SFCTA Contract Number 06/07-29

SOUTH ACCESS TO THE GOLDEN GATE BRIDGE

DOYLE DRIVE

DOYLE DRIVE REPLACEMENT PROJECT

Comparison of Soil Proposed for Excavation with Water Board Environmental Screening Levels

Contract 4

January 2010

Prepared By:

BASELINE Environmental Consulting

for

Caltrans and Arup PB Joint Venture

Our ref 131558/FRG
File ref 4-01
Date January 29, 2010

SOUTH ACCESS TO THE GOLDEN GATE BRIDGE
DOYLE DRIVE

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Mr. Ray Boyer, P.E.
District Branch Chief – Hazardous Waste
Office of Environmental Engineering
Division of Environmental Planning & Engineering
Caltrans District 4
111 Grand Avenue
Oakland, CA 94612

Re: Comparison of Soil Proposed for Excavation with Water Board Environmental Screening Levels Doyle Drive Replacement Project, Contract 4 San Francisco, California

Dear Mr. Boyer:

The Arup PB Joint Venture (JV) is pleased to present ten (10) copies of the Comparison of Soil Proposed for Excavation with Water Board Environmental Screening for Contract 4 on the subject project. The report was prepared by BASELINE Environmental Consulting, who is engaged under an agreement with the JV to provide environmental soil investigation services. The report has been reviewed by the JV.

The report presents a comparison of non-hazardous soil proposed for excavation under Contract 4 with Environmental Screening Levels (ESLs). Attachments to the report include figures, tables, and statistical analyses.

Should you have any questions regarding this report, please contact Cheri Page of BASELINE at (707) 762-5233.

Yours sincerely

REGISTERED PROFESSIONAL ENGINEER
FRANCIS ROBERT GREGURAS
No. GE000356
EXP. 12/31/10
GEOTECHNICAL
STATE OF CALIFORNIA

Francis R. Greguras, P.E., G.E.
Arup PB JV

Distribution: Ray Boyer, Caltrans – 10 copies
Cheri Page, BASELINE Environmental Consulting – 3 copies
John Karn, Arup PB JV Project Manager – 1 copy
Sabine van der Slais, Parsons Brinckerhoff – 1 copy
Project Files

BASELINE
ENVIRONMENTAL CONSULTING

21 January 2010
Y0239-04.A3.01414

Mr. John Karn
ARUP/PB Joint Venture
c/o Arup North America Ltd.
560 Mission Street, Suite 700
San Francisco, CA 94105

Subject: Comparison of Soil Proposed for Excavation with Water Board Environmental Screening Levels, Doyle Drive Replacement Project, Contract 4, San Francisco, California

Dear Mr. Karn:

This letter report provides information to assist the excavation contractor with soil management decisions during highway improvement construction within the Contract 4 area of the Doyle Drive Replacement Project (DDRP), shown on Figure 1. The proposed excavation areas are located on and adjacent to the existing Doyle Drive (Highway 101) in San Francisco, California, on Presidio Trust Lands (Figure 2). Construction is currently scheduled to begin in March 2010. This report has been prepared by BASELINE Environmental Consulting on behalf of the ARUP/PB Joint Venture and Caltrans.

Soils previously determined to be non-hazardous wastes for disposal purposes[1] were screened against Environmental Screening Levels (ESLs) established by the California Regional Water Quality Control Board (Water Board) for residential and commercial/industrial land uses where the groundwater is considered a current or potential source of drinking water,[2] and against ESLs for construction/trench worker direct exposure.[3] Screening against ESLs was performed to provide information for Caltrans and/or contractor use to assist with developing offsite soil management options and assess health and safety concerns.

Evaluation of possible reuse of soils within Contract 4 of the DDRP in accordance with Presidio Trust reuse criteria is not addressed in this report, and may be presented in a separate report to be prepared by BASELINE. BASELINE understands the contractor will be preparing a Soil

[1] ARUP/PB Joint Venture, 2009, Doyle Drive Replacement Project, Environmental Soil Investigation, Contract 4, August.

[2] California Regional Water Quality Control Board (Water Board), San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A.

[3] Ibid, Table K-3.

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Emeryville Petaluma

Management Plan based on recommendations of the Contract 4 Environmental Soil Investigation Report4 and this supplemental letter report.

BACKGROUND

Soil proposed for excavation within the Contract 4 area has been chemically characterized in a previous environmental boring and soil sampling program.[5] Soil sampling in the Contract 4 area was conducted in January 2009 in accordance with a Soil and Groundwater Sampling Work Plan,[6] which was reviewed and accepted by the Presidio Trust. Boring locations and sample composite areas are shown on Figure 2. Discrete and composite sample correlations are provided on Table 1.

The sampling program was a systematic investigation of the quality of soils that were expected to be excavated during the DDRP, and was primarily intended to provide data to classify soil for waste disposal purposes. The soil classification study concluded that the materials that should be classified as hazardous waste in the Contract 4 area were: 1) all soil in the top 2.5 feet in Composite Area 11; and 2) serpentinite bedrock. Therefore, the quality of all other soils expected to be excavated in the Contract 4 area were compared against ESLs in this technical memorandum.

COMPARISON OF SOIL PROPOSED FOR EXCAVATION WITH ESLS

Soils previously determined to be non-hazardous included all soils from Composite Areas 9, 10, and 12 with the exception of serpentinite bedrock. Non-hazardous soils from these Composite Areas were grouped in subsets by potential waste stream, or chemically similar soil types, for comparison against screening levels. In particular, the following subsets were evaluated against ESLs:

- (1) top 2.5 feet of soil;
- (2) fill deeper than 2.5 feet below ground surface (bgs);
- (3) alluvium deeper than 2.5 feet bgs;
- (4) Colma Sand deeper than 2.5 feet bgs; and
- (5) non-serpentinite bedrock.

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[4] ARUP/PB Joint Venture, 2009, op cit.

[5] ARUP/PB Joint Venture, 2009, op cit.

[6] Caltrans and ARUP/PB Joint Venture, 2008, Doyle Drive Replacement Project, License to Enter and Conduct Geotechnical Investigations, Exhibit No. 3, Soil and Groundwater Sampling – Work Plan, October.

Analytical results for all the soil samples are summarized in Tables 2 through 8, which are organized by the above subsets. Note that some composite samples are included in more than one subset in the tables. For example, composite sample EC09-F001 is summarized under "Top 2.5 Feet of Soil" and "Fill Deeper than 2.5 Feet below Ground Surface" subsets in Table 2 because the discrete samples used to make up EC09-F001 were from both subsets. Only compounds that were identified above laboratory reporting limits in at least one sample are presented on the tables. Semi-volatile organic compounds with the exception of certain polycyclic aromatic hydrocarbons (PAHs) (analyzed by EPA Method 8270C) and herbicides (analyzed by EPA Method 8151A) were not reported above laboratory reporting limits; therefore, the results are not tabulated.

ESLs are listed at the bottom of the summary tables for all compounds with established values. Concentrations that exceed any of the ESLs are shaded in the tables, and are discussed below.

Total Lead in Soil in Top 2.5 Feet Subset

Total lead concentrations exceeded residential ESLs only in one discrete sample from the top 2.5 feet of soil. This sample (E075F-1.0, Table 3) had a total lead concentration of 320 milligrams per kilogram (mg/kg), which is above the residential ESL of 200 mg/kg, Total lead concentrations did not exceed the commercial or construction/trench worker ESL of 750 mg/kg in any samples from this subset. Total lead was evaluated further to determine whether a representative concentration exceeded the residential ESL.

The EPA Risk Assessment Guidance for Superfund (RAGS) specifies that the 95 percent upper confidence limit (UCL) on the arithmetic average should be calculated and used as a reasonable estimate of the exposure concentration over time.[7] Using ProUCL version 4.00.04 software, estimates of the 95 percent UCL for total lead concentrations in discrete samples from the top 2.5 feet of soil subset were calculated. The software tests the data to determine if it is consistent with normal, lognormal, or gamma distributions, and also calculates UCLs assuming these three distributions as well using nonparametric methods.

Only lead concentrations for discrete samples were used to estimate the 95 percent UCL since all samples collected from the top 2.5 feet of soil were analyzed discretely for lead (Table 3). Data for composite samples also listed in Table 3 are not representative of this subset since they contained discrete samples from both above and below 2.5 feet bgs.

[7] U.S. Environmental Protection Agency, 1989, Risk Assessment Guidance for Superfund ["RAGS"], Volume 1, Human Health Evaluation Manual (Part A), EPA/540/1-89/002.

Total lead concentrations for the 40 discrete samples were used to estimate the 95% UCL. The basic statistics on the data are summarized below.

	Number of Observations	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	Median (mg/kg)	Standard Deviation
Lead	40	1.6	320	46	13	66.28

The total lead concentrations and the ProUCL 95% UCL output file are provided in Attachment A. The lead data do not follow a normal, lognormal, or gamma distribution. The ProUCL algorithm recommended using the non-parametric, 99% Chebyshev UCL of 150 mg/kg, which is below the residential ESL of 200 mg/kg. Therefore, the representative lead concentration in soil from the top 2.5 feet of soil is below the residential ESL where the groundwater is considered a current or potential source of drinking water.

Arsenic and Vanadium in All Subsets

Arsenic and vanadium concentrations exceeded the residential ESLs in all samples from all soil subsets, and arsenic also equaled or exceeded the commercial ESL in all samples (Table 2). However, none of the arsenic or vanadium concentrations are above background concentrations published by the Lawrence Berkeley National Laboratory (LBNL).

Background concentrations for arsenic published by the LBNL are substantially higher than the ESLs for residential and commercial/industrial land uses, which are based on health risk considerations. The 95th and 99th percentile for arsenic determined by the LBNL is 17 and 28 mg/kg (LBNL, 2009),[8] respectively, whereas the residential and commercial/industrial ESLs are 0.39 and 1.6 mg/kg, respectively. The 95th and 99th percentile determined by LBNL for vanadium is 77 and 90 mg/kg, respectively, above the residential ESL of 16 mg/kg. All arsenic and vanadium concentrations for all soil subsets are below the 95th percentile determined by the LBNL.

Polycyclic Aromatic Hydrocarbons in Top 2.5 Feet Subset

With the exception of one composite sample, EC12-F002, analyzed by EPA Method 8270C, PAH concentrations were fairly consistent. The EC12-F002 sample analyzed by EPA Method 8270C contained six PAHs at elevated concentrations, above residential and/or commercial ESLs (Table 6). This composite sample was also analyzed by EPA Methods 8310, and the PAHs concentrations were substantially lower than those determined by EPA Method 8270C, and were

[8] Lawrence Berkeley National Laboratory (LBNL), 2009, Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory, revised, April.

consistent with all the other composite samples analyzed. All quality assurance parameters for both methods were acceptable. The most plausible explanation for the differences between the EPA Method 8270C and 8310 results is composite sample non-homogeneity. The five discrete samples used to make up this composite sample were composited by the laboratory, and unique aliquots were used for each analysis. One of the five discrete samples was collected immediately below an asphalt road. Asphalt particles, which contain high concentrations of PAHs, may have been present in the aliquot used for the EPA Method 8270C analysis, which could account for the elevated concentrations. Since the EPA Method 8270C results are so much higher than the results for all the other soil samples and appear anomalous, the EPA Method 8270C PAH results are not considered representative, and are not considered in the ESL comparison discussed below.

With the exception of the composite sample EC12-F002 results determined by EPA Method 8270C, the only PAH that exceeds the residential ESL is benzo(a)pyrene in the soil from the top 2.5 feet. Two samples contained benzo(a)pyrene above the residential ESL of 0.038 mg/kg, but below the commercial/industrial and construction/trench worker ESLs. Benzo(a)pyrene was evaluated further to determine whether a representative concentration exceeds the residential ESL in this subset.

Using ProUCL software, estimates of the 95 percent UCL for benzo(a)pyrene concentrations in samples from the top 2.5 feet subset were calculated. The data used for these calculations and the ProUCL output file are provided in Attachment A. The basic statistics for this data set are summarized below.

	Number of Detections	Number of Non-Detects	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	Median (mg/kg)	Standard Deviation
Benzo(a)pyrene	12	3	0.0016	0.089	0.021	0.012	0.027

Fifteen samples were used to calculate the 95 percent UCL in the top 2.5 feet subset. It should be noted that most of the composite samples were made up of discrete samples collected from the top 2.5 feet of soil, as well as from fill, alluvium, and Colma Sand deeper than 2.5 feet bgs.

