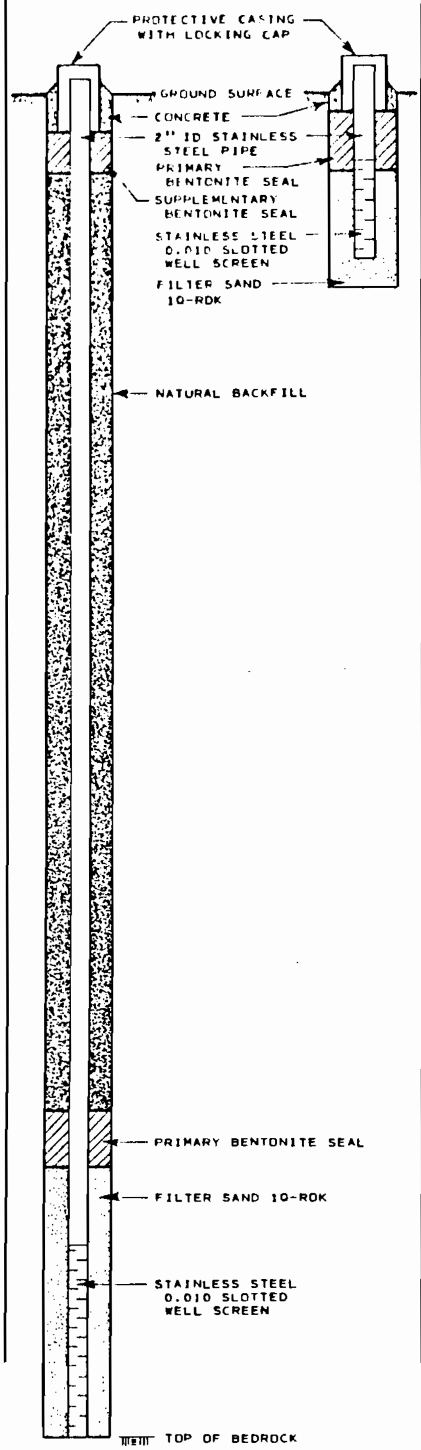
APPENDIX A
SOIL BORING LOGS

1985 Phase II Report

BORING OW-1
NASH ROAD SITE



SAMPLING: BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE RQD	FRACTURES
5	1				
15	2				
15	3				
35	4				
15	5				
9	6				
10	7				
2	8				
2	9				
	10				
	11				
9	1B:1				
4	1B:2				
38/6"	1B:3				
55/6"	1B:4				
16/6"	1B:5				
20/6"	1B:6				
98	1B:7				
55/6"	1B:8				
65/6"	1B:9				
76/6"	1B:10				

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65

GRAPHIC LOG: ML, CL, CH, GM

DESCRIPTIVE GEOLOGIC NOTES

SURFACE CONDITIONS: GRASSY, WET.

LIGHT BROWN MOIST MEDIUM SILT AND CLAY, TRACE OF SAND, OCCASIONAL BLACK ORGANIC STAINS

GRAY MOIST STIFF LAYERED CLAY AND SILT WITH OCCASIONAL SEAMS OF FINE TO MEDIUM SAND, 1/8" IN THICKNESS

GRADES TO LESS STIFF

GRAY MOIST MEDIUM LAYERED CLAY, RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT IRREGULAR INTERVALS

GRADES TO VERY SOFT CLAY

GRADES TO SOFT

GRADES TO VERY SOFT

BROWN, MOIST SILT AND COARSE TO FINE GRAVEL, LITTLE CLAY, LITTLE FINE SAND (TILL)

GRADES TO WET

GRADES TO MOIST, DENSE SILT, SOME FINE TO COARSE SAND, LITTLE FINE GRAVEL

GRADES TO WET

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-I

NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE NO & TYPE	SAMPLING: RUN NO	SAMPLING: CORE REC	SAMPLING: CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK AT 68.6'. BEDROCK IS DOLOSTONE.
		1B;11					70		BORING TERMINATED AT A DEPTH OF 68.6' ON JUNE 11, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

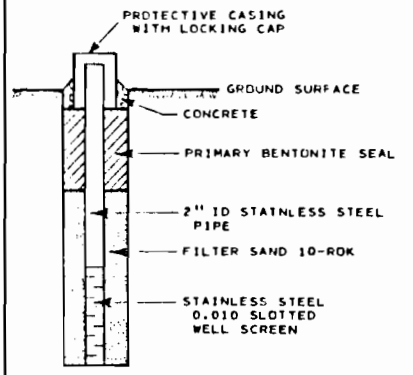
- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-2
NASH ROAD SITE

WELL SCHEMATICS

OW-2



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO & TYPE	RUN NO.	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, MUDDY
10	1 ▣					0	ML	LIGHT BROWN MOIST STIFF SILT, LITTLE FINE SAND
11	2 ▣						SW	GRAY WET MEDIUM DENSE FINE SAND, TRACE SILT
13	3 ▣					5		GRAY AND BROWN MOIST STIFF LAYERED CLAY AND SILT; SILT LAYERS ABOUT 1/2" THICK
34	4 ▣						CL	GRADES TO MEDIUM
18	5 ▣					10		GRADES TO SOFT
5	6 ▣						CH	GRAY MOIST, VERY SOFT LAYERED CLAY; RED CLAY LAYERS ARE APPROXIMATELY 1/5" THICK AT 3/4" INTERVALS
3	7 ▣					15		BORING TERMINATED AT A DEPTH OF 14.0' ON JUNE 6, 1984.

SOIL SAMPLING INFORMATION

- ▣ STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- ⊠ DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

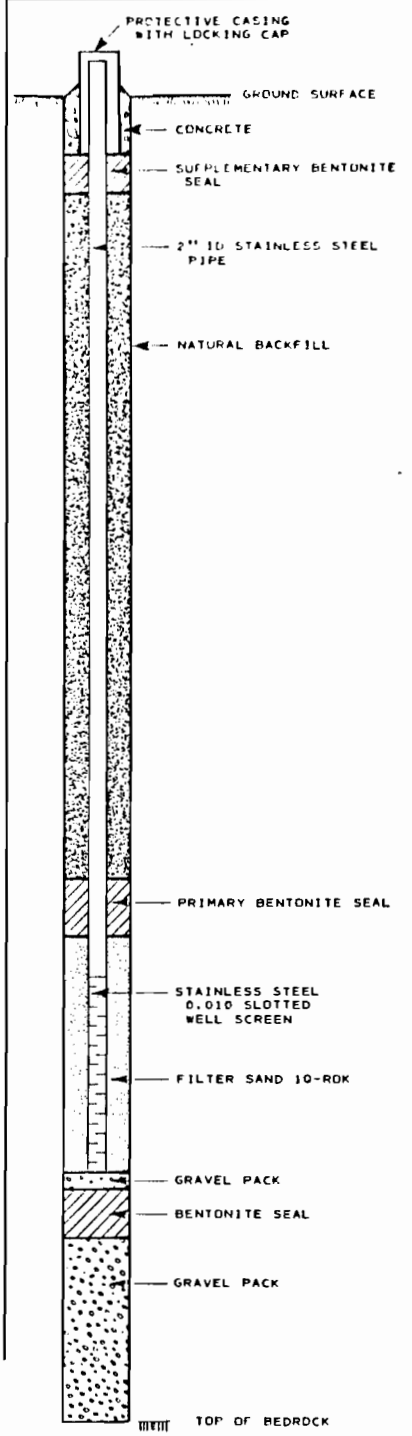
DAMES & MOORE

BORING OW-3

NASH ROAD SITE

WELL SCHEMATICS

OW-3



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, TALL BRUSH
6	1 ▣					0		MIXED SAND/WASTE FILL
11	2 ▣							
7/.5'	3A ▣							
9/.5'	3B ▣					5	CL	GRAY AND BROWN MOIST MEDIUM LAYERED CLAY AND SILT, TRACE FINE SAND, BROWN SILT LAYERS APPROXIMATELY 1/2" -1" IN THICKNESS AT 1 1/2" INTERVALS
32	4 ▣							GRADES TO STIFF AT 6.0'
20	5 ▣							GRAY MOIST MEDIUM LAYERED CLAY
7	6 ▣					10		RED CLAY LAYERS APPROXIMATELY 1/10" THICK AT 1/2" INTERVALS
6	7 ▣							GRADES TO SOFT WITH OCCASIONAL SILT LAYERS APPROXIMATELY 1/2" THICK AT 10.0'
4	8 ▣							CLAY LAYERS BECOME LESS DISTINCT AT 12.0'
2	9 ▣					15	CH	GRADES TO VERY SOFT AT 16.0'
2	10 ▣							
2	11 ▣					20		
3	12A ▣					25	CL	GRAY AND BROWN/RED MOIST MEDIUM STIFF LAYERED CLAY AND SILT AT 26.0'
3	12B ▣							SEAM OF MOIST MEDIUM TO FINE SAND AT 26.3'
72/5'	13 ▣							BROWN MOIST MEDIUM SILT AND COARSE TO FINE GRAVEL, TRACE FINE SAND, TRACE CLAY (TILL)
	14 ▣					30		GRADES TO DRY AND VERY STIFF SILT AT 28.5'
65/5'	15 ▣					35		GRADES TO MOIST AND HARD SILT
100/4"	16 ▣							
29	17 ▣					40	GM	GRADES TO MOIST AND MEDIUM
21	18 ▣					45		GRADES TO WET
23	19 ▣					50		
17	20 ▣					55		
75/5'	21 ▣					60		GRADES TO COARSE TO FINE GRAVEL AND BROWN DRY HARD SILT, SOME WEATHERED ROCK FRAGMENTS, TRACE FINE SAND
96/5'	22 ▣					65		

SOIL SAMPLING INFORMATION

- ▣ STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- ▨ DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD / PERCENT CORE RECOVERY — CORE LOSS ZONE
- RQD — CORE ROD

2-01-80 — PIEZOMETRIC SURFACE & DATE TESTED

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

FIGURE B-24

BORING OW-3

NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLE NO. & TYPE	RUN NO	CORE REC	CORE RQD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK 68.7' BEDROCK IS DOLOSTONE BORING TERMINATED AT A DEPTH OF 68.7' ON JUNE 7, 1984.
							70		

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

RQD — CORE LOSS ZONE; PERCENT CORE RECOVERY

82 — CORE POD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

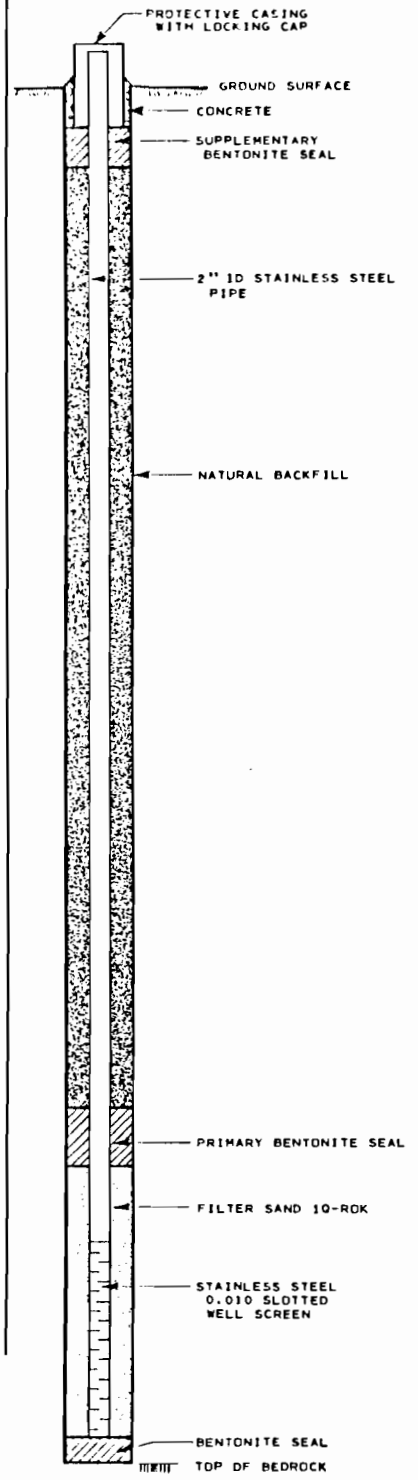
DAMES & MOORE

BORING OW-4

NASH ROAD SITE

WELL SCHEMATICS

OW-4



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, SOME SURFACE TRASH
						0		
								MIXED SAND/WASTE FILL
								GRAY MOIST SILT AND CLAY
22	1					5	ML	
15	2							GRAY WET MEDIUM TO FINE SAND, TRACE SILT, ORGANIC ODOR, SOME BLACK STAIN
17	3						SW	
33	4							GRAY AND BROWN MOIST LAYERED SILT AND CLAY, TRACE FINE SAND
10	5							LAYERS APPROX. 1/2" THICK
18	6					10	CL	
16								GRADES TO WET BROWN SILT AND CLAY
8	7							
6	8							
5	9							
2	10					15		GRADES TO CLAY, TRACE SILT
3								
2	11					20		
2								
2	12					25	CH	
2								
2	13					30		
2								
2	14					35		
2								
26	15					40		BROWN WET SILT AND FINE TO COARSE SAND, LITTLE MEDIUM TO FINE GRAVEL
46	16						SW	
								BROWN WET MEDIUM TO FINE SAND
							SP	
50/.2'	17					45		BROWN MOIST SILT, AND COARSE TO FINE SAND, LITTLE FINE TO COARSE SAND (TILL)
	18							
80/.5'	19					50		GRADES TO WET
							GM	
50/.5'	20					55		GRADES TO MOIST
50/.4'	21					60		
50/.5'	22					65		

