EA Engineering, Science, and Technology, Inc., PBC
320 Gold Avenue SW, Suite 1300
Albuquerque, New Mexico 87102
Phone: (505) 224-9013

November 7, 2019

Ms. Susan von Gonten
New Mexico Environment Department
Petroleum Storage Tank Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

RE: FILE REVIEW
SANTA FE COUNTY JUDICIAL COMPLEX STATE LEAD SITE
327 SANDOVAL STREET, SANTA FE, NEW MEXICO
FACILITY #: 53763, RELEASE ID #: 4597, WPID #: 4072

Dear Ms. von Gonten:

EA Engineering, Science, and Technology, Inc., PBC (EA) is pleased to submit this letter report documenting the file review of available New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) boring logs for the Design Center plume associated with the Santa Fe County Judicial Complex (SFCJC) State Lead Site. The work was performed under EA's State Lead remediation contract number (#) 19-667-3200-0007 and in accordance with EA's *Workplan for CRP Development, File Review, Baseline Groundwater Monitoring, In Situ Microcosm Study, Benzene Plume Delineation, FRP Development, and Discharge Permit*, approved by the NMED PSTB on June 27, 2019 under work plan identification (WPID) number 4072.

On August 23, 2019, EA traveled to Santa Fe, New Mexico to review available boring logs and heated headspace screening results for soil borings installed in the vicinity of the Design Center in the southern portion of the SFCJC State Lead Site for the purpose of verifying the plume extent and treatment zone thickness for future injection activities to be completed at the site. Boring logs reviewed included, from south to north, TWS-2, TWS-3, MW-4, MW-4R, MW-1, MW-1R, TWS-4, SB-3, MW-20, and SB-1. The locations of the soil borings/monitoring wells are shown on Figure 1. Copies of the pertinent reviewed boring logs are provided in Attachment 1.

Headspace readings were below the NMED PSTB action level of 100 parts per million by volume (ppmv) in all field screening samples collected from borings TWS-2, TWS-3, SB-3 and MW-20. Headspace readings above 100 ppmv were encountered in the remainder of the borings, including MW-4, MW-4R, MW-1, MW-1R, TWS-4, and SB-1 (Figure 1). A summary of elevated PID readings above 100 ppmv and associated sample intervals where the elevated PID readings were encountered in each boring are presented in Table 1.

In borings MW-4, MW-4R, TWS-4, and SB-1, the bottom limits of contamination were not defined, as PID readings were above 100 ppmv at the total depth of the borings. Therefore, EA

recommends that three soil borings be advanced within the Design Center plume area to delineate the lower boundary of the treatment zone. During advancement of the borings, continuous sampling and heated headspace screening will be performed to document existing contaminant concentrations with depth. EA will utilize the Contingency Set-Aside for Soil Borings (Deliverable ID 4072-5) to complete the boring investigation.

EA intends to invoice the full approved amount of $2,696.88 (including NMGRT of 7.875%) for Deliverable ID 4072-1, File Review & Letter Report. If you have any questions regarding the information provided in this letter report, please don't hesitate to call me at (505) 369-3149.

Sincerely,

EA Engineering, Science, and Technology, Inc. PBC

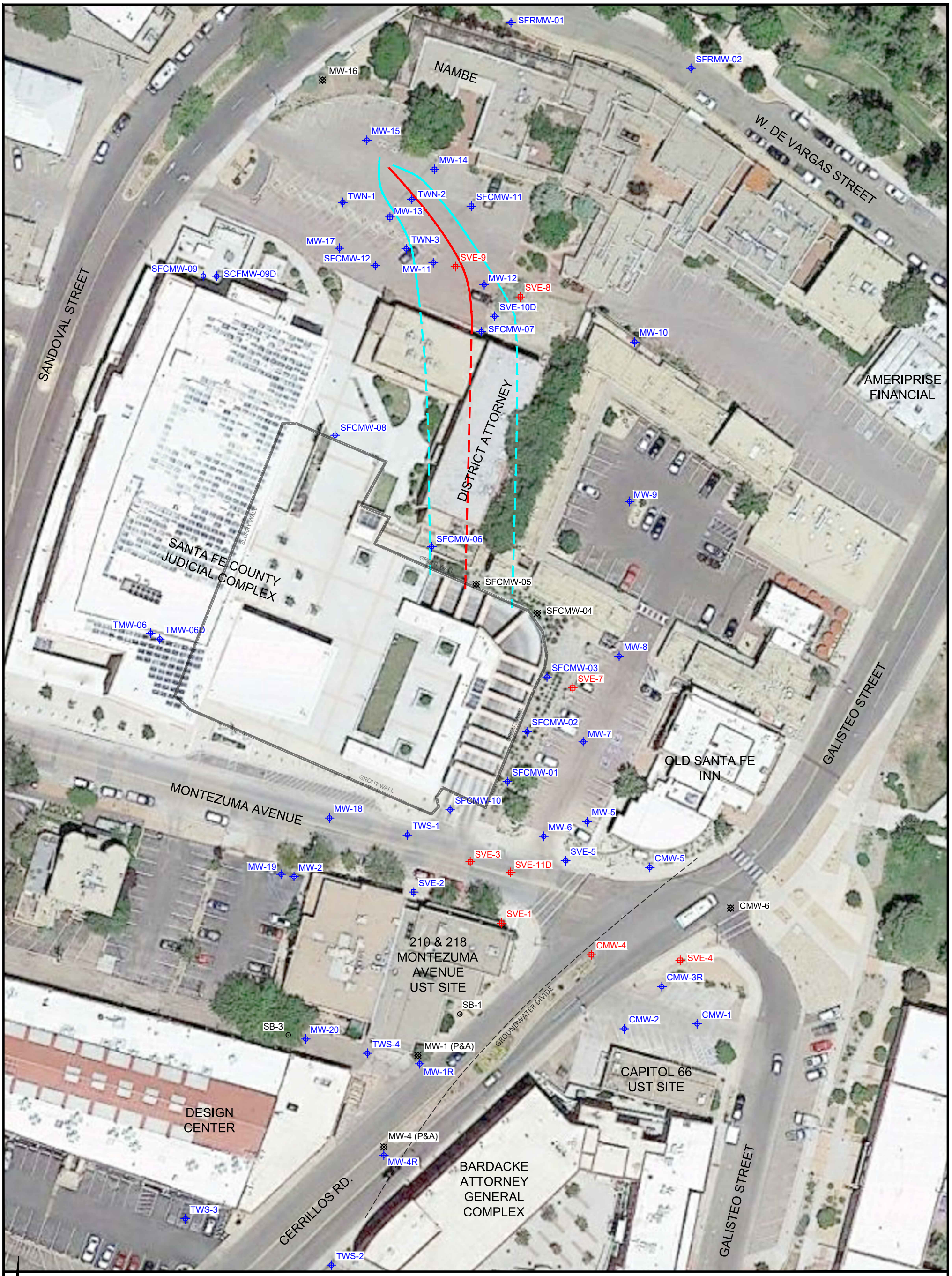
Michael D. McVey, P. G.
Senior Hydrogeologist

Enclosure
Cc: File

Attachments: Figure 1 – Site Layout
Table 1 – Summary of Elevated PID Readings Above 100 PPMV in Soil Borings Installed in the Area of the Design Center Plume
Attachment 1 – Soil Boring Logs

FIGURE

P:\Active Projects\PSTB State lead\Santa Fe County Judicial Complex_SFCJC\Reports\4071-1 CRP\Figures



LEGEND:

- SOIL BORING
- MONITORING WELL
- DESTROYED MONITORING WELL
- SOIL VAPOR EXTRACTION WELL
- HORIZONTAL SVE WELL
- HORIZONTAL HOT AIR INJECTION WELL

SOURCE: SOUDER, MILLER & ASSOCIATES. 2018 AUGUST.

