URS

June 25, 2007

Mr. Eric Yunker
Superfund Project Manager
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street (SFD-7-3)
San Francisco, California 94105

06.a4

Re: RAC IX Contract No. 68-W-98-225
Cooper Drum RD WA No. 247-RDRD-091N
Remedial Design Technical Memorandum For Field Sampling Results
Addendum No. 2 CPT/HydroPunch Sampling Results February/March 2007

Dear Mr. Yunker:

URS Corporation (URS) has prepared this addendum to the July 2006 Remedial Design Technical Memorandum For Field Sampling Results (RDTM, [URS, 2006]) to document the results of a cone penetrometer testing (CPT) and HydroPunch groundwater sampling event conducted at the Cooper Drum Company Superfund Site (Site) located in South Gate, Los Angeles County, California (Figures 1 and 2). The CPT/HydroPunch investigation was performed by URS on behalf of the United States Environmental Protection Agency (EPA) in February/March 2007, to provide additional groundwater data for delineation of downgradient portion of the Cooper Drum plume prior to implementation of the selected remedy in the Record of Decision (ROD). The downgradient plume delineation was included as a component in the ROD.

Based on a similar CPT/HydroPunch and monitor well installation effort conducted in 2003, the following conclusions were drawn in the July 2006 RDTM regarding the vertical and lateral extent of the Cooper Drum plume:

- The downgradient (off site along Southern Avenue) vertical extent of groundwater contamination is defined.
- The downgradient lateral extent of groundwater contamination was mostly defined. However due to the commingling of additional groundwater contamination from an adjacent plume in the shallow aquifer, there was uncertainty regarding plume definition at the southeastern plume boundary. Additional groundwater sampling was considered necessary to address this uncertainty.

The 2007 CPT/HydroPunch investigation was performed by the EPA to further define the lateral extent of the Cooper Drum plume and complete the remedial design (RD) for the Site. The CPT/HydroPunch data serve as the basis for design and installation of the proposed monitor wells, which are necessary to confirm the HydroPunch depth-discrete sampling results. The monitor wells provide a fixed sampling location to (1) determine groundwater flow direction, (2) define plume boundaries, (3) track plume

URS Corporation
Crown Corporate Center
2870 Gateway Oaks Drive, Suite 150
Sacramento, CA 95833
Tel: 916.679.2000
Fax: 916.679.2900

migration, and (4) gauge effectiveness of future remedial actions. At this time, wells have only been installed within the Cooper Drum plume. Wells will also be required outside the Cooper Drum plume to verify the location of other plumes and for the other above-described reasons. During the CPT/ HydroPunch investigation, depth-discrete groundwater samples were collected outside the Cooper Drum Plume. Sample results clearly indicate that the Cooper Drum plume is commingling with an adjacent plume.

The following pages present a brief background of the 2003 plume delineation sampling results, a description of the additional 2007 CPT/HydroPunch investigation activities and results, and recommendations for monitor well locations.

BACKGROUND

RD investigation activities performed to fill data gaps prior to completing the RD were initiated in May 2003. Analytical results, which included soil sampling, soil gas sampling, CPT/HydroPunch sampling, monitor well installation and monitored natural attenuation (MNA) sampling, were presented the July 2006 RDTM. A brief review of those results and conclusions from the 2003 CPT/HydroPunch and monitor well installation effort, is presented below. (The reader is referred to the RDTM [URS, 2006] for a detailed discussion of Site contaminants of concern [COCs] distribution in the groundwater.) There are 12 COCs, including trichloroethene (TCE); cis-1,2-dichlorethene (cis-1,2-DCE); and 1,4-dioxane.

Fourteen CPT/HydroPunch borings (CPT-24 through CPT 38) were drilled and sampled in May 2003 to address site groundwater data gaps. Figure 3 shows the CPT locations and summarizes the volatile organic compound (VOC) results. Twelve of these borings were located downgradient (to the south) of the eastern Site property boundary to further define the site lithology and delineate the extent of the Cooper Drum plume. Based on the lithologic data and depth-discrete groundwater sampling results, nine monitor wells were installed in December 2003 in the downgradient portion of the Cooper Drum plume along and south of Southern Avenue. Wells MW-24, MW- 25, MW-27, MW-29, and MW-31 were installed with screen intervals from approximately 75 to 90 feet below ground surface (bgs) in the middle portion of the shallow (Gaspur) Aquifer; MW-28 and MW-30 were installed in the lower portion of the shallow aquifer (screened from 104 to 114 feet bgs); and MW-26 and MW-30 were installed in the top portion (screened from 122 to 132 feet bgs) of the Exposition Aquifer. VOCs have been shown to be above maximum contaminant levels (MCLs) in the Gaspur Aquifer but not in the Exposition Aquifer. Sampling of the wells completed in the Exposition Aquifer is necessary to monitor for potential vertical migration of VOCs and 1,4-dioxane from the Gaspur Aquifer. The distributions of 1,4-dioxane in groundwater is similar to that of TCE, with concentrations above action levels not found in the Exposition Aquifer.

The locations of the monitor wells installed in 2003, along with the most recent monitor well sampling results (August 2006 [URS, 2006b]) for TCE; cis-1,2-DCE; and 1,4-dioxane, are shown on Figures 4 through 6, respectively. Conclusions and recommended further actions from the RDTM are included

below. The extent of the Cooper Drum plume in the shallow Gaspur and the deeper Exposition Aquifers are addressed, as well as the convergence with adjacent plumes from the Jervis Webb site (northeast plume, see Figure 3) and the Seam Master site (southeast plume) in the area of Southern Avenue.

- COC vertical extents were defined in the Exposition aquifer along Southern Avenue at concentrations below MCLs. (See data from wells MW-26 and MW-32, which are completed in the upper portion of the Exposition Aquifer.) The contamination is confined to the shallow Gaspur Aquifer.
- The downgradient lateral extent of groundwater contamination was mostly defined. The estimated lateral extents of 1,1-dichloroethane (1,1-DCA) and vinyl chloride from the Cooper Drum plume are defined. TCE; cis-1,2-DCE; 1,2-DCA and 1,4-dioxane in the shallow Gaspur Aquifer at concentrations above MCLs extend south of Southern Avenue, and are partially undefined along the southeastern and southern plume boundaries. Cooper Drum plume definition is difficult in this area due to commingling with other plumes to the east (see Figure 3 [especially the 100 micrograms per liter (µg/L) contour for northeast plume/Jervis Webb site and high concentrations in CPT-26] and Figures 4, 5, and 6).
- It was recommended that CPT/HydroPunch borings be completed along McCallum Avenue (see Figure 7) to provide lithologic and groundwater data for locating monitor wells. A minimum of two CPT/HydroPunch borings would be required. Based on those results, locations of additional monitor wells will be determined. It was also recommended that up to three CPT/HydroPunch borings be completed on and south of Southern Avenue east of MW-31, to address groundwater contamination migrating from the Seam Master site.
- To address the downgradient extent of the Cooper Drum plume, at least two monitor well pairs completed in the middle and lower portion of the shallow Gaspur Aquifer were recommended. Proposed well locations would be determined based on the results of the CPT/HydroPunch investigation. The vertical extent of the Cooper Drum plume was defined at Southern Avenue; therefore, completion of an additional deeper monitor well in the Exposition aquifer was not considered necessary.

As recommend in the RDTM and agreed upon with the DTSC, the February/March 2007 CPT/HydroPunch investigation was performed, and is described below.

DEPTH-DISCRETE GROUNDWATER SAMPLING

Five CPT/HydroPunch borings (CPT-40 through CPT-45) and four HydroPunch borings only (HP-8, HP-26 HP-35, and HP-36) were installed between February 26 to March 1, 2007, to obtain lithologic data and/or depth-discrete groundwater samples to further delineate the groundwater contamination. As described in the introduction, these data serve as the basis for design and installation of the additional groundwater monitor wells at the site. Figure 7 shows the CPT and HydroPunch (HP) boring locations. The HP borings were installed at locations that had been sampled during prior investigations

(i.e., CPT-8, CPT-26, CPT-35, and CPT-36); therefore, these locations were designated with an HP, because lithologic data were available from CPTs in the vicinity of the HP borings.

Rationales for the boring locations were as follows:

- Borings CPT-40 through CPT-45 were sampled to evaluate the downgradient extent of the Cooper Drum Plume and the Seam Master plume and evaluate areas of commingling. Total boring depths ranged from 121 to 136 feet bgs, with four to five depth-discrete groundwater samples collected between approximately 60 and 130 feet bgs, from each boring.
- Boring HP-8, HP-35, and HP-36 were sampled from approximately 90 to 100 feet bgs with two samples collected in this depth range to evaluate concentrations in the lower portion of the Gaspur Aquifer and potential migration from the Jervis Webb plume.
- HP-26 was sampled at 58 and 67 feet bgs, to evaluate potential source areas in the Southern Avenue vicinity.

The CPT/HydroPunch borings were installed and sampled by Gregg In-Situ, Inc. personnel, with assistance from URS. All samples were collected using the HydroPunch method as described in Subsection 6.3.1 of the RD Sampling and Analysis Plan (SAP) (URS, 2003a). Groundwater samples were collected and submitted for analysis of VOCs and 1,4-dioxane. The samples were shipped via Federal Express to DataChem Laboratories Inc. in Salt Lake City, Utah within 48 hours of collection. All samples were transported in a cooler packed with ice, under chain-of-custody protocol. The CPT boring logs are presented as Attachment 1. Water level measurements were also collected from existing monitor wells on February 28, 2007.

DEPTH-DISCRETE GROUNDWATER SAMPLING RESULTS

This section presents the results and conclusions from the February 2007 water-level sound round and the CPT/HydroPunch investigation.

Groundwater elevation contours from the February 28, 2007 sounding event are presented on Figure 8. This contour map represents horizontal groundwater flow directions in the shallow (Gaspur) aquifer, which is the impacted aquifer beneath the Site requiring groundwater remediation. Water level data shown on the figure also include data from four wells (MW-16, MW-18, MW-26, and MW-32) with screened intervals completed within the deeper Exposition Aquifer. Data from these wells were not used in constructing the contours shown on Figure 8. Horizontal flow directions shown on the figure are consistent with previous groundwater flow directions, which show a generally southern flow direction in the eastern portion of the Site, continuing along Rayo Avenue and south of Southern Avenue. A detailed description of the site lithology, including horizontal and vertical gradients can be found in the RDTM (URS, 2006). As noted in the RDTM (and shown on Figure 8) the horizontal flow pattern also suggests the presence of a southwest flow direction on the east side of the contours, in the vicinity of MW-8 and MW-31. The presence of a slight downward vertical gradient is also present in the Gaspur Aquifer. A

greater downward vertical gradient is present between the Gaspur and Exposition Aquifers. Lithologic data from the new CPTs (see Attachment 1) are also consistent with prior data, which indicated the presence of a relative sandy unit from approximately 60 to 100 feet. This unit begins in the eastern portion of the site along Rayo Ave and trends to the south and southeast.

