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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Environmental Protection Agency
Region IV
Attn: Mr. Robert Scarbrough
Chief, RCRA Branch
Waste Management Division
345 Courtland Street N.E.
Atlanta, GA 30365

Subj: RCRA FACILITY ASSESSMENT FOR NAVAL AIR STATION MEMPHIS, MILLINGTON, TN, PERMIT TN2-170-022-600, HSWA - TN 002

Dear Mr. Scarbrough:

This letter is to provide you with our response to both your and the State of Tennessee's comments on our RFA/RFI Work Plan submitted in April 1987. Enclosure (1) is our response to the comments provided in your May 9, 1989 letter. Enclosure (2) is our response to the comments provided in your July 15, 1988 letter. Enclosure (3) is our response to the State of Tennessee's comments provided by their September 25, 1987 letter.

It is still our position that we have complied with our permit conditions II.A.1 and II.A.2 as set forth in the HSWA permit effective October 15, 1986. We provided to the Regional Administrator a report within 180 days of the effective date of the permit which identified and characterized all solid waste management units. Based upon the comments we are unsure whether your contractor has reviewed our permit conditions. We concur that our submitted work plan does not meet EPA's current guidance documents as we submitted our work plan three months before your current Draft RFI guidance document was released.

Your contractor made several review comments which indicate that the RFI process is for full characterization and not verification. According to EPA's RFI guidance documents and our permit conditions, verification sampling is allowed as part of the RFI process. We also find our permit conditions inconsistent with EPA's RFA and RFI guidance documents. EPA's guidance documents state that EPA will conduct the RFA.

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Subj: RCRA FACILITY ASSESSMENT FOR NAVAL AIR STATION MEMPHIS, MILLINGTON, TN, PERMIT TN2-170-022-600, HSWA - TN 002

Based upon the above, we are very concerned that we are receiving a "standard" type review from your contractor which does not consider that the documents we developed were to satisfy a permit written before your current guidance was available. This does not change our commitment and responsibility to satisfying our RCRA responsibilities, but it does require a review which also considers the permit and its history if we are to satisfy our responsibilities in a timely, logical and effective manner. To this end we suggest a meeting at your convenience to discuss our comments.

If you have any questions, please contact either Mr. Robert Moser at telephone number (803) 743-0573 or CWO3 Ken Iverson at telephone number (901) 873-5462.

Sincerely,

G. C. BRADLEY, P.E.
HEAD, ENVIRONMENTAL BRANCH

Encl:
(1) Navy's Response to EPA's May 9, 1989 letter
(2) Navy's Response to EPA's July 15, 1988 letter
(3) Navy's Response to Tennessee's Sep 25, 1988 letter with attachments I, II, and III

Copy to:
EPA Region IV (Mr. Arthur Linton) (w/encl)
TDHE Nashville (Mr. Thomas Tiesler) (w/encl)
TDHE Memphis (Mr. Paul Patterson) (w.encl)
NAS Memphis (CWO3 Ken Iverson) (w/encl)

RESPONSE TO EPA REGION IV's COMMENTS
PROVIDED BY
EPA'S LETTER DATED 9 MAY 1989

The following response address EPA's comments on the specific items found in the minutes of the RFI meeting held on January 18, 1989:

Comment: 1. "... We intend to provide joint comments on future documents, consistent with our current protocol with Tennessee, with the understanding that EPA has the responsibility for regulating HSWA provisions and may elect to dispense with joint comments on HSWA-related documents."

Response: We appreciate EPA willingness to provide us with a joint set of comments and we do understand that EPA has the responsibility for regulating HSWA provisions.

Comment: 2. "A letter has not yet been provided to EPA explaining why the Navy does not agree with the review by EPA's contractor, A.T. Kearney, of the RFI Work Plan. We are willing to consider the Navy's objections, point by point, provided those objections are accompanied by justification...."

Response: We are providing our response to EPA's contractors comments by the letter which we provide this response, see the other enclosures.

Comment: 3. "The hydrogeological information required in the RFI Work Plan was not provided in sufficient detail to permit an adequate review of the plan...."

Response: We will provide this information in the revised RFA and RFI Work Plan. Please refer to the responses we are providing on your contractor's comments for additional response.

Comment: 4. "The Navy has not provided a rationale for not testing ground water at site 1 (Fire Department Drill Area), site 5 (Fire Fighting Training Area), and Site 6 (N-125 Battery Shop Storm Sewer and Ditch). Our position, with respect to firefighting training areas, is that groundwater monitoring of these areas is necessary unless it can be conclusively demonstrated that groundwater contamination could not have occurred."

Response: Since these sites are listed as CERCLA sites and since Region IV has concerns about the potential for these sites to have a release, we will be investigating these sites and the groundwater underneath them by the means of an RI/FS

which we will be provided to EPA REGION IV to satisfy both CERCLA and RCRA requirements. Site 6 is located at building N-126.

Comment: 5. "The Navy has not yet sent sampling data from site 4 (Storm Sewer and Ditch), as requested by EPA."

Response: Based on your comments on our RFA/RFI Work Plan, it was our understanding that this information had to be part of the RFA and RFI Work Plan. However, this report is provided as attachment II to our response to the state of Tennessee's comments which are provided with this letter.

Comment: 6. "The Navy has not yet provided a schedule to coordinate investigations with CERCLA at Site 3 (Building N-121 Plating Shop Dry Well), Site 7 (Building N-125 Battery Shop Dry Well), and Site 8 (Cemetery Yard #1), as requested by EPA."

Response: We are currently preparing RI/FS Work Plans for Sites 1 thru 9, which includes Site 7 (Building N-126 Plating Shop Dry Well). We offer the following schedule which is dependent upon the availability of funds from Congress and your review. This schedule should allow for the coordination of the CERCLA investigation with RCRA investigation including UST:

Navy submit Revised RFA by	31 July 1989	
Navy receive EPA comments by	13 September 1989	45 days
Navy submit Revised RFI by which will include a Draft Final RI Work Plan for Sites 1 thru 9. (We will need about 45 days to get an contract authorized)	11 January 1990	120 days
Navy receive EPA comments by	25 February 1990	45 days
Navy begin field work by (in order to get this contract portion authorized) Both RCRA and CERCLA will begin at this time.	11 April 1990	45 days
Navy submit RFI Report by	11 April 1991	365 days
Navy receive EPA comments by	10 July 1991	90 days
Navy submit Corrective action plan and request for permit mod. (for those RCRA and CERCLA sites which corrective action will cost more than 200,000$ a MILCON project will be submitted for Congress funding approval - generally this process takes 3 years before design will start and another 1 to 2 years before construction starts, for those corrective action of less than 200,000$ a Special Project will be submitted for approval)	7 November 1991	120 days
Navy implement corrective action	7 November 1995-6	
Navy complete corrective action	7 November 2000	

Note: Currently Congress has established the Defense Environmental Restoration Account for the funding of CERCLA investigation related work. These funds can not be used for current RCRA related work. Congress has not established a specific funding source for RCRA related work. Funding for the RCRA/HSWA program has to come out of the Navy's Defense Budget which has been greatly reduced. By Congress we are tasked with both defending our country and protecting our environment using our defense dollars. The Navy accepts this challenge from Congress. This why we are concerned about spending needless dollars to rewrite a work plan that already meets permit conditions only to repeat EPA's guidance documents. It is and always has been our objective in the HSWA portion of RCRA, to take whatever corrective actions necessary to protect human health and the environment.

Comment: 7. "The Navy has yet to provide the sampling data on Site 28 (Southside STP) and Site 40 (Salvage Yard #1) requested by EPA.

Response: Based on your comments on our RFA/RFI Work Plan, it was our understanding that this information had to be part of the RFA and RFI Work Plan. However, this report is provided as attachment I to our responses to the state of Tennessee's comments which are provided with this letter.