60 30 0 60

SCALE IN FEET

SANTA FE COUNTY JUDICIAL COMPLEX
SANTA FE, NEW MEXICO

FIGURE 1
SITE LAYOUT

PROJECT #:	6347001	PROJECT PHASE:	01	PROJECT MANAGER:	MM

320 Gold Avenue, SW Suite 1300
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Phone: (505) 224-9013

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC. PBC

TABLE

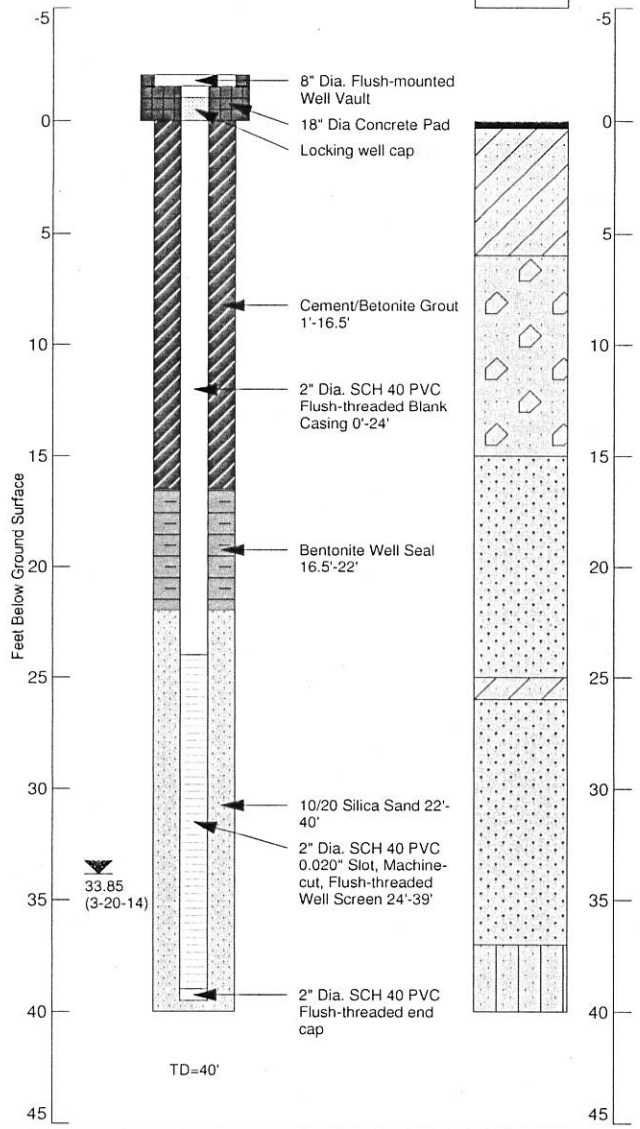
TABLE 1. SUMMARY OF PID READINGS ABOVE 100 PPMV IN SOIL BORINGS INSTALLED IN THE AREA OF THE DESIGN CENTER PLUME SANTA FE COUNTY JUDICIAL COMPLEX, SANTA FE, NEW MEXICO

Boring/Well Designation	Date Drilled/ Installed	Total Depth (ft bgs)	Sample Interval (ft bgs)	PID Reading (ppmv)
MW-4	03-Feb-06	41	39-41	**146.4**
MW-4R	24-Jun-14	47	25-27	843.6
			40-42	2,572
			45-47	**825.4**
MW-1	04-Feb-99	30	15	252
			16	601
			21	612
			22	525
			23	399
			24	110
			25	122
			30	6
MW-1R	31-Mar-04	38	23.5-25	228.8
			30-32.5	108.9
			37-38	64.2
TWS-4	19-Mar-14	40	30-35	405
			35-40	**196**
SB-1	31-Mar-04	32	25-29	198.5
			29-30	199.2
			30-32	**199.7**

Notes:
BOLD indicates PID reading above the NMED PSTB action level of 100 ppmv at total depth of boring.
ft bgs = Feet below ground surface
ppmv = Parts per million by volume

ATTACHMENT 1
SOIL BORING LOGS

S:\Projects\ES09.0215_SFCJC\VR_Drawings\logplot\TWS-2



PID reading (ppm)	Sample Recovery (feet)	Sample Interval (ft bgs)	USCS Symbol	Comments and Lithology
				Asphalt
0.1	0.8	0 - 5	SC	Clayey sand, brown (7.5 YR 4/3), clay (20%) to medium sand, poorly graded, medium dense, moist, no HC odor
-	0.0	5 - 10	GW	@ 6' Sandy gravel, cobbles up to 4" dia, no sample collection due to rocks at depth
-	0.0	10 - 15	GW	Sandy gravel, same as above
0.8	1.1	15 - 20	SW	Gravelly sand w/ clay, brown (7.5 YR 4/4), clay (20%) to 1.5" dia gravel (20%), subangular to subrounded clasts, well graded, medium dense, moist, no HC odor
0.0	2.5	20 - 25	SW	Gravelly sand, brown (7.5 YR 4/3), fine sand to 2" dia gravel (20%), fines (< 10%), angular clasts, medium dense, well graded, damp, no HC odor
			SC	Clayey sand, reddish brown (5 YR 4/4), clay (30%) to medium sand, poorly graded, medium dense, moist
0.3	2.3	25 - 30	SW	Gravelly sand w/ clay, reddish brown (5 YR 4/4), clay (15%) to 1" dia gravel (15%), angular clasts, well graded, medium dense, wet, no HC odor
0.3	2.0	30 - 35	SW	Gravelly sand w/ clay, same as above, light reddish brown (5 YR 6/3), moist
			SW	Sand w/ silt, reddish brown (5 YR 4/3), silt (10%) to coarse sand, well graded, medium dense, wet, no HC odor
0.1	2.7	35 - 40	SM	@ 37' Silty sand, light reddish brown (5 YR 6/3), silt (30%) to fine sand, hard, damp, no HC odor

Geologist: T. Golden

Driller: EnviroDrill

Date completed: 3-18-14

Drilling method: H S A

Bit diameter: 8 in. O.D.

Sampling method: Continuous core

DTW= Depth to water measured below top of casing (BTOC)

SFCJC

Well Completion and Soil Boring Log: TWS-2

Daniel B. Stephens & Associates, Inc.

