Treadwell&Rollo

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11 April 2003
Project No. 3433.04

Mr. Barney Chan
Alameda Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Addendum to Soil Management and Removal Plan
Mandela Gateway Redevelopment Site
Seventh Street and Mandela Parkway
Oakland, California

Dear Mr. Chan:

This letter serves as an Addendum to the Treadwell & Rollo *Soil Management and Removal Plan, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California* (SMRP), dated 24 March 2003. The Addendum is based on your request of 6 April 2003 that the SMRP be amended to:

- apply an unrestricted residential use target level for lead of 255 mg/kg (the California Department of Toxic Substances Control (DTSC) value for new school sites in California), instead of the 261 mg/kg value calculated by us for this site as being protective of human health for unrestricted-use residential units constructed at grade and with an assumed ingestion pathway of home-grown vegetables;
- excavate "hot spot" areas at sampling locations B-11 and WB-5 in the West Block and B-6, PB-17, B-3, PB-19, and EB-9 in the East Block; and
- amend the sampling protocol (for soils proposed for excavation and reuse at the site) to reflect the frequency of sampling specified in the Regional Water Quality Control Board (RWQCB) internal memo *Characterization and Reuse of Petroleum Hydrocarbon Impacted Soil as Inert Waste* (November 2002).

In accordance with your request, we shall use the DTSC default lead value of 255 mg/kg for unrestricted land use, including landscaped areas. With respect to your request for "hot spot" removal, we are completing the "hot spot" removal at this time. With respect to your request for

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an alternative sampling protocol, we believe that the sampling protocols presented in the SMRP are appropriate for the assessment and management of soils to be excavated at the site, for the reasons discussed in the remainder of this Addendum. We respectfully request your concurrence with our use of the soil sampling protocols as currently set forth in the SMRP.

To build the podium structures at the site, soil will be excavated, a geotextile fabric placed on the floor of the excavation, and the soil replaced in the excavation and recompacted. This excavation and reuse is being performed for geotechnical reasons based on foundation design. As stated in Section 7.0 of the SMRP, excavated soils that are determined to be hazardous waste or that otherwise contain lead at levels exceeding 350 mg/kg shall be managed as hazardous waste and disposed off-site at an appropriately-licensed disposal facility. In the SMRP, we proposed sampling the excavated soil for profiling by collecting one four-point composite sample per 500 cubic yards (cy) of excavated soil.

During our telephone discussion on 2 April 2003, you stated your preference for a sampling protocol based on the RWQCB internal memo *Characterization and Reuse of Petroleum Hydrocarbon Impacted Soil as Inert Waste* (November 2002). Specifically, you requested that shallow soil in the podium areas (less than two feet below ground surface (bgs) in the West Block and less than three feet bgs in the East Block) should be sampled at a frequency of one sample per 25 cy of excavated soil. For deeper soil in the podium areas (greater than two feet bgs in the West Block and three feet bgs in the East Block), you requested that soil be sampled at a frequency of one sample per 100 cy of excavated soil. You stated that previous samples collected could count in the sample totals for purposes of determining the sampling frequency.

As we discussed with you on the telephone on 8 April 2003, we believe that the sampling protocols currently described in the SMRP are appropriate for the assessment and management of soils to be excavated at the site. As described below, we have compared the sampling protocol described in the SMRP with the frequency of sampling described in the RWQCB memo, and with the U.S. Environmental Protection Agency's *Test Methods for Evaluating Solid Waste* (Office of Solid Waste and Emergency Response, SW-846, November 1986). This comparison demonstrates that the requested change in the frequency of sampling is unnecessary for the following reasons.

