WASTE MANAGEMENT

Waste Management of Alameda County, Inc.
172 98th Avenue, Oakland, CA 94603

September 7, 2011

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10:58 am, Sep 09, 2011
Alameda County
Environmental Health

Alameda County Health Care Services Agency
Environmental Health Services, Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Attn: Mr. Jerry Wickham, PG, CEG, CHG
Senior Hazardous Materials Specialist

Transmittal: Work Plan for Additional Investigation
Former Waste Management Facility
6175 Southfront Road, Livermore, California
GeoTracker Global ID T10000003066
SLIC Case RO0003076

Dear Mr. Wickham:

I declare, under penalty of perjury, that the information and recommendations contained in the attached Work Plan are true and correct to the best of my knowledge.

Sincerely,
Waste Management of Alameda County, Inc.

Barry Skolnick
Area Vice President
WM-California Bay Area

Attachment

TETRA TECH

Electronic Submittal, Alameda County ftp Site

September 7, 2011
P:\Projects\WasteManagement\Livermore2402091\WorkPlanAdditionalInvestigation.doc

Alameda County Health Care Services Agency
Environmental Health Services, Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Attn: Mr. Jerry Wickham, PG, CEG, CHG
Senior Hazardous Materials Specialist

Re: Work Plan for Additional Investigation
Former Waste Management of Alameda County, Inc. Property
6175 Southfront Road
Livermore, California 94550
GeoTracker Global ID T10000003066
SLIC Case RO0003076

Dear Mr. Wickham:

In accordance with your June 22, 2011 letter to Mr. Jim Morgan of Waste Management, Inc., a Work Plan describing additional site investigation activities to be performed at the former Waste Management of Alameda County, Inc. (WMAC) facility located at 6175 Southfront Road in Livermore, California is presented below.

1.0 BACKGROUND

Information regarding background conditions at the Property was obtained from review of the following documents:

- *Fuel Leak Site Case Closure for Livermore-Dublin Disposal Co., at 6175 S Front Street, Livermore, CA* prepared by Alameda County Health Care Services, Environmental Health Services for Waste Management of Alameda dated August 31, 1998.
- *Phase I Environmental Site Assessment, APN 099B-5875-017-06, 6175 Southfront Road, Livermore, California, 94551* prepared by SCS Engineers for Waste Management, Inc. dated February 17, 2010.
- *Summary Report, Limited Phase II Environmental Investigation, 6175 Southfront Road, Livermore, California* prepared by SCS Engineers for Waste Management, Inc. dated August 30, 2010.

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These three documents have been provided to the Alameda County Health Care Services Agency, Environmental Health Services, Environmental Protection group (the County).

Figure 1 is a plot plan of the 6175 Southfront Road property (the Property) showing previous sample locations at the Property, as well as the previous location of two underground storage tanks (USTs). Figure 2 presents the Phase II environmental investigation groundwater sample results from July 2010. Figure 3 presents the Phase II investigation soil vapor survey results from July 2010. Figure 4 presents the proposed supplemental sample locations to address the County's request for additional investigation of the Property.

1.1 Property Characteristics

The Property covers approximately 3.5 acres and consists of one parcel, APN 099B-5875-017-06. The Property is located on the south side of Southfront Road, approximately 600 feet southeast of the intersection of Highway 580 and South Vasco Road, within a commercial/industrial area of Livermore.

The Property was used by WMAC as a regional operations yard from 1982 to July 1, 2010. The regional operations yard supported a fleet of refuse/recycling trucks that served Livermore and San Ramon. The trucks were cleaned, serviced and stored on the Property. Supporting structures and operations are shown on the attached figures, and include an office building in the north portion of the Property; a 10,000-gallon above ground diesel fuel storage tank and dispensing area west of a metal canopy structure; a maintenance building in the central portion of the Property; and a pressure wash area south of the maintenance building that includes a drainage grate, clarifier, and underground sanitary sewer piping.

In July 2010 WMAC sold the Property to Southfront LLC. The February 2010 Phase I Environmental Site Assessment report and the August 30, 2010 Limited Phase II Environmental Investigation report were prepared in support of the Property sale.