4/4/2014

JN ES09.0215.00

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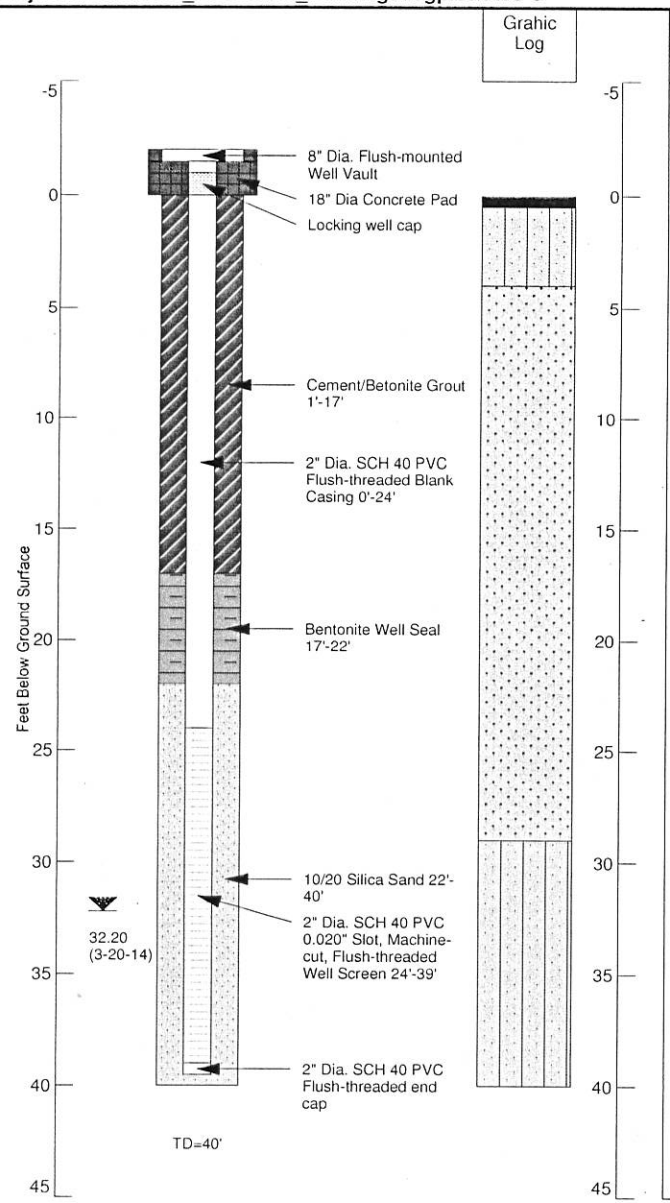

PID reading (ppm)	Sample Recovery (feet)	Sample Interval (ft bgs)	USCS Symbol	Comments and Lithology
				Asphalt
0.6	1.0	0 - 4	SM	Silty sand w/ gravel, dark brown (7.5 YR 3/3), silt (10%) to 1" dia gravel (15%), rounded to subrounded clasts, well graded, moist, no HC odor
0.6	1.8	4 - 9	SW	Gravelly sand, brown (7.5 YR 4/3), fine sand to 2" dia gravel (25%), subangular granitic clasts, well graded, loose, damp, no HC odor
0.1	2.5	9 - 14	SW	Gravelly sand, same as above, gravel (10%), clasts to 0.5" dia
0.0	2.5	14 - 19	SW	Gravelly sand, same as above, gravel (15%), clasts to 0.75" dia
0.0	2.5	19 - 24	SW	Gravelly sand, same as above, gravel (10%), clasts to 1" dia
0.9	2.5	24 - 29	SW	Gravelly sand, same as above
0.2	2.7	29 - 34	SM	Silty sand, reddish brown (5 YR 4/4), silt (20%) to fine sand, poorly graded, loose, wet, no HC odor
0.0	2.7	34 - 39	SM	Silty sand w/ gravel, reddish brown (5 YR 4/4), silt (10%) to 0.25" dia gravel (10%), well graded, saturated, no HC odor

Geologist: T. Golden
Driller: EnviroDrill
Date completed: 3-17-14

Drilling method: H S A
Bit diameter: 8 in. O.D.
Sampling method: Continuous core

DTW= Depth to water measured below top of casing (BTOC)

SFCJC

Well Completion and Soil Boring Log: TWS-3

Daniel B. Stephens & Associates, Inc.
4/4/2014

JN ES09.0215.00

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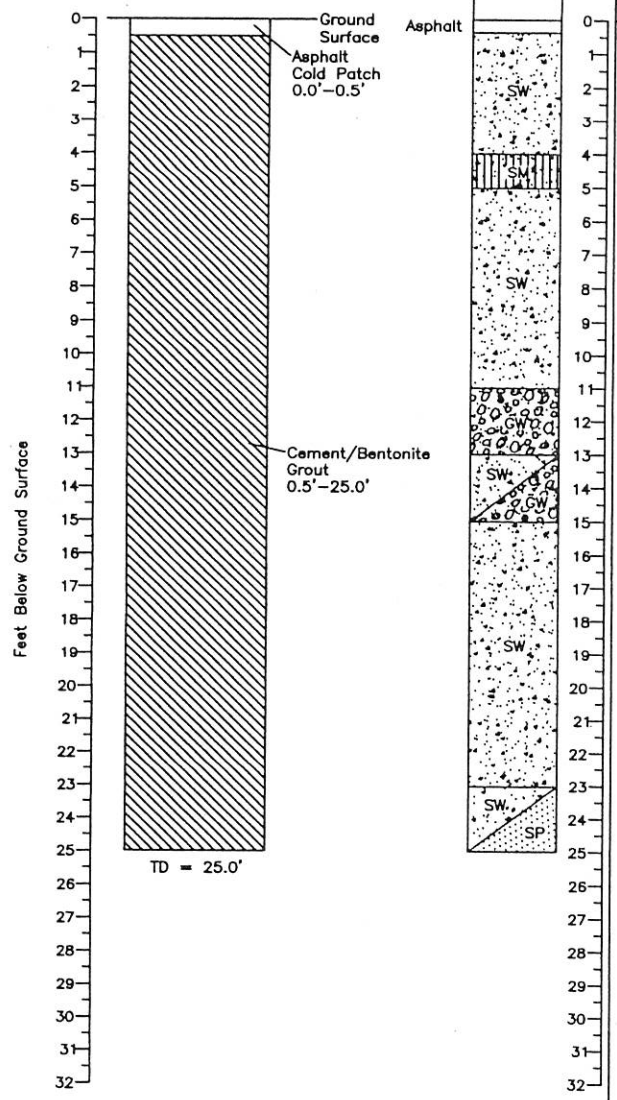

