



SUBSURFACE EXPLORATION LOG

CLIENT: *Ironox LLC*
 JOB NUMBER: *04020-023-4312*
 LOCATION: *Henderson, NV*
 SURFACE ELEVATION:

GEOLOGIST: *Anita Regmi*
 DATE DRILLED: *06/25/08*
 DRILLING COMPANY: *Boart Longyear*
 NORTHING:

Boring/Well ID Number: *SAB7/M142 Pg 1*
 TOTAL DEPTH: *45'*
 DRILLING METHOD: *Sonic*
 SAMPLE METHOD: *Split Spoon*
 EASTING:

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION											USCS soil class.	litho. contact (ft bgs)				
							% Gravel	% Sand	% Silt	% Clay	NAME	COLOR	moisture	density	plasticity	angularity	grain size range/gravel			grain size range/sand	max gravel size	grading	Additional Modifiers
5		SAB7-05B @ 0.5'	830	0.0/0.0	10	10ft	10	85	10	0	SW well-graded Sand	10YR 5/4 yellowish brown	D	1.00	N	SA SR	F	C	1.5"	W	Caliche lenses	SW	
10				0.0/0.0	10	10ft	25	70	5	0	SW well-graded Sand w/ gravel		D	1.00	N	SA SR	F	C	2"	W	Caliche lenses	SW	
15		SAB7-10B SAB7-10B (Spike) @ 10'	945	0.0/0.0	10	10ft	5	95	0	0	SW well graded Sand	10YR 5/4	D	1.00	N	SA SR	F	C	0.5"	W	Caliche	SW	
20				0.5/0.0	10	10ft	5	95	0	0	SW well graded Sand	10YR 5/3 brown	D	1.00	N	SA SR	F	C	2"	W	Caliche	SW	
22'		SAB7-20B @ 20'	1025	0.0/0.0	10	10ft	0	10	90	0	Boundary		M	D	Med R		F			P	Muddy Creek fm	22ft	
25		SAB7-25B @ 25'	1200	0.0/0.0	10	10ft					MM - Elastic Silt	7.5YR 5/4 brown										MH	
30		SAB7-30B @ 30'	1055	0.0/0.0	10	10ft																	

Notes: *30'*

>1/4 inch visible - 1/4 in. visible with hand lens not visible see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only)

use Munsell color chart Dry Moist Wet Dense, D. Sand Non High Med. Low Angular: SA, SR, Rounded Fine, Coarse Fine, Med, Coarse in inches Poorly, Well Odor, Staining, Mineralogy, etc.



SUBSURFACE EXPLORATION LOG

CLIENT: Tronox LLC
JOB NUMBER: 04020-023-4312
LOCATION: Henderson, NV
SURFACE ELEVATION:

GEOLOGIST: Anita Regmi
DATE DRILLED: 06/25/08
DRILLING COMPANY: Boart Longyear
NORTHING:

Boring/Well ID Number: SA87/M142

TOTAL DEPTH: 45'
DRILLING METHOD: Sonic
SAMPLE METHOD: Split-Spoon
EASTING:

Fig 2

Table with columns: Depth (feet), Samples, Sample Number, Time, FID/PID (ppm), Blow Count, Recovery (ft), % Gravel, % Sand, % Silt, % Clay, NAME, COLOR, moisture, density, plasticity, angularity, grain size range/gravel, grain size range/sand, max gravel size, grading, Additional Modifiers, USCS soil class, litho. contact (ft bgs). Includes handwritten data for depths 30, 40, and 45 feet.

Well Log

Project Number: 2027.01		Boring No.: M-137	
Project Name: Tronox Phase B Investigation		Logged by: Ed Krish	
Drilling Contractor: Boart Longyear		Date Started: 07/27/09	Date Completed: 07/27/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 75.0	Depth to Water (ft bgs): 54.0
Borehole Dia. (in): 8.0	Completion: Monument	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1847.543
Blank Casing: SCH 40 PVC	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots	Filter Pack Type: Silica Sand Size: #10-20	
Casing Dia. (in): 2 From (ft bgs): 0 To: 52	Casing Dia. (in): 2 From (ft bgs): 52 To: 72	Interval (ft bgs) From: 42 To: 75	
Remarks: Boring advanced with 8.0" casing to 75.0'; Neat Cement from 0' to 38'; 3/8" Holeplug from 38' to 42'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
1						<p>SAND (SM): Silty, pale brown (10YR 6/3) and moderate yellowish brown (10YR 5/4); 60% - 70% medium to coarse grained sand with minor finegrained and very coarse grained sand, sub-angular quartz and volcanic fragments; 20% - 30% silt with trace of clay. Up to 10% volcanic granules to 3/8", sub-angular to angular. Trace caliche to 19', then increasing to common @ 23' - 30'.</p> <p>@ 11' - 11.5' cobbles/pebbles to 3", angular volcanics.</p> <p>@ 19' - 23' minor caliche as sand size nodules and coatings, moderate yellowish brown (10YR 5/4), minor coarse grained sub-angular sand and 10% granules to 3/8".</p> <p>23' - 30' Common caliche as nodules to 1", grain coatings and semi-hard cement. Grayish orange (10YR 7/4) in fine to medium grained sand matrix. Caliche up to 50%.</p>				
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7										
8										
9										
10										
11										
12										
13										
14										
15				SM	Qal					
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31						<p>SILT (ML): Dark yellowish orange (10YR 6/6); with 5% - 10% very fine grained sand, 5% clay. Minor scattered caliche nodules to 1" and caliche as grain coatings.</p>				
32										
33				ML	UMCf (MCf1)					
34										

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01	Boring No.: M-137
Project Name: Tronox Phase B Investigation	Logged by: Ed Krish
Drilling Contractor: Boart Longyear	Date Started: 07/27/09
	Date Completed: 07/27/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36				ML	UMCf (MCf1)	SILT (ML): Dark yellowish orange (10YR 6/6); with 5% - 10% very fine grained sand, 5% clay. Minor scattered caliche nodules to 1" and caliche as grain coatings.				
37										
38										
39										
40				ML	UMCf (MCf1)	SILT, sandy, dark yellowish orange (10YR 6/6); 60% silty and 35% very fine grained sand with 5% clay.				
41										
42										
43										
44										
45										
46						Interbedded SAND, gravelly, clean, and SAND, silty. Gravelly Sand: Dark yellowish brown (10YR 4/2); clean; 80% fine to coarse grained with common medium grains and sparse very coarse grains. Sub-angular to sub-rounded; 20% volcanic granules to 3/8"; sub-angular; water bearing. Occurs 45' - 48', 54' - 56', 64' - 65.5', 70.5' - 72'.				
47										
48										
49										
50						Silty Sand: Moderate yellowish brown (10YR 5/4); 60% very fine to fine grained sand with minor medium grains, 35% silt, 5% clay.				
51										
52										
53										
54						Water @ 54'	▽			
55										
56										
57										
58				SM	UMCf (MCc1)					
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										
71										
72										
73				ML	UMCf (MCf1)	SILT, sandy, clayey, dark yellowish brown (10YR 4/2); 10% - 15% very fine grained sand, 1% - 2% clay. Minor scattered caliche nodules and grain coatings.				
74										

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Total depth = 75.0' @ 14:00, 7/27/09.

Well Log

Project Number: 2027.01		Boring No.: M-138	
Project Name: Tronox Phase B Investigation		Logged by: Ed Krish	
Drilling Contractor: Boart Longyear		Date Started: 07/28/09	Date Completed: 07/28/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 65.0	Depth to Water (ft bgs): 50.0
Borehole Dia. (in): 8.0	Completion: Monument	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1846.353
Blank Casing: SCH 40 PVC	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots	Filter Pack Type: Silica Sand Size: #10-20	
Casing Dia. (in): 2 From (ft bgs): 0 To: 50.5	Casing Dia. (in): 2 From (ft bgs): 50.5 To: 65.5	Interval (ft bgs) From: 40.5 To: 66	
Remarks: Boring advanced with 8.0" casing to 66.0'; Neat Cement from 0' to 36.5'; 3/8" Holeplug from 36.5' to 40.5'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction	
1						<p>SAND (SM): Silty, gravelly, moderate yellowish brown (10YR 5/2); 65% fine to coarse grained sand with common very coarse grained sand, sub-angular to sub-rounded quartz and volcanic fragments; 10% - 15% volcanic granules to 3/4", minor scattered cobbles to 6"; 20% - 25% silt with trace of clay.</p> <p>@ 26' - 28' abundant caliche as cementation and grain coatings, semi-hard; very pale orange (10YR 8/2).</p> <p>@ 28' - 32' Moderate caliche as nodules and coatings, soft.</p>					
2											
3								0			
4											
5											
6											
7											
8											
9								0			
10											
11											
12											
13											
14											
15											
16				SM	Qal						
17											
18											
19								2.2			
20											
21								0.6			
22											
23											
24								2.9			
25											
26								3.5			
27											
28											
29											
30											
31											
32											
33				ML	UMCf (MCf)	SILT (ML): Sandy, moderate yellowish brown (10YR 5/4); 70% silt; 25% very fine grained sand, 5% clay. Scattered sand sized caliche nodules, soft.					
34											

