

CITY OF OAKLAND



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Oakland Public Works
Environmental Services Division

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December 31, 2014

RECEIVED

By Alameda County Environmental Health at 10:15 am, Jan 07, 2015

Revised Work Plan- Data Gap Summary and Proposed Investigation

City of Oakland, Municipal Service Center

7101 Edgewater Drive

Oakland, California

ACEH Case #RO293

“I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.”

Submitted by:
City of Oakland

A handwritten signature in black ink that reads "Mark Arniola".

Mark Arniola
Environmental Program Supervisor



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December 23, 2014

Mr. Keith Nowell PG, CHG
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6540

Subject: City of Oakland, Municipal Service Center 7101 Edgewater Drive Oakland,
California Fuel Leak Case RO293 – Revised Work Plan to Address Data Gaps

Dear Mr. Nowell:

Enclosed is the revised work plan *Data Gaps Summary and Proposed Investigation for the City of Oakland, Municipal Service Center 7101 Edgewater Drive in Oakland, California Fuel Leak Case RO293*. As before in our previous submittal on July 31, 2014, Table 5-2 describes the data gaps that were discussed during meetings that took place on January 6 and March 25, 2014, and submitted as Table 5-1 to Alameda County Environmental Health (ACEH) on February 14, 2014. This revised version of the document includes prioritization of the tasks. This is a concept that was discussed with the previous City of Oakland project manager, Mr. Gopal Nair. We would like to discuss this concept with you and obtain approval to implement the work based on the prioritization categories included in the document.

If you have any questions or comments, please call Mr. Chuck Pardini at (510) 596-9536 or me at (510) 238-7371.

Sincerely,

A handwritten signature in black ink that reads "Mark Arniola". The signature is written in a cursive, flowing style.

Mark Arniola
Environmental Program Supervisor

Attachment



An American Public Works Association Accredited Agency



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Mr. Keith Nowell PG, CHG
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6540

ENVIRONMENT

Subject:
City of Oakland, Municipal Service Center 7101 Edgewater Drive Oakland,
California Fuel Leak Case RO293 – Work Plan to Address Data Gaps

Dear Mr. Nowell:

Date:
December 18, 2014

Enclosed is the revised work plan *Data Gaps Summary and Proposed Investigation for the City of Oakland, Municipal Service Center 7101 Edgewater Drive in Oakland, California Fuel Leak Case RO293*. Table 5-2 describes the data gaps that were discussed during meetings that took place on January 6 and March 25, 2014, and submitted as Table 5-1 to Alameda County Environmental Health (ACEH) on February 14, 2014. This revised version of the document includes prioritization of these tasks. This is a concept that was discussed with the previous City of Oakland project manager, Mr. Gopal Nair.

Contact:
Chuck Pardini
Phone:
(510) 596-9536

Email:
Chuck.Pardini@arcadis-us.com

If you have any questions or comments, please call Mr. Chuck Pardini at (510) 596-9536 or Mark Arniola at (510) 238-7371.

Our ref:
EM012222.0007

Sincerely,

Charles Pardini, P.G.
Vice President, Principal Geologist (6444)



Attachment

Imagine the result

\\arcadis-us\office\data\emeryville-ca\projects\em012222\deliverables\2014-07 data gap wp\revision 12-14\rev_datagapwp cov.ltr (sus)_2014-12-18 (vf) (2).docx

**Table 5-2
Data Gaps Summary and Proposed Investigation Municipal Service Center
7101 Edgewater Drive Oakland, California**