The data do not follow a normal distribution, but are consistent with lognormal and gamma distributions at a five percent significance level. The 95 percent UCLs estimated assuming lognormal and gamma distributions ranged from 0.028 to 0.035 mg/kg. However, the ProUCL algorithm suggests using the non-parametric, 95 percent KM Chebyshev UCL of 0.046 mg/kg. This 95 percent UCL is above the residential ESL of 0.038 mg/kg, and below the commercial/industrial ESL of 0.13 mg/kg for benzo(a)pyrene. Therefore, the representative benzo(a)pyrene concentration in soil from this subset exceeds the residential land uses ESL and

is below the commercial/industrial ESL where the groundwater is considered a current or potential source of drinking water.

Polycyclic Aromatic Hydrocarbons in Fill Deeper than 2.5 Feet Subset

The benzo(a)pyrene concentration exceeded the residential ESL of 0.038 mg/kg in one out of eight composite samples from fill deeper than 2.5 feet bgs subset (Table 6). None of the benzo(a)pyrene concentrations were above the commercial/industrial ESLs. Benzo(a)pyrene was evaluated further to determine whether a representative concentration exceeded the residential ESL in this subset.

Using ProUCL software, estimates of the 95 percent UCL for benzo(a)pyrene concentrations in samples from fill deeper than 2.5 feet were calculated. The data used for these calculations and the ProUCL output file are provided in Appendix A. The basic statistics for this data set are summarized below.

	Number of Detections	Number of Non-Detects	Minimum (mg/kg)	Maximum (mg/kg)	Mean (mg/kg)	Median (mg/kg)	Standard Deviation
Benzo(a)pyrene	7	1	0.0027	0.063	0.017	0.011	0.0206

Eight samples were used to calculate the 95 percent UCL in this subset. Most of these samples are composite samples of soil both above and below 2.5 feet bgs, and were also used in the statistical analysis of the top 2.5 feet subset. The data do not follow a normal distribution, but are consistent with lognormal and gamma distributions at a five percent significance level. The 95 percent UCLs estimated assuming lognormal and gamma distributions ranged from 0.028 to 0.12 mg/kg. However, the ProUCL algorithm suggests using the non-parametric, 95 percent KM Chebyshev UCL of 0.046 mg/kg. This 95 percent UCL is above the residential ESL of 0.038 mg/kg, and below the commercial/industrial ESL of 0.13 mg/kg for benzo(a)pyrene. Therefore, the representative benzo(a)pyrene concentration in soil from this subset exceeds the residential land uses ESL and is below the commercial/industrial ESL where the groundwater is considered a current or potential source of drinking water.

CONCLUSIONS

A systematic investigation of the quality of the soils previously determined to be nonhazardous wastes that are expected to be excavated within the Contract 4 area of the DDRP has been evaluated against ESLs established by the Water Board.

All soil subsets exceeded residential and commercial/industrial ESLs for arsenic, and exceeded the residential ESL for vanadium. However, these metals appear to be present at concentrations

below regional background levels, as discussed above. ESL exceedances due to compounds other than these two metals are listed below.

The soil subsets where the representative concentrations exceeded residential ESLs are as follows:

- Benzo(a)pyrene in soil in top 2.5 feet subset
- Benzo(a)pyrene in fill deeper than 2.5 feet bgs

No compounds in any of the subsets were present in concentrations that exceeded the commercial/industrial or construction/trench worker ESLs.

Should you have any questions or need additional information regarding the data presented in this letter, please do not hesitate to contact us at your convenience.

Sincerely,

Cheri Page
Senior Geologist
P.G. No. 5288

Lydia Huang
Senior Engineer
P.E. No. 43995

CP:LH:cr

Attachments:

Figure 1 – Contract 4 Area and Regional Plan
Figure 2 – Boring Locations and Composite Areas

Table 1: Soil Composite and Discrete Sample Correlations
Table 2: Total Metal Concentrations in Soil
Table 3: Total and Soluble Chromium and Lead Concentrations in Soil
Table 4: Total Petroleum Hydrocarbon Concentrations in Soil
Table 5: Volatile Organic Compound Concentrations in Soil
Table 6: Polycyclic Aromatic Hydrocarbon Concentrations in Soil
Table 7: Pesticide Concentrations in Soil
Table 8: Polychlorinated Biphenyl Concentrations in Soil

Attachment A: Statistical Analyses

FIGURES

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	sf	101,1	9.2/9.8, 6.8/7.1		

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

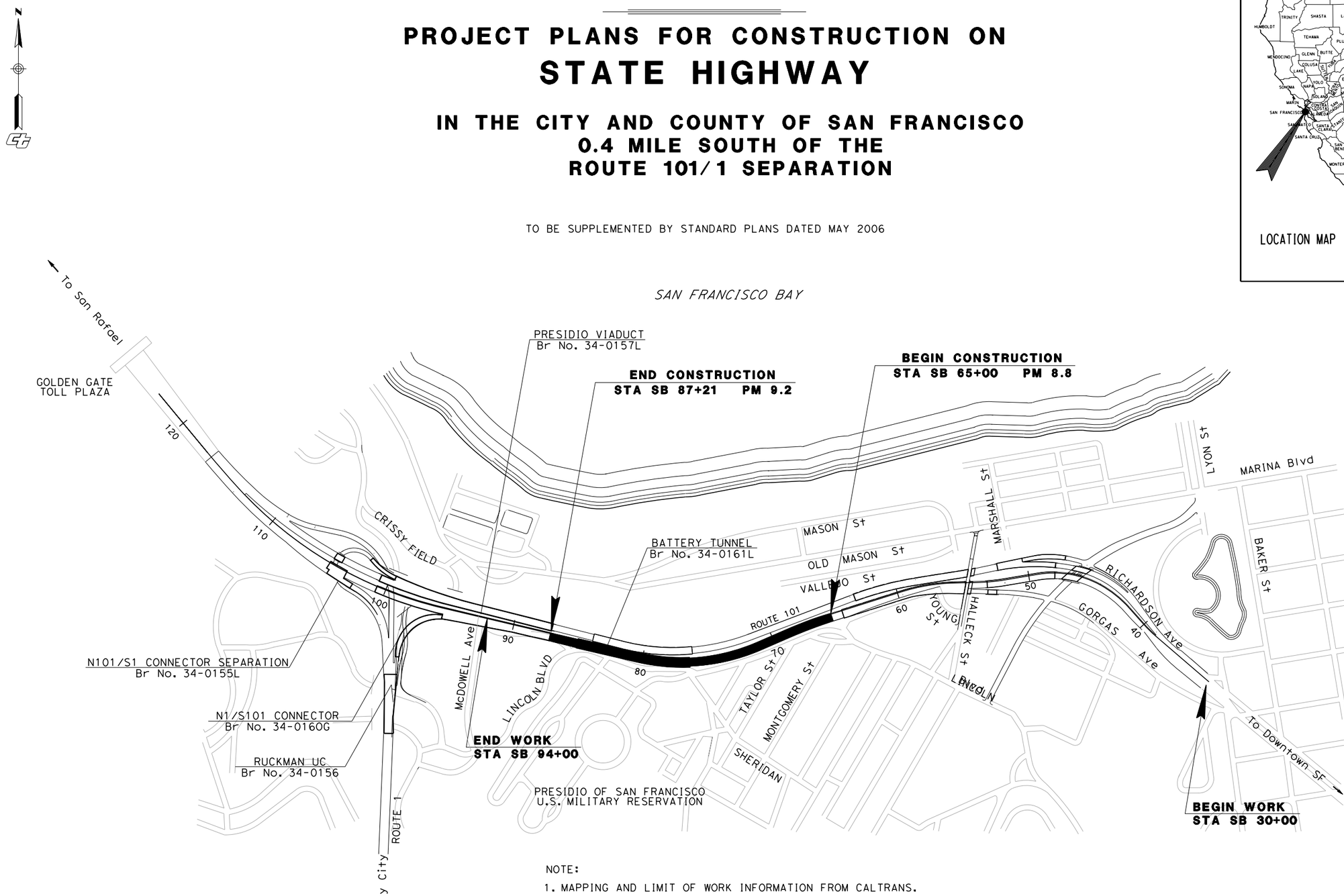
PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN THE CITY AND COUNTY OF SAN FRANCISCO
0.4 MILE SOUTH OF THE
ROUTE 101/1 SEPARATION

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

LOCATION MAP



NOTE:

1. MAPPING AND LIMIT OF WORK INFORMATION FROM CALTRANS.

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

Caltrans

ARUP PB joint venture

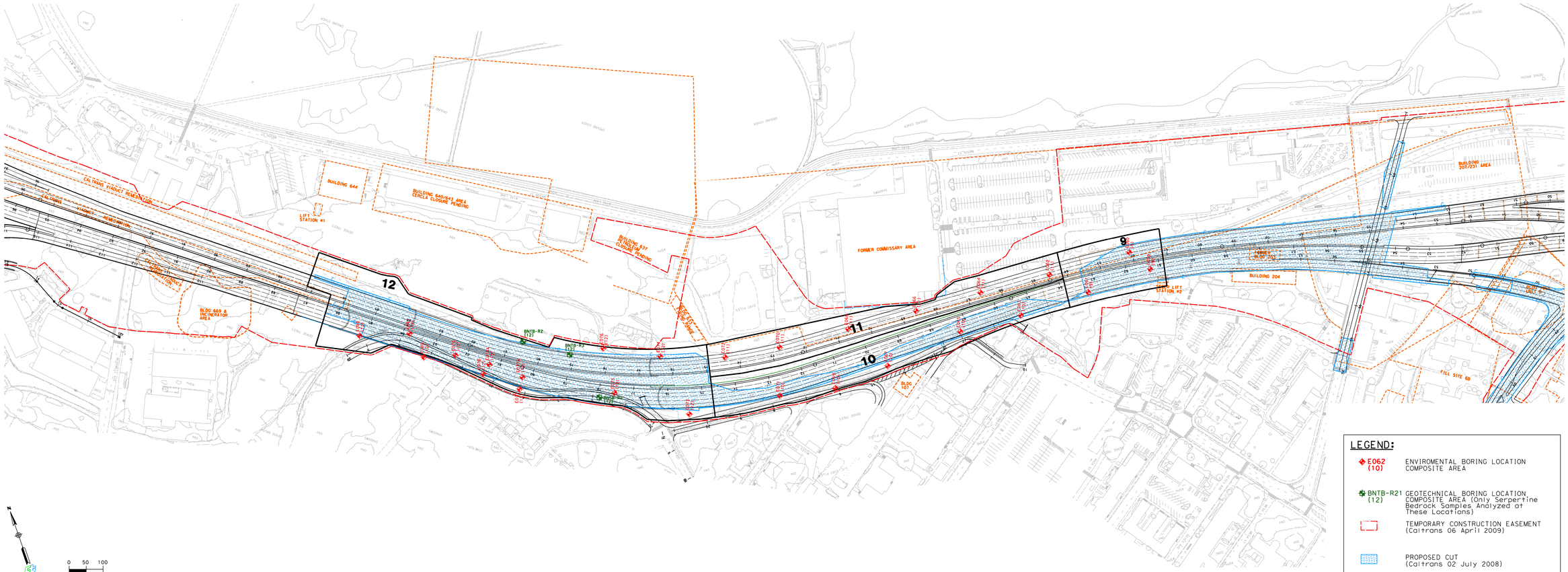
CONTRACT 4 AREA & REGIONAL PLAN
FIGURE 1 - JULY 24, 2009

0 250 500 1000
FEET

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3


12
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BUILDING 644
BUILDING 640/643 AREA
CERCLA CLOSURE PENDING
BUILDING 637
CERCLA CLOSURE PENDING
FORMER COMMISSARY AREA
BUILDING 204
BUILDING 207/237 AREA
LIFT STATION #1
LIFT STATION #2
BLDG 665 & INCINERATOR AREA
BLDG 101
FILL SITE 60
BNTB-R2
BNTB-R3
BNTB-R4
BNTB-R5
BNTB-R6
BNTB-R7
BNTB-R8
BNTB-R9
BNTB-R10
BNTB-R11
BNTB-R12
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TABLES

TABLE 1: Soil Composite and Discrete Sample Correlations
Contract 4 of Doyle Drive Replacement Project

Composite Area	Composite Sample ID	Lithology	Sample Depth (feet bgs)	Discrete Sample ID
Top 2.5 Feet of Soil				
9	EC09-C001	CO	2.5-12.5	E061C-2.5
				E061C-7.5
				E061C-12.5
9	EC09-F001	F	1.0-7.5	E057F-1.0
				E059F-1.0
				E059F-2.5
				E059F-7.5
				E061F-1.0
9	EC09-F003	F/FS	1.0-12.5	E055F-7.5
				E055F-12.5
				E060F-1.0
				E060FS-2.5
9	EC09-F004	F	1.0-7.5	E058F-1.0
				E058F-2.5
				E058F-7.5
				E060F-7.5
10	EC10-F001	F	1.0-7.5	E069F-1.0
				E069F-2.5
				E071F-1.0
				E071F-2.5
				E071F-7.5
10	EC10-F002	F	1.0-7.5	E065F-1.0
				E065F-2.5
				E065F-7.5
				E067F-1.0
				E067F-2.5
10	EC10-F003	F	1.0-22.0	E063F-1.0
				E063F-2.5
				E065F-12.5
				E065F-17.5
				E065F-22.0
12	EC12-A002	A	1.0-7.5	E080A-2.5
				E080A-7.5
				E082A-1.0
				E082A-2.5
				E082A-7.5
12	EC12-A004	A	2.5-22.5	E078A-2.5
				E078A-7.5
				E078A-12.5
				E078A-17.5
				E078A-22.5
12	EC12-A005	A	1.0-27.5	E077A-2.5
				E077A-7.5
				E078A-27.5
				E078AA-1.0
				E078AA-2.5