The following response address EPA's comments on the "Action Items" listed in the minutes of the RFI meeting:

Comment: 1. "With respect to items a and e, groundwater monitoring will be required around firefighting training areas unless the Navy can provide convincing data to indicate that groundwater contamination could not have occurred. Upon investigation into this matter, the Agency has determined that the potential for contamination is such that regulatory authorities in Region IV do require groundwater monitoring around firefighting training areas."

Response: Since these sites are listed as CERCLA sites and since Region IV has concerns on these sites, we will be investigating these sites and the groundwater underneath them by the means of an RI/FS which we will be provided to EPA REGION IV to satisfy both CERCLA and RCRA requirements. Site 6 is located at building N-126.

Comment: 2. "The Navy has not yet provided EPA with a copy of the Verification Study with the field boring logs and original test data, as requested in item b."

Response: Based on your comments on our RFA/RFI Work Plan, it was our understanding that this information had to be part of the RFA and RFI Work Plan. Enclosed is a copy of the Verification Study.

Comment: 3. "The Navy has yet provide a schedule for revising the RFI Work Plan, as addressed in item c...."

Response: We offer the following schedule which is dependent upon the availability of funds from Congress and your review. This schedule should allow for the coordination of the CERCLA investigation with RCRA investigation including UST:

Navy submit Revised RFA by	31 July 1989	
Navy receive EPA comments by	13 September 1989	45 days
Navy submit Revised RFI by which will include a Draft Final RI Work Plan for Sites 1 thru 9.	11 January 1990	120 days

This schedule requests 120 days after EPA's review of the Revised RFA rather than your stated 45 days. This will allow us to get this product contracted and prepared to meet EPA's guidance requirements.

Comment: 4. "The Navy has not yet provided a specific response to A.T. Kearney"s comments, as requested in item d."

Response: We are providing our response to EPA's contractors comments with this response, see the other enclosure.

Comment: 5. "With reference to item f, we are agreeable to the Navy's desire to investigate underground storage tanks under the Navy's UST program. However, it must be remembered that investigatory requirements for hazardous waste USTs are subject to RCRA schedules and technical requirements."

Response: We appreciate EPA's concurrence. We will comply, within our ability, with the RCRA schedules and technical requirements but our ability to comply will be dependent upon Congressional funding.

COMMENTS ON EPA's REGION IV
15 JULY 1988 LETTER
ON
NAVAL AIR STATION MEMPHIS
RCRA FACILITY INVESTIGATION (RFI) WORK PLAN

COMMENT: EPA ltr 4WD-RCRA dtd 15 July 1988

a) We have reviewed your RCRA Facility Investigation Work Plan, dated May 1, 1987, which you submitted as required by conditions II A-1 and A-2 of your permit (effective date October 15, 1986). Our review concludes that your submittal does not satisfy the conditions. Attached to this letter are comments describing the technical inadequacies and informing you the necessary changes or additions.

RESPONSE:

We provided a work plan that met the following permit conditions.
HSWA PERMIT ISSUED 15 SEP 1986
IDENTIFICATION NUMBER TN2 170 022 600
PERMIT NUMBER HSWA - TN 002
EFFECTIVE DATE 15 OCTOBER 1986

PART II - SOLID WASTE MANAGEMENT UNITS

II.A. ASSESSMENT OF NEED FOR CORRECTIVE ACTION

II.A.1. The Permittee shall provide to the Regional Administrator a report which identifies and characterizes all solid waste management units (defined in I.G.2) currently or previously located at the facility.
Solid Waste Management unit for purposes of this permit includes any unit that have ever accumulated, treated, stored, or disposed of solid wastes containing hazardous constituents and/or hazardous wastes (irrespective of whether the units were intended for waste management). Such units may include but are not limited to any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank (including storage, treatment, and accumulation tanks), container storage unit and wastewater treatment unit. These units include those that are subject to 40 CFR Part 264, and those which are not subject to such regulations.
In preparing this report, the Permittee will review all existing sources of information and develop new information related to solid waste management practices and releases at the facility and also shall fully investigate the facility property to determine the

existence of any additional solid waste management units. This report must include, at a minimum, the following information for each unit:

a) Type of unit: PROVIDED BY UNIT NAME.

b) Outline each unit on a location map of appropriate scale;

A map of scale 1"=200' was prepared for each unit.

c) General dimensions and capacities;

General dimensions were given and known capacities were given - SWMU dimensions/capacity

d) Function of unit; (Provided - Function)

e) Dates that the unit was operated;

(Provided - SWMU dates of operation)

f) Description of the wastes that were place in the unit;

(Provided - Substance handled in SWMU)

g) Either -- a description of any known, suspected, or presumed releases or spills of hazardous waste or hazardous constituents (per Appendix VIII of 40 CFR Part 261) which includes any existing data and analyses of groundwater, soil, surface water, and air quality.

(Provided - Past SWMU sample results)

h) Or -- a description of technical studies and results and other information which convincingly demonstrates that a release has not occurred or demonstrates that a release is highly improbable.

(Provided - Past SWMU studies and Additional information)

i) Or -- an indication that waste character or release is not known. Determination of waste character and release will be accomplished as

part of the solid waste management investigation outlined in II.A.2.

(Provided - Comments)

II.A.2. The Permittee shall prepare, as necessary, any determinations required under II.A.1.i and prepare a solid waste management unit investigation plan and a proposes schedule for implementation and completion, for each solid waste management unit identified through II.A.1. which are known, suspected, or presumed to have releases of hazardous constituents to the environment. (EPA's ltr dtd 15 Sep 86 provide the following change: If the waste character and release information outlined in Section II.A.1. is not readily available, it can be developed as part of the activities under II.A.2.

Each solid waste management unit investigation plan shall address, characterize, and define at least the following:

a) Schedules;

(Schedule provided)

b) Methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste or hazardous constituents has occurred and/or to characterize the nature and extent or releases;

(Provided - Sample locations)

c) Pathways of contaminant transport (i.e., air, soil, surface water or groundwater);

(Provided - contaminant transport)

d) Current and future human and biotic receptors;

(Provided - Potential receptors, page 5)

e) Applicable regulatory standards, advisories, or related guidelines (a representative list of potentially applicable standards/advisories/ guidelines is found in Federal Register, Volume 50, November 20, 1985, pp. 47948-47950);

(Provided - Applicable regulatory standards and potential non-compliance pages 6-10)

f) Noncompliance with standards, advisories, and guidelines;

(Provided - same as e)

and,
g) Contaminant effects on human health and the environment.

(Provided - Contaminant effects pages 11-)

COMMENTS: ATKEARNEY ltr dtd 23 June 1988

a) Our assessment centers on the gross technical deficiencies that we found associated with the NAS Memphis RFI document. In addition, we have provided general technical comments pertaining to the following technical deficiencies:

hydrogeology;
waste management approach;
schedule;
data management and interpretation;
sampling approach;
sampling media;
analytical parameters; and
underground storage tanks.

A cursory review of the RFA document noted that this document, in conjunction with the RFI work plan approach does not provide information which adequately addresses the objectives of the EPA Region IV RFI requirements.

... the gross deficiencies encountered in the NAS Memphis text, particularly, the hydrogeologic setting brings additional question of whether or not all SWMUs have been identified and investigated.

RFI Review Report:
Section 1.0

a) Presents a technical review of the RCRA Facility Investigation (RFI) plan ... principle sources...used in conducting this review ... RFI ... RFA.

RESPONSE:

EPA Region IV had other data which we assumed would be considered when they reviewed our submitted plans, such as our Part B Permit Applications, Initial Assessment Study, and Verification Study.

COMMENT:

b) The scope of this technical review includes a review of the following area:

environmental setting;
source characterization;
characterization of releases of hazardous constituents;

potential receptors: and
overall approach of the RFI plan.

