

Date: August.5.2015

Project: Point Molate IR Site 3

Number: 0078.001.019

**Subject: Weekly Summary 7.27.2015 to 7.31.2015**

**Construction Tasks Completed**

- SWPPP inspections
- 0-5 Excavation including step-outs
- 5-10 Excavation including step-outs
- 10+ Excavation including step-outs
- Excavation of clean overburden (0 – 10' bgs)
- Removal of sheet pile wall
- Installation of contingency extraction trench
- Excavation of deep soil (10 – 17' bgs) area adjacent to building 82 has been completed
- Dewatering has been completed
- Installation of stormwater drain
- Install contingency extraction trench
- Confirmation sampling has been completed
- Export of Class II material

**Construction Tasks in Progress**

- Import soil. Approximately 86 truckloads of clean import fill were imported to the site. Approximately 1,720 tons of soil. An additional 17,000 CY will be imported when a suitable import source is located
- The last bit of Class II material has been exported. Approximately 19 trucks loads. 380 tons Class II
- 4 loads of debris were off-hauled from the site
- Continue containerizing excavated transite pipe
- Demobilization of PGWTP

**Environmental Monitoring Task**

- Air monitoring stations set up and take down
- Air monitoring stations set up and take down
  - Air monitoring results to date indicate that dust exceeded the action levels at the site perimeter (PM-10 >0.05 mg/m<sup>3</sup> over an 8 hour average) on July 27, 2015 at AM-4

adjacent to the import stockpile area. Additional water was applied in the area to reduce dust. AM-2 did not exceed the action levels at the site perimeter.

- Monitoring of streets for soil tracking
  - Some tracking of soil was observed during the soil off-haul activities at the exit point from the site. This was noted in the weekly SWPPP inspection and the contractor will make send the sweeper to that area more often.
- Operation of the PGWTP
  - The system has been run in compliance with existing NPDES permit. As of the July 31, 2015 the system is no longer discharging water and will be demobilized in the coming weeks.
- Confirmation sampling
  - Confirmation sampling is now complete for the site.
- Weekly SWPPP Inspection Action Items
  - Straw wattles should be placed around the import stockpile and weighed down with sandbags.

#### **Planned Tasks for Next Week**

- The site has been placed on hiatus as of July 31, 2015 for up to 3 weeks until additional required fill can be located and transported on site to reach the final design grade. Weekly SWPPP inspections will continue to take place during this time. Remaining tasks after completion of fill include final site grading and application of a tack coat until hydroseeding can be completed prior to the rainy season.



Backfill of area adjacent to building 82



Compaction and smoothing out prior to leaving the site



Installation of storm drain



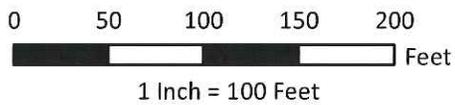
removal of debris from the site



File: J:\GIS Backup\GIS Data\0001 Point Molate\0078.001.019 Oversight\ProgressMap\_gt10.mxd Created by: DR/EM/JK Checked by: TS 7/29/2015

**Legend**

-  Excavation Boundary (5-10 Ft)
-  Excavation Boundary (10+ ft)
-  Completed Excavation (10+ ft)
-  Extended Excavation Boundary (10+ ft)
-  Completed Extended Excavation Boundary (10+ ft)



13A1.5





July 27, 2015

	CLIENT:	City of Richmond	<b>Excavation Progress and Proposed Step Out Locations (10+ Feet)</b>
	PROJECT:	IR Site 3 Remediation	
	PROJECT NUMBER:	0078.001.019	<b>FIGURE 3</b>

13A1.7



Date: July.29.2015

Project: Point Molate IR Site 3

Number: 0078.001.019

**Subject: Weekly Summary 7.20.2015 to 7.24.2015**

### **Construction Tasks Completed**

- SWPPP inspections
- 0-5 Excavation including step-outs
- 5-10 Excavation including step-outs
- 10+ Excavation including step-outs
- Excavation of clean overburden (0 – 10' bgs)
- Removal of sheet pile wall
- Installation of contingency extraction trench
- Excavation of deep soil (10 – 17' bgs) area adjacent to building 82 has been completed
- Dewatering has been completed
- Installation of stormwater drain
- Install contingency extraction trench
- Confirmation sampling has been completed

### **Construction Tasks in Progress**

- Export Class II waste soil. Approximately 80 truckloads of Class II waste soil off-hauled. Approximately 1,600 tons of export soil.
- Import soil. Approximately 493 truckloads of clean import fill were imported to the site. Approximately 9,860 tons of soil.
- Surveying deep excavations as they are completed
- Continue containerizing excavated transite pipe

### **Environmental Monitoring Task**

- Air monitoring stations set up and take down
- Air monitoring stations set up and take down
  - Air monitoring results to date indicate that dust has not exceeded the action levels at the site perimeter (PM-10 >0.05 mg/m<sup>3</sup> over an 8 hour average)
- Monitoring of streets for soil tracking
  - Some tracking of soil was observed during the soil off-haul activities at the exit point from the site. This was noted in the weekly SWPPP inspection and the contractor will make send the sweeper to that area more often.
- Operation of the PGWTP

- The system has been run in compliance with existing NPDES permit. The system has been upgraded to treat a higher flow of 200 gpm to deal with increased quantities of water in the excavations.
- Confirmation sampling
  - Confirmation sampling of accessible deep soil. Duplicate samples taken every 20 confirmation samples. Total of 8 samples taken for this reporting period. Confirmation sampling is now complete for the site.
- Weekly SWPPP Inspection Action Items
  - Tracked out soil should be swept up from the concrete pad north of the import stockpile where the trucks exit the excavation area

### **Planned Tasks for Next Week**

- Backfill deep excavations where floor and sidewall samples meet screening criteria and the excavations have been surveyed
- Soil Import
- Off-haul of Class II waste soil
- Initial grading of roadway along Building 6
- Final site grading
- SWPPP inspection
- Continue air monitoring
- Continue soil tracking and SWPPP monitoring as necessary
- The site will be placed on hiatus at the end of the week for up to 3 weeks until additional required fill can be located and transported on site to reach the final design grade. Weekly SWPPP inspections will continue to take place during this time.



Completion of last section of extraction trench



Installation of stormdrain



Completed excavation adjacent to Building 82



Import fill progress



Date: July.23.2015

Project: Point Molate IR Site 3

Number: 0078.001.019

**Subject: Weekly Summary 7.13.2015 to 7.18.2015**

### **Construction Tasks Completed**

- SWPPP inspections
- 0-5 Excavation including step-outs
- 5-10 Excavation including step-outs
- 10+ Excavation except for step-out adjacent to Building 82
- Excavation of clean overburden (0 – 10' bgs)
- Removal of sheet pile wall
- Excavation of contingency extraction trench

### **Construction Tasks in Progress**

- Export Class II waste soil. Approximately 102 truckloads of Class II waste soil off-hauled. Approximately 2,040 tons of export soil.
- Import soil. Approximately 860 truckloads of clean import fill were imported to the site. Approximately 17,200 tons of soil.
- 3 loads of treated wood and 4 loads of concrete.
- Excavation of deep soil (10 – 17' bgs) area adjacent to building 82
- Dewatering deep excavations as necessary
- Surveying deep excavations as they are completed
- Continue containerizing excavated transite pipe
- Installation of stormwater drain
- Install contingency extraction trench

### **Environmental Monitoring Task**

- Air monitoring stations set up and take down
- Air monitoring stations set up and take down
  - Air monitoring results to date indicate that dust has not exceeded the action levels at the site perimeter (PM-10 >0.05 mg/m<sup>3</sup> over an 8 hour average)
- Monitoring of streets for soil tracking
  - Some tracking of soil was observed during the soil off-haul activities at the exit point from the site. This was noted in the weekly SWPPP inspection and the contractor will make send the sweeper to that area more often.
- Operation of the PGWTP

- The system has been run in compliance with existing NPDES permit. The system has been upgraded to treat a higher flow of 200 gpm to deal with increased quantities of water in the excavations.
- Confirmation sampling
  - Confirmation sampling of accessible deep soil. Duplicate samples taken every 20 confirmation samples. Total of 18 samples taken for this reporting period.
  - Review of analytical data for confirmation sampling. Identification of step out excavations to achieve clean-up goals.
- Weekly SWPPP Inspection Action Items
  - Tracked out soil should be swept up from the concrete pad north of the import stockpile where the trucks exit the excavation area

#### **Planned Tasks for Next Week**

- All deep excavation within the original excavation extents will be completed.
- Completion of the Excavation adjacent to building 82 running west towards Excavation cells 83 and 95.
- Backfill deep excavations where floor and sidewall samples meet screening criteria and the excavations have been surveyed
- Soil Import
- Off-haul of Class II waste soil
- Initial grading of roadway along Building 6
- Install contingency extraction trench
- Repair and replace storm drain
- Final site grading
- SWPPP inspection
- Continue air monitoring
- Continue soil tracking and SWPPP monitoring as necessary



Installation of contingency extraction trench



Grading and compaction adjacent to Building 6



Excavation adjacent to building 82





August 27, 2015

Ms. Margarete Beth  
California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, California 94612

*sent via: email*

Subject: Monthly Remediation Status Report for Work in July 2015, Former Naval Fuel Depot Point Molate, Richmond, California

Dear Ms. Beth:

This monthly remediation status report summarizes the remediation activities conducted by Terraphase Engineering Inc. (Terraphase) on behalf of the City of Richmond at the former Naval Fuel Depot Point Molate (the Site). This remediation status report is intended to meet the requirements of Task 9 in the Regional Water Quality Control Board (RWQCB) Order R2-2011-0087 (RWQCB 2011d). The requirements of Task 9 are as follows:

*The Discharger shall submit a report to the Regional Water Board, 30 days prior to the start of any onsite remediation activities, and then on a monthly basis beginning 30 days after the start of the remediation activities, outlining the onsite remediation activities accomplished during the past month and those planned for the following month. The first monthly report at the beginning of each quarter shall include monitoring and test results and any conclusions or proposed changes to the remediation process based on those results. If any changes to the remediation are proposed during any monthly report, applicable supporting monitoring or test data will be submitted at that time. The status report shall also verify that the Prohibitions in Section A, stipulated above, have been adhered to. Should any of those prohibitions be trespassed, the report shall propose a recommendation acceptable to the Executive Officer to correct the trespass.*

This remediation status report provides a monthly update on the progress of environmental investigations, remediation, maintenance, and monitoring at the Site. This report is organized around each task listed in the RWQCB Order R2-2011-0087 (RWQCB 2011d). Additional tasks related to the Installation Restoration (IR) Site 3 Packaged Groundwater Treatment Plant (PGWTP) and site-wide groundwater monitoring are included below. For major work tasks completed in 2014, please see the monthly status report for December 2014 (Terraphase 2014aa). A reference list of reports and submittals is included as an attachment to this letter.