Task	Data Gap Item #	Proposed Investigation	Rationale	Analyses	Priority Category
TASK 1: CONDUCT CONDUIT STUDY					
1.	The precise locations of the elements of the storm drain system, the sanitary sewer system, and the conveyance piping are unknown.	The November 2004 Conduit Study by Ninyo & Moore will be reviewed to assess the locations of the subsurface storm drain and sanitary sewer systems. Additional utility surveys will be conducted if the Conduit Study by Ninyo & Moore is assessed to be inadequate. A private third-party utility locator will be contracted to identify underground utilities. Magnetic, electromagnetic, sonic/acoustic, ground penetrating radar (GPR) and live line detector techniques will be used to detect, trace, and map buried utilities.	These potential preferential pathways may be located in portions of the Site that intersect areas with impacted groundwater, thus potentially acting as a conduit for contaminant migration.	NA	A
TASK 2: MONITORING WELL NETWORK ASSESSMENT					
2a.	Permitting and utility clearance for all tasks below, including Task 2, Task 3 and Task 8	Well and encroachment permits, and utility clearance for all soil borings, temporary wells and monitoring well locations (Task 2, Task 3 and Task 8).	To save cost and time, utility clearance and permitting are performed for all tasks below as one event instead of separate events which will incur higher mobilization cost	NA	B
2b	Wells MW-1 and RW-D8 have submerged well screens (average groundwater elevation is greater than the top of the well's screened interval). MW-1 is located in a portion of the Site where light non-aqueous phase liquid (LNAPL) has not been detected. Chemical concentrations have decreased over time and current water-quality results do not suggest that LNAPL is present. RW-D8 is located in a portion of the Site where LNAPL has been present (identified Plume D area). The potential presence of LNAPL cannot be assessed adequately in well RW-D8.	Collect in-situ groundwater samples from temporary wells at two locations southwest of RW-D8 (equidistant between RW-D8 and RW-C1) and two locations east of MW-1 (equidistant between MW-1 and RW-D9) to assess the potential presence of free product and groundwater quality between the Plume D and Plume C areas and the area west of the Plume D. <ul style="list-style-type: none"> The temporary wells will be installed using direct push rig technology to approximately 15 to 20 feet below ground surface (bgs) Soil will be logged continuously and samples may be collected based on field observations and photoionization detector (PID) readings. The temporary wells will be constructed such that they screen across the water table based on field observation and measurement from nearby wells RW-D8 and RW-C1. If LNAPL is not present in the temporary wells, grab groundwater samples will be collected from each temporary well and submitted under chain-of-custody protocol to Curtis & Tompkins, Ltd., Analytical Laboratories (C&T), a California Department of Health Services-certified environmental laboratory located in Berkeley, California. A monitoring well, or wells, may be recommended based on the results of this assessment. 	Historically LNAPL has been observed in Plume C and Plume D. The temporary wells will be located in between the two plumes to assess the potential presence of free product. Two additional borings will be located west of Plume D (between wells MW-1 and RW-D9) to evaluate the potential presence of LNAPL and groundwater quality.	Groundwater (and soil): TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	B
2c	Remediation wells RW-D6 through RW-D11 are screened over a 15-foot interval. As a result, groundwater samples collected from these wells may be diluted.	Collect groundwater samples from wells OB-D1 and OB-D2 which are located near, and downgradient, of remediation wells RW-D6 through RW-D11. The screens in these two wells are 10 feet in length. <ul style="list-style-type: none"> Depth to groundwater and depth to LNAPL will be measured using an electric oil/water interface probe A polyvinyl chloride (PVC) sampling bailer will be used to purge a minimum of three well-casing volumes of groundwater and the wells will be allowed to recover to at least 80 percent of their original static groundwater levels before they are sampled, or at least two hours of recovery time, whichever comes first. Dissolved oxygen, temperature, pH, conductivity, and oxidation-reduction potential will be measured for each well volume purged. Additionally, characteristics of the water (color, turbidity, odor, sheen) will be noted on the field data sheets The samples will be secured in a chilled cooler and transported to C&T 	Collecting groundwater samples from wells OB-D1 and OB-D2 will provide adequate groundwater quality data in this portion of the Site. In addition, groundwater data obtained from wells OB-D1 and OB-D2 will be compared to data previously collected from remediation wells RW-D6 through RW-D11 to assess if the groundwater samples collected from RW-D6 through RW-D11 may have been diluted.	TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	A
2d	Top-of-casing elevations are not available for the following wells: MW-3, MW-18, OB-A1, RW-D6 through RW-D11, and RW-1.	The top of casing and ground surface elevation, as well as the northing and easting for these wells, will be surveyed by a California-licensed land surveyor.	These data will allow the groundwater elevation data from these wells to be used to better assess conditions at the Site and allows for more precision in assessing groundwater flow direction. These data will be provided to the Department of Water Resources (DWR)	NA	C
2e	Potential obstruction in well OB-C1	Conduct a field assessment of the well condition and propose action to fix the well. A downhole camera will be used to inspect the sidewalls of the well. Deterioration, obstruction, perforation blockage, or other physical damage to the casing or screen will be noted. The well will be repaired based on the condition of the well. The well may be abandoned and re-installed, if needed.	Potential obstruction prohibits groundwater elevation and water-quality data from being obtained at this location.	NA	A