RESPONSE:

Our work plan was based on the following conditions:

HSWA PERMIT ISSUED 15 SEP 1986
IDENTIFICATION NUMBER TN2 170 022 600
PERMIT NUMBER HSWA - TN 002
EFFECTIVE DATE 15 OCTOBER 1986

PART II - SOLID WASTE MANAGEMENT UNITS

II.A. ASSESSMENT OF NEED FOR CORRECTIVE ACTION

II.A.1. The Permittee shall provide to the Regional Administrator a report which identifies and characterizes all solid waste management units (defined in I.G.2) currently or previously located at the facility.
In preparing this report, the Permittee will review all existing sources of information and develop new information related to solid waste management practices and releases at the facility and also shall fully investigate the facility property to determine the existence of any additional solid waste management units. This report must include, at a minimum, the following information for each unit:

a) Type of unit: PROVIDED BY UNIT NAME.

b) Outline each unit on a location map of appropriate scale;

A map of scale 1"=200' was prepared for each unit.

c) General dimensions and capacities;

General dimensions were given and known capacities were given - SWMU dimensions/capacity

d) Function of unit; (Provided - Function)

e) Dates that the unit was operated;

(Provided - SWMU dates of operation)

f) Description of the wastes that were place in the unit;

(Provided - Substance handled in SWMU)

g) Either -- a description of any known, suspected, or presumed releases or spills of hazardous waste or hazardous constituents (per Appendix VIII of 40 CFR Part 261) which includes any existing data and analyses of groundwater, soil, surface water, and air quality.

(Provided - Past SWMU sample results)

h) Or -- a description of technical studies and results and other information which convincingly demonstrates that a release has not occurred or demonstrates that a release is highly improbable.

(Provided - Past SWMU studies and Additional information)

i) Or -- an indication that waste character or release is not known. Determination of waste character and release will be accomplished as part of the solid waste management investigation outlined in II.A.2.

(Provided - Comments)

II.A.2. The Permittee shall prepare, as necessary, any determinations required under II.A.1.i and prepare a solid waste management unit investigation plan and a proposes schedule for implementation and completion, for each solid waste management unit identified through II.A.1. which are known, suspected, or presumed to have releases of hazardous constituents to the environment. (EPA's ltr dtd 15 Sep 86 provide the following change: If the waste character and release information outlined in Section II.A.1. is not readily available, it can be developed as part of the activities under II.A.2.

Each solid waste management unit investigation plan shall address, characterize, and define at least the following:

a) Schedules;

(Schedule provided)

b) Methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste or hazardous constituents has occurred and/or to characterize the nature and extent or releases;

(Provided - Sample locations)

c) Pathways of contaminant transport (i.e., air, soil, surface water or groundwater);

(Provided - contaminant transport)

d) Current and future human and biotic receptors;

(Provided - Potential receptors, page 5)

e) Applicable regulatory standards, advisories, or related guidelines (a representative list of potentially applicable standards/advisories/ guidelines is found in Federal Register, Volume 50, November 20, 1985, pp. 47948-47950);

(Provided - Applicable regulatory standards and potential non-compliance pages 6-10)

f) Noncompliance with standards, advisories, and guidelines;

(Provided - same as e)

and,

g) Contaminant effects on human health and the environment.

(Provided - Contaminant effects pages 11-)

COMMENT:

c) In summary, the NAS Memphis Site Investigation Plan - RFI is found to be grossly deficient in providing the Following:

both the necessary data and information (e.g., hydrogeologic, operational, sampling, and analysis) which would then allow for a substative review: and

RESPONSE:

We provide the data called for in our permit

b) Methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste or hazardous constituents has occurred and/or to characterize the nature and extent or releases;

COMMENT:

a scheduling and interpretive approach which represent the objectives of an RFI, namely, a full

characterization of the nature and extent of a release.

RESPONSE:

We have addressed this by addressing each comment presented in the below sections. Thrity of our sites we called for verification sampling as allowed by our permit conditions. Four sites do call for characterization.

COMMENT:
Section 2.0

a) RFI ... describes a verification sampling approach rather than a characterization sampling approach.

RESPONSE:

This is correct. By permit condition II.A.2 we included a verification approach for 30 sites in the RFI WP.

COMMENT:
b) Positive confirmation would be a basis for initiating an RFI to assess the associated impact and the need for further action. Therefore, the NAS Memphis Site Investigation Plan - RFI must describe the complete investigatory program, rather than just the collection of an initial set of samples, and should include procedures to both collect additional samples and also to allow justifiable interpretation of all data collected.

RESPONSE:

If this statement is true then we need to modify the permit to delete the requirement to include those site requiring a verification study.
WE CAN NOT DESCRIBE WHAT TYPE OF SAMPLING WILL BE REQUIRED BEYOND THE VERIFICATION SAMPLING UNTIL AFTER WE REVIEW THE RESULTS. FOR THESE SITE, WE HAVE MADE STATEMENTS LIKE THE FOLLOWING: "IF A RELEASE IS INDICATED BY THE INITIAL SAMPLING, SUBSEQUENT SAMPLING WILL BE STRUCTURED TO DETERMINE THE EXTENT OF THE RELEASE.." IN THE RFI WORK PLAN. EPA's comment under additional schedules called for future sampling and analysis involving characterization and should correspond to an amended sampling plan.

COMMENT:
c) In addition, there were various general technical deficiencies associated with the NAS Memphis RFI approach. These deficiencies are described below and include the following:

Comment 1 - Hydrogeology

Comment 2 - Waste Management and Interpretation
Comment 3 - Schedule
Comment 4 - Data management and Interpretation
Comment 5 - Sampling Approach
Comment 6 - Sampling Media
Comment 7 - Analytical Parameters
Comment 8 - Underground Storage Tanks

RESPONSE:

See our comments for each comment, below.

COMMENT:
Comment 1 - The groundwater subsection of the Environmental Setting section does not adequately characterize the hydorgeology at the site.

DEFICIENCIES

1) Description of the regional and facility-specific geology and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:

RESPONSE:

RFA PAGE 5 - GEOLOGIC FRAMEWORK "The Naval Base is located in the north-central part of the Mississippi embayment where the subsurface sediments are formed by depositional process of wind and streams. This geologic and hydrogeologic setting has been described by Geraghty and Miller, Inc., in 1985." {This was the Verification Study which EPA Region IV has a copy of.} "The sequence of geologic sediments underlying NAS Memphis is illustrated in Figure 2, a generalized geologic column. The uppermost stratigraphic unit consists of sand, gravel, silt and clay and extends to a depth of approximately 175 feet in some areas. These units are underlain by clays of the Jackson Formation." "The nature of the surfical sediments at the NAS are illustrated in the geologic cross section presented in Figure 3, which was prepared originally by Geraghty and Miller, Inc., from logs of the borings drilled during their 1985 investigation. The figure shows that the surficial sediments are composed of soft gray clay, firm silty blue clay and gravelly sand. Water contained within the uppermost aquifer is sometimes used for industrial and irrigation purposes." "Ground Water System Stratigraphic units within the sediments at NAS contain a perched zone and an uppermost aquifer."

COMMENT:

i) description of strata including strike and dip, identification of stratigraphic contacts;

RESPONSE:

Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of. EXAMPLE: "In the facility area, the Memphis Sand strikes to the norteast and dips to the northwest at approx 10 feet per mile."

COMMENT:

ii) description of local and regional structural features (e.g., foling, faulting, tilting, jointing, etc.);

RESPONSE:

Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of. EXAMPLE: "Early in the study of structural deformation in the Mississippi Embayment, it was recognized that, as the region subsided during the formation of the regional syncline, faulting of the unconsolidated sediments and, perhaps, underlying paleozoic rock occurred. This formed a rectangular pattern of faults trending northeast and northwest."

COMMENT:

iii) depositional history:

RESPONSE:

See COMMENT 1 - 1 response. Additional information is provided in the Initial Assessment Study which EPA Region IV has a copy of.

COMMENT:

iv) identification and characterization of areas and amounts of recharge and discharge:

RESPONSE:

Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of. EXAMPLE: "Until recently, recharge of the Memphis Sands was thought to occur only in the areas to the east of the Memphis area (updip)..."

