



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION II

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**FEB 11 1998**

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Mr. Paul A. Rakowski, P.E., DEE  
Head, Environmental Program Branch  
Environmental Division,  
Atlantic Division (LANTDIV), Code 182  
Naval Facilities Engineering Command  
1510 Gilbert Street  
Norfolk, VA 23511-2699

Re: Naval Station Roosevelt Roads - EPA ID # PR2170027203  
EPA Comments On:

- 1) RFI Quarterly Progress report (August 1, 1997 - October 31, 1997), including Attachment 1 - [March 1997 and July 1997 addendum] Groundwater Monitoring System Implementation Plan for the Base Landfill (SWMU #3),
- 2) Tow Way Fuel Farm Quarterly Progress Report No. 3 (July 1, 1997 through September 30, 1997),
- 3) Draft Corrective Measures Study (CMS) Workplan for Tow Way Fuel Farm (SWMUs #7 & #8), and
- 4) Navy response of December 24, 1997 to EPA's November 14, 1997 comments on OU 1, 6, and 7 RFI Report, and Work Plan for Additional Characterization at SWMU #30 (former incinerator).

Dear Mr. Rakowski:

The United States Environmental Protection Agency (EPA) Region 2 has completed its review of the above four documents transmitted respectively by the Navy contractor Baker Environmental Inc's letters of December 3, 10, and 12, 1997, and by the December 24, 1997 letter from Mr. Christopher Penny, of your staff. EPA has the following comments:

I. RFI Quarterly Progress report (August 1, 1997 - October 31, 1997), including Attachment 1 - [March 1997 and July 1997 addendum] Groundwater Monitoring System Implementation Plan for the Base Landfill (SWMU #3)

EPA has reviewed the March 1997 Groundwater Monitoring System Implementation Plan (GWMSIP) and Sampling and Analysis Plan (SAP) for the base's Landfill, and the July 1997 Addendum No. 1, which were submitted as Attachment 1 and 2 respectively to the RFI Quarterly progress report for August 1, 1997 - October 31, 1997. Since the facility's currently operating solid waste landfill was identified as Solid Waste Management Unit (SWMU) #3 in the 1994 RCRA Operating Permit, and is fully subject to the terms of that permit, EPA has reviewed the above two documents for both conformance with the investigation requirements for SWMU #3 of the September 1995 approved RFI Work Plan, and the requirements of 40 CFR § 258 for monitoring of Subtitle D municipal landfills.

In addition, the Puerto Rico Environmental Quality Board (EQB) has reviewed the GWMSIP and SAP. EQB's comments are attached.

Since the age of the wells to be utilized under the GWMSIP are not indicated, and based on their observed condition as described in the GWMSIP (and information in other documents), their usability to render acceptable groundwater samples is suspect. EQB in the attached comments recommends that integrity testing be implemented on wells R7GW02 and 04 to confirm their acceptability. These two wells were not located by the Navy's GWMSIP consultant during an October 1996 site inspection; nor their condition described in the GWMSIP; however, they are now indicated to have been found by base personnel. In addition well R7GW03 is stated to have been destroyed.

However, since the age of none of the wells are indicated, and their observed condition is often very deteriorated (see section 3.1 of the GWMSIP), EPA requests that the Navy demonstrate the integrity of **all** wells if they are to be utilized for satisfying the groundwater investigation requirements of the 1995 approved RFI work plan [and the requirements of 40 CFR § 258 for monitoring of Subtitle D municipal landfills]. For all wells more than 10 years old, or for which either the age and/or construction/completion information are not available, and/or that have not been sampled in the past five years, EPA requests that, within 60 days of your receipt of this letter, the Navy submit, for EPA's review and approval, a workplan to demonstrate the integrity of all such wells by implementing downhole borehole telemetry (video scan) surveys over the entire well length, and/or another acceptable technology. Furthermore, the above work plan must include a plan to replace and/or rehabilitate all wells found to be in an unacceptable condition based on the integrity survey and/or other testing, subject to EPA's concurrence.

In addition, as described in the GWMSIP, and noted in EQB's comments, the concrete surface pads, protective casing and cap, and the protective bumpers appear to be in extremely deteriorated condition for many of the wells to be utilized for ongoing groundwater monitoring. Therefore, EPA requests that the work plan discussed previously, also include a program, subject to EPA's review and approval, to rehabilitate and recondition the surface structures of all wells deemed in an unsatisfactory condition.

