

N40003.AR.002355  
PUERTO RICO NS  
5090.3a

TRANSMITTAL LETTER FOR COLLECTION OF 15 ADDITIONAL SEDIMENT SAMPLES FOR  
THE DRAFT FINAL RESOURCE CONSERVATION AND RECOVERY ACT FACILITY  
INVESTIGATION REPORT NAVAL ACTIVITY PUERTO RICO  
11/25/2013  
BAKER ENVIRONMENTAL, INC.

Airside Business Park  
100 Airside Drive  
Moon Township, PA 15108  
Office: 412-269-6300  
Fax: 412-375-3995

November 25, 2013

U.S. Environmental Protection Agency – Region II  
290 Broadway – 22<sup>nd</sup> Floor  
New York, NY 10007-1866

Attn: Mr. Phil Flax  
Chief, Resource Conservation and Special Projects Section

Re: Contract N62470-10-D-3000  
IDIQ for A/E Services for Multi-Media  
Environmental Compliance Engineering Support  
Delivery Order (DO) JM15  
U.S. Naval Activity Puerto Rico (NAPR)  
EPA I.D. No. PR2170027203  
SWMU 9 Area B, Tank 214 Area  
Additional Sampling for Completion of the Full RCRA Facility Investigation

Dear Mr. Flax:

Michael Baker Jr., Inc. (Baker) submitted the Draft Final Full RCRA Facility Investigation (RFI) Report for SWMU 9 Area B, Tank 214 Area on behalf of the U.S. Department of the Navy (Navy) on June 16, 2011. EPA and PREQB provided comments on the Draft Final RFI report on August 30, 2011. PREQB comments on the Draft Final RFI report indicated that the extent of total petroleum hydrocarbons, diesel range organics (TPH DRO) in the sediment in the areas west of samples 9SD117, 9SD120 and 9SD123 has not been fully delineated. Collection of 15 additional sediment samples for TPH DRO, total petroleum hydrocarbons, oil range organics (TPH ORO), and semi-volatile organic compounds (SVOCs) analyses is proposed to address this comment. It is also proposed to collect two sediment samples from previous locations (9SD117 and 9SD123) for TPH DRO, TPH ORO, and SVOCs analysis. The sediment sampling rationale and sampling locations are discussed in the following paragraphs.

#### **SEDIMENT SAMPLING RATIONALE**

As indicated above, this proposed additional sediment sampling is designed to address PREQB Page-Specific Comment 35 from the EPA Comment Letter dated August 30, 2011. The comment states, "It does not appear that TPH DRO has been delineated to the west of sample 9SD117, 120 and 123. Although only sample 9SD120 is attributable to DRO, the concentration was reported as an estimated 1,900 mg/kg and the identity of the contaminants contributing to contamination in the surrounding samples 9SD117 and 123 needs to be determined and delineated as well. Please address." As discussed in the Draft Final Full RCRA Facility Investigation Report for SWMU 9 – Area B, Tank 214 Area, the analytical chromatograms for the distal sediment samples exhibited both petroleum hydrocarbon and non-petroleum hydrocarbon patterns.

Mr. Phil Flax  
U.S. Environmental Protection Agency, Region II  
November 25, 2013  
Page 2

There are two proposed tasks associated with the additional sediment sampling:

1. Delineate the elevated levels of total petroleum hydrocarbons, diesel range organics (TPH DRO) detected in sediment sample 9SD120.
2. Ascertain the nature of hydrocarbon detections associated with samples 9SD117 and 9SD123.

### **SEDIMENT SAMPLING LOCATIONS AND ANALYSES**

To delineate TPH DRO at 9SD120, the established estuarine wetland sediment sampling grid will be extended approximately 150 feet to the west of 9SD120 and 100 feet to the north of 9SD120 resulting in the collection of 15 additional estuarine wetland sediment samples. The location of the expanded sampling grid and the associated sediment samples is shown on Figure 1. A list of proposed samples and their associated laboratory analysis is provided in Table 1. To ascertain the nature of hydrocarbon detections associated with samples 9SD117 and 9SD123, one additional sediment sample will be collected at the location of 9SD117 and one additional sediment sample will be collected from location 9SD123. Sediment samples will be obtained using disposable, stainless steel spoons. The samples will be collected from 0- to 0.5-foot below the surface following the procedures established in the EPA approved Final Full RCRA Facility Investigation Work Plan for SWMU 9 Area B, Tank 214 Area (Baker, February 2008).