**Task 1: Soil Cleanup Goals (Compliance Date: February 13, 2012)**

*Work completed in July 2015:*

1. None.

*Major Work Items Previously Completed in 2015:*

1. None.

*Upcoming Work in August 2015:*

1. None.

**Task 2: Soil and Groundwater Management Plan (Compliance Date: March 15, 2012)**

Complete - *Final Soil and Groundwater Management Plan submitted to the RWQCB September 21, 2012 (Terraphase 2012jj).*

**Task 3a: IR Site 3 Feasibility Study and Remedial Action Plan (Compliance Date: May 4, 2012 Revised: February 28, 2014)**

Complete - *Final Feasibility Study and Remedial Action Plan submitted to the RWQCB June 4, 2014 (Terraphase 2014o).*

**Task 3b: IR Site 3 Remedial Action Completion Report (Compliance Date: February 3, 2014 Revised: June 30, 2015)**

Remedial Action will take place August 2014 through September 2015. This task is dependent upon completion of the Remedial Action.

**Task 4a: IR Site 4 Interim Remedial Action Work Plan (Compliance Date: April 3, 2012)**

Complete - *IR Site 4 Interim Remedial Action Work Plan submitted to the RWQCB (Terraphase 2011r, 2012gg, 2012ii, and 2012mm).*

**Task 4b: IR Site 4 Interim Remedial Action Completion Report (Compliance Date: November 2, 2012)**

*Work completed in July 2015:*

1. Preparation of Completion Report.

*Major Work Items Previously Completed in 2015:*

1. None.

*Upcoming Work in August 2015:*

1. Submittal of Completion Report.

**Task 4c: IR Site 4 Human Health Risk Assessment (Compliance Date: November 4, 2013)**

*Work completed in July 2015:*

1. None

*Major Work Items Previously Completed in 2015:*

1. None.

*Upcoming Work in August 2015:*

1. Preparation of HHRA work plan

**Task 4d: IR Site 4 Feasibility Study and Remedial Action Plan (Compliance Date: February 3, 2014)**

Not Applicable. This task may not be necessary dependent upon the outcome of Task 4c. A revised completion date will be requested from the RWQCB.

**Task 4e: IR Site 4 Remedial Action Completion Report (Compliance Date: February 3, 2015)**

Not Applicable. This task may not be necessary dependent upon the outcome of Task 4c. A revised completion date will be requested from the RWQCB.

**Task 5: UST Management Plan (Compliance Date: March 4, 2013)**

*Work completed in July 2015:*

1. Preparation of tank closure requests to the RWQCB for UST 2.

*Major Work Items Previously Completed in 2015:*

1. None.

*Upcoming Work in August 2015:*

1. Preparation and submittal of tank closure requests to the RWQCB for USTs 2, 15, 18, and 19 .

**Task 6: UST Removal Plan (Compliance Date: 90 days prior to UST demolition)**

Not Applicable – Triggered when demolition of a UST is contemplated. No UST demolition is scheduled at this time.

**Task 7: UST Status Report (Compliance Date: June 3, 2012)**

*Work completed in July 2015:*

1. Conducted the routine monthly UST closure monitoring inspections.

*Major Work Items Previously Completed in 2015:*

1. Submittal of Fourth Quarter/Annual 2014 UST Monitoring Report (Terraphase 2015d).
2. Submittal of Q1 2015 Quarterly Monitoring Report (Terraphase 2015j).

*Upcoming Work in August 2015:*

1. Conduct routine monthly UST closure monitoring inspections.
2. Preparation and submittal of Q2 UST Monitoring Report (Terraphase 2015p)

**Task 8: Amended Land Use Controls (Compliance Date: When environmental closure is requested)**

Not Applicable. No closures have been requested.

**Task 9: Remediation Status Reports (Compliance Date: Monthly)**

*Work completed in July 2015:*

1. Submitted the monthly remediation status report for June 2015 (Terraphase 2015n) to the RWQCB.
2. Submit the insurance budget summary and project status update for April and May 2015 to the City of Richmond and the ACE Group.

*Major Work Items Previously Completed in 2015:*

1. Submitted the monthly remediation status report for January 2015 to the RWQCB (Terraphase 2015g).
2. Submitted the monthly remediation status report for February 2015 to the RWQCB (Terraphase 2015h).
3. Submitted the monthly remediation status report for March 2015 to the RWQCB (Terraphase 2015i).
4. Submitted the monthly remediation status report for April 2015 to the RWQCB (Terraphase 2015l).
5. Submitted the monthly remediation status report for May 2015 (Terraphase 2015m)

*Upcoming Work in August 2015:*

1. Submit the monthly remediation status report for July 2015 to the RWQCB.

**Task 10: Discoveries During Facility Redevelopment (Compliance Date: 60 days from initial discovery)**

None

**Task 11: IR Site 1 ROD (Compliance Date: None)**

*Work completed in July 2015:*

1. Routine monthly landfill inspection of signs, gates, locks, etc.
2. Routine operation, maintenance, and monitoring of the landfill treatment system.
3. Maintenance of vegetation on the site including access to wells.

*Major Work Items Previously Completed in 2015:*

1. Submittal of 2014 Annual Monitoring Report (Terraphase 2015e).
2. Maintenance of vegetation on the site including access to wells.

*Upcoming Work in August 2015:*

1. Routine monthly landfill inspection of signs, gates, locks, etc.
2. Routine operation, maintenance, and monitoring of the landfill treatment system.

**Task 12: Construction Stormwater General Permit (Compliance Date: Prior to field work)**

A Notice of Intent was filed with the Water Board (Application # 449157) September 3, 2014. A WDID was issued for the project 2 07C370778.

**IR Site 3: PGWTP**

Terraphase, under the direction of the City of Richmond, operates, maintains, monitors, and prepares the quarterly and annual monitoring reports for the PGWTP under the existing General Waste Discharge

Requirements for: Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOC), Fuel Leaks and Other Related Wastes (VOC and Fuel General Permit) (RWQCB 2012a). The following summarizes the activities related to the continued operation, maintenance, and monitoring of the PGWTP.

*Work completed in July 2015:*

1. Routine operation, maintenance, and monitoring of the PGWTP.
2. Conducted monthly sampling event.
3. Additional sampling associated with exceedance noted July 8, 2015

*Major work items completed previously in 2015:*

1. Submittal of Modified Notice of Intent (Terraphase 2015b).
2. Submittal of 2015 Annual Monitoring Report (Terraphase 2015f).
3. Submittal of Q1 2015 Monitoring Report (Terraphase 2015k).

*Upcoming Work in August 2015:*

1. Routine operation, maintenance, and monitoring of the PGWTP.
2. Preparation and submittal of Q2 2015 Monitoring Report (Terraphase 2015q)
3. Demobilize all rental equipment associated with the PGWTP.

**Site-wide Groundwater Monitoring**

The purpose of the site-wide groundwater monitoring is to provide groundwater quality data that can be evaluated against established screening criteria for the Site. This program will help protect human health and the environment and prevent releases to the San Francisco Bay. Integrating data collected under this program with previous data is intended to support compliance and closure in accordance with regulatory requirements. Groundwater monitoring is being conducted on a semi-annual basis (wet-season and dry-season) per the Site-Wide Groundwater Monitoring Plan (Terraphase 2011n) that was approved by the RWQCB on August 30, 2011 (RWQCB 2011b). Data collected is summarized and submitted as semi-annual monitoring reports to the RWQCB.

*Work completed in July 2015:*

1. Monthly monitoring and skimming of free product in wells MTWB-01R, MWT05-02, MWT08-01, MWT06-02, MW10-23, MW10-24.
2. Submittal of Wet Season 2015 semi-annual groundwater monitoring report (Terraphase 2015o)

*Major work items completed previously in 2015:*

1. Dry Season 2014 annual groundwater monitoring report (Terraphase 2015c).
2. Draft Workplan for alternative quantification methodology, additional characterization and/or risk evaluation for areas outside of IR Site 3 where USEPA Method 8015 without Silica Gel Cleanup quantifies TPH and TPH decomposition products as exceeding the Fuel Product Action Levels within 150 feet of the San Pablo Bay (Terraphase 2015a).

*Upcoming Work in August 2015:*

1. Monthly monitoring and skimming of free product in wells MTWB-01R, MWT05-02, MWT08-01, MWT06-02, MW10-23, MW10-24.

2. Response to RWQCB comments on Draft Workplan for alternative quantification methodology, additional characterization and/or risk evaluation for areas outside of IR Site 3 where USEPA Method 8015 without Silica Gel Cleanup quantifies TPH and TPH decomposition products as exceeding the Fuel Product Action Levels within 150 feet of the San Pablo Bay (Terraphase 2015a).

### Prohibitions Verification

As required in Task 9 of the RWQCB Order, the following prohibitions (Section A of the RWQCB Order) were adhered to during the remedial activities in July 2015, to the knowledge of Terraphase.

1. The discharge of wastes and/or non-hazardous or hazardous substances in a manner which will degrade, or threaten to degrade, water quality or adversely affect, or threaten to adversely affect, the beneficial uses of the waters of the State is prohibited.
2. Further migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup that will cause adverse migration of wastes or hazardous substances are prohibited.
4. The tidal marsh habitat and wetland habitats onsite shall be completely avoided unless encroachment on these areas is required to implement Facility remediation work and resultant impacts to the affected habitat are mitigated through a plan approved by the Executive Officer. A setback of 50 feet shall be established around the tidal marsh and any wetland area as a means of preventing any unintended impacts to it from the remediation.
5. The Site's offshore eel-grass habitat shall be completely avoided during any remedial work to the maximum extent practicable.

