Appendix D2 – Phase II Environmental Site Assessment

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April 1, 2014

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Re: Phase II Investigation Letter Report, 3300 El Camino Real, Palo Alto, CA

Dear Mr. McHenry:

WSP Services, Inc. (WSP) prepared this letter report to summarize the Phase II Investigation conducted at the property located at 3300 El Camino Real.

The objective of the Phase II ESA was to provide environmental data on the soils at the property in support of establishing baseline conditions and planning for potential future development. Based on the Phase I assessment conducted by WSP, groundwater beneath the subject property has been impacted by solvent contamination from offsite sources. This Phase II investigation was focused on the soil conditions. It was not designed to delineate or characterize potential groundwater impacts beneath the subject property which impacts are already relatively well known and the subject of agency review.

Site Background

The subject property currently consists of an approximately two-acre asphalt covered parking lot located in a commercial office park. Based on the Phase I report, other than the current use as a parking lot, the only historic use of the subject property was agricultural. Also based on the Phase I report, several monitoring wells are present on the property and were installed to monitor impacts to groundwater from offsite sources. Trenches and well vaults, potentially related to subsurface remediation or monitoring activities were also observed during site visits by WSP.

Investigation Activities

On February 24, 2014, a total of 12 soil borings (SB-1 through SB-12) were advanced on the subject property in a grid spacing pattern. The location of soil borings are shown on Figure 1. All soil borings were installed using the direct push method to a total depth of 5 feet below ground surface (bgs). The soil samples were screened for organic vapors using a photo-ionization detector (PID). Lithologic descriptions using the Unified Soils Classification System (USCS) and PID readings were recorded in a field book and on soil boring logs. In addition to collection of soil samples, soil gas probes were installed at three soil boring locations (SG-1 through SG-3). Each soil gas probe was installed to collect a sample from 4 to 5 feet bgs. Soil gas samples were collected and analyzed for Volatile Organic Compounds (VOCs) using EPA method TO-15.

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Soil Sampling

Materials encountered in the subsurface underlying asphalt consisted of approximately one foot of sandy fill underlain by silty fill to a total depth of 5 feet bgs, which was the total depth explored during the investigation. Groundwater was not encountered in any borings; based on the Phase I report, groundwater is approximately 10 to 20 feet below ground surface. No elevated PID readings or VOC-like odors or staining were observed in any soil samples. Soil boring logs are provided in Enclosure A.

Two soil samples were collected at each soil boring. One sample from each boring was collected immediately underlying the base-rock or asphalt and analyzed for total petroleum hydrocarbon diesel range organics (TPH-dro), motor oil (TPH-mo) and gasoline range organics, (TPH-gro); volatile organic compounds (VOCs); semi volatile organic compounds (SVOCs); polychlorinated biphenyls (PCBs); CAM 17 metals; and pesticides and herbicides by EPA methods 8015m, 8260, 8270c, 6020, 8081A LL and 8151A, respectively. One additional sample per boring was collected at 5 feet below ground surface (bgs) and archived by the laboratory pending results of the shallow soil samples. Where the shallow samples approached residential or commercial/industrial screening levels, the deeper samples were also analyzed.

Soil Gas Sampling

Soil gas probes were installed in boreholes SB-1 (SG-1), SB-4 (SG-2) and SB-7 (SG-3). A probe consisting of a 1/4 inch Teflon tubing fitted with a one-inch stainless steel screen was lowered into the borehole and installed at 5 feet bgs. Filter sand was used to fill the boring from 5 to 4 feet bgs. The remaining portion of the borehole was sealed with hydrated bentonite granules from 4 feet bgs to ground surface. Soil gas probe construction details are provided in the boring logs in Enclosure A.

Soil gas samples were collected from the probes by connecting the Teflon tubing to a T-fitting where one end was connected to a 6 liter purge canister equipped with a 150 milliliters per minute (ml/min) flow regulator and the other end to the one-liter sample canister also fitted with a 150 ml/min flow regulator. Each of the soil gas probes was purged of approximately three probe volumes in order to purge the probe of any stagnant air before collecting the sample. The volume of the probe included the probe tip [i.e., sand pack interval (2.25 inch diameter by 12 inches long) around the probe intake (assuming a 30% pore volume)] plus the length of sample tubing of approximately 10 ml. This probe volume was equivalent to approximately 800 milliliters. Per Cal EPA guidelines, the purge rate did not exceed 200 milliliters per minute (ml/min).

