AIR QUALITY STUDY PREPARED FOR URBAN ADAMAH

Executive Summary

LSA Associates, Inc. has completed this report to assess the air quality and health risk impacts for the proposed Urban Adamah relocation project. The project applicant proposes to relocate operations from its current leased site at 1050 Parker Street to the 2.18-acre project site located at 1151 Sixth Street in Berkeley, California. Operations and uses at the new site would include agricultural training programs, public farm programs, and composting. Future site infrastructure would include classrooms, administrative offices, greenhouses, and dormitories.

Over the last several years, numerous reports have been prepared related to air quality in the West Berkeley area including the USA Today's Smokestack Effect report series1 and publications from the West Berkeley Alliance and Global Community Monitor. This report summarizes these reports and using our professional expertise and knowledge of Bay Area Air Quality Management District (BAAQMD) measuring and monitoring protocols, have interpreted the validity of the findings in these reports. This report also evaluates the relevance of the Harrison Park Air Quality Study.2

Our review of these reports revealed that in particular, the USA Today report is very misleading in its findings in that the model used in the analysis was a screening level tool that is not designed for site-specific impact analysis. Monitoring techniques used by USA Today do not meet any of the standards established by regulatory agencies and monitoring data sited in the report can also not be verified to review the adequacy of their findings. Other reports identify and evaluate outdated air quality samples, especially considering the improvements to diesel engine emission rates and major facility emission reduction improvements at Pacific Steel Casting that were implemented in 2007.

The new Urban Adamah project site is located within West Berkeley, which has several industrial sources of air pollution, including Pacific Steel Casting Company. Interstate 80 (I-80) is also located in the vicinity of the project site, as well as an active railroad line. LSA conducted an analysis that considered the site-specific meteorological conditions and the proximity of the project site to stationary pollutant sources, including Interstate 80 (I-80) and the Amtrak train station, to determine the potential risk to future residents at the project site from emissions, including diesel particulate matter (DPM). Land uses in the vicinity of the project were also considered for potential sources of toxic emissions.

A summary of the analysis results is shown in Table ES-1. Results of the analysis conclude that the cancer risk associated with air exposure of future visitors and employees on the project site would not exceed the project or cumulative significance level criteria for toxic air contaminants as established by the BAAQMD and would not present a substantial health risk.

For example, the analysis indicates that exposure from all sources in the project vicinity would increase the cancer risk for a child visitor that spends one week outdoors on the project site for 24 hours per day by less than 1 (.072) in 1 million. The BAAQMD considers a significant risk from all sources to be an additional 100 in 1 million cancer cases.

Air pollution from land uses in the immediate vicinity of the project site has the greatest influence over localized air quality conditions. In the case of 1151 Sixth Street, the surrounding land uses have relatively low air pollution potential. With residential uses to the north, a U.S. Postal Service office facility (which has a low truck volume) to the east and light industrial uses to the south and west, the surrounding land uses do not generate high concentrations of air pollutants. Additionally, Sixth Street and Harrison Street are not considered high volume roadways. Therefore, impacts from the immediately adjacent roadways are not expected to be a significant source of emissions.

As discussed further in this report, there are several substantial sources of air pollution in West Berkeley, including industrial facilities, high volume roadways and idling trains. Measured air studies indicate that pollutants decrease exponentially as one moves away from the source, and this appears to be the case with concentrations at 1151 Sixth Street. Air pollutants in this area appear to readily disperse resulting in pollutant concentrations at 1151 Sixth Street that are not substantially different than those of other areas in Berkeley or the Bay Area for both inhalation risks and risks associated with ingesting foods grown on the site.

SOIL AND GROUNDWATER STUDY PREPARED FOR URBAN ADAMAH

Executive Summary

1.0 INTRODUCTION

Bureau Veritas North America, Inc. (BVNA), on behalf of Urban Adamah, prepared this *Limited Subsurface Investigation Report* (Report) regarding the property located at 1151 6th Street in Berkeley, Alameda County, California (the Site, Figure 1). The approximately 2-acre subject property (or Site) is currently vacant vegetated land that is fenced to the north, west and south, and bounded by a concrete wall along the eastern boundary. This investigation was performed based on findings of BVNA's *Phase I Environmental Site Assessment* (ESA) of the Site, dated August 5, 2013.

2.0 SCOPE OF WORK

The investigation included pre-field activities, a geophysical survey and advancement of borings to collect soil and groundwater samples, as described below. The field activities were performed on September 4 and September 5, 2013.

2.1 PRE-FIELD ACTIVITIES

Prior to initiating the field work, BVNA obtained a drilling permit from the City of Berkeley Planning and Development Department, Toxics Management Division (BTMD) for the borings. A copy of the drilling permit is included as Appendix A. BVNA completed a Site Health and Safety Plan (SHSP) for the work proposed at the Site in accordance with the requirements of the State of California General Industry Safety Order (GISO) 5192 and Title 29 of the Code of Federal Regulations, Section 1910.120 (29 CFR 1910.120). A copy of the SHSP was kept onsite during field activities. The SHSP detailed the work to be performed, safety precautions, emergency response procedures, nearest hospital information, and onsite personnel responsible for managing emergency situations.