PID Reading (ppm)	Blow Counts	Sampling Device	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol	Comments and Lithology
						0.0–0.3 Asphalt 0.3–0.9 Sand, strong brown (7.5YR 4/6), fine to coarse sand, low plasticity, moist, no odor, 25–30% gravel, trace silt/clay 0.9–2.0 Same as above, dark brown (7.5YR 3/3)
3.0	–	Hand Auger	–	2–3	SW	2.0–3.0 Sand, strong brown (7.5YR 4/6) very fine to medium sand, 15% gravel (small), 5% clay/silt, low plasticity, moist, no odor 3.0–4.0 Sand with gravel, brown (10YR 5/3), very fine to coarse sand, 15% gravel, trace silt/clay, moist, no odor
3.1	–	5' Core barrel	24"	3–5	SM	4.0–5.0 Silty sand, strong brown (7.5YR 5/6) very fine to fine sand with 30% silt, trace clay, low plasticity, soft consistency, slightly moist, no odor 5.0–7.0 Mostly gravel, hard drilling, sand with gravel, strong brown to brown (7.5YR 5/6 – 5/4), changing irregularly, 25% gravel and cobbles mostly in layers between more sand parts, very fine to coarse sand, soft to firm consistency, slightly moist, no odor
2.5	–	5' Core barrel	22"	5–10	SW	10.0–11.0 Same as above, strong brown (7.5YR 4/6)
						11.0–13.0 No sample
					GW	13.0–15.0 Gravel with sand to sand with gravel constituents as above, more in gravel and cobble fragments, mostly granitic, some quartzite, moist, no odor, (1/2 inch size mica plateletts at 14 feet)
3.3	–	–	–	10–15	SW/GW	15.0–17.5 Very fine sand to mostly medium sand, 5% fine gravel, 5% silt/clay yellowish brown (10YR 5/8), trace mica plateletts, soft to firm consistency, moist, no odor, large rock/ cobble at 17.5 feet
–	–	–	24"	15–17.5	SW	17.5 Change out bullet bit to gravel bit, no drilling progress, try to break up rock inside hole 17.5–20.0 No recovery
–	–	–	–	17.5–20	SW	20.0–22.0 Same as above, no recovery
–	–	5' Core barrel	–	–	SW	22.0–25.0 Top 4 inches: fine to coarse sand, yellowish brown (10YR 5/6) to olive, 20% fine gravel, moist, no odor; below 4 inches: sand, yellowish red (5YR 4/6), very fine to mostly fine to medium sand with 5% silt/clay, low plasticity, soft consistency, moist at top, bottom foot very moist to wet, no odor
2.0	–	5' Core barrel	24"	22–25	SW/SP	

Geologist: L. Rought
Driller: Spectrum Exploration
Date completed: 4–1–04

Drilling method: Hollow stem auger
Bit diameter: 7–5/8" O.D.

210 and 218 MONTEZUMA AVENUE UST SITE

Boring Log: SB-3

Daniel B. Stephens & Associates, Inc.
5–17–04
JN ES03.0125

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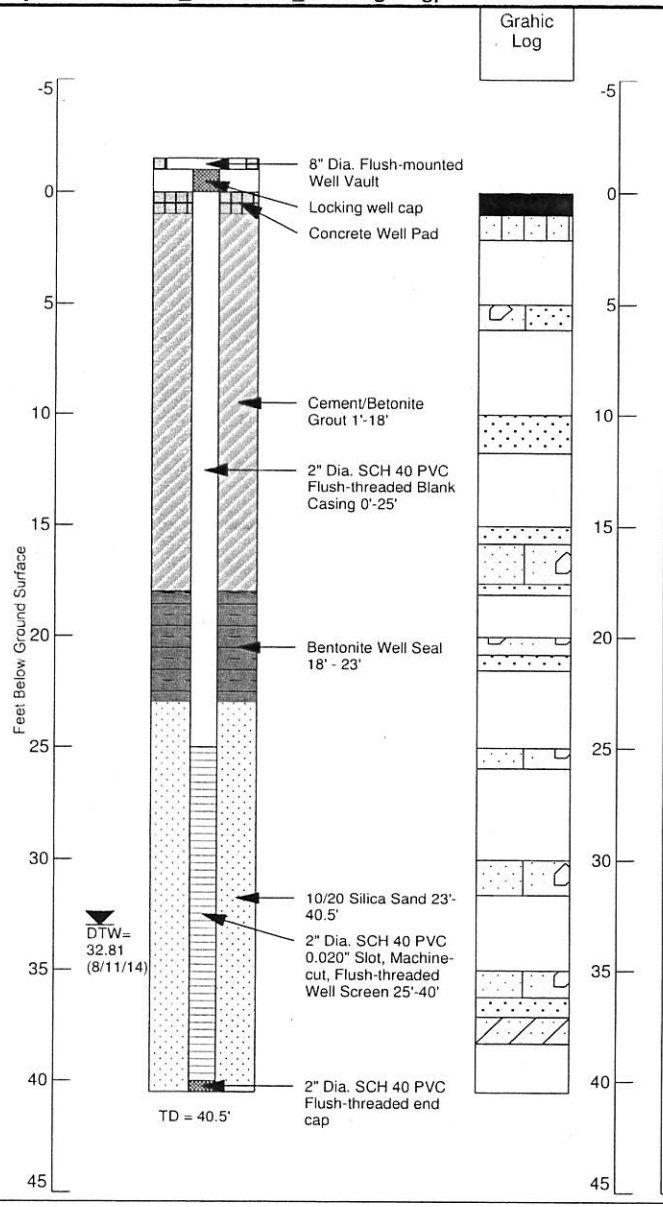

PID reading (ppm)	Sample Recovery (inches)	Sample Interval (ft bgs)	USCS Symbol	Comments and Lithology
0.8	25	0-5	Asphalt	Asphalt
			SM	Silty sand with clay, brown (7.5YR 4/4), fined-grained, poorly graded, round to subround, 20-25% silt, 10-15% clay, damp, no HC odor.
0.0	15	5-10	GW/SW	Gravelly sand with cobbles, brown (7.5YR 5/4), fine- to medium-grained sand, round to subround, loose, 50% cobbles and gravels, subround up to 10 cm, dry, no HC odor.
0.0	20	10-15	SW	Sand with gravel, reddish brown (5YR 4/4), fine- to coarse-grained, well graded, round to subangular, little fines, 15% gravels, subangular up to 2 cm,
0.1	37	15-20	SW	Similar to above, with sparse subround gravels up to 2 cm
			SW/GW	As above, with cobbles up to 6.5 cm
			SW	Sand with gravel, brown (10YR 5/3) , fine- to coarse-grained, well graded, round to subround, dry to damp, loose. 15% subrounded gravels up to 5 cm. No hydrocarbon odor.
0.0	18	20-25	GW	Sandy gravel with cobbles, reddish brown (5YR 5/4), fine- to coarse-grained, sub-angular to angular, well graded, 45% - 55% subround gravels and small cobbles , dry to damp, no odor.
			SW	Sand, reddish brown (2.5YR 5/4), fine- to coarse-grained, round to subround,sparse granules up to 1.5 cm, damp, no odor
0.0	11	25-30	SW/GW	Sand, similar to above with cobbles up to 7 cm
0.0	29	30-35	SW/GW	As above
0.0	40	35-40	SW/GW	As above
			SW	Sand, reddish brown (2.5YR 5/4), fine- to medium- grained with sparse coarser material and few fines; well-graded, loose, damp.
			SC	Clayey sand, reddish brown (2.5YR 4/4), fine- to coarse-grained, well graded, with sparse round to subround small gravels, approx. 15% clay, very hard/compact, moist, no odor

Geologist: J. Fisher

Driller: EnviroDrill

Date completed: 8/10/14

Drilling method: H S A

Bit diameter: 8 in. O.D.

Sampling method: Core barrel, cuttings

DTW= Depth to water measured below top of casing (feet)

Daniel B. Stephens & Associates, Inc.