### Summary

The above detailed summaries by task provide a look at the ongoing remediation activities at the former Naval Fuel Depot Point Molate. The RWQCB's and public's comments have been incorporated into the FS/RAP for IR Site 3. The RWQCB accepted the Final FS/RAP on June 4, 2014. Construction is now underway at IR Site 3 with an estimated completion date of September 2015.

If you have questions regarding this report, please call Tomer Schetrit at (510) 645-1850.

Sincerely,  
For Terraphase Engineering Inc.



Tomer Schetrit, PE (C81411)  
Senior Project Engineer

cc: Craig Murray, City of Richmond  
Carlos Privat, City of Richmond  
Bruce Goodmiller, City of Richmond  
LaShonda White, City of Richmond  
Michael Leacox, NCE

James Whitcomb, BRAC Program Management Office  
Venkat Puranapanda, ACE Group  
Paul Carman, PMCAC  
Jim Hite, PMCAC

Attachments: Point Molate Bibliography

### **Point Molate Bibliography**

- City of Richmond. 2012. Letter from Richard Mitchell (Planning Department) to Mr. Tristan Tozer (California Office of Historic Preservation) RE: *Section 106 Consultation for the Point Molate IR Site 3 Remediation Project, Former Naval Fuel Depot Point Molate, Richmond, CA*. April 3.
- Innovative Technical Solutions, Inc. (ITSI). 2005. Post-Closure UST Maintenance and Monitoring Plan. December.
- LSA. 2014. Osprey Nest Deterrent Implementation Plan. Point Molate Fuel Depot, Richmond, CA. January 13 2014.
- Regional Water Quality Control Board - San Francisco Bay Region (RWQCB). 2006. Order No. R2-2006-0075 NPDES No. CAG912002 General Waste Discharge Requirements for: Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Fuel Leaks and Other Related Wastes at Service Stations and Similar Sites. November 13.
- RWQCB. 2007. Letter from Ms. Lila Tang to United States Navy Subject: *Notice of General Permit Coverage for Discharges from the Packaged Groundwater Treatment Plant located at Naval Fuel Depot Point Molate, Richmond, Contra Costa County, CA 94801, under the Requirements of Order No. R2-2006-0075, NPDES Permit No. CAG912002 (Fuels General Permit)*. June 6.
- RWQCB. 2010. Letter from Mr. George Leyva to Mr. Levine RE: *Approval of Field Assessment Methodology for Potentially Mobile Free Petroleum Product at Installation Restoration (IR) Site 3 at the former Naval Fuel Depot (NFD) Point Molate, Richmond, Contra Costa County*. November 30.
- RWQCB. 2011a. Letter from Mr. George Leyva to Mr. Steve Duran RE: *Approval of Excavation Delineation Work Plan for Former Point Molate NFD Site-3 Richmond, Contra Costa County*. August 26.
- RWQCB. 2011b. Letter from Mr. George Leyva to Mr. Steve Duran RE: *Approval of Site-Wide Groundwater Monitoring Plan for the Former Point Molate Naval Fuel Depot, Richmond, Contra Costa County*. August 30.
- RWQCB. 2011c. Letter from Mr. George Leyva to Mr. Steve Duran RE: *Approval of Draft Groundwater Remediation Work Plan, IR Site 4, Drum Lot 2/Building 87 Area, Former Naval Fuel Depot Point Molate, Richmond*. November 8.
- RWQCB. 2011d. Order No. R2-2011-0087 Updated Site Cleanup Requirements and Recission of Order Nos. 95-235, 97-124 and 97-125, City of Richmond and United States Department of Defense, Department of the Navy for the: Former Point Molate Naval Fuel Depot, Located at 1009 Western Drive, Richmond, Contra Costa County. December 19.
- RWQCB. 2012a. Order No. R2-2012-0012 NPDES No. CAG912002 General Waste Discharge Requirements for: Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOC), Fuel Leaks and Other Related Wastes (VOC and Fuel General Permit). February 8.
- RWQCB. 2012b. Letter from Mr. George Leyva to Mr. Bruce Goodmiller RE: *Review and Comments - Draft FS/RAP, Former Naval Fuel Depot Point Molate, Richmond, Contra Costa County*. February 17.
- RWQCB. 2012c. Letter from Ms. Lila Tang to Mr. Steve Duran RE: Reauthorization to Discharge from the Packaged Groundwater Treatment Plant (PGWTP) located at the former Naval Fuel Depot, Point



August 15, 2015

Ms. Margarete Beth  
California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, California 94612

**Subject:** Second Quarter 2015 Underground Storage Tank (UST) Monitoring Report, Former Naval Fuel Depot Point Molate, Richmond, California

Dear Ms. Beth,

On behalf of the City of Richmond, Terraphase Engineering Inc. (Terraphase) has prepared the attached Second Quarter 2015 Underground Storage Tank (UST) Monitoring Report. This report describes the activities and status for the ongoing monitoring and maintenance program for USTs 1 through 20 at the former Naval Fuel Depot Point Molate located in Richmond, California. The inspections were conducted in accordance with the Final Post-Closure UST Maintenance and Monitoring Plan (PMMP) (ITSI 2005).

If you have any question or comments regarding this report, please contact Tomer Schetrit at (510) 645-1850.

Sincerely,  
For Terraphase Engineering Inc.

A handwritten signature in black ink, appearing to read 'T.S.', located below the typed name of Tomer Schetrit.

Tomer Schetrit, P.E. (C81411)  
Project Engineer

A handwritten signature in black ink, appearing to read 'C. Jones', located below the typed name of Chris Jones.

Chris Jones  
Staff II Engineer

cc: Carlos Privat, City of Richmond  
Craig Murray, City of Richmond  
Jim Whitcomb, BRAC Program Management Office  
Michael Leacox, NCE  
Eileen Whittey, PMCAC  
Paul Carman, PMCAC  
Joan Garrett, PMCAC  
Lori Braunesreither, Contra Costa County Environmental Health Services

**Attachments:** 2nd Quarter 2015 Underground Storage Tank (UST) Monitoring Report

**2<sup>nd</sup> QUARTER 2015 MONITORING REPORT  
UNDERGROUND STORAGE TANKS  
FORMER NAVAL FUEL DEPOT POINT MOLATE,  
RICHMOND, CALIFORNIA**

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*Prepared on Behalf of*

City of Richmond  
450 Civic Center Plaza  
Richmond, California

*Prepared by*

Terraphase Engineering Inc.  
1404 Franklin Street, Suite 600  
Oakland, California

August 15, 2015

Project Number 0078.001.024



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## Acronyms and Abbreviations

bbi	barrel
BAI	Barajas and Associates, Inc.
BRAC	Base Realignment and Closure
CCHSD	Contra Costa Health Services Department
FOSET	Finding of Suitability for Early Transfer
ITSI	Innovative Technical Solutions, Inc.
JP-5	jet propellant grade 5 fuel
MSL	mean sea level
NFD	Naval Fuel Depot
ORS	oil recovery system
PMMP	Post-Closure UST Maintenance and Monitoring Plan
RWQCB	California Regional Water Quality Control Board, San Francisco Bay Region
Terraphase	Terraphase Engineering Inc.
TtEMI	Tetra Tech EM Inc.
UST	underground storage tank
VP	valve pit

## 1.0 INTRODUCTION

On behalf of the City of Richmond Terraphase Engineering Inc. (Terraphase) has prepared this Underground Storage Tank (UST) Quarterly Monitoring Report to summarize the monitoring conducted on a monthly and quarterly basis as part of the ongoing monitoring and maintenance of USTs 1 through 20 at the former Naval Fuel Depot (NFD) Point Molate in Richmond, California. The inspections were conducted in accordance with the final Post-Closure UST Maintenance and Monitoring Plan (PMMP) (ITSI 2005).

## 2.0 HISTORY OF UST OPERATIONS AT NFD POINT MOLATE

The former NFD Point Molate was a fuel storage facility that had the capacity to store more than 40 million gallons of fuel. Prior to closure, the facility mainly held jet propellant grade 5 fuel (JP-5) and marine diesel fuel. Historically, other fuels were stored at the depot, including bunker fuel and aviation gasoline. Fuel was transferred to and from the facility by offloading and onloading ships and barges at the depot fuel pier, as well as through the Santa Fe Pacific Pipeline transfer station.

The former NFD Point Molate is on the San Pablo peninsula (Figure 1), approximately 1.5 miles north of the Richmond-San Rafael Bridge in the City of Richmond, Contra Costa County, California. Former NFD Point Molate covers approximately 412 acres in the Potrero Hills along the northeastern shore of San Francisco Bay of which 140 acres are submerged within San Francisco Bay. The San Pablo peninsula is the land mass between San Pablo Bay and San Francisco Bay. Former NFD Point Molate contains approximately 1.6 miles of shoreline, and its property extends into the adjacent hillsides to the top of the San Pablo ridge. Topography at the facility ranges from flat, filled areas (reclaimed tidal areas) near the Bay to steep, dissected slopes of nearly 500 feet above mean sea level (MSL) in elevation. The facility is bordered to the north, south, and east by the Chevron Corp. Richmond refinery (Chevron Richmond refinery) and to the west by San Francisco Bay.

Fuel storage and transfer operations at the facility ceased in May 1995. Former NFD Point Molate became a closing base under the Base Realignment and Closure (BRAC) IV program in September 1995, and operational closure of the facility occurred in September 1998. In September 2003, approximately 372 acres of the depot were transferred to the City of Richmond under a Finding of Suitability to Transfer (Navy 2003). The remaining 40 acres of the 412-acre federal facility were transferred to the City on March 29, 2010 on the basis of a Finding of Suitability for Early Transfer (FOSET; Navy 2008).

The Navy closed in place (without filling with concrete or other material) USTs 1 through 20, due to the large size and the good condition of the USTs. Tanks B and C were removed due to their relatively smaller size, central location, and history of bunker fuel releases near Tank B. The *Underground Storage Tank and Hillside Pipeline Closure Conceptual Design* (TtEMI, 1999), was reviewed by the Hazardous Materials Programs office at the Contra Costa Health Services Department (CCHSD), the City of Richmond, and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). CCHSD, the agency overseeing structural closure of the USTs, officially approved the conceptual plan in a letter dated 23 July 1999.