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-138

Project Name: Tronox Phase B Investigation

Logged by: Ed Krish

Drilling Contractor: Boart Longyear

Date Started: 07/28/09

Date Completed: 07/28/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction	
36						<p>SILT (ML): Sandy, moderate yellowish brown (10YR 5/4); 70% silt; 25% very fine grained sand, 5% clay. Scattered sand sized caliche nodules, soft.</p>					
37											
38											
39											
40				ML	UMCf (MCf1)				21.5		
41						<p>Interbedded 20% SAND, gravelly; and SAND, silty, moderate yellowish brown (10YR 5/4). SAND, gravelly; fine to medium grained with minor coarse - very coarse grains, angular to sub-angular; clean to 10% silty; 10% - 15% volcanic granules to 1/4", angular to sub-angular; minor caliche nodules to 1", hard, angular to sub-angular. Gravelly @ 45' - 46.5', 50' - 52', 54.5' - 55', 64' - 65'. SAND Silty; 60% - 65% very fine to fine grained sand with trace 1/8" - 1/4" granules, angular to sub-angular; 30% silt, 5% clay. Very silty 55' - 64'. Water @ 50'</p>					
42											
43											
44											
45											
46									4.2		
47											
48											
49											
50								▽			
51											
52									4.6		
53											
54											
55				SM	UMCf (MCc1)						
56											
57											
58											
59											
60											
61											
62											
63											
64											
65											
66						Total depth = 65.0' @ 11:55, 7/28/09.					
67											
68											
69											
70											
71											
72											
73											
74											

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-139	
Project Name: Tronox Phase B Investigation		Logged by: Dana Brown	
Drilling Contractor: Boart Longyear		Date Started: 08/28/09	Date Completed: 08/28/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 60.0	Depth to Water (ft bgs): 29.5
Borehole Dia. (in): 6.0	Completion: Flush Mount	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1813.193
Blank Casing: SCH 40 PVC Casing Dia. (in): 2 From (ft bgs): 0 To: 45	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots Casing Dia. (in): 2 From (ft bgs): 45 To: 60	Filter Pack Type: Silica Sand Size: #10-20 Interval (ft bgs) From: 40 To: 60	
Remarks: Boring advanced with 6.0" casing to 60.0'; Neat Cement from 0' to 36'; 3/8" Holeplug from 36' to 40'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction								
1	SA59-0.5B 07:50			SP-SM	Qal	Poorly Graded Sand with Silt (SP-SM): Pale yellowish brown 10 YR (6/2), very loose, dry. 2% fine sub-rounded gravel to 3/4"+, 88% fine to medium sub-angular sand, 10% non-plastic fines. No odor or staining. Probable fill material with sharp lower contact.		0.0	0.0									
2																		
3																		
4																		
5																		
6	SA59-10B 08:05			SP	Qal	Poorly graded Sand (SP): Grayish orange 10 YR (7/4), very loose, dry. 2% fine sub-rounded gravel to 3/4", 88% fine to medium sub-angular sand, 10% non-plastic fines. No odor or staining.		0.0	0.0									
7																		
8																		
9																		
10																		
11																		
12																		
13															Gravel lens 12.0' - 13.0'; (10/80/10).			
14																		
15																		
16																		
17	SA59-25B, SA59009-25B 08:35			SP-SM	Qal	Poorly Graded Sand with Silt (SP-SM): Grayish orange 10 YR (7/4), very loose, dry. 2% fine sub-rounded gravel to 3/4", 88% fine to medium sub-angular sand, 10% non-plastic fines. No odor or staining.		0.0	0.0									
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30							▽											
31																		
32																		
33																		
34																		

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-139

Project Name: Tronox Phase B Investigation

Logged by: Dana Brown

Drilling Contractor: Boart Longyear

Date Started: 08/28/09

Date Completed: 08/28/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36	SA59-36B 09:28			MH	UMCf (MCf1)	Sandy Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), dense, wet. Trace fine sub-rounded gravel to 3/8", 35% fine sand, 65% moderate-plastic fines. No odor or staining.		0.0	0.0	
37										
38										
39										
40										
41										
42								0.0	0.0	
43								0.2	0.0	
44								0.4	0.0	
45								0.0	0.0	
46								0.0	0.0	
47								0.0	0.0	
48								0.0	0.0	
49								0.0	0.0	
50						Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), very dense, wet. 5% fine sand, 95% moderate-plastic fines. No odor or staining.		0.0	0.0	
51								0.0	0.0	
52								0.0	0.0	
53								0.0	0.0	
54								0.0	0.0	
55						Sandy Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), very dense, wet. 20% fine sand, 80% moderate-plastic fines. Up to 2% caliche as nodules to 1/16" and veinlets. No odor or staining.		0.0	0.0	
56								0.0	0.0	
57								0.0	0.0	
58										
59										
60										
61						Total depth 60.0' @ 09:55, 8-28-09				
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63										
64										
65										
66										
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DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-141	
Project Name: Tronox Phase B Investigation		Logged by: Brendan Mulholland	
Drilling Contractor: Boart Longyear		Date Started: 08/01/09	Date Completed: 08/01/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 50.0	Depth to Water (ft bgs): 41.0
Borehole Dia. (in): 8.0	Completion: Flush Mount	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1797.158
Blank Casing: SCH 40 PVC	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots	Filter Pack Type: Silica Sand Size: #10-20	
Casing Dia. (in): 2 From (ft bgs): 0 To: 37.5	Casing Dia. (in): 2 From (ft bgs): 37.5 To: 47.5	Interval (ft bgs) From: 30 To: 50	
Remarks: Boring advanced with 10.0" casing to 50.0'; Neat Cement from 0' to 26'; 3/8" Holeplug from 26' to 30'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
1				AC	Qal	Asphaltic concrete (AC)				
2				SP	Qal	Poorly graded sand (SP): Very dark brown 7.5 YR (5/2), moist. 10% fine to coarse gravel, 85% coarse sand, 5% non-plastic fines.	0.5			
3				SM	Qal	Silty Sand (SM): Yellowish brown 10 YR (5/4), moist. 5% fine to coarse gravel, 70% medium to coarse sand, 25% non-plastic fines.	0.0			
4				SM	Qal		0.0			
5				SM	Qal		0.0			
6				SM	Qal		0.0			
7				SM	Qal		0.0			
8				SM	Qal		0.0			
9				SM	Qal		0.0			
10				SM	Qal		0.0			
11				SM	Qal		0.0			
12				SM	Qal		0.0			
13				SM	Qal		0.0			
14				SM	Qal		0.0			
15				SM	Qal		0.0			
16				SM	Qal		0.0			
17				SM	Qal		0.1			
18				SM	Qal	17.5' - 18.0' Volcanic cobbles.	0.0			
19				SM	Qal		0.0			
20				SM	Qal		0.0			
21				SM	Qal		0.0			
22				SM	Qal		0.0			
23				SM	Qal		0.0			
24				SM	Qal		0.0			
25				SM	Qal		0.0			
26				SM	Qal		0.0			
27				SM	Qal		0.0			
28				SM	Qal		0.0			
29				SM	Qal		0.0			
30				SM	Qal		0.0			
31				SM	Qal		0.0			
32				SM	Qal		0.0			
33				SM	Qal		0.0			
34				SM	Qal		0.0			

