APPENDIX E

WORKPLAN FOR AIR MONITORING

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06 October 2005
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AGE Project No.: RC684E7.1443

Mr. Robert Heller
Project Manager
Waste Management, Inc.
3738 East Rolling Green Lane
Orange, California 92867

Subject: **Work Plan for Air Monitoring As Required To Comply with the Response Plan and South Coast Air Quality Management District Rule 403- Fugitive Dust at Agricultural Park 7020 Crest Avenue, Riverside, California**

Dear Mr. Heller:

A work plan to ensure the quality and accuracy of air monitoring conducted at the subject site is enclosed. A copy of this work plan will be maintained on-site for reference and guidance. If you have any questions, please contact me at (714) 529-0200.

Sincerely,

Advanced GeoEnvironmental, Inc

Dennis Michael Delaney
Director, Air Quality Division

Work Plan

WORK PLAN FOR AIR MONITORING AS REQUIRED TO COMPLY WITH THE RESPONSE PLAN AND SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 403- FUGITIVE DUST

Agricultural Park
7020 Crest Avenue, Riverside, California

1.0 INTRODUCTION

Waste Management, Inc. has been contracted by the Friends of the Riverside Airport (FRA) to provide removal of hydrocarbon-impacted soil at the agricultural park located in the vicinity of the Santa Ana Riverbed and Crest Avenue in the City of Riverside, California. An Assessment and survey of this property has shown the soil to be impacted with polychlorobiphenyls (PCBs). Dioxins and furans, byproducts of PCB degradation, are also considered chemicals of potential concern (COPCs). Therefore, under the oversight of the Department of Toxic Substance Control (DTSC) and the South Coast Air Quality Management District (SCAQMD), environmental monitoring during excavation is required. Monitoring will be conducted in accordance with procedures outlined in SCAQMD Rule 403 – Fugitive Dust. This monitoring includes, but may not be limited to: meteorological monitoring of wind conditions and relative humidity; real time particulate monitoring both upwind and downwind of the workface during excavation and grading; and monitoring for airborne concentrations of PCBs

In response to the requirements of this contract, *Advanced* GeoEnvironmental, Inc. (AGE) has developed an Air Quality Management Program for Waste Management, Inc., designed to ensure compliance with the approved Response Plan (RP) as well as South Coast Air Quality Management District (SCAQMD) Rule 403 – Fugitive Dust. For the purposes of this document, Fugitive Dust is identified as airborne particulate matter, with an aggregate particle diameter of 10 microns or less (PM_{10}), which has been entrained into the air through anthropogenic (man-made) pathways.

Under the provision of South Coast Air Quality Management District SCAQMD Rule 403 – Fugitive Dust, owners/operators of facilities (or projects) are required to limit emissions of fugitive dust generated by their activities. Preparation and submission of a Fugitive Dust Plan and ambient air monitoring are required for projects that cover an aggregate area exceeding 50 acres. Since this area is far less than 50 acres, notification of the SCAQMD and submission of a monitoring plan for approval are not required. However, all contractors operating within the jurisdiction of the SCAQMD are required to comply with the emission controls and limitations specified in the Rule.

The purpose of this Work Plan is to outline the procedures to be followed in order to comply with the monitoring protocol presented in the SCAQMD Rule 403 Implementation Plan, as well as the action levels for worker and public safety stipulated

in the RP. Monitoring will complement the voluntary Fugitive Dust Plan (separate cover) prepared for this project, to demonstrate compliance with the Rule.

2.0 BACKGROUND

2.1 SITE SETTING

The site consists of approximately 62 acres of undeveloped land, with a simple roofed structure positioned near its center. The site is relatively flat, with a mean elevation of approximately 740 feet above mean sea level (msl). It is surrounded by the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and the Chino Hills and Santa Ana Mountains to the west and south. Crest Avenue borders the property to the west, with residential developments to the west of the road. The area to the south and east is developed with residential homes. The Santa Ana River Wash bounds the site to the north.

The site was used as a sewage treatment plant in the early 1940's by the United States Army. The Arlington Utility Company retained management of the plant from the mid-1940's through 1961, at which time the City of Riverside took control of the property and operated the plant until it was decommissioned in 1965. The City retained ownership of the property, and used the two oval-shaped basins as brine ponds through the early 1970's.

In 2003, the City entered into a contract for redevelopment with the FRA. During demolition of existing structures, fluids were discovered in abandoned tanks that were found to contain PCB's. Environmental investigation has determined that PCB-contaminated soil exists over approximately 45 acres of the site, with soil concentrations ranging from 0.009 milligrams per kilogram (mg/kg) to 9,560 mg/kg. Demolition and redevelopment were discontinued until the contamination could be remediated.