Leak testing was implemented by placing paper towels saturated with a leak check compound (i.e., isopropyl alcohol) at each connection point in the sample train between the Summa canister and the probe. The intent of the leak check compound is to enhance the integrity of the soil gas sample by demonstrating that minimal or no ambient air breakthrough occurred during sampling (Cal EPA, 2012). The presence of isopropyl alcohol in the sample, as indicated by the sample analysis, would indicate that breakthrough occurred. This breakthrough condition did occur and is further discussed in the Soil Gas Results section below.

The sampling was performed by first opening the 6–liter purge canister; the 1-liter sample canister remained closed. After 800 ml was purged, the 6-liter purge canister was closed and the 1-liter sample canister was opened. The sample canister was left open until the vacuum dropped to approximately 3 inches of mercury (inches Hg). Sample collection took between 5-10 minutes at SG-2 and SG-3. Collection time was approximately 1 hour at SG-1

and final canister vacuum was 14 inches Hg, possibly due to low permeability soil conditions at that probe location.

After sampling, the soil gas probes were abandoned by removing the sample tubing and capping the surface with asphalt.

Equipment Decontamination, Borehole Abandonment, and Investigation Derived Waste
All subsurface drilling and sampling activities were performed using clean equipment. Non-disposable down-hole drilling and sampling equipment was decontaminated in accordance with WSP's Standard Operating Procedures. Decontamination procedures included washing the equipment with a non-phosphate detergent and potable water solution to remove soil and debris. After the washing process, the equipment was rinsed with potable water and allowed to dry. After sample collection, all soil removed from the boreholes was placed back into the borehole and compacted. Each borehole was capped with asphalt upon completion.

Laboratory Analysis and Screening Levels
To maintain preservation, soil samples were immediately placed with ice in coolers for transport to the laboratory. Soil samples for VOC analysis were collected using the Encore® sampling method. The soil and soil gas samples were forwarded to McCampbell Analytical, Inc. in Pittsburgh, California under standard Chain of Custody (COC) procedures. The twelve shallow soil samples from each borehole (0.5-1.5 feet bgs) were analyzed for TPH-gro, TPH-mo and TPH-gro, VOCs, SVOCs, PCBs, CAM 17 metals, and pesticides and chlorinated herbicides by EPA methods 8015m, 8260, 8270c, 6020, 8081A LL and 8151A, respectively. The twelve deeper soil samples from each borehole (4-5 feet bgs) were placed on hold pending shallow sample results. Soil gas samples were analyzed for VOCs by method TO-15.

Laboratory results for the soil samples were compared to California Environmental Screening Levels (ESLs) for shallow (<3m bgs) residential soil where groundwater is a potential source for drinking water (May 2013) and California Human Health Screening Levels (CHHSLs), if available, for residential and commercial property (January 2005). Soil samples were compared to the Revised CHHSL Screening Levels for Lead dated September 2009. Laboratory results for soil gas were compared to CHHSLs for shallow soil (<5 feet) at residential and commercial property (January 2005). Laboratory data and these screening reference levels are provided in Enclosure B.

Soil Results
Analytical results for the soil samples are summarized in Tables 1 and 2 and sample locations are shown on Figure 1. VOCs, SVOCs, chlorinated herbicides, PCBs, and pesticides were not detected in any samples above the laboratory reporting limit. Organochloride pesticides were detected in three shallow soil samples at concentrations much lower than applicable screening levels. These are not expected to pose a concern, as discussed below. TPH-gro was detected in one sample (SB-12 from 0.5-1.5 feet bgs) below the residential ESL of 100 mg/kg. TPH-dro and TPH-mo were detected in all 12 boreholes from the 0.5-1.5 foot depth interval. TPH-dro concentrations ranged from 7.6 to 86 mg/kg and none of the samples exceeded the residential ESL for TPH-dro (100 mg/kg). TPH-mo concentrations ranged from 58 to 890 mg/kg. The residential ESL for TPH-mo (500 mg/kg) was exceeded in four shallow soil samples (0.5-1.5 feet bgs) in borings SB-1, SB-3, SB-6 and SB-10. To characterize the depth of soil impacted with TPH-mo, TPH constituents were subsequently analyzed in the four deeper samples (4-5

feet bgs) in each borehole where the shallow sample exceeded the ESL. None of the 4 to 5 foot interval samples exceeded the residential or commercial/industrial ESLs for TPH-mo or any of the other TPH constituents.

Concentrations of metals found in the soil samples appear to be representative of background levels. Only arsenic and cobalt exceeded the ESL. The concentrations of arsenic and cobalt appear to also be background concentrations and do not appear to be indicative of a release of these metals. Accordingly, no deeper samples were analyzed as the detections of metals in the soil samples do not appear to require further action.

