AEI CONSULTANTS
ENVIRONMENTAL & CIVIL ENGINEERING SERVICES

2309 Pacific Coast Hwy., Suite 206, Hermosa Beach, CA 90254-2753
Phone: (310) 798-4255 Fax: (310) 798-2841

October 1, 1999

Mr. Barney M. Chan
Hazardous Materials Specialist
Alameda County Health Care Services
1131 harbor bay Parkway, Suite 250
Alameda, CA 94502-6577

RE: Workplan Addendum
625 Hegenberger Road
Oakland, CA 94621
AEI Project No. 20826

Dear Mr. Chan:

AEI Consultants (AEI) submitted a Remediation Workplan to the County of Alameda Heath Services Agency on August 26, 1997. This workplan was reviewed and approved by your Agency on January 13, 1998. As you are aware, AEI is in the process of obtaining the final permits for the installation of the inoculation system. Some aspects of the proposed system have been altered to better address the plume on the property. This addendum will outline those changes.

- The workplan stated that inoculant would be injected in 1,000-gallon batches per day. In actuality, 500-gallons of water will be pumped through the system per 24-hour period. This will allow for microbes to grow and thrive prior to being injected into the ground. It is expected that microbe counts will be in the order of 1,000 parts per million. This is considered adequate to mitigate for the current levels of benzene, TPH and MTBE in the groundwater.

- The workplan proposed the installation of five (5) new injection wells. In designing the system, AEI decided that it would be more effective to inject the inoculant through ½-inch PVC piping ("injection points"). The former tankhold excavation will be divided into four quadrants and four injection points will be placed per quadrant. The pipes will be driven to the top of the pea-gravel "sump". Each injection point will receive approximately 875 gallons per every four weeks. AEI believes the new design will allow for a greater volume of groundwater to be inoculated. It will also allow for the top foot or two of soil above the capillary zone to be inoculated, minimizing the chance for groundwater fluctuations to affect remediation results.

- AEI has collected baseline groundwater data from the existing monitoring wells. These samples were analyzed for TPH-gas (EPA 8015), BTEX & MTBE (EPA 8020). They were not analyzed for dissolved oxygen (DO), nitrogen (N), and phosphorous (P) as proposed. This data was already available from previous sampling events and as the TPH, BTEX and MTBE concentrations have not significantly changed, it is believed that neither has the DO, N and P.

) Could there be sun during process?

- AEI will not inject a tracer bromide ion as proposed. It is believed that injecting bromide into a sensitive environment such as the aquifer beneath the property may throw-off the chemical balance and disrupt the microbes.

- AEI will treat the site with an inoculation medium consisting of microbes and nutrients. All bioremediation products are manufactured by Micro-Bac International, Inc. in Round Rock, Texas. The microbes have the trademark name M-1000H™. The nutrients have the trademark name OSNF#1™.

If you have any questions or would like additional information, please do not hesitate to contact me at (310) 798-4255. Thank you.

Sincerely,
AEI CONSULTANTS

will oxygenation occur? If yes how so?
[redacted]
Eliminates ?(?)
Man for DO, Nitrate, P, CO_2

Mauricio Escobar
Project Manager

cc: Mr. James T. Graeb
400 Oyster Point Boulevard, Suite 415
South San Francisco, CA 94080

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ENVIRONMENTAL PROTECTION

99 DEC 17 PM 1:07

December 1, 1999

Mr. Barney M. Chan
Hazardous Materials Specialist
Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RE: Workplan
625 Hegenberger Road
Oakland, CA 94621
AEI Project No. 20826

Dear Mr. Chan:

This letter workplan will provide with an overview of the proposed subsurface investigation for the above-referenced facility. The proposed scope of work will satisfy the requirements of the October 5, 1999 letter requesting that the Client further delineate the MTBE plume on the property. AEI Consultants (AEI) proposes to install two (2) additional wells to further delineate the lateral extent of MTBE migration. AEI also proposes to investigate the vertical extent of MTBE contamination by placing one deep boring in the center of the plume.

Proposed Scope of Work

AEI will advance three soil borings labeled AEI-DI-B26 through AEI-DI-B28. Borings AEI-DI-B26 and AEI-DI-B27 will be drilled to first encountered groundwater plus 20 feet (as required by the County and the Water Board), corresponding to a depth of approximately 30 feet below ground surface (bgs). These borings will then be converted to two-inch groundwater monitoring wells AEI-MW-26 and AEI-MW-27. Boring AEI-DI-B28 will be driven to 50 feet bgs. Soil samples will be collected at 5-foot intervals from all borings until groundwater is encountered.