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-4
NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: B. ON COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK 70.3' BEDROCK IS DOLOSTONE
							70		BORING TERMINATED AT A DEPTH OF 70.3' ON JUNE 13, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

80 — CORE LOSS ZONE

PERCENT CORE RECOVERY

82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

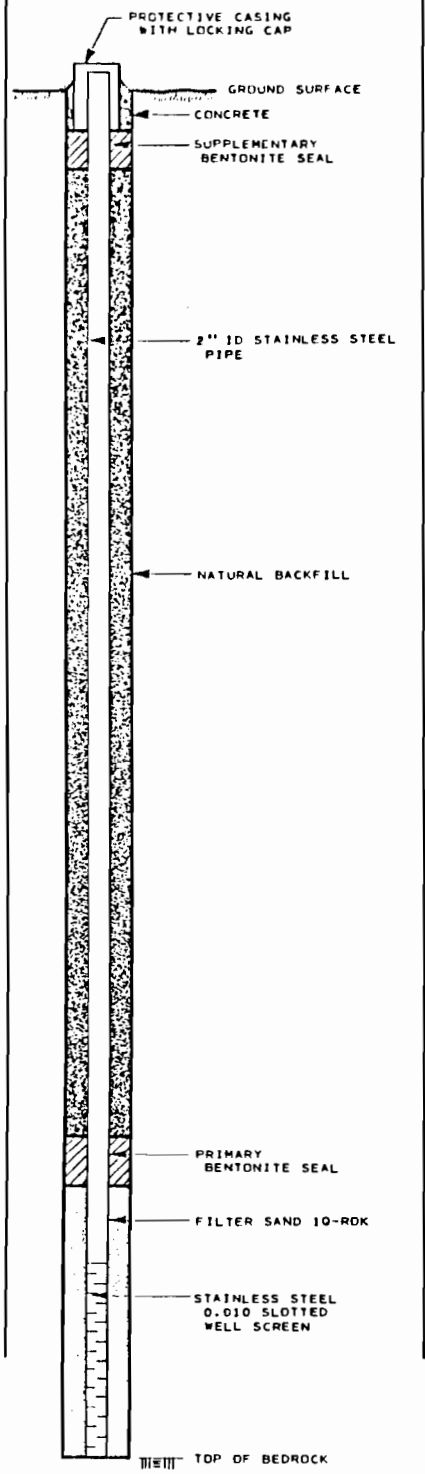
- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-5
NASH ROAD SITE

WELL SCHEMATICS

OW-5



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO. & TYPE	RUN NO	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, ATOP FILL
						0		
17	1 ■						SW	GRAY, WET MEDIUM TO FINE SAND, TRACE SILT
11/6"	2 ■					5		
9/6"	3 ■							GRADES TO FINE SAND
12	4							GRAY AND BROWN MOIST LAYERED CLAY AND SILT, TRACE FINE SAND
29	5 ■					10	CL	SILT LAYERS APPROXIMATELY 1/2" THICK, OCCASIONAL SEAMS OF WET FINE TO MEDIUM SAND APPROXIMATELY 1/8" THICKNESS
5	6 ■							GRAY WET SOFT LAYERED CLAY
6	7 ■					15		RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT IRREGULAR INTERVALS
2	8 ■					20		GRADES TO VERY SOFT
2	9 ■					25	CH	
2	10 ■					30		
2	11 ■					35		RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT 3/4" INTERVALS
2	12 ■					40		
							SP	BROWN WET LAYERED SILT AND COARSE TO FINE SAND
39&5'	13 ■					45		BROWN WET SILT AND FINE TO COARSE GRAVEL, SOME COARSE TO FINE SAND, TRACE CLAY (TILL)
50&4'	14 ■							
50&2'	15 ■					50		GRADES TO MOIST
							GM	
60&4'	16 ■					55		GRADES TO MORE GRAVEL, LESS SILT, DRY
65&5'	17 ■					60		
	18 ■					65		GRADES TO WET SILT, SOME MEDIUM TO FINE GRAVEL, LITTLE WEATHERED BEDROCK FRAGMENTS AT 65.0'

SOIL SAMPLING INFORMATION

- ■ STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- ■ DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-5
NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF DOLOSTONE BEDROCK AT 69.8'
							70		BORING TERMINATED AT A DEPTH OF 70.0' ON JUNE 14, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- 80 — PERCENT CORE RECOVERY
- CORE LOSS ZONE
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

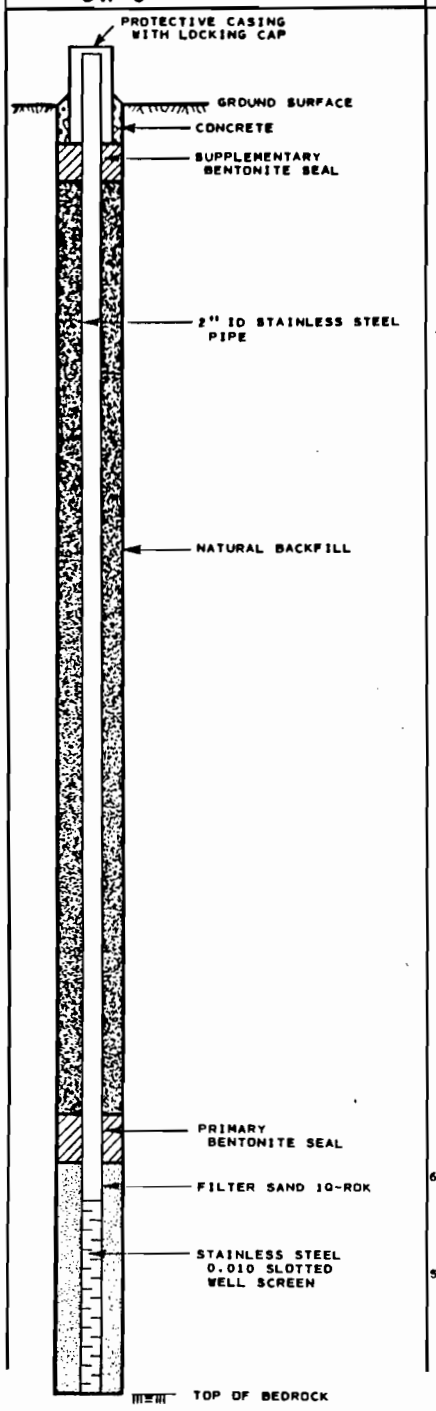
DAMES & MOORE

BORING OW-6

NASH ROAD SITE

WELL SCHEMATICS

OW-6



BLOW COUNT	SAMPLE NO & TYPE	RUN NO.	CORE REC.	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
						0		SURFACE CONDITIONS: VERY MUDDY WITH STANDING WATER; MARSHY GRASS
								MIXED SAND/WASTE FILL
12	1 S					5	SW	GRAY WET MEDIUM TO FINE SAND, LITTLE SILT, SOME BLACK STAINS
31	2 S							
17	3 S							
41	4 S					10	CL	GRAY AND BROWN MOIST STIFF LAYERED CLAY AND SILT, SILT LAYERS APPROXIMATELY 1/4" THICK AT 1" INTERVALS
15	5 S							GRAY MOIST STIFF CLAY
								GRADES TO MEDIUM CLAY AT 13.0'
4	6 S					15		GRADES TO SOFT AT 18.0'
2	7 S					20		GRADES TO WET
								RED CLAY LAYERS APPROXIMATELY 1/2" THICK AT 1 1/2 TO 2" INTERVALS (DETECTABLE ORGANIC ODOR)
2	8 S					25	CH	
2	9 S					30		
2	10 S					35		RED CLAY LAYERS APPROXIMATELY 2" THICK AT 1" INTERVALS AT 35.0'
								TRACE SMALL BLACK MOTTLES OF ORGANIC MATERIAL IN RED LAYERS
2	11 S					40		
39	12 S					45		BROWN DRY MEDIUM SILT, AND MEDIUM TO FINE GRAVEL, TRACE CLAY, TRACE FINE TO COARSE SAND (TILL)
39	13 S					50		GRADES TO MOIST
6/45'	14 S					55	GM	
								GRADES TO WET, MORE GRAVEL, LESS SILT
55/5'	15 S					60		
						65		

SOIL SAMPLING INFORMATION

- S STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- S DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- B0 — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- B2 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-6
NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	SM	TOP OF BEDROCK 66.0' BEDROCK IS DOLOSTONE
							70		BORING TERMINATED AT A DEPTH OF 66.0' ON JUNE 19, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- 80 — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

FIGURE B-6B

1989 Supplemental
Phase II Report

DRILLING CONTRACTOR:
er: Mike Logue - Rochester Drilling
ector: L. Dobson-ES
Type Mobile 61
ling Method 4.25" I.D. HSA

ENGINEERING-SCIENCE DRILLING RECORD

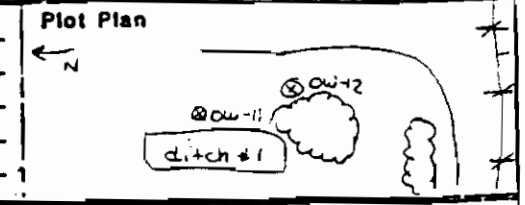
PROJECT NAME Nash Road
PROJECT NO. 5Y012.19

BORING NO. OW-11
Sheet 1 of 1
Location E. of ditch #1 - (upgradient)

ROUND WATER OBSERVATIONS
from TOC
ater Level 4' 3.5'
Time 1300
ate 12/02/88
ling Depth 9.0

Weather 15°F, Breezy / Partly Sunny
Date/Time Start 1/28/88 1100
Date/Time Finish 1/28/88 1500

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
1.5	0-2	S-1	7	Red-Gray Clay and Silt, Fill material (Frozen)		
	rec: 5"		1			
	SS		2			
			1			
3.6	2-4	S-2	2	Red-Gray Clay (smooth) trace silt fine sand dry	GROUT	
	rec.: 10"		3		Bentonite	4
	SS		2			5
			2			
41.7	4-6	S-3	2	Red-Gray Clay - lamination evident some sand/gravel moist		
	rec.: 10"		1			
	SS		1			
			2			
31.7	6-8	S-4	2	Red/Gray Clay and Gray/black Sand on bottom - odor	SAND	
	rec: 10"		2		2.0" PVC RISER	
	SS		2			
			3		2.0" PVC SCREEN	7
23.7	8-10	S-5	3	Gray/Red Clay (laminated), Some fine sand - odor		9.0'
	rec: 10"		2			
	SS		2			
			2			
	10-12		1	No Recovery 1st attempt		
	rec: 16"		2	Saturated Gray clay / fill material (glass/garbage)		
	SS		3			
			3			
				boring terminated at 12.0' @ 12:00		

SPT = STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary
Red-Gray Clay with thin (< 2.0") sand seams some fill

DRILLING CONTRACTOR:
ler: M. Legare - Rochester Drilling
ector: L. Dobson - ES
Type Mobile 61
lling Method 4.25" HSA

ENGINEERING-SCIENCE DRILLING RECORD

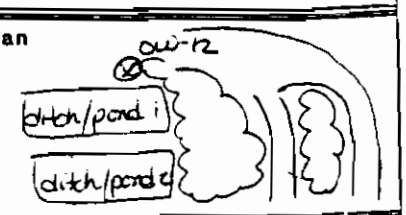
PROJECT NAME NASH RD
PROJECT NO. SY012.19

BORING NO. DW-12
Sheet 1 of 2
Location E/NE of ditch/pond #1

(2)

