

**APPENDIX D**

**SOIL BORING & WELL COMPLETION LOGS**

**FIELD SAMPLE DATA SHEETS**

**SOIL BORING & WELL COMPLETION LOGS**

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

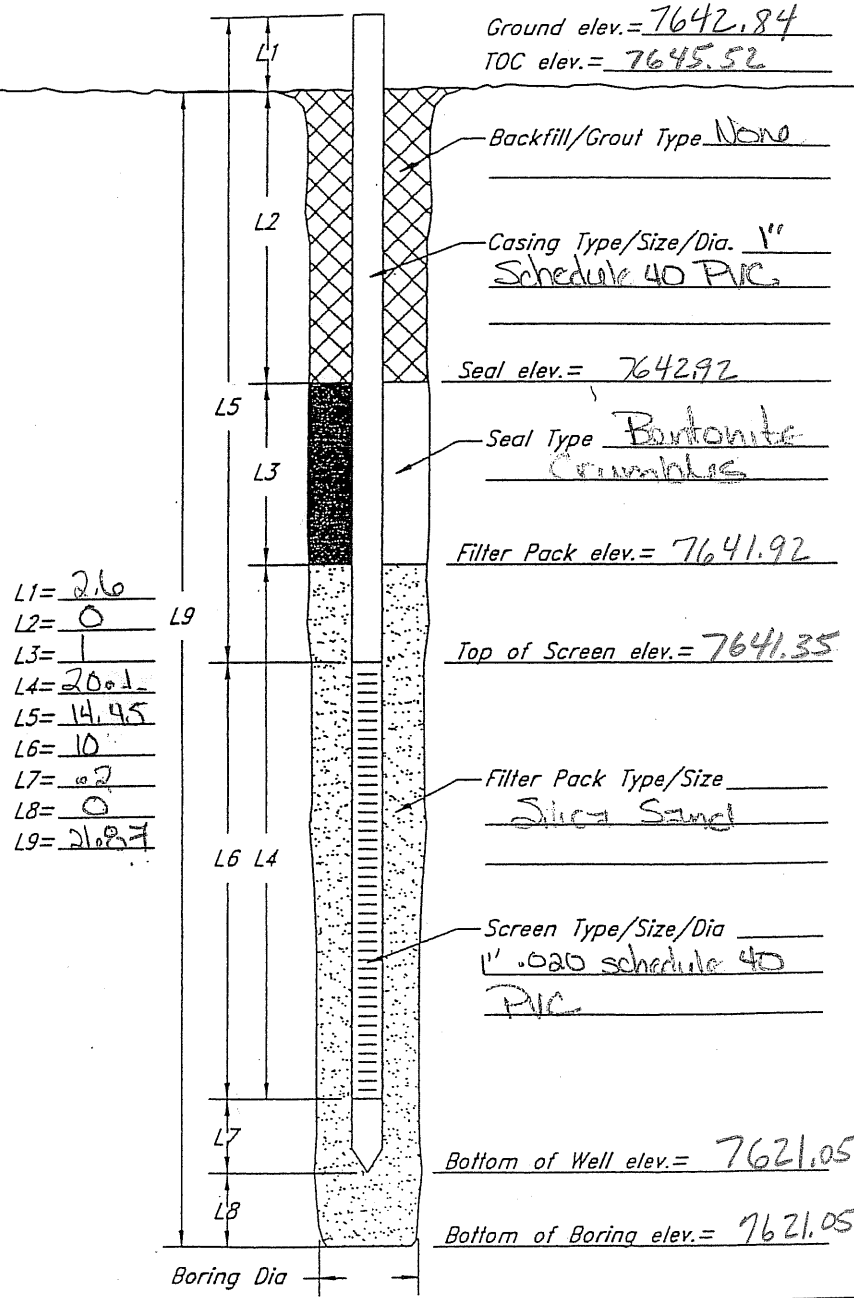
Project: McLaren Tailings Soil Boring/Well Number: PZ-01-S  
 Location: \_\_\_\_\_ Date: 9/16/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroprobe  
 Drilling Method: Geoprobe  
N-281225.552 E-1858355.137  
 Depth to Water: 12.74 TWC Logged By: \_\_\_\_\_

Soil Boring Log

PID  
READING  
(PPM)

Well Type: Piezometer

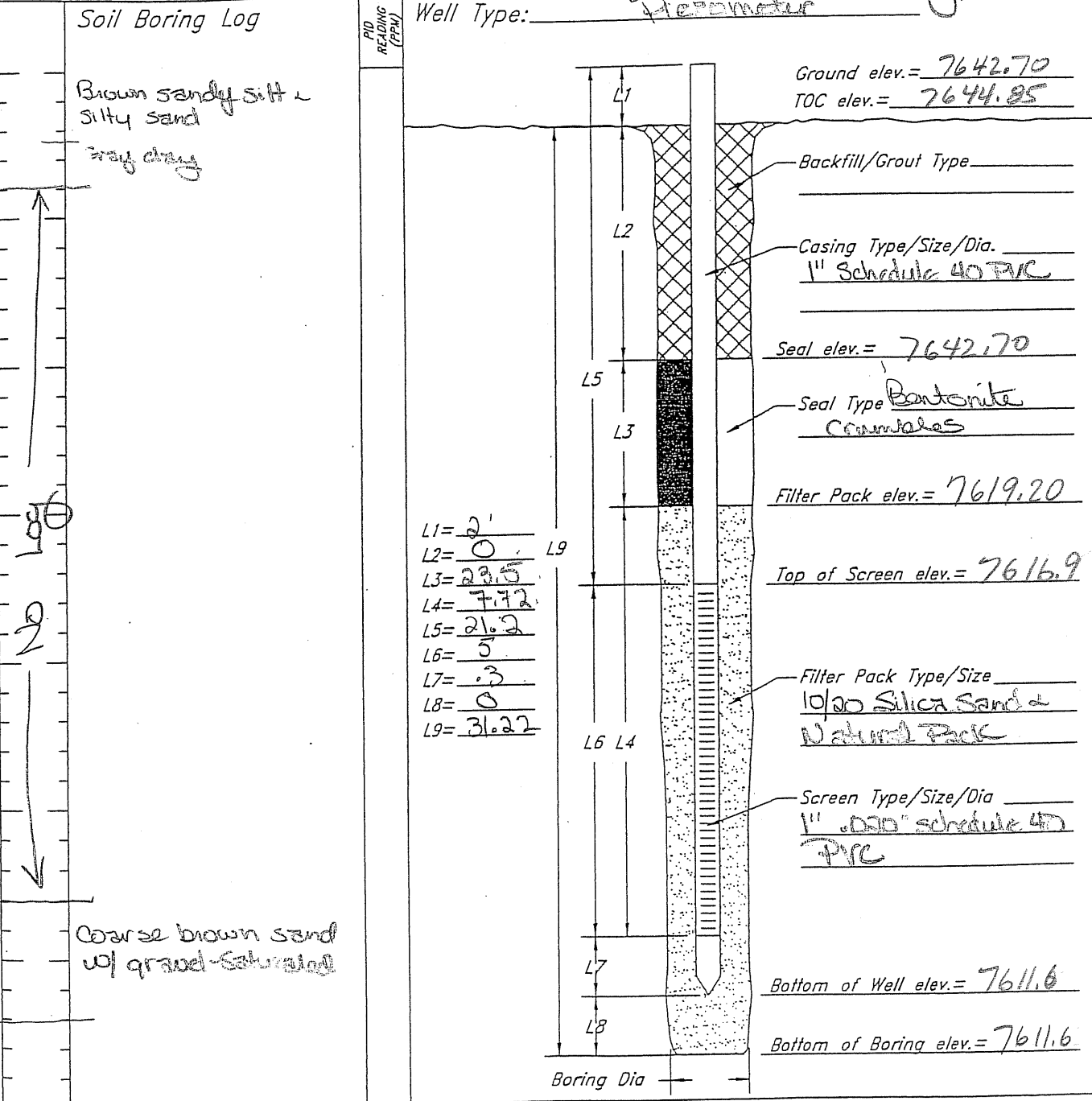
No log - see PZ-01-A



Remarks: \_\_\_\_\_  
 Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Holdings Soil Boring/Well Number: PZ-01-D  
 Location: \_\_\_\_\_ Date: \_\_\_\_\_ Time Start/Finish: \_\_\_\_\_  
 Driller: Eric Latta Drilling Company: Enviroprobe  
 Drilling Method: Geoprobe  
N-1858351.486 E-281222.88  
 Depth to Water: 13.68' IPVC Logged By: J. Flamming



Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Tailings      Soil Boring/Well Number: PZ-025  
 Location: \_\_\_\_\_      Date: 9/16/08      Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta      Drilling Company: Enviroprobe  
 Drilling Method: Geoprobe  
N-281253.782 E-1858332.378  
 Depth to Water: 12.90' IPVC      Logged By: J. Flammaran

Soil Boring Log

Well Type: Piezometer

Ground elev. = 7642.9  
 TOC elev. = 7645.48

Backfill/Grout Type \_\_\_\_\_

Casing Type/Size/Dia. \_\_\_\_\_  
1" schedule 40  
PVC

Seal elev. = 7642.90

Seal Type Bentonite  
Collumite

Filter Pack elev. = 7639.5

Top of Screen elev. = 7626.0

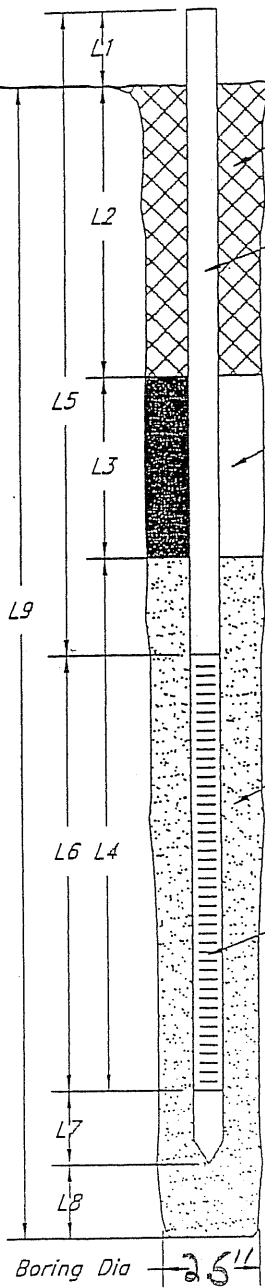
Filter Pack Type/Size \_\_\_\_\_  
10/20 sand & 1/2" filter  
Dunk