CCHSD approved final closure in place of USTs 1 through 20 in a letter dated 24 February 2005; CCHSD also recognized that associated fuel product pipelines and valves were cleaned and rendered inoperable, and that Tanks B and C were completely removed. To date, USTs 1, 4, 7, 9, 10, 11, 12, 14, 16, 17 and 20 have received environmental closure (NFA) letters from the RWQCB. The remaining USTs (USTs 2, 3, 5, 6, 8, 13, 15, 18, and 19) have not received

environmental closure from the RWQCB. Regardless of the closure status of the USTs with the RWQCB, they require on-going maintenance and monitoring to reduce the chances that they will become a physical hazard. This report describes the monitoring and maintenance for USTs 1 through 20.

USTs 1 through 20 each have a capacity of approximately 50,000 barrels (bbls), which is equivalent to 2.1 million gallons. Figure 2 is a site plan showing the locations of the USTs and appurtenances at the former NFD Point Molate.

Between 1943 and 1975, bunker fuel, marine diesel fuel, and JP-5 were stored at the former NFD Point Molate. Between 1975 and 1995, the northern portion of the facility (USTs 1, 2 and 5 through 13) was used to store and transfer diesel fuel. The southern portion of the facility (USTs 3, 4 and 14 through 19) was used to store and transfer JP-5. UST 20 stored bunker fuel from 1943 to 1975, and stored naval ballast, sediment and wastewater from 1975 to 1995.

USTs 1 through 20 were constructed between 1942 and 1943 by blasting bedrock in the hillside to create "benches" for the USTs. Concrete was poured into wooden forms built on the benches, apparently in direct contact with bedrock. The UST floors, walls, and roof support columns were constructed; the concrete roofs were then installed. Completed USTs were covered with varying amounts of fill (four to eight feet); fill materials were presumably blasted rock and locally-derived excavated fill. Appendix A includes a more detailed description of UST construction, as excerpted from the *Final Report, Structural Integrity Evaluation of Underground Storage Tanks at Naval Fuel Depot, Point Molate, Richmond, California* (AGS, 2000).

Approximate dimensions of USTs 1-20 are as follows:

- Each tank has an interior clear diameter of 135'-4".
- Each tank has an interior clear height of 20'-0".
- Each tank has roof and floor slabs 1'-4" and 1'-6" thick, respectively.
- Tank walls are 1'-6" thick up to 10'-0" in height and 1'-3" thick above that.

Each UST was constructed with a perimeter drain surrounding the tank bottom. Original design drawings indicate that each drain consisted of open joint tiles placed in a gravel bed. Each drain was laid on a slope to fall approximately 12 inches from the upper (uphill side) UST perimeter to the lower (downhill side) perimeter. Water collected by these drains was to the oil recovery system (ORS; TtEMI, 2002). The purpose of the perimeter drains was to prevent infiltrating surface water from accumulating in the backfill outside of the UST walls. Figure 3 is a typical cross section of a UST at former NFD Point Molate.

## 3.0 SITE INSPECTIONS

The PMMP requires:

- Monthly inspections of the gates, locks, and fences.
- Quarterly inspections of the vegetation for erosion control; surface grade for erosion control; UST systems (ground surface, French drain outfalls, and tank vents); and groundwater monitoring wells.
- Biannual (Two-year) inspections of the UST interiors for standing water.
- Five-year structural inspections, structural inspections after significant loading events, and structural inspections after major seismic events.

The purpose of the site inspections is to conduct the inspection tasks established in the Final PMMP (ITSI 2005), including: security, erosion control, condition of the UST systems, and condition of the groundwater monitoring wells to identify conditions that may warrant maintenance or repair. This section provides an overview of observations made during the inspections. Recommendations for repairs that could not be completed during the site inspection are provided in Section 5. Individual UST sites are referred to by tank number (e.g., UST 6).

The location of tanks, monitoring wells, and French drains are shown on Figure 2. Summary table of the inspection field notes are provided in Appendix A.

### 3.1 Monthly Inspection of Gates, Locks, and Fences

The gates, locks, and fences along Stenmark Drive that provide security for the UST sites are inspected to make sure they are in good condition, locked, and secure.

Observations during the monthly inspections of the gates, locks, and fences performed on April 23, May 27, and June 24, 2015:

- The gates, locks, and fences for gates 15 through 19 are in good condition, locked, and secure.
- Gate 23 is under constant surveillance as it is located next to the guard house (Building 123).

### 3.2 Quarterly Inspection of Erosion Control

#### 3.2.1 Vegetation

Vegetation protects the soil surface from wind and water erosion, improves slope stability, and improves visual aesthetics. A site-specific hydroseed mix that includes drought-tolerant native plant seeds has been used for providing a vegetative cover at the UST sites.

Vegetation on UST sites are inspected for bare spots, signs of stress, color changes, etc. and areas of both healthy and sickly growth are noted on a quarterly basis.

Observations during the quarterly inspection performed on May 27, 2015:

- Small, bare and/or brown patches of vegetation were present at USTs 1 through 20. Brown patches are most likely due to lack of rain during the first quarter of 2015.

### 3.2.2 Surface Grade

Uniformity of the slight grade on top of the USTs mitigates erosion and reduces surface water infiltration.

The soil cover is inspected for erosion, visible depressions, ponded water, cracks, slope failure, and grade on top of the USTs to see if there was a uniformity of the slight (0.5 percent to 1 percent) grade on a quarterly basis.

Observations during the quarterly inspection performed on May 27, 2015:

- No indication of erosion, ponded water, depressions, or slope failure was found at USTs 1 through 20.
- Small animal burrows were observed on the surface of USTs 2 and 3. The burrows will be monitored during future inspections.

### 3.3 Quarterly Inspection of UST Systems

#### 3.3.1 Ground Surface

The structural integrity of the USTs can be compromised by surface loads. Loading by structures, vehicles, and debris is prohibited. Overloading is a serious condition that could lead to catastrophic failure and must be addressed by a licensed structural engineer.

Ground surfaces of the USTs are inspected for surface loads including structures, signs of vehicle traffic, and dumping of debris on a quarterly basis.

Observations during the quarterly inspection performed on May 27, 2015:

- Indications of light vehicle traffic such as tire tracks are present at USTs 1 through 20. The tire tracks are likely from lawn mowers.

#### 3.3.2 Tank Vents

The aboveground vent at each UST provides equilibrium of the UST atmosphere with the outside atmosphere and allows for humidity to escape the UST interior.

The vents are inspected for signs of vandalism and to assure that the vent opening was intact on a quarterly basis.

Observations during the quarterly inspection performed on May 27, 2015:

- The vents do not show any indication of vandalism and the vent openings were intact and unobstructed at USTs 1 through 20.

### 3.3.3 French Drain Outfalls

French drains at each UST are intended to direct surface water infiltration away from the structural joint between the tank ceiling and upper sidewalls. Rip-rap is located at each outfall to reduce erosion. French drain outfalls are inspected for vandalism or displacement on a quarterly basis.

Vegetation around the drains on USTs 4, 5, 12, 13, 15, 16, 17, and 20 was cleared during the second quarter monitoring period.

The quarterly observations for the French drain outfalls can be found in Appendix A, which is attached to this report. The West drain at UST 6 and the South drain at UST 15 could not be located. It is suspected that they were previously destroyed or were never constructed by the Navy.

### 3.4 Quarterly Inspection of Groundwater Monitoring Wells

There are groundwater monitoring wells adjacent to many of the USTs. The well casings are typically completed aboveground and protected with a standpipe. The wells are locked with keyed padlocks.

The surface completions of the monitoring wells are inspected for general condition on a quarterly basis. The standpipe covers are opened, well casings and well caps are inspected, and grout surrounding each casing is inspected.

The quarterly observations for the groundwater monitoring wells can be found in the Appendix A, which is attached to this report.

## 4.0 RECOMMENDATIONS

Recommendations for repairs that could not be completed during the site inspection are provided below.

### 4.1 Gates, Locks, and Fences

If locks are rusted or are missing, or if gates or fences are in disrepair, the City of Richmond must be notified that repairs should be made.

Recommended actions:

None

### 4.2 Erosion Control

#### 4.2.1 Vegetation

If significant bare spots are found, the bare spots must be reseeded or planted in accordance with the specification for hydroseeding. Irrigation during the establishment period must be provided, as necessary.

Recommended actions:

Bare and/or brown vegetation is present at USTs 1 through 20, but the bare and/or brown patches of vegetation are not significant enough to require reseeding or planting. This should be monitored for future degradation.

#### 4.2.2 Surface Grade

Erosion must be mitigated. Visible depressions and cracks must be backfilled. Slope failures must be mitigated by backfilling and placing rip-rap or other erosion-limiting engineered control.

Recommended actions:

None

### 4.3 UST Systems

#### 4.3.1 Ground Surface

Any objects, debris, or material that represents a load to the USTs must be removed. If a UST has been significantly overloaded, a structural inspection must be conducted.

Recommended actions:

None

#### 4.3.2 Tank Vents

Vents must be repaired as required. Any object in the vent opening must be removed.

Recommended actions:

None

#### 4.3.3 French Drain Outfalls

Blockages of the drain pipe must be removed. Riprap must be replaced in kind. Small vegetation growing into the rip-rap is beneficial and should not be removed.

Recommended actions:

Vegetation around the drains on USTs 4, 5, 12, 13, 15, 16, 17, and 20 was cleared during the second quarter monitoring period. The vegetation around these drains should be maintained to allow access to these drains.

#### 4.4 Groundwater Monitoring Wells

If standing water is present in the well standpipes, it must be removed from the standpipe and the condition allowing water to accumulate should be mitigated. If casing caps are missing, they should be replaced. If grout is cracked, it should be removed and replaced.

Recommended actions:

None

## 5.0 REFERENCES

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- \_\_\_\_\_. 2002. Final Definitive Design for the UST and Hillside Pipeline Closure, Naval Fuel Depot Point Molate, Richmond, California. 24 January.