GROUND WATER OBSERVATIONS
ater Level 11' 3.0"
Time 800
Date 2/02/88
ing Depth 34'

Weather Cold - 10°F, Partly Sunny
Date/Time Start 1/26/88 1330
Date/Time Finish 1/27/88

Plot Plan


Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
53.5	0-2	S-1	3	Red/Gray Clay and fine sand, trace angular gravel (3mm) dry		auger cuttings read high 20's on photovac
	rec=14"		5			
	SS		5			
			7			
1.8	5-7	S-2	8	Fine red/brown sand with clay grading into smooth gray clay moist		
	rec=24"		8			
	SS		12			
			21			
0.8	10-12	S-3	4	light brown clay (8.0") grading into smoother red/gray clay		Saturation @ 8.0' cuttings read 90 on photovac
	rec=24"		5			
	SS		6			
			6			
0.9	15-17	S-4	3	Red-Gray Clay - smooth/moist trace of orange sand @ 15'		
	rec=24"		2			
	SS		1			
			1			
0	20-22	S-5	3	Gray/Red Clay - smooth/moist	2.0" PVC RISER	
	rec=24"		1			
	SS		2			
			1			
0.1	22-24	S-6	3	Gray/Red Clay - some lamination smooth, high plasticity - moist		
	rec=24"		3			
	SS		2			
			2		GRAVEL	
0.5	24-26	S-7	2	same as above - some very fine sand @ 26.0'		25.5
	rec=24"		2			
	SS		1			
			1		BENTONITE	
—	26-28	S-8	2	Red/Gray Clay - saturated, smooth 1" v. fine sand @ 27.8'		27.5
	rec=24"		1			
	SS		2		SAND	
			1			

SPT - STANDARD PENETRATION TEST
D - DRY W - WASHED C - CORED
U - UNDISTURBED SS - SPLIT SPOON
P - PIT A - AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR: Rochester Drilling
Driller: M. Legave
Inspector: L. Dobson - ES
Rig Type: 4.25" HSA
Drilling Method: Mobile B61

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: Nash Rd
PROJECT NO.: SY012.19

BORING NO. OW-12
Sheet 2 of 2
Location

GROUND WATER OBSERVATIONS

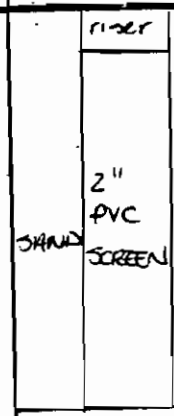
Water Level			
Time			
Date			
Casing Depth			

Weather: Cold, 10°F partly cloudy
Date/Time Start: 1/26/88 1330
Date/Time Finish: 1/27/88 1230

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0	28-30	S-9	1	Gray/brown clay with fine brown sand/trace gravel
	Rec=10"	1	2	
		1	2	
		1	2	
		1		
0.1	30-32	S-10	26	Stiff brown fine-medium sand and rounded gravel (1mm-3mm) some clay - fairly dense
	rec.=26"	1	34	
		1	34	
		1	32	
		1		
0.2	32-34	S-11	16	Same as above. Higher clay content
	rec=24"	1	12	
		1	28	
		1	19	
		1		boring terminated @ 34' @ 1230 1/27/88

WELL SCHEMATIC



Comments: 29.5; 32.5

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

ENGINEERING-SCIENCE DRILLING RECORD

DRILLING CONTRACTOR: Rochester Drilling Co.
er: M Legare / C Reynolds
pector: L Dobson - Eng. Science
Type Mobile B61
ling Method HSA 4.25" I.D.

PROJECT NAME Nash Road
PROJECT NO. SY012.19

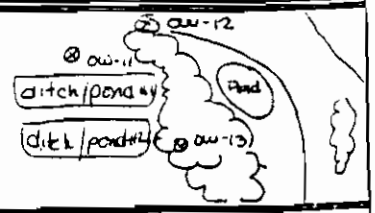
BORING NO. DW-13
Sheet 1 of 1
Location downgradient of ditch/pond (2)

ROUND WATER OBSERVATIONS (from TOC)

ater Level	3.00		
Time	1400		
Date	12/02/88		
ling Depth	5'		

Weather Sunny, 30°F
Date/Time Start 1/29/88 1130
Date/Time Finish 1/29/88 1200

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0	0-2	S-1	5	Top Soil - Roots/organic material & very fine sand, trace angular gravel
	rec = 6.0"		1	
	SS		3	
			1	
0.2	2-4	S-2	29	Orange/Grey m-c sand, well sorted saturated.
	rec = 6.0"		4	
	SS		10	
			12	
0	4-6	S-3	15	Orange/Brown m-c sand grading into stiff clay with silt, trace gravel
	rec = 12"		15	
	SS		9	
			13	
				End of Boring 6.0' @ 1200

WELL SCHEMATIC

Grout	2" PVC RISER		1
Bentonite			2½
SAND		3'	
	2" PVC SCREEN		5'

Comments: High blow count due to tree root

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: M. Legare - Roch. Drilling
Inspector: L. Dobson - ES
Rig Type: ATV
Drilling Method: 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: Nasn Rd
PROJECT NO.: 54012.19

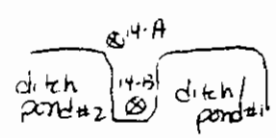
BORING NO. 14-A (deep) (2)
Sheet 1 of 2
Location

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather: 10°F | snowing
Date/Time Start: 2/04/88 1645
Date/Time Finish: 2/08/88 1100

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
-	0-2			See 14-B drilling log for soil description from 0-7'		3.5' stickup
-	5-7					No elevated photovac readings in auger cuttings
1.5	10-12	S-1	3	Gray / Red Clay and fine sand (stiff)		
	rec = 24"		3			
	SS		4			
			4			
0	15-17	S-2	1	Gray / Red Clay - layering evident smooth, moist, plastic.		
	rec = 24"		2			
	SS		2			
			1			
0	20-22	S-3	0*	same as above with trace of silt @ 20'		* spoon went 2' under weight of rod
	rec = 24"		0			
	SS		0			
			0			
0.1	25-27	S-4	1	Gray / Red Clay - smooth / moist		
	rec = 24"		2			
	SS		1			
			2			
						30.5
	30-32	S-5	1	Red / Gray Clay - layering evident trace fine sand and gravel.	bentonite	
			1			32.5
			1			
			1			
0	32-34		0*	Gray / Red Clay grading into fine sand & gravel w/ clay @ 33'		
			0			
			0			
			0			
						33.5

SAND
2.0" PVC SCREEN

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Iler: M. Lecore - Roch drill.
pector: L. Dorson - ES
g Type ATV
illing Method 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Nash Rd.
PROJECT NO. 5402.19

BORING NO. 14-A (deep) (2)
Sheet 2 of 2
Location

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather 10°F / snowing
Date/Time Start 2/04/88 1645
Date/Time Finish 2/05/88 1100

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0	34-36	1	13	fine sand & gravel w/ clay grading into dense light gray silt w/ some gravel & med. sand.	SAND / 2" PVC SCREEN	
	36	1	35			
		1	82			
		1	47			
		1				
	36-38	1	12	damp, gray-brown silt, sand, clay w/ angular to subangular pebbles.		36.5
	Rec.=2.0	1	63			
	55	1	70			
		1	91			
		1				
	38-40	1	104	Same as above		Auger refusal at 40'
	rec=0.5"	1	100/5"			
		1		boring terminated @ 40' 2/08/88		

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: M. Leggare-Rochester Drilling
Inspector: L. Dobson - Eng. Sci.
Rig Type: Mobile B-61
Drilling Method: HSA 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: Nash Rd
PROJECT NO.: SY012.19

BORING NO.: 4-B (shallow) (2)
Sheet 1 of 1
Location: mound 15' out from edge of pond.

GROUND WATER OBSERVATIONS

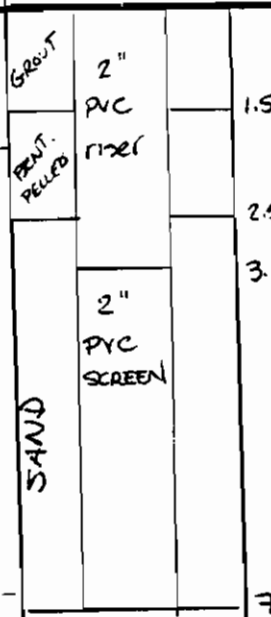
Water Level			
Time			
Date			
Casing Depth			

Weather: 25°F Partly Sunny
Date/Time Start: 2/04/88 1130
Date/Time Finish: 2/04/88 1230

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0.8	0-2	S-1	5	fine medium gray sand, trace angular gravel upper 6" frozen rest saturated
	rec=10"		3	
	SS		2	
			6	
0.6	2-4	S-2	10	v.f. gray sand with some clay grading into a m-c orange/brown sand (wet)
	rec=12"		10	
	SS		20	
			19	
0.	4-6	S-3	13	med. brown/orange m-c sand (wet)
	rec=12"		24	
	SS		26	
			23	
0.1	6-8	S-4	3	m-c brown sand trace rounded black gravel grading into stiff red/gray clay @ 7.0'
			7	
			15	
			21	
–	8-10		19	No sample
			~~20~~ 12	
			20	
			18	Boring terminated 10' @ 1230

WELL SCHEMATIC



Comments: No return on 1st or 2nd attempts in SS.

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
B = BIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.: 54012.19

BORING NO.: OW-15 (2)
Sheet: 1 of 3
Location: DOWNGRADIENT, ALONG NORTH BORDER OF SITE

GROUND WATER OBSERVATIONS

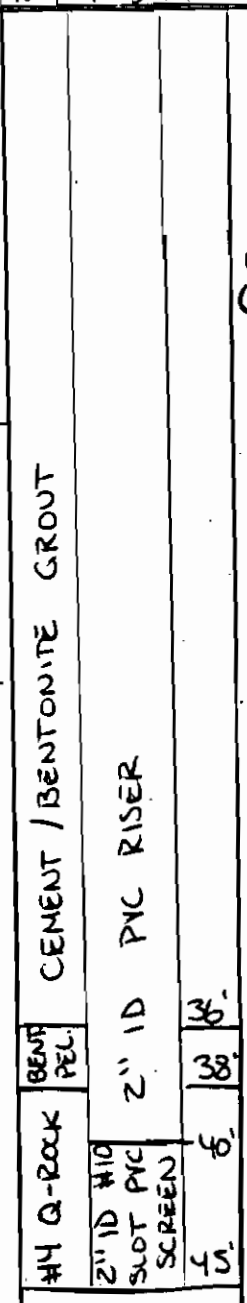
Water Level			
Time			
Date			
Casing Depth			

Weather:
Date/Time Start: 12 | 9 | 87 | 1415
Date/Time Finish: 12 | 11 | 87 | 0945

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0.0	0-2	S-1	3	BROWN CLAY, SOME SILT
	"		4	
	"		2	
	"		1	
	"			
	"			
	"			
	"			
	"			
	"			
0.0	5-7	S-2	9	BROWN MOIST SAND
	REC = 12		5	
	"		7	BROWN MOIST CLAY
	"		11	
	"			
	"			
	"			
	"			
	"			
	"			
0.0	10-12	S-3	6	REDDISH-BROWN WET PLASTIC "STICKY" CLAY
	REC = 22		18	
	"		14	
	"		15	
	"			
	"			
	"			
	"			
	"			
	"			
0.0	15-17	S-4	1	
	REC = 24		1	
	"		1	
	"		3	
	"			
	"			
	"			
	"			
	"			

WELL SCHEMATIC Not To Scale



Comments: GREY WET CUTTINGS (W/TRASH) AT 3'

SPT = STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary: SOIL AND NON SOIL FILL TO 3' OVER MOIST SAND TO 6' OVER LEAN CLAY TO 10' OVER FAT CLAY TO 39' TOP WATER BEARING SAND & CLAY WITH GRAVEL

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼ ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.:

BORING NO. OW-15 (2)
Sheet 2 of 3
Location: DOWNGRADIENT, NORTH BORDER OF SITE

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather:
Date/Time Start:
Date/Time Finish:

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	20-22	S-5	1*	REDDISH-BROWN WET PLASTIC "STICKY" CLAY		*SPOON PUSH BY WEIGHT O ROD
	REC= 24		1*			
			1			
			1			
0.0	25-27	S-6	1*			
	REC= 24		1*			
			1			
			2			
0.2	30-32	S-7	2			
	REC= 24		2			
			1			
			3			
	NO SAMPLE					NO SAMPLE TAKEN AT 32 PLUG PUSHED I WHILE AUGER
0.0	34-36	S-8	1*			
	REC= 24		1			
			1			
			1			
0.0	36-38	S-9	1*			
	REC= 24		1*			
			1*			
			1*			
0.0	38-40	S-10	1*			
	REC= 24		1*			
			2	REDDISH-BROWN CLAY AND SAND, SOME GRAVEL		
			2			

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary:

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD
PROJECT NO.:

BORING NO. OW-15 (2)
Sheet 3 of 3
Location: DOWNGRADIENT NORTH BORDER OF SITE

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather:
Date/Time Start:
Date/Time Finish:

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	40-42	S-11	1	REDDISH-BROWN CLAY AND SAND, SOME GRAVEL		SPOON PUSHED BY WEIGHT OF ROD.
	REC= 24		1			
			14			
			16			
0.0	42-44	S-12	1*			
	REC= 24		6			
			18			
			74			COARSE GRAVEL
0.0	44-46	S-13	45			
	REC= 24		71/6"			
				Boring terminated at 45'		

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary:

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.: 5401Z.19

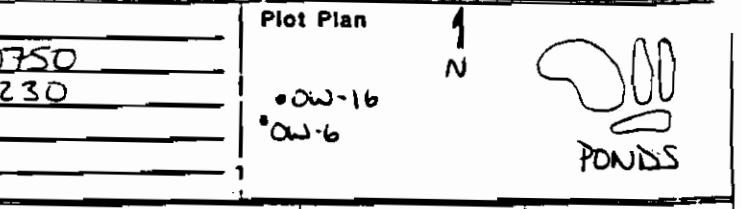
BORING NO. OW-16 (2)
Sheet 1 of 1
Location: WEST END OF SITE

GROUND WATER OBSERVATIONS

Water Level	8.5'	1.0'
Time	0919	0735
Date	12/8	12/10
Casing Depth	10.'	10.'

