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U S NAVY RESPONSE TO U S EPA REGION I COMMENTS ON DRAFT LONG-TERM
MANAGEMENT PLAN SITE 9 OPERABLE UNIT 3 (OU 3) OLD FIRE FIGHTER TRAINING
AREA NS NEWPORT RI
8/21/2013
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**NAVY RESPONSES TO
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
COMMENTS DATED APRIL 29, 2013
DRAFT LONG TERM MANAGEMENT PLAN
OLD FIRE-FIGHTING TRAINING AREA, NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND**

Navy responses to the EPA comments dated April 29, 2013 on the Draft Long Term Management Plan for the Old Fire Fighting Training Area at NAVSTA Newport in Newport, RI are presented below. The EPA comments are presented first (in italics) followed by the Navy's responses.

Comment 1, p. 2-6, §2.3.2, ¶1: Please edit the last sentence that discusses the groundwater classification to use language agreed-to previously for the NUSC site.

Response: As provided in the July 2010, Feasibility Study Technical Memorandum, Changes to the Draft Final Feasibility Study, the agencies agreed that "RIDEM GA/GB groundwater criteria may be discussed in general within the FS, although they are not applicable to the remedy selected under CERCLA". The inclusion of this statement in the Long Term Monitoring Plan is consistent with that what previously agreed to. Therefore, the Navy does not believe that a revision is required.

Comment 2, p. 2-6, §2.3.2, ¶2: Please clarify the second sentence. The north side of the site abuts Coasters Harbor so the reference "to the north and east of the site" cannot be correct.

Response: Figure 2, the site location map for OFFTA, shows Coasters Harbor abutting the OFFTA site to the north and northeast. The reference to the east will be revised to indicate "northeast".

Comment 3, p. 2-7, §2.3.3, ¶2: Metals may migrate great distances at sites where reducing conditions have developed in the subsurface as they have at OFFTA. Please qualify the last sentence to acknowledge that this may be the case for OFFTA

Response: This language was used in Section 2.5 of the ROD. Groundwater that may have been impacted by contaminants released from OFFTA can only migrate a few hundred feet before it discharges to shallow seawater, where it encounters an oxidizing environment. The cited sentence has been modified in the LTMP as follows: "If leaching of metals from soil to groundwater occurs, the migration of metals in groundwater may be affected by multiple factors including whether or not there is a reducing or oxidizing environment."

Comment 4, Table 3-2: Please explain the site soil background values presented. Although these are the same values listed in the Record of Decision (ROD), the values are said to come from the OFFTA background data. Review of the Final Background Soil Investigation for OFFTA dated August 2000 lists the following recommended background values: arsenic - 5.55 mg/kg for surface soil and 42.8 mg/kg for subsurface soil; lead - 48.8 mg/kg for surface soil and 15.4 mg/kg for subsurface soil; and manganese - 372 mg/kg for surface soil and 563 mg/kg for subsurface soil.

Response: Although the ROD specified the Groundwater Clean Up Level of 0.04 µg/L for arsenic, the Navy still recommends that for purposes of the LTMgmt Plan, the Project Action Level (PAL) as proposed should, in the case of arsenic, be established at the MCL, which is the accepted drinking water standard for arsenic. Both the RI GA groundwater criterion and the MCL are 10 µg/L.

As provided in the ROD, the upgradient groundwater at the site is intended to be monitored solely comparison purposes, because all contaminated groundwater is limited to the waste management area, and groundwater downgradient of the site is saline. The proposed method 6020A (ICP/MS) is used for low level metals analysis across the ER program. Navy will procure a lab that is ELAP accredited and capable of achieving an acceptable MDL. For recent projects, a contracted laboratory has achieved a

Method Detection Limit (DL) for arsenic of 2.25 µg/L (not 0.4 µg/L); a limit of detection (LOD) of 4 µg/L and a limit of quantitation (LOQ) of 5 µg/L.

Based on historical groundwater monitoring data, arsenic has not been reported above detection limits in filtered samples from two upgradient wells and has been considered non detect. In 2005, arsenic results in filtered samples reported for SWOS MW01 were 5.1U and for SWOS MW02 were 1.8UJ. Since the average detected value of dissolved arsenic in groundwater at the site was 16 µg/l (with detected concentrations ranging from 3.8 to 28.3 µg/l), the MCL can effectively serve as a PAL for observing significant changes in arsenic concentrations in upgradient groundwater.

Further, on the site, the LUCs that are implemented in accordance with the 2013 LUCRD will prevent residential use the property and use of the groundwater at the property for any consumptive purpose, including for household use, drinking water supply, irrigation, or industrial use. On land adjacent to the site, potable groundwater use is precluded naturally by its proximity to the shoreline with resulting thinning of the freshwater lens, susceptibility to overwash, and potential salt-water intrusion.

Response: Although the ROD specified the Groundwater Clean Up Level of 0.04 µg/L for arsenic, the Navy still recommends that for purposes of the LTMgmt Plan, the Project Action Levels as proposed should, in the case of arsenic, be established at the MCL, which is the accepted drinking water standard for arsenic. Both the RI GA groundwater criterion and the MCL are 10 µg/L.

The 0.04 µg/L cleanup level for arsenic in groundwater was selected in the ROD with the intent of being used "solely for the purpose of comparing groundwater monitoring data collected upgradient of the site...". The proposed method 6020A has a Method Detection Limit (DL) for arsenic of 2.25 µg/L (not 0.4 µg/L); a limit of detection (LOD) of 4 µg/L and a limit of quantitation (LOQ) of 5 µg/L. There is another method, Method 200.8, with a Method Detection (DL) for arsenic in an aqueous sample of 0.4 µg/L; a limit of detection (LOD) of 0.8 µg/L and a limit of quantitation (LOQ) of 1 µg/L. According to a chemist at the contracted laboratory, the digestion for Method 200.8 is different than SW846 3010. It uses less hydrochloric acid (HCL) and is considered less rigorous. Since the digestion uses less HCl, the digestate does not need to be diluted before analysis as it does with 3010. Data would not be consistent with other previous data sets for which the Method 200.8 was not used.

