

Baker

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March 25, 1994

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Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Mrs. Brenda Norton, P.E.
Navy Technical Representative

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0228
Final Meeting Minutes - Site Screening Process
Naval Weapons Station Yorktown, Yorktown, Virginia

Dear Mrs. Norton:

Baker Environmental, Inc. (Baker) is pleased to submit four copies of the final meeting minutes from the January 19, 1994 meeting with US Environmental Protection Agency (USEPA), Naval Weapons Station Yorktown, LANTDIV, and Baker personnel. This meeting took place at the Naval Weapons Station in Yorktown, Virginia. The purpose of the meeting was to discuss the site-screening process to be used to evaluate site-screening areas (SSAs) identified in the Federal Facilities Agreement.

Multiple activities associated with other deliverables for the WPNSTA Yorktown Project and government review time have delayed finalization of these meeting minutes. We regret any inconvenience this may have caused.

If you have any questions, please do not hesitate to call me at (412) 269-2010 or Ms. Donna Weidemann at (412) 269-2059.

Sincerely,

BAKER ENVIRONMENTAL, INC.



Lynne T. Srinivasan
Activity Coordinator

LTS/jc
Enclosures

cc: Ms. Valerie Walker, WPNSTA Yorktown (2 copies)
Mr. Robert Thomson, USEPA Region III (2 copies)
Ms. Lisa Ellis, VDEQ (2 copies)

**MEETING MINUTES
SSA PROCESS AND MISCELLANEOUS ITEMS
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA**

DATE: January 19, 1994

PLACE: Naval Weapons Station Yorktown, Yorktown, Virginia

ATTENDEES: Valerie Walker, WPNSTA Yorktown, (804) 887-4775
Jeffrey Harlow, WPNSTA Yorktown, (804) 887-4775
Brenda Norton, LANTDIV Code 18, (804) 322-4778
Robert Thomson, USEPA Region III, (215) 597-1110
Bruce Rundell, USEPA Region III, (215) 597-1268
Nancy Rios, USEPA Region III, (215) 597-6682
Richard Hoff, Baker Environmental, Inc., (412) 269-2099
Lynne Srinivasan, Baker Environmental, Inc., (412) 269-2010
Donna Weidemann, Baker Environmental, Inc., (412) 269-2059
David Martin, Baker Environmental, Inc., (412) 269-2041

Note: Lisa Ellis from the Virginia Department of Environmental Quality (VDEQ) could not attend due to an emergency.

The meeting began at 1:25 P.M. with Rich Hoff explaining the site screening process (SSP) to be used to evaluate the site screening areas (SSAs) identified at the Naval Weapons Station Yorktown, Yorktown, Virginia (WPNSTA Yorktown). A short presentation, using overheads (copies of which were distributed during the meeting and are attached) was completed, during which Rich explained how Risk-Based Concentration (RBCs) values, developed by the USEPA Region III, would be used to evaluate each SSA. The SSP will include collection of site-specific samples (soil, groundwater, surface water, sediment), laboratory analysis, and data validation of those samples using Level C protocols. The site-specific concentrations will be divided by the RBCs and summed. For those compounds which are known or potential carcinogens, the sum will be multiplied by 10^{-6} and compared to 1×10^{-6} , the lower limit of Incremental Cancer Risk (ICR) established in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). For the noncarcinogenic compounds, the ratios of concentrations to RBCs will also be summed and compared to 1.0, the Hazard Index (HI). In either case, if the sum of the ratios exceed the ICR or the HI, the SSA would be recommended for further investigation. If the sum of the ratios is less than the ICR or HI, the SSA would be recommended for no further action. Nancy Rios noted that for sums close to 1.0 or 1×10^{-6} , a Monte Carlo analysis should be used, when necessary, to address the uncertainty in the data. It was also noted that the latest RBC values would be used in the evaluation of SSAs (RBCs are usually updated on a quarterly basis.) The group agreed with this approach.

