



TETRA TECH EC, INC.

March 11, 2009
2854-31-09-005

Mr. Paul Kulpa
Rhode Island Department of Environmental Management (RIDEM)
235 Promenade Street
Providence, Rhode Island 02908-5767

Subject: Responses to Comments on the Addendum 1 Work Plan for Site Closure for Tank Farm 3

Dear Mr. Kulpa:

Attached are Responses to Comments on the Addendum 1 Work Plan for Site Closure for Tank Farm 3 that was submitted to RIDEM in October 2007. Comments were received from RIDEM via email on November 7, 2007.

The Defense Energy Support Center (DESC) was licensed by the US Navy to use Tank Farm 3 to store and distribute petroleum fuel products, and operated at Tank Farm 3 from 1974 until 1998 when the tank farm was administratively closed by the DESC. Tank closure activities were conducted in 1996 and 2000, as documented in the Tank Closure Assessment Report by GZA (1998) and the Closure Report for Underground Storage Tanks at Tank Farm 3 by Tetra Tech EC, Inc. (Tetra Tech 2001). During 2004 and 2005, investigation and remediation of impacted soil areas resulting from DESC's use of the property was conducted in accordance with the Final Work Plan for Site Closure Tank Farm 3, which was submitted to RIDEM in May 2003. This field effort was conducted by Tetra Tech on behalf of the DESC. Field activities are described in the Site Investigation (SI) and Remedial Action Report (RAR) dated May 26, 2005. As documented in the SI/RAR, DESC has completed investigation and remediation activities at Tank Farm 3. Presently, DESC is actively working to transfer Tank Farm 3 back to the US Navy, and any additional work to be conducted at the site will be implemented by the US Navy.

If you have any questions or require further information, please feel free to contact me at 617-457-8275 or diane.stokes@tteci.com.

Sincerely,

Diane Stokes
Task Manager

Attachments

Response to Comments
Comment Letter from RIDEM, November 7, 2007

cc: Hasan Dogrul, DESC
Cornelia Mueller, US Navy
Brian Blanchard, Tetra Tech



TETRA TECH EC, INC.
DEFENSE ENERGY SUPPORT CENTER CONTRACT NO. SP0600-04-D-5403
DEFENSE FUEL SUPPORT POINT - MELVILLE
PORTSMOUTH, RHODE ISLAND

ANNOTATED RESPONSES TO REVIEW COMMENTS

The Rhode Island Department of Environmental Management (RIDEM) reviewed the Addendum 1 Work Plan for Site Closure, Tank Farm 3, Defense Fuel Support Point – Melville, Portsmouth, Rhode Island dated October 19, 2007. RIDEM comments are provided in italic type followed by the Defense Energy Support Center (DESC) and/or Tetra Tech EC's (TtEC) responses in bold type.

Reviewer: P. Kulpa - RIDEM

Date: November 7, 2007

General Comments:

Comment 1: It appears that the Building 188, Transformer Vault has already been investigated and sampled. Please confirm. If it has not been investigated please include this location in the work plan.

Response: The area surrounding Building 188 was investigated during site investigation activities conducted from May 2004 through April 2005 in accordance with the Final Work Plan for Site Closure Tank Farm 3 (Tetra Tech 2003). No remediation was required in this area. Field activities and findings were documented in the Draft Site Investigation and Remedial Action Report (SI/RAR), which was submitted to RIDEM on May 26, 2005.

Building #188 was identified as Area of Concern (AOC) #20 in the Stereographic Aerial Photography Analysis (SAPA) Survey. The area was investigated for the presence of polychlorinated biphenyls (PCBs) and petroleum hydrocarbons in soil. The petroleum hydrocarbon investigation consisted of excavating three tests pits to visually inspect soil and to collect soil samples for analysis using PetroFLAG™ field screening test kits. If PetroFLAG™ results exceeded 100 parts per million (ppm), samples for laboratory analysis of total petroleum hydrocarbons (TPH) were collected. Three samples were submitted for TPH analysis. TPH concentrations were below the Residential Direct Exposure Criteria (RDEC) and the Industrial/Commercial Direct Exposure Criteria (ICDEC).

In this area, there are two non-PCB transformers located on a concrete pad. These transformers replaced a former facility that had been removed prior to 1983. PCB sampling consisted of surface soil samples collected from 0 to 1 foot below ground surface (bgs) around the base of the concrete pad. PCBs were not detected at concentrations exceeding the RDEC and the ICDEC.