Further, on the site, the LUCs that are implemented in accordance with the 2013 LUCRD will prevent residential use the property and use of the groundwater at the property for any consumptive purpose, including for household use, drinking water supply, irrigation, or industrial use. On land adjacent to the site, potable groundwater use is precluded naturally by its proximity to the shoreline with resulting thinning of the freshwater lens, susceptibility to overwash, and potential salt-water intrusion. Since the average detected value of dissolved arsenic in groundwater at the site was 16 µg/l (with detected concentrations ranging from 3.8 to 28.3 µg/l), the MCL can effectively serve as a PAL for observing significant changes in arsenic concentrations in upgradient groundwater.

Comment 5, Table 4-2: Sediment monitoring is intended to ensure that the project action levels are not exceeded (i.e., monitors any recontamination or excess risk to receptors). The proposed basis for evaluating future sediment conditions are the contaminant concentrations at the 17 monitoring locations, 16 of which were last sampled in 2005 and one was last sampled in 2004. Decision-making should be based on statistical analysis using a 95% confidence in the decision. Because only a small data set will be available for evaluation, the baseline data should be used to calculate a one-tailed 95% Upper Prediction Limit (UPL) for future sampling data to determine if future data is significantly different from the baseline data set. The UPL calculated for each COC for each sampling round would serve as the project action limit for that COC for that round. As sampling progresses and additional rounds of data become available, a repeated-measures Analysis of Variance could be used to determine if the mean of any sampling round differs from the baseline mean. EPA prefers this to a two mean t-test because it considers all the sampling data. Please revise the table.

When the revised sediment PALs are provided, please include the backup calculations in an appendix or an electronic submittal. Further discussion may be warranted before revising the PALs.

Response: Sediment is not a medium of concern at the site. Sediment monitoring is being done to monitor the potential for impact to the marine ecosystem from COCs migrating in groundwater. The empirical rule was the basis for the calculation of the PALs; the empirical rule states that 95% of all values will lie within two standard deviation of the average. The basic concepts behind the processes used to select the PALs and the UPL method are similar. However, the PALs were calculated using the average plus two standard deviations to provide an easier calculation that was based in statistical theory and appropriate for smaller sample sizes.

While there are 16 samples in the post-remediation dataset from (2005 and 2004), monitoring sampling events will only contain a smaller sample set. One of the assumptions of the Analysis of Variance Model is that the data are normally distributed. With a small sample set, the assumption that the data are normally distributed will be difficult to test. Additionally, with only 5 to 6 samples the statistical power of the test would be limited and the Analysis of Variance Model may not be able to detect a statistical difference between averages even if one actually exists. Therefore, the PALs should be based on the average concentration plus two standard deviations.

Comment 6, .p. 4-5, §4.4, ¶15: Please revise Decision Rule #1 to eliminate the reference to the hydraulic gradient, which is not relevant. The wells east and west of the Site will be located in potentially downgradient locations and the well south of the Site could be influenced by tidal effects.

Response: The portion of the Decision Rule #1 referencing the hydraulic gradient is relevant and necessary given the agreement has been made to monitor upgradient wells. EPA was specifically concerned that reversals of groundwater flow direction during storm or other events could occur causing contaminated groundwater to flow to upgradient locations; while this is unlikely based on the hydrogeology at the Site location, based on this concern, it was agreed that monitoring the hydraulic gradient and sampling upgradient wells was warranted. Therefore the language regarding hydraulic gradient must be maintained as part of the decision rule.

With respect to tidal effects, the following is noted for the proposed monitoring locations:

- LTM-MW-1 is proposed upgradient of the OFFTA areas on the west side of the site. Little or no tidal fluctuation is anticipated at this location based on previous observations. The nearest well that was measured in 2006 was ENSR-2, which showed a head change from high to low tide of 0.12 ft or approximately an inch and a half.
- LTM-MW-2 is upgradient of the easternmost part of the OFFTA area. Little or no tidal fluctuation is anticipated at this location, based on 2006 measurements in nearby wells.
- Several inches of fluctuation might be observed at ENSR-1, where a change of 0.36 ft in head was observed in 2006.
- No measurable tidal effects were observed at SWOS-MW02, the upgradient well south of the site.

Replace Decision Rule #1 with: "If any measured COC concentration in any OFFTA monitoring well exceeds the groundwater PAL (Table 4-2), inform the Project Team of the exceedance, notify the regulators when the exceedance becomes known, report the exceedance in the data report for the sampling event and in the annual"

Response: The Navy prefers the Decision Rule #1 as written. The Navy plans to share monitoring data with the Project Team in the form of a data package when it becomes available, and the data can be discussed during regularly scheduled meetings. However, the Navy intends to include analysis of the data and any trend analysis in the annual report.

Comment 7, .p. 4-6, §4.4, ¶16: Decision Rule #2 is not comprehensive enough as written because the majority of the samples could significantly exceed the PAL with no action taken. The decision rule should consider the magnitude and frequency of the exceedances as well. Further discussion is warranted in order to establish an appropriate decision rule for groundwater.

Response: The Project Team will always be notified of exceedances as noted in the previous response and the magnitude and frequency can be discussed. The monitoring data are most useful to identify trends and changes over time that may flag a significant change in site conditions. However, unless a trend (best established by 3 events) is observed, it will be premature to require the team to develop a response.