To address the ecological impact, surface water and sediment samples would be collected from the SSA, if appropriate. These data would also be analyzed and validated using Level C protocols. The constituent concentrations for surface water will be compared to ambient water quality criteria, while the sediment data will be compared to National Oceanic and Atmospheric Administration (NOAA) Effects Range - Low (ER-L) concentrations. Ratios of chemical concentrations in surface water or sediment samples to appropriate criteria or guidance will be evaluated in a manner similar to the human health HI. For chemicals that could possibly bioconcentrate from surface water, ambient water quality criteria will be divided by a factor of ten to ensure that ecological

effects will not occur. If any of the constituents equal or exceed their respective criteria (i.e., surface water or sediment sample ratio ≥ 1.0), and the water body is judged by USEPA and the Commonwealth of Virginia to provide important habitats or may affect other important downstream habitats, further action (i.e., RI/FS study) may be warranted. This approach corresponds to a Tier I ecological evaluation approach discussed with Bob Davis of USEPA Region III at the December 7, 1993, meeting.

The discussion during the presentation brought up several issues to be addressed or discussed, as itemized below:

- Nancy Rios noted that she wanted to address surface water as a drinking water source. Lynne Srinivasan noted that there is no surface water intake at WPNSTA Yorktown or the surrounding area. Nancy agreed that this pathway would not need to be evaluated.
- Nancy Rios stated that she wanted to evaluate the consumption of fish as a potential pathway at the SSAs. Lynne Srinivasan noted that analysis of fish tissue was completed during the Round One RI, and that no risks had been noted during the analysis (Focused Biological Sampling and Preliminary Risk Evaluation, Naval Weapons Station, Yorktown, Virginia, July 1993). Nancy agreed that this pathway did not need to be evaluated.
- Nancy Rios mentioned that a 25% factor was used as an assumption for the amount of fish consumed at WPNSTA Yorktown in the Focused Biological Report. She wanted a justification for the use of the 25% factor. Rich Hoff said he can discuss this with Dave Shield (WPNSTA Yorktown, Natural Resources Specialist). This will be discussed further in the SSP Report.
- A question was raised about dermal exposure to soil in the SSP. Rich Hoff noted that soil dermal exposure was not evaluated in the derivation of soil RBCs. Also, this pathway usually presents a very minor portion of the total risk to humans. A semiquantitative discussion of dermal contact will be presented in the uncertainty analysis section of the risk evaluation. Region IV default absorption factors will be used.
- Lynne Srinivasan noted that NOAA ER-L values are not specific for fresh or saline waters. These values will be used for comparison because they are the only data available for comparison. She also mentioned that groundwater will be compared to maximum contaminant levels (MCLs) and VDEQ groundwater quality criteria as part of the SSP.
- Nancy Rios asked if subsurface soils would be collected, and expressed concern about the subsurface soil to groundwater pathway. Subsurface soils will be collected as part of the investigation. Lynne noted that surface water reservoirs located off-Station are used for drinking water in and around WPNSTA Yorktown, not groundwater.
- Lynne Srinivasan asked USEPA personnel if a written approval of the SSP was needed from the USEPA. Rob Thomson said that a short summary of the SSP could be sent to USEPA for approval. Only one draft would be needed by USEPA. Lynne also asked about what happened at the end of the SSP - would a decision document be requested by USEPA? Rob asked that a summary document be written (10-15 pages) which summarized the activities completed, results of the sampling, and conclusions regarding the need for further investigation or no

further investigation at each SSA. This document would be similar to the Proposed Remedial Action Plans used at the end of the RI/FS process. The document would need to be short and simple so that the general public will be able to understand the results.