BVNA marked the proposed boring locations in white paint and notified Underground Service Alert (USA) at least 48 hours prior to drilling, as required by law. In addition, OHJ Subsurface, a private utility locating service based in Oakland, California, cleared the proposed work area of potential underground utilities.

2.2 GEOPHYSICAL SURVEY

A geophysical survey was conducted on September 4, 2013 by Norcal Geophysical Consultants, Inc. of Cotati, California. Electromagnetic (EM) and magnetometer (MAG) surveys were performed on a 10-foot grid to identify potential locations of buried debris or features. The results of the geophysical survey are presented in Appendix B in the form of EM and MAG data contour maps and a summary of defined subsurface anomalies prepared by the geophysical consultant.

2.3 SOIL BORINGS

Soil borings were advanced on September 5, 2013 using a truck-mounted direct-push drilling rig operated by Environmental Control Associates (ECA), a California C-57 licensed drilling firm, located in Aptos, California. The soil and groundwater samples were collected from the borings using standard techniques. The sampling locations are shown in Figure 2. 1

2.3.1 Soil Logging and Sampling

Soil cores were collected from the borings for soil logging purposes using a 4-foot long core barrel sampler that contained an acetate liner to retain a relatively undisturbed soil core. Soil cores were examined for soil classification and described on boring logs in general conformance with the Unified Soil Classification System. Standard soil logging practices were employed. Soil boring field logs are presented in Appendix C.

Field screening of soil cores was performed using a photoionization detector (PID) to evaluate the potential presence of volatile organic compounds (VOCs). To initiate this procedure, soil samples were removed from plastic liners, placed into labeled plastic bags and sealed. After sufficient time had elapsed for vapor build-up inside the bags, the bags were punctured and the probe tip of the PID was inserted to allow measurement of ionizable substances in the headspace. Measurements of the headspace were obtained in the parts per million (ppm) range for total VOCs. The results of the headspace tests were recorded on the boring logs.

Soil samples were generally collected at approximate four-foot intervals and retained from soil cores for potential chemical analysis. Retrieved sample sleeves were cut from plastic liners, sealed with Teflon tape and plastic end caps, labeled with identifying information, and stored in a pre-chilled ice-chest awaiting transportation to the laboratory. Soil sample information including project information, sample time, sample date, sample identification and depth were recorded onto a chain-of-custody document that accompanied the soil samples to the analytical laboratory.

2.3.2 Groundwater Sampling

Soil borings were generally advanced to depths of approximately 12 to 19 feet below the ground surface (bgs) to reach saturated soils and groundwater. To facilitate collection of groundwater samples, a temporary well casing consisting of one-inch-diameter schedule 40 PVC casing with 5 feet of slotted screen was inserted into the open borehole to a depth approximately 2 to 4 feet below first encountered groundwater. Upon completion of the borings to the reported depths and installation of the temporary well casing, a water level indicator device was used to measure the depth to groundwater within the boring. Water level depths were recorded on the boring logs. After allowing sufficient time for sediments to settle, a peristaltic pump with new silicone and polyethylene tubing was used to obtain grab- groundwater samples at a rate of approximately 0.5 liters per minute. The collected grab-groundwater samples were sealed, labeled and placed in a pre-chilled ice chest for delivery to the laboratory. Chain- of-custody records were completed and accompanied the grab-groundwater samples to the laboratory.

2.3.3 Decontamination

Drilling equipment and down-hole sampling equipment was washed in a solution of non-phosphate detergent, double-rinsed with potable water prior to each use, and allowed to dry. 2

2.3.4 Borehole Abandonment

The groundwater borings were grouted using a tremmie pipe in accordance with BTMD guidelines.

2.4 LABORATORY ANALYSES

A total of five (5) soil samples and five (5) groundwater samples were submitted to analytical laboratories for analysis of one or more of the following analyses by standard United States Environmental Protection Agency (USEPA) methods:

- Total Petroleum Hydrocarbons (TPH) as diesel-range organics (DRO) and motor oil-range organics (MRO) by USEPA Method 8015B with silica gel cleanup – soil and groundwater samples
- VOCs by USEPA Method 8260B – soil and groundwater samples
- Polyaromatic Hydrocarbons (PAHs) by USEPA Method 8270C with selected ion mode (SIM) – soil samples
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082 – soil samples
- Organochlorine Pesticides (OCPs) by USEPA Method 8081A – soil samples
- CAM 17 Metals by USEPA Method 6010B/7471A – soil samples
- Hexavalent Chromium by USEPA Method 7199 – groundwater samples
- Asbestos by polarized light microscopy (PLM) according to USEPA Methods and -600/M4-82-020 and -600/R-93-116 – soil samples

The soil and groundwater samples were submitted to Test America in Pleasanton, California and Curtis & Tompkins Ltd., Analytical Laboratories in Berkeley, California, respectively. These laboratories are certified by the State of California.