Screen Type/Size/Dia \_\_\_\_\_  
1" 20 schedule  
40 PVC

Bottom of Well elev. = 7616.0

Bottom of Boring elev. = 7616.0

- L1 = 1.98
- L2 = 0
- L3 = 4.0
- L4 = 26.51
- L5 = 14.55
- L6 = 10.0
- L7 = .20
- L8 = 0
- L9 = 27.5



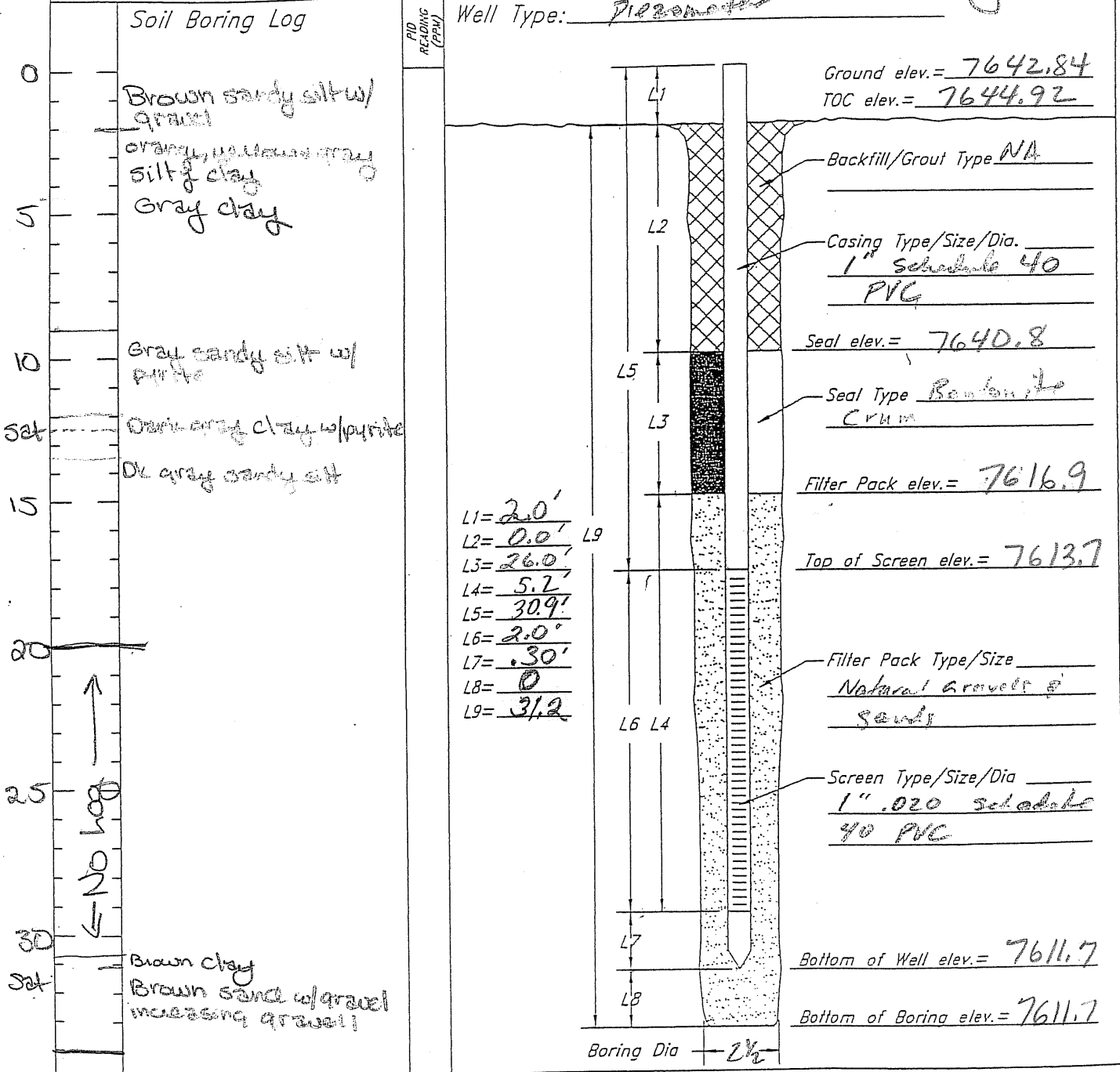
No log- See PZ-02-D

Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Tailings Site Soil Boring/Well Number: PZ-02-D  
 Location: \_\_\_\_\_ Date: 9/16/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroprobe  
 Drilling Method: Geoprobe  
N-781249.745 E-1858328.191  
 Depth to Water: 14.52' JIPIC Logged By: J. Flammang

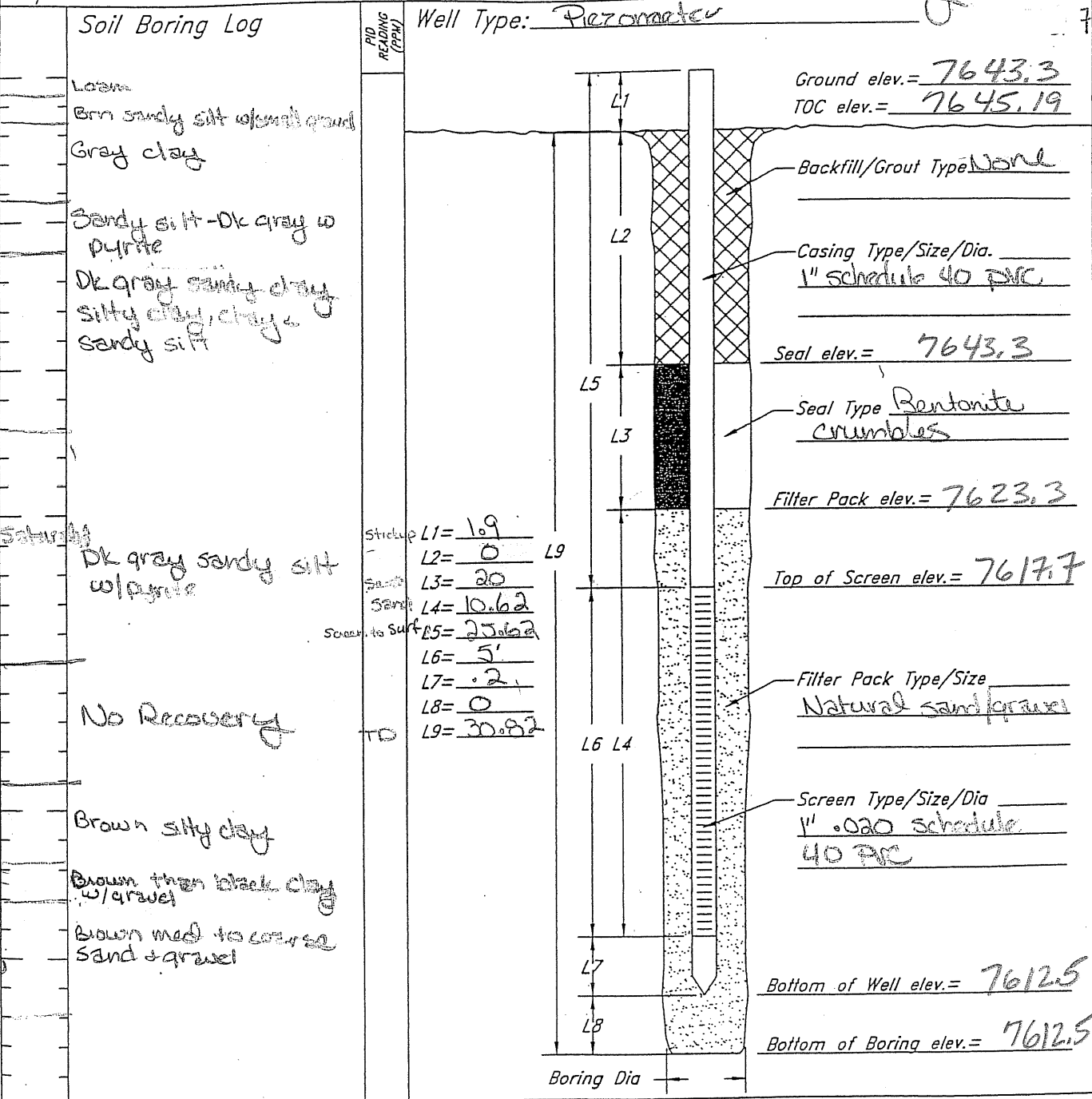


Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Tailings Soil Boring/Well Number: PZ-03-D  
 Location: \_\_\_\_\_ Date: 9/16/03 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroprobe  
 Drilling Method: Geometric  
N-281310.199 E-1858272.063  
 Depth to Water: 15.42' IPC Logged By: J. Flammang



Remarks: \_\_\_\_\_  
 Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

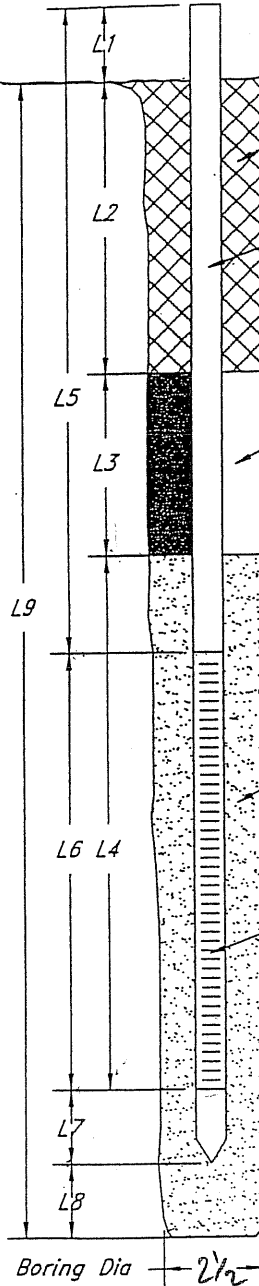
Project: McLaren Tailings Site Soil Boring/Well Number: PZ045  
 Location: \_\_\_\_\_ Date: 9/17/05 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Erwinproba  
 Drilling Method: Geoprobe  
N-281222.251 E-1858381.272  
 Depth to Water: 12.3' IPAC Logged By: \_\_\_\_\_

Soil Boring Log

PID  
READING  
(FPA)