August 14, 2015

Ms. Lourdes Gonzales  
California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, California 94612

Attn: NPDES Wastewater Division  
Fuel General NPDES No. CAG912002

Subject: Second Quarter 2015 Self-Monitoring Report for the Packaged Groundwater Treatment Plant, Former Naval Fuel Depot Point Molate, Stenmark Drive, Richmond, California (CIWQS 657165) Order No. R2-2012-0012, NPDES No. CAG912002

Dear Ms. Gonzales:

On behalf of the City of Richmond, Terraphase Engineering Inc. (Terraphase) has prepared this National Pollutant Discharge Elimination System (NPDES) Second Quarter 2015 Self-Monitoring Report (SMR) for the Packaged Groundwater Treatment Plant (PGWTP) located at the Former Naval Fuel Depot Point Molate in Richmond, California ("the Site"). This letter report was prepared in accordance with the RWQCB Order No. R2-2012-0012, NPDES Permit No. CAG912002 (adopted March 15, 2012), titled "GENERAL WASTE DISCHARGE REQUIREMENTS FOR: Discharge or Reuse of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Volatile Organic Compounds (VOC), Fuel Leaks and Other Related Wastes (VOC and Fuel General Permit)".

This SMR presents the data collected during the second quarter of 2015 (the "reporting period") in accordance with reporting requirements specified in Attachment E of the VOC and Fuel General Permit.

This report presents flow rates and laboratory analytical results of the PGWTP influent and effluent for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and total xylenes (BTEX) compounds; polycyclic aromatic hydrocarbon (PAH); and turbidity.

#### **PGWTP Description**

The PGWTP treats groundwater extracted from four screened wells set into a trench that extends below the water table and has been backfilled with gravel to minimize the resistance to groundwater flow into the wells. The groundwater is pumped from the extraction wells using submersible well pumps and conveyed directly to two, two-pod sand filters plumbed in parallel. To reduce turbidity, water then passes through an eight basket bag filter containing 5 micron filter bags. Following the bag filter, water then flows through four GAC units (2,000 pounds each) plumbed in series to further reduce the concentrations of the chemicals of concern in the PGWTP's effluent discharge. The configuration of the GAC units was modified on June 5, 2015 to include 6 GAC units running in parallel to allow for treatment of increased flow associated with dewatering during active remediation of IR Site 3. Treated groundwater is discharged directly to San Francisco Bay under the requirements of the NPDES Permit.

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1344.1

## **PGWTP 2015 Second Quarter Operations**

The PGWTP is operated and maintained in accordance with the Operation and Maintenance (O&M) Manual, prepared by Terraphase, dated July 25, 2011. A copy of this O&M Manual is located at the PGWTP.

The PGWTP operated continuously from April 1, 2015 through June 30, 2015. An exceedance was identified on July 8, 2015 upon receipt of results from the June 25, 2015 effluent water samples collected as part of the June monthly sampling event. Immediately following identification of the effluent limit violation, four of the six carbon units running in parallel for the PGWTP were replaced as a corrective action. A resampling of the effluent was collected on July 9, 2015 in addition to collection of a sample from the receiving waters. Expedited results of this re-sampling event were received on July 13, 2015; the results established that there were no detections for PAHs or TPH as Bunker C Fuel (TPHbc) in the effluent and detections for TPH as gasoline (TPHg) and TPH as diesel (TPHd) were below permit limits. Receiving waters also sampled on July 9<sup>th</sup> indicated elevated levels of TPH and PAHs, but TPHg and TPHd did not exceed permit limits. The receiving waters were re-sampled two additional times on July 14, 2015 and July 17, 2015 with expedited results indicating no significant detections. The RWQCB was notified of all events associated with the June violation by phone and e-mail on August 6, 2015.

On May 19, 2015, the extraction wells were demolished as part of the active remediation of IR Site 3. After demolition of the extraction wells, groundwater generated as part of construction dewatering activities continued to be directly pumped to the PGWTP.

On June 5, 2015, the PGWTP was upgraded from a treatment capacity of 100 gallons per minute (gpm) to a capacity of 200 gpm per the Modified Notice of Intent (NOI) submitted to the RWQCB on February 4, 2015. The Modified NOI addressed increased flows resulting from dewatering activities occurring at IR Site 3. The upgrade included the addition of a larger pump as well as an additional three GAC units plumbed in parallel to the three existing GAC units. These units were added in addition to the existing treatment system components including two pod sand filter units, an 8 basket bag filter (1-5 $\mu$ m), an 18,000 gallon settling tank, and two 20,000 gallon fractionation tanks.

During the second quarter of 2015, the PGWTP treated approximately 2,415,955 gallons of groundwater with an average flow rate of approximately 18.4 gallons per minute (Table 1).

During the second quarter of 2015, approximately 39.1 kilograms of TPH were removed by the PGWTP (Table 2).

## **Summary of NPDES Sampling Results**

Influent, effluent, and receiving water samples from the PGWTP were collected and analyzed during the reporting period in accordance with the 2012 Order. Tables 3A, 3B, and 3C summarize the analytical data for influent samples collected from the PGWTP. Tables 4A, 4B, and 4C summarize data for the same analytes in effluent samples collected from the PGWTP during the reporting period. Tables 5A, 5B, 5C, and 5D summarize the data for the receiving water samples collected in compliance with the 2012 Order. The following sections of this report summarize the sampling results.

## **TPH Analytical Results**

Influent and effluent sampling for TPHg, TPHd, and TPHbc was performed on April 23, May 27, and June 25, 2015. The PGWTP was re-sampled on July 9, 2015 in response to results showing exceedances in the analytical data. The analytical results for these compounds are presented in Table 3A for influent samples and in Table 4A for effluent samples.

The concentrations of TPHg in effluent samples were below the effluent limitation in April and May but exceeded the limit of 50 µg/L during the June sampling event as noted above. The concentrations of TPHd and TPHbc in effluent samples were not detected above laboratory reporting limits in April and were detected below the effluent limitations in May, but exceeded their respective limits during the June sampling event.

Upon receiving the June analytical report the PGWTP was re-sampled within 24 hours on July 9, 2015. Prior to resampling four of the six carbon units running in parallel were replaced. The effluent concentrations of TPHg, TPHd, and TPHbc from the June re-sampling event collected on July 9 were all below their respective limits.

As part of the resampling on July 9, 2015, a receiving water sample was also collected. Elevated TPH concentrations in the receiving water samples collected on July 9 led to additional receiving water sampling on July 14 and 17, 2015. The analytical results from the sampling events on July 14 and 17 did not detect any TPH concentrations above the analytical laboratory's reporting limits.

Historically, the influent and effluent samples at the PGWTP have contained concentrations of compounds that interfere with the analytical laboratory's performance of TPH analysis when using United States Environmental Protection Agency (EPA) Method 8015B. Interference of this type is typically caused by a biogenic source, usually carboxylic acids that have elution times similar to the range of TPHd and TPHbc compounds. When present in samples, these organic acids are interpreted by laboratory analytical equipment to be TPH. The interference in site samples has led to false elevated analytical results for TPH. Subjecting the sample to a process referred to as a "silica gel cleanup" effectively removes the interfering compounds from a sample and allows the laboratory to separate out and quantify the true concentration of petroleum-related TPH compounds. As required by the O&M manual approved by the RWQCB, silica gel cleanups were performed on the TPHd and TPHbc samples collected from the PGWTP.

## **BTEX Analytical Results**

Influent and effluent sampling for BTEX compounds was performed on April 23, May 27, June 25, and July 9, 2015. BTEX influent and effluent analytical results are presented in Table 3A for influent samples and in Table 4A for effluent samples.

Sampling of the receiving water for BTEX compounds was performed on July 9, 14, and 17, 2015. The receiving water BTEX analytical results are presented in Table 5A.

The concentrations of BTEX compounds in the effluent and receiving water samples were below analytical laboratory's reporting limit of 0.5 µg/L during the reporting period.

### **PAH Analytical Results**

Influent and effluent sampling for PAH compounds was performed on April 23, May 27, June 25, and July 9, 2015. PAH analytical results are presented in Table 3B for influent samples and in Table 4B for effluent samples.

The concentrations of PAH compounds in the effluent samples were not detected above the analytical laboratory's reporting limit of 0.1 µg/L, for the sampling events in April and May, which is the lowest reporting limit that the analytical laboratory can reach. PAH trigger value exceedances were detected in the effluent sample collected on June 25, but upon re-sampling on July 9, the concentrations of PAH compounds were analyzed to be non-detect.

Sampling of the receiving water for PAH compounds was performed on July 9, 14, and 17, 2015 following the effluent exceedances on June 25. Analytical results showed an exceedance of trigger values for PAH compounds in the receiving water on July 9<sup>th</sup> but these compounds could no longer be detected above the laboratory's reporting limit in the samples collected on July 14<sup>th</sup> or 17<sup>th</sup>. The receiving water PAH analytical results are presented in Table 5B.

### **Turbidity Analytical Results**

Influent and effluent sampling for turbidity was performed April 23, 2015 in accordance with trigger process outlined in the permit following an exceedance of the 5.0 NTU trigger value December 2014. Turbidity analytical results are presented in Table 3C for influent samples and in Table 4C for effluent samples.

The treatment train was bolstered in the first quarter 2015 to account for increased turbidity resulting from construction. Second quarter samples collected showed no results in excess of the turbidity requirements of 5.0 NTU.

### **Visual Observations**

Visual observations regarding floating materials, discoloration, turbidity, odor, evidence of beneficial use, hydrographic condition, and weather condition for the receiving water; and odor, weather condition, deposits, discoloration, clogging, and valve exercise regarding the PGWTP were recorded during the monthly sampling events. The visual observation forms for the reporting period are provided as Attachment A.

### **Quality Assurance/Quality Control (QA/QC)**

Standard QA/QC measures were implemented during the sample collection, transportation, and chemical analysis process. The primary objective of these QA/QC measures is to ensure that resulting analytical data are reproducible, are of adequate quality for their intended use, and are representative of actual conditions.