The 15 sediment samples collected as part of the TPH DRO delineation (samples 9SD184 to 9SD198) as well as 9SD117 and 9SD123 will be submitted for analysis of TPH DRO and TPH ORO via SW 846 Method 8015B. These samples will be analyzed with and without SW 846 Method 3630C (silica gel cleanup). The Silica gel cleanup removes polar compounds that are not petroleum hydrocarbon compounds from the samples prior to the TPH analyses. This will ascertain whether or not the TPH detections are actually related to petroleum. If the compounds detected are petroleum related and the TPH concentration in a silica gel treated sample is above the PREQB screening value of 100 mg/kg, then further fractionation will be conducted and the risk of that TPH will be assessed. An acceptable method such as the New Jersey's Extractable Petroleum Hydrocarbon (EPH), Massachusetts EPH, or Texas TPH will be used. The risk for these fractionated results will be assessed using surrogate compounds. The California Department of Toxic Substances Control (DTSC) recommends a 2-methylnaphthalene surrogate for aromatics in the C9-C16 range and pyrene for aromatics in the >C17 range. It will be assumed that the nature of the detections in wetland sediment from this investigation phase can be applied to detections from the previous investigation phases. Thus, the entire distribution of TPH in the wetland will be impacted from this investigation phase.

All sediment samples proposed for collection to ascertain the nature of hydrocarbon detections will be analyzed for SVOCs via SW 846 Method 8270C. The scan mode will be used with a mass spectroscopy (MS) library to identify the individual compounds. The full scan mode allows the analyst to identify specific compounds contributing to DRO and ORO and quantify those individual peaks. Identified compounds will be compared against UESPA Regional Screening Level (RSL) and PREQB Target Levels, as appropriate.

Mr. Phil Flax  
U.S. Environmental Protection Agency, Region II  
November 25, 2013  
Page 3

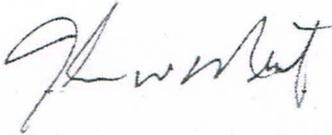
Sediment sampling ancillary activities such as decontamination and sample handling will be done in accordance with the existing SWMU 9 Full RFI Work Plan (Baker, 2008). In addition, specific QA/QC samples for this work will consist of field duplicate and matrix spike/matrix spike duplicate samples as shown in Table 1 and equipment rinsate and field blanks as identified in Table 2.

The results of this proposed additional sampling will be combined with the existing data collected for the Full RFI and presented in the Final Full RFI Report for SWMU 9.

If you have questions regarding this submittal, please contact Mr. David Criswell at (843) 743-2130.

Sincerely,

**MICHAEL BAKER JR., INC.**



John W. Mentz.  
Activity Coordinator

Attachments

cc: Ms. Debbie Sanders, BRAC PMO SE (letter only)  
Mr. David Criswell, BRAC PMO SE (1 CD)  
Mr. Pedro Ruiz, NAPR (electronic copy only)  
Mr. Stacin Martin, NAVFAC Atlantic (1 CD)  
Mr. Doug Pocze US EPA Region II (2 hard copies and 2 CDs)  
Mr. Jose Font, US EPA Caribbean Office (1 hard copy and 1 CD)  
Mr. Felix Lopez, US F&WS (1 hard copy and 1 CD)  
Ms. Wilmarie Rivera, PREQB (1 hard copy and 1 CD)  
Ms. Gloria Toro Agrait, PREQB (1 hard copy and 1 CD)  
Ms. Bonnie Capito, NAVFAC Atlantic – Code EV42 (1 hard copy)