The two proposed monitoring wells will be purged, surveyed, developed, and sampled. In addition, all existing wells will be purged and sampled.

Soil Borings

A mobile B-57 or CME 75 hydraulic rotary drill with 8" outside diameter hollow stem augers will be used to drill the borings. Soil borings will be logged on-site by an AEI geologist using the Unified Soil Classification System. Soil samples obtained during drilling will be field-screened with a portable photoionization detector (PID).

A total of six (6) soil samples will be collected from the three borings placed on-site. All soil samples will be collected in 6" brass tubes driven into the soil until completely full and sealed with Teflon tape and plastic caps. In addition, discreet groundwater samples will be collected from boring AEI-DI-B28 at first encountered groundwater and at 10-foot intervals thereafter, to a total depth of approximately 50 feet bgs. The groundwater samples collected will be placed into laboratory provided 10-ml vials.

The secured soil and groundwater samples will be placed into a cooler with ice and transported under chain of custody documentation to McCampbell Analytical, Inc. in Pacheco, California. All soil samples will be analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (EPA method 5030/8015), Benzene, Toluene, Ethylbenzene and Xylene (BTEX) (EPA method 8020/602), and MTBE (EPA method 8020/602). Strict chain of custody protocol will be followed in all phases of sampling and transportation.

Monitoring Well Construction

Borings AEI-DI-B27 and AEI-DI-B28 will be converted to 2-inch groundwater monitoring wells. The monitoring wells will be constructed of 2-inch flush threaded Schedule 40 PVC casing, with up to 25 feet of .01" or .02" factory-slotted well screen. The top of the well screen will extend up to 5 feet above the encountered groundwater level to account for static water level establishment and seasonal fluctuations. The well casing will be inserted through the augers to a point a few inches above the borehole terminus where it will be suspended until the well is secured within the sand pack. Sand (#2 or #3) will be poured through the augers in one to two-foot lifts, up to two feet above the top of the perforated casing. Two feet of bentonite pellets will be placed above the sand and activated with tap water. The seal will be finished up to the surface with cement/bentonite grout. A locking top cap and a flush-mounted watertight well cover will be installed.

The top of the casing elevation of the monitoring wells will be surveyed to the nearest 0.01 ft. AEI will use this information for the collection of groundwater elevation data to determine on-site groundwater flow direction and gradient. AEI will purge and develop the newly installed wells. Forty-eight hours later, AEI will collect one groundwater sample from all seven wells on-site (five existing and two proposed).

New Monitoring Well Purging & Development

Monitoring wells AEI-MW-26 and AEI-MW-27 will be developed by bailing water into a DOT 17H drum until the water appears to be reasonably clear with a minimum of 10 well volumes removed. Well development will take place no less than 72 hours after installation of the wells.

Groundwater Sampling

A total of seven (7) groundwater samples will be collected from the existing and proposed groundwater monitoring wells on-site. After measuring water levels in each well, AEI will purge each well by pumping out three to five volumes of groundwater. When the groundwater level has returned to within 90% of the original water level, water samples will be retrieved using a disposable bailer. The water samples will be stored in specially sealed glass containers in an ice chest.

Groundwater samples will be submitted to a state certified laboratory for chemical analyses. All groundwater samples will be analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (EPA method 5030/8015), Benzene, Toluene, Ethylbenzene and Xylene (BTEX) (EPA method 8020/602), and MTBE (EPA method 8020/602). Strict chain of custody protocol will be followed in all phases of sampling and transportation.

Site Safety

Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting. Also, the hazards of the known or suspected chemicals of interest will be explained. Level D personal protection equipment is the anticipated maximum amount of protection needed. A site safety plan conforming to Part 1910.120 (i) (2) of 29 CFR will be on site at all times during the project.

A working area will be established with barricades and warning tape to delineate the zone where hard hats and steel-toed shoes must be worn, and where unauthorized personnel will not be allowed. If, during drilling, fuel product odors are deemed to be substantial, half-face respirators with organic vapor cartridges will be worn.