Contingent on the Navy's submission, and EPA's approval, of an acceptable demonstration of the integrity of all utilized wells, and/or their replacement or rehabilitation (including surface structures), as discussed above, EPA will accept data generated under the GWMSIP and SAP, as amended by Addendum No. 1, towards fulfilling the groundwater investigation requirements for SWMU #3, of the September 1995 RFI Work Plan, contingent on the following additional requirements also being met:

1. All deficiencies noted in the enclosed January 15, 1998 evaluation prepared by EPA's contractor, TechLaw, Inc., must be addressed (either through submission of an appropriately revised GWMSIP and SAP, or through submission of response addressing the deficiencies).
2. All sample collection, quality assurance/quality control (QA/QC) procedures, and data validation procedures must conform with the September 1995 RFI Work Plan requirements.
3. A lithologic and completion [construction] log must be submitted for each well to be utilized. Such logs must either be submitted with the well integrity demonstration workplan requested above, or any final report submitted pursuant to that workplan.
4. Pursuant to Condition III.B.8.(a) of the 1994 RCRA permit, all preliminary analytical results must be submitted with the RFI Quarterly progress reports.
5. It is EPA's understanding that completion of the groundwater investigation requirements, completes the SWMU #3 investigation requirements of the September 1995 RFI Work Plan. Therefore, since the Base landfill (SWMU #3) is the only SWMU in operative unit (OU) #4, the draft RFI Final Report for OU #4 must be submitted within 60 calendar days of receipt of all validated groundwater analytical data required for SWMU #3, pursuant to Condition III.E.3.(a) of the 1994 RCRA permit.

Furthermore, even though the Navy indicates that implementation of groundwater monitoring under the GWMSIP is being done [only] to meet the requirements of 40 CFR § 258 for Subtitle D municipal landfills, EPA notes that, as a SWMU fully subject to the

corrective action requirements of the Base's 1994 RCRA Permit, EPA reserves its option, subject to the results of the RFI investigations, to require on-going groundwater monitoring, and/or other measures, for this SWMU as part of any remedy [corrective measures] imposed under the corrective action (Module III) requirements of that Permit.

II. Tow Way Fuel Farm Quarterly Progress Report No. 3 (July 1, 1997 through September 30, 1997)

1. The report, dated December 10, 1997, is indicated to cover the period July 1, 1997 through September 30, 1997. If this is correct, pursuant to Condition B.8 of Module III of the 1994 RCRA Permit and requirements given in previous EPA letters, the Quarterly Progress Report was due October 31, 1997, and was therefore, submitted 42 days late. It should be noted, however, that the present Quarterly Report includes much (but not all) relevant data through the end of October 1997, such as water and product elevation measurements through October 30, 1997 (refer to Table 3-2), and product thickness measurements (refer to Table 3-3), and Figures 5-1 through 5-9 include data through November 16, 1997. Please clarify the correct period covered by the present report, and henceforth submit the Tow Way Quarterly Reports within 30 days of the end of the period covered.

2. The site plan map, Figure 2-1, should have reflected the location of the new wells proposed originally in Quarterly Progress Report #2, and modified by your letter of October 20, 1997. Your October 20, 1997 letter made major revisions to the program proposed in Quarterly Report #2, yet EPA has never received a map showing the revised locations, and expected this to be included with the current Quarterly Progress Report. Please submit, within 45 days of your receipt of this letter, a site map showing all wells, including these new well locations [proposed as of September 30, 1997]. Also, please include with the next Quarterly Progress Report well logs for these new wells, showing lithology and construction/completion details for each.

3. The locations of at least 6 wells with product thickness measurements reported in Table One of the July 1997 [Terra Vac] Free Product Level Measurement Report 97-07, are not shown on any of the maps submitted, including the site plan map, Figure 2-1. These include wells identified on Table One as NW-1 & 2, and #1 through #4 [Terra Vac measured fluid levels in these wells in the field, but could not ascertain their numbers/identities]. Please submit, within 45 days of your receipt of this letter, a site plan map showing all wells, including these six wells, and the new wells discussed in (2) above.

4. In addition, as requested by EPA, our contractor, TECHLAW Inc., reviewed the Tow Way Fuel Farm Quarterly Progress Report. TECHLAW noted (see enclosed comment) that free product thicknesses presented in Table 5-1 of the quarterly report are not

consistent with measurements presented in Table 3-2. Please revise the Tables and/or provide a discussion for the discrepancies.

5. Furthermore, as discussed in more detail in the enclosed TECHLAW comments of January 28, 1998, the present limited free product recovery (total approximately 1,000 gallons in both 1996 and 1997, compared to approximately 12,000 gallons in 1995) would appear to indicate system deficiencies (either design or operation, or both). EPA concurs, and requests the Navy to submit, within 45 days of your receipt of this letter, a discussion of the causes of this greatly reduced free product recovery rate (including comments in the enclosed TECHLAW comments), and a work plan for measures to increase the rate of free product recovery to levels approaching that achieved in 1995. Also this response should address the above comment (#4) regarding discrepancies between Tables 5-1 and 3-2, and site map requested in (#2 and #3 above).