Weather:
Date/Time Start: 12/8/87 0750
Date/Time Finish: 12/8/87 1230

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	0-2	S-1	2	BROWN CLAY, SOME SAND, TRACE SILT	BENT. PEL. / CEMENT/BENT. GROUT; 2" ID PVC RISER; 3'; 4'	
	REC= 12		3			
			4			
			15			
0.0	2-4	S-2	11			
	REC= 6		13			
			4			
			8			
0.5	4-6	S-3	1			
	REC= 10		1			
			2	WET BROWN & GREY SILT, SOME SAND, TRASH PRESENT.		
			6			
0.0	6-8	S-4	6		#4 Q-ROCK; 2" ID SLOTTED PVC SCREEN; 5'; 10'	S-4: WOOD IN NOSE
	REC= 3		9			
			2			
			4			
0.0	8-10	S-5	7	MOIST BROWN CLAY, SOME SILT.		
	REC= 7		8			
			3			
			10			
				Boring terminated at 10'		

SPT = STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary: SOIL FILL TO 4.5' OVER SOIL AND NON-SOIL FILL TO 8' SILTY CLAY.

2013 Site Characterization Report

SOIL BORING LOG

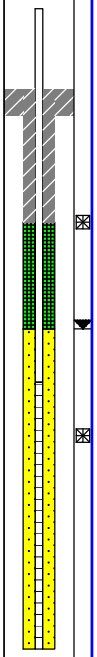
ID NO. **SB-A/OW-24**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **20 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	8.1	NA	4.0/4.0'	Fill - Brown & Gray Clayey Silt, some f-m Sand, trace organics, trace debris (plastic, glass). Moist to wet.	Lab sample collected 0-4'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	NC		0/4.0'	No recovery 4-8'. Macro-core liner is wet.	Composite lab sample collected from 4-8' and 8-12' due to poor recovery.	#00N Silica Sand Filter Sand
10	S#3, 8-12'	4.8		0.1/4.0'	Very Poor Recovery. Fill - Debris, Metal, Wood, f-c, Sand, Black, saturated, slight petroleum odor.	While augering, clay cuttings brought to surface when augers were at 8-10 ftbg. Likely that Clay begins in this interval. Material in S#3 was slough from shallower depth.	2" PVC, 10 slot screen 5-10'
15	S#4, 12-16'	1.2		0.2/4.0'	Very Poor Recovery. Dark Gray f-m Sand, Saturated. Brown-Gray Clay at 16' (in sample tip).		
20	S#5, 16-20'	NC		0/4.0'	No Recovery, only water in Macro-core sleeve, brown Clay smeared on outside of Macro-core casing. Assume sample slipped out due to saturated conditions.	Boring Terminated at 20'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

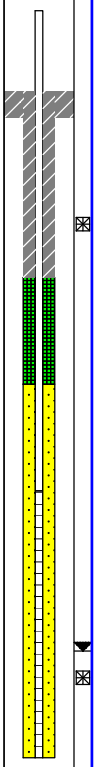
ID NO. **SB-B/OW-25**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **20 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	656	NA	3.0/4.0'	Brown, Hard, Silty Clay, trace organics. Strong solvent odor. Dry. Large Gravel at surface.	Lab sample collected 0-4'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
5	S#2, 4-8'	145		4.0/4.0'	Gray, soft, Silty Clay, trace fine sand, trace organics, trace gravel. Strong solvent odor. Moist.		Hydrated bentonite chips
	S#3, 8-12'	35.7		4.0/4.0'	Gray, soft, Silty Clay, trace fine sand, trace organics, trace gravel. Strong solvent odor. Moist to wet.		#00N Silica Sand Filter Sand
10		170			Black-gray, fine to coarse Sand, and silty Clay. Moist to wet.	Lab sample collected 10-11'	
		103			Brown, CLAY, wet.		2" PVC, 10 slot screen 7-12'
	S#4, 12-16'	124		4.0'/4.0'	Gray, CLAY, slight solvent odor. Moist to wet.		
15		103			Brown, CLAY, hard, trace organics. Dry to moist.		
	S#5, 16-20'	22.6		4.0'/4.0'	Brown, CLAY, hard, trace organics, trace fine gravel, trace f-c sand. Wet		
20						Boring Terminated at 20'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

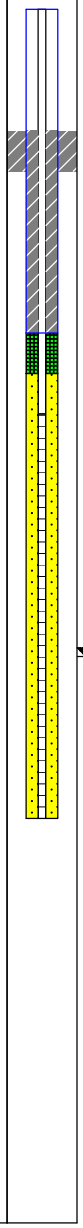
ID NO. **SB-C/OW-22**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	4.1	NA	2.0/4.0'	Fill - Brown, Silty Clay, trace to little f-c Sand & f-c Gravel, trace debris, trace organics. Moist		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	4.7		0/4.0'	No Recovery 4-8'. Collected slough from S#3 for field screening, presumed from 4-8 interval. Slough consisted of a mixture of Fill and sand.		#00N Silica Sand Filter Sand
	S#3, 8-12'	0.4		4.0'/4.0	Brown, Clay, trace Silt. Faint solvent odor. Moist.		2" PVC, 10 slot screen 3-8'
10						Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

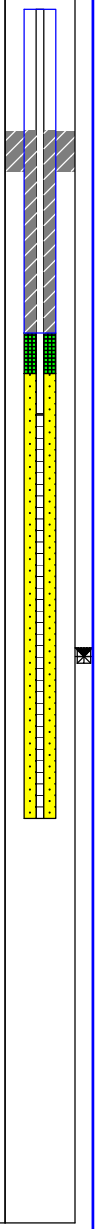
ID NO. **SB-D/OW-21**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	2.7	NA	3.5/4.0'	Gray, Silty Clay. Moist		4" Steel protective standpipe set in concrete
					Tan-Brown, fine to medium Sand, little to some Silt, trace organics. Moist		2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.5		4.0/4.0'	Tan-Brown, fine to medium Sand. Saturated.	Lab sample collected 4-8'.	#00N Silica Sand Filter Sand
		0.1			Brown Clay. Hard.		2" PVC, 10 slot screen 3-8'
10	S#3, 8-12'	0.0		3.0/4.0'		Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-E**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.2	NA	3.0/4.0'	FILL - Brown, Clayey Silt, little-some debris (plastic, glass, metal), little f-c sand & gravel. Moist.		
	S#2, 4-8'	1.4		0.8/4.0'	Tan, f-m Sand, trace debris (possible slough). Wet-saturated.	Lab sample collected 4-8'.	
5	S#3, 8-12'	0.0		4.0/4.0'	Brown, Clay. Hard. Moist.		
10						Boring Terminated at 12'	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

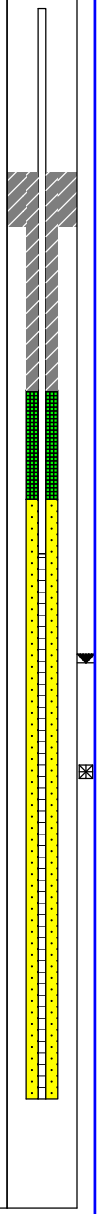
ID NO. **SB-F/MW-23**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	4.0/4.0'	Brown-gray, Silty Clay, trace organics. Moist.		4" Steel protective standpipe set in concrete
		0.5			Black, fine to medium Sand, trace Silt. Moist to wet. Grades to tan from 3-4'.		2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.6		3.0/4.0'	Tan, fine to medium Sand. Wet.	Lab sample collected 4-6'.	#00N Silica Sand Filter Sand
		0.0			Brown, CLAY. Hard.		2" PVC, 10 slot screen 3-8'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-G**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/4/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.6	NA	1.0/4.0'	Fill - Brown-Gray, Clayey Silt, little fine to coarse Sand, trace to little debris (plastic, wood). Dry to moist.		
	S#2, 4-8'	1.5		4.0/4.0'	Brown, fine to medium Sand, trace Silt. Wet.	Lab sample collected 4-7'.	
5					Brown, CLAY. Hard. Moist.		
						Boring Terminated at 8'	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-H**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/5/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	940	NA	2.0/4.0'	Fill - Brown Silty Clay, and debris, trace organics, little fine to coarse gravel, little fine to coarse Sand. Slight solvent odor. Moist.		
	S#2, 4-8'	1,214		2.0/4.0'	Fill - Same as above. Dark NAPL observed.	Lab sample collected 4-8'.	
5	S#3, 8-12'	1,035		1.0/4.0'	Fill - Same as above. Dark NAPL observed. Dark, viscous NAPL also observed. Refusal at 10 ftbg.	Lab sample collected 8-10'.	
10						Refusal at 10'. Reason unknown.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-I**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/6/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	5.3	NA	4.0/4.0'	Brown, Clayey Silt, trace to little fine Sand. Moist.		
		6.2			Fill - Debris (plastic, glass, f-c Sand & Gravel).		
					Tan-brown, fine to medium Sand, little-some Silt. Moist to wet.		
	S#2, 4-8'	10.8		4.0/4.0'		Lab sample collected 4-7'.	
5		1.3			Gray, CLAY. Moist.		
						Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-J**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **16 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/6/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	439	NA	4.0/4.0'	Fill - Brown, Silty Clay, trace organics, occasional layers of clayey silt, trace debris (glass, metal, plastic). Slight solvent odor. Moist.	Lab sample collected 0-4'.	
		139			Gray, f-m Sand, little-some Silt. Slight solvent odor. Moist to wet.		
5	S#2, 4-8'	NC		0/4.0'	No Recovery 4-8'. Slight solvent odor on Macro-core sleeve.		
	S#3, 8-12'	249		4.0/4.0'	Gray, fine to medium Sand, some silt, trace clay. Solvent odor. Wet.	Lab sample collected 8-10'	
10		181			Brown, Clay. Medium stiffness. Slight solvent odor. Moist.		
	S#4, 12-16'	1.9		4.0/4.0'	Reddish-brown, CLAY. Soft-medium hardness, plastic. Moist.		
15						Boring Terminated at 16 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-K**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/6/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.4	NA	4.0/4.0'	Fill, brown silty clay, trace organics, trace debris, no odor, moist		
		9.5			Tan-brown, fine to medium sand, little silt, moist	Lab sample collected 2-4'.	
	S#2, 4-8'	5.4		4.0/4.0'	Tan-brown, fine to medium sand, little silt, moist, from 5-6 begins to grade to sandy silt		
5		0.0			Brown clay, hard, no odor		
						Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-L**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/6/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	40.1	NA	0.5/4.0'	Brown-gray, CLAY, trace Silt. Hard. Moist.	Lab sample collected 0-4'.	
	S#2, 4-8'	8.2		4.0/4.0'	Gray, fine Sand, little-some Silt. Moist to Wet.		
5		0.4			Gray, CLAY. Hard. Moist.		
						Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-M**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**6/6/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.6	NA	0.1/4.0'	Fill - Tan/brown, fine to coarse Sand, and fine to coarse Gravel, trace debris (glass), trace clay. Moist.		
	S#2, 4-8'	100		2.0'/4.0'	Fill - Grey Clay and Silt, some fine to coarse Sand, trace organics, soil exhibits pattern of re-worked soil fill. Slight solvent odor. Wet.	Lab sample collected 4-8'.	
5	S#3, 8-12'	4.2		3.0'/4.0'	Red-brown, Clay. Medium Hardness.		
10						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