2.2 FUGITIVE DUST CONTROL REQUIREMENTS

The SCAQMD adopted Rule 403 – Fugitive Dust in 1976. Amended in 1997, the Rule regulates anthropogenic fugitive dust sources within the jurisdiction of the SCAQMD, requiring facilities with the potential to emit or generate fugitive dust to take appropriate action to prevent, reduce, or mitigate those emissions. Portions of the South Coast Air Basin are designated non-attainment for PM_{10} (particulate matter with an aerodynamic diameter of 10 microns or less), which makes control of localized emissions critical. Rule 403(d)(4) states: "A person shall not cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high volume particulate matter samplers or other EPA-approved equivalent method for PM_{10} monitoring. When sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), part 50, Appendix J, or appropriate EPA-published documents for EPA-approved equivalent methods for PM_{10}

(B) Reasonably placed upwind and downwind of key activity areas and close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized."

Protocol established for Rule 403 compliance testing require simultaneous sampling upwind and downwind of a suspected source for a period of five hours. These requirements are intended to provide a means to isolate the potential emissions from the monitored source, and identify the level of concentration of those emissions. "Upwind" and "downwind" are meteorologically-derived terms: upwind identifies a position relative to the potential source of emissions TOWARDS THE DIRECTION FROM WHICH THE WIND IS BLOWING (if the wind is generated northwest of the monitored site, then upwind would be northwest of the site); downwind similarly identifies a position relative to the source of emissions TOWARDS THE DIRECTION TO WHICH THE WIND IS BLOWING (the wind will travel from the site to the downwind location).

The five-hour requirement was chosen by scientific investigation. It represents a period of steady wind direction that may be expected during any season of the year. Wind is driven by variations in surface temperature and pressure. These can be affected by variations in season as well as by the passage of synoptic-scale storms. Surface heating is less during winter, providing a shorter period during which stable winds might be observed. Surface heating fluctuates daily as well as seasonally, providing regular changes to the local wind field. In general, winds at night are light and variable, when surface heating is minimal. Daytime winds are stronger, and more stable in direction. Therefore, the most stable winds are produced in the period covering late morning to early evening at any time of year. Five hours reflects the mean period, irrespective of season, over which directionally stable winds occur. This period also corresponds to the normal period of operations at commercial/industrial facilities and will therefore both maximize the potential for emissions and define the emission potential of the suspected source.

2.3 PUBLIC HEALTH AND SAFETY REQUIREMENTS

Polychlorinated biphenyls (PCBs) (C.A.S. 1336-36-3) are a family of man-made chemicals that contain 209 individual compounds with varying levels of toxicity. The seven classes of PCBs described here include 35 percent of all PCBs and 98 percent of PCBs sold in the U.S. since 1970, most of which are known in the U.S. by their industrial trade name, Aroclor.

Because of their insulating and nonflammable properties, PCBs have been widely used as coolants and lubricants in transformers, capacitors, and other electrical equipment.

The manufacture and use of PCBs in new products stopped in the U.S. in October 1977, because of evidence that PCBs accumulated in the environment and could cause human health hazards. Although PCBs are no longer manufactured, exposure still occurs. Many older transformers and capacitors, which have lifetimes of 30 years or more, still contain fluids made with PCBs. Old fluorescent lighting fixtures may contain PCBs as well.

Another major source of PCB exposure is from contaminated indoor air in buildings that contain devices made with PCBs.

2.3.1 Health Effects

PCBs are classified by EPA as carcinogens, particularly with regard to the liver. Reproductive and developmental effects may also be related to occupational exposure to PCBs and eating contaminated fish. Studies indicate that PCBs concentrate in human breast milk. PCBs can be passed easily into the bloodstream from a pregnant woman to a fetus, and from a breastfeeding mother to a nursing infant. Slight effects on birth weight, head circumference, gestational age and/or neonatal behavior have been reported in infants of mothers who were consumers of PCB-contaminated fish.

Exposure to PCBs can also be by inhalation or skin contact. Studies show that irritations such as lesions, rashes, and burning eyes and skin can occur in PCB-exposed workers.

Populations at high risk of exposure to PCBs include nursing infants whose mothers consume large amounts of contaminated fish; embryos, fetuses, and neonates; and people who work or live in buildings that have high concentrations of PCBs in the indoor air supply.