TABLE 1: Soil Composite and Discrete Sample Correlations
Contract 4 of Doyle Drive Replacement Project

Composite Area	Composite Sample ID	Lithology	Sample Depth (feet bgs)	Discrete Sample ID
12	EC12-A006	A	1.0-17.5	E075A-7.5
				E077AA-1.0
				E077AA-2.0
				E077A-12.5
				E077A-17.5
12	EC12-F002	F	1.0-2.5	E078F-1.0
				E079F-1.0
				E079F-2.5
				E081F-1.0
				E081F-2.5
12	EC12-F003	F	1.0-2.5	E073F-1.0
				E075F-1.0
				E075F-2.5
				E077F-1.0
12	EC12-F004	F	2.5-12.5	E073F-2.5
				E073F-7.5
				E073F-12.5
12	EC12-F005	F	1.0-2.5	E074F-1.0
				E074F-2.5
				E076F-1.0
				E076F-2.5
				E080F-1.0
Fill Deeper than 2.5 Feet below Ground Surface				
9	EC09-F001	F	1.0-7.5	E057F-1.0
				E059F-1.0
				E059F-2.5
				E059F-7.5
				E061F-1.0
9	EC09-F003	F/FS	1.0-12.5	E055F-7.5
				E055F-12.5
				E060F-1.0
				E060FS-2.5
9	EC09-F004	F	1.0-7.5	E058F-1.0
				E058F-2.5
				E058F-7.5
				E060F-7.5
9	EC09-F005	F	7.5-12.5	E055F-7.5
				E055F-12.5
				E058F-7.5
				E059F-7.5
				E060F-7.5
10	EC10-F001	F	1.0-7.5	E069F-1.0
				E069F-2.5
				E071F-1.0
				E071F-2.5
				E071F-7.5

TABLE 1: Soil Composite and Discrete Sample Correlations
Contract 4 of Doyle Drive Replacement Project

Composite Area	Composite Sample ID	Lithology	Sample Depth (feet bgs)	Discrete Sample ID
10	EC10-F002	F	1.0-7.5	E065F-1.0
				E065F-2.5
				E065F-7.5
				E067F-1.0
				E067F-2.5
10	EC10-F003	F	1.0-22.0	E063F-1.0
				E063F-2.5
				E065F-12.5
				E065F-17.5
				E065F-22.0
10	EC10-F004	F/FS	7.5-22.5	E063F-7.5
				E063F-11.5[1]
				E063F-17.5
				E063FS-22.5
10	EC10-F005	F	7.5-22.0	E065F-7.5
				E065F-12.5
				E065F-17.5
				E065F-22.0
				E071F-7.5
12	EC12-F004	F	2.5-12.5	E073F-2.5
				E073F-7.5
				E073F-12.5
12	EC12-F006	F	7.5-12.5	E073F-7.5
				E073F-12.5
Alluvium Deeper than 2.5 Feet below Ground Surface				
10	EC10-A001	A	7.0-17.5	E069A-7.0
				E069A-12.5
				E071A-12.5
				E071A-17.5
10	EC10-A002	A	7.5-17.5	E067A-7.5
				E067A-12.5
				E069A-17.5
12	EC12-A001	A	7.5-17.5	E074A-7.5
				E074A-12.5
				E076A-7.5
				E076A-12.5
				E076A-17.5
12	EC12-A002	A	1.0-7.5	E080A-2.5
				E080A-7.5
				E082A-1.0
				E082A-2.5
				E082A-7.5
12	EC12-A003	A	7.5-27.5	E079A-7.5
				E079A-12.5
				E079A-17.5
				E079A-22.5
				E079A-27.5

TABLE 1: Soil Composite and Discrete Sample Correlations
Contract 4 of Doyle Drive Replacement Project

Composite Area	Composite Sample ID	Lithology	Sample Depth (feet bgs)	Discrete Sample ID
12	EC12-A004	A	2.5-22.5	E078A-2.5
				E078A-7.5
				E078A-12.5
				E078A-17.5
				E078A-22.5
12	EC12-A005	A	1.0-27.5	E077A-2.5
				E077A-7.5
				E078A-27.5
				E078AA-1.0
				E078AA-2.5
12	EC12-A006	A	1.0-17.5	E075A-7.5
				E077AA-1.0
				E077AA-2.0
				E077A-12.5
				E077A-17.5
12	EC12-A007	A	12.5-22.5	E073A-17.5
				E073A-22.5
				E075A-12.5
				E075A-17.5
Colma Sand Deeper than 2.5 Feet below Ground Surface				
9	EC09-C001	C	2.5-12.5	E061C-2.5
				E061C-7.5
				E061C-12.5
10	EC10-C001	C	17.5-27.5	E067C-17.5
				E067C-22.5
				E069C-22.5
				E071C-22.5
				E071C-27.5
12	EC12-C001	C	17.5-32.5	E074C-17.5
				E074C-22.5
				E076C-22.5
				E076C-27.5
				E076C-32.5
12	EC12-C002	C	12.5-37.5	E074C-27.5
				E074C-32.5
				E074C-37.5
				E082C-12.5
12	EC12-C003	C	22.5-32.5	E073C-27.5
				E073C-32.5
				E075C-22.5
				E075C-27.5

TABLE 1: Soil Composite and Discrete Sample Correlations
Contract 4 of Doyle Drive Replacement Project

Composite Area	Composite Sample ID	Lithology	Sample Depth (feet bgs)	Discrete Sample ID
Non-Serpentinite Bedrock				
12	EC12-BR001	BR	7.5-22.5	E080BR-12.5
				E080BR-17.5
				E081BR-7.5
				E082BR-17.5
				E082BR-22.5
12	EC12-BR002	BR	23.0-38.0	E077BR-23.0
				E077BR-28.0
				E079BR-33.0
				E079BR-38.0

Notes:

Boring locations are shown on Figure 2.

Key to Discrete Sample IDs: E061C-2.5 indicates sample collected from environmental boring number E061, lithology of sample is Colma Sand (C=Colma Sand), and sample depth is 2.0 to 2.5 feet bgs.

Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).

Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.

bgs = below ground surface.

[1] The laboratory sample identification was E063F-12.5. BASELINE changed the sample identification to E063F-11.5 based on review of the boring log.

TABLE 2: Total Metal Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Sample Depth (feet bgs)	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Top 2.5 Feet of Soil																				
9	EC09-C001	2.5-12.5	1/22/2009	<0.29	1.6	30	0.19	<0.29	80	8.4	8	2.5	<0.024	<0.29	50	<0.29	<0.29	<0.29	44	27
9	EC09-F001	1.0-7.5	1/22/2009	0.08	2	53	0.18	0.063	72	9.1	18	12	0.072	0.16	51	0.19	0.082	<0.28	46	38
9	EC09-F003	1.0-12.5	1/23/2009	0.2	3.1	90	0.3	0.087	79	8.1	33	6.5	<0.024	0.16	44	0.11	<0.29	<0.29	42	33
9	EC09-F004	1.0-7.5	1/23/2009	0.22	2.9	80	0.22	0.35	45	6.5	21	140	0.043	0.28	31	<0.29	<0.29	<0.29	38	76
10	EC10-F001	1.0-7.5	1/21/2009	0.18	3.4	58	0.29	0.072	62	6.5	15	24	<0.022	0.31	35	0.19	<0.27	0.034	46	41
10	EC10-F002	1.0-7.5	1/21/2009	0.35	4.4	110	0.41	0.14	63	12	28	96	0.17	0.34	72	0.16	0.078	0.037	45	94
10	EC10-F003	1.0-22.0	1/22/2009	0.24	3.6	140	0.26	0.2	69	12	23	90	0.13	0.33	65	0.11	0.12	<0.27	49	150
12	EC12-A002	1.0-7.5	1/13/2009	0.092	4	84	0.3	<0.27	48	13	12	5.9	<0.023	0.27	35	0.2	<0.27	<0.27	43	38
12	EC12-A004	2.5-22.5	1/14/2009	<0.26	2.6	30	0.12	<0.26	42	6.2	9.3	2	<0.022	0.066	25	<0.26	<0.26	<0.26	33	23
12	EC12-A005	1.0-27.5	1/14/2009	<0.26	2.9	29	0.1	<0.26	35	5.3	9	4.5	<0.021	0.075	29	<0.26	<0.26	<0.26	29	22
12	EC12-A006	1.0-17.5	1/14/2009	<0.27	2.9	37	0.12	<0.27	44	7.1	34	4.9	<0.022	0.072	37	<0.27	<0.27	<0.27	33	43
12	EC12-F002	1.0-2.5	1/13/2009	0.14	3.1	180	0.23	0.097	43	9.2	39	34	0.2	0.58	38	0.15	<0.27	<0.27	37	61
12	EC12-F003	1.0-2.5	1/15/2009	0.22	2.6	120	0.22	0.24	39	8.9	34	120	0.092	0.28	41	0.12	<0.28	<0.28	30	94
12	EC12-F004	2.5-12.5	1/15/2009	<0.27	3	87	0.22	<0.27	45	7.4	14	3.6	<0.021	0.23	27	0.19	<0.27	<0.27	39	31
12	EC12-F005	1.0-2.5	1/12/2009	0.41	3.6	170	0.36	0.22	60	11	28	50	0.18	0.59	35	0.23	0.14	0.13	46	65
Fill Deeper than 2.5 Feet below Ground Surface																				
9	EC09-F001	1.0-7.5	1/22/2009	0.08	2	53	0.18	0.063	72	9.1	18	12	0.072	0.16	51	0.19	0.082	<0.28	46	38
9	EC09-F003	1.0-12.5	1/23/2009	0.2	3.1	90	0.3	0.087	79	8.1	33	6.5	<0.024	0.16	44	0.11	<0.29	<0.29	42	33
9	EC09-F004	1.0-7.5	1/23/2009	0.22	2.9	80	0.22	0.35	45	6.5	21	140	0.043	0.28	31	<0.29	<0.29	<0.29	38	76
10	EC10-F001	1.0-7.5	1/21/2009	0.18	3.4	58	0.29	0.072	62	6.5	15	24	<0.022	0.31	35	0.19	<0.27	0.034	46	41
10	EC10-F002	1.0-7.5	1/21/2009	0.35	4.4	110	0.41	0.14	63	12	28	96	0.17	0.34	72	0.16	0.078	0.037	45	94
10	EC10-F003	1.0-22.0	1/22/2009	0.24	3.6	140	0.26	0.2	69	12	23	90	0.13	0.33	65	0.11	0.12	<0.27	49	150
10	EC10-F004	7.5-22.5	1/22/2009	0.16	4.5	180	0.4	<0.3	78	13	20	21	0.059	0.47	53	0.19	<0.3	0.06	57	45
12	EC12-F004	2.5-12.5	1/15/2009	<0.27	3	87	0.22	<0.27	45	7.4	14	3.6	<0.021	0.23	27	0.19	<0.27	<0.27	39	31
Alluvium Deeper than 2.5 Feet below Ground Surface																				
10	EC10-A001	7.0-17.5	1/21/2009	0.19	5.3	83	0.54	<0.29	77	14	21	5.5	0.023	0.55	55	0.11	<0.29	0.076	68	49
10	EC10-A002	7.5-17.5	1/21/2009	0.11	4.9	45	0.34	0.092	110	14	16	4.1	<0.024	0.32	73	<0.28	<0.28	0.036	67	39
12	EC12-A001	7.5-17.5	1/12/2009	0.13	4.5	110	0.38	<0.29	68	15	25	5.2	0.055	0.4	50	0.15	<0.29	<0.29	58	73
12	EC12-A002	1.0-7.5	1/13/2009	0.092	4	84	0.3	<0.27	48	13	12	5.9	<0.023	0.27	35	0.2	<0.27	<0.27	43	38
12	EC12-A003	7.5-27.5	1/16/2009	<0.27	3.4	58	0.22	<0.27	43	9.1	15	2.7	0.038	0.17	30	0.1	<0.27	<0.27	35	36
12	EC12-A004	2.5-22.5	1/14/2009	<0.26	2.6	30	0.12	<0.26	42	6.2	9.3	2	<0.022	0.066	25	<0.26	<0.26	<0.26	33	23
12	EC12-A005	1.0-27.5	1/14/2009	<0.26	2.9	29	0.1	<0.26	35	5.3	9	4.5	<0.021	0.075	29	<0.26	<0.26	<0.26	29	22
12	EC12-A006	1.0-17.5	1/14/2009	<0.27	2.9	37	0.12	<0.27	44	7.1	34	4.9	<0.022	0.072	37	<0.27	<0.27	<0.27	33	43
12	EC12-A007	12.5-22.5	1/15/2009	0.073	3.5	120	0.31	<0.29	69	8.9	19	4.4	0.1	0.26	39	0.13	<0.29	<0.29	48	45
Colma Sand Deeper than 2.5 Feet below Ground Surface																				
9	EC09-C001	2.5-12.5	1/22/2009	<0.29	1.6	30	0.19	<0.29	80	8.4	8	2.5	<0.024	<0.29	50	<0.29	<0.29	<0.29	44	27
10	EC10-C001	17.5-27.5	1/21/2009	0.056	3.7	39	0.23	<0.28	82	12	13	2.7	<0.023	0.17	71	<0.28	<0.28	<0.28	61	32
12	EC12-C001	17.5-32.5	1/12/2009	<0.29	5.7	75	0.21	<0.29	70	22	9.6	3.3	<0.026	0.11	86	<0.29	<0.29	<0.29	53	45
12	EC12-C002	12.5-37.5	1/12/2009	<0.3	3.5	52	0.2	<0.3	55	13	27	2.9	<0.025	0.092	71	<0.3	<0.3	<0.3	42	50
12	EC12-C003	22.5-32.5	1/15/2009	<0.29	4.3	50	0.22	<0.29	75	12	12	2.9	<0.024	0.13	62	<0.29	<0.29	<0.29	56	36