VOC and 1,4-dioxane analytical data for the February/March 2007 sampling event are presented in Table 1. Select VOC and 1,4-dioxane results are also presented on Figure 9. This figure has an expanded base map and also includes the August 2006 TCE results from monitor wells that were previously shown on Figure 4. TCE concentrations are considered representative of the lateral extent of the Cooper Drum plume. Results from the February/March 2007 CPT/HydroPunch investigation indicate the following:

- The leading edge of the Cooper Drum plume (as represented by TCE) appears to be slightly south of McCallum Avenue, as depicted on Figure 9. Estimated boundaries of the Cooper Drum plume and the plume(s) to the east cannot be finalized until the groundwater flow direction and COC concentrations can be ascertained from sampling results from proposed monitor wells to be installed on the Seam Master Site and/or to the south, in the areas of CPT-40 through CPT-45 (see Figure 9). Based on the current monitor well data, the recent CPT/HydroPunch data, and the water level data from the Cooper Drum Site, the boundary of the 5 µg/L TCE contour line for the Site plume was estimated for the purpose of developing the conceptual groundwater remedial design (URS, 2007). Note that an estimated area of plume convergence (commingling with off-site plumes) has also been depicted on Figure 9.
- VOCs concentrations in the downgradient area of the Cooper Drum plume appear to be higher in the lower portion (90 to 110 feet bgs) of the Gaspur Aquifer. This is evident from the new results from HP-35 and HP-36 (compare TCE concentrations with results from CPT-35 and CPT-36, Figure 3) and results from well pair MW-29 (TCE 59 µg/L and screened interval 75 to 90 feet bgs) and MW-30 (TCE 180 µg/L and screen interval 104 to 114 feet bgs) located south of Southern Avenue.
- Concentrations (up to 830 µg/L of TCE) of VOCs south of Southern Avenue are significantly above those observed in the Cooper Drum plume. These elevated VOC concentrations are present from the depth range of approximately 62 to 85 feet bgs, beginning at CPT-40 and continuing to the south at CPT-41, CPT-42, and CPT-45. The VOCs would appear to be emanating from the area of CPT-10 and CPT-21, located in the eastern portion of the Seam Master site. Results from these two CPTs showed TCE concentrations up to 16,000 µg/L (see Figure 3) from this depth range. Assuming the source of VOCs at CPT-45 is from the Seam Master site, groundwater flow directions may be south to southwest.
- The high TCE concentration at the 100-foot bgs depth from CPT-40 (as compared to the shallower results) suggest this contamination may not be associated with the Seam Master site, and could be associated with the Jervis Webb site and/or Cooper Drum plume. Further investigations are required to determine this contamination source.

- 1,4-Dioxane concentrations appear to higher in the Cooper Drum plume, as compared to results from the CPTs sampled to the east and downgradient of the plume. Generally, all results from CPT-40 to CPT-42 and CPT 45 were less than 2 µg/L. The only exception would be the 88-foot bgs sample from CPT-40, which showed 12 µg/L.

Analytical Data Validation

Tier 3 data validation is currently being performed on 20 percent of the analytical data presented in this memorandum. The electronic data tables provided by the laboratory and the data validation reports will available at the Records Center at the EPA Region 9 in San Francisco. The data validation reports will be reviewed when available, and it will be verified that the data were acceptable for decision making purposes

RECOMMENDATIONS

As discussed, monitor well installations are necessary to confirm the CPT/HydroPunch depth- discrete sampling results, establish groundwater flow patterns, track plume migration, and evaluate performance of the remedial action (RA). Results from the well installations in the Cooper Drum plume will used to complete the plume delineation and the RD. Well installations are also necessary within and to the south of the Seam Master Site to further characterize VOC contamination in that area.

Regarding characterizing of the Cooper Drum Plume, the following recommendations are made:

- To address the downgradient extent of the Cooper Drum plume, two monitor well pairs are recommended for completion in the middle and lower portion of the shallow Gaspur Aquifer on McCallum Avenue, in the vicinity of CPT-43 and CPT-44.
- Two monitor wells are recommended for completion in the lower portion of the Gaspur Aquifer at the locations of MW-25 and MW-31. At these locations, existing wells MW-25 and MW-31 are completed in the middle portion of the Gaspur Aquifer, and MW-26 and MW-32 are completed in the upper portion of the deeper Exposition Aquifer. Data from the recommended wells would be used to (1) further characterize COC distribution in the Cooper Drum plume and (2) design and evaluate the effectiveness of the bio-barrier anticipated to be installed along Southern Avenue as part of the RA.

Regarding the Cooper Drum Plume commingling with the adjacent plumes to the east, the following recommendations are made:

- One monitor well pair are recommended for completion in the middle and lower portion of the shallow Gaspur Aquifer, located on Southern Avenue in the vicinity of CPT 40. The deeper well would be useful to address deep contamination which may be related to upgradient sources. Water levels from these locations should assist in establishing flow directions from the Seam Master site.

- One monitor well pair is recommended for completion in the middle and lower portions of the shallow Gaspur Aquifer, and located on Adella Avenue approximately 100 feet south of the intersection of McCallum Avenue. A well completed in the lower Gaspur Aquifer (approximately 95 to 110 feet bgs) should define the downgradient extent of the Cooper Drum plume, since the VOC concentration above this depth interval (see Figure 9, CPT-42 and CPT-45) appears to be significantly higher and not attributed to the Cooper Drum plume.

If you have any questions or comments regarding this report, please call me at (916) 679-2049.

Sincerely,

URS Corporation

Don Gruber
Task Manager

Attachments:

	Table 1	VOC and 1,4-Dioxane Analytical Data
	Figure 1	Site Location Map
	Figure 2	Site Layout and Source Areas
	Figure 3	Depth-discrete Groundwater Sampling VOC Results
	Figure 4	Trichloroethene Isopleth Map, August 2006
	Figure 5	cis-1,2-Dichloroethene Isopleth Map, August 2006
	Figure 6	1,4-Dioxane Isopleth Map, August 2006
	Figure 7	February/March 2007 CPT/HydroPunch Boring Locations
	Figure 8	Groundwater Elevation Contours, February/March 2007
	Figure 9	CPT/HydroPunch Results, February/March 2007
	Attachment 1	Cone Penetrometer Test (CPT) Boring Logs

cc. Ms. Lori Parnass, DTSC
Site Repository, South Gate, Ca
Chron File
Project File

TABLES

TABLE 1
February/March 2007
Cooper Drum Company Site, South Gate, California

Location	Depth (bgs)	Sample No.	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,4-Dioxane	Other VOCs Detected
CPT-40	63	Y3615	<2.0	160	290	1.9	18	1.0	<2.0	<2.0	<2.0	0.59	Cyclohexane (0.8), Methylcyclohexane (1.6)
	75	Y3616	<0.5	32	32	0.46	4.6	0.21	<0.5	0.41	<0.5	<2	Cyclohexane (0.4)
	88	Y3617	<0.5	71	27	1.2	5.6	0.31	0.46	14	0.94	12	Cyclohexane (1.0)
	100	Y3618	<1.0	220	120	2.5	18	0.42	1.7	20	2.9	NA	Cyclohexane (0.83)
CPT-41	63	Y3622	<2.5	430	370	2.4	27	0.86	<2.5	<2.5	<2.5	0.57	None
	78	Y3623	<0.5	89	94	0.59	8.0	0.21	<0.5	0.41	<0.5	<2	Cyclohexane (2.4)
	89	Y3624	<0.5	7.1	16	0.22	1.0	0.13	<0.5	2.0	<0.5	<2	Cyclohexane (0.3)
	102	Y3625	<0.5	17	49	0.36	3.7	0.16	<0.5	1.4	<0.5	0.66	Cyclohexane (0.33)
	123	Y3626	<0.5	9.4	13	0.28	0.6	0.22	0.21	1.1	<0.5	0.68	Cyclohexane (0.31) Carbon Disulfide (0.19)
CPT-42	62	Y3627	<1.0	53	160	0.29	12	0.32	<1.0	<1.0	<1.0	<2	Cyclohexane (0.42), Methylcyclohexane (0.8)
	83	Y3628	<5.0	530	770	3.5	57	<5.0	<5.0	<5.0	<5.0	0.49	None
	96	Y3629	<0.5	5.8	8.7	0.20	1.0	<0.5	<0.5	1.0	<0.5	<2	Cyclohexane (0.12)
	106	Y3630	<0.5	7.8	17	0.23	1.0	0.17	0.13	2.1	<0.5	0.41	Cyclohexane (0.30) Carbon Disulfide (0.13), Toluene(0.17), 1,2-DCPA (0.29)
CPT-43	72	Y3634	<1.0	35	17	0.55	2.2	0.34	<0.5	<0.5	<0.5	0.45	Cyclohexane (1.9), Methylcyclohexane (0.8)
	92	Y3635	<0.5	23	10	1.1	3.2	0.26	0.49	5.3	<0.5	9	Cyclohexane (1.4)
	104	Y3636	<0.5	78	8.9	1.1	2.2	0.26	0.79	5.5	<0.5	7.3	Cyclohexane (1.4)
	128	Y3637	<0.5	0.5	0.14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	Carbon Disulfide (0.44), Acetone (19)

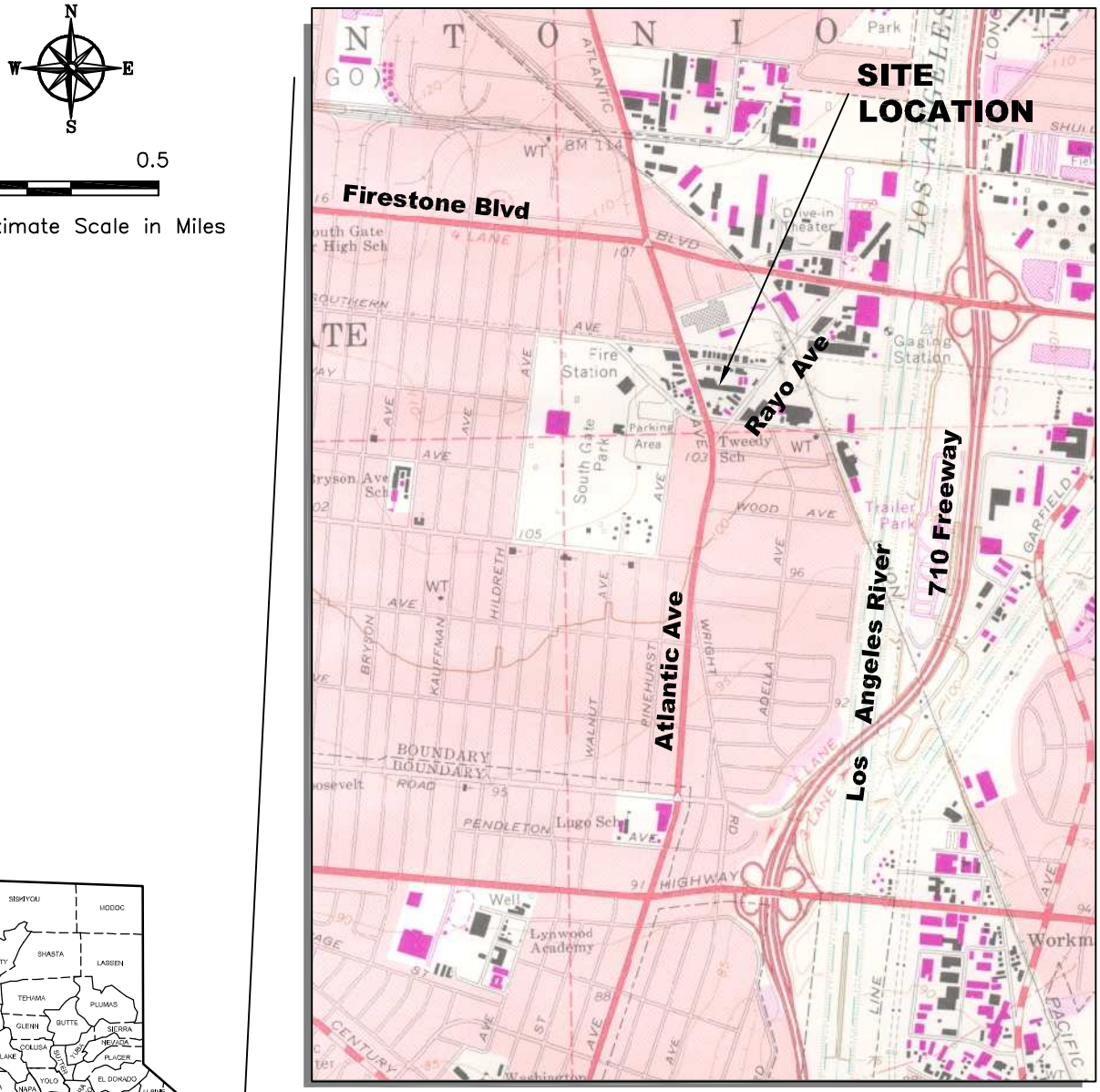
TABLE 1 (Continued)