- April Trip Blank Detection:

- TPHg was detected in the trip blank that accompanied the samples collected on April 23, 2015. The concentration was 14 J µg/L.
- April Method Blank Detection:
  - TPHg was detected in the method blank associated with the samples collected on April 23, 2015. The concentration was 18 J µg/L.
- May Trip Blank Detection:
  - TPHg was detected in the trip blank that accompanied the samples collected on May 27, 2015. The concentration was 17 J µg/L.
- May Method Blank Detection:
  - TPHg was detected in the method blanks associated with the samples collected on May 17, 2015. The concentration was 12 J µg/L.
- June Trip Blank Detection:
  - TPHg was detected in the trip blank that accompanied the samples collected on June 25, 2015. The concentration was 14 J µg/L.
- July Trip Blank Detection:
  - TPHg was detected in the trip blanks that accompanied the samples collected on July 9, 14 and 17, 2015. The concentrations were 14 J µg/L, 17 J µg/L, and 17 J µg/L, respectively.
- July Method Blank Detection:
  - TPHg was detected in the method blank associated with the samples collected on July 14 and 17, 2015. The concentrations were 16 J µg/L and 12 J µg/L, respectively.
  - TPHd was detected in the method blank associated with the samples collected on July 17, 2015. The concentration was 10 J µg/L.

Estimated Concentrations: Analytes that were present in samples above the laboratory method detection limit (MDL) but below the laboratory reporting limit (RL) are qualified with a "J" flag to indicate that the concentration is an estimated value.

No further qualification has been applied to the analytical results presented in this report because the concentrations of the analytes in the method and trip blank samples are below the analytical laboratory's reporting limit and the concentrations of the analytes in the effluent samples are below the Effluent Limitations.

### **Compliance Evaluation Summary**

During the second quarter 2015 reporting period, the PGWTP complied with the applicable sampling requirements.

If you have questions regarding this report, please call Tomer Schetrit at (510) 645-1850.

Sincerely,  
For Terraphase Engineering Inc.



Tomer Schetrit P.E. (C81411)  
Senior Project Engineer



Chris Jones  
Staff II Engineer

cc: Carlos Privat, City of Richmond  
Craig Murray, City of Richmond  
Venkat Puranapanda, ACE Group  
Jim Whitcomb, United States Navy BRAC  
Michael Leacox, NCE  
Margarete Beth, California RWQCB  
Joan Garrett, PMCAC  
Bruce Beyaert, PMCAC

Tables:

- 1 PGWTP Summary of Flow Data
- 2 PGWTP Summary of Total Petroleum Hydrocarbon Mass Removal Data
- 3A PGWTP Summary of Influent BTEX and Total Petroleum Hydrocarbons Sample Results
- 3B PGWTP Summary of Influent PAH Sample Results
- 3C PGWTP Summary of Influent Turbidity Sample Results
- 4A PGWTP Summary of Effluent BTEX and Total Petroleum Hydrocarbons Sample Results
- 4B PGWTP Summary of Effluent PAH Sample Results
- 4C PGWTP Summary of Effluent Turbidity Sample Results
- 5A PGWTP Summary of Receiving Water BTEX and Total Petroleum Hydrocarbons Sample Results
- 5B PGWTP Summary of Receiving Water PAH Sample Results
- 5C PGWTP Summary of Receiving Water VOC Sample Results
- 5D PGWTP Summary of Receiving Water Dissolved Oxygen Sample Results

Attachments:

Attachment A Visual Observation Forms

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Table 1  
 PGWTP Summary of Flow Data  
 Former Naval Fuel Depot Point Molate, Richmond, California



Month	Period of Operation <sup>(1)</sup> (days)	Volume Per Period (gallons)	Volume Per Period (liters)	Average Flow Rate During Operation (gpm)
April	30	686,220	2,597,343	15.9
May	31	623,925	2,361,556	14.0
June	30	1,105,810	4,185,491	25.6

**Notes:**

(1) Number of days system is operating, which may not coincide with the number of days in the month.

gpm = gallons per minute

Second Quarter 2015 Summary (4/1/2015 to 6/30/2015)	
Total days of operation	91
Total volume of groundwater treated (gallons)	2,415,955
Average flow rate (gpm)	18.4

**Table 2**  
**PGWTP Summary of TPH Mass Removal Data**  
**Former Naval Fuel Depot Point Molate, Richmond, California**



Month	Period of Operation <sup>(1)</sup> (days)	Volume Per Period (gallons)	Volume Per Period (liters)	Total TPH Influent Concentration <sup>(2)</sup> (µg/l)	Total TPH Effluent Concentration <sup>(2)</sup> (µg/l)	Total TPH Removal Concentration (µg/l)	TPH Mass Removed Per Period <sup>(3)</sup> (kg)	TPH Mass Removal (kg/day) Rate
April	30	686,220	2,597,343	217	14	203	0.5	0.0
May	31	623,925	2,361,556	6,610	51	6,559	15.5	0.5
June <sup>(4)</sup>	30	1,105,810	4,185,491	5,560	36	5,524	23.1	0.8

**Notes:**

(1) Number of days system is operating, which may not coincide with the number of days in the month.

(2) For total TPH concentration, non-detects are treated as zero.

(3) Total TPH concentration is based on addition of TPHg, TPHd, and TPHbc results. Because the range of hydrocarbons reported for each analyte overlaps, this mass removal may be biased high.

(4) Influent and effluent values based on the analysis after re-sampling

ND = Not Detected (Analyte was not detected above the RL.)

RL = Reporting Limit

TPH = Total Petroleum Hydrocarbons

kg = kilograms

µg/l = micrograms per liter

Second Quarter 2015 Summary (4/1/2015 to 6/30/2015)	
TPH mass removed this period (kg)	39.1

Table 3A  
 PGWTP Summary of Influent BTEX and Total Petroleum Hydrocarbons Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California



Constituent	Analytical Method	Units	Sample Frequency	Sample Date															
				4/23/15			5/27/15			6/25/15			7/9/15						
				Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed				
Benzene	EPA 8260B	µg/l	Q	0.2 J	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	26-Jun	ND	0.5	0.1	9-Jul
Toluene	EPA 8260B	µg/l	Q	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	26-Jun	ND	0.5	0.1	9-Jul
Ethylbenzene	EPA 8260B	µg/l	Q	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	26-Jun	ND	0.5	0.1	9-Jul
Total xylenes	EPA 8260B	µg/l	Q	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	26-Jun	ND	0.5	0.1	9-Jul
TPH <sub>g</sub>	EPA 8015B	µg/l	Q	64 Y <sup>(2)</sup>	50	11	24-Apr	110 Y <sup>(2)</sup>	50	11	29-May	170 Y <sup>(2)</sup>	50	13	27-Jun	160 J <sup>(2)</sup>	50	13	10-Jul
TPH <sub>d</sub> <sup>(1)</sup>	EPA 8015B	µg/l	Q	43 Y	17	5.5	27-Apr	1600	17	5.5	5-Jun	300 Y	17	5.5	6-Jul	1400 Y	17	5.5	10-Jul
TPH <sub>b</sub> <sup>(1)</sup>	EPA 8015B	µg/l	Q	110 Y	100	--	27-Apr	4900	100	--	5-Jun	730	100	--	6-Jul	4,000	100	--	10-Jul

**Notes:**

- (1) Silica gel cleanup used for TPH<sub>d</sub> and TPH<sub>b</sub> analysis
- (2) Analyte detected in Trip Blank and/or Method Blank
- = Not measured/Not applicable
- BOLD** = Analyte detected
- EPA = Environmental Protection Agency
- J = Estimated concentration. Compound detected at a concentration below its RL and above the MDL
- MDL = Method Detection Limit
- ND = Not Detected (Analyte was not detected above the RL.)
- Q = Quarterly
- RL = Reporting Limit
- TPH<sub>b</sub> = total petroleum hydrocarbons quantified as bunker C
- TPH<sub>d</sub> = total petroleum hydrocarbons quantified as diesel
- TPH<sub>g</sub> = total petroleum hydrocarbons quantified as gasoline
- µg/l = micrograms per liter
- Y = Sample exhibits chromatographic pattern, which does not resemble standard.

Table 3B  
 PGWTP Summary of Influent PAHs Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California

Constituent	Analytical Method	Units	Sample Frequency	Sample Date															
				4/23/15			5/27/15			6/25/15			7/19/15						
				Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed				
Naphthalene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	0.01 J	0.3	0.06	1-Jun	0.2	0.09	0.02	30-Jun	0.1 J	0.2	0.04	10-Jul
Acenaphthylene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	0.03 J	0.09	0.02	30-Jun	0.08 J	0.2	0.04	10-Jul
Acenaphthene	EPA 8270C-SIM	µg/l	Q	0.2	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	0.4	0.2	0.04	10-Jul
Fluorene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	0.07 J	0.09	0.02	30-Jun	0.5	0.2	0.04	10-Jul
Phenanthrene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	0.3	0.2	0.04	10-Jul
Anthracene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.03	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	ND	0.2	0.06	10-Jul
Fluoranthene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	0.3 J	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	0.1 J	0.2	0.04	10-Jul
Pyrene	EPA 8270C-SIM	µg/l	Q	0.1	0.1	0.02	28-Apr	1.1	0.3	0.06	1-Jun	0.2	0.09	0.02	30-Jun	0.5	0.2	0.05	10-Jul
Benzo(a)anthracene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	0.2 J	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	0.1 J	0.2	0.04	10-Jul
Chrysene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.03	28-Apr	0.5	0.3	0.06	1-Jun	0.05 J	0.09	0.02	30-Jun	0.3	0.2	0.05	10-Jul
Benzo(b)fluoranthene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	0.05 J	0.2	0.04	10-Jul
Benzo(k)fluoranthene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	ND	0.2	0.04	10-Jul
Benzo(a)pyrene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	0.1 J	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	0.06 J	0.2	0.04	10-Jul
Indeno(1,2,3-cd)pyrene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	ND	0.2	0.04	10-Jul
Dibenz(a,h)anthracene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.02	28-Apr	ND	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	ND	0.2	0.04	10-Jul
Benzo(g,h,i)perylene	EPA 8270C-SIM	µg/l	Q	ND	0.1	0.03	28-Apr	0.07 J	0.3	0.06	1-Jun	ND	0.09	0.02	30-Jun	ND	0.2	0.05	10-Jul

Notes:

- = Not measured/Not applicable
- BOLD** = Analyte detected
- EPA = Environmental Protection Agency
- J = Estimated concentration. Compound detected at a concentration below its RL and above the MDL.
- MDL = Method Detection Limit
- ND = Not Detected (Analyte was not detected above the RL.)
- Q = Quarterly
- RL = Reporting Limit
- µg/l = micrograms per liter

13A4.11

Table 3C  
 PGWTP Summary of Influent Turbidity Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California

Constituent	Analytical Method	Units	Permit Required Sample Frequency	Sample Date															
				1/30/15			2/26/15			3/26/15			4/23/15						
				Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed				
Turbidity	SM 2130B	NTU	D/Q/Y <sup>(1)</sup>	6	0.02	--	31-Jan	3	0.02	--	26-Feb	2.7	0.02	--	26-Mar	9.7	0.02	--	23-Apr

Notes:

(1) = Monthly following an exceedance until 3 consecutive months below 5.0 NTU

-- = Not measured/not applicable

**BOLD** = analyte detected

D/Q/Y = Once during the first and fifth day of startup, quarterly for the first year, annually thereafter

EPA = Environmental Protection Agency

MDL = Method Detection Limit

ND = Not Detected (Analyte was not detected above the RL.)