TABLE 2: Total Metal Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Sample Depth (feet bgs)	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Non-Serpentinite Bedrock																				
12	EC12-BR001	7.5-22.5	1/13/2009	**0.27**	**6.7**	**140**	**0.53**	<0.3	**36**	**12**	**45**	**9.2**	**0.056**	**0.52**	**68**	**0.095**	<0.3	<0.3	**38**	**77**
12	EC12-BR002	23.0-38.0	1/15/2009	**0.27**	**7**	**130**	**0.53**	<0.29	**64**	**12**	**36**	**7.3**	**0.088**	**0.29**	**71**	**0.2**	<0.29	<0.29	**64**	**65**
ESL for Residential Land Use (mg/kg) [1]				6.3	**0.39**	750	4.0	1.7	750 [5]	40	230	200	1.3	40	150	10	20	1.3	**16**	600
ESL for Commercial/Industrial Land Use (mg/kg) [2]				40	**1.6**	1,500	8.0	7.4	750 [5]	80	230	750	10	40	150	10	40	16	200	600
ESL for Construction/Trench Worker Exposure (mg/kg) [3]				310	15	2,600	98	39	1,200,000 [5]	94	310,000	750	58	3,900	260	3,900	3,900	62	770	230,000
LBNL Upper 95th Percentile of Background Metals [4]				NV	17	280	NV	NV	100	22	58	17	NV	NV	164	NV	NV	NV	77	110
LBNL Upper 99th Percentile of Background Metals [4]				<6	28	410	1.0	5.6	120	25	63	43	0.42	4.8	272	4.9	2.9	10	90	140

Shading Key:
Analytical results with shaded gray stripes indicate that concentrations were greater than or equal to ESLs, but less than background metal concentrations.
Screening values shaded blue indicate that at least one analytical result was greater than or equal to the screening value.

Notes:
Boring locations are shown on Figure 2.
Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).
Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.
Soil results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan ("QAPP").
Values shown in bold indicate compound was quantified above the laboratory reporting limit.
Additional samples that were analyzed for lead only are included in Table 3.
Title 22 Metals analyzed by Environmental Protection Agency Methods 6020, 6010B, and 7471A (Mercury).
bgs = below ground surface.
mg/kg = milligram per kilogram.
<x.x = Compound was not identified above laboratory reporting limit of x.x.
-- = Not analyzed or not applicable.
NV = No Value.
ESL = Environmental Screening Level.

[1] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.
[2] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.
[3] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May
[4] Lawrence Berkeley National Laboratory ("LBNL"), 2009, Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory, Revised, April.
[5] ESL is for chromium III.

TABLE 3: Total and Soluble Chromium and Lead Concentrations in Soil
Contract 4 of Doyle Drive Replacement Project

Composite Area	Boring ID	Sample ID	Sample Depth (feet bgs)	Sample Date	Chromium	Chromium, TCLP	Chromium, WET	Lead	Lead, TCLP	Lead, WET
				Units	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L
Top 2.5 Feet of Soil										
9	E059	E059F-1.0	1.0	1/23/2009	--	--	--	**2.2**	--	--
9	E059	E059F-2.5	2.5	1/23/2009	--	--	--	**120**	<0.03	**1.1**
9	E060	E060F-1.0	1.0	1/23/2009	--	--	--	**9.9**	--	--
9	E060	E060FS-2.5	2.5	1/23/2009	--	--	--	**21**	--	--
9	E061	E061C-2.5	2.5	1/22/2009	--	--	--	**2.5**	--	--
9	E061	E061F-1.0	1.0	1/22/2009	--	--	--	**8.2**	--	--
9	--	EC09-C001	2.5-12.5	1/22/2009	**80**	--	<0.25	**2.5**	--	--
9	--	EC09-F001	1.0-7.5	1/22/2009	**72**	--	<0.25	**12**	--	--
9	--	EC09-F003	1.0-12.5	1/23/2009	**79**	--	<0.25	**6.5**	--	--
9	--	EC09-F004	1.0-7.5	1/23/2009	**45**	--	--	**140**	**0.32**	**3.7**
10	E063	E063F-1.0	1.0	1/22/2009	--	--	--	**110**	**0.071**	**7.8**
10	E063	E063F-2.5	2.5	1/22/2009	--	--	--	**160**	<0.03	**1.9**
10	E065	E065F-1.0	1.0	1/22/2009	--	--	--	**100**	**0.23**	**15**
10	E065	E065F-2.5	2.5	1/22/2009	--	--	--	**23**	--	--
10	E067	E067F-1.0	1.0	1/21/2009	--	--	--	**160**	<0.03	**2.9**
10	E067	E067F-2.5	2.5	1/21/2009	--	--	--	**13**	--	--
10	E069	E069F-1.0	1.0	1/21/2009	--	--	--	**20**	--	--
10	E069	E069F-2.5	2.5	1/21/2009	--	--	--	**4**	--	--
10	E071	E071F-1.0	1.0	1/21/2009	--	--	--	**79**	--	**1.9**
10	E071	E071F-2.0	2.0	1/21/2009	--	--	--	**12**	--	--
10	--	EC10-F001	1.0-7.5	1/21/2009	**62**	--	<0.25	**24**	--	--
10	--	EC10-F002	1.0-7.5	1/21/2009	**63**	--	<0.25	**96**	--	**6.7**
10	--	EC10-F003	1.0-22.0	1/22/2009	**69**	--	<0.25	**90**	--	**1.1**
12	E073	E073F-1.0	1.0	1/15/2009	--	--	--	**120**	**0.056**	**4.9**
12	E073	E073F-2.5	2.5	1/15/2009	--	--	--	**3**	--	--
12	E074	E074F-1.0	1.0	1/12/2009	--	--	--	**59**	--	**1.2**
12	E074	E074F-2.5	2.5	1/12/2009	--	--	--	**4.6**	--	--
12	E075	E075F-1.0	1.0	1/15/2009	--	--	--	**320**	**0.063**	**2.7**
12	E075	E075F-2.5	2.5	1/15/2009	--	--	--	**30**	--	--
12	E076	E076F-1.0	1.0	1/12/2009	--	--	--	**130**	<0.03	**2**
12	E076	E076F-2.5	2.5	1/12/2009	--	--	--	**2.4**	--	--
12	E077	E077A-2.5	2.5	1/15/2009	--	--	--	**1.8**	--	--
12	E077A	E077AA-1.0	1.0	1/14/2009	--	--	--	**20**	--	--
12	E077A	E077AA-2.5	2.5	1/14/2009	--	--	--	**6.9**	--	--
12	E077	E077F-1.0	1.0	1/15/2009	--	--	--	**14**	--	--
12	E078	E078A-2.5	2.5	1/14/2009	--	--	--	**1.9**	--	--
12	E078A	E078AA-1.0	1.0	1/14/2009	--	--	--	**7.4**	--	--
12	E078A	E078AA-2.5	2.5	1/14/2009	--	--	--	**2.8**	--	--
12	E078	E078F-1.0	1.0	1/14/2009	--	--	--	**8.2**	--	--
12	E079	E079F-1.0	1.0	1/16/2009	--	--	--	**120**	**0.033**	**4.3**
12	E079	E079F-2.5	2.5	1/16/2009	--	--	--	**49**	--	--
12	E080	E080A-2.5	2.5	1/14/2009	--	--	--	**1.6**	--	--

TABLE 3: Total and Soluble Chromium and Lead Concentrations in Soil
Contract 4 of Doyle Drive Replacement Project

Composite Area	Boring ID	Sample ID	Sample Depth (feet bgs)	Sample Date	Chromium	Chromium, TCLP	Chromium, WET	Lead	Lead, TCLP	Lead, WET
				Units	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L
12	E080	E080F-1.0	1.0	1/14/2009	--	--	--	**60**	--	**1.1**
12	E081	E081F-1.0	1.0	1/13/2009	--	--	--	**3.7**	--	--
12	E081	E081F-2.5	2.5	1/13/2009	--	--	--	**13**	--	--
12	E082	E082A-1.0	1.0	1/13/2009	--	--	--	**4.1**	--	--
12	E082	E082A-2.5	2.5	1/13/2009	--	--	--	**5.1**	--	--
12	--	EC12-A002	1.0-7.5	1/13/2009	**48**	--	--	**5.9**	--	--
12	--	EC12-A004	2.5-22.5	1/14/2009	**42**	--	--	**2**	--	--
12	--	EC12-A005	1.0-27.5	1/14/2009	**35**	--	--	**4.5**	--	--
12	--	EC12-A006	1.0-17.5	1/14/2009	**44**	--	--	**4.9**	--	--
12	--	EC12-F002	1.0-2.5	1/13/2009	**43**	--	--	**34**	--	--
12	--	EC12-F003	1.0-2.5	1/15/2009	**39**	--	--	**120**	**0.14**	**1.2**
12	--	EC12-F004	2.5-12.5	1/15/2009	**45**	--	--	**3.6**	--	--
12	--	EC12-F005	1.0-2.5	1/12/2009	**60**	--	**0.28**	**50**	--	**0.67**
Fill Deeper than 2.5 Feet below Ground Surface										
9	--	EC09-F001	1.0-7.5	1/22/2009	**72**	--	<0.25	**12**	--	--
9	--	EC09-F003	1.0-12.5	1/23/2009	**79**	--	<0.25	**6.5**	--	--
9	--	EC09-F004	1.0-7.5	1/23/2009	**45**	--	--	**140**	**0.32**	**3.7**
9	--	EC09-F005	7.5-12.5	1/23/2009	--	--	--	**7.3**	--	--
10	--	EC10-F001	1.0-7.5	1/21/2009	**62**	--	<0.25	**24**	--	--
10	--	EC10-F002	1.0-7.5	1/21/2009	**63**	--	<0.25	**96**	--	**6.7**
10	--	EC10-F003	1.0-22.0	1/22/2009	**69**	--	<0.25	**90**	--	**1.1**
10	--	EC10-F004	7.5-22.5	1/22/2009	**78**	--	**0.45**	**21**	--	--
10	--	EC10-F005	7.5-22.0	1/22/2009	--	--	--	**18**	--	--
12	--	EC12-F004	2.5-12.5	1/15/2009	**45**	--	--	**3.6**	--	--
12	--	EC12-F006	7.5-12.5	1/15/2009	--	--	--	**3.1**	--	--
Alluvium Deeper than 2.5 Feet below Ground Surface										
10	--	EC10-A001	7.0-17.5	1/21/2009	**77**	--	<0.25	**5.5**	--	--
10	--	EC10-A002	7.5-17.5	1/21/2009	**110**	<0.05	<0.25	**4.1**	--	--
12	--	EC12-A001	7.5-17.5	1/12/2009	**68**	--	<0.25	**5.2**	--	--
12	--	EC12-A002	1.0-7.5	1/13/2009	**48**	--	--	**5.9**	--	--
12	--	EC12-A003	7.5-27.5	1/16/2009	**43**	--	--	**2.7**	--	--
12	--	EC12-A004	2.5-22.5	1/14/2009	**42**	--	--	**2**	--	--
12	--	EC12-A005	1.0-27.5	1/14/2009	**35**	--	--	**4.5**	--	--
12	--	EC12-A006	1.0-17.5	1/14/2009	**44**	--	--	**4.9**	--	--
12	--	EC12-A007	12.5-22.5	1/15/2009	**69**	--	--	**4.4**	--	--
Colma Sand Deeper than 2.5 Feet below Ground Surface										
9	--	EC09-C001	2.5-12.5	1/22/2009	**80**	--	<0.25	**2.5**	--	--
10	--	EC10-C001	17.5-27.5	1/21/2009	**82**	--	<0.25	**2.7**	--	--
12	--	EC12-C001	17.5-32.5	1/12/2009	**70**	--	<0.25	**3.3**	--	--
12	--	EC12-C002	12.5-37.5	1/12/2009	**55**	--	<0.25	**2.9**	--	--
12	--	EC12-C003	22.5-32.5	1/15/2009	**75**	--	<0.25	**2.9**	--	--