Location	Depth (bgs)	Sample No.	PCE	TCE	cis-1,2-DCE	1,1-DCE	trans-1,2-DCE	VC	1,1-DCA	1,2-DCA	Benzene	1,4-Dioxane	Other VOCs Detected
CPT-44	65	Y3639	<0.5	<0.5	<0.5	<0.5	<0.5	0.23	<0.5	<0.5	<0.5	<2	None
	88	Y3640	<0.5	0.5	0.31	<0.5	<0.5	<0.5	<0.5	0.58	<0.5	<2	None
	102	Y3641	<0.5	5.1	1.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	0.62	None
	114	Y3642	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.29	<2.5	None
CPT-45	68	Y3646	<2.5	310	380	1.6	30	<2.5	<2.5	<2.5	<2.5	0.98	None
	85	Y3647	<5.0	830	860	2.6	47	<5.0	<5.0	<5.0	<5.0	NA	None
	98	Y3648	<0.5	2.7	15	0.14	1.7	0.14	<0.5	0.65	<0.5	<2	Cyclohexane (0.12)
	120	Y3649	<0.5	0.54	0.73	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	None
HP-35	93	Y3655	<0.5	80	86	4.0	5.2	1.3	12	5.9	0.67	43	Cyclohexane (0.14), Carbon Dislulfide (0.20), 1,2-DCPA (1.5), Toluene (0.4)
	102	Y3656	<0.5	95	19	0.67	1.7	0.37	0.46	2.0	<0.5	1.9	None
HP-36	93	Y3657	<5.0	610	13	2.5	3.0	<5.0	3.0	5.6	<5.0	7.9	Cyclohexane (1.2)
	102	Y3658	<0.5	3.1	3.7	0.13	0.34	<0.5	<0.5	0.41	<0.5	1.7	None
HP-26	58	Y3659	<0.5	0.23	3.1	0.12	<0.5	<0.5	<0.5	<0.5	<0.5	15	None
	67	Y3660	<0.5	4.4	3.5	0.13	0.22	0.13	<0.5	<0.5	<0.5	<2	Cyclohexane (0.55), Methylcyclohexane (0.56), Toluene (0.26)
HP-8	92	Y3661	<0.5	25	7.8	1.3	0.62	0.27	0.51	8.6	<0.5	7.1	Cyclohexane (1.0)
	97	Y3662	<0.5	25	7.1	1.1	0.53	0.22	0.43	7.1	<0.5	6	Cyclohexane (0.8), Carbon Disulfide (0.21)

Index: Analytical results in micrograms per liter (µg/L) or parts per billion (ppb).
Diluted sample concentrations used in table.

bgs = feet below ground surface
J = estimated value
B = analyte found in associated method blank as well as in sample
D = detection associated with sample dilution
CPT = cone penetrometer testing
HP = HydroPunch sampling only, no CPT at this location
DCA = dichloroethane
DCE = dichloroethene
DCPA = dichloropropane
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride
VOC = volatile organic
µg/L = micrograms per liter

FIGURES



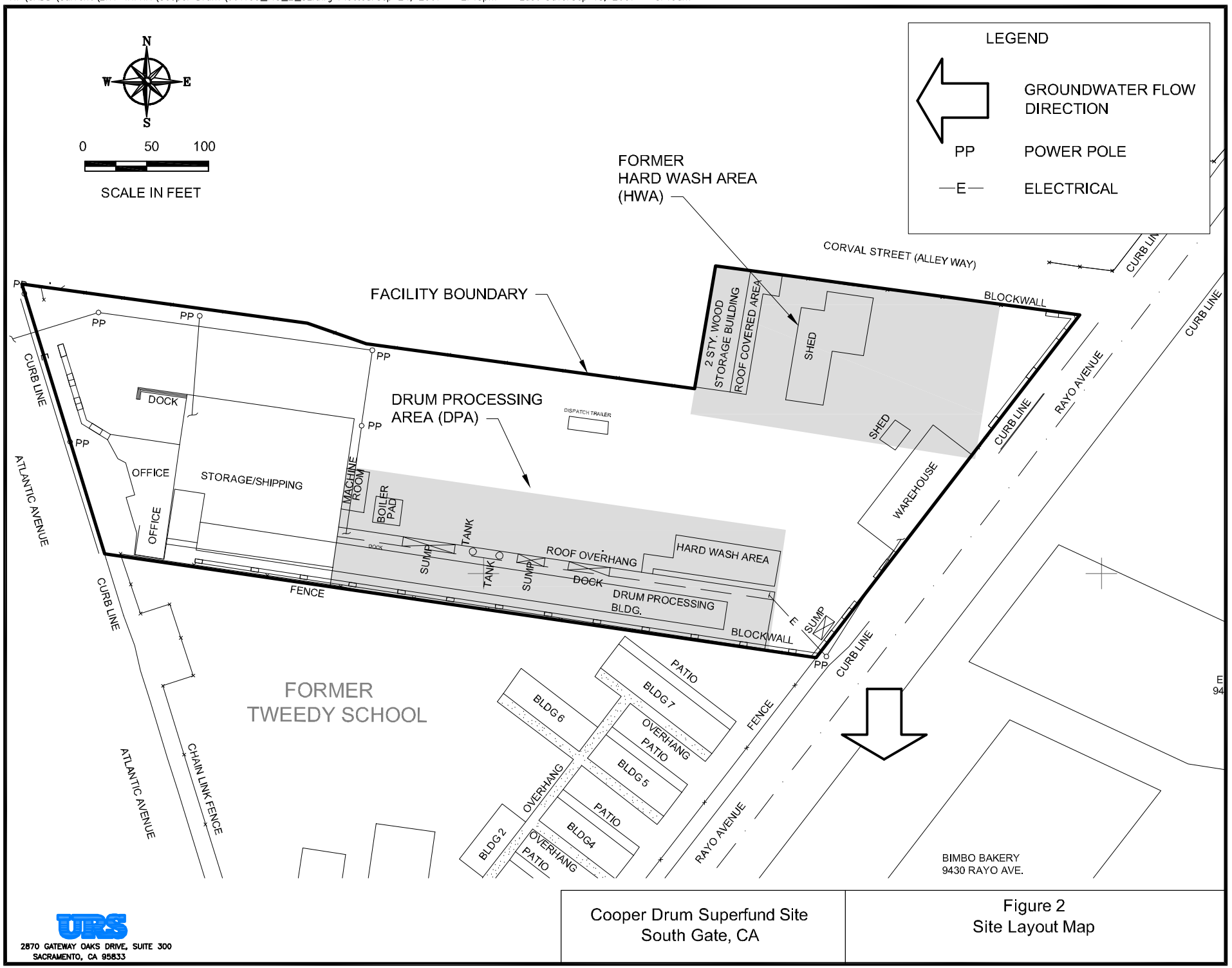
H:\CADD\Current\ENV-INFRA\Cooper Drum\20060602\FIG_1_SLM.dwg Plotted:Sep 18, 2007 - 8:26am Last Save:Dec 05, 2006 - 2:45pm

URS
2870 GATEWAY OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833

Cooper Drum Company
South Gate, California

FIGURE 1
Site Location Map

H:\CADD\Current\ENV-INFRA\Cooper Drum\061103_FIG_2_SL.dwg Plotted: Sep 24, 2007 - 2:48pm Last Save: Sep 18, 2007 - 8:49am



URS
2870 GATEWAY OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833

Cooper Drum Superfund Site
South Gate, CA

Figure 2
Site Layout Map

H:\CADD\Current\ENV-INFRA\Cooper Drum\20060602\060602_FIG_3_CPT data.dwg User: jorge_acevedo Plotted: Oct 01, 2007 - 11:13am Last Save: Jul 16, 2007 - 11:12am

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-4 (OCT.1998)	92	2.2	2.9	<1
	102	1.9	1.7	<1
	117	<1	<1	<1
	117 (dupl.)	<1	<1	<1
	142	<1	<1	<1
	162	<1	<1	<1
	192	<1	<1	<1
SB-4A (OCT.1998)	66	100	130	19
	66 (dupl.)	130	160	NA
	83	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-13 (OCT.2000)	62	42	30	<0.5
	73	<1	0.4J	<0.5
	92	<0.5	<0.5	<0.5
	130	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-25 (MAY 2003)	72	<0.5	2J	2
	99	<0.5	0.4J	<0.5
	114	<0.5	0.3J	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-4 (NOV.1998)	61	220	270	4
	74	<1	<1	<1
	96	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-3 (SEPT.1998)	62	8.1	7.4	<1
	82	<1	<1	<1
	103	<1	<1	<1
	132	<1	<1	<1
	151	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-22 (NOV.2000)	68	350	200	2
	78	<1	<1	<1
	92	<1	<1	<1
	116	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-27 (MAY 2003)	62	6.5	4.8	1.3
	78	2.4	0.59	<0.5
	103	4.1	0.52	<0.5
	126	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-7 (MAR.1999)	64	9	5	<1
	81	46	<1	<1
	97	<1	<1	<1
	97 (dupl.)	<1	<1	<1
	116	100	4	2

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-12 (OCT.2000)	62	50	12	<0.5
	73	4,400	25	21
	99	<0.5	<0.5	<0.5
	125	1J	<0.5	<0.5

Sample Point	Screen Interval feet-bgs	TCE	CIS-1,2-DCE	Sample Date
MW-19	67-77	5,700	33	Feb. 2001
MW-19	67-77	1,000	<50	May 2003
MW-19	67-77	450	11	Jan. 2004

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-15 (OCT.2000)	62	<0.5	0.9	<0.5
	80	49	86	9
	100	9	20	0.5
	130	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-5 (OCT.1998)	63	<1	<1	<1
	63 (dupl.)	<1	<1	<1
	82.5	<1	<1	<1
	82.5 (dupl.)	<1	<1	<1
	102	<1	3.6	<1
	131	<1	<1	<1
	131 (dupl.)	<1	<1	<1
	151	<1	<1	<1
	181	<1	<1	<1
	201	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-14 (OCT.2000)	62	<0.5	0.5J	<0.5
	90	25	0.8	<0.5
	117	0.3J	<0.5	<0.5
	137	1	<1	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-2 (OCT.1998)	62	<1	<1	<1
	82	<1	<1	<1
	90	<1	5.7	<1
	100	3.2	9.7	<1
	130	<1	<1	<1
	140	<1	<1	<1
	160	<1	<1	<1
	191	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-6 (OCT./NOV.1996)	76	<1	<1	NA
	76 (dup)	<1	<1	NA
	90	2	0.4	NA
	90 (dup)	3	0.4	NA
	105	<1	<1	NA
	115	<1	<1	NA
	120	<1	<1	NA
	131	<1	<1	NA
	165	<1	<1	NA
	205	<1	<1	NA

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-6 (MAR.1999)	63	<1	<1	2
	78	<1	<1	0.6J
	78 (dupl.)	<1	<1	<1
	95	<1	<1	1
	111	<1	<1	2

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-7 (OCT./NOV.1996)	70	<1	<1	NA
	70 (dup)	<1	<1	NA
	80	<1	<1	NA
	80 (dup)	<1	<1	NA
	70 (dup)	<1	<1	NA
	90	39	2	NA
	100	43	2	NA
	120	<1	<1	NA
	130	<1	<1	NA
	140	<1	<1	NA
	160	<1	<1	NA