- Nancy Rios expressed concern about taking enough samples to evaluate each SSA properly. Baker noted that the USEPA would be reviewing the Work Plans for each SSA (or group of SSAs) and that the USEPA could comment on the number of samples. Bruce Rundell commented that the BTAG group should be consulted prior to beginning field activities to gain their approval for sampling locations.
- Lynne Srinivasan asked who would be signing all future RODs. Rob Thomson said that it should be the USEPA Regional Administrator, the Commonwealth of Virginia (if they are a party to the FFA), and the Commanding Officer of WPNSTA Yorktown.
- Brenda Norton asked whether SSAs should have TRC meetings, or if a smaller group (a sub-TRC) should meet for the SSAs. After discussion, it was agreed by the group that there would not be a TRC meeting for the Work Plan stage of activities, although it would be necessary to get input from BTAG on the sampling. Also, the NCP does not require a TRC meeting for pre-RI/FS work. A full TRC meeting would take place after the investigation to explain the findings and future activities at each SSA. The SSA reports would be placed in the Administrative Record.
- Rob Thomson asked for a copy of the database from the Round One RI Report because the USEPA is compiling information on all the sites. He also asked for a copy of the site descriptions; Lynne noted that these are available in the Site Management Plan. (This information was sent to USEPA's Oversight Contractor [Black and Veatch] in early February 1994).
- The performance of a treatability study on soils contaminated by nitramine compounds was discussed. Brenda Norton handed out an outline (which is attached) that showed the proposed approach to a treatability study. First, a technical review of what has been completed to date on remediation of soils contaminated by nitramine compounds would be completed. The results of the literature review would be compiled and presented to the USEPA. Then a Treatability Study Work Plan would be completed. Brenda also noted that the money to complete these tasks would come from the money not used to perform the RI/FS for soils at Sites 4, 16, and 21. The RI/FS at these three sites had been planned for FY 1994, but schedule changes in the SMP were made for these sites based on site ranking and USEPA/State comments. This change in schedule would move up the start of treatability study activities about 8 months.

Nancy Rios noted that it is very important to come up with a good Work Plan for the treatability study, especially with respect to the number of samples. Baker can talk to Nancy and her point of contact at Kerr Labs to develop the plans. Donna Weidemann asked Nancy if she had an example of a good set of Work Plans. Nancy told her to see if Baker had received the biotreatment guidance from Rob. This would be a good guidance to use. If Baker had not received this document, she can get us a copy. Nancy also recommended that the treatability study be set up with a "screening study", that is, to evaluate the data after 3 to 6 months. If the process is not working, the treatability study should be stopped, even if it was originally planned to be longer in duration.

A general discussion of the effectiveness of biotreatment of soils contaminated by nitramine compounds was initiated. Nancy Rios noted that biotreatment of these types of soils will not clean up to residential levels, and that both residential and industrial scenarios will have to be evaluated for risk and clean-up purposes. Nancy also noted that the USEPA prefers that clean-up levels be met in the laboratory prior to starting pilot studies in the field. Rob Thomson said that he will check different RODs for how soils contaminated by nitramine compounds were treated and to what concentrations. He concluded that biological treatment (white rot fungus) may not be effective for remediation of soils, and that the only other known remedial alternative is incineration. It was then concluded that the technology review should be completed and submitted to USEPA. Whatever treatments are recommended should be discussed with Nancy Rios and her contacts at Kerr Labs to see if the treatments might be feasible.

- Lynne Srinivasan mentioned concern about the scheduling of design activities prior to signing the ROD. Rob Thomson agreed; he did not think that design activities should start prior to ROD signature. However, the issue of Section 120 of CERCLA was raised. In CERCLA, there should be a continuous on site presence at the site under remediation within 15 months of ROD signing. However, the minimum scheduled time for development and review of design documents is 18 months. Rob noted that the USEPA wanted to stick to that review schedule, and even mentioned that it was a minimum schedule, that is, the design review and approval could take longer. Brenda Norton noted that the Navy's opinion on the 15 month CERCLA requirement was that remediation should start within 15 months of ROD signing. Rob Thomson said that the Army defines a continuous presence by setting up a trailer at the site. Lynne asked Rob if he would prepare a letter explaining USEPA Region III's position on the 15 month requirement. Rob agreed to prepare a letter explaining the USEPA Region III's position and expectations for the remediation schedule after the ROD was signed. Rob also said that working on the design might constitute an on site presence.
- The procedures for incineration were discussed. USEPA directives from Carol Browner now require test burns at incinerators prior to signing the ROD. This allows for the modeling of residual risk to the surrounding community from the incineration activities. Nancy Rios has a guidance document on how incineration is utilized under RCRA. She said this would also be applicable to CERCLA.

The meeting adjourned at approximately 4:30 P.M.