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Well Log

Project Number: 2027.01

Boring No.: M-141

Project Name: Tronox Phase B Investigation

Logged by: Brendan Mulholland

Drilling Contractor: Boart Longyear

Date Started: 08/01/09

Date Completed: 08/01/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36				SM	Qal	Silty Sand (SM): Yellowish brown 10 YR (5/4), moist. 5% fine to coarse gravel, 70% medium to coarse sand, 25% non-plastic fines. Wet @ 41.0'	▽	0.1		
37		0.0								
38		0.0								
39				ML	UMCf (MCf)	Silt (ML): Yellowish brown 10 YR (5/4), wet. 5% fine sand, 95% non-plastic fines. @ 44.0' Color change to dark yellowish brown 10 YR (4/4).		0.1		
40		0.0								
41		0.0								
42		0.0								
43		0.0								
44				CL	UMCf (MCf)	Lean Clay (CL): Yellowish brown 10 YR (5/4), moist to wet. 5% fine sand, 95% moderate to high-plastic fines.		0.0		
45		0.0								
46								0.0		
47								0.0		
48								0.0		
49								0.0		
50										
51						Total depth 50.0' @ 10:30, 8-1-09				
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DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-144	
Project Name: Tronox Phase B Investigation		Logged by: Dana R. Brown	
Drilling Contractor: Boart Longyear		Date Started: 09/08/09	Date Completed: 09/08/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 45.0	Depth to Water (ft bgs): 32.0
Borehole Dia. (in): 6.0	Completion: Flush Mount	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1813.305
Blank Casing: SCH 40 PVC Casing Dia. (in): 2 From (ft bgs): 0 To: 35	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots Casing Dia. (in): 2 From (ft bgs): 35 To: 45	Filter Pack Type: Silica Sand Size: #10-20 Interval (ft bgs) From: 30 To: 45	
Remarks: Boring advanced with 10.0" casing to 45.0'; Neat Cement from 0' to 26'; 3/8" Holeplug from 26' to 30'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
1	SA135-0.5B 08:02					Silty Sand (SM): Pale brown 5 YR (5/2), very loose, dry. 2% fine sub-angular gravel to 1"-, 75% fine - medium sub-angular sand, 23% fine sub-angular silt. No odor or staining.		3.2	2.0	
2								11.9	1.2	
3	SA135-10B, SA135009-10B 08:24				SM	Qal	Gravel lens @ 8.0' (10/65/25).	4.8	0.2	
4								4.0	2.0	
5								12.5	4.0	
6								32.8	3.2	
7								10.9	2.7	
8								41.8	2.8	
9	SA135-25B 09:25				SM	Qal	Gravel lens @ 15.0' (8/65/27).	29.4	2.6	
10								35.4	2.4	
11								47.8	1.7	
12								13.3	1.4	
13								13.6	1.3	
14								29.7	1.5	
15	SA135-25B 09:25				ML	UMCf (MCf1)	Sandy Silt (ML): Moderate yellowish brown 10 YR (5/4), soft to medium-stiff, damp to dry. 2% fine sub-rounded to sub-angular gravel to 1/2"-, 38% fine sub-angular sand, 60% non-plastic fines. No odor or staining.	59.1	2.0	
16								21.4	2.3	
17								19.8	2.1	
18										
19										
20										
21										
22										
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33										
34										

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-144

Project Name: Tronox Phase B Investigation

Logged by: Dana R. Brown

Drilling Contractor: Boart Longyear

Date Started: 09/08/09

Date Completed: 09/08/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36	SA135-37B 09:51			ML	UMCf (MCf1)	Silt with Sand (ML): Light brown 5 YR (5/6), stiff, wet. Trace fine sub-rounded gravel to 3/8"+, 20% fine sub-angular sand, 80% non-plastic fines. Rare caliche nodules to 1/16". No odor or staining.		9.1	0.4	
37								11.5	0.0	
38								16.0	0.2	
39								19.5	0.4	
40								18.6	0.6	
45	Total depth 45.0' @ 09:55, 9-8-09									
46										
47										
48										
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DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-145	
Project Name: Tronox Phase B Investigation		Logged by: Dana R. Brown	
Drilling Contractor: Boart Longyear		Date Started: 08/31/09	Date Completed: 08/31/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 60.0	Depth to Water (ft bgs): 34.8
Borehole Dia. (in): 6.0	Completion: Flush Mount	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1812.234
Blank Casing: SCH 40 PVC Casing Dia. (in): 2 From (ft bgs): 0 To: 45	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots Casing Dia. (in): 2 From (ft bgs): 45 To: 60	Filter Pack Type: Silica Sand Size: #10-20 Interval (ft bgs) From: 40 To: 60	
Remarks: Boring advanced with 10.0" casing to 60.0'; Neat Cement from 0' to 36'; 3/8" Holeplug from 36' to 40'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction			
1	SA68-0.5B 06:41			Fill		Fill Material (0.0' - 9.8'), Silty Sand (SM): Very pale orange 10 YR (8/2), very loose, dry to damp. 2% (up to 5% locally) fine sub-angular gravel to 1"+, 65% fine to medium sub-angular sand, 32% - 35% non-plastic fines. Stratified locally in fine lifts. No odor or staining.		2.0	0.3				
2								5.2	0.5				
3	SA68-10B 07:22			Fill		Silty Sand (SM): Light brown 5 YR (5/6), loose, dry. 2% fine sub-angular gravel to 3/4", 88% fine to medium sub-angular sand, 10% non-plastic fines. No odor or staining.		7.0	0.3				
4								4.0	0.2				
5								SP	Qal		Poorly Graded Sand (SP): Grayish orange 10 YR (7/4) to light brown 5 YR (5/6), loose, dry to damp. 2% fine sub-angular gravel to 1/2", 94% fine to medium sub-angular sand, 4% non-plastic fines.	4.3	0.3
6												0.4	0.0
7								SM	Qal		Silty Sand (SM): Dark yellowish orange 10 YR (6/6), medium dense, damp to moist. 5% sub-angular gravel to 1"-, 65% fine to medium sub-angular sand, 30% non to moderate-plastic fines. No odor or staining. Probable fill material.	0.4	0.0
8												0.4	0.0
9								SP-SM	Qal		Poorly Graded Sand (SP) to Poorly Graded Sand with Silt (SP-SM): Grayish orange 10 YR (7/4) to light brown 5 YR (5/6), loose, dry to damp. 2% to 5% fine sub-angular gravel to 1/2", 85% - 95% fine to medium sub-angular sand, 5% -10% non-plastic fines. Some caliche as grain coatings and veinlets. No odor or staining.	0.3	0.0
10												0.2	0.0
11	0.4	0.0											
12	0.4	0.0											
13	0.3	0.0											
14	0.3	0.0											
15	SA68-25B, SA68009-25B 07:55				22.5' - 23.5' Massive caliche.		0.9	0.0					
16							0.3	0.0					
17							0.9	0.0					
18	SM	Qal	Silty Sand (SM): Dark yellowish orange 10 YR (6/6), medium dense, damp to moist. 5% sub-angular gravel to 1"-, 65% fine to medium sub-angular sand, 30% non to moderate-plastic fines. No odor or staining.	0.9	0.0								
19				0.9	0.0								
20	SM	Qal	Silty Sand (SM): Light brown 5 YR (5/6), medium dense to loose, damp to moist. Trace sub-rounded gravel to 3/8"+, 65% fine sand, 35% non-plastic fines. No odor or staining.	0.6	0.0								
21				0.6	0.0								
22							0.9	0.0					

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-145

Project Name: Tronox Phase B Investigation

Logged by: Dana R. Brown

Drilling Contractor: Boart Longyear

Date Started: 08/31/09

Date Completed: 08/31/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction		
36	SA68-36B 08:25			SM	Qal							
37				MH	UMCf (MCf1)	Sandy Elastic Silt (MH): Light brown 5 YR (5/6), stiff, wet. Trace fine sub-rounded gravel to 3/8"+, 30% fine sand, 70% moderate-plastic fines. No odor or staining.	0.6	0.3				
38									0.0	0.1		
39												
40								Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), stiff to very stiff locally, wet. 20% fine sub-angular sand, 80% non to moderate-plastic fines. No odor or staining.	3.1	0.0		
41												
42									1.2	0.1		
43												
44									0.6	0.0		
45												
46						1.0	0.0					
47												
48												
49						Sandy Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), medium stiff to stiff locally, wet. Trace to 2% fine sub-angular gravel to 1/2", 35% fine sub-angular sand, 63% non to moderate-plastic fines. No odor or staining.	0.3	0.0				
50												
51							0.3	0.0				
52												
53							0.1	0.0				
54						Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), stiff to very stiff locally, wet. 20% fine sub-angular sand, 80% non to moderate-plastic fines. No odor or staining.	0.6	0.0				
55												
56							1.8	0.0				
57												
58							0.7	0.0				
59												
60							1.2	0.0				
61	Total depth 60.0' @ 09:20, 8-31-09											
62												
63												
64												
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66												
67												
68												
69												
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72												
73												
74												