III. Draft Corrective Measures Study (CMS) Workplan for Tow Way Fuel Farm (SWMUs #7 & #8)

1. As discussed above under the Tow Way Quarterly Progress Report #3, the site plan map, Figure 2-1, should reflect the locations of the new wells proposed in your letter of October 20, 1997 (modified from the original proposal in the September 22, 1997 Quarterly Progress Report #2). In addition, Section 3.7 of the CMS workplan must be revised to indicate that groundwater elevation and product thickness data will be measured in those new wells (i.e., those proposed in your letter of October 20, 1997), concurrently with the measurements at the other 36 Tow Way wells. Of course, the data from the new wells must be fully incorporated into the CMS final report. Please modify the workplan accordingly.

2. In addition to the groundwater sampling of 36 wells proposed in Section 3.5, groundwater in the new wells proposed in your letter of October 20, 1997 must also be sampled as part of the CMS, unless those new wells are/have been sampled within 3 months of the date when sampling of the 36 wells, pursuant to the CMS workplan, occurs, and for essentially the same analytical suite. However, all data from the new wells (i.e., those proposed in your letter of October 20, 1997) must be fully incorporated into the CMS final report, even if they are not resampled concurrently with the other 36. Please modify the workplan accordingly. In addition, Figure 3-2 of the CMS workplan, showing the 36 groundwater sampling locations, must be revised to reflect the new wells (i.e., those proposed in your letter of October 20, 1997).

3. Section 3.2 indicates that 32 soil borings are proposed, and that the locations of these are shown on Figure 3-1, not 4-1 as stated in the text [per December 16, 1997 telephone conversation between Mr. Tim Gordon of my staff and Mr. Tom Fuller of Baker]. Likewise for Section 3.3 regarding the 10 soil gas sampling locations.

4. Even though the schedule given in Figure 6-1 extends the completion time frame beyond the December 15, 1998 date agreed to in EPA's letter of September 9, 1997, EPA will approve that schedule, subject to the following modifications and reporting requirements:

a) The Navy must submit a full report on results of the additional investigations described in Section 3.0 of the work plan by June 30, 1998. In addition to all analytical and other investigation results, this report must include the following: 1) a groundwater gradient/elevation map, 2) a free-product/phase separated hydrocarbon isopach map, 3) soil isopleth maps for each 5 foot interval below ground surface for both TPH and BTEX concentrations (if any interval contains less than 3 detections for either TPH or BTEX, no isopleth of that analyte is needed for that respective interval), and 4) isopleth maps for both dissolved BTEX and TPH concentrations in the groundwater.

b) The Task I draft report must be submitted by December 1, 1998 (not late February 1999 as shown in Figure 6-1), and must include recommended clean-up concentration levels and/or other corrective action objectives, along with supporting analysis if clean-up concentration levels are not based on regulatory standards, such as maximum contaminant levels (MCLs) for groundwater. In addition, the Task I draft report must contain a screening (identification and first stage evaluation) of potentially applicable technologies and/or remedies.

IV. Navy response to EPA's November 14, 1997 comments on OU 1, 6, and 7 RFI Report, and Work Plan for Additional Characterization at SWMU #30 (former incinerator)

EPA approves the Navy's December 24, 1997 response to EPA's November 14, 1997 comments on OU 1, 6, and 7 RFI Report, and the revised attachments (Tables 4-1 and 4-2).

Also, EPA approves the Work Plan for Additional Characterization at SWMU #30 (former incinerator) transmitted with the Navy's (Mr. Christopher Penny's) letter of December 24, 1997, subject to the following requirements:

1. In addition to the reporting program given on page 4 of the work plan, all preliminary data and a discussion of any field activities must be reported in the permit required Quarterly RFI status reports, as they are received/occur.

2. The revised Final RFI report for OU 1, 6, and 7, when that document is developed, must incorporate not only the results from the additional characterization at SWMU #30 in the present work plan, but also the previous RFI soil sampling (1996) and the previous groundwater investigations (implemented by B.B. & L in 1994, under the UST program).

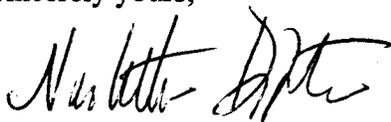
3. No implementation schedule is given in the SWMU #30 work plan. Pursuant to the terms of the 1994 RCRA Permit (Condition III.E.3.a.), implementation is to commence within 60 days following written approval of the work plan, given herewith. Should the Navy wish to delay the commencement, please submit a written request prior to the end of the 60 day time period.

In addition, the Puerto Rico EQB, in its February 9, 1998 review comments prepared for EPA on the SWMU #30 additional characterization workplan, recommended that the analytical program be expanded to include volatiles (not just semi-volatiles, TPH, BTEX, PCBs, and antimony as proposed). However, EPA will not require modification of the workplan submitted, since the previous RFI soil sampling (1996) included a full volatile analytical program in 6 surface soil sample locations, which are in close proximity to the 5 "detailed" soil borings proposed for the present investigation. Furthermore, the analytical program for the present investigation includes BTEX analysis for 3 soil intervals (surface, plus 6 -7 feet below surface, and 1 foot above expected water table) in each of the 5 "detailed" soil borings (total 15 samples), which would indicate if any of these four volatile constituents are present.