USEPA/STATE/NAVY BRIEFING
SITE SCREENING AREA PROCESS
NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

January 19, 1994

SITE SCREENING AREA PROCESS NAVAL WEAPONS STATION DISCUSSION OVERVIEW

- Definition of Site Screening Area (SSA)
- Definition of Site Screening Process (SSP)
- Site Screening Process Approach
 - Human Health Evaluation
 - Ecological Evaluation
- Site Screening Process Rationale and Examples
- Further Action or No Action Decision

**SITE SCREENING AREA PROCESS
NAVAL WEAPONS STATION
SITE SCREENING AREA DEFINITION**

- Site Screening Area (SSA)

SSAs are defined in the WPNSTA Yorktown Draft Federal Facilities Agreement (FFA), November 4, 1993, as:

"(currently listed areas) and any additional areas agreed to by the Parties in the future. SSAs may be either RCRA Solid Waste Management Units (SWMUs) or RCRA Areas of Concern (AOCs) or CERCLA AOCs. When the Parties agree, SSAs may expand or contract in size as information becomes available indicating the extent of contamination... "

**SITE SCREENING AREA PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS DEFINITION**

- Site Screening Process (SSP)

SSPs are also defined in the FFA as:

"the mechanism ... for evaluating whether identified SSAs should proceed with a Remedial Investigation/Feasibility Study. The SSP encompasses both the Facility's RCRA AOC and SWMU areas and newly discovered CERCLA AOCs within the Facility boundaries..."

**SITE SCREENING AREA PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS APPROACH**

- **SSP Approach - Human Health Evaluation**

Potential risks to human health will be evaluated by calculating the ratio of contaminant concentrations in a given environmental medium to appropriate USEPA Region III Risk-Based Screening Concentrations (RBCs).

Ratios will be summed and multiplied by 10^{-6} to determine Incremental Cancer Risk (ICR) values for future residential and commercial/industrial property use. Ratios will be summed to determine Hazard Indices (HIs) for noncarcinogenic contaminants.

**SITE SCREENING AREA PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS APPROACH (continued)**

- **SSP Approach - Ecological Evaluation**

Potential ecological effects will be evaluated by comparing contaminant concentrations in surface water and sediment samples to available toxicological data (i.e ACQUIRE data), Commonwealth of Virginia and USEPA standards and criteria. Ratios will be derived in a manner similar to that used in the Human Health Evaluation.

The ratio will be evaluated like an HI, in that ecological ratios equal to or exceeding 1.0 could indicate the potential for adverse effects.

**SITE SCREENING AREA PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS RATIONALE**

- USEPA, in March 1991 Office of Solid Waste and Emergency Response (OSWER) directive, promulgated the use of standard default exposure factors to "reduce unwarranted variability in exposure assumptions" and "provide a consistent approach to assessing exposure when there is a lack of site specific data or consensus on which exposure factors to choose".

Default exposure factors are now routinely used in the current baseline risk assessment process and are equal to those values used in the derivation of USEPA Region III RBC values.

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS RATIONALE (continued)**

Parameter	Default Value	RBC Value
<u>Residential Exposure</u>		
Child Soil Ingestion	200 mg/d	200 mg/d
Exposure Frequency	350 d/yr	350 d/yr
Exposure Duration	6 yrs	6 yrs
Body Weight	15 Kg	15 Kg
Adult Soil Ingestion	100 mg/d	100 mg/d
Exposure Frequency	350 d/yr	350 d/yr
Exposure Duration	30 yrs	30 yrs
Body Weight	70 Kg	70 Kg

**SITE SCREENING PROCESS
 NAVAL WEAPONS STATION
 SITE SCREENING PROCESS RATIONALE (continued)**

Parameter	Default Value	RBC Value
<u>Commercial/Ind. Exposure</u>		
Soil Ingestion	50/480 mg/Kg*	100 mg/d
Exposure Frequency	250 d/yr	250 d/yr
Exposure Duration	25 yrs	25 yrs
Body Weight	70 Kg	70 Kg

* Values correspond to ingestion associated with not digging/digging activities.

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS RATIONALE (continued)**

"Generally Acceptable" risk equals:

- Carcinogens
 - ▶ National Contingency Plan (1990) set acceptable Incremental Cancer Risk (ICR) range between 1×10^{-4} to 1×10^{-6} , with point of departure equal to 1×10^{-6} . RBCs are derived for the NCP point of departure.