Comment 2: It appears that Building 230 Transformer Substation has not been investigated. Please modify the work plan to include an investigation of this sub station.

Response: Building 230 is an active electrical substation. Investigation of this area by DESC is beyond the scope of investigating releases of fuel resulting from DESC's operations. DESC fueling operations at Tank Farm 3 were discontinued in the mid-1990s. Tank closure activities were conducted in 1996 and 2000, as documented in the Tank

Closure Assessment Report (GZA 1998) and the Closure Report for Underground Storage Tanks at Tank Farm 3, which was submitted to RIDEM on August 7, 2001 (Tetra Tech 2001). Comprehensive environmental investigation and remediation activities were conducted by DESC from May 2004 through April 2005 in accordance with the Final Work Plan for Site Closure Tank Farm 3 (Tetra Tech 2003). The objective of the investigation was to identify areas where petroleum-related compounds in environmental media resulting from DESC operations exceeded the ICDEC. This comparison against industrial criteria is appropriate for the current site use. Field activities were documented in the Draft SI/RAR, which was submitted to RIDEM on May 26, 2005. As stated in the Draft SI/RAR (Tetra Tech 2005), in areas where remediation was warranted DESC made an effort to further reduce contamination levels below the RDEC. However, DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

Comment 3: Building 108 Pump House is located on the western side of the site. This investigation should include a review of historical engineering plans to ascertain potential sources of contamination and appropriate sampling, which should then be included in the work plan.

Response: Building 108 Pump House is located on property owned and operated by the Navy, and the pump house itself is operated by the Navy. Investigation of this area by DESC is beyond the scope of investigating releases of fuel resulting from DESC's operations. However, DESC did complete a field camera inspection in this area as part of the Lawton Brook Emergency Action. This work is documented in the Emergency Response Action Completion Report submitted to RIDEM on January 30, 2009. This inspection confirmed that the connection between Building 108 and the jet fuel line running along Defense Highway was dry.

Comment 4: During the initial investigation of Structure 228 engineering plans were not reviewed and as such sampling was limited. Please review engineering plans to ascertain if PCB transformers, PCBs, mercury or other switches are or were present, if sumps or floor drains are present, if UICs, USTS or ASTs are or were present or whether other sources of contamination are present. Finally, due to the nature of the protective coating at the structure samples for lead should be collected from the perimeter.

Response: DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Further investigation of Structure 228 for the presence of lead, mercury or PCBs is beyond DESC's scope. Any additional work to be conducted at the site will be implemented by the Navy.

Note that DESC investigated Structure 228 for petroleum impacts to soil, as described in Section 2.7 of the Draft SI/RAR (Tetra Tech 2005). Soil surrounding and pipes entering and exiting on the north and south sides of the building were excavated to expose the piping for visual inspection and soil sampling. Excavation between the pipes was then completed by hand. Soil samples were collected directly beneath the pipes at the point where they entered the building and analyzed for TPH. None of the samples exceeded the RDEC or ICDEC for TPH.

Comment 5: During the previous investigation samples were collected from the drainage swales. One swale located north of Tank 69 was not sampled as it discharged beyond the security fence. It appears that the discharge location is on Navy owned land; therefore please modify the work plan to include sampling of this swale.

Response: DESC completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at or adjacent to the site (on Navy-owned land) will be implemented by the Navy.

As part of the 2004-2005 field activities, RIDEM requested TPH screening of all drainage features with the potential to discharge surface water away from Tank Farm 3. This screening occurred as described in the Final Work Plan (Tetra Tech 2003) with the only discrepancy being that no sample was collected from the asphalt-lined swale north of Tank 69. During a reconnaissance of this discharge area, observations included significant erosion at the pipe outfall and no visual or olfactory evidence of TPH. A swale paralleling the fenceline, draining from the south, appeared to discharge at the fence at the same location as the drainpipe and was sampled as TF3-DSW-3.

Sample locations were heavily vegetated with no evidence of recent water flow. TPH samples for DRO/GRO were collected from 1 foot bgs at each location and sent to an off-site laboratory for analysis. Results of analysis showed that all sample locations were below the ICDEC and RDEC for TPH. No additional analysis was performed and no further action was recommended.

Comment 6: It appears that a limited removal action was conducted in area of concern 17. This area encompasses a small construction debris landfill. Please perform a metal survey in this area to determine the extent of the fill area and excavate additional test pits to characterize the site.