1.2 USTs

The Property formerly operated two USTs – one 10,000-gallon diesel fuel UST and one 4,000-gallon gasoline UST. The USTs were located in the same area, beneath the western portion of the metal canopy structure in the northern portion of the Property. As described in the 1998 Fuel Leak Case Closure letter, the USTs were removed in April 1992. Subsurface impact was first discovered in 1988. A total of seven groundwater monitoring wells were installed. Soil and groundwater impact was documented. A groundwater extraction and treatment system was installed in November 1991 and operated until October 1995, treating an estimated 6.2 million gallons of groundwater. An estimated 1,200 cubic yards of petroleum impacted soil was excavated between May and July 1992. An estimated 14,000 gallons of groundwater was pumped from the open excavation in May 1992. Additional groundwater was pumped from the excavation in

July 1992. In April 1996 oxygen release compound ("ORC") was added to two groundwater monitoring wells to aid in the natural bioremediation process. Following several years of post-cleanup groundwater monitoring, the leaking UST case received closure in 1998. Residual impact remained, with up to 380 milligrams per kilogram (mg/kg) TPH as gasoline and 1.3 mg/kg benzene in soil, and up to 5.8 micrograms per liter (ug/L) benzene in groundwater. The closure letter included a requirement for a site safety plan to be prepared for construction workers in the event excavation and/or trenching was to be performed in the vicinity of the residual soil and groundwater impact, and a provision that corrective action be reviewed in the event land uses change.

Groundwater entered the open UST excavation at a depth of approximately 15 feet below ground surface (bgs). Depth to groundwater data collected from the groundwater monitoring wells was observed at about 10 feet bgs, but was observed as shallow as 6 feet bgs. These observations suggest that the shallow groundwater may be semi-confined. Depth to groundwater measurements resulted in a calculated northwest groundwater flow direction.

1.3 Phase II Investigation

SCS Engineers performed a Phase II investigation at the Property in July 2010 in follow-up to a Phase I ESA and in support of a planned sale of the Property. Soil, soil vapor and groundwater samples were collected from across the Property and analyzed for petroleum compounds and chlorinated volatile organic compounds (VOCs). Sample results were compared to agency screening criteria, specifically the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Environmental Screening Level (ESL) values. In evaluating the soil vapor data, Tetra Tech GEO converted the reported ug/L soil vapor sample results into the microgram per cubic meter (ug/m^3) unit to allow for direct comparison to published agency screening levels. In summary, three areas contained sample results exceeding ESL values:

1. One of five grab-groundwater samples contained TPH in the motor oil and diesel fuel ranges (Figure 2). Sample GW-4, located adjacent to the pressure wash area drainage grating, contained 1 milligram per liter (mg/L) TPH in the diesel fuel range, and 4.6 mg/L TPH in the motor oil range. Adjacent samples were non-detect for TPH and VOCs in groundwater. Soil impact was not found in this area, at boring SS-4 (same boring as GW-4) or at five other soil borings drilled in that area.
2. One of twelve soil vapor samples contained vinyl chloride. Sample SV-6 contained vinyl chloride at 370 ug/m^3, above the commercial land use ESL value of 100 ug/m^3. Sample SV-6. Vinyl chloride was not detected in the other eleven soil vapor samples, or in any soil or groundwater sample analyzed as part of the Phase II investigation.
3. Two of twelve soil vapor samples contained benzene concentrations above the commercial land use ESL value of 280 ug/m^3. Benzene was detected at 400 and 5,400 ug/m^3 at sample locations SV-4 and SV-2, respectively.

Sample locations SV-4 and SV-2 are located cross-gradient to down-gradient of the former USTs and within the area of residual petroleum impact.

1.4 County Comments

In response to the Phase II investigation sample results, the County required submittal of a Work Plan to address three items:

1. Vinyl Chloride in Soil Vapor
   The County requested additional investigation to identify the source and extent of vinyl chloride in soil vapor and other media.

2. Benzene in Soil Vapor
   The County requested additional investigation to assess the extent of elevated concentrations of benzene in soil vapor.

3. Total Petroleum Hydrocarbons in Groundwater
   The County requested additional investigation to identify the source and extent of petroleum hydrocarbons in groundwater.