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-5 (MAR.1999)	65	<1	<1	<1
	81	<1	<1	<1
	96	14	<1	<1
	116	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-31 (MAY 2003)	69	16	7.0	<0.5
	90	<0.5	<0.5	<0.5
	108	<0.5	2J	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-23 (NOV.2000)	67	0.8J	0.9J	<1
	82	46	43	<1
	102	23	25	<1
	120	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-32 (MAY 2003)	73	0.3J	<0.5	<0.5
	90	2.0	0.3J	<0.5
	111	<0.5	<0.5	<0.5
	128	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-19 (OCT.2000)	62	170	41	19
	80	960	210	49
	100	32	22	2
	125	6	4	1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-24 (OCT.2000)	62	13	8	<1
	80	32	25	<1
	98	12	13	0.7J
	120	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-33 (MAY 2003)	72	5	2	<0.5
	88	1	0.7	<0.5
	102	4	16J	<0.5
	126	<0.5	<0.5J	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-34 (MAY 2003)	72	33	17	<0.5
	90	15	14	0.8
	108	<0.5	<0.5	<0.5
	128	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-37 (MAY 2003)	72	4.4	3.4	<0.5
	90	1.4	3.5	<0.5
	112	<0.5	<0.5	<0.5
	128	<0.5	0.3J	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-29 (MAY 2003)	60	<0.5	<0.5	<0.5
	74	52	61	1.6
	91	29	29	2.6
	109	<0.5	7.4	<0.5
	128	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-38 (MAY 2003)	72	14	4J	<0.5
	90	10	8J	<0.5
	113	<0.5	<0.5	<0.5
	129	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-35 (MAY 2003)	58	<0.5	<0.5	<0.5
	72	20	4	<0.5
	90	35	4	<2.0
	110	<0.5	<0.5	<0.5
	128	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-26 (MAY 2003)	72	99	17	<0.5
	88	110	11	0.7
	102	240	12	<0.5
	125	0.3J	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-11 (OCT.2000)	62	31	28	0.9
	73	280	3	2
	88	<0.5	<0.5	<0.5
	105	<0.5	<0.5	<0.5
	123	1J	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
SB-1 (OCT.1998)	63	2,000	97	2.1
	63 (dupl.)	2,000	99	2.3
	83	15	2.9	<1
	103	1.5	2.4	<1
	132	<1	<1	<1
	142	<1	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-3 (NOV.1998)	61	20	13	<1
	78	<1	<1	<1
	78 (dupl.)	<1	<1	<1
	97	22	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-1 (NOV.2000)	67	120	17	<1
	84	4	<1	<1
	97	3	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-2 (NOV.1998)	67	16	3	<1
	82	<1	<1	<1
	98	2	<1	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-28 (MAY 2003)	59	<0.5	<0.5	<0.5
	72	43	42	3
	96	3	4	<0.5
	128	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-17 (OCT.2000)	63	58	27	<0.5
	80	120	10	<0.5
	97	390	16	0.4J
	122	12	2	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-18 (OCT.2000)	67	25	11	<0.5
	85	6	0.5J	<0.5
	100	320	14J	<25
	120	0.5J	<0.5	<0.5
	138	0.5J	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-16 (OCT.2000)	60	<0.5	<0.5	<0.5
	72	13	5	0.7
	95	13	0.5J	<0.5
	120	1	0.5J	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-30 (MAY 2003)	64	0.4J	<0.5	<0.5
	80	130	30	1.1
	98	23	7.4	<0.5
	128	<0.5	<0.5	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-20 (OCT.2000)	64	24	9	<0.5
	80	51	14	<3
	97	5	3	<0.5
	118	22	14	1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-9 (MAR.1999)	60	<1	2	<1
	80	16	7	<1
	97	43	6	<1
	119	9	5	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-8 (MAR.1999)	65	21	240	<1
	80	18	2	<1
	96	90	8	<1
	107	2	2	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-21 (OCT.2000)	63	8,000	4,900	<250
	87	11,000	4,900	<250
	100	12	8	<0.5
	120	1	1	<0.5
	140	1	1	<0.5

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-10 (MAR.1999)	65	16,000	4,500	14
	85	5	12	<1
	102	38	31	<1
	102(dupl.)	80	80	<1
	120	2	2	<1

Sample Point	Depth feet-bgs	TCE	CIS-1,2-DCE	1,1-DCA
CPT-36 (MAY 2003)	58	<0.5	<0.5	<0.5
	72	5	2	<0.5
	89	140	5	2
	108	<0.5	2	<0.5
	128	<0.5	<0.5	<0.5

LEGEND

CPT-1 — CONE PENETROMETER TESTING LOCATION AND DEPTH DISCRETE GROUNDWATER SAMPLING LOCATION (CPT-1 THROUGH CPT-39)

MW-1 — ON-SITE GROUNDWATER MONITORING WELL LOCATION (MW-1, MW-2, MW-4, MW-5, and MW-21)

EW-1 — GROUNDWATER EXTRACTION WELL LOCATION

MW-8 — OFF-SITE GROUNDWATER MONITORING WELL LOCATION (MW-3, MW-8, MW-10, MW-12, AND MW-14 THROUGH MW-20, AND MW-22 THROUGH MW-32)

SB-1 — SOIL BORING LOCATION AND DEPTH DISCRETE GROUNDWATER SAMPLING LOCATION

—10— TCE GROUNDWATER CONTOUR IN MICROGRAMS PER LITER

TCE	Trichloroethene
CIS-1,2-DCE	cis-1,2-Dichloroethene
1,1-DCA	1,1-Dichloroethane
ug/L	Micrograms per Liter (parts per billion - ppb)
bgs	Below Ground Surface
N	Tentatively Identified
J	Estimated Value

TCE

- > 1 ug/L - < 5 ug/L
- > 5 ug/L - < 10 ug/L
- > 10 ug/L - < 100 ug/L
- > 100 ug/L - 1,000 ug/L
- > 1,000 ug/L - 10,000 ug/L
- > 10,000 ug/L