Also, EQB stated that groundwater sampling may be necessary. EPA agrees; however, as stated in the workplan (and EPA's letter of November 14, 1997), that determination will be contingent on the results of the additional surface and subsurface soil investigations. It should be noted that a full Appendix IX groundwater analysis has already been performed in 2 wells during the 1996 RFI investigations, and no hazardous constituents, except antimony, were detected in the groundwater at concentrations exceeding background. In addition, a limited volatile, semivolatile, and lead screening was performed in 5 wells during the 1994 UST program investigations implemented by B.B. & L, and no detections were reported. Therefore, EPA concurs with the workplan that the determination of whether additional groundwater investigations are needed at SWMU #30 should be contingent on the results of the proposed additional surface and subsurface soil investigations.

Please telephone Mr. Tim Gordon of my staff at (212) 637-4167 if you have any questions regarding any of the above.

Sincerely yours,



Nicoletta DiForte  
Chief, Caribbean Section  
RCRA Programs Branch

Enclosures: 1) TECHLAW comments of January 15, 1998 on GWMSIP and SAP  
2) EQB comments on Base Landfill Groundwater System Implementation Plan (1 page)  
3) TECHLAW comments of January 28, 1998 on Tow Way Quarterly Report

cc: Mr. Israel Torres, PREQB, with encl.  
Ms. Madeline Rivera, NAVSTA Roosevelt Roads, with encl.  
Mr. Chistopher Penny, LANTDIV, with encl.  
Mr. Tom Fuller, Baker Environmental, with encl.  
Ms. Luz Muriel-Diaz, PREQB, with encl.

**EVALUATION OF ATTACHMENTS 1 and 2  
(GROUNDWATER MONITORING AND SAMPLING and ANALYSIS PLANS for the  
BASE MUNICIPAL LANDFILL)  
of the  
RCRA PERMIT  
QUARTERLY PROGRESS REPORT  
PERIOD AUGUST 1, 1997 - OCTOBER 31, 1997 FOR  
NAVAL STATION ROOSEVELT ROADS  
PUERTO RICO**

**Submitted to:**

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**Submitted by:**

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**January 15, 1998**

EVALUATION OF ATTACHMENTS 1 and 2  
(GROUNDWATER MONITORING AND SAMPLING and ANALYSIS PLANS for the  
BASE MUNICIPAL LANDFILL)  
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**EVALUATION OF ATTACHMENTS 1 and 2  
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PERIOD AUGUST 1, 1997 - OCTOBER 31, 1997 FOR  
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PUERTO RICO**

## **1.0 INTRODUCTION**

The U.S. Environmental Protection Agency (EPA) has requested that the TechLaw Team (TechLaw Team) provide support to the Agency under Work Assignment No. R02020 for technical review of documents associated with the RCRA Facility Investigation (RFI) of the U.S. Naval Station Roosevelt Roads (NSRR) located in Ceiba, Puerto Rico.

The NSRR is located on the east coast of Puerto Rico in the municipality of Ceiba, approximately 33 miles southeast of San Juan. The primary mission of NSRR is to provide full support for the Atlantic Fleet weapons training and development activities. NSRR is currently operating under a Draft RCRA Corrective Action Permit that includes varying degrees of work at 28 Solid Waste Management Units (SWMUs) and three Areas of Concern (AOCs).

EPA requested the TechLaw Team to review Attachments 1 and 2 (Groundwater monitoring and sampling and analysis plans for the base municipal landfill) of the RCRA permit quarterly report for August 1, 1997 - October 31, 1997, submitted by Baker Environmental, Inc (Baker) dated December 3, 1997.

The TechLaw Team's report presents evaluations of this quarterly report. The methodology of this document review is presented in Section 2.0. Page-Specific Comments are detailed in Section 3.0. Conclusions and Recommendations are discussed in Section 4.0.

## **2.0 METHODOLOGY**

Pursuant to the EPA Work Assignment Manager's (WAM's) Technical Directive dated December 4, 1997, the TechLaw Team reviewed Attachments 1 and 2 (Groundwater monitoring and sampling and analysis plans for the base municipal landfill) of the RCRA permit quarterly report for August 1, 1997 - October 31, 1997. The review considered whether requirements and procedures presented in the September 1995 approved RFI Work Plan, as well as requirements of 40 CFR Section 258, were

conformed with. In addition, the TechLaw Team's review evaluated the technical adequacy of the proposed activities with regard to standard procedures and guidance presented in RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, OSWER-9950.1 (TEGD). Only outstanding issues are discussed.