TABLE 3: Total and Soluble Chromium and Lead Concentrations in Soil
Contract 4 of Doyle Drive Replacement Project

Composite Area	Boring ID	Sample ID	Sample Depth (feet bgs)	Sample Date	Chromium	Chromium, TCLP	Chromium, WET	Lead	Lead, TCLP	Lead, WET
				Units	mg/kg	mg/L	mg/L	mg/kg	mg/L	mg/L
Non-Serpentinite Bedrock										
12	--	EC12-BR001	7.5-22.5	1/13/2009	**36**	--	--	**9.2**	--	--
12	--	EC12-BR002	23.0-38.0	1/15/2009	**64**	--	<0.25	**7.3**	--	--
ESL for Residential Land Use (mg/kg) [1]					750 [5]	NV	NV	**200**	NV	NV
ESL for Commercial/Industrial Land Use (mg/kg) [2]					750 [5]	NV	NV	750	NV	NV
ESL for Construction/Trench Worker Exposure (mg/kg) [3]					1,200,000 [5]	NV	NV	750	NV	NV
LBNL Upper 95th Percentile of Background Metals [4]					100	NV	NV	17	NV	NV
LBNL Upper 99th Percentile of Background Metals [4]					120	NV	NV	43	NV	NV

Shading Key:

Analytical results shaded gray indicate that concentrations were greater than or equal to ESLs.

Screening values shaded blue indicate that at least one analytical result was greater than or equal to the screening value.

Notes:

Boring locations are shown on Figure 2.

Key to Discrete Sample IDs: E061C-2.5 indicates sample collected from environmental boring number E061, lithology of sample is Colma Sand (C=Colma Sand), and sample depth is 2.0 to 2.5 feet bgs.

Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).

Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.

Total metal results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan (QAPP).

Values shown in bold indicate compound was quantified above the laboratory reporting limit.

Total chromium and lead analyzed by Environmental Protection Agency Methods 6010B and 6020.

Soluble chromium and lead analyzed by Waste Extraction Test ("WET") and Toxicity Characteristic Leaching Procedure ("TCLP") methods.

bgs = below ground surface.

mg/kg = milligram per kilogram.

mg/L = milligram per liter.

<x.x = Compound was not identified above laboratory reporting limit of x.x.

-- = Not analyzed or not applicable.

NV = No Value.

ESL = Environmental Screening Level.

[1] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.

TABLE 3: Total and Soluble Chromium and Lead Concentrations in Soil
Contract 4 of Doyle Drive Replacement Project

[2] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.

[3] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May

[4] Lawrence Berkeley National Laboratory ("LBNL"), 2009, Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory, Revised, April.

TABLE 4: Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Sample Depth (feet bgs)	Sample Date	TPH as Gasoline C7-C12	TPH as Diesel C12-C24	TPH as Motor Oil C24-C36
Top 2.5 Feet of Soil						
9	EC09-C001	2.5-12.5	1/22/2009	<1.1	<1.2	<5.9
9	EC09-F001	1.0-7.5	1/22/2009	<1.2	**22**	**94**
9	EC09-F003	1.0-12.5	1/23/2009	<1.1	**24**	**240**
9	EC09-F004	1.0-7.5	1/23/2009	<1.1	**29**	**260**
10	EC10-F001	1.0-7.5	1/21/2009	<1.1	**5.4**	**32**
10	EC10-F002	1.0-7.5	1/21/2009	<1	**11**	**49**
10	EC10-F003	1.0-22.0	1/22/2009	<1.1	**19**	**74**
12	EC12-A002	1.0-7.5	1/13/2009	<1.2	**3.8**	<5.5
12	EC12-A004	2.5-22.5	1/14/2009	<0.97	<1	<5.2
12	EC12-A005	1.0-27.5	1/14/2009	<0.96	<1	<5.2
12	EC12-A006	1.0-17.5	1/14/2009	<1.2	<1.1	<5.4
12	EC12-F002	1.0-2.5	1/13/2009	<1.1	**7.7**	**19**
12	EC12-F003	1.0-2.5	1/15/2009	<1.1	**8.1**	**49**
12	EC12-F004	2.5-12.5	1/15/2009	<1.1	**7.8**	<5.3
12	EC12-F005	1.0-2.5	1/12/2009	<1.1	**10**	**49**
Fill Deeper than 2.5 Feet below Ground Surface						
9	EC09-F001	1.0-7.5	1/22/2009	<1.2	**22**	**94**
9	EC09-F003	1.0-12.5	1/23/2009	<1.1	**24**	**240**
9	EC09-F004	1.0-7.5	1/23/2009	<1.1	**29**	**260**
10	EC10-F001	1.0-7.5	1/21/2009	<1.1	**5.4**	**32**
10	EC10-F002	1.0-7.5	1/21/2009	<1	**11**	**49**
10	EC10-F003	1.0-22.0	1/22/2009	<1.1	**19**	**74**
10	EC10-F004	7.5-22.5	1/22/2009	<1.2	**20**	**66**
12	EC12-F004	2.5-12.5	1/15/2009	<1.1	**7.8**	<5.3
Alluvium Deeper than 2.5 Feet below Ground Surface						
10	EC10-A001	7.0-17.5	1/21/2009	<1.1	<1.1	<5.7
10	EC10-A002	7.5-17.5	1/21/2009	<1.2	<1.1	<5.7
12	EC12-A001	7.5-17.5	1/12/2009	<1.2	<1.2	<5.8
12	EC12-A002	1.0-7.5	1/13/2009	<1.2	**3.8**	<5.5
12	EC12-A003	7.5-27.5	1/16/2009	<1	**1.4**	<5.4
12	EC12-A004	2.5-22.5	1/14/2009	<0.97	<1	<5.2
12	EC12-A005	1.0-27.5	1/14/2009	<0.96	<1	<5.2
12	EC12-A006	1.0-17.5	1/14/2009	<1.2	<1.1	<5.4
12	EC12-A007	12.5-22.5	1/15/2009	<1.2	<1.2	<5.9
Colma Sand Deeper than 2.5 Feet below Ground Surface						
9	EC09-C001	2.5-12.5	1/22/2009	<1.1	<1.2	<5.9
10	EC10-C001	17.5-27.5	1/21/2009	<1.2	<1.1	<5.7
12	EC12-C001	17.5-32.5	1/12/2009	<1.2	<1.2	<5.9
12	EC12-C002	12.5-37.5	1/12/2009	<1.3	<1.2	<5.9
12	EC12-C003	22.5-32.5	1/15/2009	<1.2	<1.2	<5.8
ESL for Residential Land Use (mg/kg) [1]				83	83	370
ESL for Commerical/Industrial Land Use (mg/kg) [2]				83	83	2,500
ESL for Construction/Trench Worker Exposure (mg/kg) [3]				4,200	4,200	12,000

TABLE 4: Total Petroleum Hydrocarbon Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Notes:
Boring locations are shown on Figure 2.
Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).
Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.
Soil results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan ("QAPP").
Values shown in bold indicate compound was quantified above the laboratory reporting limit.
Total petroleum hydrocarbons analyzed by Environmental Protection Agency Method 8015B.
bgs = below ground surface.
mg/kg = milligram per kilogram.
<x.x = Compound was not identified above laboratory reporting limit of x.x.
ESL = Environmental Screening Level.

[1] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.
[2] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.
[3] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May

TABLE 5: Volatile Organic Compound Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Sample Depth (feet bgs)	Sample Date	Acetone	Methylene Chloride
Top 2.5 Feet of Soil					
9	EC09-C001	2.5-12.5	1/22/2009	<0.022	<0.022
9	EC09-F001	1.0-7.5	1/22/2009	**0.031**	<0.021
9	EC09-F003	1.0-12.5	1/23/2009	<0.022	**0.0047**
9	EC09-F004	1.0-7.5	1/23/2009	<0.021	<0.021
10	EC10-F001	1.0-7.5	1/21/2009	<0.021	<0.021
10	EC10-F002	1.0-7.5	1/21/2009	<0.021	<0.021
10	EC10-F003	1.0-22.0	1/22/2009	<0.022	**0.0028**
12	EC12-A002	1.0-7.5	1/13/2009	<0.022	<0.022
12	EC12-A004	2.5-22.5	1/14/2009	**0.0022**	<0.019
12	EC12-A005	1.0-27.5	1/14/2009	<0.021	<0.021
12	EC12-A006	1.0-17.5	1/14/2009	<0.021	<0.021
12	EC12-F002	1.0-2.5	1/13/2009	<0.02	<0.02
12	EC12-F003	1.0-2.5	1/15/2009	<0.021	<0.021
12	EC12-F004	2.5-12.5	1/15/2009	**0.0085**	<0.021
12	EC12-F005	1.0-2.5	1/12/2009	<0.023	<0.023
Fill Deeper than 2.5 Feet below Ground Surface					
9	EC09-F001	1.0-7.5	1/22/2009	**0.031**	<0.021
9	EC09-F003	1.0-12.5	1/23/2009	<0.022	**0.0047**
9	EC09-F004	1.0-7.5	1/23/2009	<0.021	<0.021
10	EC10-F001	1.0-7.5	1/21/2009	<0.021	<0.021
10	EC10-F002	1.0-7.5	1/21/2009	<0.021	<0.021
10	EC10-F003	1.0-22.0	1/22/2009	<0.022	**0.0028**
10	EC10-F004	7.5-22.5	1/22/2009	**0.029**	**0.0032**
12	EC12-F004	2.5-12.5	1/15/2009	**0.0085**	<0.021
Alluvium Deeper than 2.5 Feet below Ground Surface					
10	EC10-A001	7.0-17.5	1/21/2009	<0.023	<0.023
10	EC10-A002	7.5-17.5	1/21/2009	<0.022	<0.022
12	EC12-A001	7.5-17.5	1/12/2009	<0.019	<0.019
12	EC12-A002	1.0-7.5	1/13/2009	<0.022	<0.022
12	EC12-A003	7.5-27.5	1/16/2009	**0.011**	<0.021
12	EC12-A004	2.5-22.5	1/14/2009	**0.0022**	<0.019
12	EC12-A005	1.0-27.5	1/14/2009	<0.021	<0.021
12	EC12-A006	1.0-17.5	1/14/2009	<0.021	<0.021
12	EC12-A007	12.5-22.5	1/15/2009	**0.0031**	<0.023
Colma Sand Deeper than 2.5 Feet below Ground Surface					
9	EC09-C001	2.5-12.5	1/22/2009	<0.022	<0.022
10	EC10-C001	17.5-27.5	1/21/2009	<0.022	<0.022
12	EC12-C001	17.5-32.5	1/12/2009	<0.023	<0.023
12	EC12-C002	12.5-37.5	1/12/2009	<0.024	<0.024
12	EC12-C003	22.5-32.5	1/15/2009	**0.0042**	<0.022
ESL for Residential Land Use (mg/kg) [1]				0.5	0.077
ESL for Commerical/Industrial Land Use (mg/kg) [2]				0.5	0.077
ESL for Construction/Trench Worker Exposure (mg/kg) [3]				100,000	630

TABLE 5: Volatile Organic Compound Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Notes:
Boring locations are shown on Figure 2.
Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).
Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.
Soil results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan ("QAPP").
Values shown in bold indicate compound was quantified above the laboratory reporting limit.
Only compounds that were identified above laboratory reporting limits in at least one sample are presented.
Volatile organic compounds analyzed by Environmental Protection Agency Method 8260B.
bgs = below ground surface.
mg/kg = milligram per kilogram.
<x.x = Compound was not identified above laboratory reporting limit of x.x.
ESL = Environmental Screening Level.

[1] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.

[2] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.