2014 Supplemental Site Characterization Report

SOIL BORING LOG

ID NO. **SB-N**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/14/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	100%	Brown to Black, Clayey SILT, tr-little organics, little Sand. Dry to moist.	Lab sample collected 2-4'.	
		0.3			Tan to brown, Silty Fine SAND. Moist to wet. Wet at 3.5ftbg.		
	S#2, 4-8'	0.1		100%	Brown, fine to medium SAND, trace Silt.		
5		0.0			Brown to grey, hard CLAY.		
				100%		Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-O**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/14/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	100%	Brown-tan, CLAY and Silt, little f-m Sand, tr. organics. Dry to moist.		
		0.1			Tan-brown, Silty SAND. Moist.		
	S#2, 4-8'	0.4		100%	Brown, f-m SAND. Mosit to wet.	Lab sample collected 4-6'.	
5		0.0			Brown, hard CLAY.		
						Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-P**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/14/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	50%	FILL - Brown-black debris, f-c Sand, clayey Silt. Debris includes plastic, rubber, glass, metal. Dry to moist.		
		0.1			Tan, Clayey SILT, little f-m Sand. Moist.		
	S#2, 4-8'	0.4		100%	Brown, f-m SAND, tr Silt. Wet.	Lab sample collected 4-6'.	
5		0.0			Brown, hard, CLAY.		
						Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-Q**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/14/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.0	NA	50%	FILL - Brown-black, f-c Silty Clay and Debris, glass, plastic, metal fragments. Moist.		
		0.3			Brown, Clayey SILT. Dry to moist.		
	S#2, 4-8'	0.5		100%	Grey, fine SAND, tr silt. Slight solvent odor.Wet.	Lab sample collected 4-8'.	
5							
	S#3, 8-12'	0.0			Grey, hard CLAY.		
10						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-R**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	20%	Brown, Silty CLAY, tr organics. Wet.		
	S#2, 4-8'	0.0		100%	Brown, f-c SAND, little Silt. Wet.	Lab sample collected 4-5'.	
5					Brown, hard CLAY.		
						Boring Terminated at 8 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

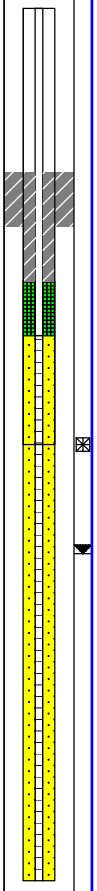
ID NO. **SB-S/OW-31**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.0	NA	75%	Brown, SILT and CLAY, little f.Sand, tr organics. Wet.		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
		0.3			Tan-brown, f-m SAND, little Silt. Moist to wet.	Lab sample collected 1-3'.	Hydrated bentonite chips
5	S#2, 4-8'	0.0		100%	Brown, hard CLAY. Moist.		#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 1-6'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

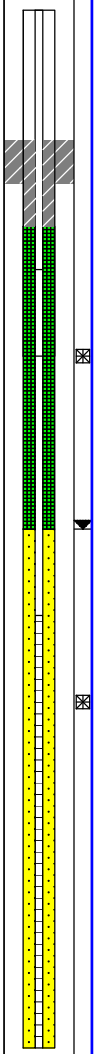
ID NO. **SB-T/OW-32**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	75%	FILL - Brown, Silty CLAY w/Debris. Debris includes metal, plastic, glass. Shiny metallic balls, size of coarse sand.	Lab sample collected 0-3'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
		0.3			Tan, f-m SAND, tr Silt. Moist		
5	S#2, 4-8'	0.4		100%	Brown, f.Silty SAND. Grades to grey at 6-7 ftbg. Wet. Slight odor observed.	Lab sample collected 4-8'	#00N Silica Sand Filter Sand
	S#3, 8-12'	0.0		100%	Grey, f.SAND, tr Silt. Wet.		
10					Grey, hard CLAY. Moist.		2" PVC, 10 slot screen 5-10'



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-U**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/16/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.0	NA	50%	FILL - Black & Grey, mixture of Debris and f-c Sand, f-c gravel. Debris consists of glass, metal, plastic,possible trace ash. Moist.	Three attempts to recover sufficient volume for field observations and laboartory sample. First two attemps rendered poor recovery. Lab sample collected 0-4'.	
	S#2, 4-8'	0.0		100%	Tan-brown, f-m SAND, tr Silt. Moist to wet. Wet at 6'.		
5							
	S#3, 8-12'	0.0		100%			
10		0.0			Brown, hard CLAY. Moist.	Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

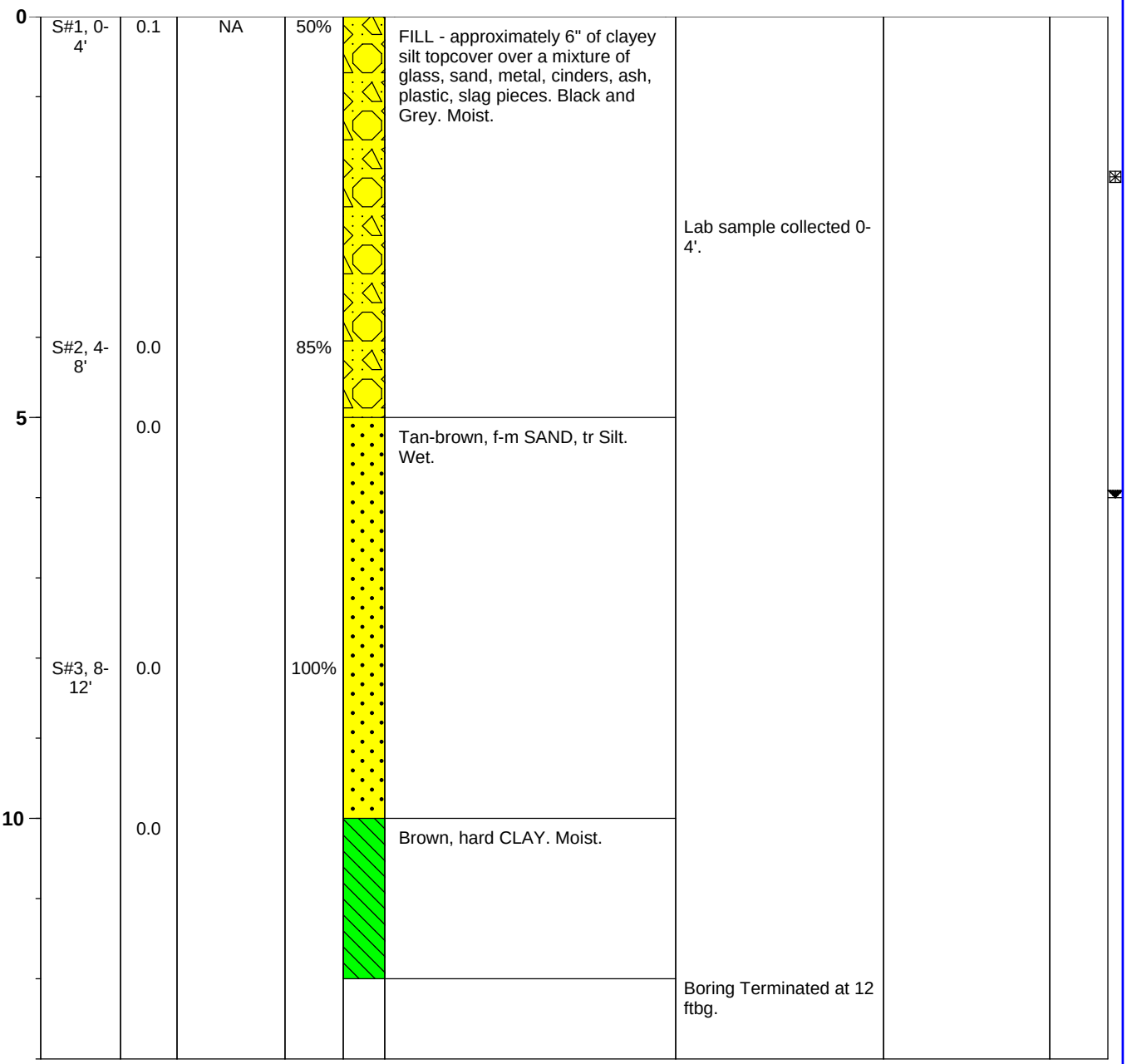
ID NO. **SB-V**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/16/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	50%	FILL - approximately 6" of clayey silt topcover over a mixture of glass, sand, metal, cinders, ash, plastic, slag pieces. Black and Grey. Moist.	Lab sample collected 0-4'.	
	S#2, 4-8'	0.0		85%			
5		0.0			Tan-brown, f-m SAND, tr Silt. Wet.		
	S#3, 8-12'	0.0		100%			
10		0.0			Brown, hard CLAY. Moist.	Boring Terminated at 12 ftbg.	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

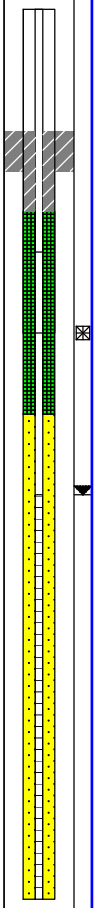
ID NO. **SB-W/OW-33**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/16/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	50%	FILL - 6" Clayey Silt topcover, over glass, plastic, ash, cinders, sand & gravel, tile, wood. Dry to Moist.	Lab sample collected 0-3'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.1		90%	Tan-brown, fine SAND. Contains trace seashells (clams) Wet. Grades to f-m Sand at 6 ftbg.	Lab sample collected 4-8'	#00N Silica Sand Filter Sand
	S#3, 8-12'	0.0		100%			2" PVC, 10 slot screen 4-9'
10		0.0			Grey, hard CLAY. Moist.	Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-X**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/16/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.9	NA	100%	FILL - approximately 6" of clayey silt topcover over f-c Sand and f-c Gravel w/Debris. Debris consists of pulverized glass, bricks, plastic pieces. Size of coarse Sand. Dry.	Lab sample collected 0-4'.	
					Tan-brown, f-m SAND. Moist.		
	S#2, 4-8'	0.2		100%	Brown, f-m SAND, tr Silt. Wet to Saturated. Grades to grey at 6.5 ftbg.	Lab sample collected 4-8'.	
5							
	S#3, 8-12'	0.1		80%			
10					Brown, hard CLAY. Moist.		
						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

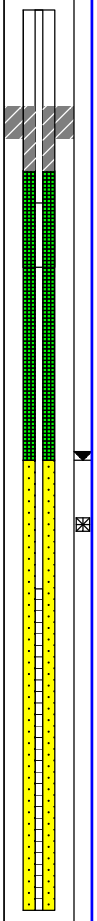
ID NO. **SB-Y/OW-34**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **16 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	100%	Brown, Sandy SILT, tr Clay, tr organics. Dry.		4" Steel protective standpipe set in 2' PVC riser to approx 2 ft above surface
					Dark brown, fine SAND. Moist.		
					Brown, Clayey SILT, tr-little f.SAND. Dry to moist.		
	S#2, 4-8'	0.3		100%	Grey-brown, silty f.SAND. Moist.		Hydrated bentonite chips
5					Grey-brown, f-m SAND. Wet-saturated.	Lab sample collected 5-7'	
					Grey-brown, silty f.SAND. Moist.		
	S#3, 8-12'	0.4		75%	Grey-brown, f-m SAND. Wet-saturated.		#00N Silica Sand Filter Sand
10		0.2					
	S#4, 12-16'			100%			2" PVC, 10 slot screen 7-12'
15					Brown, Hard CLAY. Moist.		
						Boring Terminated at 16'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-Z**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/18/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.2	NA	80%	Brown, Silty CLAY, and debris - glass, bricks, f-c Gravel, tr wood.		
					Brown, Silty, f.SAND, little m-c Sand, tr organics, tr ash and cinders. Moist.	Lab sample collected 0-4'	
					Tan, f. SAND. Moist.		
	S#2, 4-8'	0.2		90%	Brown, f-m SAND. Wet.		
5					Grey-brown, silty f. SAND and silty Clay. Wet.		
	S#3, 8-12'	0.0		100%	Brown, hard CLAY.		
10						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-AA**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/18/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.2	NA	60%	Brown, Silty CLAY, tr f. gravel, tr organics, hard. Dry.		
	S#2, 4-8'	0.2		100%		Lab sample collected 4-8'	
5							
	S#3, 8-12'	0.0		100%	Olive-grey CLAY and SILT. Moist. Hard.		
10						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