9/4/2014

JN ES09.0215.00

SFCJC

Well Completion and Soil Boring Log: MW-20

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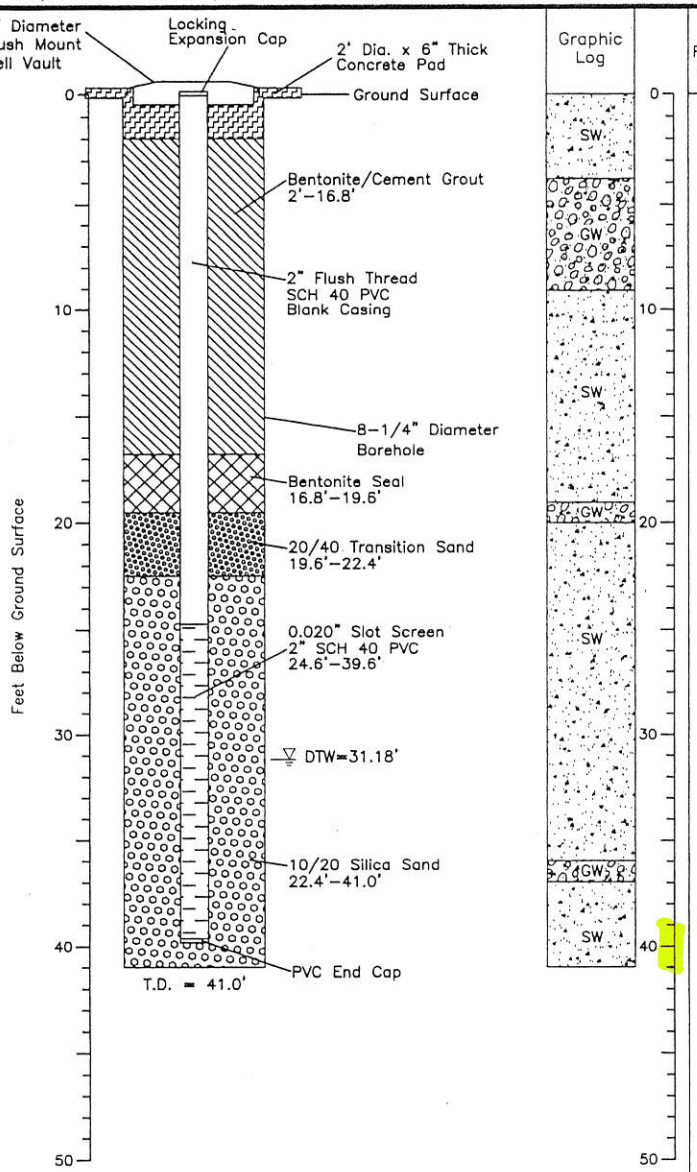

PID Reading (ppm)	Sampling Device	Sample Interval (feet bgs)	USCS Symbol	Comments and Lithology
0.1	Hand auger	1.0–1.5	SW	1.0: Sand with clay and gravel, very dark grayish brown (10YR 3/2), clay to pebbles, mostly medium- to coarse-grained sand, poorly sorted, angular to rounded grains, slight plasticity, unconsolidated, moist.
0.0	Cuttings	5–7.0	GW	5.0: Gravel with sand, brown (7.5YR 4/4), very fine sand to 2-inch diameter and probably larger gravel, poorly sorted, angular to rounded clasts, unconsolidated, moist, at 9 feet more sand.
0.0	Split spoon	9–11	SW	10.0: Sand with gravel, brown (7.5 YR 5/4), very fine-grained sand to 2-inch and larger gravel, poorly sorted, angular clasts, unconsolidated, damp, becomes sandier with depth.
	Split spoon	11–13	SW	
0.0	Split spoon	13–15	SW	
	Split spoon	15–17	SW	15.0: Sand, yellowish red (5YR 4/6) medium- to coarse-grained, poorly sorted, subangular grains, unconsolidated, moist, at 19 feet encounter gravel.
	Split spoon	17–19	SW	
0.0	Split spoon	20–22	SW	20.0: Sand, same as above, minor amounts gravel (weathered granite).
	Split spoon	22–24	SW	
0.0	Split spoon	24–26	SW	25.0: Sand, same as above, minor amounts of gravel.
	Split spoon	26–27	SW	
	Split spoon	27–29	SW	
2.1	Split spoon	29–31	SW	30.0: Sand, same as above.
	Split spoon	31–33	SW	
0.0	Split spoon	33–35	SW	
	Split spoon	35–37	SW/GW	35.0: Sand, same as above, gravel layer from 36 to 37 feet, saturated at 37 feet, water probably in gravel, at 39 feet strong hydrocarbon odor.
0.1	Split spoon	37–39	SW	
146.4	Split spoon	39–41	SW	

Geologist: C. Pigman
Driller: WDC Exploration
Date completed: 2-03-06

Drilling method: Hollow stem auger
Bit diameter: 8-1/4"

218 MONTEZUMA AVENUE UST SITE

Well Log: MW-4

Daniel B. Stephens & Associates, Inc.
2-20-06
JN ES04.0103

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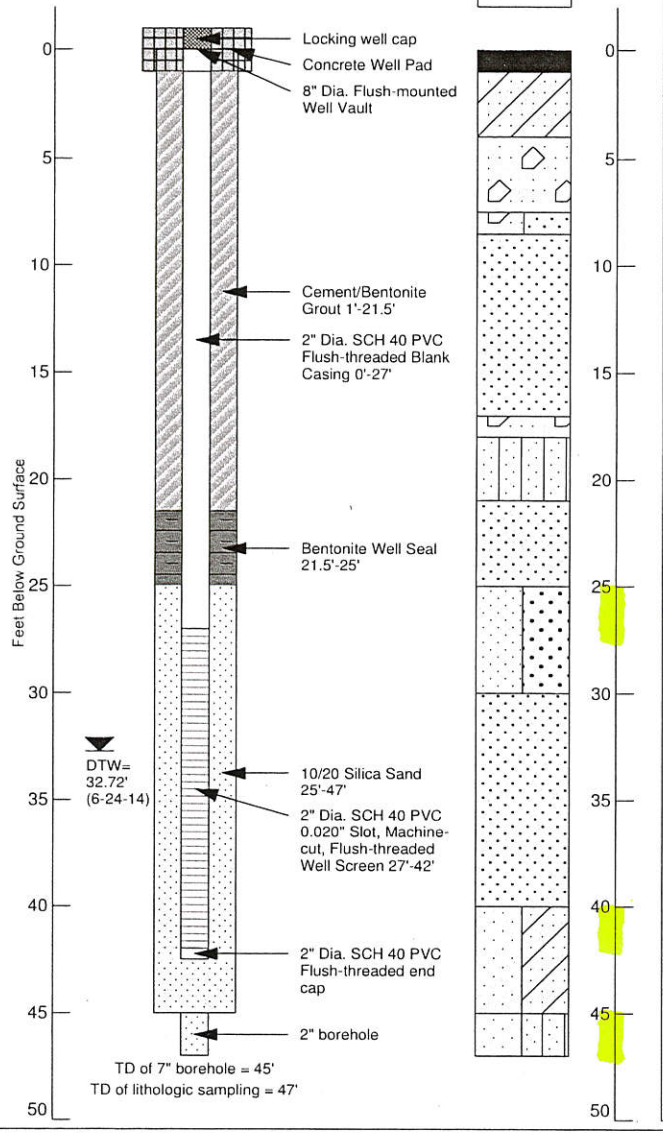