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-146	
Project Name: Tronox Phase B Investigation		Logged by: Dana R. Brown	
Drilling Contractor: Boart Longyear		Date Started: 09/01/09	Date Completed: 09/01/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 50.0	Depth to Water (ft bgs): 31.0
Borehole Dia. (in): 6.0	Completion: Monument	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1812.481
Blank Casing: SCH 40 PVC Casing Dia. (in): 2 From (ft bgs): 0 To: 40	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots Casing Dia. (in): 2 From (ft bgs): 40 To: 50	Filter Pack Type: Silica Sand Size: #10-20 Interval (ft bgs) From: 35 To: 50	
Remarks: Boring advanced with 6.0" casing to 50.0'; Neat Cement from 0' to 31'; 3/8" Holeplug from 31' to 35'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction	
1	SA133-0.5B 09:50			SM	Qal	Silty Sand (SM): Pale yellowish brown 10 YR (6/2), very loose to loose, dry. 10% fine angular to sub-angular gravel to 3/8"+, 60% fine to medium sub-angular sand, 30% non-plastic fines. Probable fill material, many fractured angular gravel clasts.		1.4	0.7		
2								4.1	0.6		
3											
4											
5											
6											
7											
8											
9											
10	SA133-10B 10:05			SM	Qal	Gravel lens 9.0' - 10.0', 10% angular to sub-angular gravel to 1/2". @ 11.0' color change to very pale orange 10 YR (8/2).		0.9	0.2		
11								0.9	0.2		
12											
13											
14											
15											
16											
17											
18											
19	SA133-20B 10:25			SM	Qal	Silty Sand (SM): Dark yellowish brown 10 YR (4/2), very loose, dry. 65% fine sub-angular sand, 30% non-plastic fines. No odor or staining.		0.9	0.6		
20								0.9	0.3		
21											
22											
23											
24											
25											
26											
27											
28	SA133-31B, -BMS, -BMSD 10:50			ML	UMCf (MCf1)	Sandy Silt (ML): Dark yellowish brown 10 YR (6/6), medium stiff, wet. Trace sub-angular gravel to 3/8"+, 25% fine to medium sub-angular sand, 75% non-plastic fines. No odor or staining.		▽	0.7	0.5	
29											
30											
31											
32											
33											
34											
34				ML	UMCf (MCf1)			11.6	0.6		

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-146

Project Name: Tronox Phase B Investigation

Logged by: Dana R. Brown

Drilling Contractor: Boart Longyear

Date Started: 09/01/09

Date Completed: 09/01/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36						Silt with Sand (ML): Moderate yellowish brown 10 YR (5/4), stiff to medium-stiff, wet. Trace sub-angular coarse sand/fine gravel to 3/8", 15% fine sub-angular sand, 85% non-plastic fines. Trace caliche as nodules to 1/16". No odor or staining.		4.4	0.7	
37								12.6	1.0	
38										
39								25.0	1.5	
40										
41										
42				ML	UMCf (MCf1)			15.7	1.1	
43										
44								12.9	0.9	
45										
46							0.8	0.5		
47										
48							14.0	0.8		
49										
50										
51						Total depth 50.0' @ 11:20, 9-1-09		0.1	0.4	
52										
53										
54										
55										
56										
57										
58										
59										
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DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-147	
Project Name: Tronox Phase B Investigation		Logged by: Dana R. Brown	
Drilling Contractor: Boart Longyear		Date Started: 08/20/09	Date Completed: 08/20/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 40.0	Depth to Water (ft bgs): 29.0
Borehole Dia. (in): 6.0	Completion: Monument	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1781.211
Blank Casing: SCH 40 PVC Casing Dia. (in): 2 From (ft bgs): 0 To: 25	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots Casing Dia. (in): 2 From (ft bgs): 25 To: 40	Filter Pack Type: Silica Sand Size: #10-20 Interval (ft bgs) From: 20 To: 40	
Remarks: Boring advanced with 6.0" casing to 40.0'; Neat Cement from 0' to 16'; 3/8" Holeplug from 16' to 20'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
1	SA139-0.5B 06:55			SM	Qal	Silty Sand (SM): Pale yellowish brown 10 YR (6/2), very loose to loose, dry. 10% fine angular to sub-angular gravel to 3/8"+, 60% fine to medium sub-angular sand, 30% non-plastic fines. Probable fill material, many fractured angular gravel clasts.		2.4	0.4	
2										
3										
4										
5										
6										
7										
8										
9										
10	SA139-10B 07:15			SM	Qal	Gravel lens 9.0' - 10.0', 10% angular to sub-angular gravel to 1/2". @ 10.0' color change to very pale orange 10 YR (8/2).		63.7	0.1	
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21	SA139-25B, SA139009-25B 07:30			SM	Qal	Silty Sand (SM): Dark yellowish brown 10 YR (4/2), very loose, dry. 65% fine sub-angular sand, 30% non-plastic fines. No odor or staining.		109	0.9	
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
				ML	UMCf (MCf1)	Sandy Silt (ML): Dark yellowish brown 10 YR (6/6), medium stiff, wet. 25% fine sub-angular sand, 75% non-plastic fines. No odor or staining.	44.7	0.0		
							0.7	0.0		
							9.8	0.6		

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-147

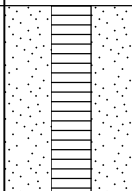
Project Name: Tronox Phase B Investigation

Logged by: Dana R. Brown

Drilling Contractor: Boart Longyear

Date Started: 08/20/09

Date Completed: 08/20/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36	SA139-35B 07:55			ML	UMCf (MCf1)	Silt with Sand (ML): Moderate yellowish brown 10 YR (5/4), stiff to medium-stiff, wet. 2% fine sub-rounded gravel to 5/8"+, 15% fine sub-angular sand, 83% non-plastic fines. Trace caliche as nodules to 1/16". No odor or staining.		19.5	0.4	
37										
38										
39								180	1.7	
40										
41						Total depth 40.0' @ 08:15, 8-20-09				
42										
43										
44										
45										
46										
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DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01		Boring No.: M-148	
Project Name: Tronox Phase B Investigation		Logged by: Dana R. Brown	
Drilling Contractor: Boart Longyear		Date Started: 09/10/09	Date Completed: 09/11/09
Drilling Method: Rotary Sonic		Total Depth (ft bgs): 50.0	Depth to Water (ft bgs): 42.5
Borehole Dia. (in): 6.0	Completion: Monument	Surface Elevation (ft MSL):	Top of Casing (ft MSL): 1800.827
Blank Casing: SCH 40 PVC Casing Dia. (in): 2 From (ft bgs): 0 To: 30	Slotted Casing: Factory slotted SCH 40 PVC, 0.020" Slots Casing Dia. (in): 2 From (ft bgs): 35 To: 50	Filter Pack Type: Silica Sand Size: #10-20 Interval (ft bgs) From: 30 To: 50	
Remarks: Boring advanced with 6.0" casing to 50.0'; Neat Cement from 0' to 26'; 3/8" Holeplug from 26' to 30'.			

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
1	SA124-0.5B 13:02			FILL		Manganese tailings (Fill): Dark gray N3, very loose to medium-dense locally, dry. 99% very fine grained dust, 1% fine gravel or coarse sand floating in tailings matrix. Locally accumulated in layers up to 1/32' thick.		0.0	0.0	
2										
3										
4										
5										
6										
7										
8										
9										
10										
11	SA124-10B, SA124009-10B 13:35			SM	Qal	Silty Sand (SM): Dark yellowish orange 10 YR (6/6), medium dense to loose, damp to dry. 5% fine sub-angular gravel to 1"-, 65% fine to medium sub-angular sand, 30% non-plastic fines. No odor or staining.		0.2	0.0	
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22	SA124-25B 07:04			SM	Qal	Gravel lens @ 22.0' (10/70/20).		0.1	0.0	
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33				SM	Qal	Gravel lens @ 27.0' (10/75/15).		2.2	0.1	
34										

DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10

Well Log

Project Number: 2027.01

Boring No.: M-148

Project Name: Tronox Phase B Investigation

Logged by: Dana R. Brown

Drilling Contractor: Boart Longyear

Date Started: 09/10/09

Date Completed: 09/11/09

Depth (ft)	Sample I.D. Sample Time	Sample Type	Graphic Log	USCS Code	Formation Name	Material Description	Water Level	10.6 ev PID (ppm)	11.7 ev PID (ppm)	Well Construction
36	SA124-42B 07:39			SM	Qal	Silty Sand (SM): Dark yellowish orange 10 YR (6/6), medium dense to loose, damp to dry. 5% fine sub-angular gravel to 1"-, 65% fine to medium sub-angular sand, 30% non-plastic fines. No odor or staining.	▽	0.9	0.0	
37								1.3	0.1	
38				ML	UMCf (MCf1)	Sandy Silt (ML): Pale brown 5 YR (5/2), medium-stiff to loose, damp. 35% fine to medium sand, 65% non-plastic fines. Some caliche nodules to 3/8". No odor or staining.		0.1	0.0	
39								0.3	0.0	
40				MH	UMCf (MCf1)	Sandy Elastic Silt (MH): Moderate yellowish brown 10 YR (5/4), medium stiff, damp to wet. 25% fine sand, 75% non to moderate-plastic fines. Rare caliche nodules to 1/16". No odor or staining.		0.7	0.0	
41								0.1	0.0	
42								0.2	0.0	
43								0.7	0.0	
44								0.1	0.0	
45								0.2	0.0	
46	0.7	0.0								
47	0.7	0.0								
48	Total depth 50.0' @ 08:20, 9-11-09									
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51										
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DRB-ENVIRO WELL LOG 2027.01.GPJ 1/13/10