Well Type: Piezometer

Ground elev. = 7642.83  
 TOC elev. = 7644.91



- L1 = 20'
- L2 = 0
- L3 = 5
- L4 = 19.8
- L5 = 12.0
- L6 = 14.8
- L7 = 0.2
- L8 = 0
- L9 = 25.0

No log - see PZ044

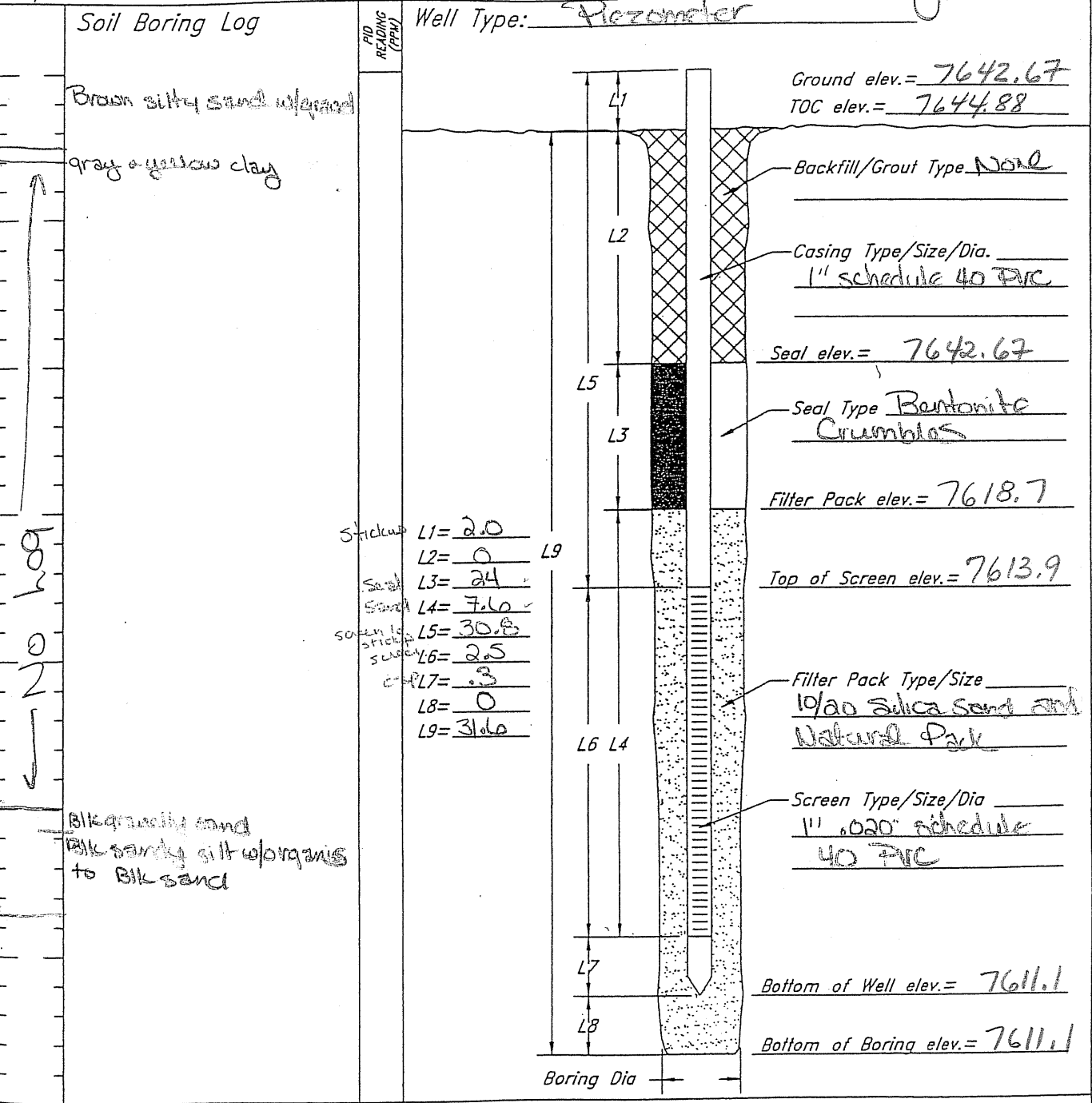
Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_



## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Tailings Soil Boring/Well Number: PZ-04-D  
 Location: \_\_\_\_\_ Date: 9/7/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroprobe  
 Drilling Method: GeoProbe  
N-281217.419 E-1858385.206  
 Depth to Water: 13.54' DPWC Logged By: J. Flannery



Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

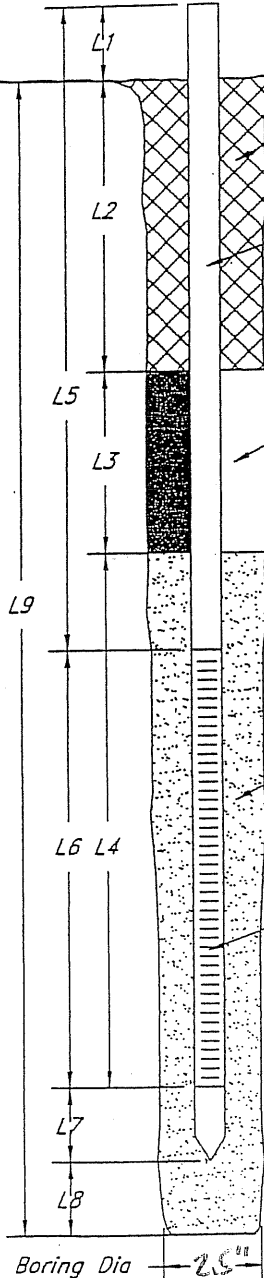
Project: McLaren Taekwondo Soil Boring/Well Number: PZ-055  
 Location: \_\_\_\_\_ Date: 9/17/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroprobe Services  
 Drilling Method: Geoprobe  
N-281255.73 E-1858407.3  
 Depth to Water: 12.40' Logged By: \_\_\_\_\_

Soil Boring Log

PID  
READING  
(PPM)

Well Type: Piezometer

Ground elev. = 7645.01  
 TOC elev. = 7644.99



Backfill/Grout Type: NONE

Casing Type/Size/Dia.: 1" schedule 40 PVC

Seal elev. = 7645.0

Seal Type: Bentonite Crumbles

Filter Pack elev. = 7641.0

Top of Screen elev. = 7637.7

Filter Pack Type/Size: Silica Sand 10/20

Screen Type/Size/Dia: \_\_\_\_\_

Bottom of Well elev. = 7622.5

Bottom of Boring elev. = 7622.5

- L1 = 2.0'
- L2 = 0
- L3 = 4.0
- L4 = 18.3
- L5 = 9.3
- L6 = 15
- L7 = 0.2
- L8 = 0
- L9 = 22.5

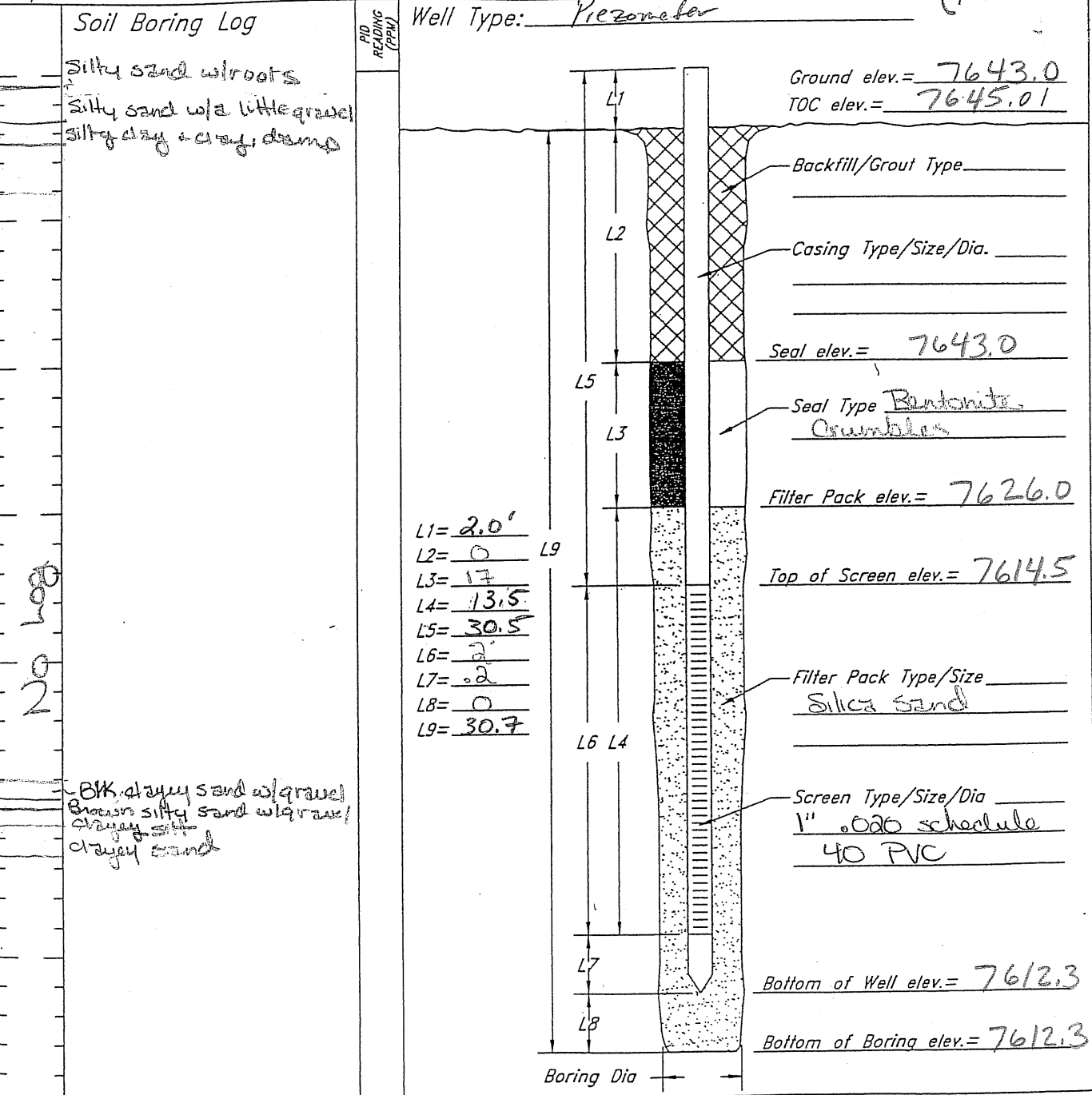
No Log See PZ-055A

Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Soil Boring/Well Number: PZ050  
 Location: \_\_\_\_\_ Date: 9/17/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroprobe  
 Drilling Method: Geoprobe  
N-281252 E-1858412  
 Depth to Water: 13.37 PVC Logged By: J. Cummings