A nearby hospital will be designated in the site safety plan as the emergency medical facility of first choice. A map with a course plotted to the hospital will be on-site.

AEI requests your approval to proceed with this project. Please let me know if you need additional information and please do not hesitate to call me at (310) 798-4255 if you have any questions.

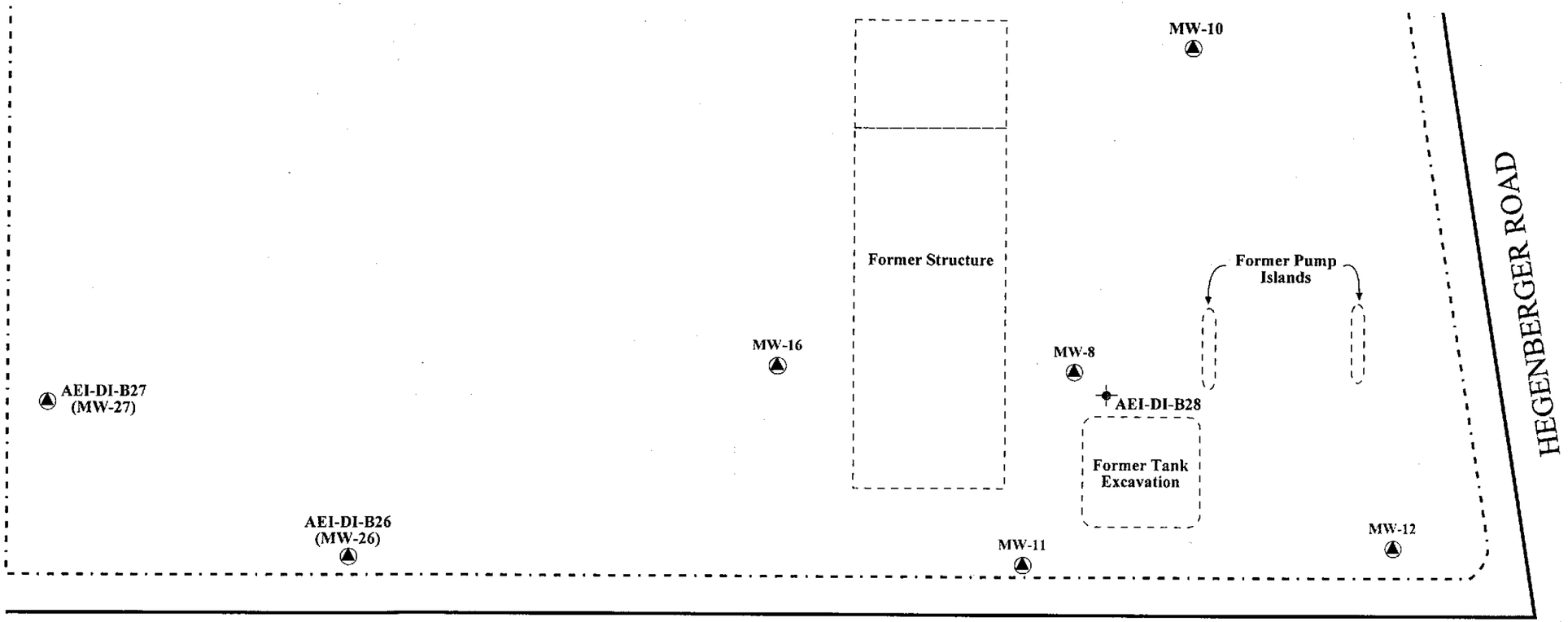
Sincerely,
AEI CONSULTANTS

Mauricio Escobar
Project Manager

Joseph P. Derhake, PE
Principal

Attachments:
Figure 1 – Proposed Boring Location Map

cc: Mr. James T. Graeb
400 Oyster Point Boulevard, Suite 415
South San Francisco, CA 94080



COLLINS DRIVE

LEGEND

- AEI-26 — Proposed AEI monitoring wells.
- B1 — Proposed AEI boring location.
- W-26 — Monitoring wells previously installed on-site.
- Property Line
- Street

N

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2309 Pacific Coast Highway, Suite 206, Hermosa Beach, CA

Page 1 of 1	Drawn by: M. Escobar	Approximate Scale: 1"= 40'

Proposed Boring Location Plan

625 Hegenberger Road
Oakland, California

JN 21032
December 1, 1999