2.3.2 Exposure Values

IDLH: 5 mg/m^3 Not applicable for Cholrodipheyl (54% chlorine), a potential human carcinogen. (NIOSH, 1997)

TLV TWA: 0.5 mg/m^3 For chlorodiphenyl (54% Chlorine). Skin. (ACGIH, 1999)

TLV STEL: 1 mg/m^3 For Chlorodiphenyl (54% Chlorine). Skin (ACGIH, 1999)

NIOSH REL: **Ca** TWA 0.001 mg/m^3

OSHA PEL: TWA 1 mg/m^3.

2.3.3 Economics

PCBs are no longer produced or used in the production of new products in the United States. Disposal of PCB materials that are still in service is controlled by federal regulations.

Annual U.S. production of PCBs peaked in 1970 when 85 million pounds were produced. Monsanto, the sole U.S. manufacturer at the time production was banned, had been producing Aroclors 1016, 1221, 1242, and 1254 at a facility in Sauget, Illinois.

2.3.4 Regulation

The Food and Drug Administration (FDA) has issued permissible levels of PCBs in food and packaging. PCBs are regulated by the U.S. Environmental Protection Agency under the Clean Water Act Effluent Guidelines.

Under Section 313 of the Emergency Planning and Community Right to Know Act of 1986, releases of more than one pound of polychlorinated biphenyls into the air, water, and land must be reported annually and entered into the Toxic Release Inventory (TRI).

3.0 PROCEDURES

3.1 SITE EXCAVATION

As stated by the contractor, approximately 90 - 120 working days (3 to 4 months) will be required to complete the project. Monitoring will be conducted during the operation, to be implemented in accordance with the following Rule conditions:

- Preparation and implementation of a Fugitive Dust Plan.
- Monitoring of wind speed and direction and particulate matter (PM_{10}).
- Monitoring of PCB levels.

Mobilization for the excavation has been scheduled to commence on 5 July 2006. It is assumed that the planned work day is scheduled from 07:00 AM through 05:00 PM, with one hour for lunch each day. Monitoring will be conducted during working hours.

3.2 WIND MONITORING

A MetOne Instruments, Inc. wind sensor, Model # G034A, will be installed in the vicinity of the property. The sensor will be battery-operated, with a solar panel for sustainability, and will continuously record wind speed and direction during the excavation. The monitor will be installed in accordance with the siting criteria outlined in 40 CFR Part 50, and will be aligned to true north. Analog data will be transmitted from the wind speed and direction sensors to a data logger. Data will be downloaded for analysis at the end of each week, as well as at the conclusion of each particulate monitoring episode.

3.3 PARTICULATE MONITORING

Monitoring for concentrations of PM_{10} upwind and downwind of the work site will be conducted continuously, to record compliance with the emission limits imposed by the RAW and by SCAQMD Rule 403. Monitoring for particulates will be conducted in accordance with the protocol established under SCAQMD Rule 403 – Fugitive Dust, modified to include real-time particulate monitors. Namely:

> A person shall not cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between

upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM_{10} monitoring. If sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM_{10}.

(B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

Fugitive dust testing will be conducted employing upwind and downwind Thermo Andersen DataRam Aerosol Monitors, Model 4000. Sampling at each location will be conducted simultaneously over at least a five-hour monitoring period. The monitoring period will be chosen such that the wind speed is measurable and the wind direction is steady. The monitors shall be placed such that the vector from the upwind to the downwind location corresponds with the prevailing wind direction ($\pm 15^{o}$). A monitoring event will be considered valid if the following conditions are met:

- Each monitor is operated for five hours (300 minutes).
- The starting and stopping times of the upwind and downwind samplers shall be the same, ± 10 minutes.
- Each monitor will operate at its calibrated rate of between 1.7 and 2.3 liters per minute, ± 10%, throughout the five-hour monitoring interval.
- The direction of the wind will remain constant throughout the sampling period, ± 15%, such that the upwind/downwind relationship is maintained.

Known performance characteristics of the monitors are critical to the successful collection of valid particulate data. Monitors will be calibrated in accordance with manufacturer's specifications, adhering to the guidelines promulgated in 40 CFR, Part 50, Appendix J. A multi-point calibration will be conducted on each sampler prior to placement in the field. Single-point calibrations of each sampler will be conducted in the field prior to each monitoring event. Deviations of more than 10% from the formal calibration curve will require a full multi-point calibration prior to operation. The flow-rate recorder will be monitored during each run, and deviations of more than 10% from the calibrated flow rate will invalidate the run.

Quality Assurance will be maintained throughout the period of the contract. Sampler calibration records will be maintained, to determine the overall accuracy and efficiency of the samplers. Maintenance records will be kept on each sampler, in accordance with the guidelines set forth in Sections 2.2 and 2.10 of EPA/600/R-94/038b, *Quality Assurance Handbook for Air Pollution Measurement Systems*.