TABLE 1

ENVIRONMENTAL SAMPLE SUMMARY  
 ADDITIONAL SAMPLING FOR COMPLETION OF THE  
 FULL RCRA FACILITY INVESTIGATION  
 SWMU 9 AREA B, TANK 214 AREA  
 NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	Sample Depth (ft bgs)	Silica Gel Cleanup	TPH DRO	TPH ORO	SVOCs	Comments
<i>Sediment Samples</i>						
9SD117	0.0-0.5	X	X	X	X	
9SD117D	0.0-0.5	X	X	X	X	Duplicate
9SD123	0.0-0.5	X	X	X	X	
9SD184	0.0-0.5	X	X	X	X	
9SD185	0.0-0.5	X	X	X	X	
9SD186	0.0-0.5	X	X	X	X	
9SD187	0.0-0.5	X	X	X	X	
9SD187D	0.0-0.5	X	X	X	X	Duplicate
9SD187MS/MSD	0.0-0.5	X	X	X	X	Matrix Spike/Matrix Spike Duplicate
9SD188	0.0-0.5	X	X	X	X	
9SD189	0.0-0.5	X	X	X	X	
9SD190	0.0-0.5	X	X	X	X	
9SD191	0.0-0.5	X	X	X	X	
9SD192	0.0-0.5	X	X	X	X	
9SD193	0.0-0.5	X	X	X	X	
9SD194	0.0-0.5	X	X	X	X	
9SD195	0.0-0.5	X	X	X	X	
9SD196	0.0-0.5	X	X	X	X	
9SD197	0.0-0.5	X	X	X	X	
9SD197D	0.0-0.5	X	X	X	X	Duplicate
9SD198	0.0-0.5	X	X	X	X	

**Notes:**

TPH DRO - Total petroleum hydrocarbons, diesel range organics

SVOCs - Semivolatile organic compounds

ft bgs - feet below ground surface

TABLE 2

QA/QC SAMPLE SUMMARY  
 ADDITIONAL SAMPLING FOR COMPLETION OF THE  
 FULL RCRA FACILITY INVESTIGATION  
 SWMU 9 AREA B, TANK 214 AREA  
 NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

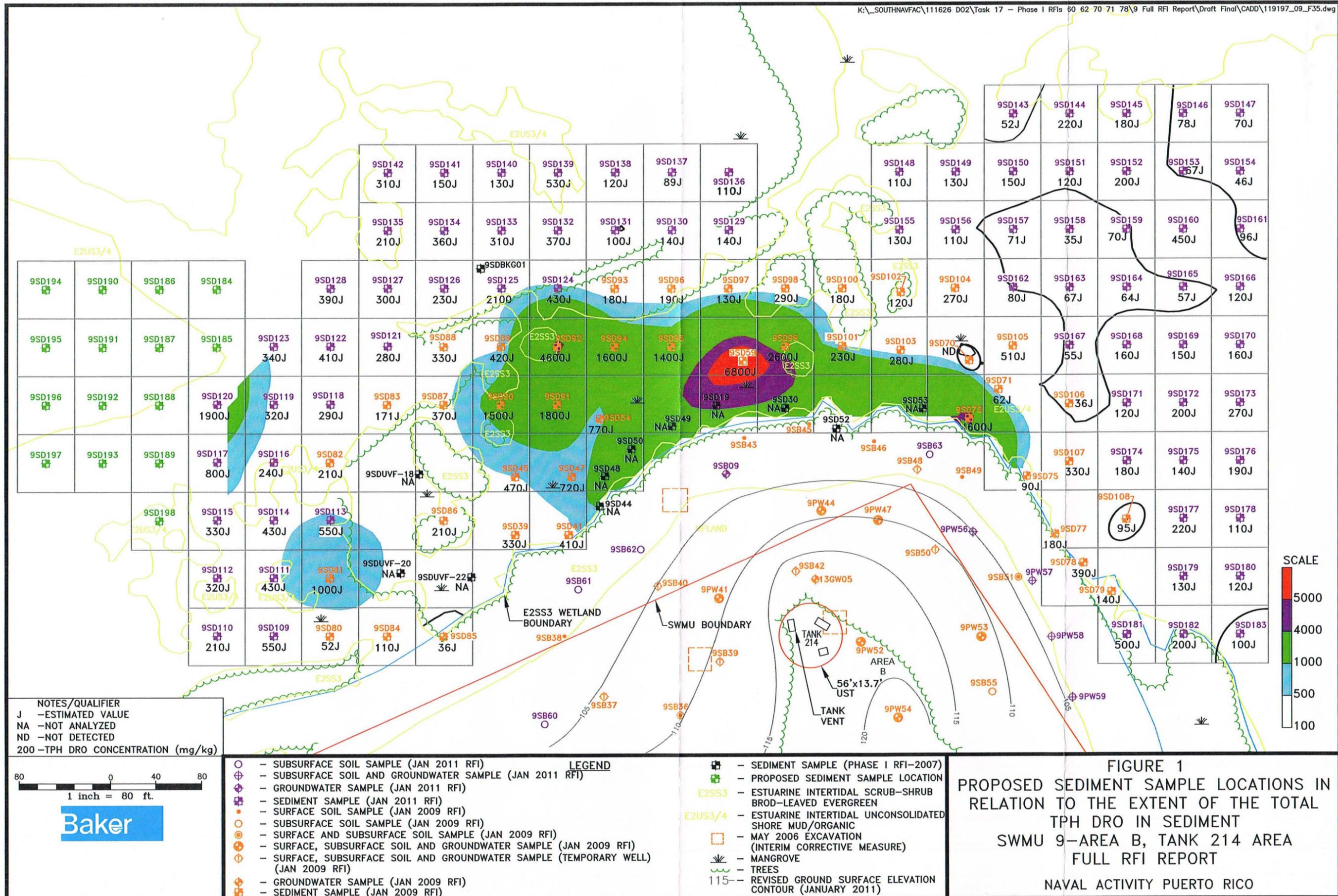
Sample ID	Sample Depth (ft bgs)	TPH	DRO	SVOCs	Comments
<i>QA/QC Samples</i>					
9ER01-13	NA	X	X		Equipment Rinsate Sample
9ER02-13	NA	X	X		Equipment Rinsate Sample
9FB01-13	NA	X	X		Field Blank Sample