[3] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May

TABLE 6: Polycyclic Aromatic Hydrocarbon Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Analysis Method	Sample Depth (feet bgs)	Sample Date	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
Top 2.5 Feet of Soil																		
9	EC09-C001	EPA 8310	2.5-12.5	1/22/2009	<0.078	<0.0039	<0.0039	<0.0039	<0.0078	<0.0078	<0.0039	<0.0039	<0.0078	<0.0078	<0.0078	<0.0039	<0.0039	<0.0039
9	EC09-F001	EPA 8310	1.0-7.5	1/22/2009	<0.074	**0.0015**	**0.0058**	**0.011**	**0.012**	**0.012**	**0.0046**	**0.017**	**0.0065**	**0.075**	<0.0074	**0.0045**	**0.016**	**0.016**
9	EC09-F003	EPA 8310	1.0-12.5	1/23/2009	<0.076	**0.0065**	**0.028**	**0.0027**	**0.024**	**0.049**	**0.0039**	**0.057**	<0.0076	**0.032**	<0.0076	<0.0038	**0.0095**	**0.013**
9	EC09-F004	EPA 8310	1.0-7.5	1/23/2009	<0.076	**0.0054**	**0.009**	**0.016**	**0.024**	**0.033**	**0.01**	**0.039**	**0.0052**	**0.076**	<0.0076	**0.011**	**0.052**	**0.037**
10	EC10-F001	EPA 8310	1.0-7.5	1/21/2009	<0.072	**0.00099**	**0.0048**	**0.0062**	**0.0049**	<0.0072	<0.0036	**0.0082**	**0.0046**	**0.011**	<0.0072	**0.0019**	**0.0079**	**0.009**
10	EC10-F002	EPA 8310	1.0-7.5	1/21/2009	<0.071	**0.0012**	**0.0063**	**0.011**	**0.0092**	**0.02**	**0.0039**	**0.013**	**0.0074**	**0.027**	<0.0071	**0.0021**	**0.016**	**0.014**
10	EC10-F003	EPA 8310	1.0-22.0	1/22/2009	**0.12**	**0.0084**	**0.049**	**0.063**	**0.049**	**0.066**	**0.023**	**0.068**	**0.058**	**0.14**	<0.0073	**0.026**	**0.093**	**0.14**
12	EC12-A002	EPA 8310	1.0-7.5	1/13/2009	<0.073	<0.0037	**0.0016**	**0.0016**	**0.0017**	**0.0042**	<0.0037	**0.0032**	<0.0073	**0.0053**	<0.0073	**0.00053**	**0.0023**	**0.0012**
12	EC12-A004	EPA 8310	2.5-22.5	1/14/2009	<0.07	<0.0035	<0.0035	<0.0035	<0.007	<0.007	<0.0035	<0.0035	<0.007	<0.007	<0.007	<0.0035	<0.0035	<0.0035
12	EC12-A005	EPA 8310	1.0-27.5	1/14/2009	<0.07	**0.0011**	**0.0032**	**0.0029**	**0.0023**	<0.007	**0.0013**	**0.0035**	**0.0023**	**0.0086**	<0.007	**0.0011**	**0.0093**	**0.0076**
12	EC12-A006	EPA 8310	1.0-17.5	1/14/2009	<0.072	**0.008**	**0.013**	**0.012**	**0.0092**	**0.019**	**0.0054**	**0.015**	**0.0087**	**0.049**	<0.0072	**0.0061**	**0.026**	**0.041**
12	EC12-F002	EPA 8310	1.0-2.5	1/13/2009	<0.071	**0.02**	**0.084**	**0.089**	**0.066**	**0.14**	**0.04**	**0.11**	**0.058**	**0.26**	<0.0071	**0.043**	**0.078**	**0.23**
12	EC12-F002	EPA 8270C[1]	1.0-2.5	1/13/2009	**0.53**	**1.7**	**2.9**	**2.3**	**2.3**	**1.2**	**0.98**	**3.1**	**0.3**	**5.8**	**0.52**	**1.1**	**4.5**	**5.8**
12	EC12-F003	EPA 8310	1.0-2.5	1/15/2009	<0.074	**0.0015**	**0.0085**	**0.013**	**0.015**	**0.031**	**0.0056**	**0.027**	**0.01**	**0.043**	<0.0074	**0.0072**	**0.018**	**0.022**
12	EC12-F004	EPA 8310	2.5-12.5	1/15/2009	<0.071	<0.0036	<0.0036	<0.0036	<0.0071	<0.0071	<0.0036	<0.0036	<0.0071	<0.0071	<0.0071	<0.0036	<0.0036	<0.0036
12	EC12-F005	EPA 8310	1.0-2.5	1/12/2009	<0.077	**0.0017**	**0.017**	**0.023**	**0.019**	**0.046**	**0.0065**	**0.049**	**0.0066**	**0.15**	<0.0077	**0.0041**	<0.0039	**0.015**
Fill Deeper than 2.5 Feet below Ground Surface																		
9	EC09-F001	EPA 8310	1.0-7.5	1/22/2009	<0.074	**0.0015**	**0.0058**	**0.011**	**0.012**	**0.012**	**0.0046**	**0.017**	**0.0065**	**0.075**	<0.0074	**0.0045**	**0.016**	**0.016**
9	EC09-F003	EPA 8310	1.0-12.5	1/23/2009	<0.076	**0.0065**	**0.028**	**0.0027**	**0.024**	**0.049**	**0.0039**	**0.057**	<0.0076	**0.032**	<0.0076	<0.0038	**0.0095**	**0.013**
9	EC09-F004	EPA 8310	1.0-7.5	1/23/2009	<0.076	**0.0054**	**0.009**	**0.016**	**0.024**	**0.033**	**0.01**	**0.039**	**0.0052**	**0.076**	<0.0076	**0.011**	**0.052**	**0.037**
10	EC10-F001	EPA 8310	1.0-7.5	1/21/2009	<0.072	**0.00099**	**0.0048**	**0.0062**	**0.0049**	<0.0072	<0.0036	**0.0082**	**0.0046**	**0.011**	<0.0072	**0.0019**	**0.0079**	**0.009**
10	EC10-F002	EPA 8310	1.0-7.5	1/21/2009	<0.071	**0.0012**	**0.0063**	**0.011**	**0.0092**	**0.02**	**0.0039**	**0.013**	**0.0074**	**0.027**	<0.0071	**0.0021**	**0.016**	**0.014**
10	EC10-F003	EPA 8310	1.0-22.0	1/22/2009	**0.12**	**0.0084**	**0.049**	**0.063**	**0.049**	**0.066**	**0.023**	**0.068**	**0.058**	**0.14**	<0.0073	**0.026**	**0.093**	**0.14**
10	EC10-F004	EPA 8310	7.5-22.5	1/22/2009	<0.079	**0.0011**	**0.0057**	**0.011**	**0.0061**	**0.01**	**0.017**	**0.0082**	**0.0091**	**0.017**	**0.0095**	**0.0033**	**0.0076**	**0.011**
12	EC12-F004	EPA 8310	2.5-12.5	1/15/2009	<0.071	<0.0036	<0.0036	<0.0036	<0.0071	<0.0071	<0.0036	<0.0036	<0.0071	<0.0071	<0.0071	<0.0036	<0.0036	<0.0036
Alluvium Deeper than 2.5 Feet below Ground Surface																		
10	EC10-A001	EPA 8310	7.0-17.5	1/21/2009	<0.076	<0.0038	<0.0038	<0.0038	<0.0076	<0.0076	<0.0038	<0.0038	<0.0076	<0.0076	<0.0076	<0.0038	<0.0038	<0.0038
10	EC10-A002	EPA 8310	7.5-17.5	1/21/2009	<0.075	<0.0038	<0.0038	<0.0038	<0.0075	<0.0075	<0.0038	<0.0038	<0.0075	<0.0075	<0.0075	<0.0038	<0.0038	<0.0038
12	EC12-A001	EPA 8310	7.5-17.5	1/12/2009	<0.076	<0.0038	<0.0038	<0.0038	<0.0076	<0.0076	<0.0038	<0.0038	<0.0076	<0.0076	<0.0076	<0.0038	<0.0038	<0.0038
12	EC12-A002	EPA 8310	1.0-7.5	1/13/2009	<0.073	<0.0037	**0.0016**	**0.0016**	**0.0017**	**0.0042**	<0.0037	**0.0032**	<0.0073	**0.0053**	<0.0073	**0.00053**	**0.0023**	**0.0012**
12	EC12-A003	EPA 8310	7.5-27.5	1/16/2009	<0.071	<0.0036	<0.0036	<0.0036	<0.0071	<0.0071	<0.0036	<0.0036	<0.0071	<0.0071	<0.0071	<0.0036	<0.0036	<0.0036
12	EC12-A004	EPA 8310	2.5-22.5	1/14/2009	<0.07	<0.0035	<0.0035	<0.0035	<0.007	<0.007	<0.0035	<0.0035	<0.007	<0.007	<0.007	<0.0035	<0.0035	<0.0035
12	EC12-A005	EPA 8310	1.0-27.5	1/14/2009	<0.07	**0.0011**	**0.0032**	**0.0029**	**0.0023**	<0.007	**0.0013**	**0.0035**	**0.0023**	**0.0086**	<0.007	**0.0011**	**0.0093**	**0.0076**
12	EC12-A006	EPA 8310	1.0-17.5	1/14/2009	<0.072	**0.008**	**0.013**	**0.012**	**0.0092**	**0.019**	**0.0054**	**0.015**	**0.0087**	**0.049**	<0.0072	**0.0061**	**0.026**	**0.041**
12	EC12-A007	EPA 8310	12.5-22.5	1/15/2009	<0.078	<0.0039	<0.0039	<0.0039	<0.0078	<0.0078	<0.0039	<0.0039	<0.0078	<0.0078	<0.0078	<0.0039	<0.0039	<0.0039

TABLE 6: Polycyclic Aromatic Hydrocarbon Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Analysis Method	Sample Depth (feet bgs)	Sample Date	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
Colma Sand Deeper than 2.5 Feet below Ground Surface																		
9	EC09-C001	EPA 8310	2.5-12.5	1/22/2009	<0.078	<0.0039	<0.0039	<0.0039	<0.0078	<0.0078	<0.0039	<0.0039	<0.0078	<0.0078	<0.0078	<0.0039	<0.0039	<0.0039
10	EC10-C001	EPA 8310	17.5-27.5	1/21/2009	<0.076	<0.0038	<0.0038	<0.0038	<0.0076	<0.0076	<0.0038	<0.0038	<0.0076	<0.0076	<0.0076	<0.0038	<0.0038	<0.0038
12	EC12-C001	EPA 8310	17.5-32.5	1/12/2009	<0.079	<0.0039	<0.0039	<0.0039	<0.0079	<0.0079	<0.0039	<0.0039	<0.0079	<0.0079	<0.0079	<0.0039	<0.0039	<0.0039
12	EC12-C001-RE	EPA 8310	17.5-32.5	1/12/2009	<0.079	<0.0039	<0.0039	<0.0039	<0.0079	<0.0079	<0.0039	<0.0039	<0.0079	<0.0079	<0.0079	<0.0039	<0.0039	<0.0039
12	EC12-C002	EPA 8310	12.5-37.5	1/12/2009	<0.079	<0.004	<0.004	<0.004	<0.0079	<0.0079	<0.004	<0.004	<0.0079	<0.0079	<0.0079	<0.004	<0.004	<0.004
12	EC12-C002-RE	EPA 8310	12.5-37.5	1/12/2009	<0.079	<0.0039	<0.0039	<0.0039	<0.0079	<0.0079	<0.0039	<0.0039	<0.0079	<0.0079	<0.0079	<0.0039	<0.0039	<0.0039
12	EC12-C003	EPA 8310	22.5-32.5	1/15/2009	<0.078	<0.0039	<0.0039	<0.0039	<0.0078	<0.0078	<0.0039	<0.0039	<0.0078	<0.0078	<0.0078	<0.0039	<0.0039	<0.0039
ESL for Residential Land Use (mg/kg) [2]					13	2.8	**0.38**	**0.038**	**0.38**	27	**0.38**	23	**0.062**	40	8.9	**0.62**	11	85
ESL for Commerical/Industrial Land Use (mg/kg) [3]					13	2.8	**1.3**	**0.13**	**1.3**	27	1.3	23	**0.21**	40	8.9	2.1	11	85
ESL for Construction/Trench Worker Exposure (mg/kg) [4]					11,000	100,000	15	**1.5**	15	11,000	15	2,400	2.4	14,000	12,000	24	11,000	21,000

Shading Key:
Analytical results shaded gray indicate that concentrations were greater than or equal to ESLs.
Screening values shaded blue indicate that at least one analytical result was greater than or equal to the screening value.