COMMENT:

v) regional and facility-specific groundwater flow patterns;

RESPONSE:

Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.
EXAMPLE: "The artesian nature of the Memphis Sand projects a piezometric surface in the facility area at an elevation of approximately +230 feet MSL, Approximately 220 feet above the top of the aquifer. These and other data indicate a general southwestward gradient..."

COMMENT:

vi) characterize seasonal variations in the groundwater flow regime.

RESPONSE:

Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.
EXAMPLE: "The data suggest a seasonal fluctionation of the shallow ground water table form approximately the present local surface, to approximately 21 feet below local surface."

COMMENT:

2) An analysis of any topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis).

RESPONSE:

SEE RFA Section titled Topography and Soils
"NAS Memphis lies in the EAST Gulf Plain section of the Coastal Plain Province and is characterized by gently sloping terrain and moderately steep hills. The majority of the installation has a slope of between one and five percent. In general, land surface elevations vary from 270 feet MSL in the southeast border along Big Creek Drainage Canal to 350 feet MSL in the northern portion of the base near Tanya lake."
Additional information:
Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.
EXAMPLE: "Topography, natural drainages, and cultural features of the facility vicinity are shown ... Elevations on NAS Memphis vary, from approx. 250 feet above MSL, along the southern border adjacent to BIG Creek Drainage Canal..."
The Part B Permit Application section B - 2 Topographic Map, has additional information.

COMMENT:

3) Based on field data, test, and cores, a

representative and accurate classification and description of the hydrogeology units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:

RESPONSE:

> We plan to obtain more of this information when we conduct our field work.
> Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars."
> Some of this information is in the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFI work plan. Most of this information would have been obtained anyway.

COMMENT:

i) hydraulic conductivity and porosity (total and effective);

RESPONSE:

> We plan to obtain this information when we are in the field, see Appendix II of the RFI.
> "4.2 Groundwater Samples
> Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
> This information is necessary to totally assess the site and to be able to perform a risk assessment.

COMMENT:

ii) lithology, grain size, sorting, degree of cementation;

RESPONSE:

> We plan to obtain the lithology and sorting in our current work plan, See Appendix II.
> We did not spell this out in the work plan.
> This information is necessary for a risk assessment.

COMMENT:

iii) an interpretation of hydraulic interconnections between saturated zones:

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI. We did not spell this out in the work plan. Some was provided in the RFA Section titled Geologic Framework. Additional information is provided in the Verification Study section titled Ground Water System, which EPA Region IV has a copy of. Additional information will be collected with any boring or monitoring well we install.

COMMENT:

iv) the attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).

RESPONSE:

This was not included in the RFI work plan. This information is necessary for a risk assessment.

COMMENT:

4) Based on <u>field studies and cores, structural geology, hydrogeologic cross-sections</u> showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:

RESPONSE:

We plan to obtain more of this information when we conduct our field work. Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars." Some of this information is in the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFI work plan. Most of this information would have been obtained anyway.

COMMENT:

i) sand and gravel deposits in unconsolidated deposits;

RESPONSE:

RFA PAGE 5 - GEOLOGIC FRAMEWORK
"The Naval Base is located in the north-central part of the Mississippi embayment where the subsurface sediments are formed by depositional process of wind and streams. This geologic and hydrogeologic setting has been described by Geraghty and Miller, Inc., in 1985." {This was the Verification Study which EPA Region IV has a copy of.}
"The sequence of geologic sediments underlying NAS Memphis is illustrated in Figure 2, a generalized geologic column. The uppermost stratigraphic unit consists of sand, gravel, silt and clay and extends to a depth of approximately 175 feet in some areas. These units are underlain by clays of the Jackson Formation."
"The nature of the surfical sediments at the NAS are illustrated in the geologic cross section presented in Figure 3, which was prepared originally by Geraghty and Miller, Inc., from logs of the borings drilled during their 1985 investigation. The figure shows that the surficial sediments are composed of soft gray clay, firm silty blue clay and gravelly sand. Water contained within the uppermost aquifer is sometimes used for industrial and irrigation purposes."

COMMENT:

ii) zones of fracturing or channeling in consolidated or unconsolidated deposits;

RESPONSE:

We plan to obtain more of this information when we conduct our field work.
Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoo n or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars."
Some of this information is in the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFI work plan. Most of this information would have been obtained anyway.
Provided in the RFA Section Geologic Framework
Additional information is provided in both the Initial Assessment Study and the Verification Study, which EPA Region has a copy of.

COMMENT:

iii) zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
Provided in the RFA Section Geologic Framework
Additional information is provided in both the Initial Assessment Study and the Verification Study, which EPA Region has a copy of.

COMMENT:

iv) the uppermost aquifer;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
Provided in the RFA Section Geologic Framework
Additional information is provided in both the Initial Assessment Study and the Verification Study, which EPA Region has a copy of.

COMMENT:

v) water-bearing zones above the first confining layer..;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity

etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..." This information is necessary to totally assess the site and to be able to perform a risk assessment. Provided in the RFA Section Geologic Framework Additional information is provided in both the Initial Assessment Study and the Verification Study, which EPA Region has a copy of.

COMMENT:

5) Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
This information was performed during the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFA. Most of this information would have been obtained anyway.

COMMENT:

i) water-level contour and/or potentiometric maps;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
This information was performed during the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFA.
Even thought a table format represents the same info a map can be presented.

COMMENT:

ii) hydrologic cross-sections showing vertical gradients;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
This information was performed during the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFA. Most of this information would have been obtained anyway.

COMMENT:

iii) the flow system, including the vertical and horizontal components of flow;

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
This information was performed during the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFA. Most of this information would have been obtained anyway.

COMMENT:

iv) any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.

RESPONSE:

Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.
EXAMPLE: "The data suggest a seasonal fluctionation of the shallow ground water table form approximately the present local surface, to approximately 21 feet

below local surface."

COMMENT:

6) A description of man-made influences that may affect the hydrogeology of the site, identifying:

i) active and inactive local water supply and production wells with an approximate schedule of pumping;

RESPONSE:

Is provided in the Initial Assessment Study Section 4.6, which EPA Region IV has a copy of.
EXAMPLE: "Water was initial produced from two wells in the North Complex and three wells in the South complex..."

COMMENT:

ii) man-made hydraulic structures (pipelines, french drains, ditches, unlined po outfalls, retention areas, etc.). and, septic tanks, NPDES

RESPONSE:

Is provided in the Part B application and also, is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.
EXAMPLE: "The entire facility is drained by a series of natural, modified, or constructed drainages..."

COMMENT:
ADDITIONAL

SCS soil classification

RESPONSE:

SEE RFA Section titled Topography and Soils
"There are ten soil classifications found on the station; these within two major Soil Associations. In the proximity of the Big Creek Drainage Canal is the Falaya Waverly Colins Association. Soils in this association range form level, poor drainage to moderately well drained, silty soils on first bottoms and are subject to high water tables. The balance of the complex is composed of the Memphis Granada Loring Association. Soils in this association range from nearly level to sloping, well drained and moderately well drained, silty soils on broad uplands."
Additional information:
Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.

COMMENT:

surface soil distribution

RESPONSE:

We plan to obtain this information when we are in the field, see Appendix II of the RFI.
SEE RFA Section titled Topography and Soils
"There are ten soil classifications found on the station; these within two major Soil Associations. In the proximity of the Big Creek Drainage Canal is the Falaya Waverly Colins Association. Soils in this association range form level, poor drainage to moderately well drained, silty soils on first bottoms and are subject to high water tables. The balance of the complex is composed of the Memphis Granada Loring Association. Soils in this association range from nearly level to sloping, well drained and moderately well drained, silty soils on broad uplands."
Additional information:
Is provided in the Initial Assessment Study Section 4.3, which EPA Region IV has a copy of.