### **3.0 PAGE-SPECIFIC COMMENTS**

Attachment 1, Part I, Section 1.3, Page 1-2 and Attachment 1, Part II, Section 1.1, Page 1-1

The text should be expanded to note that this unit is also subject to the terms of the November 1994 RCRA Permit. Text should be added which cites and discusses compliance with protocols and procedures presented in the September 1995 approved RFI Work Plan regarding the Base Landfill (SWMU#3).

Attachment 1, Part I, Section 3 and Attachment 1, Part II, Table 1.1

The number and locations of the monitoring wells should be reviewed and revised for consistency with information presented in Attachment 2. According to Section 3 and Table 1.1, the monitoring well network will consist of 8 wells: seven existing wells and one which will replace a destroyed well (R7GW03). Attachment 2, however, describes a network consisting of 9 wells, including a second upgradient well (R7GW11). As discussed in the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD), multiple background monitoring wells are recommended to characterize background groundwater quality and should be utilized at NSRR Base Landfill. In addition, procedures for conducting borehole drilling, monitoring well installation and development, and elevation survey activities should be presented for evaluation prior to plan approval. Procedures currently detailed in Section 3 are adequate; however, they appear to be marked for deletion from the plan.

Attachment 1, Part II, Section 1.3, Page 1-1

The text should present the criteria which will be used to evaluate the adequacy of the background samples and determine whether additional background samples are necessary.

Attachment 1, Part II, Section 1.3.2

For conformance with EPA standard operating procedures regarding low flow purging and sampling, turbidity should be added to the field parameters measured. According to EPA guidance, a turbidity level of less than 5 NTU should be achieved to indicate stabilization.

Attachment 1, Part II, Table 1.2

Table 1.2 must be revised to summarize the selected analytical methodologies and practical quantification limits (PQLs). Currently, Table 1.2 presents 3 different analytical methodologies and PQLs for each metals analyte, and the PQLs of the different analyses vary by as much as a factor of 100. The selected analytical methodologies and associated

PQLs must meet project data quality objectives (DQOs) which are presented in Section 2.1.

Attachment 1, Part II, Section 1.4

The procedure and frequency regarding the collection of equipment rinsate blanks must be added to the Sampling and Analysis Plan. As described in Section 4.6.1 of TEGD, equipment blanks are necessary to evaluate the effectiveness of decontamination of nondedicated sampling equipment. In addition, Section 2.3 of Attachment 1, Part II indicates that equipment rinsate blanks will be collected.

Attachment 1, Part II, Section 2.1.1, Page 2-2, Paragraph 4

The text does not provide acceptance criteria for MS/MSD recovery or RPD evaluation and must be expanded to provide specific precision and accuracy objectives for each parameter. The reference in Paragraph 6, Page 2-3 to QC criteria established in applicable analytical methods or laboratory-developed QC criteria does not provide sufficient information to evaluate objectives and determine whether they support program DQOs.

Attachment 1, Part II, Section 2.1.1, Page 2-2, Paragraph 5

The precision goals for evaluation of inorganic duplicates must be specified. The statement that precision goals are modeled on the criteria for inorganic duplicates presented in the USEPA data validation guidelines does not provide sufficient information regarding the goals, in particular any differences from the standard. Specific goals are necessary to evaluate if the duplicate goals will be able to meet the program DQOs.

Attachment 1, Part II, Section 2.1.2, Page 2-3, Paragraph 1

The text discussing method blank criteria should be expanded to describe the applicability of each of the three scenarios which are presented in Chapter 1 of SW-846.

Attachment 1, Part II, Section 2.4, Page 2-5, Paragraph 3

The discussion regarding data validation procedures must be expanded to present the specific criteria which will be used to evaluate QC parameters. Currently, the text states that data validation will be adapted from principles presented in two USEPA data validation guidelines. Additional description is necessary to identify the procedures adapted from validation guidelines and to evaluate whether they will comply with data validation methodologies presented in Appendix D of the 1995 Work Plan and be sufficient to determine if the data quality will meet the program DQOs.

#### **4.0 CONCLUSIONS AND RECOMMENDATIONS**

The activities and procedures presented in the Groundwater Monitoring System and Implementation Plan and Sampling and Analysis Plan were reviewed with respect to compliance with the September 1995 RFI Work Plan and 40 CFR Section 258. Activities and procedures described in the plans appear to conform with the September 1995 RFI

Work Plan and 40 CFR Section 258. Issues regarding consistency or clarity of some proposed activities were identified. However, no significant issues or concerns were identified. It is recommended that the monitoring program be initiated and that the deficiencies be clarified and corrected in revised plans. Revised plans should be reviewed to verify that concerns were adequately addressed.