Notes:
Boring locations are shown on Figure 2.
Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).
Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.
"RE" at the end of a Sample ID indicates the sample was re-extracted for quality assurance reasons and was analyzed outside the method sample hold time. Both original and re-extraction results are included in this table.
Soil results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan ("QAPP").
Values shown in bold indicate compound was quantified above the laboratory reporting limit.
Only compounds that were identified above laboratory reporting limits in at least one sample are presented.
Polycyclic aromatic hydrocarbons analyzed by Environmental Protection Agency Method 8310.
bgs = below ground surface.
mg/kg = milligram per kilogram.
<x.x = Compound was not identified above laboratory reporting limit of x.x.
ESL = Environmental Screening Level.

[1] Analytical results for this composite sample by EPA Methods 8310 and 8270C were significantly different, and are likely due to lab composite sample non-homogeneity. Results for all quality assurance samples for both methods were acceptable. The five subsamples for this composite sample were composited by the laboratory, and unique aliquots were collected for each analysis. One of the five subsamples was collected immediately below an asphalt road. Asphalt particles, which contain polycyclic aromatic hydrocarbons, may have been present in the EPA Method 8270C sample aliquot.
[2] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.
[3] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.
[4] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May

TABLE 7: Pesticide Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Sample Depth (feet bgs)	Sample Date	4,4'-DDD	4,4'-DDT	alpha-Chlordane	gamma-Chlordane
Top 2.5 Feet of Soil							
9	EC09-F001	1.0-7.5	1/22/2009	<0.0037	<0.0037	<0.0019	<0.0019
9	EC09-F003	1.0-12.5	1/23/2009	<0.019	<0.019	<0.0099	<0.0099
9	EC09-F004	1.0-7.5	1/23/2009	**0.027**	**0.026**	**0.14**	**0.12**
10	EC10-F001	1.0-7.5	1/21/2009	<0.0036	<0.0036	<0.0018	<0.0018
10	EC10-F002	1.0-7.5	1/21/2009	<0.0036	<0.0036	<0.0018	<0.0018
10	EC10-F003	1.0-22.0	1/22/2009	<0.036	<0.036	<0.019	<0.019
12	EC12-F002	1.0-2.5	1/13/2009	<0.0036	<0.0036	<0.0018	<0.0018
12	EC12-F003	1.0-2.5	1/15/2009	<0.0037	**0.0091**	<0.0019	<0.0019
12	EC12-F004	2.5-12.5	1/15/2009	<0.0035	<0.0035	<0.0018	<0.0018
12	EC12-F005	1.0-2.5	1/12/2009	<0.0038	<0.0038	<0.002	<0.002
Fill Deeper than 2.5 Feet below Ground Surface							
9	EC09-F001	1.0-7.5	1/22/2009	<0.0037	<0.0037	<0.0019	<0.0019
9	EC09-F003	1.0-12.5	1/23/2009	<0.019	<0.019	<0.0099	<0.0099
9	EC09-F004	1.0-7.5	1/23/2009	**0.027**	**0.026**	**0.14**	**0.12**
10	EC10-F001	1.0-7.5	1/21/2009	<0.0036	<0.0036	<0.0018	<0.0018
10	EC10-F002	1.0-7.5	1/21/2009	<0.0036	<0.0036	<0.0018	<0.0018
10	EC10-F003	1.0-22.0	1/22/2009	<0.036	<0.036	<0.019	<0.019
10	EC10-F004	7.5-22.5	1/22/2009	<0.0039	<0.0039	<0.002	<0.002
12	EC12-F004	2.5-12.5	1/15/2009	<0.0035	<0.0035	<0.0018	<0.0018
ESL for Residential Land Use (mg/kg) [1]				2.4	1.7	0.44	0.44
ESL for Commerical/Industrial Land Use (mg/kg) [2]				10	4.0	1.7	1.7
ESL for Construction/Trench Worker Exposure (mg/kg) [3]				120	87	21	21

Notes:
Boring locations are shown on Figure 2.
Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).
Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.
Soil results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan ("QAPP").
Values shown in bold indicate compound was quantified above the laboratory reporting limit.
Only compounds that were identified above laboratory reporting limits in at least one sample are presented.
Pesticides analyzed by Environmental Protection Agency Method 8081A.
bgs = below ground surface.
mg/kg = milligram per kilogram.
<x.x = Compound was not identified above laboratory reporting limit of x.x.
ESL = Environmental Screening Level.

[1] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.

TABLE 7: Pesticide Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

[2] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.

[3] California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May

TABLE 8: Polychlorinated Biphenyl Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Composite Area	Sample ID	Sample Depth (feet bgs)	Sample Date	Aroclor-1254	Aroclor-1260
Top 2.5 Feet of Soil					
9	EC09-C001	2.5-12.5	1/22/2009	<0.014	<0.014
9	EC09-F001	1.0-7.5	1/22/2009	<0.013	<0.013
9	EC09-F003	1.0-12.5	1/23/2009	<0.014	<0.014
9	EC09-F004	1.0-7.5	1/23/2009	<0.014	**0.04**
10	EC10-F001	1.0-7.5	1/21/2009	<0.013	<0.013
10	EC10-F002	1.0-7.5	1/21/2009	<0.013	<0.013
10	EC10-F003	1.0-22.0	1/22/2009	<0.013	<0.013
12	EC12-A002	1.0-7.5	1/13/2009	<0.013	<0.013
12	EC12-A004	2.5-22.5	1/14/2009	<0.013	<0.013
12	EC12-A005	1.0-27.5	1/14/2009	<0.013	<0.013
12	EC12-A006	1.0-17.5	1/14/2009	<0.013	<0.013
12	EC12-F002	1.0-2.5	1/13/2009	<0.013	<0.013
12	EC12-F003	1.0-2.5	1/15/2009	**0.046**	**0.018**
12	EC12-F004	2.5-12.5	1/15/2009	<0.013	<0.013
12	EC12-F005	1.0-2.5	1/12/2009	<0.014	<0.014
Fill Deeper than 2.5 Feet below Ground Surface					
9	EC09-F001	1.0-7.5	1/22/2009	<0.013	<0.013
9	EC09-F003	1.0-12.5	1/23/2009	<0.014	<0.014
9	EC09-F004	1.0-7.5	1/23/2009	<0.014	**0.04**
10	EC10-F001	1.0-7.5	1/21/2009	<0.013	<0.013
10	EC10-F002	1.0-7.5	1/21/2009	<0.013	<0.013
10	EC10-F003	1.0-22.0	1/22/2009	<0.013	<0.013
10	EC10-F004	7.5-22.5	1/22/2009	<0.014	<0.014
12	EC12-F004	2.5-12.5	1/15/2009	<0.013	<0.013
Alluvium Deeper than 2.5 Feet below Ground Surface					
10	EC10-A001	7.0-17.5	1/21/2009	<0.014	<0.014
10	EC10-A002	7.5-17.5	1/21/2009	<0.014	<0.014
12	EC12-A001	7.5-17.5	1/12/2009	<0.014	<0.014
12	EC12-A002	1.0-7.5	1/13/2009	<0.013	<0.013
12	EC12-A003	7.5-27.5	1/16/2009	<0.013	<0.013
12	EC12-A004	2.5-22.5	1/14/2009	<0.013	<0.013
12	EC12-A005	1.0-27.5	1/14/2009	<0.013	<0.013
12	EC12-A006	1.0-17.5	1/14/2009	<0.013	<0.013
12	EC12-A007	12.5-22.5	1/15/2009	<0.014	<0.014
Colma Sand Deeper than 2.5 Feet below Ground Surface					
9	EC09-C001	2.5-12.5	1/22/2009	<0.014	<0.014
10	EC10-C001	17.5-27.5	1/21/2009	<0.014	<0.014
12	EC12-C001	17.5-32.5	1/12/2009	<0.014	<0.014
12	EC12-C002	12.5-37.5	1/12/2009	<0.014	<0.014
12	EC12-C003	22.5-32.5	1/15/2009	<0.014	<0.014
ESL for Residential Land Use (mg/kg) [1]				0.22	0.22
ESL for Commerical/Industrial Land Use (mg/kg) [2]				0.74	0.74
ESL for Construction/Trench Worker Exposure (mg/kg) [3]				6.7	6.7

TABLE 8: Polychlorinated Biphenyl Concentrations in Soil (mg/kg, dry weight basis)
Contract 4 of Doyle Drive Replacement Project

Notes:
Boring locations are shown on Figure 2.
Key to Composite Sample IDs: EC09-C001 indicates an environmental composite sample made up of discrete samples collected from Composite Area 9, and lithology of sample is Colma Sand (C=Colma Sand).
Key to Lithologies: F = Fill; FS = Fill with serpentinite; A = Alluvium; C = Colma Sand; BR = Bedrock.
Soil results are reported on a dry-weight basis in accordance with the Presidio Trust Quality Assurance Project Plan ("QAPP").
Values shown in bold indicate compound was quantified above the laboratory reporting limit.
Only compounds that were identified above laboratory reporting limits in at least one sample are presented.
Polychlorinated biphenyls analyzed by Environmental Protection Agency Method 8082.
bgs = below ground surface.
mg/kg = milligram per kilogram.
<x.x = Compound was not identified above laboratory reporting limit of x.x.
ESL = Environmental Screening Level.

1 California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use, May.
2 California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table A, Environmental Screening Levels, Shallow Soils (≤ 3 meters bgs), Groundwater is a Current or Potential Source of Drinking Water, Commercial/Industrial Land Use, May.
3 California Regional Water Quality Control Board, San Francisco Bay Region, 2008, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final, May, Table K-3, Direct Exposure Soil Screening Levels, Construction/Trench Worker Exposure Scenario, May

ATTACHMENT A

Lead, Upper 2.5 Feet
ProUCL Output

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Full Data Sets								
2	User Selected Options											
3			From File	C:\Documents and Settings\Julie Pettijohn\My Documents\Active Jobs\Doyle Drive SF\Soil								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			ber of Bootstrap Operations	2000								
7												
8												
9	Total Lead Upper 2.5 Feet, Discrete Samples Only											
10												
11					General Statistics							
12					Number of Valid Observations	40			Number of Distinct Observations		34	
13												
14				Raw Statistics					Log-transformed Statistics			
15					Minimum	1.6			Minimum of Log Data		0.47	
16					Maximum	320			Maximum of Log Data		5.768	
17					Mean	45.83			Mean of log Data		2.77	
18					Median	13			SD of log Data		1.553	
19					SD	66.28						
20					Coefficient of Variation	1.446						
21					Skewness	2.26						
22												
23					Relevant UCL Statistics							
24				Normal Distribution Test					Lognormal Distribution Test			
25					Shapiro Wilk Test Statistic	0.698			Shapiro Wilk Test Statistic		0.928	
26					Shapiro Wilk Critical Value	0.94			Shapiro Wilk Critical Value		0.94	
27				Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level			
28												
29				Assuming Normal Distribution					Assuming Lognormal Distribution			
30					95% Student's-t UCL	63.49			95% H-UCL		115.8	
31				95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL		120.6	
32					95% Adjusted-CLT UCL	67.07			97.5% Chebyshev (MVUE) UCL		151.1	
33					95% Modified-t UCL	64.11			99% Chebyshev (MVUE) UCL		211	
34												
35				Gamma Distribution Test					Data Distribution			
36					k star (bias corrected)	0.56			Data do not follow a Discernable Distribution (0.05)			
37					Theta Star	81.8						
38					MLE of Mean	45.83						
39					MLE of Standard Deviation	61.23						
40					nu star	44.82						
41					Approximate Chi Square Value (.05)	30.47			Nonparametric Statistics			
42					Adjusted Level of Significance	0.044			95% CLT UCL		63.07	
43					Adjusted Chi Square Value	30.02			95% Jackknife UCL		63.49	
44									95% Standard Bootstrap UCL		62.95	
45					Anderson-Darling Test Statistic	1.511			95% Bootstrap-t UCL		70.11	
46					Anderson-Darling 5% Critical Value	0.805			95% Hall's Bootstrap UCL		74.35	
47					Kolmogorov-Smirnov Test Statistic	0.167			95% Percentile Bootstrap UCL		63.94	
48					Kolmogorov-Smirnov 5% Critical Value	0.147			95% BCA Bootstrap UCL		66.94	
49				Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL		91.51	
50									97.5% Chebyshev(Mean, Sd) UCL		111.3	
51				Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL		150.1	
52					95% Approximate Gamma UCL	67.43						
53					95% Adjusted Gamma UCL	68.43						
54												
55				Potential UCL to Use					Use 99% Chebyshev (Mean, Sd) UCL		150.1	
56												