SUBSURFACE EXPLORATION LOG

CLIENT: Tronox LLC
 JOB NUMBER: 04020-023-4312
 LOCATION: Henderson, NV
 SURFACE ELEVATION:

GEOLOGIST: Anita Regmi
 DATE DRILLED: 06/27/08
 DRILLING COMPANY: Boart Longyear
 NORTHING:

Boring/Well ID Number: M128
 TOTAL DEPTH: 55ft Pg 1
 DRILLING METHOD: Sonic
 SAMPLE METHOD: Split-Spoon
 EASTING:

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION														USCS soil class.	litho. contact (ft bgs)	
							% Gravel	% Sand	% Silt	% Clay	NAME	COLOR	moisture	density	plasticity	angularity	grain size range/gravel	grain size range/sand	max gravel size	grading			Additional Modifiers
5				0.0 0.0 0.5	V I	10ft	10	90			SW - well graded sand few gravel	10YR 4/4 dark yellowish brown	D	100	N	SA SR	F	M to C	2"	W	no color, no stains	SW	
10				1.1 0.0 10	B R A	10ft					SW - well graded sand Same as above	10YR 4/4	D	L	IN SA SR	F	M to C	3.5"	W	12 to 14 gravelly zone	SW		
15				5.5 0.0 5	T H I		20	80			SW - well graded sand 10YR 4/4	D	L	N	SA SR	F	M to C	0.5"	W	14 to 16 strong caliche zone	SW		
20				1.5 0.0 20	T H O		10	90			SW - well graded sand 10YR 4/4	D	L	N	SA SR	F	M to C	0.5"	W	no color, no stain	SW		
25				1.16 0.0 30	N	10ft					Same as above							2"	W	Strong caliche zone betn 23-24' bgs			
30				1.16 0.0 30		Boundary		10	90		MH - Elastic silt	7.5YR 5/4 brown	M	D	M	R	F F	F	0.1	W	Muddy Creek fm trace fine gravel coarse sand		25.5'

Notes:

> 1/4 inch visible - 1/4 in. visible with hand lens not visible see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only) use Munsell color chart Dry Moist Wet Moisture: Dense, D. Sand Non High Med Low Angularity: SA, SR, Rounded Fine, Coarse Fine, Med, Coarse in inches Poorly, Well Odor, Staining, Mineralogy, etc.



SUBSURFACE EXPLORATION LOG

CLIENT: Tronox LLC
 JOB NUMBER: 04020-023-4312
 LOCATION: Henderson, NV
 SURFACE ELEVATION:

GEOLOGIST: Anita Regmi
 DATE DRILLED: 06/27/08
 DRILLING COMPANY: Boart Longyear
 NORTHING:

Boring/Well ID Number: M 128

TOTAL DEPTH: 55ft
 DRILLING METHOD: Sonic
 SAMPLE METHOD: Split-Spoon
 EASTING:

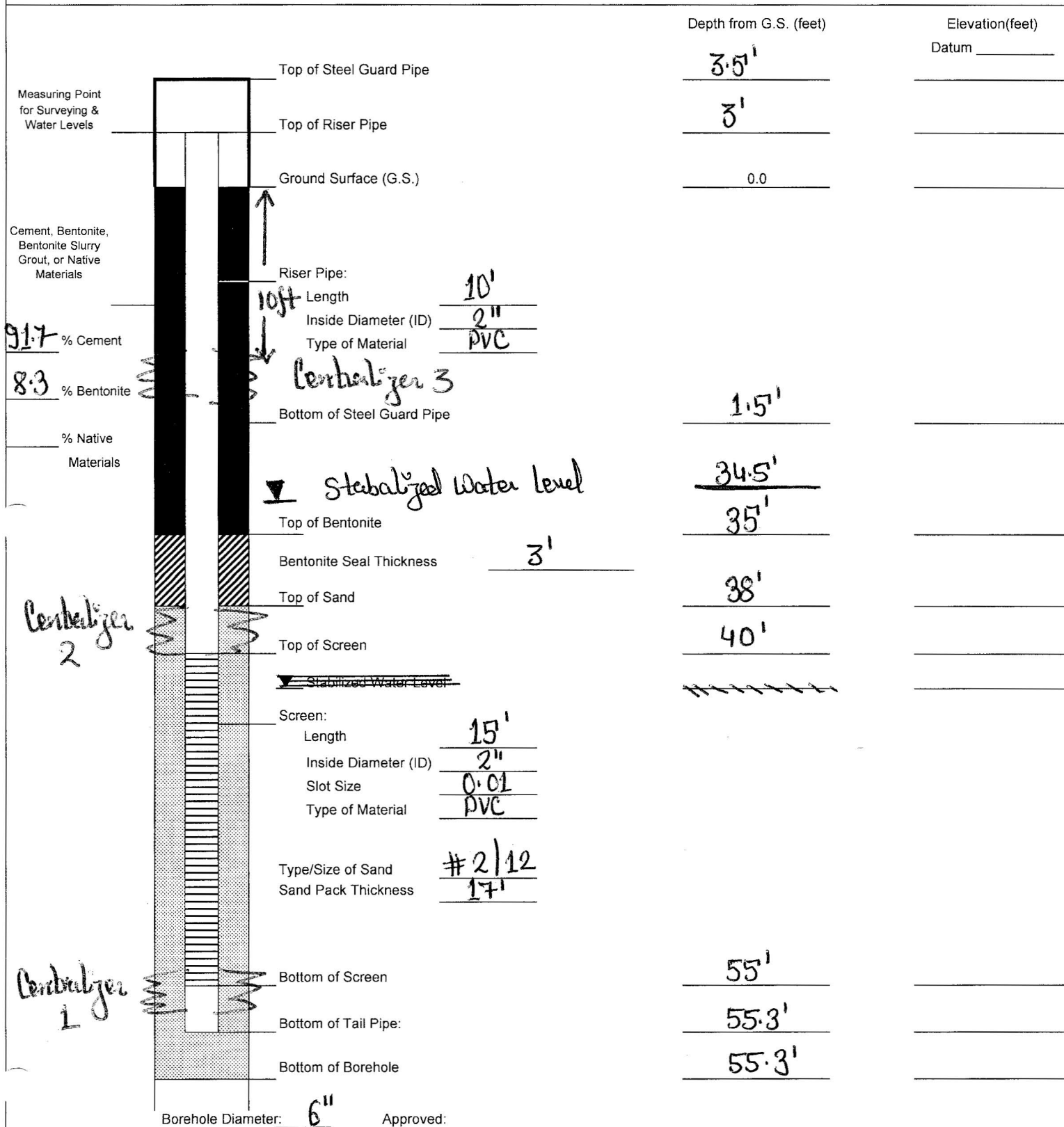
Pg 2

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION										USCS soil class.	litho. contact (ft bgs)				
							% Gravel	% Sand	% Silt	% Clay	NAME	COLOR	moisture	density	plasticity	angularity			grain size range/gravel	grain size range/sand	max gravel size	grading
35			2:24 0.0 40'		V H B R A H I N O Z	10ft 0.0	10	90			MH - Elastic Silt	7.5YR 5/4 brown	M	D	M	R	F	F	0.1'	W	no odor, no stain Trace gravel upto 38'	MH ▽→34.5
40																					38' to 46' no gravel	
45			3:05 0.0																		no odor, no stain	
50			1:05 0.0 55'																		Trace gravel bet ⁿ 46-47'	
55											Same as above										No gravel bet ⁿ 47' to 58' bgs no stain, no odor Sandy bet ⁿ 53-5'	
60											total depth → 55ft											
Notes:							> 1/4 inch	visible - 1/4 in. visible with hand lens	not visible	see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only)	use Munsell color chart	Dry Moist Wet	Dense, D. Sand	Non High Med Low	Angular, SA, SR, Rounded	Fine, Coarse	Fine, Med, Coarse	in inches	Poorly, Well	Odor, Staining, Mineralogy, etc.		