NTU = Nephelometric Turbidity Units

RL = Reporting Limit

13A4.12

**Table 4A**  
**PGWTP Summary of Effluent BTEX and Total Petroleum Hydrocarbons Analytical Results**  
**Former Naval Fuel Depot Point Molate, Richmond, California**

Constituent	Analytical Method	Units	Sample Freq.	Effluent Limit.	Sample Date															
					4/23/15			5/27/15			6/25/15			7/9/15						
					Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed
Benzene	EPA 8260B	µg/l	M	5	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	27-Jun	ND	0.5	0.1	9-Jul
Toluene	EPA 8260B	µg/l	M	5	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	27-Jun	ND	0.5	0.1	9-Jul
Ethylbenzene	EPA 8260B	µg/l	M	5	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	27-Jun	ND	0.5	0.1	9-Jul
Total xylenes	EPA 8260B	µg/l	M	5	ND	0.5	0.1	24-Apr	ND	0.5	0.1	1-Jun	ND	0.5	0.1	27-Jun	ND	0.5	0.1	9-Jul
TPHG	EPA 8015B	µg/l	M	50	14 J <sup>(2)</sup>	50	11	24-Apr	27 J <sup>(2)</sup>	50	11	29-May	150 J <sup>(2)</sup>	50	13	27-Jun	17 J <sup>(2)</sup>	50	13	10-Jul
TPHd <sup>(1)</sup>	EPA 8015B	µg/l	M	50	ND	17	5.5	27-Apr	24 Y	17	5.5	2-Jun	1,300 Y	17	5.5	6-Jul	19 Y	17	5.5	10-Jul
TPHbc <sup>(1,3)</sup>	EPA 8015B	µg/l	M	--	ND	100	--	27-Apr	ND	100	--	2-Jun	3,200	100	--	6-Jul	ND	100	--	10-Jul

**Notes:**

- (1) Silica gel cleanup used for TPHd and TPHbc analysis
- (2) Analyte detected in Trip Blank and/or Method Blank
- (3) TPHbc has a trigger limit of 50 µg/l. However, the analytical method reporting has been 100 µg/l since January 25, 2012.

-- = not measured/not applicable

**BOLD** = Analyte detected

EPA = Environmental Protection Agency

J = Estimated concentration. Compound detected at a concentration below its RL and above the MDL.

M = Monthly

MDL = Method Detection Limit

ND = Not Detected (Analyte was not detected above the RL.)

RL = Reporting Limit

TPHbc = total petroleum hydrocarbons quantified as bunker C

TPHd = total petroleum hydrocarbons quantified as diesel

TPHG = total petroleum hydrocarbons quantified as gasoline

µg/l = micrograms per liter

Y = Sample exhibits chromatographic pattern, which does not resemble standard.

Table 4B  
 PGWTP Summary of Effluent PAHs Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California

Constituent	Analytical Method	Units	Sample Frequency	Trigger	Sample Date															
					4/23/15			5/27/15			6/25/15			7/9/15						
					Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed				
Naphthalene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Acenaphthylene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Acenaphthene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Fluorene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Phenanthrene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Anthracene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Fluoranthene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Pyrene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Benzofluoranthene	EPA 8270C-SIM	µg/l	M	0.0044	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	0.3	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Chrysene	EPA 8270C-SIM	µg/l	M	0.044	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	0.3	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Benzobifluoranthene	EPA 8270C-SIM	µg/l	M	0.0044	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	0.08	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Benzokjfluoranthene	EPA 8270C-SIM	µg/l	M	0.0044	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Benzofluoranthene	EPA 8270C-SIM	µg/l	M	0.0044	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	0.1	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Indeno(1,2,3-cd)pyrene	EPA 8270C-SIM	µg/l	M	0.0044 <sup>(1)</sup>	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Dibenz(a,h)anthracene	EPA 8270C-SIM	µg/l	M	0.0044	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	ND	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul
Benzofluoranthene	EPA 8270C-SIM	µg/l	M	-	ND	0.1	0.02	28-Apr	ND	0.09	0.02	1-Jun	0.07	0.2	0.04	30-Jun	ND	0.1	0.02	10-Jul

Notes:

(1) The RL is greater than the trigger concentration and the minimum level listed in Appendix 4 of the 2005 State Water Resources Control Board, Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP). However, for EPA 8270C-SIM, the lowest level for the reporting limit that the analytical laboratory can report down to is 0.09 µg/L.

-- = Not measured/Not applicable

EPA = Environmental Protection Agency

MDL = Method Detection Limit

RL = Reporting Limit

ND = Not Detected (Analyte was not detected above the RL.)

PAHs = Polycyclic aromatic hydrocarbons

M = Monthly

µg/l = micrograms per liter

1344.14

Table 4C  
 PGWTP Summary of Effluent Turbidity Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California



Constituent	Analytical Method	Units	Permit Required Sample Frequency	Sample Date															
				1/30/15			2/26/15			3/26/15			4/23/15						
				Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed				
Turbidity	SM 2130B	NTU	D/Q/Y <sup>(1)</sup>	7.5	0.02	--	31-Jan	1.2	0.02	--	26-Feb	1.6	0.02	--	26-Mar	0.51	0.02	--	23-Apr

**Notes:**

(1) = Monthly following an exceedance until 3 consecutive months below 5.0 NTU

-- = Not measured/not applicable

**BOLD** = analyte detected

**D/Q/Y** = Once during the first and fifth day of startup, quarterly for the first year, annually thereafter

EPA = Environmental Protection Agency

MDL = Method Detection Limit

ND = Not Detected (Analyte was not detected above the RL.)

NTU = Nephelometric Turbidity Units

RL = Reporting Limit

1344.15

**Table 5A**  
**PGWTP Summary of Receiving Water BTEX and Total Petroleum Hydrocarbons Analytical Results**  
**Former Naval Fuel Depot Point Molate, Richmond, California**

Constituent	Analytical Method	Units	Effluent Limit.	Sample Date											
				7/9/15			7/14/15			7/17/15					
				Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed
Benzene	EPA 8260B	µg/l	5	ND	0.5	0.1	9-Jul	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Toluene	EPA 8260B	µg/l	5	ND	0.5	0.1	9-Jul	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Ethylbenzene	EPA 8260B	µg/l	5	ND	0.5	0.1	9-Jul	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Total xylenes	EPA 8260B	µg/l	5	ND	0.5	0.1	9-Jul	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
TPH <sub>g</sub>	EPA 8015B	µg/l	50	15 J <sup>(2)</sup>	50	13	10-Jul	14 J <sup>(2)</sup>	50	5.7	14-Jul	14 J <sup>(2)</sup>	50	5.7	18-Jul
TPHd <sup>(1)</sup>	EPA 8015B	µg/l	50	89 Y	17	5.5	10-Jul	ND	17	5.5	15-Jul	7.6 J <sup>(2)</sup>	17	5.5	20-Jul
TPHbc <sup>(1,3)</sup>	EPA 8015B	µg/l	--	380 Y	100	--	10-Jul	ND	100	--	15-Jul	ND	100	--	20-Jul

**Notes:**

- (1) Silica gel cleanup used for TPHd and TPHbc analysis
- (2) Analyte detected in Trip Blank and/or Method Blank
- (3) TPHbc has a trigger limit of 50 µg/l. However, the analytical method reporting has been 100 µg/l since January 25, 2012.
- = not measured/not applicable

**BOLD** = Analyte detected

EPA = Environmental Protection Agency

J = Estimated concentration. Compound detected at a concentration below its RL and above the MDL.

M = Monthly

MDL = Method Detection Limit

ND = Not Detected (Analyte was not detected above the RL.)

RL = Reporting Limit

TPHbc = total petroleum hydrocarbons quantified as bunker C

TPHd = total petroleum hydrocarbons quantified as diesel

TPHg = total petroleum hydrocarbons quantified as gasoline

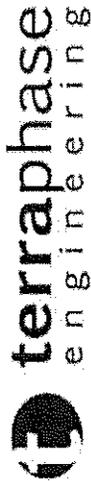
µg/l = micrograms per liter

Y = Sample exhibits chromatographic pattern, which does not resemble standard.