Response: Investigation of a construction debris landfill is beyond the scope of investigating releases of fuel resulting from DESC's operations. DESC has completed investigation and remediation activities at Tank Farm 3, as documented in the Draft SI/RAR (Tetra Tech 2005) and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

As documented in Section 2.9.2 of the Draft SI/RAR (Tetra Tech 2005), DESC investigated AOC-17, which is located to the north of Tank 69, due to the presence of a dark-toned area of soil (potentially staining) observed during the SAPA survey. An asphalt-lined drainage swale and concrete headwall are located in AOC-17. DESC conducted a magnetometer survey and several test pits. The test pits were located to avoid damaging the existing structure. The soil appeared to be fill material that contained very small asphalt pieces, and as such, only limited soil was removed for off-site disposal. In addition, any further soil removal from this area would likely require a shoring system. Confirmatory sampling results indicated petroleum-related compounds were below the ICDEC and as such, DESC has completed remediation of this area. Future use of the property may require that RDEC be achieved; however, the future use of the property as well as any additional soil removal would be the responsibility of the Navy.

Comment 7: During the previous investigation a number of areas were found to contain petroleum related contaminants above RIDEM standards. As the extent of contamination in the areas that exceeded need to be determined please modify the work plan to include additional test pitting efforts in these areas.

Response: Comprehensive environmental investigation and remediation activities were conducted by DESC from May 2004 through April 2005 in accordance with the Final Work Plan for Site Closure Tank Farm 3 (Tetra Tech 2003). The objective of this investigation was to identify areas where petroleum-related compounds in environmental media resulting from DESC operations exceeded the ICDEC. This comparison against industrial criteria is appropriate for the current site use. Field activities were documented in the Draft SI/RAR, which was submitted to RIDEM on January 18, 2006. As stated in the Draft SI/RAR (Tetra Tech 2005), in areas where remediation was warranted DESC made an effort to further reduce contamination levels below the RDEC.

As documented in Section 2.9 of the Draft SI/RAR (Tetra Tech 2005), post-remediation sampling demonstrated that concentrations were below the ICDEC, except at two areas (AOC-1 and AOC-4). ICDEC for TPH could not be achieved at AOC-1 (sand pit filter) due to the instability of the excavation. Also, Testpit 3 in AOC-4 (staining adjacent to former sludge pits) was excavated to a depth of 5 to 6 feet bgs. Soil was inaccessible below this depth; however, the TPH concentrations in confirmatory samples were still above the ICDEC. As these areas are inaccessible due to existing infrastructure, DESC will not implement any additional remedial activities and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

Comment 8: Please modify the work plan to include the investigation of all of the tanks, pump chambers, pipelines, gate boxes and release areas.

Response: DESC fueling operations at Tank Farm 3 were discontinued in the mid-1990s. The tanks, pipelines, and accessible appurtenances were cleaned and decommissioned in 1996 and 2000. For further information regarding these activities, see the following reports: Tank Closure Assessment Report (GZA 1998) and the Closure Report for Underground Storage Tanks at Tank Farm 3, which was submitted to RIDEM on August 7, 2001. In addition, comprehensive environmental investigation and remediation activities were conducted by DESC from May 2004 through April 2005 in accordance with the Final Work Plan for Site Closure Tank Farm 3 (Tetra Tech 2003). The objective of the investigation was to identify areas where petroleum-related compounds in environmental media resulting from DESC operations exceeded the ICDEC. This comparison against industrial criteria is appropriate for the current site use. The completed investigation included the identification of AOCs by the SAPA survey and corresponding investigation and remediation, if necessary, at each of the 43 identified AOCs. Field activities were documented in the Draft SI/RAR (Tetra Tech 2005), which was submitted to RIDEM on May 26, 2005. As stated in the Draft SI/RAR, in areas where remediation was warranted DESC made an effort to further reduce contamination levels below the RDEC. DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

Comment 9: *Previously, in an effort to expedite the investigation, remediation and close out of the sites and reduce the overall cost the Office of Waste Management and the Defense Logistics Agency agreed to an approach which allowed for removal actions to be performed during the investigation. This resulted in efficient use of resources, as the equipment employed during the investigation would also be used during the removal action without having to go through mobilization and demobilizations cycles. Further, it avoided the need to submit separate remedial investigation work plans, remedial action works plans remedial investigation reports and remedial action reports for review and approval. In concert with this approach please include provisions for removal actions to be conducted concurrently with the investigation.*