3.0 INVESTIGATION FINDINGS

The results of the EM and MAG geophysical surveys are represented as defined anomalies on terrain conductivity and vertical magnetic gradient contour maps, respectively. On the terrain conductivity map, three types of subsurface features were identified: 1) linear features corresponding to suspected abandoned metallic utility lines; 2) zones of localized miscellaneous buried debris (both metallic and non- metallic); and 3) broader zones of elevated terrain conductivity that may be associated with lithologic variations in subsurface soils. The vertical magnetic gradient contour map identifies zones of buried ferrous (i.e., metallic) debris, which generally correspond to areas identified on the conductivity map as including such debris.
Boring logs indicate that the Site is underlain by moderate brown gravelly silt to gravelly sand to a depth of approximately 1.5 to 3 feet bgs, underlain by dark brown to dark gray, silty clay to approximately 6 to 3 12 feet bgs, and tan, clayey silt to silty sand with localized fine- to coarse-grained sand lenses to an explored depth of up to 19 feet bgs. BVNA did not observe evidence of contaminated soil (e.g., discoloration and/or petroleum odors). Low PID readings for total VOCs ranging from 0.1 to 5.6 ppm were recorded for field screening soil samples. Groundwater was encountered at depths ranging from approximately 7.3 to 12.0 feet bgs.

3.1 SOIL ANALYTICAL RESULTS

Soil analytical results are provided in Appendix D and summarized in Table 1. The soil analytical results were compared to California Regional Water Quality Control Board (San Francisco Bay Region) Environmental Screening Levels (ESLs) and/or California Department of Toxic Substances Control, California Human Health Screening Levels (CHHSLs) for residential land use, where appropriate.

Organic analytical parameters including TPH, VOCs, PAHs, PCBs, and OCPs analyzed for this investigation were either not detected in the soil samples or were detected at concentrations below applicable residential ESLs and/or CHHSLs. Asbestos was not detected in the soil samples above the laboratory reporting limit.

Metals were either not detected in the soil samples above laboratory reporting limits or were detected at concentrations below applicable residential ESLs and CHHSLs, with the exception of arsenic, which was detected at concentrations ranging from 4.4 to 5.7 mg/kg in borings BV-1, BV-2 and BV-4. According to the California Office of Environmental Health Hazard Assessment (OEHHA) California Human Health Screening Level (CHHSL) guidance document, "naturally occurring background concentrations of arsenic, beryllium, cadmium, chromium and other metals in soils may exceed their respective CHHSLs." The California Environmental Protection Agency (Cal EPA) and other agencies within California typically do not require cleanup of naturally occurring metals to less than ambient concentrations. In addition, the detected concentrations of total metals

in soil at the Site did not appear to show significant variation in concentration, indicating that the material composition is relatively homogenous and thus representative of background conditions.

3.2 GROUNDWATER ANALYTICAL RESULTS

Groundwater analytical results are provided in Appendix E and summarized in Table 2. The grab-groundwater analytical results were compared to ESLs and California Department of Health Services (DHS) Maximum Contaminant Levels (MCLs) for drinking water. TPH (DRO or MRO) and hexavalent chromium were not detected in the collected groundwater samples above laboratory reporting limits. A few VOCs including chloroform, trichloroethene (TCE) and MTBE were detected at concentrations below applicable ESLs and/or MCLs.

3.3 QUALITY ASSURANCE/QUALITY CONTROL

The analytical laboratory data was reviewed by BVNA to establish its validity and to ensure the laboratory data was complete and accurate. BVNA verified that holding times for each analytical method were achieved and that the laboratory achieved the specific data quality objectives for each selected analytical method. A review of the data validation process indicates that the laboratories completed QA/QC 4 activities required for the samples such as blanks, lab control samples, matrix spikes, and duplicates. The QA/QC parameters for the samples were generally within acceptable limits and suggest that the data is useful for its intended purpose.

4.0 DISCUSSION

The investigation did not find evidence of soil or groundwater contamination above regulatory screening levels, except for arsenic in soil, which was found at ambient concentrations commonly encountered in soils in the region. As noted above, regulatory agencies in California typically do not require cleanup of naturally occurring metals to less than ambient concentrations. Based on these data no further soil or groundwater investigation appears warranted. The geophysical survey identified buried metal debris, the nature of which is unknown. We recommend utilizing test pit excavations in the main concentrated ferrous areas shown on vertical magnetic gradient contour map to observe the nature of the metallic debris and confirm that buried drums are not present.

5.0 REPRESENTATIONS AND LIMITATIONS

The information and opinions rendered in this report are exclusively for use by Urban Adamah, subject to acceptance of the terms and conditions referenced in our proposal number 3303.13.397 dated August 21, 2013 between BVNA and Urban Adamah, as amended by Change Order No. 1, dated August 28, 2013. BVNA will not distribute or publish this report without consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by BVNA in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made.