Client: Irondu LLC	WELL ID: M128
Project Number: 04020-023-4312	
Site Location: Henderson, NV	Date Installed: 06/27/08
Well Location: _____	Inspector: Anita Regni
Method: Sonic	Coords: _____
	Contractor: Boat Longyear

MONITORING WELL CONSTRUCTION DETAIL



Describe Measuring Point: _____

Approved: _____

Signature _____

Date _____

SUBSURFACE EXPLORATION LOG

CLIENT: Tronox
 JOB NUMBER: 04020-023-4312
 LOCATION: Area 1
 SURFACE ELEVATION:

GEOLOGIST: Anita Regmi Chris Drabant
 DATE DRILLED: ~~06/30/08~~ 07/01/08
 DRILLING COMPANY: Boart-Longyear
 NORTHING:

BORING NUMBER: *pg1*

M-125

TOTAL DEPTH: 50 ft
 DRILLING METHOD: Sonic
 SAMPLE METHOD: Split-Spoon/Trowel
 EASTING:

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION										soil class.	litho. contact (ft bgs)					
							% gravel	% sand	% silt	% clay	NAME	COLOR	moisture	density	plasticity	angularity			grain size range/gravel	grain size range/sand	max gravel size	grading	add. modifiers
0-5				0.78 0.0 1.0	V I B	10ft	5	95			Silt-well-graded Sand	10YR 5/4 yellowish brown	D	L	N	SA-SR	F	M to C	0.5"	W	Caliche lenses no odor, no stain	SW	
5-10				1.34 0.0 1.0	R A	10ft																	
10-15				0.68 0.0 2.0	T I O	10ft					Same as above												
15-25					N	10ft					Transition ML-Sandy silt	10YR 5/4 yellowish brown	M	M	L	SA-SR	F	M to F	0.5"	P		ML 23ft	
25-30	Muddy Creek Fm			1.08 0.0 3.0		10ft					MH-plastic silt	7.5YR 4/4 Brown	W	L	M	R	F	F	0.4"	P	strong caliche (Dry) zone 28.5 to 29.5 Caliche nodules - 28-30'	28ft	
Notes:							>1/4 inch	visible - 1/4 in. visible with hand lens	not visible	see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only)	use Munsell color chart	Dry Moist Wet	Non High Med Low	Angular, SA, SR, Rounded	Fine, Coarse	Fine, Med, Coarse	in inches	Poorly, Well	odor, staining, mineralogy, etc.				



SUBSURFACE EXPLORATION LOG

CLIENT: Tronox
 JOB NUMBER: 04020-023-4312
 LOCATION: Area 1

GEOLOGIST: Anita Regnier Chris Drabant
 DATE DRILLED: 07/10/08
 DRILLING COMPANY: Boart-Longyear
 NORTHING:

Bg2 BORING NUMBER:

M-125

TOTAL DEPTH: 50ft
 DRILLING METHOD: Sonic
 SAMPLE METHOD: Split-Spoon/Trowel
 EASTING:

SURFACE ELEVATION:

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION													soil class.	litho. contact (ft bgs)			
							% gravel	% sand	% silt	% clay	NAME	COLOR	moisture	density	plasticity	angularity	grain size range/gravel	grain size range/sand	max gravel size			grading	add. modifiers	
30						10ft					MH-Elastic SILT	7.5R Brown 4/4	W	L	M	SR	F	F	1"	P		MH		
35				2.42																				
40				4.85		10ft																		
45				4.4																				
50				5.1							Same as above													
55											Total Depth													
60																								

Notes:

>1/4 inch visible - 1/4 in. visible with hand lens not visible see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only)

use Munsell color chart

Dry Moist Wet

Non High Med Low

Angular, SA, SR, Rounded

Fine, Coarse

Fine, Med, Coarse

in inches

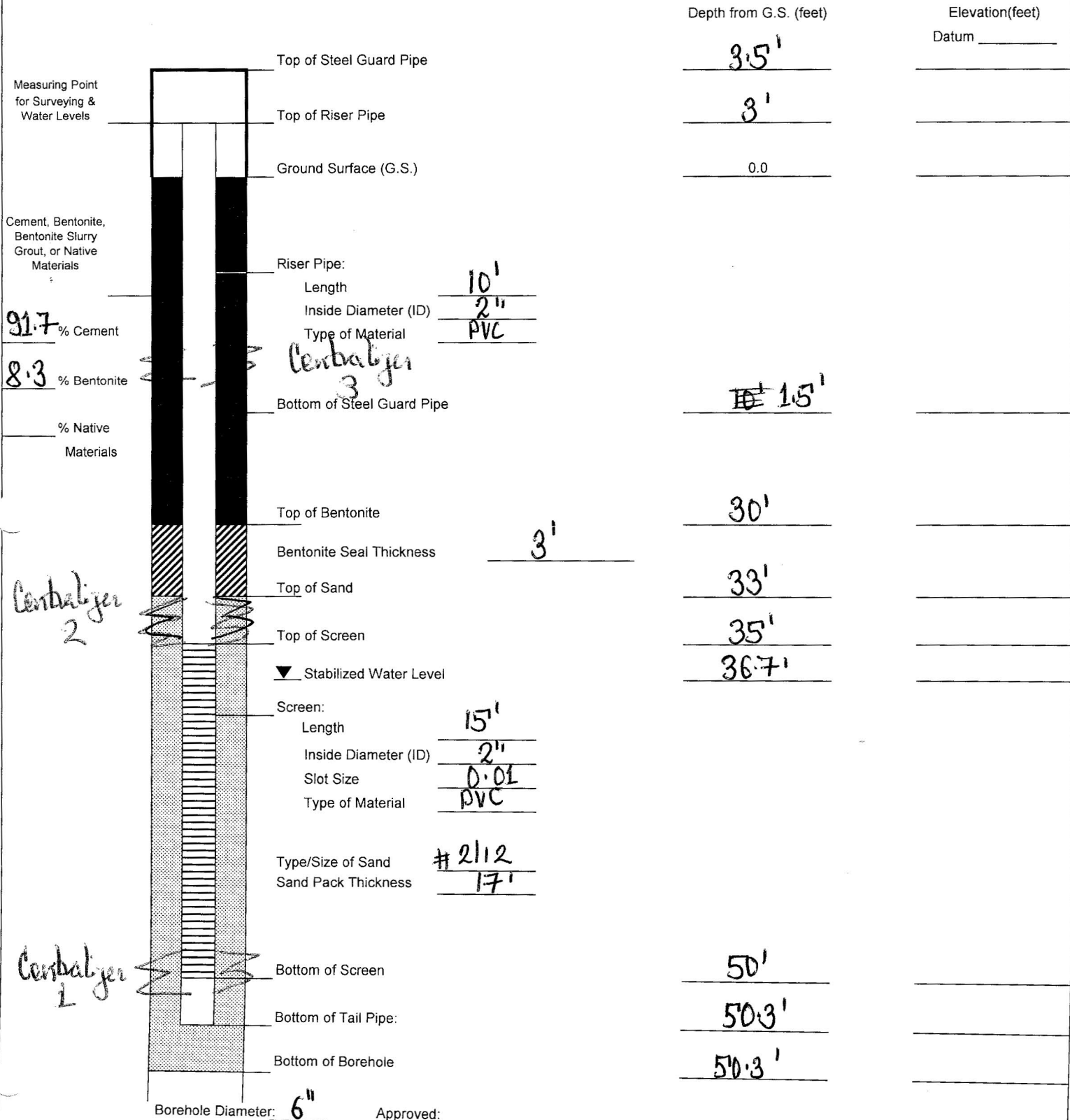
Poorly, Well

odor, staining, mineralogy, etc.



Client: <u>TRINCH LLC</u>	WELL ID: <u>M-125</u>
Project Number: <u>04020-023-4312</u>	
Site Location: <u>Henderson, NV</u>	Date Installed: <u>07/01/08</u>
Well Location: _____	Coords: _____
Method: <u>Sonic</u>	Inspector: <u>Anita Regmi</u>
	Contractor: <u>Boat Langye</u>

MONITORING WELL CONSTRUCTION DETAIL



Describe Measuring Point: _____

Approved: _____
Signature

_____ Date



SUBSURFACE EXPLORATION LOG

CLIENT: Tronox LLC
 JOB NUMBER: 04020-023-4312
 LOCATION: Henderson, NV
 SURFACE ELEVATION:

GEOLOGIST: *Anita Regmi*
 DATE DRILLED: *06/28/08*
 DRILLING COMPANY: Boart Longyear
 NORTHING:

Boring/Well ID Number: *M-124* Pg 1

TOTAL DEPTH: *49 ft*
 DRILLING METHOD: Sonic
 SAMPLE METHOD: Split-Spoon
 EASTING:

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION													USCS soil class.	litho. contact (ft bgs)		
							% Gravel	% Sand	% Silt	% Clay	NAME	COLOR	moisture	density	plasticity	angularity	grain size range/gravel	grain size range/sand	max gravel size			grading	Additional Modifiers
0-5				<i>0.3 / 0.0 @ 0.5'</i>	<i>V</i>	<i>10ft</i>	<i>5</i>	<i>95</i>			<i>SW - well graded Sand, trace gravel</i>	<i>10YR 4.5/5.4 yellowish brown</i>	<i>D</i>	<i>2000</i>	<i>N</i>	<i>SA SR</i>	<i>FA</i>	<i>C</i>	<i>2.5"</i>	<i>W</i>	<i>no odor, no stain</i>		
5-10				<i>0.2 / 0.0 @ 10'</i>	<i>B</i>													<i>2"</i>	<i>W</i>	<i>caliche lens</i>			
10-15				<i>10'</i>	<i>A</i>	<i>10ft</i>					<i>Same as above</i>										<i>caliche lens</i>		
15-20				<i>0.3 / 0.0 @ 20'</i>	<i>O</i>	<i>10ft</i>	<i>1</i>	<i>100%</i>			<i>Transition Zone</i> <i>SD - poorly graded Sand</i>	<i>10YR 5/4 yellowish brown</i>	<i>D</i>	<i>L</i>	<i>N</i>	<i>SA SR</i>	<i>F</i>	<i>M</i>	<i>15"</i>	<i>P</i>	<i>no odor, no stain</i>	<i>SP</i>	<i>18ft</i>
20-25				<i>0.3 / 0.0 @ 20'</i>	<i>N</i>	<i>10ft</i>	<i>0</i>	<i>60</i>	<i>40</i>		<i>SM - Silty Sand</i>	<i>7.5YR 5/4</i>	<i>M</i>	<i>L</i>	<i>L</i>	<i>SR</i>		<i>M to F</i>			<i>no odor, no stain</i>	<i>SM</i>	<i>20ft</i>
25-30				<i>0.4 / 0.0 @ 30'</i>			<i>10</i>	<i>90</i>			<i>MN - Plastic Silt, trace clay</i>	<i>7.5YR 5/4 brown</i>	<i>M</i>	<i>D</i>	<i>M</i>	<i>R</i>		<i>F</i>			<i>Muddy Creek Formation</i>	<i>MH</i>	<i>23ft</i>
30																					<i>Caliche nodules</i>		

Notes:

>1/4 inch
 visible - 1/4 in.
 visible with hand lens
 not visible
 see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only)
 use Munsell color chart
 Dry Moist Wet
 Dense, D. Sand
 Non High Med Low
 Angular, SA, SR, Rounded
 Fine, Coarse
 Fine, Med, Coarse
 in inches
 Poorly Well
 Odor, Staining, Mineralogy, etc.



SUBSURFACE EXPLORATION LOG

CLIENT: Tronox LLC
 JOB NUMBER: 04020-023-4312
 LOCATION: Henderson, NV
 SURFACE ELEVATION:

GEOLOGIST: *White Regmi*
 DATE DRILLED: *06/28/08*
 DRILLING COMPANY: Boart Longyear
 NORTHING:

Boring/Well ID Number: *M-124*

TOTAL DEPTH: *49ft*
 DRILLING METHOD: Sonic
 SAMPLE METHOD: Split-Spoon
 EASTING:

Depth (feet)	Samples	Sample Number	Time	FID/PID (ppm)	Blow Count	Recovery (ft)	GEOLOGIC DESCRIPTION													USCS soil class.	litho. contact (ft bgs)	
							% Gravel	% Sand	% Silt	% Clay	NAME	COLOR	moisture	density	plasticity	angularity	grain size range/gravel	grain size range/sand	max gravel size			grading
35				1.2 0.0 46	0	10ft	10	90	Trace	MH-Elastic Silt, trace clay	7.5YR 5/4 brown	M	D	M	R	—	F	—	P	Caliche nodules ≈ 1.5'	MH	
40				1.2 0.0 46	0	9ft			Trace	Same as above										Strong caliche zone @ 46' and 49' bgs.		30ft
45				0.9 0.0 49	0	9ft	10	90	Trace	MH-Elastic Silt, trace gravel	7.5YR 5/4 brown	M	D	M	R	F	F	15"	P	no odor, no stain		
50										Total depth												49ft

Notes:

>1/4 inch visible - 1/4 in. visible with hand lens not visible see USCS flow charts. <5-5%=trace, 10%=few, 15-25%=little, 30-45%=some, 50%+=mostly (cobbles only)

use Munsell color chart

Dry Moist Wet

coarse, med, Dense, D, Sand

Non High Med Low

Angular, SA, SR, Rounded

Fine, Coarse

Fine, Med, Coarse

in inches

Poorly, Well

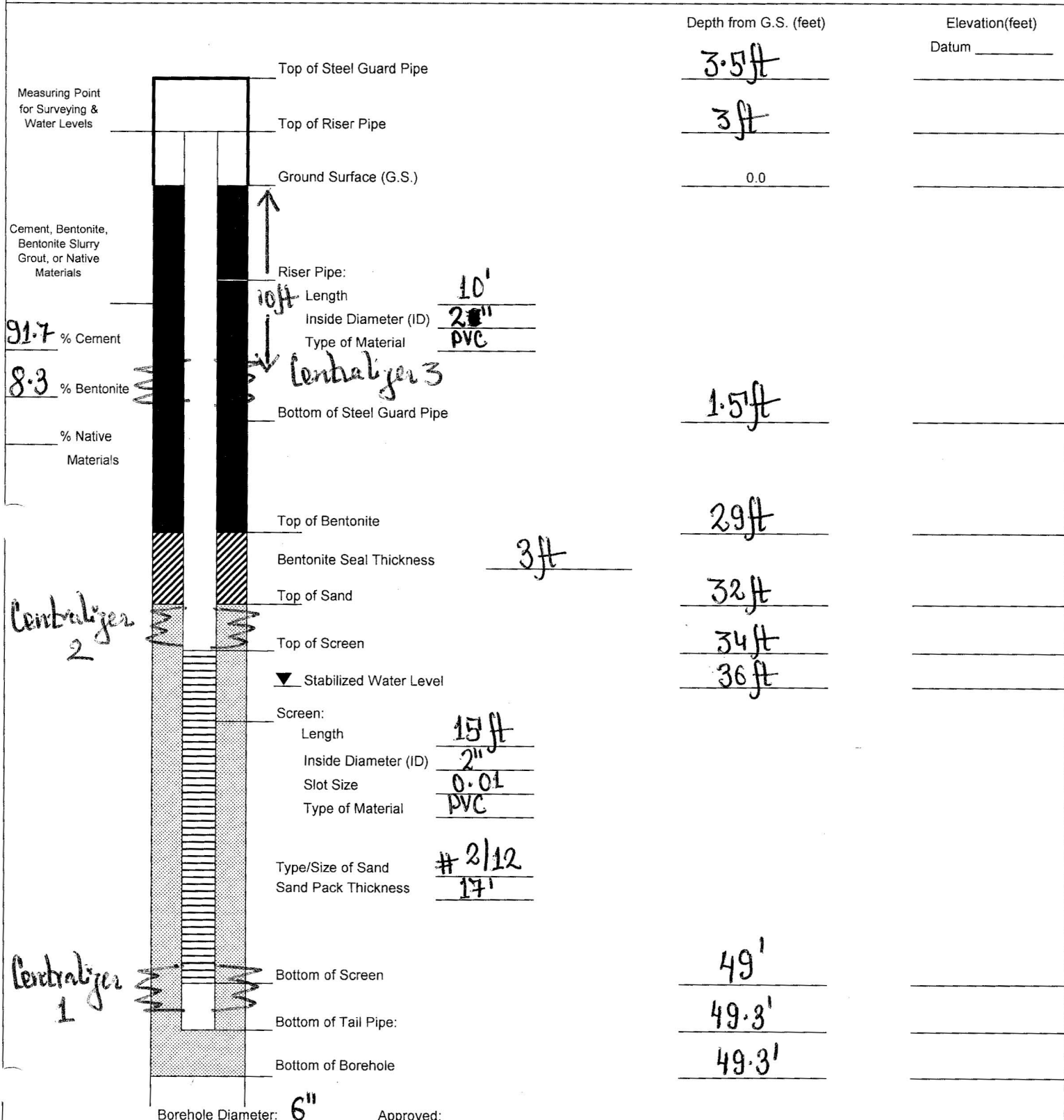
Odor, Staining, Mineralogy, etc.