Response: **DESC has completed investigation and remediation activities at Tank Farm 3 in accordance with the final work plan (Tetra Tech 2003) and as documented in the Draft SI/RAR (Tetra Tech 2005) and UST closure report (Tetra Tech 2001). DESC is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site as a result of a change in site use will be implemented by the Navy.**

Specific Comments:

Comment 10: *Sections 1.0–2.2: In an effort to expedite review of the work plan and in an effort to facilitate review of this document, comments will not be generated on statements made or conclusion drawn in Sections 1.0-2.2. Instead the attached comments will focus on the procedures to be employed during the proposed sampling events.*

Response: **Comment 10 has been noted.**

Comment 11: *Section 3.1, Groundwater Monitoring, page 4: The work plan calls for gauging all of the wells for free product and then collecting groundwater samples from select wells. The Office of Waste Management agrees with the proposal to gauge the wells for free product. In regards to the collection of dissolved phase groundwater samples, these samples must be collected after the investigations discussed above are performed on the tanks, the pipelines, release areas, structures, etc. This information would then be used to guide future groundwater-sampling activities. Therefore, please modify the work plan to state that dissolve phase groundwater samples will be collected once that aforementioned investigations are completed.*

Response: **DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy. However, Comment 11 has been noted.**

Comment 12: *Section 3.2, Sediment Sampling, page 4: The work plan calls for the collection of a sediment sample in the vicinity of Oil Water Separator Outfall # 005. Please included the outfall associated with the former sand filter burning chamber and the drainage swale identified as DS-3. In all cases test holes must be dug in the vicinity of the outfalls and inspected for evidence of petroleum contamination. Samples would be biased towards locations which exhibit petroleum contamination or if this is not evident depositional areas.*

Response: As described in Response to Comment 7, the sand pit filter (AOC-1) was extensively investigated during the field activities summarized in the Draft SI/RAR (Tetra Tech 2005). As soil removal was constrained by the existing infrastructure and TPH concentrations in excess of the ICDEC remain, additional soil removal may be required depending on future site use. DESC will not implement any additional remedial activities and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

As part of the Lawton Brook emergency response actions conducted by DESC in 2008 under the direction of RIDEM's Office of Emergency Response (OER), a section of pipe chase starting at Outfall #005 and continuing 300 feet to the south along the northbound lane of Burma Road was removed. Response actions also included removal of soil from beneath the excavated chase as well as removal of rip rap and soil surrounding the ring drain outfall (i.e., Outfall #005). The outfall was found to be crushed, likely from the placement of rip rap during its construction. Once impacted soil was excavated, the ring drain outfall area was reconstructed. Subsequently, there were no observances of product or sheen from the outfall, and OER directed DESC to remove the Navy-placed booms on November 17, 2008. Response actions are documented in the Emergency Response Completion Report, which was submitted to RIDEM on January 30, 2009. DESC has completed investigation and remediation of the ring drain outfall area, which is located on Navy-owned and operated land. Any additional work to be conducted at Outfall #005 will be implemented by the Navy.

Comment 13: Section 3.3, Structure 227 Investigation, page 4: The proposal calls for the investigation of Structure 227 to ascertain if lead batteries are present. Structure 227 is an Electrical Control House. As such the investigation should include, but not be limited to reviewing historic engineering plans and ascertaining whether PCB transformers (historical engineering plans depicts a 1000 KVA pad transformer at this location, depending upon it's location concrete and soil samples will have to be collected and analyzed for PCBs), PCB, mercury or other switches are present, if sumps or floor drains are present, if UICs, USTs or ASTs are present or whether other sources of contamination are present. It is recommended that historical engineering plans be reviewed as this may provide information concerning potential sources of contamination at this location. Finally, due to the nature of the protective coating at the structure, samples for lead should be collected from the perimeter.

Response: The additional investigations at Structure 227 requested by RIDEM are beyond the scope of investigating releases of fuel resulting from DESC's operations. DESC has completed investigation and remediation activities at Tank Farm 3, as documented in the Draft SI/RAR (Tetra Tech 2005) and in the UST closure report (Tetra Tech 2001), and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

Comment 14: Section 4.5.1, Groundwater Sampling Protocol, Structure 227 Investigation, page 6: Please be advised that if free product is observed in a well it will not be necessary to sample the well for TPH or other constituents as the presence of free product will indicate that the groundwater at this location is not in compliance with RIDEM Regulations and remedial action will be warranted.

Response: Comment 14 has been noted.

Comment 15: Section 4.5.1, Groundwater Sampling Protocol, Structure 227 Investigation, page 6: Please confirm that the wells will be gauged for free product prior to purging and checked for free product after purging.