**EQB** Comments on the Groundwater System Implementation Monitoring Plan

1. EQB agrees with the location of the existing monitoring well network, however, based on the report, wells R7GW02 and R7GW04 have not been tested for integrity. In order to determine if the wells are appropriate for groundwater sampling, EQB recommends to performed integrity test on these wells, if the test confirms that the wells are inadequate, the Navy must reinstall them.
2. The Navy must consider to replace monitoring wells R7GW03 and R7GW06 due to the possible sources of contamination and error which may result in non-representative groundwater sampling. With the improperly designed and constructed wells, there is a potential that the contamination detected is an artifact.
3. Based on the report, the existing wells are screened above the bedrock, there is no detailed information indicating the depths of these wells and the length of the screen wells. Therefore, the Navy must submitted to EQB all the information related with the construction of the monitoring network.
3. A series of photographs were taken by Burns & McDonnell which showed that the existing monitoring wells contained protective covers (bumper bumps), pads and well casings at very low maintenance conditions. EQB recommends to replace these units and implement a maintenance program to prevent these conditions to occur.
4. In addition, a survey of all the monitoring wells (indicating vertical and horizontal positions) must be performed after the existing monitoring wells have been renovated and new monitoring wells have been installed.

**TOW WAY FUEL FARM  
QUARTERLY SUMMARY PROGRESS REPORT NO. 3  
(JULY 1, 1997 THROUGH SEPTEMBER 30, 1997)  
NAVAL STATION ROOSEVELT ROADS  
PUERTO RICO**

**SUBMITTED TO:**

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U. S. ENVIRONMENTAL PROTECTION AGENCY  
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**SUBMITTED BY:**

**TECHLAW, INC.  
122 EAST 42ND STREET  
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NEW YORK, NEW YORK 10168**

**JANUARY 28, 1998**

**TOW WAY FUEL FARM  
QUARTERLY SUMMARY PROGRESS REPORT NO. 3  
(JULY 1, 1997 THROUGH SEPTEMBER 30, 1997)  
NAVAL STATION ROOSEVELT ROADS  
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**TOW WAY FUEL FARM  
QUARTERLY SUMMARY PROGRESS REPORT NO. 3  
(JULY 1, 1997 THROUGH SEPTEMBER 30, 1997)  
NAVAL STATION ROOSEVELT ROADS  
PUERTO RICO**

## **1.0 INTRODUCTION**

The U.S. Environmental Protection Agency (EPA) has requested support for technical review of documents associated with the RCRA Facility Investigation (RFI) of the U.S. Naval Station Roosevelt Roads (NSRR) located in Ceiba, Puerto Rico. TechLaw has assigned this project to TRC, a TechLaw Team member under the REPA Contract under Work Assignment No. R02020.

The NSRR is located on the east coast of Puerto Rico in the municipality of Ceiba, approximately 33 miles southeast of San Juan. The primary mission of NSRR is to provide full support for the Atlantic Fleet weapons training and development activities. NSRR is currently operating under a Draft RCRA Corrective Action Permit that includes varying degrees of work at 28 Solid Waste Management Units (SWMUs) and three Areas of Concern (AOCs).

EPA requested the TechLaw Team to review the *Tow Way Fuel Farm Quarterly Progress Report No. 3 July 1, 1997 Through September 30, 1997*, prepared by Baker Environmental, Inc (Baker) dated December 10, 1997.

The TechLaw Team's report presents evaluations of the quarterly progress report. The methodology of this evaluation is presented in Section 2.0. General Comments regarding the quarterly progress report are presented in Section 3.0, Page-Specific Comments are detailed in Section 4.0, and Recommendations are presented in Section 5.0.

## **2.0 METHODOLOGY**

Pursuant to the EPA Work Assignment Manager's (WAM's) Technical Directive dated December 16, 1997, the TechLaw Team reviewed the quarterly progress report, specifically the Recovery System Analysis in Section 5.0. The TechLaw Team's review considered causes and solutions regarding inconsistencies in product thickness observations.

## **3.0 GENERAL COMMENTS**

The Recovery System Analysis reports a large decrease in product recovery volumes. The quantity of product recovered in 1996 and 1997, approximately 1,000 gallons each year, is significantly less than the 12,000 gallons recovered in 1995. No information is provided to support the explanation that the difference is a result of nuisance water which may have been included in the quantity recovered by the system in 1995. Details regarding the duration and conditions of recovery system operation should be evaluated to determine if changes in system

operation might have been the cause.

Discrepancies in observed product thicknesses between recovery wells and nearby monitoring wells are also reported. With the exceptions identified below for RW-5 and UGW-17, product thicknesses appear to be accurately calculated from the water and product depth measurements presented. Several explanations for the discrepancies are presented. However, insufficient information is presented to provide a basis to evaluate the different explanations. It is unclear if the discrepancies are a result of problems related to measurements in the recovery wells or the nearby monitoring wells, or both. Possible explanations not considered in the analysis include: a) Variability in the time between system shut-down and product measurement allowing product levels to recover to varying degrees and b) the condition of the recovery well screens and sand filter packs around the screens which may decreasingly restrict product flow into the wells. The time between system shut-down and product measurement should be evaluated to determine if product levels were allowed to recover adequately. Clogging of the screens or sand filter packs of the recovery wells, restricting the flow of product into the wells, should be evaluated. Information regarding system operation, variations in subsurface conditions, and differences in the current condition of recovery and monitoring wells versus the previously reported condition must be considered to evaluate the cause of the apparent discrepancies in product thicknesses.