As discussed with the County on August 23, 2011, Tetra Tech GEO does not consider additional work in follow-up to the detections of benzene in soil vapor at borings SV-4 and SV-2 to be necessary. The lateral extent of benzene in soil vapor above the commercial ESL value is largely already delineated with the sample results from the other Phase II investigation soil vapor samples (Figure 3), covering an area of perhaps 100 feet by 150 feet. The detections of benzene in soil vapor correlate with the area of residual soil and groundwater impact from the leaking USTs, that was defined in the case closure letter from the County. The down-gradient extent of benzene in soil vapor above the ESL value is defined by sample results from sample locations SV-3, SV-1 and SV-8. The soil vapor survey was effective in delineating the lateral extent of soil vapor impact in the area of residual petroleum impact.

As stated above, residual petroleum hydrocarbon impact in this area was already recognized in the County's case closure letter, and the case closure letter already contains provisions for preparation of a site safety plan in the event of future excavation/trenching in the area, and for reviewing corrective action in the event of a change in land use. If necessary, an additional provision could be added to the case closure requiring additional assessment of soil vapor conditions in the event a building is to be constructed in the area. As a practical note, it is likely that any building to be constructed in the area of residual petroleum hydrocarbon impact would trigger a requirement for at least a vapor barrier from the planning department in response to the reported soil and groundwater data, and now in response to the soil vapor data.

2.0 PROPOSED SCOPE OF WORK

The proposed scope of work will include assessing soil vapor for vinyl chloride near SV-6, and collecting groundwater samples for TPH analysis near and down-gradient of GW-4. The proposed boring locations are shown on Figure 4.

Two soil vapor sample locations are proposed near SV-6, one near and down-gradient of SV-6 and one up-gradient between SV-6 and the maintenance building. The source of the single vinyl chloride detection in soil vapor is not known. Vinyl chloride was not identified as a compound of concern in the Phase I ESA report. Vinyl chloride is not widespread across the Property as evidenced by the non-detect result in soil vapor samples north, northeast and southwest of SV-6. No VOCs, including vinyl chloride, were detected in soil or groundwater samples collected south (up-gradient) of the maintenance building, at and near the pressure wash area.

Two grab-groundwater sample locations are proposed near SW-4, one up-gradient and one down-gradient of SW-4, to further assess the extent of petroleum hydrocarbons in groundwater near the pressure wash area drainage grate. The lack of groundwater impact has already been defined east of the drainage grate, at and near the other components of the pressure wash area.

2.1 Health and Safety Plan

Tetra Tech GEO will prepare a Health and Safety Plan (HASP) prior to performing the field work. The HASP will identify site conditions and potential risks, and will define levels of protection and monitoring protocols.

2.2 Underground Utility Clearance

Tetra Tech GEO will mark proposed boring locations and notify Underground Services Alert (USA) at least 48 hours prior to drilling. USA will notify local utility companies of the pending work. Additionally, a licensed utility locating contractor will be hired to clear each boring location prior to performing the sampling.

2.3 Field Work

The planned field work is described below.

2.3.1 Sampling Protocol – Soil Vapor

Two soil vapor sample locations will be completed as shown on Figure 4. Soil vapor samples will be collected at 5 feet in depth to allow for direct comparison to RWQCB ESL screening levels for vapor intrusion.

A summary of the soil vapor sample methodology, including probe installation, waiting period, field quality assurance steps and sampling technique is attached.

Briefly, small sample screens will be driven into the subsurface to the desired depth using a direct-push Geoprobe rig or hand auger. The screen will be connected to tubing.

Once placed, the borehole will be sealed using 1-foot of dry bentonite covered with a pre-mixed wet bentonite slurry. The top of the boring will be covered. The screen will be allowed to remain undisturbed for a minimum 2-day period. Soil vapor will be sampled through the tubing and screen using a 1-liter Summa canister under vacuum. Leak checks will be performed as part of the sample methodology. Following sampling, the probes and tubing will be removed and the boreholes abandoned. The samples will be stored under Chain of Custody protocol.