Response: DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy. However, Comment 15 has been noted.

Comment 16: Section 4.5.1, Groundwater Sampling Protocol, page 6: The report proposes analyzing groundwater for TPH GRO/DRO via Method 8015. Please be advised that all samples for DRO must be analyzed using an extractable procedure capable of detecting heavier oils. Further standards for the known fuels used at the site (various jet fuels including military jet fuel, aviation gasoline and diesel) must be run during the analysis.

Response: DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy. However, Comment 16 has been noted.

Comment 17: Section 4.5.1, Groundwater Sampling Protocol, page 6: Aviation gasoline was stored at the tank farms. Therefore please include analysis for lead in the groundwater sampling.

Response: DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. The monitoring well location GZ-302 was sampled for lead due to its proximity to the former burn pit and not due to the storage of aviation fuel. Any additional work to be conducted at the site will be implemented by the Navy. However, Comment 17 has been noted.

Comment 18: Section 4.5.2, Sediment Sampling, page 6: The section of the work plan deals with the collection of sediment samples from the brook. In order to address release via surface run off or other mechanisms the entire length of the stream adjacent to the tank farm must be inspected for evidence of contamination. Test holes must be dug every 100 feet biased towards depositional areas. If evidence of petroleum is present a sample must be collected. Further, as Lawton Brook was dammed and the water levels behind it fluctuated, and as TPH contaminated soils and sediments were found away from the brook at Tank Farm # 4 which had a similar dam, the wetlands in the vicinity of Lawton brook must be inspected for evidence of petroleum contamination. If field observations are unable to ascertain if petroleum contamination is present four additional sediment samples must be collected in depositional areas adjacent to the site.

Response: DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

As described in the Response to Comment 5, as part of the 2004-2005 field activities, RIDEM requested TPH screening of all drainage features with the potential to discharge surface water away from Tank Farm 3. This screening occurred as described in the Final Work Plan (Tetra Tech 2003) with only one

discrepancy. Sample locations were heavily vegetated with no evidence of recent water flow. TPH samples for DRO/GRO were collected from 1 feet bgs at each location and sent to an off-site laboratory for analysis. Results of analysis showed that all sample locations were below the ICDEC and RDEC for TPH. No additional analysis was performed and no further action was recommended.

Also of note, during the emergency response action described in Response to Comment 12, a major release of aluminum sulfate (alum) sludge by the Portsmouth Water Department temporarily stopped the emergency response work at Lawton Brook and severely impacted with the brook and its outlet to Narragansett Bay. This release was not in compliance with the town's RIPDES permit and based on discussions between Tetra Tech (DESC's contractor) and the Portsmouth Water Department during initial investigation of the release, this activity had occurred on numerous occasions (i.e., quarterly). As such, any future sediment sampling conducted in the brook may be impacted by these releases of alum sludge. Note that Tetra Tech provided all documentation of this event to John McIlmail of RIDEM's Office of Criminal Investigation on September 8, 2008.

Comment 19: Section 4.5.2, Sediment Sampling, page 6: The report proposes analyzing sediment samples for TPH GRO/DRO via Method 8015. Please be advised that all samples for DRO must be analyzed using an extractable procedure capable of detecting heavier oils. Further standards for the known fuels used at the site (various jet fuels including military jet fuel, aviation gasoline and diesel) must be run during the analysis.

Response: DESC has completed investigation and remediation activities at Tank Farm 3 and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy. However, Comment 19 has been noted.

Comment 20: Section 4.5.2, Sediment Sampling, page 6: Please include lead and arsenic to the list of constituents to be analyzed in the sediments.

Response: Sediment sampling for lead and arsenic are beyond the scope of investigating releases of fuel resulting from DESC's operations. DESC has completed investigation and remediation activities at Tank Farm 3, as documented in the Draft SI/RAR (Tetra Tech 2005) and in the UST closure report (Tetra Tech 2001), and is actively working to transfer the property back to the Navy. Any additional work to be conducted at the site will be implemented by the Navy.

Additionally, as described in Response to Comment 18, the Town of Portsmouth Water Department routinely discharged in the past alum sludge to Narragansett Bay via Lawton Brook. These releases were not permitted activities. Any future sediment sampling conducted in the brook may be impacted by these alum sludge releases. Tetra Tech provided all documentation of this event to John McIlmail of RIDEM's Office of Criminal Investigation on September 8, 2008.