**Table 5-2
Data Gaps Summary and Proposed Investigation Municipal Service Center
7101 Edgewater Drive Oakland, California**

Task	Data Gap Item #	Proposed Investigation	Rationale	Analyses	Priority Category
2f	Lack of water in well MW-16 and the presence of a black, tar-like coating on the casing of this well	<p>Abandon and replace well MW-16 to an appropriate depth. Prior to abandonment, MW-16 will be inspected and depth to water at this location will be measured to confirm that it is no longer an appropriate monitoring point. If well MW-16 is deemed to no longer be appropriate for groundwater monitoring, the following will be conducted:</p> <ul style="list-style-type: none"> MW-16 will be abandoned by over-drilling to its total depth using a hollow stem auger rig equipped with a 12-inch outer diameter auger, which has a greater diameter than the current wellbore diameter of approximately 8 inches. Neat cement grout (Portland Type I/II) will be placed into the borehole to the ground surface. A new replacement well will be installed approximately 5 to 10 feet from the original location. The actual well construction will depend on field observation, but will likely be installed with a ten-foot screen that screens across the water table. The well filter pack will be constructed by emplacing #2/12 Monterey Sand will be placed in the well annulus from the bottom of the wellbore to approximately two feet above the screen interval. One to two feet of hydrated bentonite will be emplaced above the sand as the well seal. After allowing the bentonite to hydrate, neat cement grout (Portland Type I/II) will be placed into the well annulus to the ground surface. The well will be secured with a traffic-rated well box and locking well cap. <p>The newly installed monitoring wells will be developed using a combination of surging, bailing, and pumping. A surge block will be moved up and down across the screened interval to remove fine-grained deposits from the formation near the monitoring well and boring wall and from the filter pack material. After surging the monitoring well, a bailer will be used to remove water containing suspended sediments from the casing. Additional purging activities will be conducted with a submersible pump placed near the bottom of the well. The final development task consists of pumping the well at a steady flow rate while monitoring groundwater parameters (including pH, temperature, conductivity, turbidity and dissolved oxygen) using a water quality meter with a flow-through cell. Pumping continues until ten casing-volumes of water are removed and consecutive groundwater parameter readings have stabilized to within 10%. The well will then be sampled.</p>	<p>During the most recent sampling event (July 2013), the well appeared to be dry, in addition, black, tar-like coating was observed on the casing of this well.</p> <p>Well MW-16 was completed at a depth approximately five feet less than nearby, down gradient well MW-17. Based on this and the presence of the black, tar-like coating on the casing of this well, it is likely no longer an appropriate monitoring point.</p>	TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	B
TASK 3 PLUME DELINEATION (provides additional data that will advance the cast towards closure)					
3a-1	The lateral extent of affected groundwater near former plume D is not adequately defined	Monitor and collect groundwater samples from wells MW-18; RW-D1; RW-D2, RW-D7; OB-D1, and OB-D2. These wells will be monitored and sampled using similar method described in Task 2b	LNAPL was historically present in the former Plume D but was no longer observed after October 2009. To assess the lateral extent of affected groundwater by LNAPL, groundwater samples will be collected from adjacent wells, including RW-D1, RW-D7, RW-D10 which were last sampled in November 2008 and wells RW-D2, OB-D1, OB-D2, which have never been sampled. Three additional grab water samples east and southeast of plume D are also proposed to further assess the up- and cross gradient of the plume.	TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	A
3a-2		Collect in-situ groundwater samples from temporary wells at three locations north, east and southeast of RW-D6 to assess the potential impact in groundwater. These temporary wells will be installed and sampled using similar method described in Task 2a		TPH-d, TPH-mo and TPH-g by EPA Method 8015; BTEX by EPA Method 8260.	B
3b.	The lateral extent of affected groundwater in the north, east, and south near former plume C is not adequately defined	Monitor wells RWC1, RWC2, & OB-C2 for LNAPL and groundwater quality (see Task 2d). These wells will be monitored and sampled using similar methods as described in Task 2b	LNAPL was historically present in the former plume C but was not observed after April 2010. To assess the lateral extent of affected groundwater; samples will be collected from well RW-C2 (never collected) and wells RW-C1 & RW-C3 (last sampled in Nov.2008).	TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	A
3c	The lateral and downgradient extent of affected groundwater north, south and west near former plumes A and B is not adequately defined.	<p>Advance 10 borings to approximately 15 to 20 feet bgs for the collection of grab groundwater samples:</p> <ul style="list-style-type: none"> north, south, and west of MW-11, north of well RW-B3, and south and east of RW-B4. <p>The proposed grab groundwater sample locations are distributed at approximately 100 to 120 feet from existing wells or other proposed locations such that the lateral extent of the groundwater plume can be defined. If field observations warrant, (i.e. PID readings & visual observations), additional borings may be completed as stepout locations. Borings will be installed & groundwater samples collected using similar method discussed in Task 2a.</p> <p>Replace well MW-16 (dry well); install new well that screens across water table (described in Task 2e)</p>	Analytical results for samples from existing wells do not define the lateral extent of affected groundwater associated with former plumes A and B in this area of the Site. Additional boring locations are proposed to monitor for LNAPL and groundwater quality	TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	B