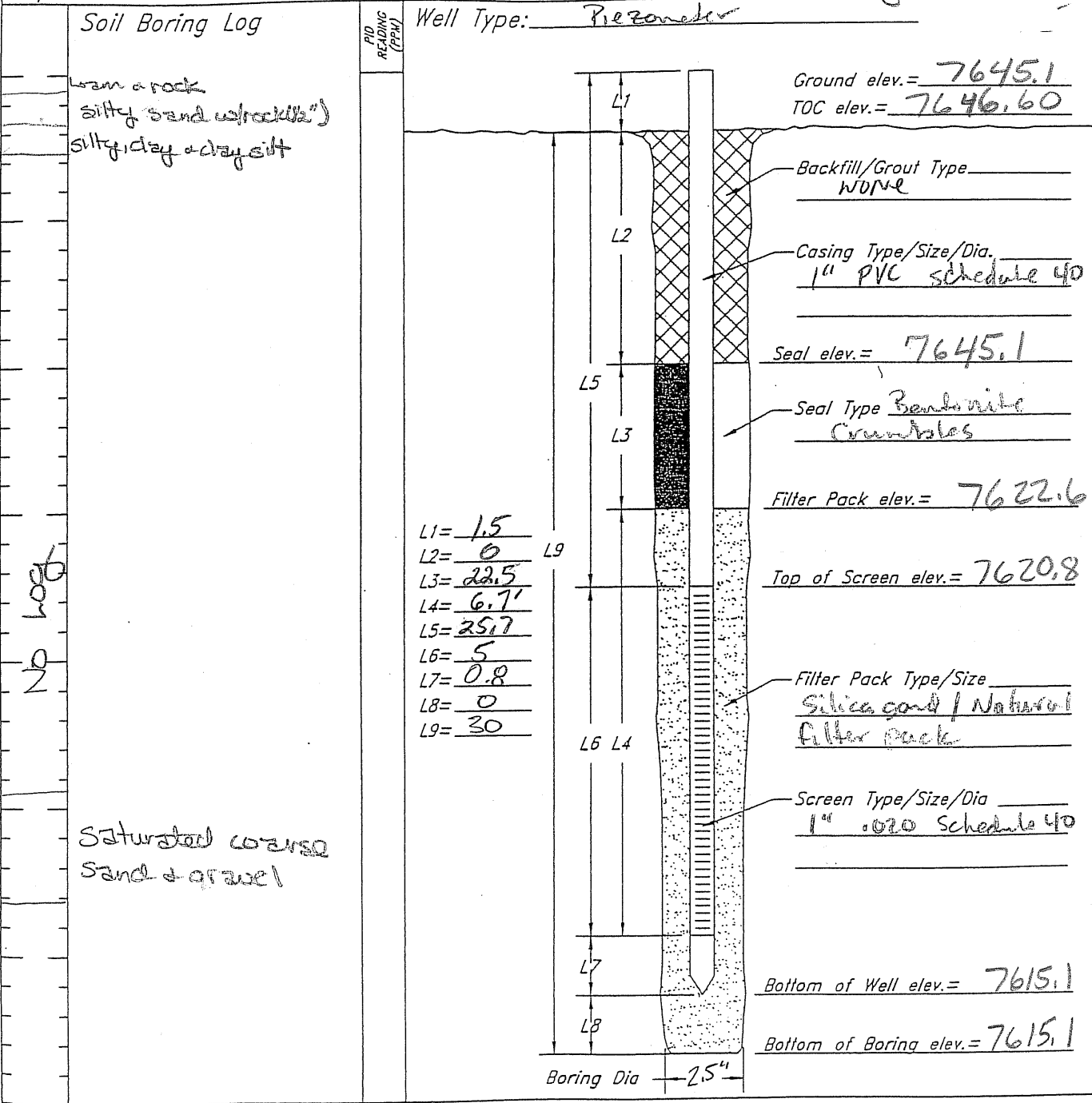


Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Soil Boring/Well Number: P2010  
 Location: \_\_\_\_\_ Date: 7/10/10 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: Enviroproba  
 Drilling Method: Geoprobe  
N-281310.36 E-1858465.75  
 Depth to Water: 4.78' TOC Logged By: J.M. Slay



Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Soil Boring/Well Number: PZ-07-D  
 Location: \_\_\_\_\_ Date: 9/17/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Erin Latta Drilling Company: EnvironPond  
 Drilling Method: Geoprobe  
N-281179.428 E-1838397.734  
 Depth to Water: 12.59 TWC Logged By: J. Flaminio

**Soil Boring Log**

Well Type: Piezometer

PID  
READING  
(FTW)

Ground elev. = 7642.2  
TOC elev. = 7643.96

Brown sandy silt  
to silty sand

Backfill/Grout Type NONE

Casing Type/Size/Dia.  
1" schedule 40 PVC

Seal elev. = 7642.2

Seal Type Bentonite  
crumbles

Filter Pack elev. = 7619.2

Top of Screen elev. = 7615.9

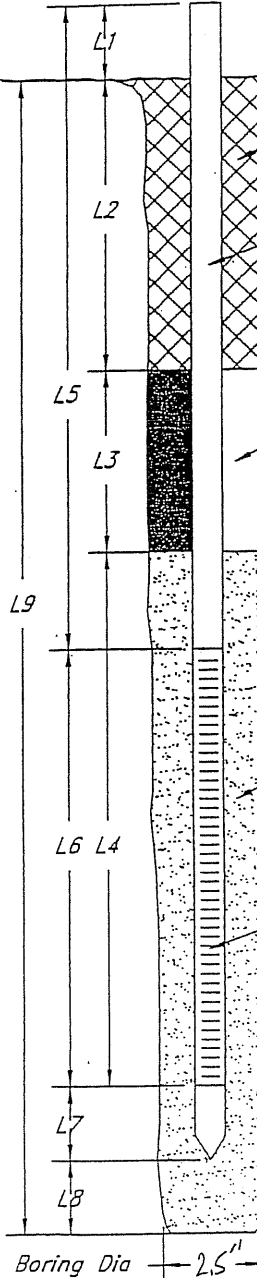
Filter Pack Type/Size  
natural filter material  
and silica sand

Screen Type/Size/Dia  
1" .020 schedule  
40 PVC

Bottom of Well elev. = 7610.7

Bottom of Boring elev. = 7610.7

- L1 = 1.8
- L2 = 0
- L3 = 2.3
- L4 = 8.3
- L5 = 28.1
- L6 = 5'
- L7 = 0.2
- L8 = 0
- L9 = 31.5



20  
log

Brown med to coarse sand  
dk brown silty clay w/wood

Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

## SOIL BORING LOG & WELL CONSTRUCTION DETAILS

Project: McLaren Soil Boring/Well Number: PW-01  
 Location: \_\_\_\_\_ Date: 9/16/08 Time Start/Finish: \_\_\_\_\_  
 Driller: Dave Crowley Drilling Company: Crowley Environmental  
 Drilling Method: Auger Drilling equipped with hollow stem augers  
N-281208.11 E-1858367.01  
 Depth to Water: \_\_\_\_\_ Logged By: \_\_\_\_\_

Soil Boring Log

P.D. READING (PPM)

Well Type: pumping well

Ground elev. = 7643.1  
 TOC elev. = 7645.07

Backfill/Grout Type Concrete

Casing Type/Size/Dia. 4" schedule 40 PVC

Seal elev. = 7642.1

Seal Type Bentonite Chips

Filter Pack elev. = 7625.3

Top of Screen elev. = 7624.1

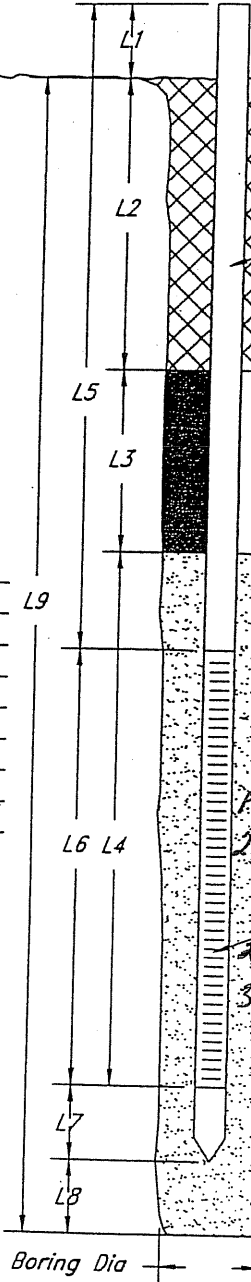
Filter Pack Type/Size  
1/8-29 10/20 silica sand from 29-40 5/8" washed crush rock from

Screen Type/Size/Dia  
21-30 5/8' of .010 PVC screen 4"  
305-40 95' of 0.025 PVC screen 4"

Bottom of Well elev. = 7604.6

Bottom of Boring elev. = 7604.6

- L1 = 2.0'
- L2 = 1.0'
- L3 = 16.8'
- L4 = 22.2'
- L5 = 23.0'
- L6 = 19.0'
- L7 = 0.5'
- L8 = 0'
- L9 = 40.5'



Remarks: \_\_\_\_\_

Signature: \_\_\_\_\_

**FIELD SAMPLE DATA SHEETS**

PW-13.86 IPUC 24  
40.6 - 6424' SU

**FIELD SAMPLE DATA SHEET**

Project Name: McLaren Tailings Abandoned Mine Site Page     of      
 WELL/STATION PZ-015 DATE 9/19/08 TIME 1025  
 SAMPLERS F+SM WEATHER CONDITIONS \_\_\_\_\_  
 PHOTO: Yes  No \_\_\_\_\_ ROLL# \_\_\_\_\_ NUMBER \_\_\_\_\_

**PURGE DATA:**

PURGE METHOD Peristaltic Pump  
 START PURGING 1029  
 PURGE RATE \_\_\_\_\_ GPM  
 RATE CHANGE \_\_\_\_\_  
 1) Time \_\_\_\_\_ Rate \_\_\_\_\_  
 2) Time \_\_\_\_\_ Rate \_\_\_\_\_  
 SAMPLE TIME 12:45

WELL DEPTH 24.47 Feet  
 DEPTH TO WATER 12.77 Feet IPUC  
 COLUMN DEPTH 11.70 Feet  
 CASING DIAMETER 1" Inch  
 PUMP SET AT 24' Feet  
 3 WELL VOLUMES 1.42 Gallons  
 TOTAL PURGE VOLUME 3.0 Gallons  
 (measured)