Comment 8, .p. 4-6, §4.4, ¶17: Replace Decision Rule #3 with: "If any measured COC concentration in any OFFTA sediment monitoring station exceeds the sediment PAL (Table 4-2) inform the Project Team of the exceedance, notify the regulators when the exceedance becomes known, report the exceedance in the data report for the sampling event and in the annual monitoring report, and apply Decision Rule #4 for sediment."

Response: See response to Comment 6.

Comment 9, .p. 4-6, §4.4, ¶1: Decision Rule #4 is not comprehensive enough as written because the majority of the samples could significantly exceed the PAL with no action taken. The decision rule should consider the magnitude and frequency of the exceedances and whether the concentrations have increased to the point that an excess risk has developed. Further discussion is warranted in order to establish an appropriate decision rule for sediment.

Response: See the response to Comments 7 and 8.

Comment 10, .p. 4-6, §4.4, ¶2: The Navy must collect samples on schedule as required from the agreed-upon locations and to collect sufficient quality control data to assess data usability. If there is a problem with the data that can be documented, replacement data should be immediately collected and the original monitoring schedule should be maintained. It is not appropriate to omit a sampling round or individual samples from the overall evaluation or from the decision-making process without collecting replacement data because of the limited monitoring data collected for decision-making.

Response: The Navy intends to collect samples on schedule and does not plan to skip sampling rounds. It plans to collect the required data and meet quality goals as described in the paragraph. However, because there is such a wide range of issues or events that could impact the data, the decision to collect replacement data would have to be made on a case-by-case basis depending upon the problem identified and specific circumstance. The text as written allows the Project Team to provide input to that decision.

Comment 11, p. R-1: For completeness, please list the EPA document that presents the sediment quality benchmark for benzene referenced in Table 4-2. Note that this benchmark value is based on one percent organic carbon.

Response: The EPA document reference will be added to the list of references and cited in Table 4-2.

Comment 12, Figure 2: The revetment has already been constructed. A revetment modification was constructed as part of the construction of the Katy Field Parking Lot project. Please revise the drawing.

Response: The figure will be updated.

Comment 13, Figure 4: Move the new eastern monitoring well (OFFTA-LTM-MW2) 100 feet to the west and add the mean low and high tide contours.

Response: The mean low and high tide levels (as shown conceptually on Figure 3) will be shown on Figure 4. The Navy prefers not to move OFFTA-LTM-MW2 to the west. That would potentially place it downgradient of the portion of the Waste Management Area that is going to be the "Fitness Center". It was agreed that the monitoring wells were to be placed upgradient of the Waste Management Area.

Based on the significant northwesterly component of the groundwater flow direction at high tide depicted and the limited historical groundwater monitoring data west of Site 9, please add a sixth sediment monitoring station midway between the former OFF-1 and OFF-2 locations.

Response: Based on the contaminated areas shown in FS figure 2-6, there has been no problem reported at the OFF-1 or OFF-2 locations. However, as requested, a sediment sample will be added between previous samples OFF-1 and OFF-2 locations.

Appendix B – Draft Sampling and Analysis Plan

Comment 14, p. 24, §5.2, ¶1: Please reference Figure 2 that shows the well locations proposed for water level monitoring. Also, because of potential tidal influence the water level measurements should be collected as quickly as possible. Approximately one hour should be specified to collect all the water level measurements, which should be enough time to measure four wells.

Response: Figure 2 does not show sample locations. This section describes the data inputs in general. The specifics of which wells will be used for water level measurements are in Section 8.1. A reference to Figures 4 and 5 will be added in Section 8.1. The Navy agrees that water levels for all wells should be measured as quickly as possible to minimize the effects of tidal influence on the groundwater levels and associated data quality. Item 4 in section 5.2 has been changed to indicate that water levels will be collected within 1 hour.

Comment 15, p. 25, §5.4: Please revise the four Decision Rules based on comments on Section 4.4 of the LTMP.

Response: The four Decision Rules will be revised once they have been finalized, and will be consistent in both the Long-Term Management Plan and the Sampling and Analysis Plan.

Comment 16, p. 25, §5.5: The Navy must collect samples on schedule as required from the agreed-upon locations and to collect sufficient quality control data to assess data usability. If there is a problem with the data that can be documented, replacement data should be immediately collected and the original monitoring schedule should be maintained. It is not appropriate to omit a sampling round or individual samples from the overall evaluation or from the decision-making process without first collecting replacement data because of the limited monitoring data collected for decision-making.

Response: Please see the response to Comment 10.

Comment 17, p. 29, §7.0, ¶1: While the shallow groundwater is the interval of interest, please make sure the well screens are set so the wells will not go dry. If there is any history of dry wells at the proposed screening intervals, please revise the screening intervals to account for that.

Response: Agreed. One upgradient well SWOS-MW01 located south of the Waste Management Area went dry during development and sampling in 2005; it always recharged, but slowly.

Comment 18, p. 29, §7.0, ¶2: As noted in the comment on Figure 4 of the LTMP, please add a sixth sediment station to the west because of the uncertainty in the groundwater flow direction.

Response: Please see the response to Comment 13.

Comment 19, p. 31, §8.2: Supplement the first paragraph with a sentence stating that approval of adjusted monitoring well locations will be obtained from regulators before installation.

Response: The first paragraph will note that regulatory approval of adjusted monitoring well locations is needed prior to installation of the proposed wells.

Comment 20, p. 31, §8.2, ¶12: According to Figure 4 of the LTMP, OFFTA-LTM-MW1 is located on the western side of the site and OFFTA-LTM-MW1 is located on the eastern side. Please correct.

Response: The text will be corrected.

Comment 21, p. 34, §8.4, ¶1: Only four wells will be measured. Because of tide considerations, please revise the text to collect all measurements within approximately one hour.