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Task	Data Gap Item #	Proposed Investigation	Rationale	Analyses	Priority Category
3d	Further assess the nature and extent of LNAPL. LNAPL has not been present in the wells at the site since 2009.	Soil borings are proposed to be advanced near wells that formerly exhibited LNAPL to assess the lateral extent of the LNAPL. <ul style="list-style-type: none"> Borings will be advanced using direct-push probe equipment to an approximate depth of 15 to 20 feet bgs. Soil samples will be collected continuously in 5-foot long acetate liners, logged for stratigraphic characteristics, and field screened for the presence of VOCs using a PID. Selected soil samples (where PID readings are elevated) will be tested using the OIL-IN-SOIL™ field screening test kit (an oliophillic dye). Soil will be added to the container provided in the test kit; water will be added to a pre-set line and container will be shaken to release the dyes. A colored ring or spots indicates the presence of TPH at or above 2,500 ppm. A Styrofoam ball turning pink indicates hydrocarbon concentrations down to 500 ppm Based on the screening tests described above, soil samples with potential LNAPL impact will be collected and submitted to C&T for confirmation 	Soil borings will be drilled near wells in which LNAPL was measured to assess if product is in the soil matrix or near locations where LNAPL has been measured. This will also further assess the lateral and vertical extent of affected soil and groundwater at the Site.	TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260.	B
3e	Anomalous benzene concentrations in several wells	Benzene is detected at higher concentrations than TPHg in several wells. This phenomenon will be assessed and presented in the Revised Report.	May provide information concerning other sources of benzene		A
TASK 4 MASS REMOVAL					
4.	Mass Removal	Data from remediation reports will be compiled and presented in the Revised Report.			A
TASK 5 HYDROGRAPHS					
5.	Hydrographs	Revised hydrographs will be prepared that will include an appropriate scale, the top and bottom of the screen interval, the maximum and minimum historical groundwater elevations, timelines for DPE and hydrogen peroxide initiation and cessation, as well as historical chemical concentration data.			A
5a.	Rebound is not expected to have occurred after the hydrogen peroxide injections at the Site based on available groundwater data, but this is not certain.	Assess the relationship between chemical concentrations in injection wells and injection schedule using the revised hydrographs			A
TASK 6 HISTORICAL GROUNDWATER CONTOUR MAPS					
6.	Historical Groundwater Contour Maps	Groundwater contour maps will prepared and assessed for potential fluctuations in groundwater flow direction, tidal effects, mounding, etc.			A
		A summary of the tidal studies that were conducted at the Site in 1995 and 1997 are provided in the Baseline 2001 report. That report indicates that groundwater levels in isolated near-Bay areas are subject to daily tidal influences. A summary of this tidal study will be included in the Revised Report.			A
TASK 7 DAMON SLOUGH					
7.	The potential impact of on-site contaminants to Damon Slough is unknown. In addition, the physical features of Damon Slough are unknown	To determine if Site impacts have affected Damon Slough, chemical data from the Site and physical features of the slough will be inspected: <ul style="list-style-type: none"> Historical chemical concentration data collected from wells MW-2 and MW-10 (located between impacted portions of the Site and Damon Slough) will be analyzed to evaluate potential plume migration to the slough. If data suggests such potential, a surface water sample from Damon Slough may be collected for laboratory analysis The physical features of the slough will be inspected visually and documented in photographs. If needed, a boat may be rented to measure the depth in the middle of the slough 	Data will be used to show if Site impacts have affected Damon Slough		C