2.3.2 Sampling Protocol – Groundwater

The groundwater sampling protocol will be similar to the protocol followed during the Phase II investigation. Soil borings will be completed using a direct-push Geoprobe rig. Soil will be sampled continuously with depth, using 4-foot long tubes with acetate liners. Portions of the soil cores will be cut open in the field for visual observation, field screening for volatile compounds using a photo-ionization detector (PID) or similar instrument, and lithologic description. Soil samples will not be submitted for laboratory analysis unless field evidence of impact is suspected based on elevated PID readings (above approximately 50 ppm), petroleum odor or unusual discoloration. The borings will extend to approximately 20 feet in depth. Grab-groundwater samples will be collected by inserting temporary PVC well screen (5-feet of screen) with 0.010-inch slot size into the borehole, connected to PVC blank casing to above the ground surface, and placing new disposable tubing into the temporary well, so the end of the tubing is located near the center of the 5-foot screen interval. A peristaltic pump will used to collect the water samples. For each water sample, a new 0.45 micron disposal in-line filter will be connected to the sample tubing above the drill rod up-stream of the sample container to remove sediment expected in the groundwater. The grab-groundwater samples will be placed into laboratory-supplied amber bottles. The samples will be placed in an ice-cooled ice chest and stored under Chain of Custody protocol.

The drill rods will be washed between borings with a Liquinox/water solution, and new well screen, casing, tubing and filters will be used at each of the two groundwater sample locations.

2.3.3 Laboratory Analysis

Soil vapor samples will be hand delivered to Air Toxics Laboratory in Folsom, California for VOC analysis, including vinyl chloride, using Method TO-15.

Grab-groundwater samples will be hand delivered to CLS Laboratories in Rancho Cordova, California for TPH analysis in the diesel fuel and motor oil ranges using EPA Method 8015 Modified. A silica gel pre-treatment step will be included to remove naturally occurring lipids and fats which could cause false-positive results.

2.3.4 Investigation-Derived Waste

Wash-water will be used to mix grout for borehole abandonment. Excess wash water, if any, will be placed into one 55-gallon drum for temporary storage pending off-site disposal. Excess soil cores will be either be placed within existing landscaping on the

Property if no soil impact is suspected (no soil impact has been documented in the pressure wash area), or placed into one 55-gallon drum for temporary storage pending off-site disposal if soil impact is suspected.

2.4 Written Report

A written report will be prepared. The field activities and findings will be described. Laboratory results will be tabulated and compared to relevant regulatory criteria. Figures and photographs will be included. Soil boring logs will be included.

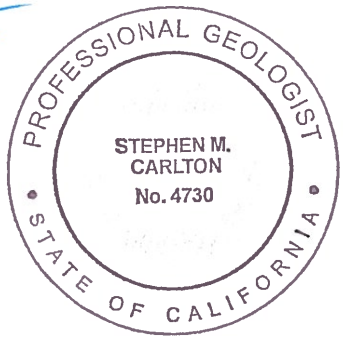
3.0 CLOSURE

Please forward any comments to the Work Plan to the attention of Tim Costello at Tetra Tech GEO, tim.costello@tetratech.com .

Sincerely,
Tetra Tech GEO

Tim Costello
Senior Scientist
Associate

Stephen M. Carlton, PG, CHG
Principal Hydrogeologist



Cc: Tianna Nourot, Waste Management of Alameda County, Inc.
Jim Obereiner, Waste Management

Attachments:

	Figure 1	Plot Plan and Previous Sample Locations
	Figure 2	Grab-Groundwater Data – July 2010
	Figure 3	Soil Vapor Data – July 2010
	Figure 4	Plot Plan, Previous Sample Locations and Proposed Supplemental Sample Locations
		Active Soil Vapor Sampling Protocol

SOURCE: maps.google.com, 2011.

Legend:

- SCS Limited Phase II Sampling Location (soil vapor, soil and/or groundwater sample), July 27-28, 2010.
- Sanitary Sewer Line (with direction of flow).
- MW-1 — Former groundwater monitoring well location (approximate).

N

0 feet 50

TITLE:	**Plot Plan and Previous Sample Locations**
LOCATION:	6175 Southfront Road Livermore, California

TETRA TECH GEO

CHECKED:	TC
DRAFTED:	KH
FILE:	117-240209101
DATE:	08-22-11

FIGURE: 1

SOURCE: maps.google.com, 2011.

Legend:

- SCS Limited Phase II Sampling Location (soil vapor, soil and/or groundwater sample), July 27-28, 2010.
- Sanitary Sewer Line (with direction of flow).
- MW-1 — Former groundwater monitoring well location (approximate).