PID reading (ppm)	Sample Recovery (inches)	Sample Interval (ft bgs)	USCS Symbol	Comments and Lithology
-	-	0 - 1	-	Asphalt
6.8	18	1 - 3	SC	Sandy clay, dark brown (7.5YR 3/3) well-graded sand-silt-clay mixture, with large cobles up to 1-foot diameter. Slightly moist, medium stiff to stiff, slightly plastic when wet. No HC odor.
-	-	4 - 7.5	GW	Significant cobble zone, difficult drilling, no sample recovery.
0.9	12	7.5 - 9.5	GW/SW	Gravelly sand and sandy gravel, strong brown (7.5 YR 5/6). Well-graded sand interbedded with sandy gravels up to 3+ cm diameter, few fines. Loose, dry; no HC odor.
0.0	15	12 - 14	SW	Gravelly sand, brown (7.5 YR 4/4). Well-graded, predominantly fine- to medium-grained sand with some silt, slightly cohesive, slightly moist. Granitic cobbles up to 3+ cm diameter. No HC odor.
0.4	15	15 - 17	SW	Similar to above, but generally coarse-grained with few fines.
-	-	17 - 18	GW	Significant cobble zone, difficult drilling, no sample recovery.
0.7	24	20 - 22	SM SW	(20-21) Silty sand, yellowish brown (10 YR 5/4), fine-grained, moderately graded, very slightly moist, loose to slightly cohesive. Sparse rounded pebbles up to 2 cm. (21-22) Sand, reddish brown (2.5 YR 4/4) well graded, pebbly and with appreciable fines; micaceous, slightly cohyesive, slightly moist. Common (~10%) angular to sun rounded granitic pebbles up to 3 cm.
843.6	24	25 - 27	SW/SP	Interbedded sand and gravelley sand, yellowish red (5 YR 4/6). generally medium grained, with poorly graded and well graded intervals. sparse granitic cobbles up to 3+ cm. slightly moist, slight HC odor
4.8	12	30 - 31	SW	Gravelly sand, reddish brwn (2.5 YR 4/4).predominantly coarse-grained, well graded and gravelly. loose to very slightly cohesive. no HC odor
8.5	12	35 - 36	SW	As above
2,572	18	40 - 42	SP/SC	Sand, reddish brown (2.5 YR 4/4) fine-grained, poorly graded, wet, loose. Interbedded with clayey sand, reddish brown (2.5 YR 4/4), fine-grained, medium stiff, moist. Strong HC odor
825.4	24	45 - 47	SP/SM	Interbedded sand, silty sand and gravelly sand, reddish brown (5 YR 4/4). Sands are fine-grained, poorly graded, wet, loose. HC odor not as strong as above interval.

Geologist: J. Raucci

Driller: EnviroDrill

Date completed: 06-24-14

Drilling method: H S A

Bit diameter: 7 in. O.D.

Sampling method: Split Spoon

DTW= Depth to water measured below top of casing (BTOC)

Daniel B. Stephens & Associates, Inc.

7/15/2014

JN ES09.0215.00

SFCJC

Well Completion and Soil Boring Log: MW-4R

SOIL BORING / MONITOR WELL LOG

PROJECT: TWO OFFICE BUILDINGS
PROJECT NUMBER: 94997048
CLIENT: Triumfo Properties, L.P.
BORING / WELL NUMBER: MW-1
TOTAL DEPTH: 30.0'
SURFACE ELEVATION:
GEOLOGIST: M. Henn

DRILLING COMPANY: Geo-Test
DRILLER: D. Tanner
DRILLING METHOD: Hollow Stem Auger
BORE HOLE DIAMETER: 4"
SCREEN: Diam. 2.0" Length 20.0' Slot Size 0.010"
CASING: Diam. 2.0" Length 10.0' Type Sch. 40 PVC
DATE DRILLED: 2-4-99

DEPTH (FT)	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM
0					
	7			1.0	SANDY CLAY, dark brown to moderate brown, small to medium sized gravel, slightly moist, no odor
	0			2.0	
	0				SANDY CLAY, dark reddish brown, with small to medium sized gravel, slightly moist, no odor
	0			4.0	
5	0				SANDY CLAY, moderate to dusky reddish brown, with small to medium sized gravel and pieces of ash, slightly moist, no odor
	0				
	-			7.5	CLAYEY SAND, fine-to medium-grained, moderate to light brown, with small to medium pieces of granite (degraded)-rose colored, moderately moist, no odor
	0				
10	-				CLAYEY SAND, fine-to medium-grained, moderate brown, with small to large pieces of granite (degraded)-rose colored, slightly to moderately moist, no odor
	0			10.0	
	1				CLAYEY SAND, fine-to medium-grained, dark yellowish brown, with small to medium granite (degraded), moderately moist, no odor
	2			12.0	- with reddish brown silty ribbons at 11'
	15				
15	2			15.0	
	252		15.0		
	601		16.0	16.5	CLAYEY SAND, fine-to medium-grained, moderate brown, with small to medium degraded granite, with dark brown inclusions, moist, mild to moderate odor
	42				
	3				SAND, fine-grained, moderate brown, very moist, strong odor
	95				
20	99		20.0		CLAYEY SAND, fine-to medium-grained, moderate brown to moderate reddish brown, with small to medium sized gravel (granite) and 1/4" to 1/2" quartz and small sized green and black staining, moist with moderate to strong odor
	612		21.0		- staining decreases from 17' to 24'
	525				- silt seam, pale yellowish brown, at 21'
	399				
	110			24.0	
25	122				CLAYEY SAND, fine-to medium-grained, moderate reddish brown, with medium sized pieces of quartz and degraded granite, slightly moist to moist, moderate odor
	10				
	88			27.0	
	7				CLAYEY SAND, fine-to medium-grained, moderate reddish brown, with medium sized pieces of quartz and degraded granite, slightly moist to moist, slight odor
				29.0	
30				30.0	
	6				CLAYEY SAND, fine-to medium-grained, pale reddish brown, dry to slightly moist, no odor
					Bottom of boring at 30.0'
35					
40					

REMARKS:

HBC ENGINEERING, P.C.

MWL 97048 2/18/99

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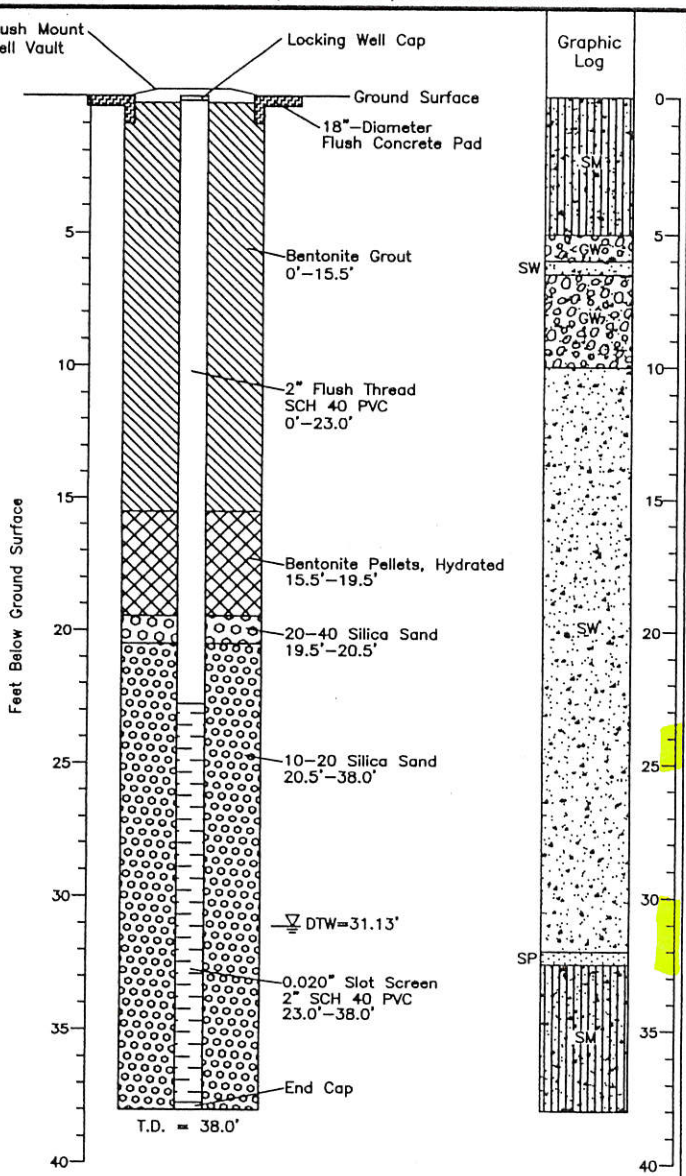