#### **4.0 PAGE-SPECIFIC COMMENTS**

##### **Table 5-1**

Free product thicknesses presented in Table 5-1 are not consistent with measurements presented in Table 3-2. According to Table 5-1, free-product thicknesses for RW-5 and UGW-17 measured on 9/3/97 were 0.00 and 2.00 feet, respectively. However, based on measurements presented in Table 3-2, free-product thicknesses on 9/3/97 for RW-5 and UGW-17 should be 0.95 and 5.0 feet, respectively. Free product thicknesses presented in Table 5-1 should be reviewed for accuracy and revised as appropriate.

#### **5.0 RECOMMENDATIONS**

The reduction in product recovery volumes and discrepancies in observed product thicknesses should be re-evaluated and the findings reported to EPA for review. The additional actions proposed might provide useful information with which to evaluate these discrepancies. Information regarding system operation, variations in subsurface conditions, and conditions of recovery and monitoring wells should also be obtained and included in the evaluation.

EVALUATION OF DRAFT  
CORRECTIVE MEASURES STUDY WORK PLAN  
FOR TOW WAY FUEL FARM  
NAVAL STATION ROOSEVELT ROADS  
PUERTO RICO

## 1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has requested support for technical review of documents associated with the RCRA Facility Investigation (RFI) of the U.S. Naval Station Roosevelt Roads (NSRR) located in Ceiba, Puerto Rico. TechLaw has assigned this project to TRC, a TechLaw Team member under the REPA Contract under Work Assignment No. R02020.

The NSRR is located on the east coast of Puerto Rico in the municipality of Ceiba, approximately 33 miles southeast of San Juan. The primary mission of NSRR is to provide full support for the Atlantic Fleet weapons training and development activities. NSRR is currently operating under a Draft RCRA Corrective Action Permit that includes varying degrees of work at 28 Solid Waste Management Units (SWMUs) and three Areas of Concern (AOCs).

EPA requested the TechLaw Team to review the *Draft CMS Work Plan for Tow Way Fuel Farm*, prepared by Baker Environmental, Inc (Baker) dated December 12, 1997.

The TechLaw Team's report presents evaluations of the Draft CMS Work Plan. The method and objective of this evaluation is presented in Section 2.0. Page-Specific Comments are detailed in Section 3.0, Editorial Comments are detailed in Section 4.0, and Recommendations are presented in Section 5.0.

## 2.0 METHODOLOGY

Pursuant to the EPA Work Assignment Manager's (WAM's) Technical Directive dated December 16, 1997, the TechLaw Team reviewed the Draft Work Plan, in particular Sections 3.0 and 4.0 with respect to deficiencies and unsupported or questionable conceptual assumptions that could impact any conclusions reached following completion of the pilot study. The following documents were considered during the review:

- Tow Way Fuel Farm Quarterly Progress Report No.3 July 1, 1997 Through September 30, 1997, prepared by Baker Environmental, Inc (Baker) dated December 10, 1997;
- RCRA Ground-Water Monitoring: Draft Technical Guidance, EPA/530-R-93-001 , November 1992;
- Interim Final RCRA Facility Investigation (RFI) Guidance, EPA 530/SW-89-031, May 1989; and
- Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities, 57 FR 30798, July 27, 1990.

### 3.0 PAGE-SPECIFIC COMMENTS

#### Page 3-2, Section 3.3, Paragraph 2

Based on the extent of free product illustrated in Figure 3-2 of the Tow Way Fuel Farm Quarterly Progress Report No.3, it appears that approximately seven additional soil gas locations are warranted to refine the extent of contamination at the Lower TWFF and along Forestdale Drive. Two soil gas points are recommended to assess the area south of tank 85: One point should be located approximately 50 feet south of UGW-23 and the other should be located approximately 50 west of UGW-4. Five soil gas points should be installed in a southeasterly direction from UGW-5 at a spacing of approximately 75 feet. If elevated measurements indicating potential contamination are detected, additional borings and monitoring well(s) appear appropriate to determine and monitor contaminant conditions along the downgradient limit.

**Page 3-4, Section 3.8, Paragraph 1**

In order to minimize the generation of wastewater, a pumping technology should be considered to purge free-product from the wells instead of the proposed bailer technique. A pumping technology may also provide more accurate product thickness and depth-to-water measurements if the pump and product measurement device can be operated simultaneously.