N S E W

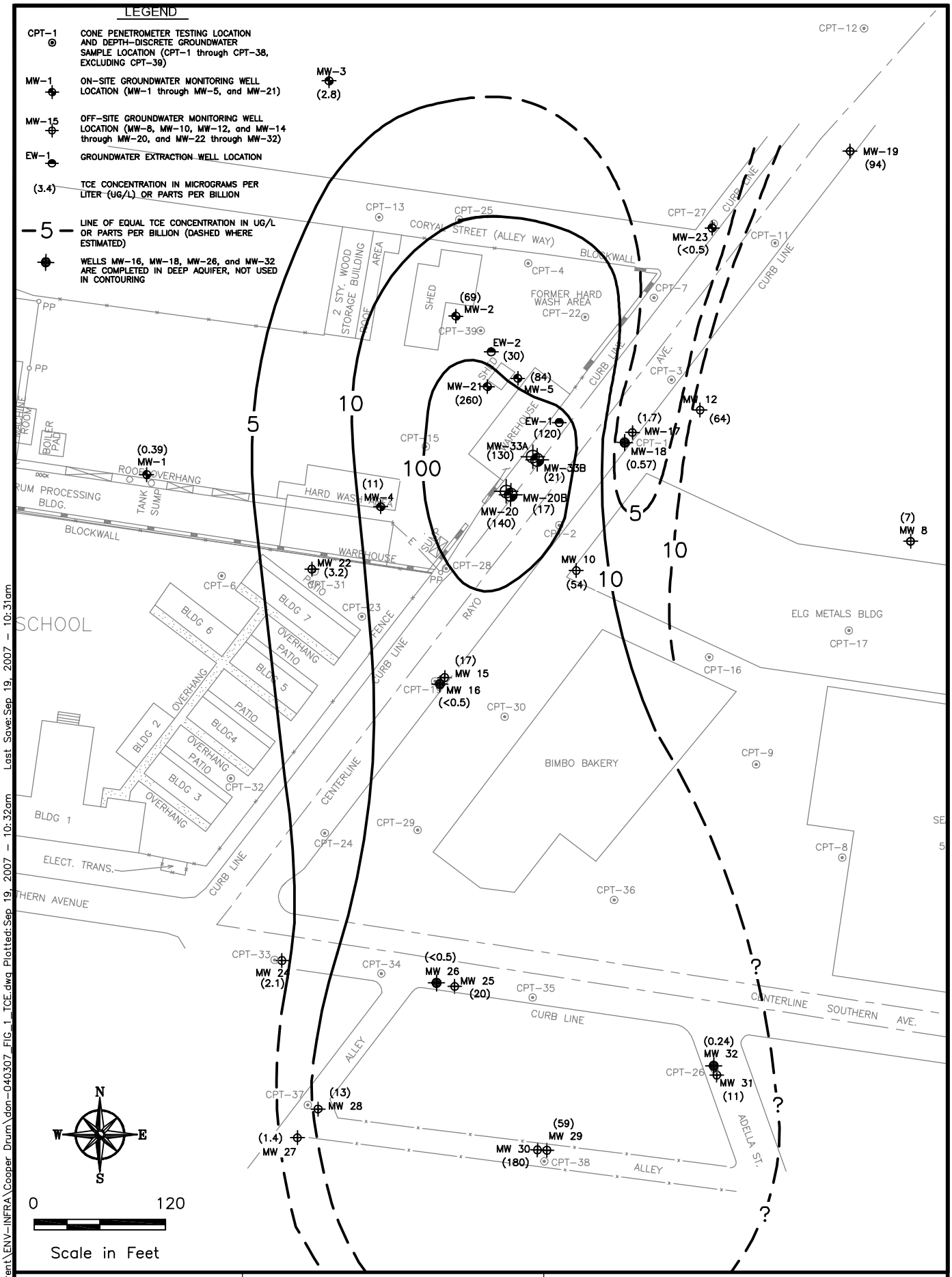
120 60 0 120 240

SCALE IN FEET

URS
2870 GATEWAY OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833

Cooper Drum Company
South Gate, California

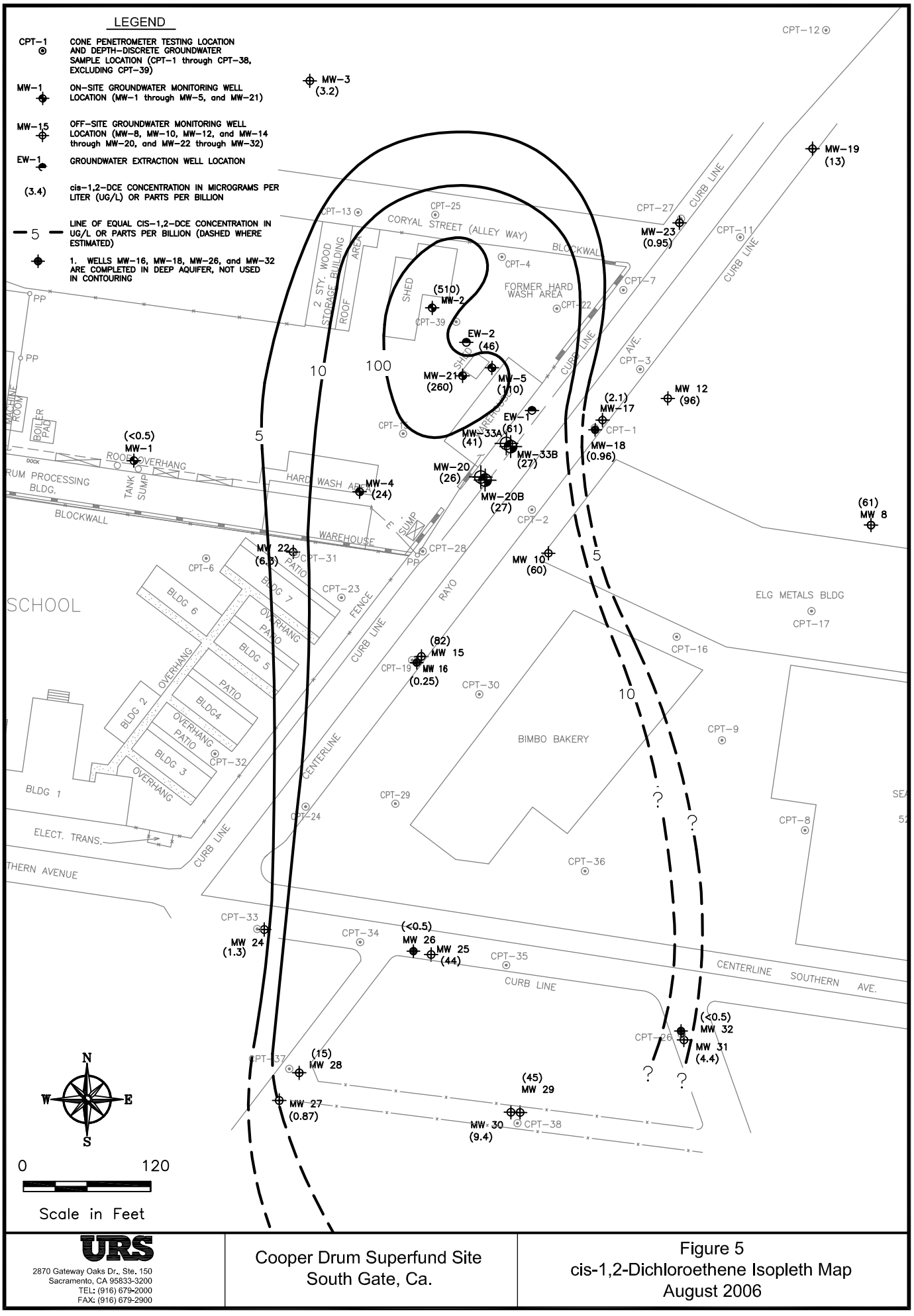
FIGURE 3
Depth Discrete
Groundwater Sample VOC Analytical Results



URS
2870 GATEWAY OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833

Cooper Drum Company
South Gate, California

FIGURE 4
Trichloroethene Isopleth Map
August 2006

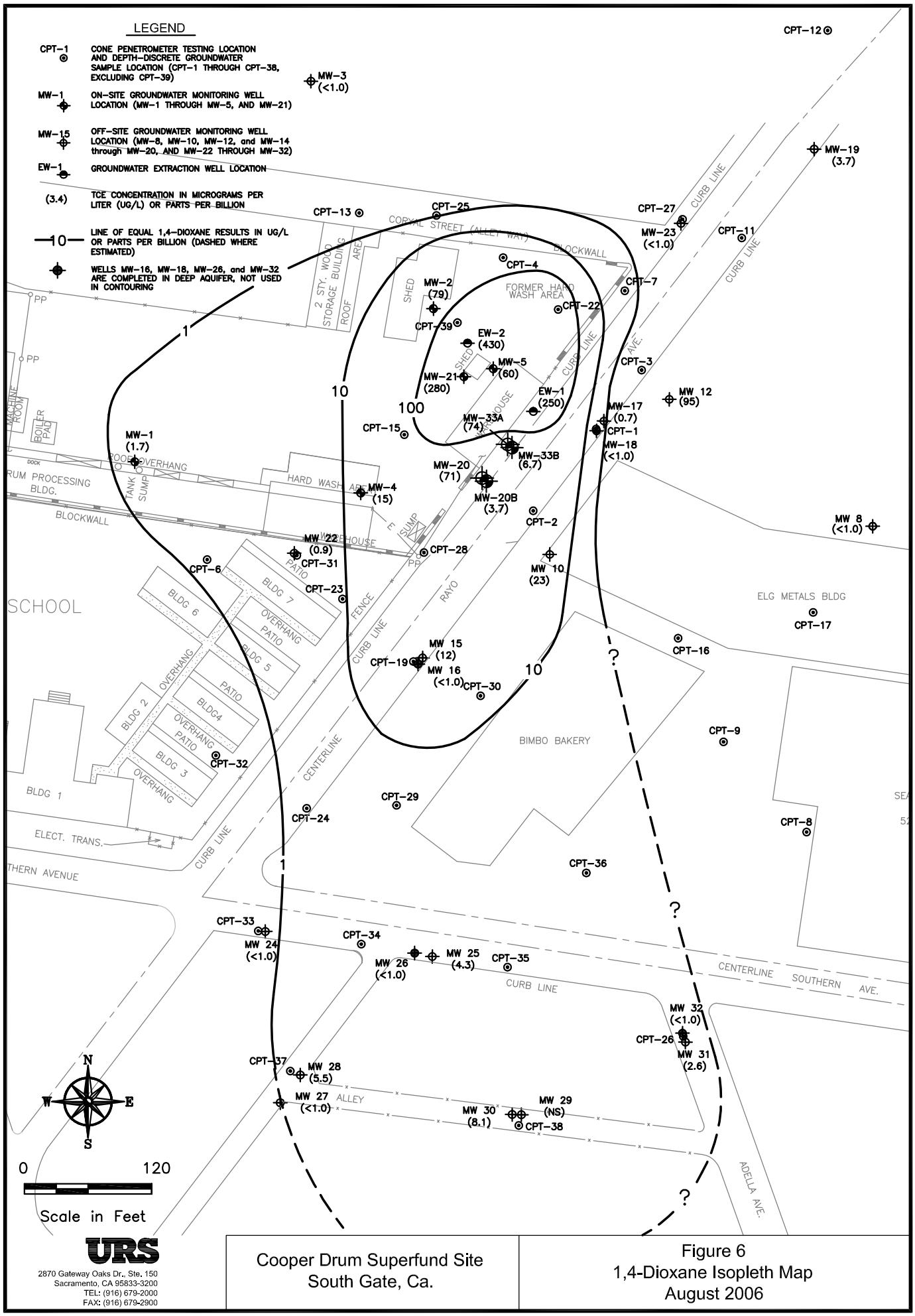


URS
2870 Gateway Oaks Dr., Ste. 150
Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

Cooper Drum Superfund Site
South Gate, Ca.

Figure 5
cis-1,2-Dichloroethene Isopleth Map
August 2006

PLOT BY: RTAYLOR - Jul 16, 2007 - 11:37:50am
IMAGES:
XREFS: xrefbase.dwg
DRAWING: Don-071607_FIG_5_CIS_DCE.dwg
DRAWING: T:\current-work files\COOPER-DRUM\A&B-APPENDS\



URS
2870 Gateway Oaks Dr., Ste. 150
Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

Cooper Drum Superfund Site
South Gate, Ca.

Figure 6
1,4-Dioxane Isopleth Map
August 2006

PLOT BY: RTAYLOR - Jul 16, 2007 - 11:38:24am
IMAGES:
XREFS:
DRAWING: Dsn-071607_FIG_6_DIOXANE.dwg
DRAWING: T:\current-work files\COOPER-DRUM\A&B-APPENDS\

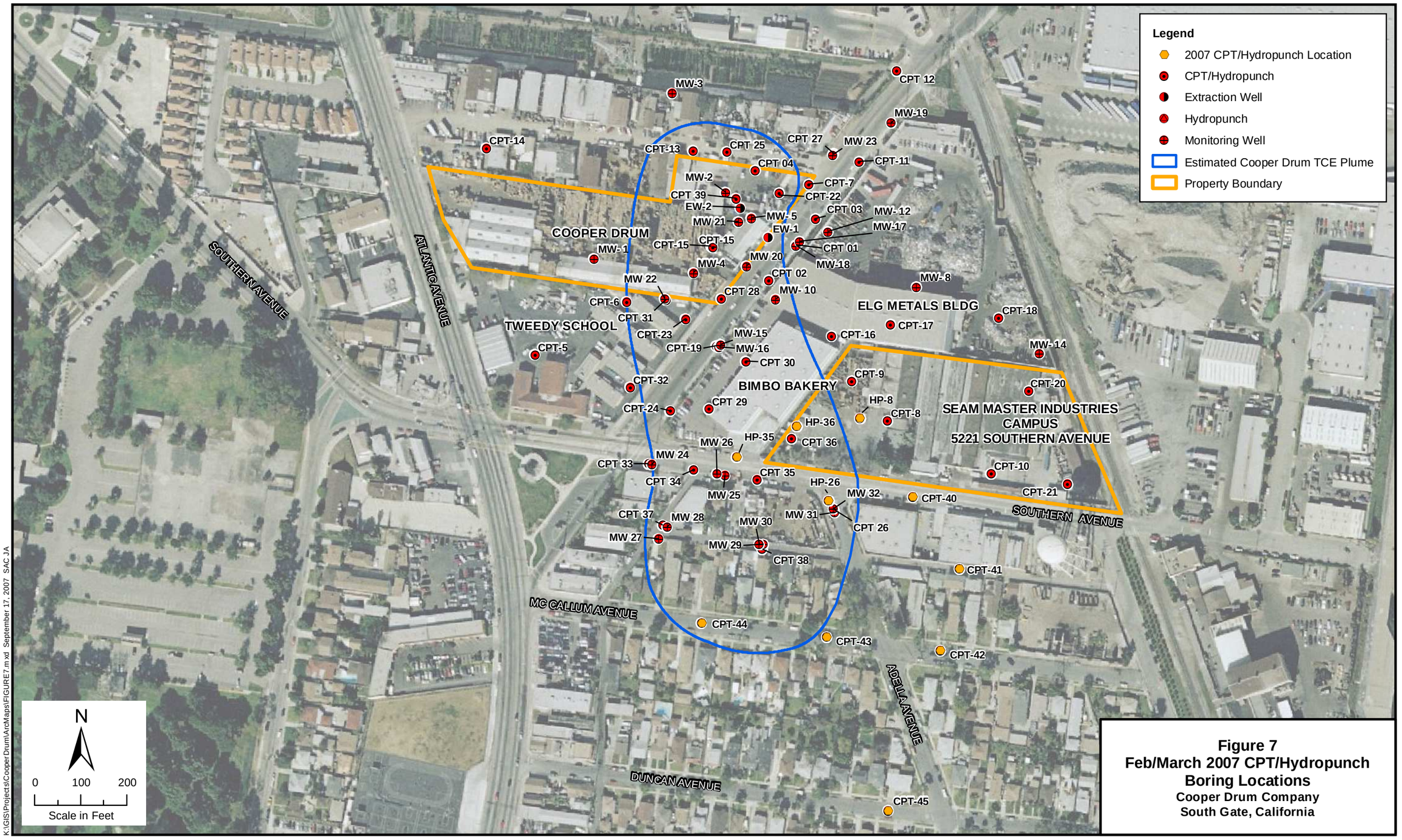
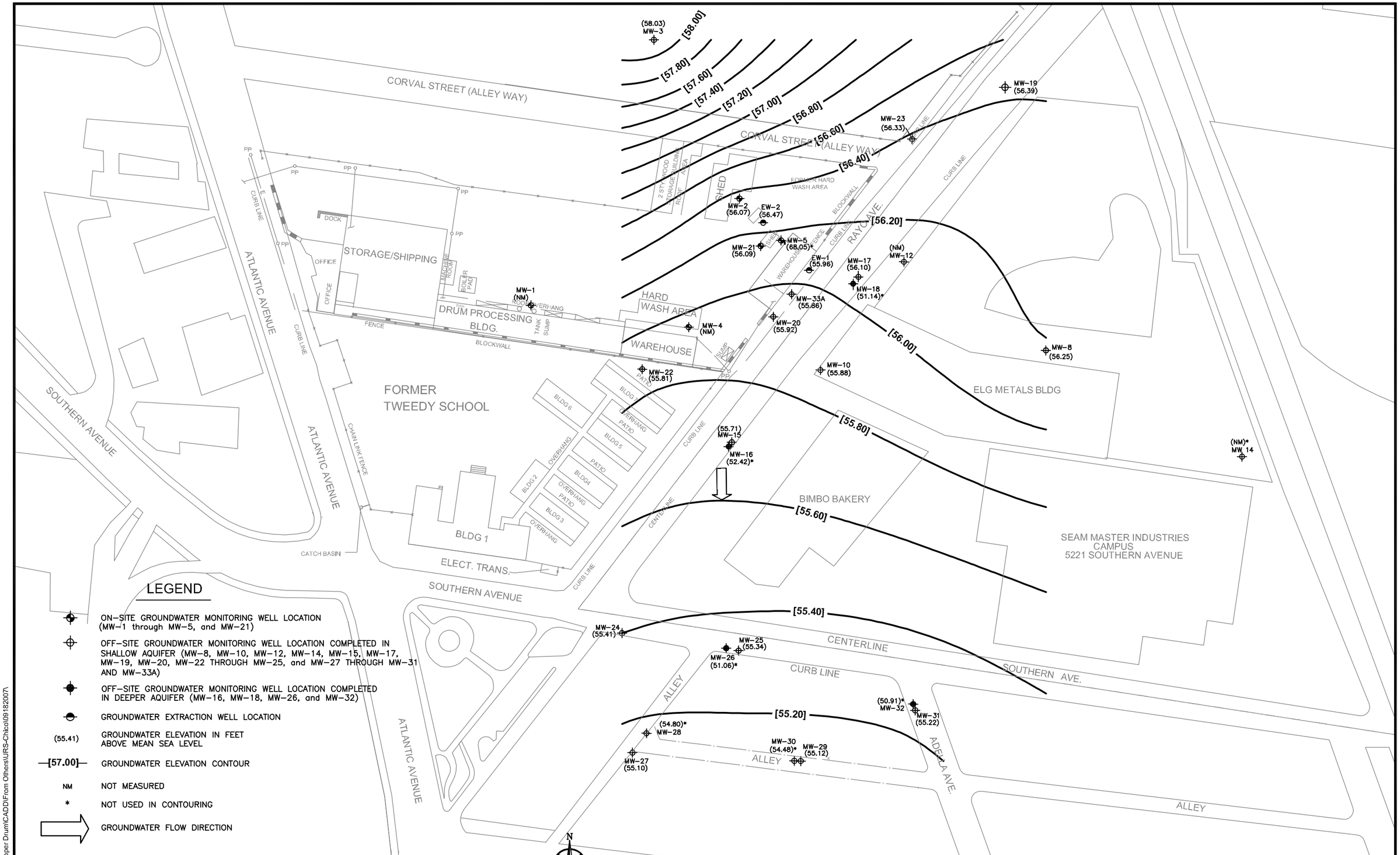