PID Reading (ppm)	Blow Counts	Sampling Device	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol	Comments and Lithology
						0.0–0.5 Concrete
–	–	Hand Auger	–	0–2.5	SM	0.5–2.5 Silty sand, strong brown (7.5YR 4/6), very fine to mostly fine sand with 20% silt and clay varying irregularly from trace to 10% medium plasticity, soft consistency, moist, no odor, some gravel to 3 inches diameter towards top (quartzite)
3.8	–	5' Core barrel	16"	2.5–4	SM	2.5–4.0 Same as above, large rock at 4 feet depth, no sample recovery
3.9	–	5' Core barrel	22"	5–10	GW	5.0–10.0 Upper 12 inches: sandy gravel, yellowish brown (10YR 5/4) mostly large gravel with coarse sand 30% with granitic look/reddish tint, gravel = granite, low plasticity, soft consistency, moist, no odor, (large rock at 7 feet; retract core barrel to drill through rock); middle 4 inch portion of sample: very fine to mostly fine sand, yellowish brown (10YR 5/4), 5% silt, soft consistency, moist, no odor,; lower 8 inch portion: gravel with sand, yellowish brown (10YR 5/4) with reddish tint, fine to coarse sand approximately 45% gravel/cobble fragments mostly granite, soft to firm consistency, moist, no odor, on a small scale (+/– 1 inch –2 inches) irregular change in grain size
2.3	–	5' Core barrel	36"	10–15	SW	10.0–15.0 Sand, strong brown (7.5YR 4/6), fine to coarse sand, trace silt/clay, 5% small gravel, low plasticity, soft consistency, moist, no odor; (large fragment of quartzite 18 inches, large fragments of granite on top of sample)
2.3	–	5' Core barrel	36"	15–20	SW	15.0–20.0 Same as above, large gravel content varies from 10% to 45% (mostly granitic), some cobble fragments; moist, no odor, bottom 1 inch change in color to yellowish red (5YR 5/6)
10.0	–	5' Core barrel	–	20–23.5	SW	20.0–25.0 Sand, yellowish red (5YR 5/6), fine to coarse sand, trace silt/clay, 5–10% small gravel, large granite fragment stuck in shoe; low plasticity, soft consistency, moist to very moist, upper 18 inches no odor, lower 18 inches strong odor and firm to hard consistency (this may indicate an old water level horizon), split sample for PID reading into upper and lower 18 inch sections
228.8	–	5' Core barrel	36"	23.5–25	SW	
37.3	–	5' Core barrel	30"	25–27.5	SW	25.0–30.0 Sand with gravel, yellowish red (5YR 5/6), same as above with 20% gravel and aggregates of greenish minerals, low plasticity, soft to firm consistency, moist to very moist, odor
24.5	–	5' Core barrel	–	27.5–30	SW	27.5–30.0 Same as above
–	32/112/ Refusal	SS	10"	30–32	SP	30.0–32.0 Same as above, refusal at 10 inches, resample with 5 feet core barrel: distinct layering with thin seems of white quartz crystals, firm to hard consistency, moist, odor at bottom of core barrel
108.9	–	5' Core barrel	30"	30–32.5	SP	32.0–32.5 Sand, yellowish red (5YR 5/6), very fine to fine sand with trace silt/clay, trace gravel, low plasticity, soft consistency, very moist to wet, odor; stop drilling and check for H20: 12:00 DTW=32.5 feet bgs; 12:10 DTW=32.3 feet bgs
–	–	5' Core barrel	30"	32.5–35	SM	32.5–35.0 Silty sand, yellowish red (5YR 5/6), very fine to fine sand with 20% silt/clay (minor), low plasticity, soft consistency, saturated, odor, (retract augers 1 foot, measure WL's = 12:27 DTW=33.3 feet bgs; 12:38 DTW= 32.7 feet bgs
						35.0–37.0 Same as above, saturated
64.2	–	5' Core barrel	–	37.0–38.0	SM	37.0–38.0 Same as above but dense, very moist, grayish discoloration at 37 feet depth

Geologist: L. Rought
Driller: Spectrum Exploration
Date completed: 3–31–04

Drilling method: Hollow stem auger
Bit diameter: 7–5/8" O.D.

210 and 218 MONTEZUMA AVENUE UST SITE

Well Log: MW-1R

Daniel B. Stephens & Associates, Inc.
5-7-04
JN ES03.0125

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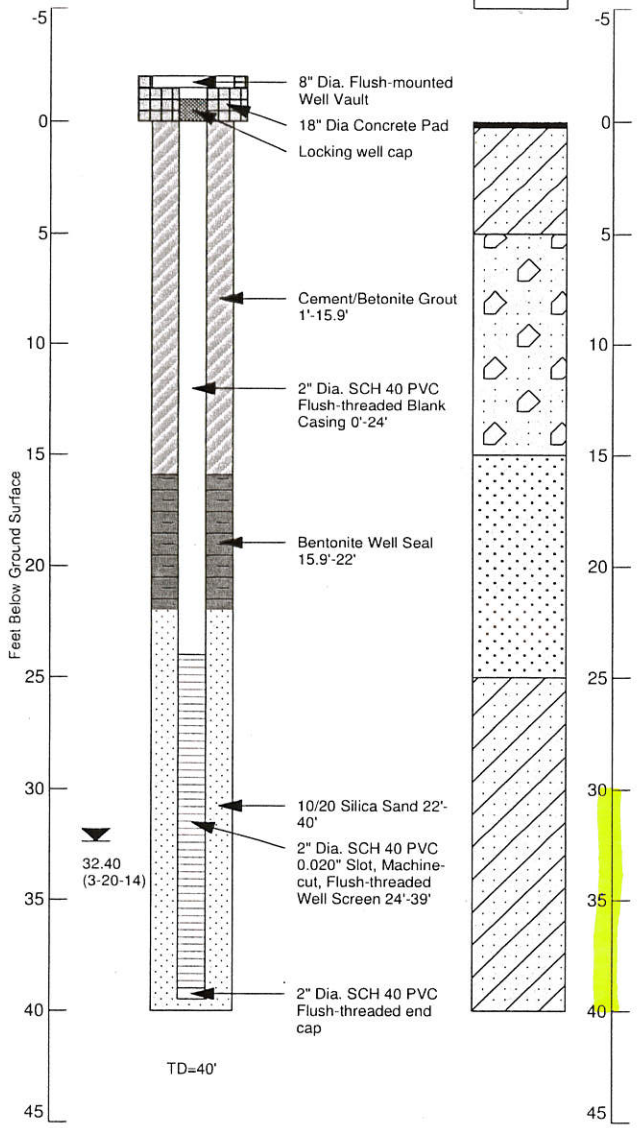