1. In the podium area of the West Block, we have already collected 25 samples at various depths in 10 locations. The volume of soil to be excavated and reused for the podium structure is not expected to exceed 5,200 cy. This represents a minimum sampling frequency of one sample per 208 cy. We have also agreed to and have now performed excavation of areas with relatively high lead and pesticide concentrations ("hot spots") at your request. In the podium area, these "hot spot" excavations have removed soil from the two locations where lead and pesticide health-risk cleanup goals were exceeded. At each location, we have collected five confirmation samples. (Per Section 7.7 of the

SMRP, the owner will provide a third-party report certifying that soil management activities followed the procedures outlined in the SMRP. A description of all mitigation activities taken during construction, including the "hot spot" removal activities, will be included in this report.) If we consider these discrete samples as two sampling points (rather than ten, because of the proximity of samples in each group of five), our frequency for sampling in the podium area becomes one sample per 193 cy. With the addition of samples collected for each 500 cy as per the current SMRP sampling protocol, the sampling frequency would then be equal to one sample per 140 cy.

For stockpiles greater than 1,000 cy, but less than 10,000 cy, the RWQCB memo calls for 25 samples plus one sample for every additional 500 cy in excess of 1,000 cy. For 5,200 cy, this results in 25 samples plus 8 samples, or 33 samples in total, for a recommended sampling frequency of one sample per 157 cy. Therefore, with the necessary profiling described above, we will have exceeded the RWQCB's recommended sampling frequency.

2. In the podium area of the East Block, we have already collected 24 samples at various depths in 11 locations. The volume of soil to be excavated and reused for the podium structure is not expected to exceed 4,700 cy. The resulting frequency of sampling is, at a minimum, one sample per 195 cy. We have also excavated "hot spots" in four locations within the excavation footprint, removing areas with elevated levels of lead. Considering the five discrete confirmation samples at each location as one sample point, we have collected 28 samples, or one sample per 168 cy. With the addition of profiling samples collected for each 500 cy as per the current SMRP sampling protocol, the sampling frequency will then be equal to one sample per 127 cy. Comparing this with the sampling frequency recommendation in the RWQCB memo (4,700 cy/32 samples, or one sample per 147 cy), the sampling frequency in the East Block also exceeds the RWQCB's recommended sampling frequency.

3. The soils in the East Block podium area will be capped by the overlying buildings and pavement, and a deed restriction will be recorded to prevent inappropriate disturbance of the cap. The **soils in the West Block podium area will be similarly capped, but no deed restriction will be required as residual soil contamination levels will not exceed applicable remedial target levels**. Therefore, there will be no exposure pathway to future site users in such areas. Accordingly, additional samples are not necessary to quantify the environmental risk. Excavated soils in these areas will be profiled according to the protocols set forth in the SMRP.

4. Using the methodology in Section 9 of the U.S. Environmental Protection Agency's SW-846, we have performed a statistical analysis of the lead chemical data from each block, after excavating the hot spots and performing confirmation sampling. This method

provides statistical analysis methods that apply to any chemical compound, whereas the RWQCB sampling protocol is written specifically for petroleum hydrocarbons. The SW-846 analysis includes selecting the data set and specifying a chemical Target Level, then finding the mean, standard deviation, variance, and T value for the number of samples collected. These values are then used to calculate the number of samples needed to characterize the data set and the 95% Upper Confidence Level (UCL) for the data set.

For the data sets used, we have removed the values originally reported for each "hot spot", because the soil itself has been removed. For the lead SW-846 Target Level, we have used the DTSC value of 255 mg/kg, which is more conservative than the calculated site-specific remedial target level of 367 mg/kg, which would be applicable to the podium areas, as presented in the Treadwell & Rollo *Human Health Risk Assessment, Mandela Gateway Redevelopment Site, Seventh Street and Mandela Parkway, Oakland, California* prepared for this site and submitted to you on 24 March 2003.

5. The SW-846 analysis is driven by the specified Target Level and its relationship to the data set being used. If most or all of the data set is lower than the Target Level, the number of samples required for adequate characterization is relatively lower. If most or all of the data set is higher than the Target Level, the number of samples required for adequate characterization is relatively higher. The data sets and statistical calculations for the East and West Blocks are shown on the attached table. A review of the data summary for the West and East Blocks clearly indicates that soil lead concentrations are generally lower than the SW-846 Target Level and that adequate samples have been collected to characterize both blocks.