Notes:

TPH DRO - Total petroleum hydrocarbons, diesel range organics

SVOCs - Semi-volatile organic compounds

ft bgs - feet below ground surface



**FINAL NAVY RESPONSES TO EPA AND PREQB COMMENTS ON THE REVISED  
ADDITIONAL SAMPLING FOR COMPLETION OF THE FULL RCRA FACILITY  
INVESTIGATION WORK PLAN LETTER FOR SWMU 9 AREA B, TANK 214 AREA  
(DRAFT: OCTOBER 9, 2012; REVISED: MARCH 27, 2013)  
NOVEMBER 25, 2013**

The following provides a compilation of the Navy responses to EPA and PREQB comments on the revised Additional Sampling for Completion of the Full RCRA Facility Investigation Work Plan Letter for SWMU 9 Area B, Tank 214 Area (dated March 27, 2013), herein referred to as the Revised Work Plan Sampling Letter. A timeline of the document history to date is provided below.

- Draft Work Plan Letter submitted by the Navy to EPA and PREQB on October 9, 2012.
- PREQB provided comments on the Draft Work Plan Letter to EPA (Doug Pocze) and the Navy (Stacin Martin) via email on December 6, 2012.
- EPA provided comments on the Draft Work Plan Letter to the Navy (Stacin Martin) via email from Doug Pocze on March 17, 2013.
- The Navy submitted responses to government comments and the Revised Work Plan Letter to the EPA and PREQB on March 27, 2013.
- PREQB provided approval of all Navy responses except the response to PREQB Page-Specific Comment 2c and the Revised Work Plan Letter in an email to the EPA (Doug Pocze) and the Navy (Stacin Martin) on April 11, 2013.
- Navy responses to the outstanding PREQB comment on the Revised Work Plan Letter submitted by the Navy to EPA and PREQB on June 5, 2013.
- EPA and PREQB provided approval of the responses via email from Doug Pocze to the Navy (Stacin Martin) on October 29, 2013.
- Final Navy Responses to EPA and PREQB Comments (this document) and the Final Work Plan Letter submitted by the Navy to EPA and PREQB on November 22, 2013.

The government comments on the Work Plan Letter are provided in italics, while the Navy responses are provided in regular print. Dates corresponding to the timeline are also included in parenthesis after each comment and response

**EPA COMMENTS (March 17, 2013)**

**EPA Comment 1(March 17, 2013)** : *I was reviewing your Project Status Schedule and I noticed for SWMU 9 it had that the next action was for EPA to submit comment on the Letter Work Plan. I've reviewed EQB's comments and the letter work plan and have no additional comments to add.*

*I am a little confused; however, on some of the comments & responses. For instance, one comment requested sediment samples at SD117 and SD123 and in your letter work plan I believe it indicates that*

*sediment samples would be taken at SD117 & SD123. So I'm not sure what is the outstanding issue ... unless perhaps it wasn't included in a table or summary in a subsequent re-write?*

**Navy Response to EPA Comment 1 (March 27, 2013):** Sediments at locations SD117 and SD123 are being resampled to provide the same point-in-time analytical results for TPH DRO as the additional samples.