Response: The text will be revised accordingly.

Comment 22, p. 34, §8.5.1, ¶3: Limiting purging to 30 minutes without achieving stability for turbidity is not appropriate and may result in non-representative samples that have to be replaced. At a minimum, purging should last 60 minutes in order to stabilize turbidity readings within 10% or achieve 5 NTUs. Only three wells are being sampled.

Response: The text has been revised to indicate that purging will be conducted for up to an hour if turbidity readings have not stabilized (within 10 %) or achieve 5 NTUs, even if other parameters have stabilized.

Comment 23, p. 35, §8.5.2, ¶2: In collecting the VOC sample, a portion of the sediment surface should be removed so the VOC sample can be collected from beneath the surface of the sediment core. Please edit the protocol accordingly.

Response: The text will be edited accordingly.

Comment 24, p. 37, §8.8, ¶2: Please confirm that the vertical datum proposed is consistent with the vertical datum used for other work at this site. Please indicate what the difference is between the mean low water datum and NGVD 1988. Please identify the local benchmark to be used.

Response: All vertical measurements will be surveyed in United States Navy Mean Low Water (USN MLW) Datum, which was used as the vertical datum for Stone Revetment Replacement design. The National Geodetic Survey's NGVD 1929 was superseded by NAVD 1988. Both were based on Mean Sea Level. There are other vertical datums that are based on local tides. The Navy plans and drawings were referenced to Naval Base Mean Low Water datum (USN MLW) the mean low water datum at OFFTA, which is based on National Oceanic & Atmospheric Administration (NOAA) tidal station 8452660 located on the southern end of Coasters Harbor Island. The elevation at the Naval Station MLW datum is 0.76 feet. The Mean Low Water Datum was used in the RI, for 2005 in the survey of the new wells and existing wells to be consistent, and for construction of the revetment. The locations (coordinates) of the local benchmarks are provided in Appendix E of the Focused Site Inspection Report (Tetra Tech, 2006). Further information on of the relationship of the USN MLW datum to other relevant datums and conversions is provided in Attachment C of the 2009 Stone Revetment Replacement Design for the Old Fire-Fighting Training Area (OFFTA) at Naval Station (NAVSTA).

Comment 25, p. 40, §8.11.3: Regarding the last paragraph, if there is a problem with the data that can be documented, replacement data should be immediately collected and the original monitoring schedule should be maintained. It is not appropriate to omit a sampling round or individual samples from the overall evaluation or from the decision-making process without first collecting replacement data because of the limited monitoring data collected for decision-making.

Response: See the response to Comment 10.

Comment 26, p. 41, §8.11.4: In addition to the comprehensive annual report, a brief data report shall be submitted to regulators to document the results of each sampling round and to report on compliance with the PALs.

Response: Data packages will be provided to the regulators once they become available; however, data and trend analysis will be presented in the annual reports.

Comment 27, p. 43, §8.13: Please edit this and other tables to add a sixth sediment station as noted in the comment on Figure 4 of the LTMP.

Response: The applicable tables will be edited in the Final LTMP to reflect any changes.

Comment 28, p. 47, §9.0: A significantly lower detection limit for arsenic should be achievable with the proposed method.

Response: Please see the response to Comment 4.

Comment 29, p. 48, §9.0: The sediment project action levels have to be changed. They need to be the 95% UPLs for the proposed baseline data, not the mean plus two standard deviations. Please refer to EPA's comment on Table 4-2 in the LTMP.

Response: Please see the response to Comment 5.

**NAVY RESPONSES TO
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM)
COMMENTS DATED APRIL 29, 2013
DRAFT LONG TERM MANAGEMENT PLAN
OLD FIRE-FIGHTING TRAINING AREA, NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND**

Navy responses to RIDEM comments dated April 29, 2013, on the Draft Long Term Management Plan for the Old Fire Fighting Training Area at NAVSTA Newport in Newport, RI are presented below. The RIDEM comments are presented first (in italics) followed by the Navy's responses.

Responses to Comments on the Conceptual Sampling Plan dated March 13, 2012:

Comment 2, p. 1, Background; 5th bullet: RIDEM's Solid Waste Regulations require several wells to be located as close as practical downgradient to the waste boundary to ensure early detection of contaminants. Since the waste boundary is the shoreline (revetment area), please propose the installation of several downgradient monitoring wells inside the WMA as close to the revetment as possible, or within the sediment as close to the revetment as possible to allow the collection of pore water.

Navy's Response: Section 2.12.2 Paragraph 5 of the ROD discusses the monitoring requirements for the Site 9 remedy. Sub paragraph (a.) states that groundwater monitoring will be conducted upgradient of the compliance boundary and paragraph (b.) discusses downgradient monitoring and that sediment will be monitored downgradient. The ROD does not require downgradient monitoring of the groundwater therefore downgradient monitoring wells and sampling will not be included in the long term monitoring plan, however downgradient sediment will be monitored in accordance with the ROD.

Additionally, as provided in the Feasibility Study Technical Memorandum of July 15, 2010, "In accordance with the preamble to the NCP, "remediation levels....".... Downgradient groundwater is saline (ocean water), non-potable, and therefore, does not require monitoring..... Sediment monitoring will ensure that contaminated groundwater is not migrating offshore of the site, undetected." Therefore, downgradient groundwater monitoring is not required for this site.