PID reading (ppm)	Sample Recovery (feet)	Sample Interval (ft bgs)	USCS Symbol	Comments and Lithology
				Asphalt
2.7	1.7	0 - 5	SC	Clayey sand, brown (7.5 YR 4/3), clay (30%) to medium sand, poorly graded, medium dense, damp, no HC odor
-	0.0	5 - 10	GW	(cuttings) Sandy gravel, brown (7.5 YR 4/3), sand (40% to gravel and cobbles up to 4" dia, subrounded clasts, well graded, no HC odor, no sample recovery due to rocks at depth
-	0.0	10 - 15	GW	Sandy gravel, same as above
7.2	1.0	15 - 20	SW	Gravelly sand, brown (7.5 YR 4/4), fine sand to 2" dia gravel (20%), well graded, loose, dry, no HC odor
0.5	2.5	20 - 25	SW	Gravelly sand, same as above, angular clasts, damp, slight HC odor and soil staining
2.3	1.5	25 - 30	SC	Clayey sand w/ gravel, reddish brown (5 YR 4/4), clay (30%) to coarse sand and gravel (10%) to 0.5" dia, well graded, medium dense, moist, slight HC odor
405	2.7	30 - 35	SC	Clayey sand w/ gravel, same as above, medium HC odor @ 32' Clayey sand w/ gravel, light reddish brown (5 YR 6/4), clay (30%) to 1.5" dia gravel (10%), angular clasts, dense, strong HC odor
196	2.0	35 - 40	SC	Clayey sand, same as above, reddish brown (5 YR 4/4), hard, strong HC odor decreases with depth

Geologist: T. Golden

Driller: EnviroDrill

Date completed: 3-19-14

Drilling method: H S A

Bit diameter: 8 in. O.D.

Sampling method: Continuous core

DTW= Depth to water measured below top of casing (BTOC)

SFCJC

Well Completion and Soil Boring Log: TWS-4

Daniel B. Stephens & Associates, Inc.

4/4/2014

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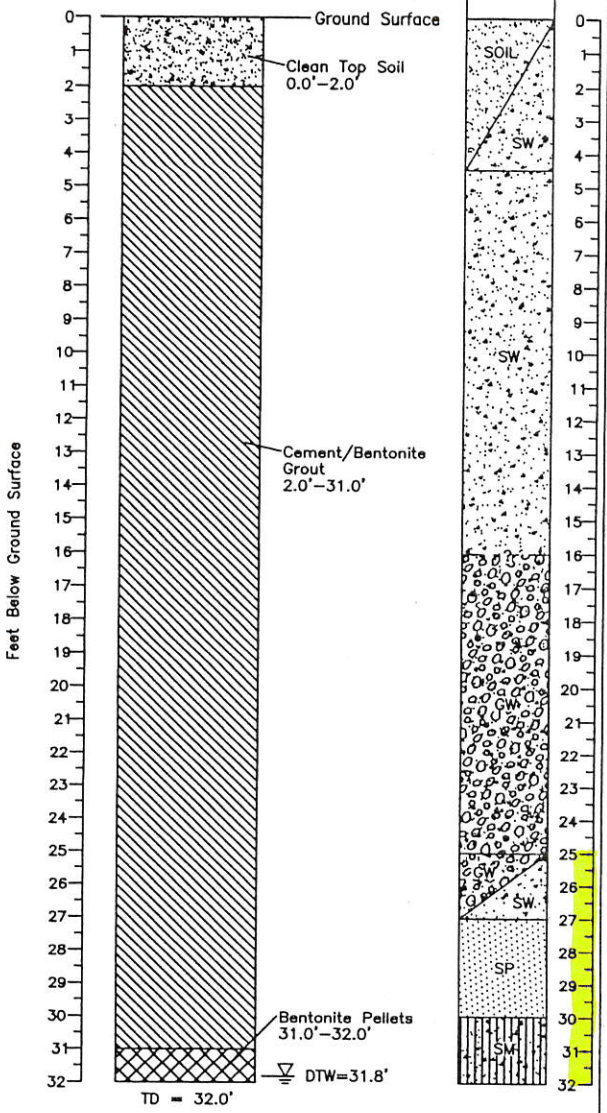

Graphic Log	PID Reading (ppm)	Blow Counts	Sampling Device	Sample Recovery	Sample Interval (feet bgs)	USCS Symbol	Comments and Lithology
SOIL / SW	–	–	Hand Auger	–	0–3	SOIL/SW	0.0–0.8 Soil/sand with gravel, strong brown (7.5YR 4/6), fine to coarse sand with grave to 3 inches diameter and organic matter, low plasticity, soft consistency, no odor, moist 0.8–1.0 Same as above 1.0–4.5 Sand with organic matters, dark brown (7.5YR 3/2), very fine to coarse sand, 25% gravel, organic matter, low plasticity, soft consistency, moist, no odor
SW	5.1	–	5' Core barrel	12"	3–5	SW	4.5–10.0 Sand with gravel, yellowish brown (10YR 5/4), very fine to medium sand with trace silt and 15–20% gravel and cobble fragments to 4 inch diameter, poorly sorted, subangular, low plasticity, soft consistency, moist, no odor, gravel and cobble fragments are granite and quartzite, (minor volcanic fragments like pumice/lava)
SW	15.5	–	5' Core barrel	24"	5–10	SW	10.0–15.0 Same as above with minor coarse sand, yellowish brown (10YR 5/6), 30% gravel
SW	6.4	–	5' Core barrel	15"	10–15	SW	15.0–20.0 Same as above with 40% fine to coarse gravel, yellowish brown (10YR 5/4)
GW	4.5	–	5' Core barrel	34"	15–20	GW	20.0–25.0 Gravel with sand, dark yellowish brown (10YR 4/4), gravel to 2 inch diameter with 30–40% mostly medium to coarse sand, low plasticity, soft consistency, very moist, no odor
GW / SW	5.5	–	5' Core barrel	10"	20–25	GW/SW	25.0–27.0 Same as above to sand with gravel
SP							27.0/28.0–30.0 Sand, yellowish red (5YR 5/6), very fine to fine sand with 5% silt/clay; low plasticity, soft consistency, trace small gravel, very moist, strong odor
SP	198.5	–	5' Core barrel	36"	25–29	SP	29.0–30.0 Same as above
SM	199.2	–	5' Core barrel	–	29–30	SM	30.0–32.0 Silty sand, yellowish red (5YR 4/6), very fine to fine sand with 20% silt and trace clay, low plasticity, soft consistency, very moist to wet, strong odor
SM	199.7	12/25/27/26	SS	–	30–32	SM	

Geologist: L. Rought
Driller: Spectrum Exploration
Date completed: 3–31–04

Drilling method: Hollow stem auger
Bit diameter: 7–5/8" O.D.

210 and 218 MONTEZUMA AVENUE UST SITE

Boring Log: SB-1

Daniel B. Stephens & Associates, Inc.
5–7–04
JN ES03.0125