COMMENT:

soil profile, including ASTM classification of soils

RESPONSE:

We can obtain this information when we are in the field. We did not specify ASTM in the work plan.

COMMENT:

hydraulic conductivity (saturated and unsaturated)

RESPONSE:

We plan to obtain this information when we are in the field.
Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars."
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the

site and to be able to perform a risk assessment.
This information was performed during the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFA. Most of this information would have been obtained anyway.
This information is necessary to totally assess the site and to be able to perform a risk assessment.

COMMENT:

relative permeability

RESPONSE:

We plan to obtain this information when we are in the field.
Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars."
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..."
This information is necessary to totally assess the site and to be able to perform a risk assessment.
This information was performed during the Verification Study, which EPA Region IV has a copy of, and has also been presented in the RFA. Most of this information would have been obtained anyway.
This information is necessary to totally assess the site and to be able to perform a risk assessment.

COMMENT:

bulk density

RESPONSE:

We plan to obtain this information when we are in the field.
Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the

hydrogeologist on-site, and will then be place in labeled glass jars."
This information is necessary to perform a risk assessment.

COMMENT:
porosity

RESPONSE:

We plan to obtain this information when we are in the field.
Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars."
This information is necessary to totally assess the site and to be able to perform a risk assessment.

COMMENT:
cation exchange capacity

RESPONSE:

We can obtain this information when we are in the field. We did not specify this in the work plan.
This information is necessary to perform a risk assessment.

COMMENT:
soil organic content

RESPONSE:

We can to obtain this information when we are in the field.
This information is necessary to perform a risk assessment.

COMMENT:
soil pH

RESPONSE:

We plan to obtain this information when we are in the field. See Appendix I of each SWMU.
This information is necessary to perform a risk

assessment.

COMMENT:
particle size distribution

RESPONSE:

We plan to obtain this information when we are in the field.
Appendix II of the RFI, "4.1 Soil Samples; For soil samples which are to be subjected to physical and chemical testing, sample collection will be obtained by the use of a hollow stem auger rig. For split-spoon or drive-sampling, ASTM D-1586 will be followed; and for relatively undisturbed this wall, or shelby tube sampling, ASTM D-1587 will be adhered to. The drive-samples will be described and logged by the hydrogeologist on-site, and will then be place in labeled glass jars."
This information is necessary to perform a risk assessment.

COMMENT:
moisture content

RESPONSE:

We can to obtain this information when we are in the field.
This information is necessary to perform a risk assessment.

COMMENT:
infiltration

RESPONSE:

We can obtain this information when we are in the field.
This information is necessary to perform a risk assessment.

COMMENT:
storage capacity

RESPONSE:

We plan to obtain this information when we are in the field.
"4.2 Groundwater Samples
Prior to the sampling event, the water level will be determined and all available information on aquifer characteristics (transmissivity, hydraulic conductivity

etc.) will be reviewed. This information will be used to assess the appropriate method and amount of..." This information is necessary to totally assess the site and to be able to perform a risk assessment. This information is necessary to totally assess the site and to be able to perform a risk assessment.

COMMENT:
mineral content

RESPONSE:

We can obtain this information when we are in the field.
This information is necessary to perform a risk assessment.

Most of this information is necessary for a risk assessment.

COMMENT:
COMMENT 2 - WASTE MANAGEMENT APPROACH
The waste management strategy of this facility is not clearly described.

RESPONSE:

We did not include the facility waste management strategy in either the RFA or RFI. The permit did not call for this information. This information can be found in chapter six of the Initial Assessment Study which EPA Region IV has a copy of.

COMMENT:
1) no information provided about operational processes in relation to associated management practices. (request a series of simplified flow charts)

RESPONSE:

We provided information about the operational process and the associated wastes. We made the following type of statements in the RFA Description of SWMU Uses; Hazardous waste are stored in drums prior to transport to the hazardous waste interim storage area; or stored in bowsers prior to storage in ...

COMMENT:
2) Neither the RCRA-regulated units nor the regulated hazard waste types or constituents are identified

in the text. (The identification of these RCRA units and wastes is important)

RESPONSE:

The RFI work plan section on Contaminant Effects listed each contaminant in tabular form for each SWMU. The one and only RCRA regulated unit was identified, SWMU 42 - N-12 Hazardous Waste Storage.

COMMENT:
COMMENT 3 SCHEDULE
The scheduling described in this RFI document is incomplete.

1) timeline provided is stated that if a hazardous constituent is encountered in the samples.., only then will additional samples be considered for release characterization analysis. The purpose of an RFI is to provide characterization... however the schedule of the NAS ...RFI...verification... for all but four unites...

RESPONSE:

If this statement is true then we need to modify the permit to delete the requirement to include those site requiring a verification study.
WE CAN NOT DESCRIBE WHAT TYPE OF SAMPLING WILL BE REQUIRED BEYOND THE VERIFICATION SAMPLING UNTIL AFTER WE REVIEW THE RESULTS. FOR THESE SITE, WE HAVE MADE STATEMENTS LIKE THE FOLLOWING: "IF A RELEASE IS INDICATED BY THE INITIAL SAMPLING, SUBSEQUENT SAMPLING WILL BE STRUCTURED TO DETERMINE THE EXTENT OF THE RELEASE.." IN THE RFI WORK PLAN. EPA's comment under additional schedules called for future sampling and analysis involving characterization and should correspond to an amended sampling plan. What does EPA want from the Navy?

COMMENT:

2) additional detail also applies to units... known contamination.

RESPONSE:

What additional details?

COMMENT:

3) Additional schedule
   i) future sampling and analysis involving characterization

RESPONSE:

The only future sampling and analysis schedule that we possible supply is already stated in our permit; II A.4 The Regional Administrator shall review the report(s) on the investigation plan(s) and notify the Permittee of the need for further investigative actions and/or...

COMMENT:

ii) should correspond to an amended sampling plan

RESPONSE:

The only future sampling and analysis schedule that we possible supply is already stated in our permit; II A.4 The Regional Administrator shall review the report s on the investigation plan s and notify the Permittee of the need for further investigative actions and/or...

COMMENT:

COMMENT 4 - DATA MANAGEMENT AND INTERPRETATION

The data management approach is undefined.

RESPONSE:

We defined a limited data management approach in Appendix II of the RFI work plan.

COMMENT:

1) no descriptions

i) how data will be recorded or presented

RESPONSE:

We did not describe how we would record or present the the data. The data will most likely be presented in tabular form from the laboratory as well as stated in the text and shown on maps.

COMMENT:

ii) data to be use to qualitatively ... define ... the release

RESPONSE:

We stated in Appendix II of the RFI work plan that the data objectives for the first phase are primarily qualitative; i.e., establishing whether releases have occurred rather than quantifying the extent if releases if any. At four units where previous studies have confirmed releases, data objective include delineation of the impact of those releases on applicable media.

COMMENT:

iii) define significant level of contamination

RESPONSE:

This will be provided in the RFI Report.
We stated in Appendix II of the RFI work plan that the data objectives for the first phase are primarily qualitative; i.e., establishing whether releases have occurred rather than quantifying the extent if releases if any. At four units where previous studies have confirmed releases, data objective include delineation of the impact of those releases on applicable media.

COMMENT:

iv) describe associated background

RESPONSE:

This will be provided in the RFI Report.
The RFI plan Appendix II, 5.1 Field Sampling: "Back ground samples for soils will be collected during the investigation. The criteria for selection of back ground sampling sites will be those areas on NAS Memphis property that are documented as having been exclusively nonindustrial land use are. The station housing area is expected to meet this criteria.

COMMENT:

v) action levels

RESPONSE:

We stated in Appendix II of the RFI work plan that the data obtained from the first phase of the investigation will not be applied to any specific regulatory standards. If EPA Region IV has a list of actions levels we would like to be provided a copy.

COMMENT:
COMMENT 5 - SAMPLING APPROACH
The rationale involving the identification of specific sampling points is unclear.