Figure 7
Feb/March 2007 CPT/Hydropunch Boring Locations
Cooper Drum Company
South Gate, California

K:\GIS\Projects\Cooper Drum\ArcMaps\FIGURE7.mxd September 17, 2007 SAC JA



URS
2870 Gateway Oaks Dr., Ste. 150
Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

Cooper Drum Company
South Gate, California

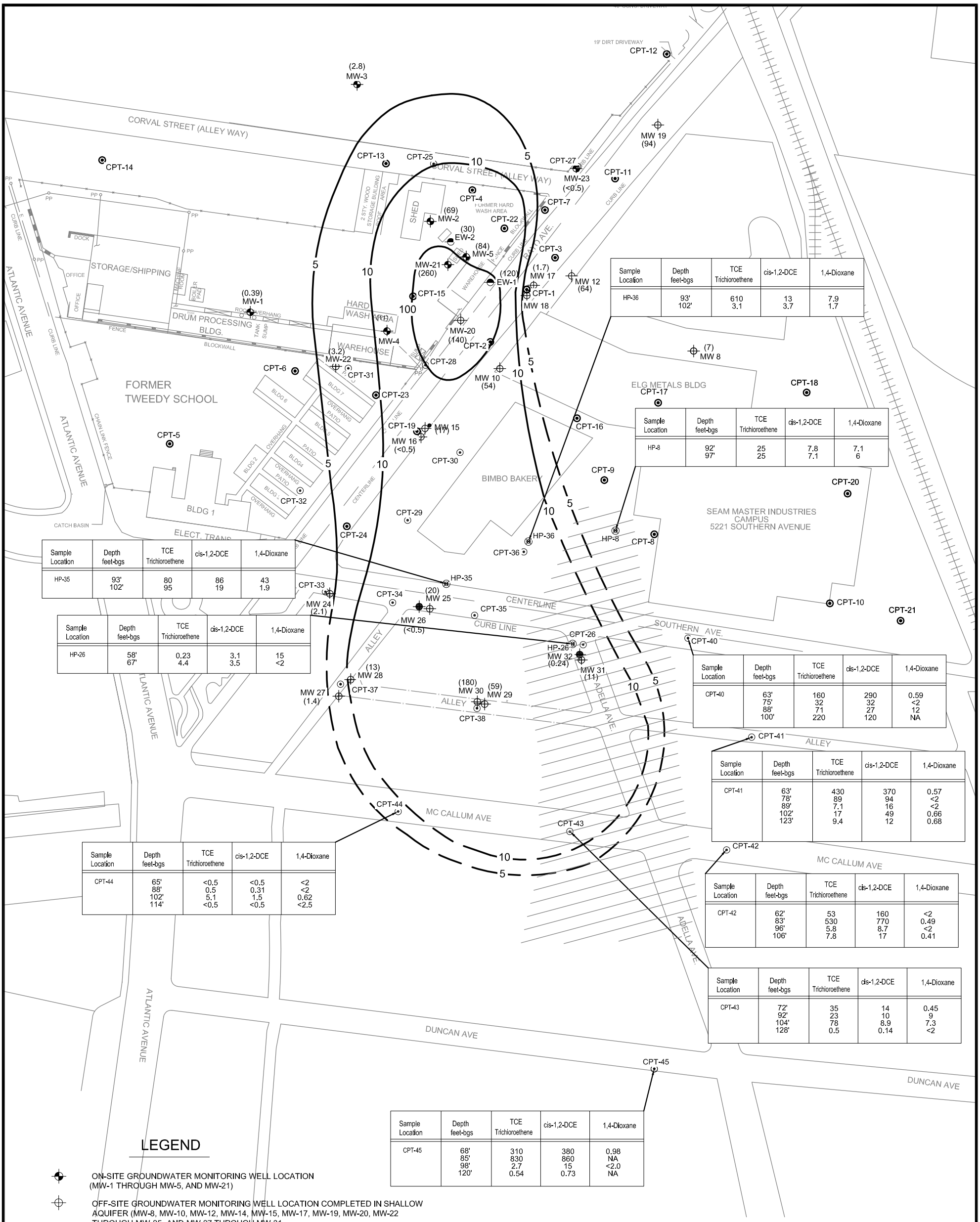
FIGURE 8
Groundwater Elevations
FEBRUARY, 2007

PLOT BY: DAVID_LARSON - Sep 18, 2007 - 10:51:09am
XREFS: \20070404\NEW-BACKGRD2.dwg IMAGES: cooper drum.jpg
DRAWING: Don-071607-FIG-8-GWGRAD.dwg
DRAWING: J:\Cooper Drum\CADD\From Others\URS-Chico\09182007\

DRAWING: Don-071607-FIG-9-backgrd-tce.dwg
DRAWING: T:\current-work files\COOPER-DRUM\A&B-APPENDS\

XREFS: T:\current-work files\COOPER-DRUM\20070404\NEW-BACKGRD2.dwg
PLOT BY: RTAYLOR - Jul 16, 2007 - 11:13:31am

IMAGES:



Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
HP-36	93' 102'	610 3.1	13 3.7	7.9 1.7

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
HP-8	92' 97'	25 25	7.8 7.1	7.1 6

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
HP-35	93' 102'	80 95	86 19	43 1.9

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
HP-26	58' 67'	0.23 4.4	3.1 3.5	15 <2

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
CPT-40	63' 75' 88' 100'	160 32 71 220	290 32 27 120	0.59 <2 12 NA

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
CPT-41	63' 78' 89' 102' 123'	430 89 7.1 17 9.4	370 94 16 49 12	0.57 <2 <2 0.66 0.68

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
CPT-44	65' 88' 102' 114'	<0.5 0.5 5.1 <0.5	<0.5 0.31 1.5 <0.5	<2 <2 0.62 <2.5

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
CPT-42	62' 83' 96' 106'	53 530 5.8 7.8	160 770 8.7 17	<2 0.49 <2 0.41

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
CPT-43	72' 92' 104' 128'	35 23 78 0.5	14 10 8.9 0.14	0.45 9 7.3 <2

Sample Location	Depth feet-bgs	TCE Trichioroethene	cis-1,2-DCE	1,4-Dioxane
CPT-45	68' 85' 98' 120'	310 830 2.7 0.54	380 860 15 0.73	0.98 NA <2.0 NA

LEGEND

- ON-SITE GROUNDWATER MONITORING WELL LOCATION (MW-1 THROUGH MW-5, AND MW-21)
- OFF-SITE GROUNDWATER MONITORING WELL LOCATION COMPLETED IN SHALLOW AQUIFER (MW-8, MW-10, MW-12, MW-14, MW-15, MW-17, MW-19, MW-20, MW-22 THROUGH MW-25, AND MW-27 THROUGH MW-31 AND MW-33A)
- OFF-SITE GROUNDWATER MONITORING WELL LOCATION COMPLETED IN DEEPER AQUIFER (MW-16, MW-18, MW-26, AND MW-32)
- GROUNDWATER EXTRACTION WELL LOCATION
- 10 — LINE OF EQUAL TCE CONCENTRATION IN µg/L, AUGUST 2006
- INFERRED TCE CONCENTRATION IN µg/L FROM MARCH 2007 CPT/HYDROPUNCH DATA.
- MW-29 (59) — TCE CONCENTRATION IN µg/L, IN AUGUST 2006 MONITOR WELL SAMPLING EVENT
- HATCHED AREA WHERE COOPER DRUM PLUME MAY HAVE COMMINGLED WITH VOC PLUME FROM SEAM MASTER AND/OR UPGRADIENT PLUME FROM JERVIS WEBB SITE.
- NA — NOT ANALYZED

N W E S

150 75 0 150 300

SCALE IN FEET

URS
2870 Gateway Oaks Dr., Ste. 150
Sacramento, CA 95833-3200
TEL: (916) 679-2000
FAX: (916) 679-2900

Cooper Drum Superfund Site
South Gate, Ca.