RIDEM's Response: Page 30 of the ROD states: "At a minimum, the monitoring program will include ... "Therefore, RIDEM is requesting that several wells be installed along the northern perimeter of the site. Typical of these types of monitoring networks, the wells will provide necessary information concerning the protectiveness of the remedy over time. In addition, they will serve as crucial sentinels for potential off site impacts to the adjacent sediments. Please be advised that a similar monitoring program was devised for McAllister Point Landfill, which also has a revetment as a downgradient boundary. Monitoring wells were installed within the landfill boundary to detect any migration of contaminants offsite. Please include additional groundwater monitoring wells within the Site, similar to the existing monitoring wells at McAllister Point Landfill.

Response: As provided in the Feasibility Study Technical Memorandum of July 15, 2010, "In accordance with the Preamble to the NCP, "remediation levels should generally be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when waste is left in place". The remedy for Site 9, as provided in the ROD, included the establishment of a waste management area for this site. Therefore, monitoring is only required at and beyond the edge of the waste management area and not within the Site.

Comment 5, p. 2, Contaminants to Monitor, Groundwater: It is common practice to monitor for all contaminants periodically at waste management areas. This Office would like to see sampling for VOCs, SVOCs and metals as well on a less frequent basis than the listed contaminants to ensure permanency of the remedy.

Navy's Response: The soil, groundwater, and sediment were studied extensively during the various phases of the RI and FS to determine the contaminants of concern at this Site. This Site is not a waste disposal area but contains residual soil and groundwater contamination from specific activities that occurred at the site, and therefore it is unlikely that new contaminants would manifest themselves during the long term monitoring program. The long term monitoring plan will monitor for the COCs for which RGs are listed in the ROD.

RIDEM's response: RIDEM does not agree with the Navy's statement above that sampling for additional VOCs, SVOCs, and metals periodically is unwarranted. RIDEM maintains that to ensure that contamination of other possible constituents from the waste management area (WMA) are not migrating offsite to the marine ecosystem, periodic sampling for VOCs, SVOCs, and metals in groundwater should be conducted.

Response: Please see previous response. As a part of the CERCLA process, contaminants that presented an unacceptable risk were identified. As part of the CERCLA remedy, the Navy believes that the COCs that were evaluated as potentially problematic in sediment or groundwater and for which RGs were identified are the same ones that should be monitored.

Comment 6, p. 2, Contaminants to Monitor, Sediment: Please also monitor for TPH in every sampling event since this site was a former fire-fighting training area with documented releases of petroleum.

Navy's Response: Page 20 of the ROD states:

"Not evaluated in the risk assessments, but still of concern is residual petroleum from fire-fighting training operations. Petroleum is bound within the soil, particularly at the water table. Generally, petroleum is excluded from CERCLA risk calculations and CERCLA regulation and is normally remediated under other authorities, such as state regulations. However, the petroleum at this Site is comingled with other contaminants because of the routine burning of petroleum products, which occurred as part of the firefighting training operations at this Site.

The CERCLA contaminants cannot effectively be addressed separately [from] the petroleum. Therefore, although these petroleum products are not identified as a concern for health and ecological risk, the Navy, EPA and RIDEM have agreed that this cleanup will address the petroleum in order to effectively address the comingled CERCLA contaminants.

TPH is not identified in the ROD as a COC and therefore, will not be monitored as part of this remedy. Furthermore there are no regulatory TPH groundwater standards to meet. However, constituents that may contribute to TPH will be monitored, since groundwater cleanup levels have been established in the ROD.

RIDEM's response: TPH is not identified as a COC in the ROD because it is not a CERCLA contaminant. However, the Navy, EPA and RIDEM agreed that this cleanup would address the petroleum as well as this is the primary source of contamination at the site. The documented releases of petroleum at this site were extensive, as product was observed and concentrations exceeded RIDEM's UCLs (30,000 mg/kg). Please include sampling for TPH in sediment downgradient of the Site to ensure protectiveness of the remedy.

Response: Navy disagrees. As provided in the July 2010 Feasibility Study Technical Memorandum, "The investigation of this Site is being conducted under CERCLA and as such, TPH is not regulated under CERCLA; however, the constituents of TPH will be accounted for in this process by evaluating the risks associated with the component chemicals in TPH, such as PAHs. TPH is therefore not listed as a separate site related contaminant".

Comment 9, Page 2, Monitoring Points, Sediment: In addition to the five previous intertidal sampling points, please also include three additional locations at the former discharge points from the two oil/water separators and the unknown pipe. Also, please include the proposed depth for the sediment samples as they should be taken at the original depth where elevated levels were observed.

Navy's Response: The objective of the sediment sampling is to assure that contaminants are not migrating out of the Waste Management Area (WMA) in the groundwater and being deposited in the sediment. The point sources of contamination that may have been associated with the previous discharge points have been remediated during the removal actions, therefore, the purpose of the sediment sampling is not to investigate these point sources but to evaluate the potential groundwater to sediment migration pathway.

The sediment sample locations will be shifted to be more evenly spaced across the site in response to EPA comment 6b on the Conceptual Long Term Monitoring Plan.

RIDEM's response: Although the objective is to monitor the sediment to ensure that contaminants are not migrating out of the WMA, the Navy is proposing to use historical sediment data to derive sediment PALs to compare to new data obtained during monitoring. Therefore, it is important to monitor the concentrations where maximum concentrations were observed in sediment (hotspots) following the remedy. Therefore, please ensure that the sediment monitoring points, at a minimum, are located where the maximum concentrations (hotspots) were observed from previous sampling rounds, which may include the former discharge points noted previously. If additional monitoring points are needed to satisfy EPA's request, then please also include several additional wells to cover the northern boundary of the site.