RESPONSE:

We stated in Appendix II of the RFI work plan that the sampling points are shown in the SWMU Investigation Plan and have been designed to determine whether releases have occurred and to approximate the extent of release. Those SWMUs at which known release have occurred are more intensively sampled.

COMMENT:

1) Since no photographic documentation provided

RESPONSE:

This was not required by permit. The RFA guidance document was not out at the time the permit was issued

COMMENT:

i) appears that ... sampling points ... may be randomly located and do not address releases....

RESPONSE:

This plan was provided by a P.E. who used his best professional judgement at the time this plan was prepared. RFI Guidance section 3.6.3.3, judgemental sampling is an acceptable approach and will general bias the data obtained towards a higher concentration.

COMMENT:

ii) sampling should focus on hot spots (drains, stains and deposits)

RESPONSE:

This sampling plan is designed to give us the best representative samples for the site.

COMMENT:

iii) describe unit boundaries

RESPONSE:

Both the RFA and the RFI work plan make the following type of statement: The SSTP was located on the South Complex at the intersection of fifth street and B street.

iv) sampling points determined

We plan to have all sampling points surveyed. We stated in Appendix II of the RFI work plan that the sampling points are shown in the SWMU Investigation Plan and have been designed to determine whether releases have occurred and to approximate the extent of release. Those SWMUs at which known release have occurred are more intensively sampled. This plan was provided by a P.E. who used his best professional judgement at the time this plan was prepared.

COMMENT:

v) photographed and recorded in the field logbook

RESPONSE:

We require this of our contractors.

COMMENT:

vi) specific procedures used in field sampling documentation

RESPONSE:

We will provide this in the REPORT. In the RFI plan Appendix II, 4.3 Sample Handling: "All samples are assigned discrete numbers which are recorded an the the sample container, field sampling log, and the sample chain of custody form."

COMMENT:

vii) approach to selecting sampling depths in sediments and soils may be ineffective

RESPONSE:

We can not offer any more than what we have already included in the RFI work plan. Your comments mention that if no visible ... observed, exploratory cores should be collected and characterized in the field to identify key subsoil features influencing the likelihood of contamination, e.g., sand lenses, stain subsoils zones, odors. See Appendix II of RFI.

COMMENT:

viii) prepare a plan to justify and document all sampling and/or monitoring procedures ... ensuring ... data and ... decisions are technically sound, statistically valid, and properly documented.

RESPONSE:

We will provide this in the REPORT. In the RFI plan Appendix II, 4.3 Sample Handling: "All samples are assigned discrete numbers which are recorded an the the sample container, field sampling log, and the sample chain of custody form."

COMMENT:

ADDITIONAL DETAILS SHOULD BE INCLUDED

1) SAMPLING

i) Selecting appropriate sampling locations, depths, etc.

RESPONSE:

Provided in the RFI work plan, see each SWMU.

COMMENT:

ii) Providing a statistically sufficient number of sampling sites;

RESPONSE:

Provided in the RFI work plan, see each SWMU.

COMMENT:

iii) Measuring all necessary ancillary data;

RESPONSE:

Please provide us with the type of ancillary data you are referring to.

COMMENT:

iv) Determining conditions under which sampling should be conducted;

RESPONSE:

Provided in the RFI work plan, see Appendix II.

COMMENT:

v) Determining which media are to be sampled

RESPONSE:

Provided in the RFI work plan, see each SWMU.

COMMENT:

vi) Determining which parameters are to be measured and where

RESPONSE:

Provided in the RFI work plan, see each SWMU.

COMMENT:

vii) Selecting the frequency of sampling and length of sampling period;

RESPONSE:

Provided in the RFI work plan, see each SWMU.

COMMENT:

viii) Selecting the types of samples and number of samples to be collected

RESPONSE:

Provided in the RFI work plan, see each SWMU.

COMMENT:

ix) Measures to be taken to prevent contamination of sampling equipment and cross-contamination between sampling points;

RESPONSE:

Provided in the RFI work plan, see each SWMU and Appendixes II and III.

COMMENT:

2) Field Measurements

i) Select appropriate field measurement locations, depths, etc.;

RESPONSE:

Provided in the RFI work plan, see Appendixes II, III.

COMMENT:

ii) Providing a statistically sufficient number of field measurements;

RESPONSE:

Provided in the RFI work plan, see Appendixes II, III.

COMMENT:

iii) Measuring all necessary ancillary data;

RESPONSE:

Please provide us with the type of ancillary data you are referring to.

COMMENT:

iv) Determining conditions under which field measurements should be conducted;

RESPONSE:

Provided in the RFI work plan, see Appendixes II, III.

COMMENT:

v) Determining which media are to be addressed by appropriate field measurements;

RESPONSE:

Provided in the RFI work plan, see Appendixes II, III.

COMMENT:

vi) Determining which parameters are to be measured and where;

RESPONSE:

Provided in the RFI work plan, see Appendixes II, III.

COMMENT:

vii) Selecting the frequency of field measurement and length of field measurements period;

RESPONSE:

Provided in the RFI work plan, see Appendix III.

COMMENT:

viii) Documenting field measurement operations and procedures, including:

a. procedures and forms for recording raw data

RESPONSE:

We will provide this in the REPORT. In the RFI plan Appendix II, 4.3 Sample Handling: "All samples are assigned discrete numbers which are recorded an the the sample container, field sampling log, and the sample chain of custody form."

COMMENT:

b. calibration

RESPONSE:

This was not provided but will be.

COMMENT:

c. collection of replicate measurements

RESPONSE:

Provide in Appendix II of the RFI.

COMMENT:

d. submission of field-biased blanks

RESPONSE:

Provide in Appendix II of the RFI.

COMMENT:

e. potential interferences

RESPONSE:

Provide in Appendix II of the RFI.

COMMENT:

f. construction material and techniques with MW

RESPONSE:

Will be provided.

COMMENT:

g. field equipment list

RESPONSE:

A list per/say was not provided.

COMMENT:

h. order in which field measurements were made

RESPONSE:

This will be provided in the Report.

COMMENT:

i. decontamination procedures

RESPONSE:

This was provided in Appendix II and III of the plan.

COMMENT:
COMMENT 6 - SAMPLING MEDIA
There is an absence of all reference to subsurface gas other than the possible formation of methane in landfills.

RESPONSE:

Appendix III provides language to the effect that air sampling or subsurface gas will be performed in order to protect the workers.

COMMENT:

1) All exploratory or access holes used for soil sampling.... available soil gas testing with, for example, an OVA, Photovac, or Hnu.

RESPONSE:

Appendix III provides language to the effect that this will be performed in order to protect the workers.

COMMENT:

2) Must provide detailed descriptions of specific procedures used to address the potential release to on-site subsurface gas...

RESPONSE:

This was not provided in the RFI.

COMMENT:

3) ...often provides too limiting an approach for an investigation designed to comprehensively characterize a release...

RESPONSE:

If this statement is true then we need to modify the permit to delete the requirement to include those site requiring a verification study.

WE CAN NOT DESCRIBE WHAT TYPE OF SAMPLING WILL BE REQUIRED BEYOND THE VERIFICATION SAMPLING UNTIL AFTER WE REVIEW THE RESULTS. FOR THESE SITE, WE HAVE MADE STATEMENTS LIKE THE FOLLOWING: "IF A RELEASE IS INDICATED BY THE INITIAL SAMPLING, SUBSEQUENT SAMPLING WILL BE STRUCTURED TO DETERMINE THE EXTENT OF THE RELEASE.." IN THE RFI WORK PLAN.
EPA's comment under additional schedules called for future sampling and analysis involving characterization and should correspond to an amended sampling plan. What does EPA want from the Navy?

COMMENT:

4) Additional suggested sampling media ... Table 1

RESPONSE:

Please refer to our ltr dtd 28 March 89.

COMMENT:
COMMENT 7 ANALYTICAL PARAMETERS
1) ... volatile constituents which exclusively comprise the analytical suite... for this RFI may be incomplete.