Soil Gas Results

Soil gas analytical results are summarized in Table 3 and sample locations are shown on Figure 1. Isopropyl alcohol was detected in all three soil gas samples. As previously noted, this compound is used for leak detection and indicates there was a leak in the sampling apparatus and dilution of the sample with ambient air likely occurred. The Cal EPA 2012 Advisory recommends that the concentration of the leak check compound reported in the sample should be below 10 times the reporting limit of the target analytes. All three of the soil gas samples detected isopropyl alcohol above the recommended concentration.

1,2-dibromo-3-chloropropane (DBCP) was detected in all three soil gas samples at concentrations ranging from 1.0 to 1.6 $\mu g/m^3$, which were all above the residential ESL of 0.61 $\mu g/m^3$3, but below the commercial/industrial ESL of 6.1 $\mu g/m^3$. DBCP if a fumigant widely used in the United States before it was banned by the US Environmental Protection Agency (EPA) in 1979. Diisopropyl ether (DIPE) was detected in SG-1 at 21 $\mu g/m^3$. No regulatory screening level has been established for DIPE. DIPE is mainly used as a fuel oxygenate added to gasoline to reduce tailpipe emissions. Toluene was detected in two soil gas samples at concentrations substantially lower than screening levels.

Thus, despite the apparent leak as evidenced by the presence of isopropyl alcohol during sample analysis, the soil gas samples qualitatively confirm the presence of three VOC compounds; however, because of the apparent leak, the data cannot be relied upon as an accurate representation of the concentrations of these three compounds.

Conclusions and Development Considerations

<u>Soil Samples</u>

- The only metals that were detected above reference levels were arsenic and cobalt, and both at relatively low concentrations. These metals are found naturally in soils in this area and are not of concern. The remaining metals that were detected were below action levels.
- VOCs, SVOCs and chlorinated herbicides were not detected in the soil at the site. As noted in the site background, VOCs have been detected in groundwater onsite by others due to offsite historic releases from neighboring properties. The reported groundwater concentrations are relatively low (less than 15 micrograms per liter) and thus are likely too low to pose a vapor intrusion threat to future development through off-gassing (i.e., volatile chemicals moving in a gaseous phase from groundwater into soil).
- Some petroleum hydrocarbons were detected in the soil samples at the site, primarily in the heavier (motor oil) range, as opposed to the lighter gasoline range. The heavy range petroleum compounds, TPH-mo, detected in soil samples near the surface exceeding the screening levels described above, do not appear to be indicative of anything other

than possible oil leakage from parked cars and are not high enough to be of major concern.

Soil Gas Samples

- With respect to the soil gas sampling results, there were three compounds that were detected. The first of these is 1,2-dibromo-3-chloropropane (DBCP), which was detected below the commercial/industrial screening level and slightly above the residential screening level. The concentrations are low enough that its presence is unlikely to present any issues, but further sampling may be desirable if and when the subject property is developed. Also detected was diisopropyl ether (DIPE), a fuel oxygenate which was added to gasoline and it likely that its presence is a result of leakage from cars in the parking lot. As noted, there is no screening level for DIPE and it was found in only one of the three sampling locations at a relatively low concentration. Thus, its presence does not likely present any issues. The third compound detected in the soil gas was toluene, a common constituent of gasoline. It was also found at a very low concentration, well below any screening level.

Development Considerations

None of the soil or soil gas sampling results suggests that there are significant impediments to the development of the subject property.

Since groundwater is found as shallow as 10 feet below ground surface, the construction of a substantial building on this site might require foundations or an underground parking garage below the groundwater level. Such construction may require dewatering and engineering to prevent water infiltration into the building during and following construction. If dewatering is necessary during construction, treatment may be required to remove VOCs from the groundwater and a discharge permit from the San Francisco Regional Water Quality Control Board to discharge the treated water may be required. Dewatering, treatment, and permit arrangements are relatively common during and following construction activities in the Bay Area, and are not likely to impose significant additional costs.

Depending on the nature of future development activities for the property, vapor intrusion mitigation may need to be incorporated into future building design. Sampling, as suggested above for VOCs such a DBCP, at the base of any future excavation during property development would be effective at assessing the possibility of vapor intrusion. Dependent upon conditions, it may be prudent to consider the installation of a passive vapor barrier to ensure no penetration of VOCs emanating from the subsurface into any structure. Construction of such a passive barrier is also unlikely to impose significant additional costs.

Please don't hesitate to contact us with any questions or if you need additional information.

Sincerely yours,

Richard E. Freudenberger
Executive Vice President

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Enclosures

Figures

Tables

Enclosure A

Enclosure B