Response: The proposed sample locations, although selected for the purposes discussed in the previous response, should for the most part satisfy the RIDEM concern. In the 1950s, there were multiple storm and sanitary sewer outfalls along the OFFTA shoreline as shown in various figures presented in the CSM, Appendix A-1 of the Draft Final FS. Since 2004, there are only two stormwater outfalls (093 and 075) and during revetment construction any others were removed. Per the 2010 FS Technical Memorandum, sediment is not considered a medium of concern for this site, and some of the COCs (PAHs) were considered to be present due to the stormwater discharges in the CSM, rather than migration from OFFTA soils. Therefore, in order to monitor for site-related constituents potentially migrating to sediment in groundwater, the samples should not be directly downstream of the stormwater outfalls. LTM-SD-1 is close to two areas where COC concentrations exceeded residential and ecological screening criteria in sediment before the revetment was rebuilt and near outfall 093. LTM-SD-2 is close to a similar area; LTM-SD-3 is currently near the storm water outfall 075 and could be moved slightly (20 feet) to the east so it would be between the stormwater outfall and a former discharge pipe. LTM-SD-4 is also near a location where COC concentrations in sediment exceeded residential and ecological screening criteria. LTM-SD-5 is between former OFF-6 and OFF-7 and is in an area where the concern was primarily exceedances of residential screening criteria. However, the location provides coverage of the southwestern part of the site. One sediment sample will be added between former sample locations OFF-1 and OFF-2 to provide better coverage of the western side of the site.

Specific Comments on the Draft long-Term Monitoring Plan:

Comment 1, p. ES-1, Executive Summary, Table ES-1 Groundwater and Sediment Monitoring Description: RIDEM requests that sampling for groundwater be conducted quarterly for the first two years (8 rounds) to establish a baseline for the site. If the data do not indicate any exceedances or cause for concern, the monitoring frequency may then be reduced to semi-annually.

Response: The 2006 Monitoring Report presents and compares results for groundwater samples that were collected in 1997, 2002, and 2004, which characterized groundwater conditions at the site. Since these data already exist and provide a baseline for the Site, the Navy believes that semiannual

groundwater sampling during the first two years would suffice to provide information about current and future site groundwater conditions.

Comment 2, p. ES-1, Executive Summary, Table ES-1 Groundwater and Sediment Monitoring Description: Please see RIDEM's response to comment #2 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 2 on the *Conceptual Sampling Plan*.

Comment 3, p. 3-2, Table 3-1, Summary of RAOs for Site 9; Expected Outcomes; last row: Please see RIDEM's response to comment #2 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 2 on the *Conceptual Sampling Plan*.

Comment 4, p. 3-3, Table 3-2: Summary of Cleanup Level Development; groundwater cleanup level for arsenic and footnote 4: "The MCL for arsenic will be used as the PAL because the ROD cleanup level (0.04 µg/L) is below the lowest available detection limits (SW-846 6020A inductively coupled plasma-mass spectrometry)".

Since the ROD specifies the cleanup level for arsenic in groundwater to be 0.04 µg/L, use the lowest available detection limit as the cleanup level/project action level for arsenic in groundwater rather than the MCL of 10 µg/L. Please revise the PAL for arsenic in groundwater throughout the LTMP and SAP as needed.

Response: Although the ROD specified the Groundwater Clean Up Level of 0.04 µg/L for arsenic, the Navy still recommends that for purposes of the LTMgmt Plan, the PAL (as proposed) should in the case of arsenic be established at the MCL, which is the accepted drinking water standard for arsenic. Both the RI GA groundwater criterion and the MCL are 10 µg/L. The Navy also recommends staying with the same analytical method.

The 0.04 µg/L cleanup level for arsenic in groundwater was selected in the ROD with the intent of being used "solely for the purpose of comparing groundwater monitoring data collected upgradient of the site..." The proposed method 6020A has a Method Detection Limit (DL) for arsenic of 2.25 µg/L (not 0.4 µg/L); a limit of detection (LOD) of 4 µg/L and a limit of quantitation (LOQ) of 5 µg/L. There is another method, Method 200.8, with a Method Detection (DL) for arsenic in an aqueous sample of 0.4 µg/L; a limit of detection (LOD) of 0.8 µg/L and a limit of quantitation (LOQ) of 1 µg/L. According to a chemist at the contracted laboratory, the digestion for Method 200.8 is different than SW846 3010. It uses less hydrochloric acid (HCL) and is considered less rigorous. Since the digestion uses less HCl, the digestate does not need to be diluted before analysis as it does with 3010. Data would not be consistent with other previous data sets for which the Method 200.8 was not used.

Comment 5, p. 4-1, Section 4.1, Selected Remedy; 6th bullet: Please see RIDEM's response to comment #2 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 2 on the *Conceptual Sampling Plan*.

Comment 6, p. 4-4, Section 4.4, Monitoring Program; whole section: Please see RIDEM's response to comment #2 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 2 on the *Conceptual Sampling Plan*.

Comment 7, p. 4-4, Section 4.4, Monitoring Program; 2nd paragraph: The two proposed monitoring wells, OFFTA-LTM-MW1 and OFFTA-LTM-MW2 are to be installed side-gradient, rather than upgradient of the waste management area (WMA). When referring to these two wells, please use the term "side-gradient" rather than "upgradient". Please revise the LTMP and SAP as needed.

Response: The wells are both “upgradient” of the northern part of OFFTA where the most active FFTA activities occurred and “cross gradient” of the southern part of the WMA that contains Building 1362 and the location of the proposed Fitness Center. To be consistent with the ROD and to avoid awkward sentence construction, the term “upgradient” will be retained.

Comment 8, p. 4-4, Section 4.4, Monitoring Program; 2nd paragraph; last sentence: Please see RIDEM's response to comment #9 on the Conceptual Sampling Plan

Response: Please see Navy's response to Comment 9 on the *Conceptual Sampling Plan*.

Comment 9, p. 4-4, Section 4.4, Monitoring Program; 3rd paragraph: Please see RIDEM's response to comment #5 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 5 on the *Conceptual Sampling Plan*.