1344.16

Table 5B

PGWTP Summary of Receiving Water PAHs Analytical Results  
Former Naval Fuel Depot Point Molate, Richmond, California



Constituent	Analytical Method	Units	Trigger	Sample Date											
				7/9/15			7/14/15			7/17/15					
				Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed
Naphthalene	EPA 8270C-SIM	µg/l	-	0.06 J	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Acenaphthylene	EPA 8270C-SIM	µg/l	-	0.05 J	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Acenaphthene	EPA 8270C-SIM	µg/l	-	0.04 J	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Fluorene	EPA 8270C-SIM	µg/l	-	0.04 J	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Phenanthrene	EPA 8270C-SIM	µg/l	-	0.3	0.09	0.02	10-Jul	0.03 J	0.1	0.02	15-Jul	0.03 J	0.09	0.02	20-Jul
Anthracene	EPA 8270C-SIM	µg/l	-	0.2	0.09	0.03	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Fluoranthene	EPA 8270C-SIM	µg/l	-	0.7	0.09	0.02	10-Jul	0.02 J	0.1	0.02	15-Jul	0.02 J	0.09	0.02	20-Jul
Pyrene	EPA 8270C-SIM	µg/l	-	0.7	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Benzo(a)anthracene	EPA 8270C-SIM	µg/l	0.0044	0.4	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Chrysene	EPA 8270C-SIM	µg/l	0.044	0.6	0.09	0.03	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Benzo(b)fluoranthene	EPA 8270C-SIM	µg/l	0.0044	0.5	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Benzo(k)fluoranthene	EPA 8270C-SIM	µg/l	0.0044	0.2	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Benzo(a)pyrene	EPA 8270C-SIM	µg/l	0.0044	0.5	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Indeno(1,2,3-cd)pyrene	EPA 8270C-SIM	µg/l	0.0044 <sup>(1)</sup>	0.2	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Dibenz(a,h)anthracene	EPA 8270C-SIM	µg/l	0.0044	0.06 J	0.09	0.02	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul
Benzo(g,h,i)perylene	EPA 8270C-SIM	µg/l	-	0.3	0.09	0.03	10-Jul	ND	0.1	0.02	15-Jul	ND	0.09	0.02	20-Jul

Notes:

- = Not measured/Not applicable
- BOLD** = Analyte detected
- EPA = Environmental Protection Agency
- J = Estimated concentration. Compound detected at a concentration below its RL and above the MDL.
- MDL = Method Detection Limit
- ND = Not Detected (Analyte was not detected above the RL.)
- Q = Quarterly
- RL = Reporting Limit
- µg/l = micrograms per liter

1344.17

Table 5C  
 PGWTP Summary of Receiving Water VOC Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California



Constituent	Analytical Method	Units	Sample Date				Sample Date			
			7/14/15				7/17/15			
			Result	RL	MDL	Date Analyzed	Result	RL	MDL	Date Analyzed
Freon 12	EPA 8260B	µg/l	ND	1.0	0.2	14-Jul	ND	1.0	0.1	17-Jul
Chloromethane	EPA 8260B	µg/l	ND	1.0	0.2	14-Jul	ND	1.0	0.3	17-Jul
Vinyl Chloride	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Bromomethane	EPA 8260B	µg/l	ND	1.0	0.1	14-Jul	ND	1.0	0.2	17-Jul
Chloroethane	EPA 8260B	µg/l	ND	1.0	0.2	14-Jul	ND	1.0	0.3	17-Jul
Trichlorofluoromethane	EPA 8260B	µg/l	ND	1.0	0.1	14-Jul	ND	1.0	0.2	17-Jul
Acetone	EPA 8260B	µg/l	ND	10	3.3	14-Jul	ND	10	3.3	17-Jul
Freon 113	EPA 8260B	µg/l	ND	2.0	0.3	14-Jul	ND	2.0	0.1	17-Jul
1,1-Dichloroethene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.2	17-Jul
Methylene Chloride	EPA 8260B	µg/l	ND	5	0.1	14-Jul	ND	5	0.2	17-Jul
Carbon Disulfide	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
trans-1,2-Dichloroethene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.2	17-Jul
Vinyl Acetate	EPA 8260B	µg/l	ND	10	0.8	14-Jul	ND	10	1.1	17-Jul
1,1-Dichloroethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.2	17-Jul
2-Butanone	EPA 8260B	µg/l	ND	10	0.5	14-Jul	ND	10	0.5	17-Jul
cis-1,2-Dichloroethene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
2,2-Dichloropropane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Chloroform	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Bromochloromethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,1,1-Trichloroethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,1-Dichloropropene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Carbon Tetrachloride	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2-Dichloroethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Trichloroethene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2-Dichloropropane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Bromodichloromethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Dibromomethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
4-Methyl-2-Pentanone	EPA 8260B	µg/l	ND	10	0.2	14-Jul	ND	10	0.7	17-Jul
cis-1,3-Dichloropropene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
trans-1,3-Dichloropropene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,1,2-Trichloroethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.2	17-Jul
2-Hexanone	EPA 8260B	µg/l	ND	10	0.3	14-Jul	ND	10	0.5	17-Jul
1,3-Dichloropropane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Tetrachloroethene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Dibromochloromethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2-Dibromoethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Chlorobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,1,1,2-Tetrachloroethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Styrene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Bromoform	EPA 8260B	µg/l	ND	1.0	0.1	14-Jul	ND	1.0	0.1	17-Jul
Isopropylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,1,2,2-Tetrachloroethane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2,3-Trichloropropane	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.2	17-Jul
Propylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Bromobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,3,5-Trimethylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
2-Chlorotoluene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
4-Chlorotoluene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul

Table 5C  
 PGWTP Summary of Receiving Water VOC Analytical Results  
 Former Naval Fuel Depot Point Molate, Richmond, California



Constituent	Analytical Method	Units	Sample Date				Sample Date			
			7/14/15			Date	7/17/15			Date
			Result	RL	MDL	Analyzed	Result	RL	MDL	Analyzed
tert-Butylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2,4-Trimethylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
sec-Butylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
para-Isopropyl Toluene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,3-Dichlorobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,4-Dichlorobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
n-Butylbenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2-Dichlorobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
1,2-Dibromo-3-Chloropropane	EPA 8260B	µg/l	ND	2	0.6	14-Jul	ND	2	0.3	17-Jul
1,2,4-Trichlorobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul
Hexachlorobutadiene	EPA 8260B	µg/l	ND	2	0.4	14-Jul	ND	2	0.1	17-Jul
Naphthalene	EPA 8260B	µg/l	ND	2	0.1	14-Jul	ND	2	0.1	17-Jul
1,2,3-Trichlorobenzene	EPA 8260B	µg/l	ND	0.5	0.1	14-Jul	ND	0.5	0.1	17-Jul

**Notes:**

(1) Analyte detected in Trip Blank and/or Method Blank

-- = Not measured/not applicable

A = Annual

**BOLD** = analyte detected

EPA = Environmental Protection Agency

J = Estimated concentration. Compound detected at a concentration below its RL and above the MDL.

MDL = Method Detection Limit

ND = Not Detected (Analyte was not detected above the RL.)

RL = Reporting Limit

µg/l = micrograms per liter

Table 5D

PGWTP Summary of Receiving Water Dissolved Oxygen Analytical Results  
Former Naval Fuel Depot Point Molate, Richmond, California



Constituent	Analytical Method	Units	Sample Date					
			7/14/15		7/17/15			
			Result	RL	Date Analyzed	Result	RL	Date Analyzed
Dissolved Oxygen	SM4500	mg/l	12	1	14-Jul	11	1	17-Jul

Notes:

RL = Reporting Limit  
mg/l = milligrams per liter

13A 4.20

**ATTACHMENT A**  
**VISUAL OBSERVATION FORMS**

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<b>Site Visit Date:</b> 4/23/15 <b>Personnel:</b> Jen Repa	
<b>Visual for Receiving waters</b>	
None	Floating and suspended materials of waste origin (oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of
None	Discoloration and turbidity: Description of color, source, and size of affected area
None	Odor: presence or absence, characterization, source distance of travel, and wind direction
Yes, birds	Evidence of beneficial water use: presence of waterfowl or wildlife, people fishing, and other recreational activities in the vicinity of the site
N/A	Hydrographic condition, if relevant (Tidal conditions, depth of sample)
61 F, 3.4 mph SSW, 0.0" total precipitation	Weather Conditions: air temperature, wind direction/velocity, Total precipitation in previous 5 days and on day of observation
<b>Visual for Groundwater Treatment System</b>	
None	Odor: presence or absence, characterization, source, distance of travel, and wind direction
3.4 mph SSW	Weather Conditions: Wind direction/velocity
None	Deposits, discolorations, and/or plugging in the treatment system that could adversely affect the system reliability and performance
Yes	Operation of the float and pressure shutoff valves installed to prevent system overflow or bypass

<b>Site Visit Date:</b> 5/27/15 <b>Personnel:</b> Jen Repa	
<b>Visual for Receiving waters</b>	
None	Floating and suspended materials of waste origin (oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of
None	Discoloration and turbidity: Description of color, source, and size of affected area
None	Odor: presence or absence, characterization, source distance of travel, and wind direction
Yes, birds	Evidence of beneficial water use: presence of waterfowl or wildlife, people fishing, and other recreational activities in the vicinity of the site
N/A	Hydrographic condition, if relevant (Tidal conditions, depth of sample)
63 F, 4.7 mph SSE, 0.0" total precipitation	Weather Conditions: air temperature, wind direction/velocity, Total precipitation in previous 5 days and on day of observation
<b>Visual for Groundwater Treatment System</b>	
None	Odor: presence or absence, characterization, source, distance of travel, and wind direction
4.7 mph SSE	Weather Conditions: Wind direction/velocity
None	Deposits, discolorations, and/or plugging in the treatment system that could adversely affect the system reliability and performance
Yes	Operation of the float and pressure shutoff valves installed to prevent system overflow or bypass

<b>Site Visit Date:</b> 6/25/15 <b>Personnel:</b> Seth Stroika	
<b>Visual for Receiving waters</b>	
None	Floating and suspended materials of waste origin (oil, grease, algae, and other macroscopic particulate matter): presence or absence, source, and size of
None	Discoloration and turbidity: Description of color, source, and size of affected area
None	Odor: presence or absence, characterization, source distance of travel, and wind direction
Yes, birds	Evidence of beneficial water use: presence of waterfowl or wildlife, people fishing, and other recreational activities in the vicinity of the site
N/A	Hydrographic condition, if relevant (Tidal conditions, depth of sample)
79 F, 2.7 mph SE, 0.0" total precipitation	Weather Conditions: air temperature, wind direction/velocity, Total precipitation in previous 5 days and on day of observation
<b>Visual for Groundwater Treatment System</b>	
None	Odor: presence or absence, characterization, source, distance of travel, and wind direction
2.7 mph SE	Weather Conditions: Wind direction/velocity
None	Deposits, discolorations, and/or plugging in the treatment system that could adversely affect the system reliability and performance
Yes	Operation of the float and pressure shutoff valves installed to prevent system overflow or bypass