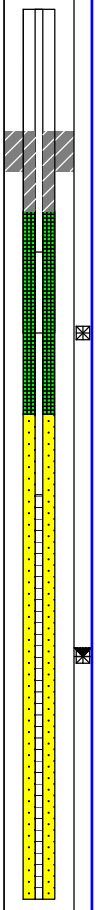
ID NO. **SB-BB/OW-35**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.6	NA	75%	Brown, Clayey SILT, tr-little f-c Sand, tr organics, tr brick fragments, tr glass fragments. Dry.		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
5	S#2, 4-8'	1.9		100%	Grey-brown, f-m SAND, tr Silt. Moist to wet. Wet at 6 ftbg.	Lab sample collected 5-7'	Hydrated bentonite chips
	S#3, 8-12'	0.0		80%			#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 4-9'
10					Brown, Hard CLAY. Moist.		
						Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-CC**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **6 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	9.2	NA	25%	FILL - brown, Clayey SILT, and f-c SAND, reworked soil. Contains debris - plastic, rubber, glass, wood. Dry to moist.		
	S#2, 4-6'	15.6		25%	FILL - Brown Clayey SILT and debris. Debris contains metal, plastic, glass. Wet. Moderate solvent odor observed.	Lab sample collected 4-6'.	
5						Refusal at 6 ftbg	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

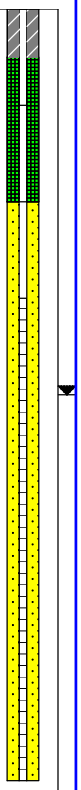
ID NO. **SB-DD/OW-36**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	9.3	NA	40%	FILL - Brown, Clayey SILT, tr-little debris (glass, metal, plastic, wood), some f-c Sand. Moist. Slight solvent odor.		Hydrated bentonite chips
	S#2, 4-8'	15.8		10%		Lab sample collected 4-8'.	
5					Grey, f-m SAND. Wet. Slight solvent odor.		#00N Silica Sand Filter Sand
	S#3, 8-12'	1.2		100%	Brown, hard, CLAY. Moist.		2" PVC, 10 slot screen 4-9'
10						Boring Terminated at 12 ftbg.	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-EE**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/18/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.4	NA	25%	FILL - Brown, Clayey SILT, little-some f-m SAND, tr organics, contains debris.Debris consists of glass, plastic, wood, f-c Sand. Slight solvent odor. Dry to moist.		
	S#2, 4-8'	2.0		50%	Brown, soft, silty CLAY. Moist.	Lab sample collected 4-8'.	
5					Grey-brown, f-m SAND. Slight solvent odor.		
					Grey, hard CLAY.		
10						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-FF**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/18/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	75%	Brown, Clayey SILT, tr organics.		
					Debris - glass, rubber, plastic.		
					Brown, f-m SAND. Moist.		
	S#2, 4-8'	0.2		80%	Olive-brown, Silty f. SAND. Moist.		
5		1.0			Dark grey and black, f-m SAND. Wet.	Lab sample collected 6-8'.	
	S#3, 8-12'	0.2		100%			
10		0.0			Brown, hard CLAY. Moist.		
						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-GG**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/18/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.2	NA	80%	FILL - Brown, Silty CLAY, tr Debris (plastic). Dry.		
					Brown, f-m SAND, tr silt (dry)		
	S#2, 4-8'	2.0		80%	FILL - Black-grey Soft Clay and Silt, little-some f-c Sand, debris (plastic, wood). Slight odor. Wet.	Lab sample collected 4-6'.	
5		0.4			Grey, f-m SAND. Wet		
	S#3, 8-12'	0.2		100%			
10		0.0			Brown, hard CLAY.		
						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-HH**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/18/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	2.1	NA	50%	FILL - Brown, Silty CLAY, tr-little debris - glass, plastic, metal. Dry.		
	S#2, 4-8'	0.9		90%	Grey-olive, sandy SILT, tr CLAY. Moist.		
5		2.5			Black, f-m SAND, slight solvent odor. Moist to wet.	Lab sample collected 6-8'.	
	S#3, 8-12'	0.2		50%			
10		0.0			Brown, hard CLAY.		
						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

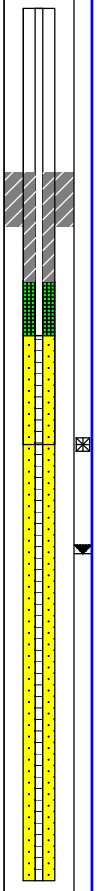
ID NO. **SB-II/OW-37**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/21/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.5	NA	50%	FILL - brown to black, clayey silt w/debris - plastic, metal, glass, cinders. Moist.	Lab sample collected 1-3'.	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
	S#2, 4-8'	0.5		90%	Black-brown, f-m SAND, tr-little clayey Silt. Wet.		
5		0.0			Brown, hard CLAY. Moist.		#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 1-6'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-JJ**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/21/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	100%	FILL - topcover of clayey SILT and organics. Dry.		
					Brown-tan, Clay and Silt, tr f. sand. Moist.		
	S#2, 4-8'	0.4		100%	Tan-brown, f-m SAND, tr-little Silt. Grey from 6-8'. Wet at 6'.	Lab sample collected 4-8'	
5							
	S#3, 8-12'	0.4		100%			
10					Brown, hard CLAY.		
						Boring Terminated at 12 ftbg.	

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

ID NO. **SB-KK**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/21/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	100%	FILL - topcover - clayey Silt, organics, crushed rocks.		
					FILL - f-c SAND and debris - glass, paper, plastic, wood, metal, tr slag. Moist.	Lab sample collected 0-2'	
	S#2, 4-8'	0.0		100%	Grey, silty f. SAND. Moist.		
5					Grey-brown, f-m SAND. Moist to wet.		
					Brown, hard CLAY.		
				100%		Boring Terminated at 8 ftbg.	
10							

Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

2017 Remedial Investigation

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-01S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.25**
DATE STARTED:	**August 15, 2017**
DATE FINISHED:	**August 15, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~6.9'

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DATE	TIME	LEVEL	TYPE

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2	3	75%	dark brown	soft	SILT and SAND with trace organics (0-0.8'); SILTY SAND with some clay (0.8-1.0')	SC	0 ppm
				2	4		light brown - yellowish brown	medium dense		SM	0 ppm
				5	8	90%			SILTY SAND, fine with some clay (1.0-5.9'). Wet around 5.9'		0 ppm
				6	9						0 ppm
5				6	9	90%					0 ppm
				18	9						0 ppm
				-	-	-	brown	very stiff	SILTY CLAY (5.9-7.0')	CL	0 ppm
									End of boring at 7.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-01S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-02S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.66**
DATE STARTED:	**July 27, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.

GROUNDWATER: ~4'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				woh	3	35%	dark brown	soft	SILT and SAND with trace organics (0-0.5'); SANDY SILT with some clay (0.5-1.5')	SC	0 ppm
				2	3		light brown - yellowish brown	medium dense	SILTY SAND, fine with trace clay (1.5-5.75'). Wet at 4'.	SM	0 ppm
				6	8	25%					0 ppm
				5	5						0 ppm
5				6	9	50%					0 ppm
				18	9		light grey	firm	SILTY CLAY (5.75-6.0')	CL	0 ppm
									End of boring at 6.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-02S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-03S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.86**
DATE STARTED:	**July 25, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.

GROUNDWATER: ~4'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				woh	2	10%	dark brown	soft	SILT and SAND (0-1')	SC	0 ppm
				2	3		light brown - yellowish brown	medium dense	SILTY SAND , fine (1.0-7.0). Wet at 6.0'	SM	0 ppm
				3	4	75%					0 ppm
				5	7						0 ppm
5				6	8	30%					0 ppm
				12	10						0 ppm
				8	10	95%					0 ppm
				12	10		light grey	medium dense	SAND, fine with some clay (7.0-8.0').	SC	0 ppm
				5	5	85%	light grey	very soft to stiff	SILTY CLAY, dry to moist with some mottling (8.0-18.0').	CL	0 ppm
10				9	10						0 ppm
				1	3	95%					0 ppm
				6	10						0 ppm
				10	11	100%					0 ppm
				10	9						0 ppm
15				woh	woh	100%					0 ppm
				woh	2						0 ppm
				woh	woh	100%	light grey and reddish brown				0 ppm
				woh	woh						0 ppm
									End of boring at 18.0'		
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-03S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-04S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**576.87**
DATE STARTED:	**July 25, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~4'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				woh	woh	50%	dark brown	very soft	SILT and SAND (0-1.0')	SC	0 ppm
				2	3		light brown - yellowish brown	loose to medium dense	SAND and SILT with coarse to fine SAND seams(1.0'-6.0'). Wet at 6.0'		0 ppm
				2	3	60%					0 ppm
				5	7					SM-SC	0 ppm
5				4	8	75%	yellowish brown to light grey	medium dense			0 ppm
				9	6						0 ppm
									End of boring 6.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. No soil samples collected.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-04S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-05S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.33**
DATE STARTED:	**July 25, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~2-4'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				woh 3	60%	dark brown	very soft	SILT and SAND (0-0.5').	SC	0 ppm
				2 5		light brown - yellowish brown to light grey	loose to medium dense	SILTY SAND, fine (0.5-5.75'). Wet at 3.0'. Grades to SILTY CLAY	SM-CL	0 ppm
				2 3	50%					0 ppm
				4 4						0 ppm
5				3 5	80%					0 ppm
				10 9						0 ppm
				7 8	100%	light grey	very stiff	SILTY CLAY, some sand (6.0-8.0)	CL	0 ppm
				10 10						0 ppm
								End of boring 8.0		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-05S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-06S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**578.03**
DATE STARTED:	**July 26, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~6'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2	3	85%	dark brown	soft	SAND and SILT (0-1.0')	SC	0 ppm
				5	7				SILTY SAND, fine. Grades to SILTY CLAY (1.0-7.0'). Wet at 6.0'.		0 ppm
				2	3	95%					0 ppm
				5	6						0 ppm
5				4	8	70%	light brown - yellowish brown	stiff		SM	0 ppm
				11	9						0 ppm
				13	11	80%					0 ppm
				11	6						0 ppm
				4	4	90%			SILTY CLAY, some mottling. Dry to wet (8.0-18.0')		0 ppm
10				8	14						0 ppm
				3	4	80%					0 ppm
				6	10						0 ppm
				9	6	100%	light grey to reddish brown	very soft to stiff		CL	0 ppm
				6	3						0 ppm
15				woh	woh	100%					0 ppm
				woh	woh						0 ppm
				woh	woh	100%					0 ppm
				woh	2						0 ppm
									End of boring at 18.0'		
20											
25											
30											
35											

COMMENTS: Well constructed. No soil samples collected.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-06S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-07S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.43**
DATE STARTED:	**July 26, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~6'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2	3	1%	dark brown	medium sitff	SAND and SILT (0-0.5')	SC	0 ppm
				2	3		light brown - yellowish brown to light brown	loose to medium dense	SILTY SAND, fine to coarse. Trace organics. Wet to moist at 4.0-6.0' (0.5-6.5')	SM	0 ppm
				2	1	0%					0 ppm
				2	3						0 ppm
5				4	8	50%					0 ppm
				11	8						0 ppm
				4	7	60%	light brown to light grey	somewhat loose to firm	SILTY CLAY, wet (6.5'-8.0')	CL	0 ppm
				8	10						0 ppm
									End of boring at 8.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construciton log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-07S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-08S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**575.95**
DATE STARTED:	**August 15, 2017**
DATE FINISHED:	**August 15, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~3.5'

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DATE	TIME	LEVEL	TYPE

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2 3	30%	dark brown	loose	FILL: sand and silt with wood fragments (0-3.0')	FILL	0 ppm
				2 2						0 ppm
				3 6	50%			SILTY SAND, fine. Grades to SILTY CLAY. Wet at 3.5' (3.0-4.0')		0 ppm
				8 10		yellowish brown	medium dense		SM	0 ppm
5				4 6	80%	brown	stiff	SILTY CLAY (4.0-6.0)	CL	0 ppm
				8 10						0 ppm
								End of bring at 6.0'		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construciton log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-08S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-09S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**578.12**
DATE STARTED:	**September 13, 2017**
DATE FINISHED:	**September 13, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~7.5'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				1 2	35%	dark brown	loose	FILL: sand and silt with plastic, paper, graphite and trash (0-4.0').	FILL	0 ppm
				3 4						0 ppm
				3 2	35%					0 ppm
				3 3						0 ppm
5				4 6	85%	brown	stiff to very stiff	SILTY SAND, some to trace clay. Grades to trace clay. Wet at 6.5' (4.0-8.0')	SM	0 ppm
				6 10						0 ppm
				11 15	90%					0 ppm
				15 12						0 ppm
				5 7	90%	brown	stiff	SILTY CLAY (8.0-10.0)	CL	0 ppm
10				8 10						0 ppm
								End of boring at 10.0'		
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-09S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-10S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.41**
DATE STARTED:	**September 14, 2017**
DATE FINISHED:	**September 14, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~4'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				1	2	85%	brown	loose	FILL: sand and silt, some clay and glass (0-4.4').	FILL	0 ppm
				3	4						0 ppm
				4	2	25%					0 ppm
				2	1						0 ppm
5				4	8	90%	brown	stiff	SILTY SAND, some to trace clay (4.4-4.8)	SM	0 ppm
				9	11		brown	very stiff	SILTY CLAY with a sandy lens from 7.1-7.2' (4.8-8.0').	CL	0 ppm
				5	8	65%					0 ppm
				12	12						0 ppm
									End of boring at 8.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-10S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-11S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.65**
DATE STARTED:	**September 13, 2017**
DATE FINISHED:	**September 13, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.