   To further evaluate whether the soil chemistry data sets adequately characterize the site, a 95% UCL was calculated for the soil chemistry data set for each block. The 95% UCL is used to determine the confidence with which you have characterized the data set. If the 95% UCL is above the Target Level, it is an indication that the Target Level may be exceeded in a statistically significant number of samples. If the 95% UCL is below the Target Level, it is an indication, with a high level of confidence, that a statistically significant number of samples will not exceed the Target Level. On the West Block, the 95% UCL is 48 mg/kg (rounded up), and on the East Block the 95% UCL is 162 mg/kg (rounded up). These numbers are well below the DTSC remedial target level of 255 mg/kg, and therefore indicate, with a high level of confidence, that the Target Level is not exceeded on either the East or West Blocks. Therefore, no additional sampling is warranted to characterize the soil chemistry.

In summary, for the reasons stated above, we believe that the sampling protocols for soils proposed for excavation and reuse at the site, as presented in the SMRP, are appropriate, and request your concurrence with those protocols. If you have any additional questions, please call.

Sincerely yours,
TREADWELL & ROLLO, INC.

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Attachment

SAMPLE COUNT STATISTICAL CALCULATIONS
MANDELA GATEWAY REDEVELOPMENT SITE
Oakland, California

WEST BLOCK		
Sample ID	**Sample Date**	**LEAD (Total) mg/kg**
B-12-0.5	5/4/02	***210***
B-12-1.5	5/4/02	12
WB-6-1.0	2/18/03	*65*
WB-6-2.5	2/18/03	3.4
WB-6-5.0	2/18/03	2.9
WB-8-0.5	2/18/03	15
WB-8-1.5	2/18/03	2.7
WB-8-5.0	2/18/03	1.7
WB-15-1.0	2/19/03	20
WB-15-2.5	2/19/03	1.9
WB-15-5.0	2/19/03	2.3
WB-16-1.0	2/18/03	11
WB-16-2.5	2/18/03	24
WB-16-5.0	2/18/03	1.3
WB-17-0.5	2/18/03	8.5
WB-17-1.5	2/18/03	29
WB-17-5.0	2/18/03	2.8
WB-18-1.0	2/18/03	45
WB-18-2.5	2/18/03	*100*
WB-18-5.0	2/18/03	11
Mean		28.48
Standard Deviation		49.56777258
Variance (S^2)		*2456.96408*
Count		20
t value		1.316
(t value)^2		1.731856
Target level		255
(RT-Mean)^2		51313.58
Number of Samples		**0.1**
t value - 95%		1.725
95% UCL		47.5943668

EAST BLOCK		
Sample ID	**Sample Date**	**LEAD (Total) mg/kg**
B-5-0.5	5/4/02	*130*
B-5-1.5	5/4/02	33
B-5-3.5	5/4/02	5.2
B-23-0.5	8/13/02	48
B-23-1.5	8/13/02	18
B-24-0.5	8/13/02	***520***
B-24-1.5	8/13/02	*62*
EB-4-0.0	2/18/03	*280*
EB-4-1.5	2/18/03	*320*
EB-4-5.0	2/18/03	*4.4*
EB-5-1.0	2/19/03	*81*
EB-5-2.5	2/19/03	2.0
EB-5-5.0	2/19/03	2.4
EB-6-1.0	2/19/03	*170*
EB-6-2.5	2/19/03	21
EB-6-5.0	2/19/03	1.6
EB-10-1.0	2/19/03	5.3
EB-10-2.5	2/19/03	*60*
EB-10-5.0	2/19/03	2.1
PB-18-5	1/8/02	0
PB-18-8	1/8/02	*172*
T-4E-0.5	7/1/02	*180*
T-4E-1.5	7/1/02	*380*
T-4W-0.5	7/1/02	*220*
T-4W-1.5	7/1/02	*140*
Mean		114.32
Standard Deviation		138.8811932
Variance (S^2)		*19287.9858*
Count		25
t value		1.321
(t value)^2		1.745
Target Level		255
(RT-Mean)^2		19790.86
Number of Samples		**1.7**
t value - 95%		1.708
95% UCL		161.7618156