Client: Trench LLC
 Project Number: 04020-029-4312
 Site Location: Henderson, NV
 Well Location: _____ Coords: _____
 Method: Sonic

WELL ID: M124
 Date Installed: 06/28/08
 Inspector: Anita Regmi
 Contractor: Bowd Longyear

MONITORING WELL CONSTRUCTION DETAIL



Describe Measuring Point: _____

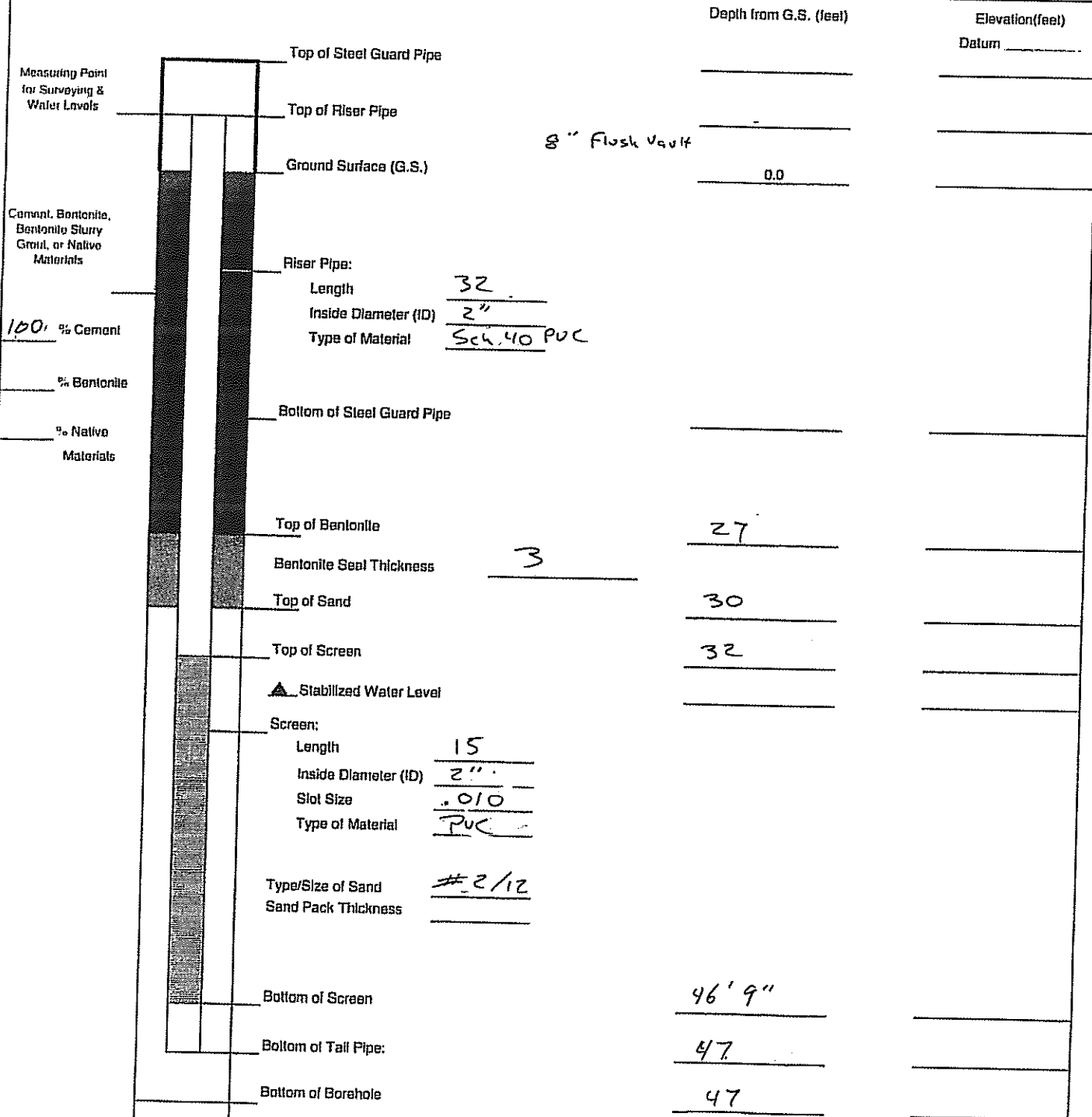
Approved: _____
 Signature _____

Date _____



Client: <u>Tronox LLC.</u>	WELL ID: <u>M-122</u>
Project Number: <u>2009251801</u>	
Site Location: <u>Henderson</u>	Date Installed: <u>10-24-09</u>
Well Location: <u>Tronox Area 3</u> Coords:	Inspector:
Method: <u>Sonic</u>	Contractor: <u>GES / Eagle</u>

MONITORING WELL CONSTRUCTION DETAIL



Borehole Diameter: 6 3/4"

Approved:
Signature

Date: 10-24-09

Describe Measuring Point:



Job Name: Trox Phase B

Boring No. M-122

Job No. 2009251801
 Start: 10-24-09
 End: 10-24-09

Location: See fig. 2

Total Depth: _____
 Groundwater _____
 Depth: _____
 Elevation: _____
 Date: _____
 Time: _____

Comments:

Air knifed to 5'

Equipment: SDC 550-24
 Type of Bit: 6 1/4"

Hammer (lbs/inches): 140 #30"
 Driller: Thompson

Surface Condition: Asphalt
 Logger: Ferringer

Surface Dry Density (pcf): _____
 Surface Moisture Content (%): _____

Depth (feet)	REC	Sample Type	Blows/6 inches	USCS	Description	Pene-trometer	Depth (feet)
1					Asphalt		1
2				FILL SW	FILL: SAND; Reddish brown (5YR 4/3) dry, loose, trace gravel ($\leq 1.5"$ angular subrounded sub-angular, 15% coarse sub-rounded sand, 85% fine-med sand, no plasticity, moderate H.C. rxn.		2
3							3
4							4
5							5
6							6
7							7
8							8
9							9
10							10
11				SW	SAND: Brown (7.5YR 4/6), soft, dry, 5% fine to coarse subangular volcanic gravel, 20% coarse subrounded sand, 75%		11
12							12

4.5'

4'

FB/d4



Job Name:

Tranox Phase B

Boring No.

M-122

Job No.

20022518VI

Start:

10-24-09

Location: See fig. 2

End:

10-24-09

Depth (feet)	REC	Sample Type	Blows/6 inches	USCS	Description	Pene-trometer	Depth (feet)
13	3'				fine - medium sub-rounded		13
14					sand, moderate HCl rxn.,		14
15					no plasticity, debris		15
16	5'			SW	from abandon utilities @ 11.5'		16
17					... gravel to 3%, several		17
18					angular basalt cobbles ~		18
19					3.5 - 4" in diameter,		19
20					trace caliche nodules ~ .75 -		20
21	5'			SW	1.5" diameter w/ calcite cement		21
22					SAND: yellowish red (5R 4/6),		22
23					soft, dry, trace gravel ~ .25 -		23
24					1.0" diameter subrounded - sub-		24
25					angular volcanic, 15% coarse		25
26	5'			SW	subrounded sand, 85% v. fine-		26
27					medium sand, moderate to		27
28					strong HCl rxn., no plasticity		28
					... 24' - 25' small calcified		
					zones, gypsum cement, mod-		
					stragly cemented		

PS 244



Job Name: Traxox Phase B

Boring No. M-122

Job No. 2009251801

Start: 10-24-09
End: 10-24-09

Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/6 inches	USCS	Description	Pene-trometer	Depth (feet)
29	4.8'			SW	... large ~ 5-6" diameter sub-angular vitric vitrophyre cobbles, CaCO ₃ coating		29
30							30
31	4.75'			SW	... gravel to 15%, fine to coarse, up to ~ 2" diameter, sub-rounded to sub-angular, volcanic origin (vitrophyre)		31
32							32
33						... volcanic cobble ~ 6" diameter	
34	5'			SW			34
35					SAND: Reddish Brown (5.5 PR 1/2)		35
36					silt, dry to damp, 5% fine to coarse sub-angular volcanic gravel, 35% coarse sub-rounded sand, 60% v. fine.		36
37					medium sand, strong HCl rxn. no plasticity,		37
38	SM			SM	MUDDY CREEK FORMATION: Abrupt Contact		38
39					Silty SAND: Brown (7.5 PR 1/4)		39
40	SM			SM	40% silt, 50% v. fine sand, 10% fine sand, cemented		40
41					zones @ 39-40', strong HCl rxn, cement is CaCO ₃ , low		41
42					plasticity		42
43							43
44							44

344



Job Name:

Traux phase B

Boring No.

M-122

Job No.

20092518 v1

Start:

10-24-09

Location: See fig. 2

End:

10-24-09

Depth (feet)	REC	Sample Type	Blows/6 inches	USCS	Description	Pene-trometer	Depth (feet)
45.29'				SM			29
46.38'				$\frac{\nabla}{-}$	Silty SAND: Brown (7.5% $\frac{S}{Cl}$) 40% silt, 45% v. fine sand, 15% fine sand, low - moderate plasticity, no HCl rxn., stiff, moist - wet		30
47.31'							31
48.32'							32
49.38'					TD @ 47' BGS		33
50.34'							34
51.38'							35
52.38'							36
53.37'							37
54.38'							38
55.38'							39
56.48'							40
57.41'							41
58.42'							42
59.48'							43
60.44'							44

98 Add