GROUNDWATER: ~4'

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DATE	TIME	LEVEL	TYPE

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				3	4	85%	brown	stiff	FILL: silty clay, some sand and organics (0-2.0').	FILL	0 ppm
				5	8						0 ppm
				3	5	85%			SANDY SILT, trace caly. Grades to a SILTY SAND. Wet at 4.0' (2.0-70').		0 ppm
				8	9						0 ppm
5				6	9	85%	brown	stiff to very stiff		SM	0 ppm
				11	13						0 ppm
				9	7	95%					0 ppm
				8	16		brown	stiff	SILTY CLAY (7.0'-8.0').	CL	0 ppm
									End of boring at 8.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-11S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-12S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.06**
DATE STARTED:	**September 13, 2017**
DATE FINISHED:	**September 13, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~6'

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DATE	TIME	LEVEL	TYPE

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2 1	35%	dark brown	loose	FILL: sand and silt with wood and glass (0-5.0').	FILL	0 ppm
				1 3						0 ppm
				5 4	10%					0 ppm
				1 1						0 ppm
5				2 3	40%					0 ppm
				6 6		gray-brown	stiff	SILTY SAND, some to trace clay. Wet at 6.0' (5.0-7.0').	SM	0 ppm
				5 6	50%					0 ppm
				8 13		brown	stiff	SILTY CLAY (6.0-8.0').	CL	0 ppm
								End of boring at 8.0'		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construciton log.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-12S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-13S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**578.75**
DATE STARTED:	**September 14, 2017**
DATE FINISHED:	**September 14, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~5'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				WH	1	60%	dark brown to black	loose	FILL: sand and silt with wood and trash. Ash from 2-2.5' (0-3.0').	FILL	0 ppm
				2	5						0 ppm
				4	5	100%					0 ppm
				11	9		brown	stiff	SILTY SAND with some clay. Grades to trace clay at 5.1'. Wet at 5.0' (3.0-7.4').	SM	0 ppm
5				3	4	100%					0 ppm
				8	10						0 ppm
				12	9	100%					0 ppm
				10	10		brown	very stiff	SILTY CLAY (7.4-8.0').	CL	0 ppm
									End of boring at 8.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. No soil samples collected.

PROJECT NO.: 17-013-0289
BORING NO.: LPZ-13S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**OW-14BR**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.18**
DATE STARTED:	**August 15, 2017**
DATE FINISHED:	**August 15, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.

GROUNDWATER: ~6.5`

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2	3	75%	dark brown	soft	SAND and SILT with trace organics (0-1.0').	SC	0 ppm
				2	4		light brown - yellowish brown	medium dense	SILTY SAND, fine, with some clay, trace gravel. Grade to trace clay. Wet around 6.5' (1.0-7.0').	SM	0 ppm
				6	8	90%					0 ppm
				9	12						0 ppm
5				12	11	55%					0 ppm
				15	10						0 ppm
				9	7	90%					0 ppm
				11	14		brown	very stiff	SILTY CLAY (7.0-8.0').	CL	0 ppm
									End of boring at 8.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: OW-14BR

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LSB-01**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**NR**
DATE STARTED:	**September 14, 2017**
DATE FINISHED:	**September 14, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~6.5`

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DATE	TIME	LEVEL	TYPE

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2 4	50%	dark brown	soft	SAND and SILT with some clay and trace organics (0-1.5').	SC	0 ppm
				3 5						0 ppm
				5 7	75%	light brown - yellowish brown	medium dense	SILTY SAND, fine, with some clay, trace gravel. Grades to trace clay. Wet around 6.5' (1.5-5.3').	SM	0 ppm
				7 9						0 ppm
5				9 11	80%					0 ppm
				11 11		brown	very stiff to stiff	SILTY CLAY (5.3-6.0')	CL	0 ppm
								End of boring at 6.0'		
10										
15										
20										
25										
30										
35										

COMMENTS: No well constructed.

PROJECT NO.: 17-013-0289
BORING NO.: LSB-01

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LSB-02**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**NR**
DATE STARTED:	**September 14, 2017**
DATE FINISHED:	**September 14, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Dan Sheldon**

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~7`

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				2	8	85%	dark brown	soft	FILL: sand and silt, some clay, trace organics (0-0.5').		0 ppm
				9	11				FILL: silt with some clay, trace gravel (0.5-9.5'). Grades to SILTY CLAY. Wet at 7.0'.		0 ppm
				6	6	85%					0 ppm
				7	7						0 ppm
5				33	5	100%					0 ppm
				5	4		red-brown	soft-very stiff		FILL	0 ppm
				4	8	55%					0 ppm
				9	8						0 ppm
				3	1	30%					0 ppm
10				2	3						0 ppm
				2	4	85%	gray	stiff	SILTY CLAY (9.5-12.0').	CL	0 ppm
				6	9						0 ppm
									End of boring at 12.0'		
15											
20											
25											
30											
35											

COMMENTS: No well constructed. No soil samples collected.
Orginally going to be LPZ-10L.

PROJECT NO.: 17-013-0289
BORING NO.: LSB-01

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LSB-03**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**NR**
DATE STARTED:	**July 27, 2017**
DATE FINISHED:	**July 27, 2017**
DRILLER:	**SJB/Empire Geo Serv. Inc.**
GEOLOGIST:	**Kris Charney**
REVIEWED BY:	

PROJECT NAME: Niagara Sanitation
CLIENT: New York State Department of Environmental Conservation (NYSDEC)
BORING CONTRACTOR: SJB/Empire Geo Serv. Inc.
GROUNDWATER: ~6'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				woh	woh	40%	light brown - yellowish brown	somewhat loose	CLAYEY SILT, some coarse sand (0-4.0').	MH	0 ppm
				2	2						0 ppm
				2	3	80%					0 ppm
				2	2						0 ppm
5				3	6	100%	yellowish brown to light grey	somewhat loose; stiff	SILTY CLAY (4.0-5.0').	CL	0 ppm
				8	12						0 ppm
									End of boring at 6.0'		
10											
15											
20											
25											
30											
35											

COMMENTS: No well constructed.
Originally going to be LPZ-08S

PROJECT NO.: 17-013-0289
BORING NO.: LSB-03

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LDP-01**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**576.92**
DATE STARTED:	**August 24, 2017**
DATE FINISHED:	**August 24, 2017**
DRILLER:	**Eric Miller**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Craig Taylor**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: LiRo Engineers

GROUNDWATER: ~4'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		Hand Auger	
DIA.		4"	
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
						dark brown		SILT and SAND, some clay, trace organics (0-1.6')	SC	0 ppm
										0 ppm
						brown		SILTY SAND, with some to trace clay (1.6-5.3'). Wet at 4'	SM	0 ppm
										0 ppm
5										0 ppm
										0 ppm
								End of boring at 5.3'		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construciton log.

PROJECT NO.: 17-013-0289

BORING NO.: LDP-01

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LDP-02**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.46**
DATE STARTED:	**August 24, 2017**
DATE FINISHED:	**August 24, 2017**
DRILLER:	**Eric Miller**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Craig Taylor**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: LiRo Engineers

GROUNDWATER: ~4

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		Hand Auger	
DIA.		4"	
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
						dark brown		SILT and SAND, some clay, trace organics (0-1.6')	SC	0 ppm
										0 ppm
						brown		SILTY SAND, with trace clay (1.6-5.2'). Wet at 4'.	SM	0 ppm
										0 ppm
5										0 ppm
										0 ppm
								End of boring at 5.3'		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LDP-02

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LDP-03**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**577.25**
DATE STARTED:	**August 24, 2017**
DATE FINISHED:	**August 24, 2017**
DRILLER:	**Eric Miller**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Craig Taylor**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: LiRo Engineers

GROUNDWATER: ~4

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HDA	
DIA.		4"	
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
						dark brown		SILT and SAND, some clay, trace organics (0-1.0')	SC	0 ppm
								SILTY SAND, with trace clay (1.0-4.9'). Wet at 4'.		0 ppm
						brown		SILTY CLAY (4.9-5.1')		0 ppm
									SM	0 ppm
5										0 ppm
								End of boring at 5.1'		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LDP-03

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LDP-04**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	**578.15**
DATE STARTED:	**August 24, 2017**
DATE FINISHED:	**August 24, 2017**
DRILLER:	**Eric Miller**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**Craig Taylor**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: LiRo Engineers

GROUNDWATER: ~4

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		Hand Auger	
DIA.		4"	
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
						dark brown		FILL: reworked sand and silt, some to trace clay, trace organics (0-2.3')	SC	0 ppm
										0 ppm
						brown		SILTY CLAY (2.3-3.1')	CL	0 ppm
								SILTY SAND with trace clay (3.1-5.3')		0 ppm
5						brown			SM	0 ppm
										0 ppm
								End of boring at 5.3'		
10										
15										
20										
25										
30										
35										

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LDP-04

2021 Sampling Event

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-14S**
SHEET:	**1 of 1**
JOB NO.:	**17-013-0289**
LOCATION:	**Niagara Sanitation**
GROUND ELEVATION:	
DATE STARTED:	**October 19, 2021**
DATE FINISHED:	**October 19, 2021**
DRILLER:	**Phil Bence**
GEOLOGIST:	**Andrew Koons**
REVIEWED BY:	**DMS**

PROJECT NAME: Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation (NYSDEC)

BORING CONTRACTOR: Earth Dimensions

GROUNDWATER: ~6.5'

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	TUBE
TYPE		HSA	
DIA.		4 1/4"	2" sampler
WT.			
FALL			

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				1	2	90%	dark brown	loose	FILL: SILT and SAND with organics (0-2.0')	FILL	0 ppm
				3	4						0 ppm
				3	4	60%	gray-brown	loose	FILL: Silty SAND with trash (2.0-4.0')		0 ppm
				5	6						0 ppm
5				4	8	90%	gray-brown	medium dense	Silty SAND, fine with trace clay and organics (4.0-8.0') Grades to SAND, fine with silt. Wet at 6.5'.	SM-SP	0 ppm
				10	10						0 ppm
				7	10	90%					0 ppm
				9	7						0 ppm
				4	4	90%	gray-brown	stiff	SILTY CLAY with silty partings(8.0-12.0')	CL	0 ppm
10				9	13						0 ppm
				3	6	90%					0 ppm
				9	11						0 ppm
									End of boring at 12.0'		
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-14S

LiRo Engineers, Inc.