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-PZ-015-091908	250 ml 1 Liter	X	HNO <sub>3</sub>	Dissolved Metals <sup>As, Sb, As, Ba, Cd, Cr, Cu</sup> <sub>Fe, Pb, Mn, Hg, Ni, Ag, Zn</sub>
McLaren-PZ-015-091908	1 Liter			TDS, TSS
McLaren-PZ-015-091908	500 ml 1 Liter			Hardness, Alkalinity, SC, SO <sub>4</sub> <sup>2-</sup> , pH
	1 Liter			
	1 Liter			

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l
12:10	2.2 gal	10.1	-	2810	-120.8	.68
12:20	2.3 gal	9.7	-	2803	-125	.45
12:30	2.5 gal	9.4	-	2813	-126.9	.40
12:45	3.0					

**FINAL FIELD PARAMATERS PRIOR TO SAMPLING**

12:30	2.5	9.4	NW	2813	-126.9	.40
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FIELD REMARKS: pH meter was NOT working. PURGED TOTAL  
of water stayed dirty throughout  
 will request pH from lab  
 Pioneer Technical Services  
 Field Fe = 9 ppm



**FIELD SAMPLE DATA SHEET**

Project Name: McLaren Tailings Abandon Mine Site Page     of      
 WELL/STATION PZ-07D DATE 9/19/08 TIME 1040  
 SAMPLERS     WEATHER CONDITIONS Sunny, Cool, Calm  
 PHOTO: Yes  No  ROLL#     NUMBER    

**PURGE DATA:**

PURGE METHOD Peristaltic  
 START PURGING 1040  
 PURGE RATE GPM ~~1.5~~ .52/min  
 RATE CHANGE      
 1) Time     Rate      
 2) Time     Rate      
 SAMPLE TIME 11:10am

WELL DEPTH 32.42 Feet  
 DEPTH TO WATER 10.45 Feet IPK  
 COLUMN DEPTH 20 Feet  
 CASING DIAMETER 7" Inch  
 PUMP SET AT 32' Feet  
 3 WELL VOLUMES 2.5 Gallons  
 TOTAL PURGE VOLUME 2.75 Gallons  
 (measured)

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-PZ-07D-091908	<u>250 ml</u> <u>1/4 Liter</u>	<input checked="" type="checkbox"/>	HNO <sub>3</sub>	Dissolved Metals <u>Al, So, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Mg, Ni, Ag, Zn</u>
McLaren-PZ-07D-091908	<u>1 Liter</u>	<input type="checkbox"/>		<u>TDS, TSS</u>
McLaren-PZ-07D-091908	<u>500 ml</u> <u>1/2 Liter</u>	<input type="checkbox"/>		<u>Alkalinity, Hardness, SC</u> <u>SO<sub>4</sub>, pH</u>
	<u>1 Liter</u>	<input type="checkbox"/>		
	<u>1 Liter</u>	<input type="checkbox"/>		

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	<u>Turbidity</u>
<u>10:55</u>	<u>1.4 gal</u>	<u>6.8</u>	<u>—</u>	<u>395</u>	<u>-155</u>	<u>.23</u>	<u>3.65</u>
<u>10:58</u>	<u>1.8 gal</u>	<u>6.8</u>	<u>—</u>	<u>387</u>	<u>169</u>	<u>.22</u>	<u>2.76</u>
<u>11:01</u>	<u>2.2 gal</u>	<u>6.8</u>	<u>—</u>	<u>384</u>	<u>-181</u>	<u>.23</u>	<u>2.5</u>
<u>11:04</u>	<u>2.6 gal</u>	<u>6.9</u>	<u>—</u>	<u>387</u>	<u>-189</u>	<u>.22</u>	<u>2.78</u>
<u>11:07</u>	<u>2.75 gal</u>	<u>6.9</u>	<u>—</u>	<u>389</u>	<u>-193.1</u>	<u>0.22</u>	<u>1.86</u>
	<u>(measured)</u>						
<b>FINAL FIELD PARAMATERS PRIOR TO SAMPLING</b>							
<u>11:07</u>	<u>2.75</u>	<u>6.9</u>	<u>—</u>	<u>389</u>	<u>-193.1</u>	<u>0.22</u>	<u>1.86</u>

FIELD REMARKS: pH meter NOT WORKING will request pH from lab

Pioneer Technical Services  
 Field TOT Fe = 0.3 ppm  
 Field alk = NOT Accurate - Changed out acid @ approx 200.  
 † did not work.

# FIELD SAMPLE DATA SHEET

Project Name: McLAREN Tailings  
 WELL/STATION MW-4 DATE 9/18/08 TIME 9:40 AM  
 SAMPLERS F+SM WEATHER CONDITIONS Cool, P. Cloudy, Breezy, 30s  
 PHOTO: Yes X No      ROLL#      NUMBER 105 (Photos w/ Pine Tree)

## PURGE DATA:

PURGE METHOD 5 stage 12 volt w/ truck battery  
 START PURGING 9:50  
 PURGE RATE 0.5 L/MIN GPM  
 RATE CHANGE  
 1) Time      Rate       
 2) Time      Rate       
 SAMPLE TIME 1340 (Begin Sampling)

WELL DEPTH 20.0 Feet  
 DEPTH TO WATER 14.21 Feet IPVC  
 COLUMN DEPTH 5.79 Feet  
 CASING DIAMETER 2 Inch  
 PUMP SET AT 20 Feet  
 3 WELL VOLUMES 2.895 Gallons  
 TOTAL PURGE VOLUME 3.25 Gallons  
(Measured)

## SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-mw-04-10-091808	<u>250 ml 1 Liter SM</u>	<input checked="" type="checkbox"/>	HNO <sub>3</sub>	Dissolved Metals <sup>Al, Sb, As, Ba, Cd, Cr, Cu</sup> <sub>Fe, Pb, Mn, Hg, Ni, Ag, Zn</sub>
McLaren-MW-04-10-091808	<u>1 Liter SM</u>			TDS, TSS
McLaren-MW-04-10-091808	<u>500 ml 1 Liter SM</u>			Hardness, Alkalinity, SC, <sub>504-2</sub>
	1 Liter			
	1 Liter			

## FIELD PARAMETERS:

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	TURB
10:42	3.25	10.2	3.24	<del>4.08</del> <sup>MSM</sup> 307	<del>4.08</del> <sup>MSM</sup> 307	2.11	470
	(Measured)			4.08 m <sup>s</sup> /cm <sup>MSM</sup>	307 m <sup>s</sup> /cm <sup>MSM</sup>		
					MSM		
19:10	—	6.3	3.03	4.29 m <sup>s</sup> /cm	~ 69.7	2.56	72.3
<b>FINAL FIELD PARAMETERS PRIOR TO SAMPLING</b>							
10:42	3.25	10.2	3.24	307	4.08	2.11	470

FIELD REMARKS: Well casing blocked @ approx 2'. Started purging w/ peristaltic pump  
Purged dry @ 3 gallons. Were purging 0.5 L/min. Turned tower @ 10:38 am. Purged dry @ 0.75 L.  
Static level @ 19.13' at 11:24 am. Because of slow recharge, 3 well  
volume criteria met but not stable field parameters.  
 Field Alkalinity = 67.5  
 Field Iron (TOTAL) = 10.0 ppm

10:42  
 19:10  
 (Measured)

**FIELD SAMPLE DATA SHEET**

Project Name: MCLAREN - Tailings  
 WELL/STATION MW-2 DATE 9/18/08 TIME 10:05 AM  
 SAMPLERS J + SM WEATHER CONDITIONS Cool, Breezy, P. Cloudy 40S  
 PHOTO: Yes Y No      ROLL#      NUMBER 66

**PURGE DATA:**

PURGE METHOD 5 stage 12 volt w/ truck battery  
 START PURGING 10:16 AM  
 PURGE RATE 1.25 GPM  
 RATE CHANGE  
 1) Time      Rate       
 2) Time      Rate       
 SAMPLE TIME 1805

WELL DEPTH 40.9 Feet  
 DEPTH TO WATER 14.39 Feet IPVC  
 COLUMN DEPTH 5.612651 Feet  
 CASING DIAMETER 2 Inch  
 PUMP SET AT 40 Feet  
 3 WELL VOLUMES 13.25 Gallons  
 TOTAL PURGE VOLUME 8 1/2 Gallons  
measured

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>MCLaren-MW-02-10-091808</u>	<u>250 ml / 1 Liter</u>	<u>✓</u>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals - Al, Sb, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Zn</u>
<u>MCLaren-MW-02-10-091808</u>	<u>1 Liter</u>			<u>TDS, TSS</u>
<u>MCLaren-MW-02-10-091808</u>	<u>500ml / 1 Liter</u>			<u>Hardness, Alkalinity, SC, SO<sub>4</sub>-2</u>
	<u>1 Liter</u>			
	<u>1 Liter</u>			

**FIELD PARAMATERS:**

Field Iron - 9 ppm  
 Field Alk - 288 mg/L as CaCO<sub>3</sub>

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l

**FINAL FIELD PARAMATERS PRIOR TO SAMPLING**

<u>1820</u>	<u>8 1/2</u>	<u>7.9</u>	<u>6.72</u>	<u>2086</u>	<u>-321.7</u>	<u>2.04</u>
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**FIELD REMARKS:**

Well casing was blocked @ approx. 18.5'. Blockage dropped or broke when started pumping. Very dirty to start but cleaned up. Purged dry @ 10:21 and 5 gallons. At 11:08 AM water level was 29.77'. Started purging slowly - 6 gallons purged - measure  
Pioneer Technical Services  
1415-DW-21.53; Begin purging at less than 1 qt/minute  
1445-Purged dry @ 8 1/2 gallons - Purged dry 3x - will sample when recovered enough

**FIELD SAMPLE DATA SHEET**

Project Name: McLAREN Tailings  
 WELL/STATION PZ03 DATE 9/18/08 TIME 11:58 AM  
 SAMPLERS F + SM WEATHER CONDITIONS 40s, P. Cloudy Breezy  
 PHOTO: Yes X No      ROLL#      NUMBER 67

**PURGE DATA:**

PURGE METHOD Peristaltic Pump  
 START PURGING NOON  
 PURGE RATE 0.5 L/M GPM  
 RATE CHANGE  
 1) Time      Rate       
 2) Time      Rate       
 SAMPLE TIME 12:37