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TASK 8 SOIL (includes Task 3e)					
8a.	The soil data set does not adequately characterize the contamination in all areas of the Site	<p>A total of 33 soil borings are proposed to be advanced across the site (including soil borings for LNAPL delineation – Data Gap 3d). Soil sampling will be conducted adjacent to previously sampled locations. The locations were selected based on historical soil data in close proximity to the source area with soil concentrations exceeding the environmental screening levels (ESLs). The results of the soil sampling will be used to assess current soil conditions. The soil sampling results will also be used to update the conceptual site model (CSM) with more current site data. If field observations warrant, (i.e. PID readings and visual observations), additional soil borings may be completed as stepout locations.</p> <ul style="list-style-type: none"> The borings will be advanced using direct-push probing equipment to an approximate total depth of up to 15 to 20 feet bgs (depending on the depth of the previously advanced boring) by a C-57 licensed drilling contractor. Soil samples will be collected continuously in 4-foot (or 5-foot) long acetate liners, logged for stratigraphic characteristics, and field screened for the presence of VOCs using a PID. The precise sampling depths will be determined based on the field and PID observation, and historical data where impacted soil was detected. A minimum of ten shallow samples (0 to 2 feet bgs) will be collected from representative locations for potential risk evaluation and to address Low-Threat UST Case Closure Policy media-specific criteria of direct contact and outdoor air exposure Soil samples will be collected using stainless steel sleeve or 4-oz soil jars, and submitted under chain-of-custody protocol to C&T <p>In order to differentiate polycyclic aromatic hydrocarbons (PAHs) in the fill materials from PAHs in the petroleum hydrocarbon impacted soil, soil samples will also be collected from locations in the fill area outside the currently defined plume. These samples will be analyzed for PAHs in addition to TPH-d, TPH-mo and TPH-g and BTEX. The exact sampling locations are subject to change by the field team based on field observation of LNAPL since these samples are proposed to be collected outside of the plume area.</p>	Soil data will be used to evaluate current concentrations of chemicals of concern in soil.	Soil (and Groundwater): TPH-d, TPH-mo and TPH-g by EPA Method 8015, and BTEX by EPA Method 8260. PAHs at selected locations by USEPA Method 8270	B
TASK 9 ASPHALT PIT AND UST 14					
9.	Asphalt Pit and UST #14 (waste latex and joint sealer)	Compile documentation concerning the removal of these features and present it in the Revised Report. This work was completed by one of the City of Oakland's on-call consultants.			A
TASK 10 CROSS SECTIONS					
10.	Cross Sections (subsurface features will be identified, including dikes, utilities/trenches, stream channels, piping/trench, soil and groundwater data, USTs, excavations, the Fill/native material boundary, and other features)	The revised cross sections will be presented in the Revised Report.			C
TASK 11 PLAN VIEWS					
11.	Plan Views	<p>Several additional figures will be prepared including the following:</p> <ul style="list-style-type: none"> Map with all of the boring/well locations Map showing excavations Map showing utilities Historic free product contour map Historic groundwater quality contour maps Map showing buried streams <p>The additional figures will be presented in the Revised Report.</p>			C

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Data Gaps Summary and Proposed Investigation Municipal Service Center
7101 Edgewater Drive Oakland, California

Task	Data Gap Item #	Proposed Investigation	Rationale	Analyses	Priority Category
TASK 12 CURRENT UST SYSTEM DETAILS					
12.	Current UST System Details	Review construction details of the USTs, and associated conveyance piping and dispensers. Potentially, collect soil/in-situ groundwater samples.			A
TASK 13 HUMAN HEALTH RISK ASSESSMENT					
13.	Human health risk assessment (bounding vapor intrusion uncertainty)	This discussion will be presented in the Revised Report.			C
TASK 14 SITE DEVELOPMENT					
14.	Site Development (Coliseum EIR and plans for site)	A discussion of the EIR, when it becomes available, and plans for the site will be included in the Revised Report.			C
TASK 15 PROJECT AND ACCOUNT MANAGEMENT					
15.	Project and Account Management	Approximately 12 weeks of project and account management, meetings with client and agency.			A/B/C
TASK 16 REPORTING					
16.	Reporting				C