RESPONSE:

There is not one site where we exclusively test for volatile constituents.

COMMENT:
2) sludges may have been co-disposed with the volatile organic solvents...

RESPONSE:

We can not find any foundation for this comment.

COMMENT:
3) Therefore, if a verification approach is first implemented, the initial sampling and analysis should be directed at a comprehensive suite... priority pollutants, in addition to those specific hazardous constituents...

RESPONSE:

If this statement is true then we need to modify the permit to delete the requirement to include those site requiring a verification study.
WE CAN NOT DESCRIBE WHAT TYPE OF SAMPLING WILL BE REQUIRED BEYOND THE VERIFICATION SAMPLING UNTIL AFTER WE REVIEW THE RESULTS. FOR THESE SITE, WE HAVE MADE STATEMENTS LIKE THE FOLLOWING: "IF A RELEASE IS INDICATED BY THE INITIAL SAMPLING, SUBSEQUENT SAMPLING WILL BE STRUCTURED TO DETERMINE THE EXTENT OF THE RELEASE.." IN THE RFI WORK PLAN. EPA's comment under additional schedules called for future sampling and analysis involving characterization and should correspond to an amended sampling plan. What does EPA want from the Navy?

COMMENT:
COMMENT 8 UNDERGROUND STORAGE TANKS
1) ... limited sampling ... This strategy is diminished by the lack of comprehensive hydrogeologic information...

RESPONSE:

EPA Region IV has a copy of all of this information.

(IAS & VERIFICATION STUDY)

COMMENT:

2) ... those units ... not.. of the UST program, additional intergrity testing in conjunction with soil gas monitoring would be appropriate...

RESPONSE:

We plan to use the UST program to investigate all underground storage tanks.
SWMUs 17 & 18 will be manual gauged in accordance with EPA Underground Storage Tank Regulations. SWMUs 19, 20, 21, 22 and 23 are programed for demolition pending Congress funding.

COMMENT:

Section 3.0 Review of individual units

1) ... only 4 of these units are scheduled for characterization sampling, rather than verification sampling ...

RESPONSE:

This statement is correct.

COMMENTS ON STATE OF TENNESSEE
DEPARTMENT OF HEALTH AND ENVIRONMENT
25 SEPTEMBER 1987 LETTER
ON
NAVAL AIR STATION MEMPHIS
RCRA FACILITY INVESTIGATION (RFI) WORK PLAN
NOTICE OF DEFICIENCY

The comments are broken into general comments and specific comments for clarity.

GENERAL COMMENTS

1. The RCRA Facility Investigation Work Plan will be revised and submitted, upon your and EPA Region IV's approval of our revised RCRA Facility Assessment to be submitted on or about 31 July 1989. This was provided in EPA's letter dated 9 May 1989.

2. Consistent with EPA's protocol with the state of Tennessee as stated in EPA's letter dated 9 May 1989 and as agreed upon 22 January 1987, we are providing a joint response to both EPA's and Tennessee's comments on the RFA and RFI work plans.

SPECIFIC COMMENTS

Section I of your Comments.

SWMU Recommendations, Appendix I:

Comment: SWMU # 2, Southside Landfill - The big creek drainage canal area adjacent to the landfill area should be inspected for leachate streams and sampled if located.

Response: We will include this in our work plans.

Comment: SWMU # 3, Building N-121 Plating Shop Dry Well - Existing Groundwater monitoring wells should be shown on map (on RFI) in relation to the proposed groundwater monitoring well.

Response: We will show the wells.

Comment: SWMU # 3, Building N-121 Plating Shop Dry Well - Special precautions must be used when developing bore holes to prevent penetration into groundwater (especially in pit area).

Response: Care will be taken not to penetrate into the groundwater by taking water-level measurements from the existing monitoring well prior to drilling or excavating. We are reconsidering our approach to this site. We are considering using a back hoe to remove the dry well and some of the surrounding soils, then perform our soil sampling.

Comment: SWMU # 3, Building N-121 Plating Shop Dry Well - Special precautions should be used when developing wells and bore holes due to the possible presence of cyanide.

Response: We expect our contractor to adhere with the Health and Safety Plan.

Comment: SWMU # 4, Building N-121 Plating Shop Storm Sewer and Drainage Ditch - RFA/RFI did not address possible releases associated with the storm sewer before it discharges to the downgradient ditch or the ditch area before it enters the storm sewer.

Response: We will provide additional text to address this possible release.

Comment: SWMU # 5, Fire Fighting Training Area - Location of 3 small pits incorrect, adjust map location of SWMU and sample locations accordingly (area should be located due north of pad B-2)

Response: We will make this adjustment to both the 3 small pit location and to the sampling locations.

Comment: SWMU # 5, Fire Fighting Training Area - Releases as a result of previous explosions around the oil/water separator should be addressed.

Response: The explosion caused no release of jet fuel. The explosions consisted of JP-4 vapors builted up in a gravity sewer line flowing from the firefighting training rings to an oil/water separator because the oil/water separator was not being maintained. The explosion occurred when a person droped a cigerate down a slotted manhole cover. This caused the vapors to flare. The sewer was not confined enough for the explosion to actually cause damage. This problem has been corrected by properly maintaining the oil/water separator.

Comment: SWMU # 6, Building N-126 Battery Shop Storm Sewer and Ditch - Location incorrect adjust map location of SWMU and sample locations accordingly (site should be east of runway)

Response: We will correctly show this location and adjust the sample location accordingly.

Comment: SWMU # 6, Building N-126 Battery Shop Storm Sewer and Ditch - RFA/RFI did not address possible releases associated with the storm sewer before it discharges to the downgradient ditch.

Response: We will address this possible release.

Comment: SWMU # 7, Building N-126 Plating Shop Dry Well - Special precautions should be used when developing wells and bore holes due to the possible presence of cyanide.

Response: We expect our contractor to adhere with the Health

and Safety Plan.

Comment: SWMU # 10, Demolition Construction Debris Landfill -

Response: Based upon a visual site inspection and review of all information, this site will not require investigation due to no evidence of a release.

Comment: SWMU # 12, Galley Disposal - Location correct (the map showing surrounding are incorrect, adjust SWMU and sample locations accordingly).

Response: We will adjust the location in the RFA. Based upon a visual site inspection and the review of all information, this site will not require investigating due to no evidence of a release.

Comment: SWMU # 15, N-94 Underground Tank Farm - The Soil section of the RFI report describes nine (9) monitoring wells while the Groundwater section of the report describes four (4) monitoring and figure 15-2 shows five monitoring wells.

Response: We will correct our over sight.

Comment: SWMU # 15, N-94 Underground Tank Farm - After the site specific hydrology of the area has been verified, the number and location of monitoring wells must be specified to adequately determine if a release has occurred from this unit. Precautions must be implemented to ensure that well installation through contaminated fill area does not promote groundwater contamination.

Response: We will amend our work plan as necessary to further characterize this site. We will take precautions, such as soil gas probe, and core samples, with proper monitoring well installation to ensure that we do not contaminate the groundwater when installing the monitoring wells.

Comment: SWMU # 15, N-94 Underground Tank Farm - Tank locations must be verified to prevent accidental penetration while drilling.

Response: We will use the best available method to determine the exact location of the tanks prior to drilling.

Comment: SWMU # 17, S-9 Underground Waste Tank - Location incorrect, adjust map location of swmu and sample location accordingly (should be located just above the 5 in at location 1657).

Response: We will show the correct location. We plan to investigate this tank under our Underground Storage Program which follows EPA regulations 40CFR280-43.5. The RFI Work Plan will be revised to reflect this change.

Comment: SWMU # 18, N-112 Underground Waste Tank - Location incorrect, adjust map location of swmu and sample location

accordingly (area should be located to the right of where the proposed groundwater monitoring well is presently located).