Fugitive dust sampling will take place daily. Andersen DataRam monitors will be placed upwind and at up to three downwind locations prior to the commencement of soil removal. Data collected from these monitors will be recorded at 30-minute intervals. A simple averaging technique will provide hourly concentrations, which will be combined to provide the 5-hour concentration. An action level of 7µg dust/m^3 will be established, measured as the difference between upwind and downwind monitors over a one-hour monitoring period. This action level has been selected to incorporate the fence line action level of fugitive dust containing PCBs. If exceedances of the 7 µg dust/m^3 concentration limit are encountered indicating potentially elevated levels of PCBs, additional watering or other appropriate control measures will be implemented to reduce the level of dust generated.

Samplers will be started and stopped within ±10 minutes of each other. Samplers will be operated for a total of 5 hours in an upwind/downwind configuration. Wind Speed and Direction data will be collected for the period in which the samplers are operated, to complete the vector analysis. The following limitations apply to particulate monitoring:

- Monitoring will not be conducted on days when the sustained (15-minute average) wind speed exceeds 15 miles per hour (mph), or if gusts exceed 25 mph. Monitoring initiated before these limits are reached will be curtailed and the samples annotated as void due to excessive winds.

- Monitoring will not be conducted during periods of rain. If, once monitoring has been initiated, measurable rainfall occurs (>0.1"), the monitoring on that day will be cancelled and the samples annotated as void due to precipitation.

Monitoring will not be scheduled within 72 hours of measurable precipitation.

3.4. PCB MONITORING

Section 25323 of the California Health and Safety Code requires that personal monitoring for airborne concentrations of toxic air contaminants be conducted at regular intervals during the excavation. Real-time monitors for PCBs are not available. Therefore, levels of PCBs will be monitored in accordance with procedures outlined in NIOSH Method 5503. Gilian Gilair5 samplers will be employed, fitted with sample cassettes developed with a combination of glass fiber filter and solid sorbent (XAD-2 resin and polyurethane foam). Samples will be collected downwind of the daily excavation site each day, over an 8-hour sampling interval, in order to compare action levels with established permissible exposure limits. The NIOSH threshold limit for PCBs is 0.001 milligrams per cubic meter (mg/m^3), measured over an 8-hour monitoring period. The action level established for this project is 0.00007 mg PCB/m^3. Samples will be analyzed using EPA Method 8082, modified for PCBs. Monitoring will be conducted daily during the first two weeks of the excavation. If the action level is not exceeded, PCB monitoring will be reduced to twice weekly. However, if during this period the action level is exceeded, daily monitoring will resume. The following table identifies the maximum soil

concentrations of the COPCs found at the site, as well as their established Community Action Levels.

Chemical	Max Soil Conc. (mg/kg)	CAL/OSHA PEL (mg/m^3)	Community Action Level (mg COPC/ m^3)	Total COPCs in air (mg/m^3) based on Community Action Level of dust at 0.05, 1 and 5 mg/m^3		
Total Dust	-	10		0.05	1	5
PCB	9560		7E-05	4.78E-04	9.56E-03	0.0478
TCDD	3.85E-04		7E-09	1.925E-11	3.85E-10	1.925E-09

3.5 DIOXIN/FURAN MONITORING

Monitoring for dioxins and furans requires high-volume samplers fitted with polyurethane foam (PUF) sleeves. Samples are collected in both this media and on a quartz filter over an 8-hour sampling interval. The samples are then analyzed by EPA Method TO-9A. Monitoring for these COPCs may be required, depending upon the results of co-located soils samples, to be collected by Frey Environmental, Inc.

4.0 QUALITY ASSURANCE

To ensure that the data collected is as true and accurate as possible, and that the protocol and results of this project are traceable under standard scientific protocol, quality assurance procedures will be applied to each element of field monitoring. These procedures include:

- Complete calibration records on each sampler. Daily flow checks will be included in each equipment log, for comparison. Multi-point flow calibrations will be conducted if any daily flow check is not within ±10% of the calibrated value. If additional multi-point flow calibrations are required, records of these calibrations will be maintained in the log.

- In order to ensure that procedures are followed uniformly throughout the project, each staff member involved in this project will read this Work Plan and sign the following acknowledgement that the Plan has been read and understood.

Work Plan for Air Monitoring As Required To Comply with the Response Plan and South Coast Air Quality Management District Rule 403- Fugitive Dust
Agricultural Park
7020 Crest Avenue, Riverside, California

Staff involved in conducting monitoring the excavation of the abandoned agricultural facility in Riverside, California have read and understand the required monitoring procedures listed in this Plan.

Date	Company	Name	Signature