- Noncarcinogens
 - ▶ Hazard Index (HI) of less than 1.0 indicates that the potential for systemic (noncarcinogenic) health effects is limited. Adverse systemic health effects would not be expected subsequent to exposure. RBCs are derived for an HI of 1.0.

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS EXAMPLES**

<u>Chemical</u>	<u>Soil (ppm)</u>	<u>* RBC (ppm)</u>	<u>Ratio</u>
TCE	15.5	58.0	0.267
DDT	2.2	1.9	1.158
Benzene	11.8	22.0	0.536
Total			1.961
ICR			2×10^{-6}

* - Residential soil RBC value for potential carcinogens.

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS EXAMPLES (continued)**

<u>Chemical</u>	<u>Soil (ppm)</u>	<u>* RBC (ppm)</u>	<u>Ratio</u>
Toluene	10000.0	16000.0	0.625
Xylenes	120000.0	160000.0	0.750
Ethylbenzene	10270.0	7800.0	1.317
Total			2.692
HI			2.7

* - Residential soil RBC values for noncarcinogens.

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS EXAMPLES (continued)**

<u>Chemical</u>	<u>Sediment (ppm)</u>	<u>NOAA ER-L (ppm)</u>	<u>Ratio</u>
DDT	32.1	0.001	32100
Arsenic	21.0	33.0	0.636
Total			32100

NOAA ER-L is the lower tenth percentile value at which adverse effects may be observed.

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
SITE SCREENING PROCESS EXAMPLES (continued)**

<u>Chemical</u>	<u>Surface Water (ppb)</u>	<u>AWQC (ppb)</u>	<u>Ratio</u>
DDT	32.1	0.001	32100
Arsenic	21.0	190.0	0.111
Total			32100

**SITE SCREENING PROCESS
NAVAL WEAPONS STATION
FURTHER ACTION OR NO ACTION DECISION**

- Human Health
 - ▶ Future residential property use scenarios for soil produce an ICR and HI value in excess of 1×10^{-6} and 1.0 suggesting that the potential for human health effects exists. Further action is thus warranted.

- Ecological Effects
 - ▶ The sediment NOAA ER-L value and surface water ambient water quality criteria for DDT was exceeded, which suggests that potential effects on aquatic life could occur. If the water body is judged by USEPA and the Commonwealth to provide important habitats, or affects other important downstream habitat, then further action is warranted.

**NAVAL WEAPONS STATION, YORKTOWN, VIRGINIA
TREATABILITY STUDY OPTIONS - BIOLOGICAL TREATMENT**

IN SITU TREATMENT - Little information available for explosives

1. AEROBIC TREATMENT

- **Air Injection/Extraction (Bioventing, Air Sparging)**
 - Typically uses indigenous bacteria
 - Can be combined with water injection for nutrient/bacteria addition
- **Water Injection/Extraction (Typically combined with groundwater treatment)**
 - Ozone, hydrogen peroxide, or oxygen addition with nutrients
 - Typically includes seeding with bacteria
 - Above-ground reactors (continuous, attached-growth, batch)

2. ANAEROBIC TREATMENT - Little information available

- **Water Injection/Extraction (Typically combined with groundwater treatment)**
 - Injection wells, infiltration trenches, or spray irrigation
 - Above-ground reactors (attached-growth, batch)

EX SITU TREATMENT - Bacterial and fungal systems

1. AEROBIC TREATMENT (Demonstrated for TNT, RDX, HMX on bench- and pilot-scales, complete mineralization of TNT not well-proven)

- **Landfarming (6-18" lifts, large area required, Pilot study for TNT completed at Hercules Incorporated)**
- **Biocells/Biopiles**
- **Bioslurry (Can be combined with groundwater treatment)**
 - Batch reactors (full-scale system planned at Joliet Army Ammunitions Plant for TNT, DNT, and RDX)
 - Lagoon slurry reactors
- **Composting (10-35% amendment addition, manure, vegetable waste, alfalfa, saw dust, wood chips)**
 - Windrows
 - Static Piles (mechanical agitation, forced aeration)
- **White Rot Fungus (Bench-scale tested only, tolerance problems with TNT > 25 ppm, tolerant strains being developed)**

2. ANAEROBIC TREATMENT - Few full-scale applications

- **Biocells/Biopiles**
- **Bioslurry**