**Page 4-8, Section 4.2.4**

Progress reports should be submitted for regulatory review following each major remedial progress sampling event. The progress reports should present observations and findings from each sampling event. The objective of the reports would be to communicate the progress of the demonstration and provide the basis for a periodic review to determine whether corrections to the demonstration are needed.

#### **4.0 EDITORIAL COMMENTS**

Page 3-1, Section 3.2, Paragraph 1; Page 3-2, Section 3.3, Paragraph 1; and Page 3-2, Section 3.4, Paragraph 1  
References to Figure 4-1 should be corrected to Figure 3-1.

#### **5.0 RECOMMENDATIONS**

The additional investigation activities and analyses proposed in Section 3.0 should provide sufficient information to screen remedial alternatives. However, delineation of the extent of contamination in the southeastern corner of the Lower TWFF and along Forestdale Drive is an apparent data gap that needs to be addressed. Additional soil gas points at these areas are recommended to assist in determining the limit of contamination. If soil gas results indicate that the downgradient extent of contamination has not been appropriately defined, additional soil borings and monitoring wells may be required.

The ElectroChemical Geo-Oxidation (ECGO) Demonstration should be adequate to provide information with which to evaluate the

effectiveness of the technology in reducing contaminant levels and free product levels. Progress reports are recommended following each major remedial progress event to communicate the progress of the demonstration and to determine whether corrections to the demonstration are needed. The ECGO Work Plan describing system planning, installation, operation, and sampling and analysis activities will need to be submitted for regulatory review. The Work Plan should also discuss the potential for adverse secondary impacts caused by the technology.

**CMS Workplan  
Techlaw Comments**

**Techlaw Comment**

**3.0 Page-Specific Comments**

**Page 3.2, Section 3.3, Paragraph 2**

*Based on the free product extent illustrated in Figure 3-2 of the Tow Way Fuel Farm Quarterly Progress Report No. 3, it appears that approximately seven additional soil gas locations are warranted to refine the extent of contamination at the lower TWFF and along Forestdale [sic] Drive. Two soil gas points are recommended to assess the area south of tank 85: One point should be located approximately 50 feet west of UGW-4. Five soil gas points should be installed in a southeasterly direction from UGW-5 at a spacing of approximately 75 feet. If elevated measurements indicating potential contamination are detected, additional borings and monitoring well(s) appear appropriate to determine and monitor contaminant conditions along the downgradient limit.*

**Response**

The soil gas investigation is not intended to investigate the nature and extent of contamination but is designed to establish representative values for the parameters indicated in the workplan. These values will provide information to be used to assess the potential viability of certain remedial measures (e.g. bioslurping, bioventing). Therefore, expanding the soil gas program does not appear reasonable at this time.

The area south of UGW-23 and west of UGW-4 has been investigated in the past with test pits and/or borings as part of the earlier RFI or pre-RFI activities. Conditions related to soil and groundwater contamination are known.

The area southeast of UGW-5 is an extremely steep rock slope that only allows an approximately 10 foot wide road shoulder where there is presently a line of wells. The slope area is not accessible due to terrain and the prospect of finding petroleum is extremely remote given the nature of the bedrock hill.

Based on the forgoing, there does not appear to be a technical need for the requested soil gas investigation expansion.

**Techlaw Comment**

**Page 3-4, Section 3.8, Paragraph 1**

*In order to minimize the generation of wastewater, a pumping technology should be considered to purge free-product from the wells instead of the proposed bailer technique. A pumping technology may also provide more accurate product thickness and depth-to-water measurements if the pump and product measurement device can be operated simultaneously.*

**Response**

The investigation portion of the work covered in the workplan has been performed (completed April 22, 1998). This was done to allow sufficient time to complete the report by your June 30, 1998 deadline.

The bail down tests were performed using a bailer as was originally proposed in the workplan. The system worked adequately for its purpose. The problem with baildown tests at this site is not with the purging or measuring of fluid levels, it is the very low recharge rate of both groundwater and free product.

**Techlaw Comment**

**Page 4-8, Section 4.2.4**

*Progress reports should be submitted for regulatory review following each major remedial progress sampling event. The progress reports should present observations and findings from each sampling event. The objective of the reports would be to communicate the progress of the demonstration and provide the basis for a periodic review to determine whether corrections to the demonstration are needed.*

**Response**

Results of interim sampling events (i.e. those performed during the period of ECGO operation) will be provided in a letter report to the EPA. This will consist of a tabulation of the data obtained and a very brief comparison of the data to expected results. After the last sampling (i.e. when the demonstration study is complete) a final report of the pilot study will be provided.

**Techlaw Comment**

**4.0 Editorial Comments**

*Page 3-1, Section 3.2, Paragraph 1; Page 3-2, Section 3.3, Paragraph 1; and Page 3-2, Section 3.4, Paragraph 1 References to Figure 4-1 should be corrected to Figure 3-1.*

**Response**

The figure references will be corrected in the revised document.