WELL DEPTH 32.72 Feet  
 DEPTH TO WATER 15.40 Feet IPVC  
 COLUMN DEPTH 17.32 Feet  
 CASING DIAMETER 1 Inch  
 PUMP SET AT 26.0 Feet  
 3 WELL VOLUMES 2.11 Gallons  
 TOTAL PURGE VOLUME 2.5 Gallons  
Measured

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>McLAREN - PZ-03 - 091808</u>	<u>250ml / 1 Liter</u>	<input checked="" type="checkbox"/>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals - Al, Sb, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Ni, Pt, Zn</u>
<u>McLAREN - PZ-03 - 091808</u>	<u>1 Liter</u>			<u>TDS, TSS</u>
<u>McLAREN - PZ-03 - 091808</u>	<u>500ml / 1 Liter</u>			<u>Hardness, ALKALINITY, SC, SO4-2</u>
	<u>1 Liter</u>			
	<u>1 Liter</u>			

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	TURB NTU
<u>12:10 pm</u>		<u>7.1°</u>	<u>6.14</u>	<u>1990</u>	<u>-186.5</u>	<u>1.05</u>	<u>44.6</u>
<u>12:13 pm</u>		<u>7.2</u>	<u>6.14</u>	<u>1981</u>	<u>-198.6</u>	<u>0.73</u>	<u>38.1</u>
<u>12:16 pm</u>		<u>7.3</u>	<u>6.12</u>	<u>1979</u>	<u>-214.4</u>	<u>0.58</u>	<u>27.9</u>
<u>12:19 pm</u>		<u>7.4</u>	<u>6.12</u>	<u>1981 1980</u>	<u>-226.3</u>	<u>0.52</u>	<u>22</u>
<u>12:22 pm</u>		<u>7.6</u>	<u>6.11</u>	<u>1974</u>	<u>-235.8</u>	<u>0.50</u>	<u>11</u>
<u>12:25 pm</u>		<u>7.6</u>	<u>6.11</u>	<u>1957</u>	<u>-248.8</u>	<u>0.47</u>	
<u>12:29 pm</u>		<u>7.5</u>	<u>6.11</u>	<u>1957</u>	<u>-257.6</u>	<u>0.47</u>	
<u>12:31 pm</u>		<u>7.5</u>	<u>6.11</u>	<u>1937</u>	<u>-263.5</u>	<u>0.46</u>	
<u>12:34 pm</u>		<u>7.6</u>	<u>6.11</u>	<u>1950</u>	<u>-270.6</u>	<u>0.46</u>	
<b>FINAL FIELD PARAMATERS PRIOR TO SAMPLING</b>							
<u>12:37 pm</u>	<u>2.5</u>	<u>7.6</u>	<u>6.10</u>	<u>1938</u>	<u>-277.3</u>	<u>0.46</u>	

FIELD REMARKS: Measured Field TOTAL iron 9.0 ppm , Field ALK = 109

# FIELD SAMPLE DATA SHEET

Project Name: McLAREN Tailings  
 WELL/STATION PZ02A DATE 9/18/08 TIME 1312  
 SAMPLERS F + SM 1 WEATHER CONDITIONS 50's, P. Cloudy Breezy  
 PHOTO: Yes  No  ROLL# \_\_\_\_\_ NUMBER 68 w/ PZ02S

## PURGE DATA:

PURGE METHOD Peristaltic Pump  
 START PURGING 1314  
 PURGE RATE \_\_\_\_\_ GPM  
 RATE CHANGE 1) Time \_\_\_\_\_ Rate \_\_\_\_\_  
 2) Time \_\_\_\_\_ Rate \_\_\_\_\_  
 SAMPLE TIME 1500

WELL DEPTH 33.19 Feet  
 DEPTH TO WATER 27 msm Feet  
 COLUMN DEPTH 14.60 Feet  
 CASING DIAMETER 18.59 Feet  
 PUMP SET AT 1 Inch  
 3 WELL VOLUMES 32.0 Feet  
 TOTAL PURGE VOLUME 2.27 Gallons  
3.25 Gallons  
measured

## SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>McLaren - PZ-02A - 091808</u>	<u>250ml 1 Liter msm</u>	<input checked="" type="checkbox"/>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals - Al, Sn, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Zn</u>
<u>McLaren - PZ-02A - 091808</u>	<u>1 Liter</u>			<u>TDS, TSS</u>
<u>McLaren - PZ-02A - 091808</u>	<u>500ml 1 Liter msm</u>			<u>Hardness, Alkalinity, SC, SO<sub>4</sub>-2</u>
	<u>1 Liter</u>			
	<u>1 Liter</u>			

## FIELD PARAMATERS:

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	Turb
<u>1440</u>		<u>9.2</u>	<u>7.09</u>	<u>544</u>	<u>-269.4</u>	<u>0.81</u>	<u>101</u>
<u>1443</u>		<u>8.5</u>	<u>7.00</u>	<u>546</u>	<u>-277.7</u>	<u>0.78</u>	<u>49.5</u>
<u>1446</u>		<u>8.3</u>	<u>6.98</u>	<u>547</u>	<u>-284.6</u>	<u>0.72</u>	<u>26.2</u>
<u>1449</u>		<u>8.2</u>	<u>6.97</u>	<u>548</u>	<u>-296.0</u>	<u>0.67</u>	<u>17.6</u>
<u>1452</u>		<u>8.0</u>	<u>6.98</u>	<u>532</u>	<u>-298.6</u>	<u>0.66</u>	<u>12.8</u>
<u>1455</u>		<u>8.1</u>	<u>6.97</u>	<u>526</u>	<u>-302.9</u>	<u>0.65</u>	<u>6.33</u>
<u>1458</u>	<u>3.25</u> <u>(Measured)</u>	<u>8.1</u>	<u>6.97</u>	<u>529</u>	<u>-306.3</u>	<u>0.65</u>	<u>4.15</u>

### FINAL FIELD PARAMATERS PRIOR TO SAMPLING

<u>1458</u>	<u>3.25</u>	<u>8.1</u>	<u>6.97</u>	<u>529</u>	<u>-306.3</u>	<u>0.65</u>
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FIELD REMARKS: Field OK 209  
Field Iron (tot) = 4 ppm  
 -Pioneer Technical Services

**FIELD SAMPLE DATA SHEET**

Page    of   

Project Name: McLaren Tailings  
 WELL/STATION PZ025 DATE 9/18/08 TIME 1445  
 SAMPLERS F & SM WEATHER CONDITIONS Rainy, Cool - 50s calvin  
 PHOTO: Yes x No    ROLL#    NUMBER W0020

**PURGE DATA:**

PURGE METHOD Peristaltic Pump  
 START PURGING 1453  
 PURGE RATE    GPM  
 RATE CHANGE  
 1) Time    Rate     
 2) Time    Rate     
 SAMPLE TIME 1540

WELL DEPTH 27.46 MSM Feet  
27.50 Feet  
 DEPTH TO WATER 12.96 Feet  
 COLUMN DEPTH 14.54 Feet  
 CASING DIAMETER 1 Inch  
 PUMP SET AT 2.7 Feet  
 3 WELL VOLUMES 1.77 Gallons  
 TOTAL PURGE VOLUME 3.5 Gallons  
measured

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-PZ-025-091808	<sup>250 ml</sup> 1 Liter ✓	✓	HNO <sub>3</sub>	Dissolved Metals - <sup>Al, Sb, As, Ba, Cd, Cr, Cu</sup> Fe, Pb, Mn, Hg, Ni, Ag, Zn
McLaren-PZ-025-091808	1 Liter			TDS, TSS
McLaren-PZ-025-091808	<sup>500 ml</sup> 1 Liter ✓			Hardness, Alkalinity, SO <sub>4</sub> , <sup>20</sup> SC
	1 Liter			
	1 Liter			

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l
<sup>MSM</sup> 1523		7.7	7.26	3.76 ms/cm	-261.2	1.03
	slug of dirt					
1530		7.1	7.39	3.77 ms/cm	-255.8	1.50
1533		6.9	7.36	3.78 ms/cm	-290.2	0.99
1539	<del>10.750</del>	6.5	7.36	3.80 ms/cm	-307.9	0.73
	1425 measured					

**FINAL FIELD PARAMETERS PRIOR TO SAMPLING**

1539	3.5	6.5	7.36	3.80 ms/cm	-307.9	0.73
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FIELD REMARKS: Field alk = 375

10x Field Iron = 8ppm

Dup

FIELD SAMPLE DATA SHEET

Project Name: ARWW&S Short-Term Groundwater Monitoring  
 WELL/STATION PZ-05D DATE 9/18/08 TIME 1645  
 SAMPLERS IF & SM WEATHER CONDITIONS Partly Cloudy - 50's, Calm  
 PHOTO: Yes Y No      ROLL#      NUMBER 69#0 w/ PZ05S

PURGE DATA:

PURGE METHOD Peristaltic Pump WELL DEPTH 32.00 Feet  
 START PURGING 1622 DEPTH TO WATER 13.41 Feet JAVE  
 PURGE RATE      GPM COLUMN DEPTH 18.59 Feet  
 RATE CHANGE 1) Time      Rate      CASING DIAMETER 1 Inch  
 2) Time      Rate      PUMP SET AT 32 Feet  
 SAMPLE TIME 1648 + 1705 3 WELL VOLUMES 2.27 Gallons  
 TOTAL PURGE VOLUME 2.5 Gallons  
(measured)

SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-PZ-05D-091808	250 ml 1 Liter	<input checked="" type="checkbox"/>	HNO <sub>3</sub>	Dissolved Metals: <sup>Al, Si, As, Ba, Cd, Cr, Cu</sup> <del>Fe, Pb, Mn, Hg, Ni, Ag, Zn</del>
McLaren-PZ-05D-091808	1 Liter			TDS, TSS
McLaren-PZ-05D-091808	500 ml 1 Liter			Hardness, Alkalinity, SC, SO <sub>4</sub> <sup>2-</sup>
McLaren-PZ-05D-T-091808	250 ml 1 Liter	<input checked="" type="checkbox"/>	MNO <sub>3</sub>	Dr-Ar, Sb, As, Ba, Cd, Cr, Cu, Fe Pb, Mn, Hg, Ni, Ag, Zn
McLaren-PZ-05D-T-091808	1 Liter			TDS, TSS
McLaren-PZ-05D-T-091808	500ml			Hardness, Alkalinity, SC, SO <sub>4</sub> <sup>2-</sup>

FIELD PARAMETERS:

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	TUB NTU's
1635		5.6	7.94	688	-287.7	0.57	18.2
1638		5.7	7.74	689	-305.2	0.49	8.11
1641		5.9	7.63	688	-309.0	0.46	4.01
1644		6.0	7.53	685	-315.3	0.44	2.77
1647	2.5 gal	6.1	7.46	684	-320.7	0.44	2.29
1650	Measured						

FINAL FIELD PARAMETERS PRIOR TO SAMPLING

1647	2.5	6.1	7.46	684	-320.7	0.44	2.29
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FIELD REMARKS: measured field alk = 19.7

TOTAL iron = 710 ppm

**FIELD SAMPLE DATA SHEET**

Project Name: ARWW&S Short-Term Groundwater Monitoring  
 WELL/STATION PZ 055 DATE 9/18/08 TIME 1620  
 SAMPLERS JF & SM WEATHER CONDITIONS Rainy; cool - 50's calm  
 PHOTO: Yes X No      ROLL#      NUMBER 69# w/PZ-05-D

**PURGE DATA:**

PURGE METHOD	<u>Peristaltic Pump</u>	WELL DEPTH	<u>23.9</u>	Feet
START PURGING	<u>1629</u>	DEPTH TO WATER	<u>12.47</u>	Feet
PURGE RATE	<u>    </u> GPM	COLUMN DEPTH	<u>11.43</u>	Feet
RATE CHANGE	1) Time <u>    </u> Rate <u>    </u>	CASING DIAMETER	<u>1</u>	Inch
	2) Time <u>    </u> Rate <u>    </u>	PUMP SET AT	<u>23.0</u>	Feet
SAMPLE TIME	<u>1715</u>	3 WELL VOLUMES	<u>1.39</u>	Gallons
		TOTAL PURGE VOLUME	<u>4.25</u>	Gallons
			<u>Measured</u>	

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>McLaren-PZ-055-091808</u>	<u>250 ml / 1 Liter</u>	<input checked="" type="checkbox"/>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals- Al, Si, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Ag, Zn</u>
<u>McLaren-PZ-055-091808</u>	<u>1 Liter</u>	<input type="checkbox"/>		<u>TDS, TSS</u>
<u>McLaren-PZ-055-091808</u>	<u>500 ml / 1 Liter</u>	<input type="checkbox"/>		<u>Alkalinity, S, Hardness, SO<sub>4</sub><sup>2-</sup></u>
	<u>1 Liter</u>	<input type="checkbox"/>		
	<u>1 Liter</u>	<input type="checkbox"/>		

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	
<u>1700</u>	<u>msm</u>	<u>6.5</u>	<u>6.74</u>	<u>2060</u>	<u>-303.7</u>	<u>0.58</u>	<u>23.6</u>
<u>1703</u>		<u>6.9</u>	<u>6.71</u>	<u>2051</u>	<u>-303.6</u>	<u>0.57</u>	<u>22.7</u>
<u>1706</u>		<u>6.6</u>	<u>6.69</u>	<u>2055</u>	<u>-303.1</u>	<u>0.55</u>	<u>21.2</u>
<u>1709</u>		<u>6.8</u>	<u>6.67</u>	<u>2065</u>	<u>-298.4</u>	<u>0.57</u>	<u>23.1</u>
<u>1712</u>		<u>6.9</u>	<u>6.66</u>	<u>2063</u>	<u>-297.5</u>	<u>0.56</u>	<u>23.6</u>
<u>1715</u>	<u>4.25</u>	<u>6.9</u>	<u>6.65</u>	<u>2056</u>	<u>-294.4</u>	<u>0.53</u>	<u>22.8</u>
	<u>Measured</u>						

**FINAL FIELD PARAMETERS PRIOR TO SAMPLING**

<u>1715</u>	<u>4.25</u>	<u>6.9</u>	<u>6.65</u>	<u>2056</u>	<u>-294.4</u>	<u>0.55</u>	<u>22.8</u>
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FIELD REMARKS: Measured  
Field alk = 300  
Field tot iron = 10 ppm



# FIELD SAMPLE DATA SHEET

Project Name: McLaren Tailings  
 WELL/STATION MW-5 DATE 9/18/08 TIME 7:55  
 SAMPLERS F+SM WEATHER CONDITIONS Cool, P. Cloudy, Breezy (30's)  
 PHOTO: Yes X No \ ROLL# \_\_\_\_\_ NUMBER # 62

## PURGE DATA:

PURGE METHOD 5 stroke 12 inch w/ track bitting WELL DEPTH 19.9 Feet  
 START PURGING 8:03 DEPTH TO WATER 16.93 Feet TPC  
 PURGE RATE 1.75 GPM COLUMN DEPTH 2.47 Feet  
 RATE CHANGE 1) Time \_\_\_\_\_ Rate \_\_\_\_\_ CASING DIAMETER 2" Inch  
 2) Time \_\_\_\_\_ Rate \_\_\_\_\_ PUMP SET AT 19 Feet  
 SAMPLE TIME 8:35 AM 3 WELL VOLUMES 1.5 Gallons  
 TOTAL PURGE VOLUME 56.0 Gallons

## SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>McLaren-MW-05-10-091808</u>	<u>250 ml</u> 1 Liter	<input checked="" type="checkbox"/>	<u>HNO<sub>3</sub></u>	Dissolved Metals - <u>Al, Sb, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, U, Ag, Zn</u>
<u>McLaren-MW-05-10-091808</u>	1 Liter			<u>TDS, TSS</u>
<u>McLaren-MW-05-10-091808</u>	<u>500 ml</u> 1 Liter			<u>Hardness, Alkalinity, SC</u> <u>SOL 2</u>
	1 Liter			
	1 Liter			

## FIELD PARAMETERS:

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	Turb
<u>8:15</u>	<u>21.62</u>	<u>6.0</u>	<u>6.816</u>	<u>218.9</u>	<u>25.0</u>	<u>5.20</u>	<u>11.36</u>
<u>8:18</u>	<u>26.25</u>	<u>6.0</u>	<u>7.05</u>	<u>219.0</u>	<u>24.7</u>	<u>5.09</u>	<u>11.39</u>
<u>8:21</u>	<u>31.5</u>	<u>6.0</u>	<u>7.14</u>	<u>219.0</u>	<u>23.16</u>	<u>5.03</u>	<u>11.34</u>
<u>8:24</u>	<u>36.75</u>	<u>6.0</u>	<u>7.23</u>	<u>218.9</u>	<u>23.6</u>	<u>4.96</u>	<u>11.30</u>
<u>8:27</u>	<u>42.0</u>	<u>6.0</u>	<u>7.29</u>	<u>218.9</u>	<u>22.7</u>	<u>4.96</u>	<u>11.37</u>
<u>8:30</u>	<u>47.25</u>	<u>6.0</u>	<u>7.33</u>	<u>218.8</u>	<u>21.7</u>	<u>4.96</u>	<u>11.45</u>
<u>8:33</u>	<u>52.5</u>	<u>6.0</u>	<u>7.36</u>	<u>218.7</u>	<u>20.2</u>	<u>4.96</u>	<u>11.32</u>
<u>8:35</u>	<u>56.0</u>	<u>6.0</u>	<u>7.39</u>	<u>218.7</u>	<u>19.7</u>	<u>4.93</u>	<u>11.32</u>
<b>FINAL FIELD PARAMETERS PRIOR TO SAMPLING</b>							
<u>8:35</u>	<u>56.0</u>	<u>6.0</u>	<u>7.39</u>	<u>218.7</u>	<u>19.7</u>	<u>4.93</u>	<u>11.32</u>

## FIELD REMARKS:

Pretty sandy 1st 2 gallons & murky, cleared up

Field alkalinity = 172 CaCO<sub>3</sub> eq mg/L

Field iron (TOTAL) = 0.1 ppm

# FIELD SAMPLE DATA SHEET

Project Name: msm ARWW&S Short-Term Groundwater Monitoring  
 WELL/STATION PZ-045 DATE 9/18/08 TIME 1750  
 SAMPLERS JF + SM WEATHER CONDITIONS Sunny, cool, windy  
 PHOTO: Yes X No      ROLL#      NUMBER     

## PURGE DATA:

PURGE METHOD Peristaltic Pump  
 START PURGING 1755  
 PURGE RATE      GPM  
 RATE CHANGE 1) Time      Rate       
 2) Time      Rate       
 SAMPLE TIME 1845

WELL DEPTH 26.72 Feet  
 DEPTH TO WATER 12.46 Feet  
 COLUMN DEPTH 14.26 Feet  
 CASING DIAMETER 1 Inch  
 PUMP SET AT 26 Feet  
 3 WELL VOLUMES 1.74 Gallons  
 TOTAL PURGE VOLUME 4.5 Gallons  
measured

## SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>Mr Laren - PZ-045-091808</u>	<u>250 ml 1 Liter</u>	<u>X</u>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals</u> <small>Al, Sb, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Zn</small>
<u>Mr Laren - PZ-045-091808</u>	<u>1 Liter</u>			<u>TDS, TSS</u>
<u>Mr Laren - PZ-045-091808</u>	<u>500 ml 1 Liter</u>			<u>Hardness, Alkalinity, SO<sub>4</sub>, CO<sub>3</sub></u>
	<u>1 Liter</u>			
	<u>1 Liter</u>			

## FIELD PARAMATERS:

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l
<u>1835</u>		<u>6.1</u>	<u>6.95</u>	<u>1687</u>	<u>-273.2</u>	<u>0.79</u> <span style="float: right;"><u>19.4</u></span>
<u>1838</u>		<u>5.9</u>	<u>6.95</u>	<u>1690</u>	<u>-272.6</u>	<u>0.75</u> <span style="float: right;"><u>15.6</u></span>
<u>1841</u>		<u>5.9</u>	<u>6.95</u>	<u>1690</u>	<u>-273.8</u>	<u>0.75</u> <span style="float: right;"><u>15.7</u></span>
<u>1844</u>	<u>4.5 gal</u>	<u>5.8</u>	<u>6.95</u>	<u>1691</u>	<u>-270.3</u>	<u>0.76</u> <span style="float: right;"><u>15.8</u></span>
	<u>measured</u>					
<b>FINAL FIELD PARAMETERS PRIOR TO SAMPLING</b>						
<u>1844</u>	<u>4.5 gal</u>	<u>5.8</u>	<u>6.95</u>	<u>1691</u>	<u>-270.3</u>	<u>0.76</u> <span style="float: right;"><u>15.8</u></span>

