesticides, conduct human health and or ecological risk assessments, if necessary, and assess the need for interim measures and/or a corrective measures study.

*An Overview of the
Corrective Measures Study (CMS)
Group II Solid Waste Management Units*

November 16, 1995

*Naval Station Mayport
Restoration Advisory Board*

What is the purpose of a CMS?



- A CMS provides the analysis for recommending a *corrective action alternative* for SWMUs that require cleanup.

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What does a CMS do?

- Identifies corrective action objectives
- Classifies and screens technologies
- Develops and evaluates *corrective action alternatives*
- Recommends the best corrective action alternative for each SWMU

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How will the CMS be used?

- The CMS is the third step in the cleanup process.
- The CMS evaluates technological alternatives for cleaning up selected SWMUs and recommends the best one.
- Analysis completed in the CMS will be used to complete a *remedial design* for the selected cleanup alternatives.

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Which SWMUs require a CMS?

- The RFI indicated that certain SWMUs require a CMS
 - SWMU 6 (Waste Oil Pit) and SWMU 7 (OWTF Sludge Drying Beds)
 - » Sludge and soil
 - » Light non-aqueous phase liquid (LNAPL)
 - SWMU 15 (Old Pesticide Handling Area)
 - » Groundwater
 - » Soil

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SWMUs 6 and 7: What are the cleanup objectives?

- SWMUs 6 and 7
 - Remove LNAPL present on the water table in excess of 0.1 inch thickness.
 - Eliminate sludge and soil that contribute to the presence of LNAPL at the site.

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SWMU 15: What are the cleanup objectives?

■ SWMU 15

- Eliminate the potential for human and ecological receptor contact with pesticide-contaminated soil at the site.
- Evaluate the distribution of BHC in groundwater at the site.

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Corrective Action Alternative #1: Sludge and Soil at SWMUs 6 and 7

■ Excavation with Onsite Low Temperature Thermal Treatment

- Excavate sludge and soil
- Treat in onsite unit
- Analyze treated soil
- Backfill excavation with treated soil

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Corrective Action Alternative #2: Sludge and Soil at SWMUs 6 and 7

■ Excavation with Onsite Bioremediation

- Excavate sludge and soil
- Place on treatment pad
- Add water and nutrients
- Analyze treated soil
- Backfill excavation with treated soil

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Corrective Action Alternative #3: Sludge and Soil at SWMUs 6 and 7

■ Excavation with Offsite Soil Recycling

- Excavate sludge and soil
- Transport to offsite facility
- Backfill excavation

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Corrective Action Alternative #1: LNAPL at SWMUs 6 and 7

■ Collection in sumps with total fluids pumping

- Install sumps
- Equip sumps with pumps
- Extract water and LNAPL
- Collect and treat extracted fluids

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Corrective Action Alternative #2: LNAPL at SWMUs 6 and 7

■ Collection in trenches with LNAPL skimming

- Install trenches
- Equip trenches with pumps
- Extract LNAPL
- Collect and treat extracted LNAPL

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Corrective Action Alternative #3: LNAPL at SWMUs 6 and 7

- Collection in sumps with groundwater table drawdown and LNAPL skimming
 - Install sumps
 - Equip sumps with two pumps
 - Extract groundwater with one pump and LNAPL with other pump
 - Collect and treat extracted groundwater and LNAPL

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Corrective Action Alternative: Groundwater at SWMU 15

- Complete Assessment
 - Install groundwater monitoring wells
 - Sample and analyze groundwater
 - Determine if corrective action is required
 - Perform a water well survey

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Corrective Action Alternative #1: Soil at SWMU 15

- Excavation and Offsite Incineration
 - Excavate soil
 - Transport to offsite facility
 - Backfill excavation

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Corrective Action Alternative #2: Soil at SWMU 15

- Construction of Parking Area
 - Place geotextile over site
 - Place gravel on geotextile
 - Maintain parking area

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Corrective Action Alternative #3: Soil at SWMU 15

- Excavation and onsite biodegradation
 - Excavate soil
 - Place on treatment pad
 - Add water and nutrients
 - Add air
 - Analyze treated soil
 - Backfill excavation with treated soil

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Corrective Action Alternative #4: Soil at SWMU 15

- Insitu Bioaugmentation (NELP Technology)
 - Construct a distribution system
 - Add biological organisms, nutrients, and water
 - Analyze treated soil after 90 days

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Recommended Corrective Action Alternatives

- **Sludge and Soil at SWMUs 6 and 7**
 - Excavation with onsite thermal treatment
- **LNAPL at SWMUs 6 and 7**
 - Collection in sumps with total fluids pumping
 - Monitoring of Interim Measures
- **Soil at SWMU 15**
 - NELP technology demonstration *and/or*
 - Construct Parking Area
- **Groundwater at SWMU 15**
 - Complete assessment

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What happens next?

- The recommended alternatives are proposed to the public.
- Corrective action alternatives are chosen for each media at each SWMU.
- Designs are completed.
- The corrective measure is implemented.

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AGENDA

NAVSTA Mayport Restoration Advisory Board (RAB) Orientation Meeting January 18, 1996, 6:30 p.m.

- ▶ Welcome Cheryl Mitchell/Bob Weiss

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

- ▶ Presentation, Questions and Answers Frank Lesesne/RAB Members
Corrective Measures Study, Group II SWMUs

- ▶ Presentation, Questions and Answers Frank Lesesne/RAB Members
RCRA Facility Investigation Group I SWMUs

- ▶ Presentation David Driggers
Relative Risk Site Evaluation Primer

- ▶ Other Topics RAB Members
 - Availability Session Planning