Comment 10, p. 4-4, Table 4-2, Project Action Levels for Groundwater and Sediment; Groundwater Project Action Level for arsenic: Please refer to specific comment #4 on the Draft LTMP.

Response: Please see Navy's response to Comment 4 on the *Draft LTMP*.

Comment 11, p. 4-4, Table 4-2, Project Action Levels for Groundwater and Sediment; Sediment Project Action Levels: "The sediment PAL is the mean of the 2005 historical data, plus two standard deviations, except for benzene, which is based on the USEPA Sediment Quality Benchmark (see SAP).

Please provide additional justification for basing the sediment PAL on the mean plus two standard deviations as opposed to just the mean, the mean plus one standard deviation, or a simple point by point comparison.

Response: The empirical rule was the basis for the calculation of the PALs; the empirical rule states that 95% of all values will lie within two standard deviation of the average. The basic concepts behind the processes used to select the PALs and the UPL method proposed in EPA comments are similar. However, the PALs were calculated using the average plus two standard deviations to provide an easier calculation that was based in statistical theory and appropriate for smaller sample sizes.

Comment 12, p. 4-5, Section 4.4, Monitoring Program; 2"d paragraph: Please see RIDEM's response to comment #6 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 6 on the *Conceptual Sampling Plan*.

Comment 13, p. 4-5, Section 4.4, Monitoring Program; 3rd paragraph: Please see specific comment #1 on the Draft LTMP.

Response: Please see Navy's response to Comment 1 on the *Draft LTMP*.

Comment 14, p. 4-5, Section 4.4, Monitoring Program; Decision Rule Number 1: Please replace "upgradient of Site 9" with "from any OFFTA monitoring well ". As noted in specific comment #2, two of the wells are side-gradient to the Site. Also, please remove "and the hydraulic gradient shows potential flow toward the well where the exceedance was observed" from this statement.

Response: The cited text will be replaced with “from OFFTA monitoring wells outside the WMA.” The portion of the Decision Rule #1 referencing the hydraulic gradient is relevant and necessary given the agreement has been made to monitor upgradient wells. EPA was specifically concerned that reversals of groundwater flow direction during storm or other events could occur causing contaminated groundwater to flow to upgradient locations; while this is unlikely based on the hydrogeology at the Site location, based on this concern, it was agreed that monitoring the hydraulic gradient and sampling upgradient wells was

warranted. Therefore the language regarding hydraulic gradient must be maintained as part of the decision rule.

Comment 15, p. 4-5, Section 4.4, Monitoring Program; Decision Rule Number 2: "If monitoring data for any COC in upgradient groundwater exceeds the groundwater PAL consecutively over three monitoring periods, convene the Project Team to devise a response to the detected contamination; otherwise, continue to monitor as scheduled."

The requirement for three consecutive exceedances is not protective, nor does it address the magnitude of any exceedance. Rather than attempt to devise a matrix which would address all possible events or contingencies, it is recommended that if an exceedance is observed that the regulators and the Navy meet to discuss the exceedance and the course of action to be taken. Please modify the above as follows: "If exceedances are observed during any sampling round, the regulators will be notified and if necessary, a meeting will be held with the Navy to determine the course of action to be taken."

Response: The Navy plans to share monitoring data with the Project Team when they become available in the form of a data package, and they can be discussed during regularly scheduled meetings. The monitoring data are most useful to identify trends and changes over time that may flag a significant change in site conditions. However, unless a trend (best established by three events) is observed, it will be premature to require the team to develop a response. This is especially true for analytes for which PRGs are near or even below the analytical DLs, since the margin of error is greater at low concentrations.

Comment 16, p. 4-5, Section 4.4, Monitoring Program; Decision Rule Number 3: Please replace "downgradient of Site 9" with "in any OFFTA sediment monitoring station". Also, please reword this decision rule similar to Decision Rule Number 1 including "apply Decision Rule Number -4 for sediment."

Response: Decision Rule Number 3 for sediment will be revised as follows: "If the measured concentration of any COC in sediment at OFFTA monitoring stations exceeds the Sediment PAL (Table 4-2 and Worksheet 9 of the SAP), inform the Project Team of the exceedance, discuss with the regulators, report the exceedances in the annual monitoring report, and apply Decision Rule 4 for sediment; otherwise take no action.

Comment 17, p. 4-6, Section 4.4, Monitoring Program; Decision Rule Number 4: "If monitoring data for any COC in sediment exceeds the sediment PAL consecutively over three monitoring period, convene the project team to devise a response to the detected contamination; otherwise, continue to monitor as scheduled. "

The requirement for three consecutive exceedances is not protective, nor does it address the magnitude of any exceedance. Rather than attempt to devise a matrix which would address all possible events or contingencies, it is recommended that if an exceedance is observed that the regulators and the Navy meet to discuss the exceedance and the course of action to be taken. Please modify the above as follows: "If exceedances are observed during any sampling round, the regulators will be notified and if necessary, a meeting will be held with the Navy to determine the course of action to be taken."

Response: The same rationale applies for sediment, per response to comment 15. The monitoring data are most useful to identify patterns and changes over time that may flag a significant change in site conditions. However, unless a trend (best established by three events) is observed, it will be premature to require the team to develop a response.

Comment 18, p. 5-1, Section 5.2, Monitoring Program; 2nd paragraph: Please see specific comment #1 on the Draft LTMP.

Response: Please see Navy's response to Comment 1 on the *Draft LTMP*.

Comment 19, Figure 4, Proposed Monitoring Point Locations and High-Tide Groundwater Potentiometric Surface Map: Please include the previous sediment sample locations on this figure and on Figures 4 and 5 in the Draft SAP.