Response: We will show the correct location. We plan to investigate this tank under our Underground Storage Program which follows EPA regulations 40CFR280-43.5. The RFI Work Plan will be revised to reflect this change.

Comment: SWMU # 19, 341 Underground Waste Tank - Location incorrect, adjust map location of swmu and sample location accordingly (area should be located on North side of bldg. 341 under the 6 in 1647).

Response: We will show the correct location. We plan to remove this tank under our Underground Storage Program which follows EPA regulations 40CFR280-43.5. The RFI Work Plan will be revised to reflect this change.

Comment: SWMU # 20, 1594 Underground Waste Tank - Location incorrect, adjust map location of swmu and sample location accordingly (area should be located on South side of bldg.).

Response: We will show the correct location. We plan to remove this tank under our Underground Storage Program which follows EPA regulations 40CFR280-43.5. The RFI Work Plan will be revised to reflect this change.

Comment: SWMU # 21, N-10 Underground Waste Tank - Location incorrect, adjust map location of swmu and sample location accordingly (area should be located on North East of bldg. N-10).

Response: We will show the correct location. We plan to remove this tank under our Underground Storage Program which follows EPA regulations 40CFR280-43.5. The RFI Work Plan will be revised to reflect this change.

Comment: SWMU # 24, Auto Hobby Shop Waste Oil Tanks, Building N-114 - Since multiple tanks are involved a single boring does not appear to be adequate to accurately determine if a release has occurred from the two, 500 gallon tanks, therefore, justification must be submitted to show the adequacy of the proposed sampling plan or groundwater monitoring wells must be installed.

Response: These two tanks are not underground tanks. They are above ground tanks. Soil samples are to be obtained to determine if the soil is contaminated and to determine if it has reached the soils just above the groundwater. Our work plan states that "Should the sample obtained in the soil sampling portions of this investigation prove positive, a ground water monitoring well will be installed at the sampling point.".

Comment: SWMU # 24, Auto Hobby Shop Waste Oil Tanks, Building N-114 - If monitoring wells are installed they must be located on the downgradient side of the tanks within the back fill area

to effectively detect releases. Precautions must be implemented to ensure that well installation through contaminated fill area does not promote groundwater contamination.

Response: We will establish downgradient wells if we find the groundwater contaminated. We will not put the wells in the back fill because these are above ground tanks. We will take precautions, such as soil gas probe, and core samples, with proper monitoring well installation to ensure that we do not contaminate the groundwater when installing the monitoring wells.

Comment: SWMU # 25, Big Creek Demolition Landfill - Since disposal operations were not fully controlled at this site and the possibility of vertical migration exist, implementation of groundwater monitoring system is recommended.

Response: Since the Big Creek Demolition Landfill is demolition materials used as rip rap along the Big Creek Drainage Canal and based on visual site inspection which observed no release we do not see your rational for recommending the implementation of a groundwater monitoring system. The Big Creek Drainage Canal does flow with surface water. We recommend no sampling at this site because we are going to sample the Big Creek Drainage Canal SWMU # 38.

Comment: SWMU # 28, Southside Sewage Treatment Plant -

Response: We plan to perform no further work on this site based on the findings of attachment I.

Comment: SWMU # 30, Park Field Waste Treatment Tank - Since there is a potential for more than one field line to emanate from the septic box there is a possibility that contaminates have been channelled in different directions, therefore, further borings are recommended to evaluate the potential for a release.

Response: According to the blue prints and excavation in the area, there is no evidence that there is more than one field line.

Comment: SWMU # 31, Aircraft Wash Rack at 4th Street - Concrete slabs that are cut away must be resealed after sampling in completed to prevent washwater from coming in contact with the ground below.

Response: Based on visual inspection, sampling is not required. However, the ditch leading from this area will be investigated as part of SWMU # 38.

Comment: SWMU # 32, Aircraft Wash Rack at N-7 - Concrete slabs that are cut away must be resealed after sampling in completed to prevent washwater from coming in contact with the ground below.

Response: Based on visual inspection, sampling is not required. However, the ditch leading from this area will be investigated as part of SWMU # 38.

Comment: SWMU # 38, Drainage Ditches in Industrial Areas - Location correct, except for section involving SWMU # 6.

Response: We will correct the location for section involving SWMU # 6.

Comment: SUMU # 38, Drainage Ditches in Industrial Areas - RFA/RFI did not address possible releases associated with the storm sewers before they discharge to the aforementioned downgradient ditches.

Response: The revised RFA/RFA will address this.

Comment: SWMU # 39, PCB Storage Area, Building S-75 - Location incorrect, adjust map locations of SWMU and sample locations accordingly (area should be located on south side of bldg. S-74).

Response: We will correct the location of SWMU and sample locations.

Comment: SWMU # 40, Salvage Yard No. 1 -

Response: Based on existing analyses, attachment II, additional sampling is not required. However, the ditch leading from this area will be investigated as part of SWMU # 38.

Comment: SWMU # 41, Salvage Yard No. 2 - Location correct, (the map showing surrounding area incorrect, adjust swmu and sample locations accordingly).

Response: We will correct the surrounding area on the location map.

Comment: SWMU # 45, Accumulation Point Adjacent to Brig, Building S-142 - Location incorrect, adjust map location of swmu and sample locations accordingly (area should be located south, inside fenced area).

Response: We will make the adjustments.

Section II of your comments.

<u>Additional SWMU's:</u>

Comment: 1. Former Pesticide Storage Building, S-335 (material spillage has been noted at the building and pesticide odor emanates from the building).

Response: This site will be included. We are currently preparing a sampling analyses plan to investigate this building so that we may be able to prepare plans and specification for the demolition of this building.

Comment: 2. Former Location of N-78 Diesel Fuel Storage Tank (site is located in yard next to building N-16 on east side).

Response: Contractor dug up and disposed of it.

Comment: 3. Waste Oil Tank on west side of building 757.

Response: Tank 1648 is part of the Underground Storage Tank program and is scheduled to under-go manual tank gauge testing.

Section III of your comments.

Quality Management Plan Recommendations, Appendix II:

Comment: 1. Iso-Propyl alcohol (reagent grade) must be used, as rinse, in cleaning sample containers instead of acetone.

Response: We will provide a rinse which is recommended in The Test Methods for Evaluating Solid Wastes, SW846.

Comment: 2. Non-phosphate soap must be used when cleaning sample containers.

Response: We will not use phosphated soap.

Comment: 3. Filtering of samples (in lab or field) must not be conducted unless specifically required by analytical method employed.

Response: We will use appropriate field and lab sampling procedures.

Comment: 4. The Test Methods for Evaluating Solid Wastes, Third edition, Update November 1986, must be used for analytical methods employed.

Response: We will use the most current edition when we perform our analyses.

Section V of your comments.

Comments:

Comment: 1. Bore holes in which permanent wells are not constructed must be sealed with non-contaminated materials at least an order of magnitude less permeable than the surrounding soil/rock/sediment in order to reduce the number of potential contaminate pathways.

Response: This will be done.

Comment: 2. Spoils generated from the development of bore holes and well installation must be maintained in a controlled environment until samples have been analyzed.

a. If spoils are contaminated they are to be disposed of in accordance with all applicable solid/hazardous waste management requirements.

b. If spoils are not contaminated they may be placed back at the original generation area.

Response: It is our requirement for the contractor to place all spoilage in appropriate drums. The station will hold the drums until test results are received. Then the station will properly dispose of the spoilage in accordance with EPA and Tennessee regulations.

Comment: 3. Additional data must be provided as part of the RFA/RFI documents to verify suitability of existing wells for sampling proposals, they are as follows:

a. Well construction Logs (including construction materials).

b. Boring Logs.

c. All available water elevation data to verify ground water flow.

d. Statements/descriptions of well development.

Response: See attachment III.

Comment: 4. Justification for well placement must be demonstrated by thorough site hydrology characterization.

Response: This was demonstrated but will be reiterated in the revised RFA and RFI.