N

0 feet 50

TITLE: **Grab Groundwater Data – July 2010**

LOCATION: 6175 Southfront Road, Livermore, California

TETRA TECH GEO

CHECKED:	TC
DRAFTED:	KH
FILE:	117-240209101
DATE:	08-22-11

FIGURE: 2

SOURCE: maps.google.com, 2011.

Legend:

- SCS Limited Phase II Sampling Location (soil vapor, soil and/or groundwater sample), July 27-28, 2010.
- Sanitary Sewer Line (with direction of flow).
- MW-1 — Former groundwater monitoring well location (approximate).
- 130/180/370 — Benzene/Ethylbenzene/Vinyl Chloride (µg/m3).

N

0 feet 50

TITLE:	**Soil Vapor Data – July 2010**
LOCATION:	6175 Southfront Road Livermore, California

TETRA TECH GEO

CHECKED:	TC
DRAFTED:	KH
FILE:	117-240209101
DATE:	08-22-11

FIGURE: 3

SOURCE: maps.google.com, 2011.

Legend:

- SCS Limited Phase II Sampling Location (soil vapor, soil and/or groundwater sample), July 27-28, 2010.
- Sanitary Sewer Line (with direction of flow).
- MW-1 — Former groundwater monitoring well location (approximate).
- Proposed groundwater sample location for TPH-diesel and TPH-motor oil.
- Proposed soil vapor sample location for Vinyl Chloride.

N

0 feet 50

TITLE:	**Plot Plan, Previous Sample Locations and Proposed Supplemental Sample Locations**
LOCATION:	6175 Southfront Road Livermore, California

TETRA TECH GEO

CHECKED:	TC
DRAFTED:	KH
FILE:	117-240209101
DATE:	08-22-11

FIGURE: 4

September 7, 2011

Waste Management of Alameda County, Inc., Active Soil Vapor Sampling Protocol

Active soil vapor samples are proposed to be collected by connecting Teflon, or other ¼-inch diameter approved tubing (LARWQCB, 2003/2010), to the hose barb at the top of the soil vapor well and to a dedicated sampling manifold. The laboratory-supplied manifold prevents soil particles or water from entering the sample canisters and restricts the air flow to less than 200 milliliters per minute (mL/min). A manifold will be used once and then returned to the laboratory with the samples for cleaning.

Three purge volumes will be extracted from each soil vapor probe using a 6-liter Summa canister that is only used for purging (LARWQCB, 2003/2010). The soil gas samples will be collected in a 1-liter Summa canister and submitted under chain of custody documentation to Air Toxics, LTD in Folsom, California and analyzed for VOCs, including Vinyl Chloride, using Method TO-15 Direct Inject. As part of the quality control procedures, Summa canister vacuum levels will be measured prior to and after collecting each soil gas sample. These measurements will be recorded on the sample label and on the sample chain of custody form.

Ambient air leaks during soil gas sampling may dilute the samples and produce results that underestimate the actual site concentrations or contaminate the sample with external contaminants. Prior to collecting a soil gas sample in the 1-liter Summa canister, two field leak detection tests will be conducted. The first test will be a vacuum test; the 6-liter Summa canister will be used to draw air through the manifold assembly with the connection to the soil vapor probe turned off. A sustained vacuum will indicate tight connections. If a vacuum is not sustained then the fittings will be checked and tightened until the leak point is identified and corrected. The second field leak detection protocol will be initiated after the soil vapor well has been purged of three volumes using the 6-liter Summa canister. A leak detection compound - Freon (either Freon 134 or Freon 152), as found in computer dusting products – will be sprayed onto cotton balls and secured to the connections of the sampling manifold using aluminum foil at all joins. Cotton balls are also sprayed with Freon and placed at the top of the well seal. If it is windy, then a shroud will be placed around the top of the well. A refrigerant detector is then connected to the manifold and the air inside the manifold is purged through the refrigerant detector. If there is a leak in the manifold the refrigerant detector digitally registers it and sounds its alarm. All of the manifold and canister connections are then checked and tightened. If a leak is not detected, then the soil gas sample is collected. The leak check compound will be included in laboratory analytical suite.