Response: There are more than 80 previous sampling points that are reported in other documents. As this is a Post-ROD document focused on showing the sample locations to be monitored to evaluate the effectiveness of the remedy the Navy does not agree that all the points should be shown.

Comment 20, Figure 4, Proposed Monitoring Point Locations and High-Tide Groundwater Potentiometric Surface Map: Please refer to RIDEM's responses to comments #2 and #9 on the Conceptual Sampling Plan regarding additional groundwater monitoring wells and adjustment of sediment sampling stations. Also, the upgradient and side-gradient monitoring wells are located too far away from the site boundaries. Please relocate monitoring well SW02-MW02 150 ft to the north/northeast (north of building 1362), adjacent to the southern boundary of the site. Please relocate OFFTA- LTM-MW1 150 ft to the north/northwest and OFFTA-LTM-MW2 approximately 75 ft to the northwest. This comment also applies to Figures 4 and 5 in the Draft SAP.

Response: Please see Navy's response to Comments 2 and 9 on the Conceptual Sampling Plan. SWOS-MW02 is upgradient of the site and of the future infiltration trench. The Navy prefers not to move LTM-MW-2 to the northwest because it might then be downgradient of the southern part of the site.

Specific Comments on Appendix B (Draft Sampling and Analysis Plan):

Comment 1, p. 2, Executive Summary; 3rd paragraph, 2nd sentence: Please see RIDEM's response to comment #2 on the Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 2 on the *Conceptual Sampling Plan*.

Comment 2, p. 2, Executive Summary; 3rd paragraph, last sentence: Please see RIDEM's response to comments #5 and #6 on the Conceptual Sampling Plan and specific comment# 1 on the Draft LTMP.

Response: Please see Navy's response to Comments 5 and 6 on the *Conceptual Sampling Plan*.

Comment 3, p. 23, SAP Worksheet 5.0, Section 5.1, Problem Definition; 2nd paragraph: "As long as one or more COC concentrations exceeds cleanup levels in the WMA, monitoring must be conducted ..."

The remedy for the site calls for the placement of a cap over the contaminated soil. These soils exceed the residential and industrial commercial risk based values. Selected COCs were employed as indicator contaminants. Therefore please modify the above as follows:

"As long as one or more COC concentrations exceed cleanup levels and/or the concentrations of any contaminants at the site, including TPH, exceed USEPA and/or RIDEM residential standards in the WMA monitoring must be conducted. "

Response: With respect to TPH, please refer to the Response to Comment 6. The paragraph referenced in the comment will be deleted. The requirement for conducting monitoring is stipulated in the ROD. According to ROD Section 2.12.2 Description of Selected Remedy, Item 6, the need to continue each element of the monitoring program will be revisited at each five year review cycle and the long term Monitoring Program work plan will be revised as appropriate."

Comment 4, p. 23, SAP Worksheet 5.0, Section 5.2, Decision Inputs; bullet 1: Please see specific comments #4 and # 11 on the Draft LTMP.

Response: Please see Navy's response to Comments 4 and 11 on the *Draft LTMP*.

Comment 5, p. 23, SAP Worksheet 5.0, Section 5.2, Decision Inputs; bullet 2: Please revise this bullet according to RIDEM's response to comment #2 on the Draft Conceptual Sampling Plan.

Response: The bullet will be revised as appropriate, based on the response to comment #2 on the Draft Conceptual Sampling Plan.

Comment 6, p. 24, SAP Worksheet 5.0, Section 5.2, Decision Inputs; bullet 4: Please revise the time period for groundwater level measurements across the site from a 12-hour period to one hour, if possible, due to the potential interference from tidal fluctuations.

Response: The text will be revised to indicate a one-hour time period allotted for groundwater level measurements during field events.

Comment 7, p. 24, SAP Worksheet 5.0, Section 5.2, Decision Inputs; bullet 5: Please see RIDEM's response to comment #6 on the Draft Conceptual Sampling Plan.

Response: Please see Navy's response to Comment 6 on the *Conceptual Sampling Plan*.

Comment 8, p. 25, SAP Worksheet 5.0, Section 5.4, Analytical Approach: Please revise these decision rules based on specific comments #14-17 on the Draft LTMP.

Response: The decision rules will be revised as appropriate, based on the responses to comments 14 - 17 on the Draft Conceptual Sampling Plan.

Comment 9, p. 28, SAP Worksheet 7.0, Contaminants to Monitor: Please see RIDEM's response to comments #5 and #6 on the Draft Conceptual Sampling Plan

Response: Please see Navy's response to Comments 5 and 6 on the draft *Conceptual Sampling Plan*.

Comment 10, p.31, SAP Worksheet 8.0, Section 8.2, Monitoring Well Installation; 2nd paragraph: Monitoring well OFFTA-LTM-MW 1 is located on the western side of the Site. Is this paragraph referring to OFFTA-LTM-MW2, or does shallow bedrock exist on the eastern side of the site? Please correct this section as needed.

Response: The text has been corrected. The figures are correct.

Comment 11, p.34, SAP Worksheet 8.0, Section 8.4, Water Level Measurements.: Please revise the time period for groundwater level measurements to be collected across the site to one hour, if possible, due to the potential interference from tidal fluctuations.

Response: Please see the response to Comment 26 above.

Comment 12, p. 47, SAP Worksheet 9.0, Reference Limits and Evaluation Tables; Groundwater: Please adjust the arsenic PAL according to specific comment #4

Response: Please see the response to Comment 4.

Comment 13, p. 48, SAP Worksheet 9.0, Reference Limits and Evaluation Tables; Sediment: Please refer to specific comment #11 on the Draft LTMP.

Response: Please see Navy's response to Comment 11 on the *Draft LTMP*.