**EPA Comment 2 (March 17, 2013):** *Also EQB requested for SVOAs to be included in the analysis which I believe you indicated to include. So again unless I'm missing something, I am not sure what is still outstanding.*

**Navy Response to EPA Comment 2 (March 27, 2013):** SVOC analysis is being added for all sediment locations, not just SD117 and SD123 as originally planned.

**EPA Comment 3 (March 17, 2013):** *As for the comment about the depth of a sample ... 0-6" or 0-12". I recommend that we remain consistent with what was performed in the RFI previously. I would not wish to have one set of samples taken at 0-6" and another set to have been obtained at 0-12".*

**Navy Response to EPA Comment 3 (March 27, 2013):** Concur; the sampling depth will be 0-6" to be consistent with the previous sampling.

**EPA Comment 4 (March 17, 2013):** *Finally as one recommendation, perhaps you should consider taking a sample diagonally southwest of sample 9SD117 (south of 9SD189 and west of 9SD115) just in case that plume extends further in that direction.*

**Navy Response to EPA Comment 4 (March 27, 2013):** One additional sediment sampling location will be added to sampling plan as indicated in Comment #4.

## **PREQB COMMENTS**

### **PREQB GENERAL COMMENTS (December 6, 2012)**

**PREQB Comment 1 (December 6, 2012):** *Based on the chromatograms provided in the Draft SWMU 9 Full RFI report for sediment samples, it appears that the analyses should include TPH DRO and ORO to include the heavier molecular weight hydrocarbons. Please revise accordingly.*

**Navy Response to PREQB Comment 1 (March 27, 2013):** TPH ORO will be added to the list of analytes.

**PREQB Comment 2 (December 6, 2013):** *Two prior sample locations are being resampled in order to analyze for SVOCs in order to identify petroleum-related vs. non-petroleum related compounds in each sample. Please add SVOC analysis using SW-846 8270C to the remaining 14 samples in order to have the data needed to determine whether the TPH concentrations reported are associated with petroleum or non-petroleum organics.*

**Navy Response to PREQB Comment 2 (March 27, 2013):** SVOC analysis has been added to the remaining samples as suggested by this comment. The text and tables will be revised accordingly.

## PREQB SPECIFIC COMMENTS (December 6, 2012)

**PREQB Comment 3 (December 6, 2013):** *At the opening paragraph, please include that in addition to the fourteen additional sediment samples, also two sediment samples will be collected from old locations (9SD117 and 9SD123) and analyzed for TPH DRO and SVOCs, and please revise Table 1 to include TPH DRO analyses for these two samples.*

**Navy Response to PREQB Comment 3 (March 27, 2013):** Baker will add the following sentence to the opening paragraph: "It is also proposed to collect two sediment samples from previous locations (9SD117 and 9SD123) for TPH DRO and SVOCs analysis." Table 1 will be revised accordingly.

**PREQB Comment 4 (December 6, 2012):** *Page 2, Sediment Sampling Locations and Analysis, Third Paragraph.*

- a. *During the RFI investigation, sediment samples were obtained from a depth of 0 to 6 inches. According to Table 1, proposed sampling depths for the 14 supplemental sampling locations is 0 to 1 foot below ground surface. Please provide the rationale for the deviation from the original sediment sampling depths.*

**Navy Response to PREQB Comment 4a (March 27, 2013):** Baker will revise Table 1 to indicate a sampling interval of 0 to 0.5 feet (6 inches) to be consistent with the 2011 field activities.

- b. *Paragraphs 2 and 3: The listed analytical method is SW-846 Method 5030B/8015B. Please note that SW-846 method 5030B is a volatile purge & trap method and is not appropriate for TPH-DRO analyses. Please revise the analytical method to show only 8015B without 5030B.*

**Navy Response to PREQB Comment 4b (March 27, 2013):** Baker will delete the analytical reference to SW-846 Method 5030B.