Lead, Top 2.5 Feet
ProUCL Worksheet

	A	B	C	D	E
1	Composite	Boring ID	Sample ID	Sample De	Lead
2	9	E059	E059F-1.0	1	2.2
3	9	E059	E059F-2.5	2.5	120
4	9	E060	E060F-1.0	1	9.9
5	9	E060	E060FS-2.	2.5	21
6	9	E061	E061C-2.5	2.5	2.5
7	9	E061	E061F-1.0	1	8.2
8	10	E063	E063F-1.0	1	110
9	10	E063	E063F-2.5	2.5	160
10	10	E065	E065F-1.0	1	100
11	10	E065	E065F-2.5	2.5	23
12	10	E067	E067F-1.0	1	160
13	10	E067	E067F-2.5	2.5	13
14	10	E069	E069F-1.0	1	20
15	10	E069	E069F-2.5	2.5	4
16	10	E071	E071F-1.0	1	79
17	10	E071	E071F-2.0	2	12
18	12	E073	E073F-1.0	1	120
19	12	E073	E073F-2.5	2.5	3
20	12	E074	E074F-1.0	1	59
21	12	E074	E074F-2.5	2.5	4.6
22	12	E075	E075F-1.0	1	320
23	12	E075	E075F-2.5	2.5	30
24	12	E076	E076F-1.0	1	130
25	12	E076	E076F-2.5	2.5	2.4
26	12	E077	E077A-2.5	2.5	1.8
27	12	E077A	E077AA-1.	1	20
28	12	E077A	E077AA-2.	2.5	6.9
29	12	E077	E077F-1.0	1	14
30	12	E078	E078A-2.5	2.5	1.9
31	12	E078A	E078AA-1.	1	7.4
32	12	E078A	E078AA-2.	2.5	2.8
33	12	E078	E078F-1.0	1	8.2
34	12	E079	E079F-1.0	1	120
35	12	E079	E079F-2.5	2.5	49
36	12	E080	E080A-2.5	2.5	1.6
37	12	E080	E080F-1.0	1	60
38	12	E081	E081F-1.0	1	3.7
39	12	E081	E081F-2.5	2.5	13
40	12	E082	E082A-1.0	1	4.1
41	12	E082	E082A-2.5	2.5	5.1

Benzo(a)pyrene, Top 2.5 Feet
ProUCL Output

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3			From File	C:\Documents and Settings\Julie Pettijohn\My Documents\Active Jobs\Doyle Drive SF\Soil								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			ber of Bootstrap Operations	2000								
7												
8												
9	Benzo(a)Pyrene top 2.5 feet, no outlier											
10												
11						General Statistics						
12						Number of Valid Data	15				Number of Detected Data	12
13						Number of Distinct Detected Data	11				Number of Non-Detect Data	3
14											Percent Non-Detects	20.00%
15												
16				Raw Statistics							Log-transformed Statistics	
17						Minimum Detected	0.0016				Minimum Detected	-6.438
18						Maximum Detected	0.089				Maximum Detected	-2.419
19						Mean of Detected	0.021				Mean of Detected	-4.513
20						SD of Detected	0.027				SD of Detected	1.204
21						Minimum Non-Detect	0.0035				Minimum Non-Detect	-5.655
22						Maximum Non-Detect	0.0039				Maximum Non-Detect	-5.547
23												
24	Note: Data have multiple DLs - Use of KM Method is recomm										Number treated as Non-Detect	6
25	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	9
26	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	40.00%
27												
28						UCL Statistics						
29	Normal Distribution Test with Detected Values Only										Lognormal Distribution Test with Detected Values Only	
30						Shapiro Wilk Test Statistic	0.69				Shapiro Wilk Test Statistic	0.956
31						5% Shapiro Wilk Critical Value	0.859				5% Shapiro Wilk Critical Value	0.859
32	Data not Normal at 5% Significance Level										Data appear Lognormal at 5% Significance Level	
33												
34				Assuming Normal Distribution							Assuming Lognormal Distribution	
35						DL/2 Substitution Method					DL/2 Substitution Method	
36						Mean	0.0171				Mean	-4.871
37						SD	0.0252				SD	1.299
38						95% DL/2 (t) UCL	0.0286				95% H-Stat (DL/2) UCL	0.0396
39												
40				Maximum Likelihood Estimate(MLE) Method							Log ROS Method	
41						Mean	0.00726				Mean in Log Scale	-4.817
42						SD	0.0346				SD in Log Scale	1.238
43						95% MLE (t) UCL	0.023				Mean in Original Scale	0.0172
44						95% MLE (Tiku) UCL	0.0249				SD in Original Scale	0.0251
45											95% Percentile Bootstrap UCL	0.0287
46											95% BCA Bootstrap UCL	0.0317
47												
48	Gamma Distribution Test with Detected Values Only										Data Distribution Test with Detected Values Only	
49						k star (bias corrected)	0.733	Data appear Gamma Distributed at 5% Significance Leve				
50						Theta Star	0.0286					
51						nu star	17.58					
52												
53						A-D Test Statistic	0.539				Nonparametric Statistics	
54						5% A-D Critical Value	0.76				Kaplan-Meier (KM) Method	
55						K-S Test Statistic	0.76				Mean	0.0172
56						5% K-S Critical Value	0.253				SD	0.0243
57	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	0.00655
58											95% KM (t) UCL	0.0288
59				Assuming Gamma Distribution							95% KM (z) UCL	0.028
60				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	0.0287
61						Minimum	0.00155				95% KM (bootstrap t) UCL	0.0542
62						Maximum	0.089				95% KM (BCA) UCL	0.0291
63						Mean	0.0171				95% KM (Percentile Bootstrap) UCL	0.0286
64						Median	0.011				95% KM (Chebyshev) UCL	0.0458
65						SD	0.0252				97.5% KM (Chebyshev) UCL	0.0581

Benzo(a)pyrene, Top 2.5 Feet
ProUCL Output

	A	B	C	D	E	F	G	H	I	J	K	L
66					k star	0.622				99% KM (Chebyshev) UCL		0.0824
67					Theta star	0.0275						
68					Nu star	18.65			**Potential UCLs to Use**			
69					AppChi2	9.864				95% KM (Chebyshev) UCL		0.0458
70					95% Gamma Approximate UCL	0.0323						
71					95% Adjusted Gamma UCL	0.035						
72	**Note: DL/2 is not a recommended method.**											
73												

Benzo(a)pyrene, Top 2.5 Feet
ProUCL Worksheet

Composite Area	Sample ID	Analysis Method	Sample Depth (feet bgs)	Benzo(a)pyrene	D_BaP
9	EC09-C001	EPA 8310	2.5-12.5	0.0039	0
9	EC09-F001	EPA 8310	1.0-7.5	**0.0110**	**1**
9	EC09-F003	EPA 8310	1.0-12.5	**0.0027**	**1**
9	EC09-F004	EPA 8310	1.0-7.5	**0.0160**	**1**
10	EC10-F001	EPA 8310	1.0-7.5	**0.0062**	**1**
10	EC10-F002	EPA 8310	1.0-7.5	**0.0110**	**1**
10	EC10-F003	EPA 8310	1.0-22.0	**0.0630**	**1**
12	EC12-A002	EPA 8310	1.0-7.5	**0.0016**	**1**
12	EC12-A004	EPA 8310	2.5-22.5	0.0035	0
12	EC12-A005	EPA 8310	1.0-27.5	**0.0029**	**1**
12	EC12-A006	EPA 8310	1.0-17.5	**0.0120**	**1**
12	EC12-F002	EPA 8310	1.0-2.5	**0.0890**	**1**
12	EC12-F003	EPA 8310	1.0-2.5	**0.0130**	**1**
12	EC12-F004	EPA 8310	2.5-12.5	0.0036	0
12	EC12-F005	EPA 8310	1.0-2.5	**0.0230**	**1**

Benzo(a)pyrene, Deeper than 2.5 Feet
ProUCL Output

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3			From File	C:\Documents and Settings\Julie Pettijohn\My Documents\Active Jobs\Doyle Drive SF\Soil								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			ber of Bootstrap Operations	2000								
7												
8												
9	Benzo(a)Pyrene Deeper than 2.5 feet bgs											
10												
11						General Statistics						
12						Number of Valid Data	8			Number of Detected Data		7
13						Number of Distinct Detected Data	5			Number of Non-Detect Data		1
14										Percent Non-Detects		12.50%
15												
16				Raw Statistics						Log-transformed Statistics		
17						Minimum Detected	0.0027			Minimum Detected		-5.915
18						Maximum Detected	0.063			Maximum Detected		-2.765
19						Mean of Detected	0.0173			Mean of Detected		-4.49
20						SD of Detected	0.0206			SD of Detected		0.956
21						Minimum Non-Detect	0.0036			Minimum Non-Detect		-5.627
22						Maximum Non-Detect	0.0036			Maximum Non-Detect		-5.627
23												
24												
25				Warning: There are only 7 Detected Values in this data								
26				Note: It should be noted that even though bootstrap may be performed on this data set								
27				the resulting calculations may not be reliable enough to draw conclusions								
28												
29				It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.								
30												
31												
32						UCL Statistics						
33	Normal Distribution Test with Detected Values Only							Lognormal Distribution Test with Detected Values Only				
34						Shapiro Wilk Test Statistic	0.646			Shapiro Wilk Test Statistic		0.924
35						5% Shapiro Wilk Critical Value	0.803			5% Shapiro Wilk Critical Value		0.803
36	Data not Normal at 5% Significance Level							Data appear Lognormal at 5% Significance Level				
37												
38	Assuming Normal Distribution							Assuming Lognormal Distribution				
39						DL/2 Substitution Method				DL/2 Substitution Method		
40						Mean	0.0153			Mean		-4.718
41						SD	0.0198			SD		1.097
42						95% DL/2 (t) UCL	0.0286			95% H-Stat (DL/2) UCL		0.0298
43												
44						Maximum Likelihood Estimate(MLE) Method				Log ROS Method		
45						Mean	0.0118			Mean in Log Scale		-4.677
46						SD	0.0226			SD in Log Scale		1.031
47						95% MLE (t) UCL	0.027			Mean in Original Scale		0.0154
48						95% MLE (Tiku) UCL	0.0272			SD in Original Scale		0.0198
49										95% Percentile Bootstrap UCL		0.0283
50										95% BCA Bootstrap UCL		0.0348
51												
52	Gamma Distribution Test with Detected Values Only							Data Distribution Test with Detected Values Only				
53						k star (bias corrected)	0.839	Data appear Gamma Distributed at 5% Significance Leve				
54						Theta Star	0.0206					
55						nu star	11.75					
56												
57						A-D Test Statistic	0.624			Nonparametric Statistics		
58						5% A-D Critical Value	0.724			Kaplan-Meier (KM) Method		
59						K-S Test Statistic	0.724			Mean		0.0155
60						5% K-S Critical Value	0.318			SD		0.0185
61	Data appear Gamma Distributed at 5% Significance Level									SE of Mean		0.00706
62										95% KM (t) UCL		0.0288
63	Assuming Gamma Distribution									95% KM (z) UCL		0.0271
64	Gamma ROS Statistics using Extrapolated Data									95% KM (jackknife) UCL		0.0285
65						Minimum	1E-09			95% KM (bootstrap t) UCL		0.0597

Benzo(a)pyrene, Deeper than 2.5 Feet
ProUCL Output

	A	B	C	D	E	F	G	H	I	J	K	L
66					Maximum	0.063				95% KM (BCA) UCL		0.0305
67					Mean	0.0151				95% KM (Percentile Bootstrap) UCL		0.0287
68					Median	0.011				95% KM (Chebyshev) UCL		0.0462
69					SD	0.02				97.5% KM (Chebyshev) UCL		0.0595
70					k star	0.269				99% KM (Chebyshev) UCL		0.0857
71					Theta star	0.0562						
72					Nu star	4.302				**Potential UCLs to Use**		
73					AppChi2	0.845				95% KM (Chebyshev) UCL		0.0462
74				95% Gamma Approximate UCL		0.077						
75				95% Adjusted Gamma UCL		0.123						
76	**Note: DL/2 is not a recommended method.**											
77												

Benzo(a)pyrene, Deeper Than 2.5 Feet
ProUCL Worksheet

Composite Area	Sample ID	Analysis Method	Sample Depth (feet bgs)	BaP	D_BaP
9	EC09-F001	EPA 8310	1.0-7.5	**0.011**	**1**
9	EC09-F003	EPA 8310	1.0-12.5	**0.0027**	**1**
9	EC09-F004	EPA 8310	1.0-7.5	**0.016**	**1**
10	EC10-F001	EPA 8310	1.0-7.5	**0.0062**	**1**
10	EC10-F002	EPA 8310	1.0-7.5	**0.011**	**1**
10	EC10-F003	EPA 8310	1.0-22.0	**0.063**	**1**
10	EC10-F004	EPA 8310	7.5-22.5	**0.011**	**1**
12	EC12-F004	EPA 8310	2.5-12.5	0.0036	0