FIELD REMARKS: Field AIK = 252 <sup>msm</sup> pp  
Field iron (TOT) = 10ppm

**FIELD SAMPLE DATA SHEET**

Project Name: ARWW&S Short-Term Groundwater Monitoring  
 WELL/STATION MW-3 DATE 7/18/08 TIME 1830  
 SAMPLERS FF+SM WEATHER CONDITIONS COOL, no wind  
 PHOTO: Yes X No    ROLL#    NUMBER 71

**PURGE DATA:**

PURGE METHOD Bailer WELL DEPTH 20.1 Feet  
 START PURGING 1835 DEPTH TO WATER 11.29 Feet  
 PURGE RATE    GPM COLUMN DEPTH 8.81 Feet  
 RATE CHANGE 1) Time    Rate    CASING DIAMETER 2 Inch  
 2) Time    Rate    PUMP SET AT NA Feet  
 SAMPLE TIME 1845 3 WELL VOLUMES 4.4 Gallons  
 TOTAL PURGE VOLUME 5 Gallons  
measured

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>McLaren MW-3-10-091808</u>	<u>250 mL</u> <u>1 Liter</u>	<u>X</u>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals - Al, Cr, As, Ba, Cd, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Zn</u>
<u>McLaren MW-3-10-091808</u>	<u>1 Liter</u>			<u>TDS, TSS</u>
<u>McLaren MW-3-10-091808</u>	<u>500 mL</u> <u>1 Liter</u>			<u>Alkalinity, Hardness, SO<sub>4</sub>, Cl</u>
	<u>1 Liter</u>			
	<u>1 Liter</u>			

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l
<u>1845</u>	<u>5gal</u> <u>measured</u>	<u>5.9</u>	<u>6.97</u>	<u>866</u>	<u>-286.9</u>	<u>1.60</u>

**FINAL FIELD PARAMETERS PRIOR TO SAMPLING**

<u>1845</u>		<u>5.9</u>	<u>6.97</u>	<u>866</u>	<u>-286.9</u>	<u>1.60</u>
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**FIELD REMARKS:**

Field ALK = 150 Band in pipe etc only allowed

Field TOT iron = > 10 ppm bailer or peristaltic very slow

recovery. Because bailer used

to purge only 1 set of parameters

Met 3 volume criteria

# FIELD SAMPLE DATA SHEET

Project Name: McLaren Tailings Page     of      
 WELL/STATION PZ 06-D DATE 9/19/08 TIME 8:45  
 SAMPLERS JFSM WEATHER CONDITIONS Sunny, warming up  
 PHOTO: Yes X No     ROLL#     NUMBER 73

## PURGE DATA:

PURGE METHOD Peristaltic Pump WELL DEPTH 31.5 Feet  
 START PURGING 8:50 DEPTH TO WATER 14.88 Feet  
 PURGE RATE     GPM COLUMN DEPTH 16.62 Feet  
 RATE CHANGE 1) Time     Rate     CASING DIAMETER 1" Inch  
 2) Time     Rate     PUMP SET AT 31.4 Feet  
 SAMPLE TIME 9:30 3 WELL VOLUMES 2 Gallons  
 TOTAL PURGE VOLUME 3.25 Gallons  
(measured)

## SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-PZ06-D-091908	<u>250 ml / 1 Liter</u>	<input checked="" type="checkbox"/>	HNO <sub>3</sub>	Dissolved Metals - <u>As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Zn</u>
McLaren-PZ06-D-091908	1 Liter			TDS, TSS
McLaren-PZ06-D-091908	<u>500 ml / 1 Liter</u>			Alkalinity, Hardness, SO <sub>4</sub> , SC, pH
	1 Liter			
	1 Liter			

## FIELD PARAMETERS:

TIME	Amount Purged	Temp C (Sc)	pH	S.C. um/cm	EH mv	D.O. mg/l	Kvb
9:17	2	6.1	<u>Not working</u>	643	-129.5	0.67	
9:20	2.15	6.0		644	-137.5	0.53	
9:24	2.50	6.2		642	-147.5	0.40	1.88
9:27	2.75	6.6	↓	643	-151.9	0.36	2.38
<b>FINAL FIELD PARAMETERS PRIOR TO SAMPLING</b>							
9:30	3.25	5.9	<u>Not working</u>	644	-152.6	0.33	2.22

FIELD REMARKS: started clear stayed clear

Pioneer Technical Services

Field Fe > 10 ppm

Field pH = 12.7

will request pH from lab

**FIELD SAMPLE DATA SHEET**

Project Name: PZ McLaren Tailings  
 WELL/STATION: PZ-01-D DATE: 9/19/08 TIME: 855  
 SAMPLERS: \_\_\_\_\_ WEATHER CONDITIONS: Sunny, Cool, Calm  
 PHOTO: Yes X No \_\_\_\_\_ ROLL# \_\_\_\_\_ NUMBER \_\_\_\_\_

**PURGE DATA:**

PURGE METHOD: peristaltic Pump  
 START PURGING: 900  
 PURGE RATE: \_\_\_\_\_ GPM  
 RATE CHANGE: \_\_\_\_\_  
 1) Time \_\_\_\_\_ Rate \_\_\_\_\_  
 2) Time \_\_\_\_\_ Rate \_\_\_\_\_  
 SAMPLE TIME: 1000

WELL DEPTH: 33.22 Feet  
 DEPTH TO WATER: 13.79 Feet  
 COLUMN DEPTH: 19.43 Feet  
 CASING DIAMETER: 1 Inch  
 PUMP SET AT: 28 Feet  
 3 WELL VOLUMES: 2.4 Gallons  
 TOTAL PURGE VOLUME: 3.75 Gallons  
 (measured)

**SAMPLE DATA:**

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
McLaren-PZ-01-D-091908	<u>250 ml / Liter</u>	<input checked="" type="checkbox"/>	HNO <sub>3</sub>	Dissolved Metals - <u>Al, So, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Ag, Zn</u>
McLaren-PZ-01-D-091908	1 Liter			TDS, TSS
McLaren-PZ-01-D-091908	<u>500 ml / Liter</u>			Alkalinity, Hardness, SO <sub>4</sub> , SO <sub>2</sub> , PH
	1 Liter			
	1 Liter			

**FIELD PARAMATERS:**

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l
952	3.1	7.3	<u>Not working</u>	495	-163.0	0.32
955	3.25	7.4	<u>0</u>	491	-171.5	0.36
958	3.50	7.4	<u>↓</u>	494	-172.0	0.33
1000	3.75	7.4	<u>↓</u>	495		0.33
<b>FINAL FIELD PARAMETERS PRIOR TO SAMPLING</b>						
1000	3.75	7.4	NW	495	-172.0	0.33

FIELD REMARKS: Started clear stayed clear will request phd from lab

Field Fe - 0.5 ppm

Field Alkalinity - 200

# FIELD SAMPLE DATA SHEET

Project Name: ARWW&S Short-Term Groundwater Monitoring Page 1 of 1  
 WELL/STATION PZ 4D DATE 9/18/08 TIME 1745  
 SAMPLERS F + SM WEATHER CONDITIONS Sunny, Cool, windy  
 PHOTO: Yes  No  ROLL# 70 NUMBER #70 w PZ-04-S

## PURGE DATA:

PURGE METHOD Peristaltic Pump WELL DEPTH 33.6 Feet  
 START PURGING 1752 DEPTH TO WATER 13.54 Feet  
 PURGE RATE \_\_\_\_\_ GPM COLUMN DEPTH 20.06 Feet  
 RATE CHANGE \_\_\_\_\_ CASING DIAMETER 1 Inch  
 1) Time \_\_\_\_\_ Rate \_\_\_\_\_ PUMP SET AT 26 Feet  
 2) Time \_\_\_\_\_ Rate \_\_\_\_\_ 3 WELL VOLUMES 2.45 Gallons  
 SAMPLE TIME 1824 TOTAL PURGE VOLUME 14.0 Gallons QTS  
measured

## SAMPLE DATA:

SAMPLE #	VOLUME	CHECK IF FILTERED	PRES.	ANALYSIS REQUESTED
<u>McLaren - PZ-04D-091808</u>	<u>250 ml / 1 Liter</u>	<input checked="" type="checkbox"/>	<u>HNO<sub>3</sub></u>	<u>Dissolved Metals - Al, Se, As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Ni, U, Ag, Zn</u>
<u>McLaren - PZ-04D-091808</u>	<u>1 Liter</u>			<u>TDS, TSS</u>
<u>McLaren - PZ-04D-091808</u>	<u>500 ml / 1 Liter</u>			<u>Hardness, Alkalinity, SO<sub>4</sub>, Cl</u>
	<u>1 Liter</u>			
	<u>1 Liter</u>			

## FIELD PARAMATERS:

TIME	Amount Purged	Temp C	pH	S.C. um/cm	EH mv	D.O. mg/l	TURB NTU
<u>1803</u>		<u>6.5</u>	<u>7.16</u>	<u>474</u>	<u>-310.2</u>	<u>7.52</u>	<u>2.04</u>
<u>1806</u>		<u>6.3</u>	<u>7.13</u>	<u>470</u>	<u>-318.7</u>	<u>7.51</u>	<u>1.26</u>
<u>1809</u>		<u>6.4</u>	<u>7.11</u>	<u>468</u>	<u>-328.4</u>	<u>7.51</u>	<u>0.72</u>
<u>1812</u>		<u>6.4</u>	<u>7.10</u>	<u>466</u>	<u>-332.3</u>	<u>7.50</u>	<u>0.90</u>
<u>1815</u>		<u>6.3</u>	<u>7.11</u>	<u>466</u>	<u>-335.6</u>	<u>7.46</u>	<u>0.91</u>
<u>1818</u>		<u>6.1</u>	<u>7.11</u>	<u>465</u>	<u>-337.3</u>	<u>7.45</u>	<u>0.89</u>
<u>1821</u>		<u>6.0</u>	<u>7.11</u>	<u>465</u>	<u>-339.0</u>	<u>7.44</u>	<u>1.13</u>
	<u>14QTS</u>						
<u>measured</u>							
FINAL FIELD PARAMETERS PRIOR TO SAMPLING							
<u>1821</u>	<u>14QTS</u>	<u>6.0</u>	<u>7.11</u>	<u>465</u>	<u>-339.0</u>	<u>7.44</u>	<u>1.13</u>

## FIELD REMARKS:

Field alk 182  
Field tot iron 0.2 ppm

**APPENDIX E**  
**GROUNDWATER MODELING RESULTS**