- c. *Paragraph 3: Please clarify that all peaks will be identified using SW-846 Method 8270C and not just target compounds. Tentatively identified compounds need to be evaluated and reported in order to comprehensively evaluate the nature of the hydrocarbons in samples 9SD117 and 9SD123.*

**Navy Response to PREQB Comment 4c (Page-Specific Comment 2c) (March 27, 2013):** The quality of the TIC data is commensurate with the level of effort required for reporting and investigating those TICs. The targeted compounds are spiked into calibration QA/QC samples, so the elution time and concentration is known and can be utilized to accurately identify and quantify the compound. The GC/MS software includes a library of over 250,000 compounds. Because of the uncertainty associated with a library search only, TICs are by definition uncertain. It is Baker's experience that TICs are often labeled as "unknown", or identified only by class (e.g., alkane). The reported concentration for a TIC is always an estimate because the identity and concentration cannot be confirmed without further investigation. This investigation requires that a known standard for the suspect compound is analyzed on the same instrument which initially made the tentative identification. There are a limited number of standards available compared with the GC/MS software library. So, it may not even be possible to positively identify a TIC if a standard is not available.

Additionally, evaluating TICs may lead to identifying a compound not related to past site activities (e.g., naturally occurring organic material associated with the wetland). Reporting of TICs is usually done where a site is uncharacterized and there is a reasonable probability of contamination by unconventional pollutants not present on a routine parameter list. SWMU 9 is known to have stored gasoline and diesel fuel. TPH GRO has previously been defined. TPH ORO has been added to the investigation to identify the possible presence of petroleum hydrocarbons outside the TPH DRO range. SVOCs have been added to the investigation to evaluate whether those peaks within the TPH DRO and TPH ORO chromatograph are Appendix IX list compound(s).

**PREQB Comment 5 (December 6, 2013):** *Paragraph 4: In the first sentence, please include the sample locations (9SD117 and 9SD123) for the two sediment samples proposed for collection to ascertain the nature of hydrocarbon detections.*

**Navy Response (March 27, 2013):** Baker will revise the first sentence to read, "All sediment samples proposed for collection to ascertain the nature of hydrocarbon detections will be analyzed for semi-volatile organic compounds (SVOCs) via SW 846 Method 8270C."

#### **PREQB SPECIFIC COMMENTS (April 11, 2013)**

**PREQB Evaluation of the Navy Response to PREQB Page-Specific Comment 2c (April 11, 2013):** *The purpose for requesting the TIC data is to determine whether the TPH concentrations are due to petroleum-related or non-petroleum related compounds, which is one goal of this investigation. The TIC data may contain compounds that are not on the routine 8270 analytical list that are components of petroleum. Since the Navy has indicated that the TPH results may be associated with non-petroleum organics, PREQB requests TIC data be reported and evaluated as a line of evidence to aid in determining the source of the TPH present in the samples. However, PREQB will defer to EPA on this issue.*

**Navy Response to PREQB Evaluation (June 5, 2013):** Rather than using TICs, the following two-step process is proposed:

**Step 1 (Silica Gel Cleanup)** - A silica gel sample treatment is proposed to determine if non-petroleum-related polar compounds are contributing to the total TPH concentration. The current GC-FID method for TPH is by SW-846 Method 8015. The method was designed to measure discrete non-halogenated organics, including non-polar petroleum hydrocarbons, and polar compounds that are not petroleum-related (e.g., alcohols, ketones, and aldehydes). The Navy proposes to analyze TPH DRO and TPH ORO with and without silica gel cleanup in order to differentiate between polar constituents that may be present from natural sources within the matrix from non-polar petroleum hydrocarbons. If the conceptual model is correct (i.e., many of the TPH detections in the wetland are not petroleum-related hydrocarbons), the detections in silica gel treated samples will be significantly less than non-silica gel treated samples.

**Step 2 (Fractionation)** - After silica gel cleanup and analysis, TPH concentrations will be considered to be petroleum-related. If the TPH concentration in a silica gel treated sample is above the PREQB screening value of 100 mg/kg, then further fractionation will be conducted and the risk of that TPH will be assessed. An acceptable method such as the New Jerseys Extractable Petroleum Hydrocarbon (EPH), Massachusetts EPH, or Texas TPH will be used. The risk for these fractionated results can be assessed using surrogate compounds. The California Department of Toxic Substances Control (DTSC) recommends 2-methylnaphthalene surrogates for aromatics in the C9-C16 range and pyrene for aromatics in the >C17 range. It will be assumed that the nature of the detections in wetland sediment from this investigation phase can be applied to detections from the previous investigation phases. Thus, the entire distribution of TPH in the wetland will be impacted from this investigation phase.