Figure 9
CPT/Hydropunch Results
February/March 2007

ATTACHMENT 1

Cone Penetrometer Test (CPT) Boring Logs

GREGG

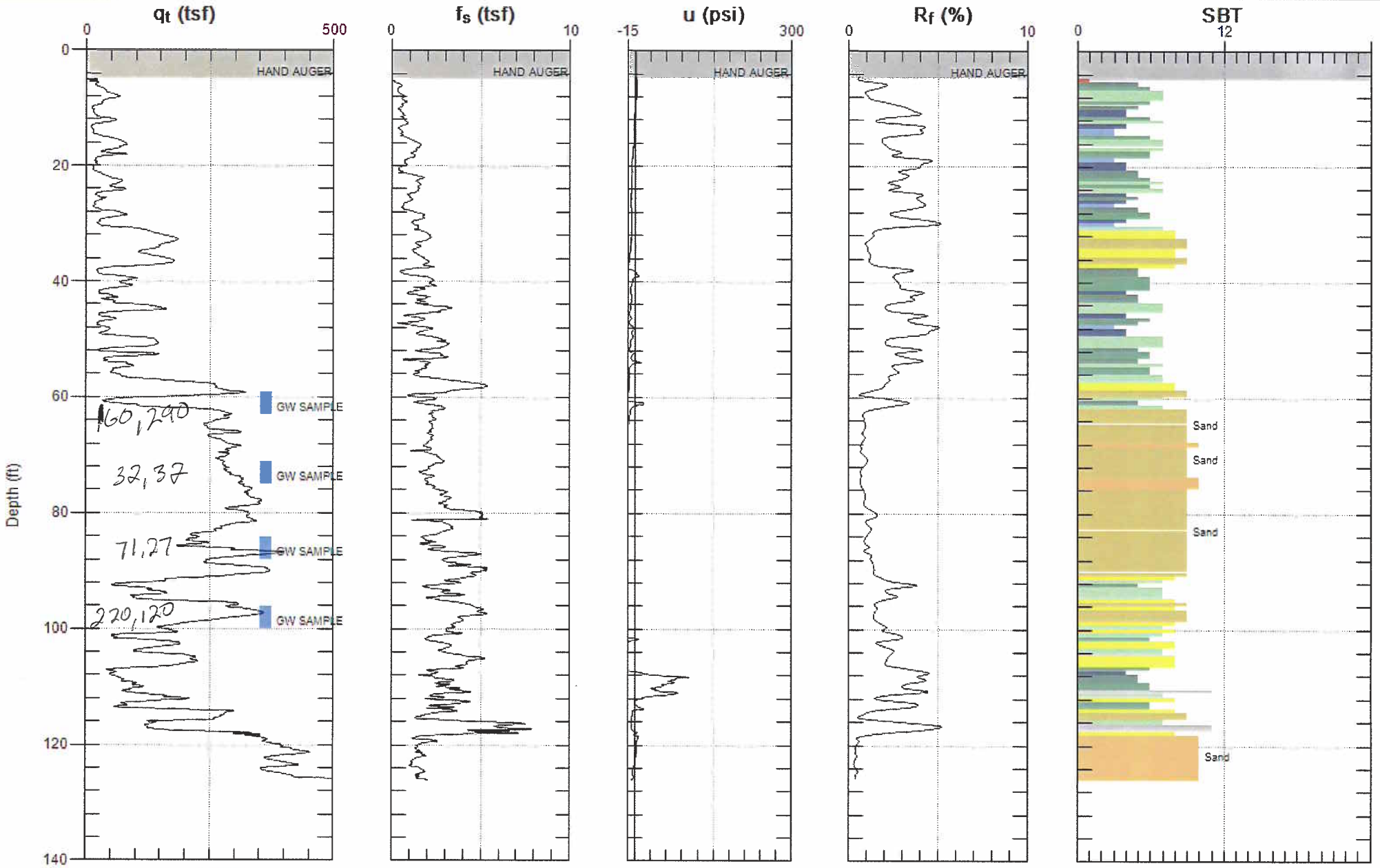
URS

Site: COOPER DRUM

Sounding: CPT-40

Engineer: D.GRUBER

Date: 2/28/2007 07:18



Max. Depth: 126.150 (ft)

Avg. Interval: 0.656 (ft)

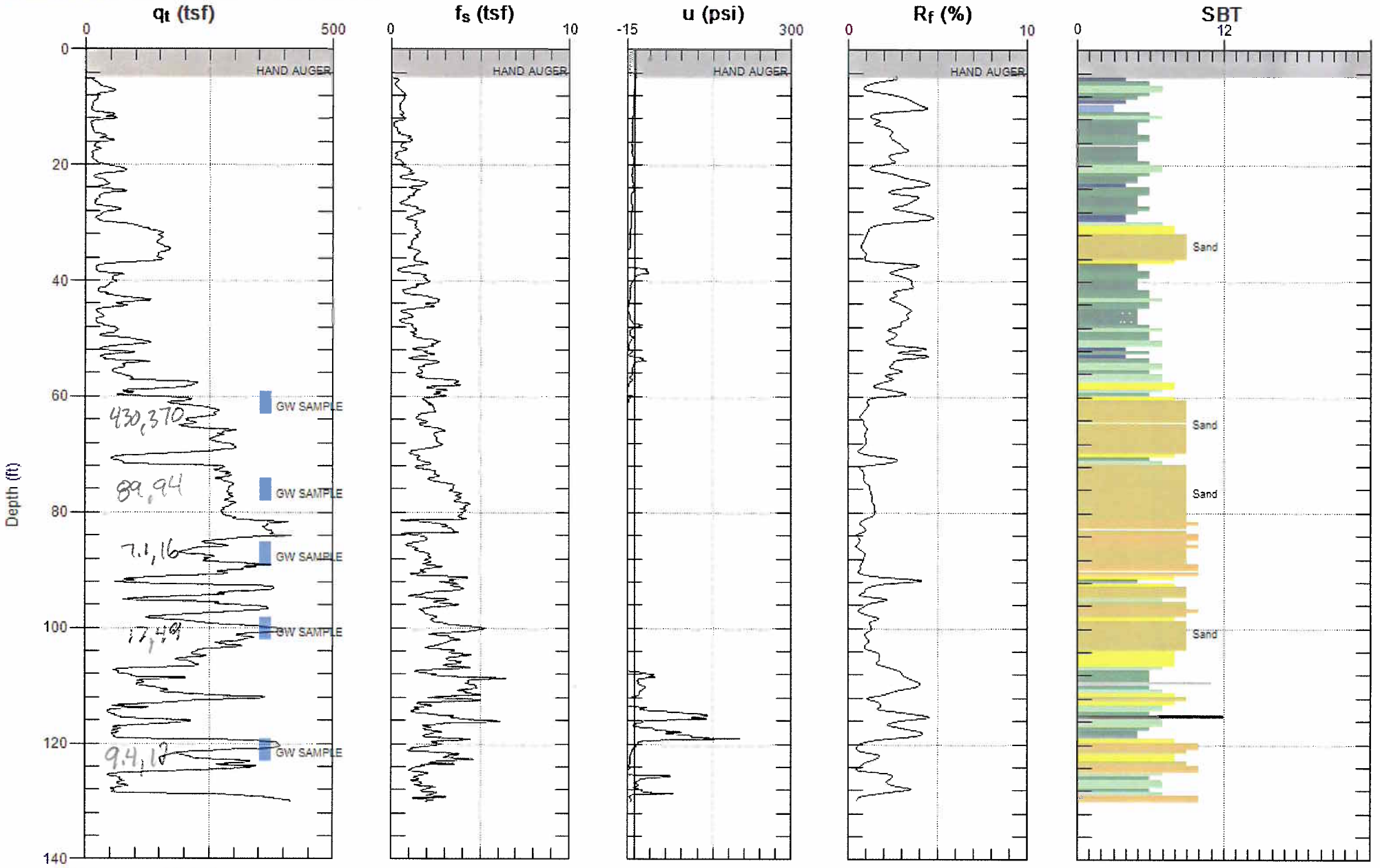
SBT: Soil Behavior Type (Robertson 1990)

GREGG

URS

Site: COOPER DRUM
Sounding: CPT-41

Engineer: D.GRUBER
Date: 3/1/2007 07:12



Max. Depth: 130.090 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

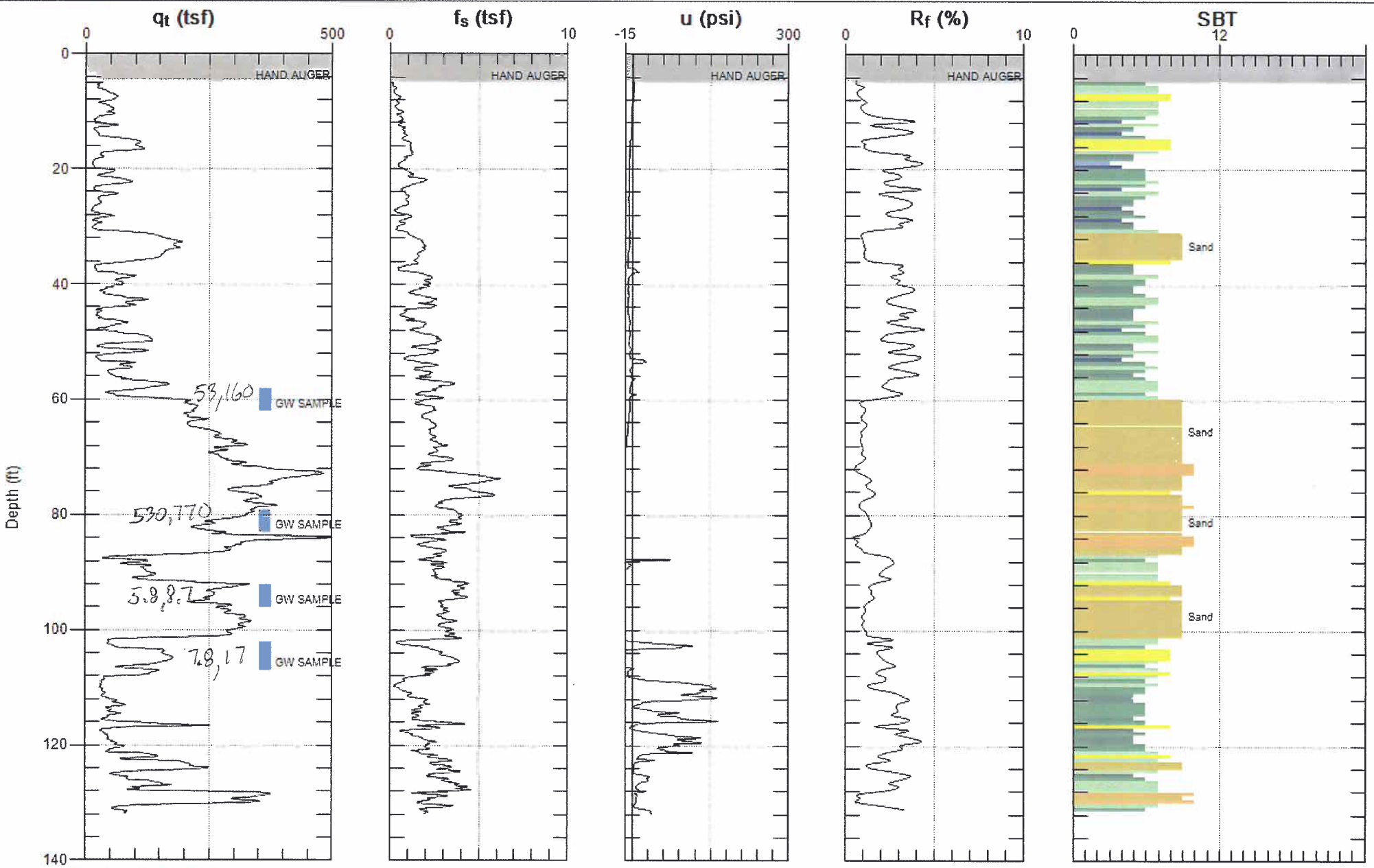
URS

Site: COOPER DRUM

Sounding: CPT-42

Engineer: D.GRUBER

Date: 2/27/2007 09:36



Max. Depth: 131.890 (ft)

Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

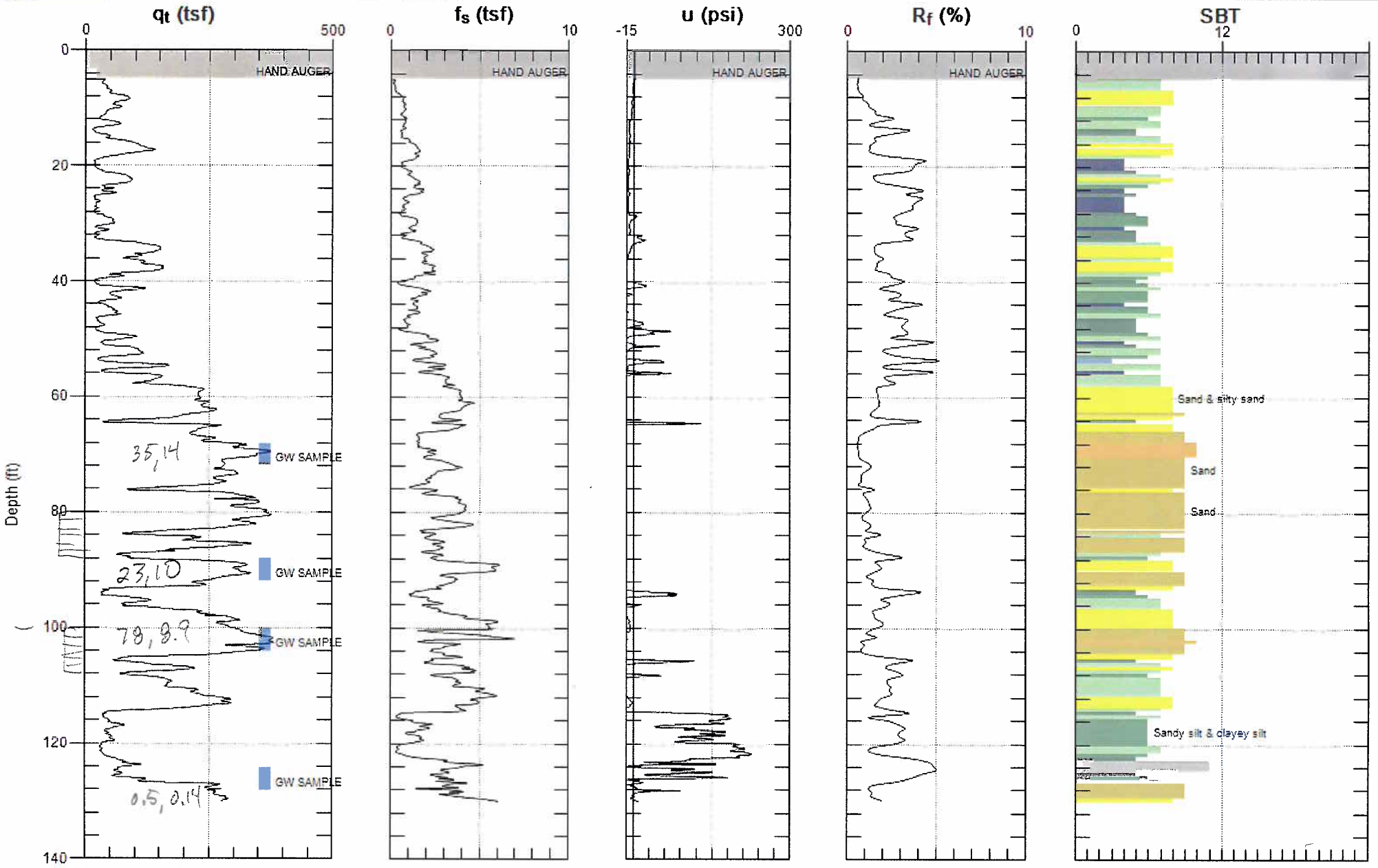
URS

Site: COOPER DRUM

Sounding: CPT-43

Engineer: D.GRUBER

Date: 2/26/2007 09:42



Max. Depth: 130.090 (ft)

Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

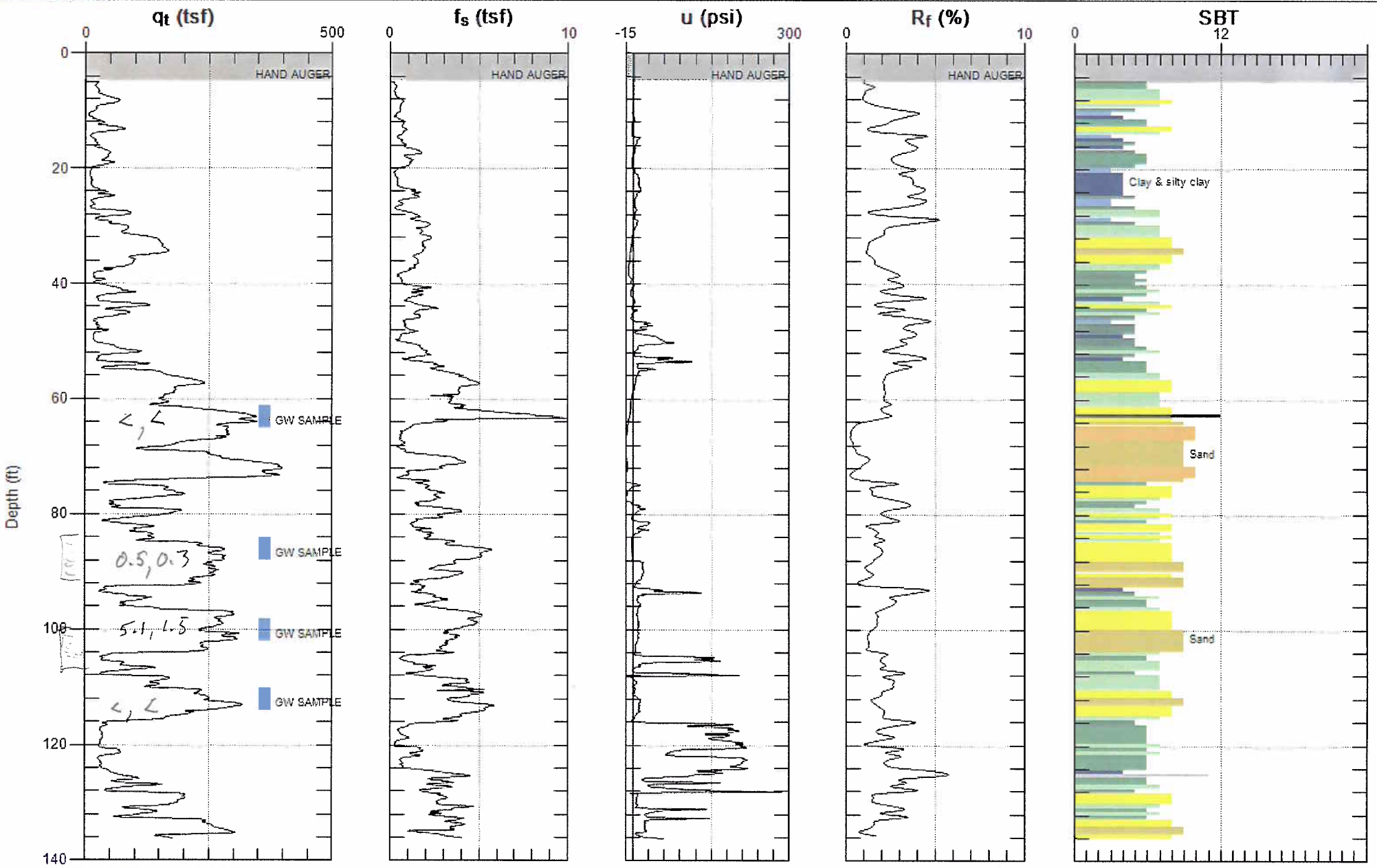
URS

Site: COOPER DRUM

Sounding: CPT-44

Engineer: D.GRUBER

Date: 2/26/2007 01:41



Max. Depth: 136.150 (ft)

Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG

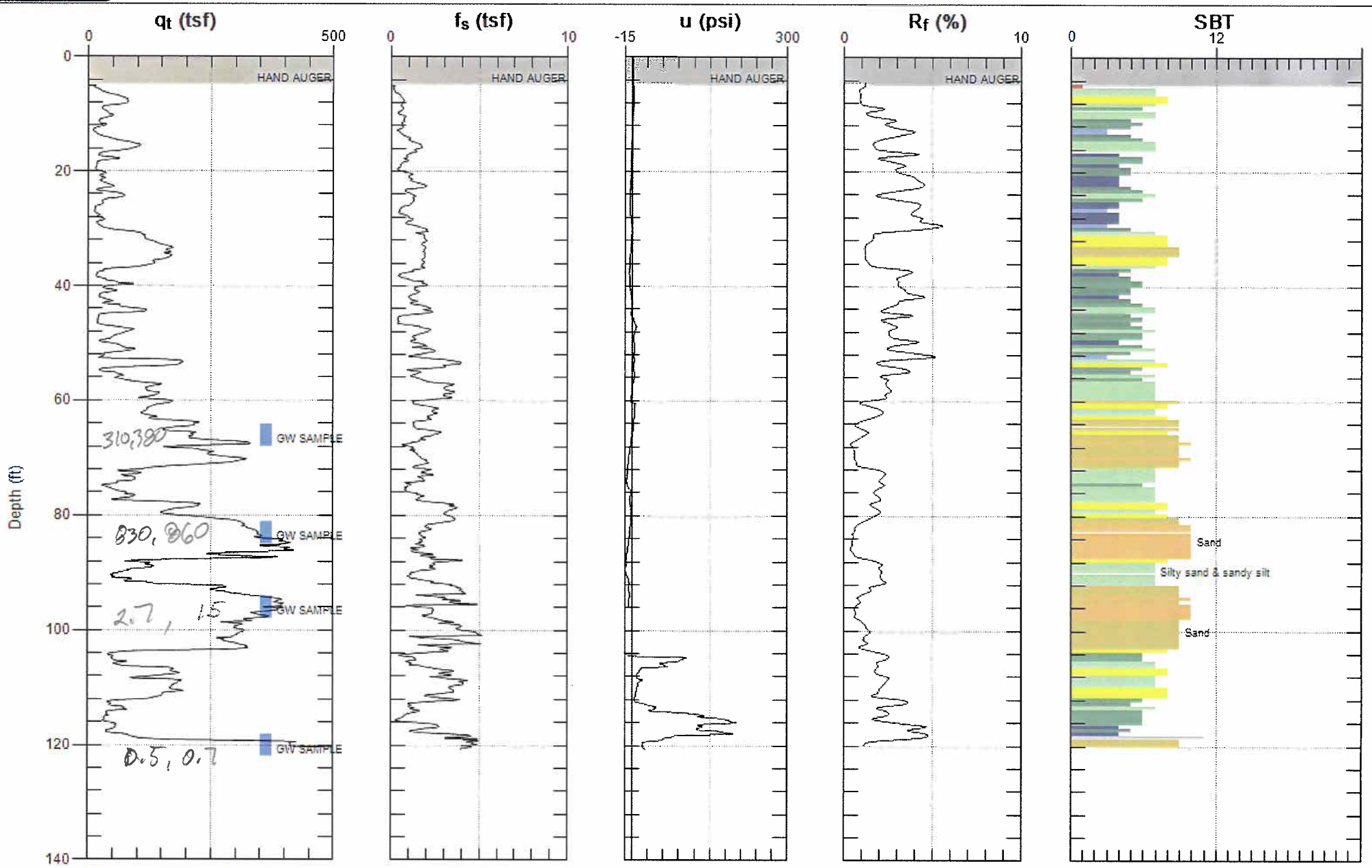
URS

Site: COOPER DRUM

Sounding: CPT-45

Engineer: D.GRUBER

Date: 2/28/2007 11:22



Max. Depth: 120.730 (ft)

Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)