TEST BORING LOG

BORING ID:	**LPZ-15S**
PROJECT NAME: Niagara Sanitation	**SHEET:** 1 of 1
CLIENT: New York State Department of Environmental Conservation (NYSDEC)	**JOB NO.:** 17-013-0289
BORING CONTRACTOR: Earth Dimensions	**LOCATION:** Niagara Sanitation
GROUNDWATER: ~5.5'	**GROUND ELEVATION:**

DATE	TIME	LEVEL	TYPE		CAS.	SAMPLER	TUBE
				TYPE		HSA	
				DIA.		4 1/4"	2" sampler
				WT.			
				FALL			

DATE STARTED:	October 19, 2021
DATE FINISHED:	October 19, 2021
DRILLER:	Phil Bence
GEOLOGIST:	Andrew Koons
REVIEWED BY:	DMS

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS
				-	-	NA	gray	very dense	FILL: crushed stone (0-2.0') Augered through first 2.0'.	FILL	0 ppm
				-	-						0 ppm
				3	4	75%	dark brown	loose	FILL: SILT and SAND with organics (2.0-3.0')		0 ppm
				5	6		gray-brown	medium dense	Silty SAND, fine with trace clay and organics (3.0-5.0')	SM	0 ppm
5				3	4	90%					0 ppm
				7	9		gray-brown	medium dense	SAND, fine with some silt (5.0-7.5'). Wet at 5.5'.	SP	0 ppm
				5	4	90%					0 ppm
				7	10				SILTY CLAY (7.5-12.0')		0 ppm
				4	6	90%					0 ppm
10				9	11		gray-brown	stiff to very stiff		CL	0 ppm
				3	6	90%					0 ppm
				10	11						0 ppm
									End of boring at 12.0'		
15											
20											
25											
30											
35											

COMMENTS: Well constructed. See well construction log.
Soil samples collected at this location at 5.0-7.0'.

PROJECT NO.:	17-013-0289
BORING NO.:	LPZ-15S

2023 Sampling Event

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**LPZ-16S**
SHEET:	**1 of 3**
JOB NO.:	**17-013-0289**
LOCATION:	**As per plan**
GROUND ELEVATION:	**577.76' AMSL**
DATE STARTED:	**October 4, 2023**
DATE FINISHED:	**October 4, 2023**
DRILLER:	
GEOLOGIST:	**J. Williams**
REVIEWED BY:	**J. Kryszak**

PROJECT Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation

BORING CONTRACTOR: Buffalo Drilling

GROUNDWATER:					CAS.	SAMPLER	TUBE
DATE	TIME	LEVEL	TYPE	TYPE			
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	USCS	REMARKS
1		1	8	2 4 / 4 5	75%	Dark Brown to Black	Firm	0-0.5' - SILT, little fine grained sand and clay	ML	0.1 ppm Moist
		2	17	3 7 / 10 9	75%	Brown	Firm	0.5-4' - fine grained SAND and SILT	SM	0 ppm Moist
5		3	23	10 11 / 12 7	67%	Brown	Firm	4-6' - fine grained SAND, little silt	SW	0 ppm Wet
		4	10	3 4 / 6 9	83%	Brown	Dense/med. Plasticity	6-16' - CLAY, little silt	CL	0 ppm Moist
10		5	13	3 4 / 9 9	75%	Brown	Dense/med. Plasticity			0 ppm Moist
		6	9	3 4 / 5 5	100%	Red Brown	Dense/high Plasticity			0 ppm Moist
		7	2	1 1 / 1 1	100%	Red Brown	Dense/high Plasticity			0 ppm Moist
16		8	2	1 1 / 1 1	100%	Red Brown	Dense/high Plasticity			0 ppm Moist
20								16.0' - End of Boring Monitoring Well Installed		
25										
30										
35										

COMMENTS: Soil classified according to the Unified Soil Classification System (USCS).

Sample LPZ-16S-2-4 collected from 2 to 4 ftbg for analysis of VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane, and solids.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-16S

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	LPZ-17S
SHEET:	2 of 3
JOB NO.:	17-013-0289
LOCATION:	As per plan
GROUND ELEVATION:	576.69' AMSL
DATE STARTED:	October 3, 2023
DATE FINISHED:	October 3, 2023
DRILLER:	
GEOLOGIST:	J. Williams
REVIEWED BY:	J. Kryszak

PROJECT Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation

BORING CONTRACTOR: Buffalo Drilling

GROUNDWATER:					CAS.	SAMPLER	TUBE
DATE	TIME	LEVEL	TYPE	TYPE			
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	USCS	REMARKS
1		1	7	3 3 / 4 6	67%	Dark Brown	Firm	0-4.1' - SILT, some clay and fine grained sand	ML	64.5 to 694 ppm Moist
		2	12	3 4 / 8 9	88%	Brown	Stiff			0 ppm Moist
5		3	4	1 2 / 2 2	54%	Brown	Firm	4.1-6' - CLAY, some silt, trace fine grained sand	CL	2 to 18.6 ppm Moist
		4	4	5 2 / 2 3	0%	NR	NR	No Recovery	--	NM Wet
10		5	3	4 1 / 2 3	0%	NR	NR	No Recovery	--	NM Wet
		6	5	3 3 / 2 2	71%	Brown to Red Brown	Soft/high Plasticity	10-18' - CLAY, little silt	CL	0 ppm Moist to Wet
		7	2	1 1 / 1 1	100%	Red Brown	Soft/high Plasticity			0 ppm Moist to Wet
15		8	2	1 1 / 1 1	75%	Red Brown	Soft/high Plasticity			0 ppm Moist to Wet
		9	2	1 1 / WH 1	100%	Red Brown	Soft/high Plasticity			0 ppm Moist to Wet
20								18.0' - End of Boring Monitoring Well Installed		
25										
30										
35										

COMMENTS: Soil classified according to the Unified Soil Classification System (USCS).

Sample LPZ-17S-0-2 collected from 0 to 2 ftbg for analysis of VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane, and solids.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-17S

LiRo Engineers, Inc.

TEST BORING LOG

BORING NO:	**LPZ-18S**
SHEET:	**3 of 3**
JOB NO.:	**17-013-0289**
LOCATION:	**As per plan**
GROUND ELEVATION:	**578.66' AMSL**
DATE STARTED:	**October 4, 2023**
DATE FINISHED:	**October 4, 2023**
DRILLER:	
GEOLOGIST:	**J. Williams**
REVIEWED BY:	**J. Kryszak**

PROJECT Niagara Sanitation

CLIENT: New York State Department of Environmental Conservation

BORING CONTRACTOR: Buffalo Drilling

GROUNDWATER:					CAS.	SAMPLER	TUBE
DATE	TIME	LEVEL	TYPE	TYPE			
			NA	DIA.			
				WT.			
				FALL			

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	USCS	REMARKS
1		1	8	2 4 / 4 5	75%	Tan	Dense	0-6.5' - fine grained SAND, some silt	SW	0 to 0.4 ppm Dry
		2	17	3 7 / 10 9	75%	Tan to Brown	Dense			0 ppm Dry to Moist
5		3	23	10 11 / 12 7	67%	Brown	Dense			0 ppm Very Moist
		4	16	6 6 / 6 10	75%	Brown	Dense			0 ppm Wet
								6.5-8' - SILT, some clay	ML	
		5	14	3 6 / 8 9	71%	Brown	Stiff	8-16' - CLAY, little to some silt	CL	0 ppm Moist
10		6	20	4 7 / 13 14	100%	Brown	Med. Plasticity			0 ppm Moist
		7	7	3 3 / 4 4	100%	Red Brown	High Plasticity			0 ppm Very Moist
15		8	3	1 2 / 1 2	100%	Red Brown	High Plasticity			0 ppm Very Moist
								16.0' - End of Boring Monitoring Well Installed		
20										
25										
30										
35										

COMMENTS: Soil classified according to the Unified Soil Classification System (USCS).

Sample LPZ-18S-4-6 collected from 4 to 6 ftbg for analysis of VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane, and solids.

PROJECT NO.: 17-013-0289

BORING NO.: LPZ-18S

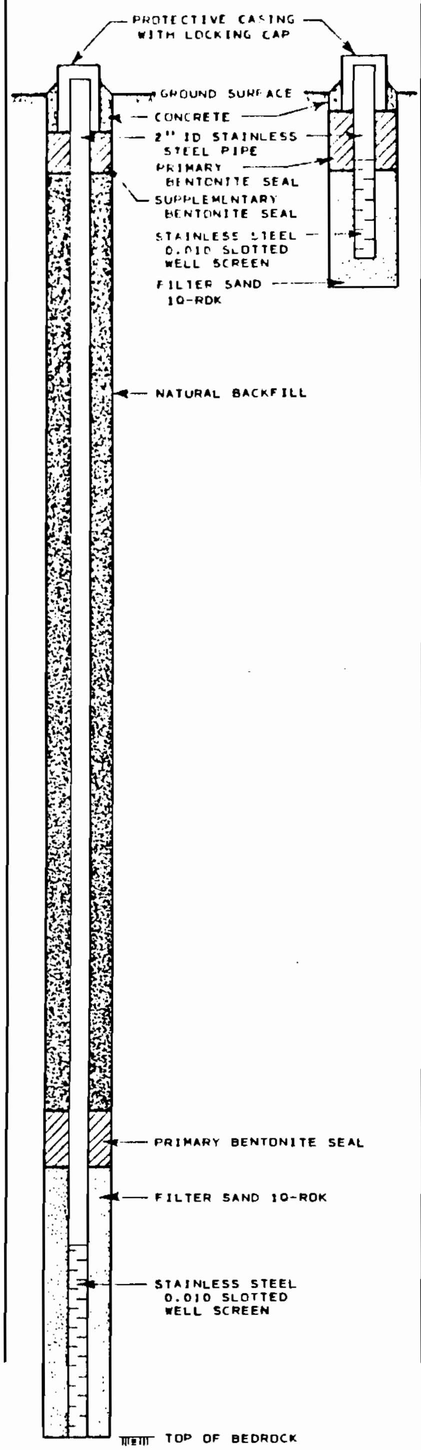
APPENDIX B
WELL CONSTRUCTION DIAGRAMS

Fill/Upper Sand Wells

BORING OW-1

NASH ROAD SITE

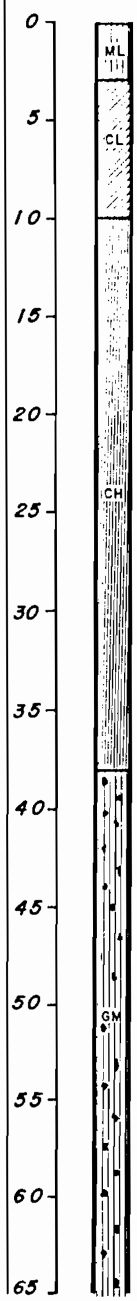
WELL SCHEMATICS



SAMPLING

Depth in Feet (approx.)	Blow Count	Sample No & Type	Run No	Core Rec	Core RQD	Fractures
0	5	1				
	15	2				
	15	3				
5	35	4				
	15	5				
10	9	6				
	10	7				
	2	8				
15	2	9				
		10				
20		11				
25	9	1B:1				
30	4	1B:2				
	38/6"	1B:3				
	55/6"	1B:4				
	16/6"	1B:5				
	20/6"	1B:6				
50	98	1B:7				
55	55/6"	1B:8				
60	65/6"	1B:9				
65	76/6"	1B:10				

GRAPHIC LOG



DESCRIPTIVE GEOLOGIC NOTES

SURFACE CONDITIONS: GRASSY, WET.

LIGHT BROWN MOIST MEDIUM SILT AND CLAY, TRACE OF SAND, OCCASIONAL BLACK ORGANIC STAINS

GRAY MOIST STIFF LAYERED CLAY AND SILT WITH OCCASIONAL SEAMS OF FINE TO MEDIUM SAND, 1/8" IN THICKNESS

GRADES TO LESS STIFF

GRAY MOIST MEDIUM LAYERED CLAY, RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT IRREGULAR INTERVALS

GRADES TO VERY SOFT CLAY

GRADES TO SOFT

GRADES TO VERY SOFT

BROWN, MOIST SILT AND COARSE TO FINE GRAVEL, LITTLE CLAY, LITTLE FINE SAND (TILL)

GRADES TO WET

GRADES TO MOIST, DENSE SILT, SOME FINE TO COARSE SAND, LITTLE FINE GRAVEL

GRADES TO WET

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-I

NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE NO & TYPE	SAMPLING: RUN NO	SAMPLING: CORE REC	SAMPLING: CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK AT 68.6'. BEDROCK IS DOLOSTONE.
		1B;11					70		BORING TERMINATED AT A DEPTH OF 68.6' ON JUNE 11, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

ENGINEERING-SCIENCE DRILLING RECORD

DRILLING CONTRACTOR: Rochester Drilling Co.
er: M Legare / C Reynolds
pector: L Dobson - Eng. Science
Type Mobile B61
ling Method HSA 4.25" I.D.

PROJECT NAME Nash Road
PROJECT NO. SY012.19

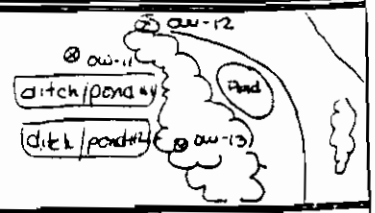
BORING NO. DW-13
Sheet 1 of 1
Location downgradient of ditch/pond (2)

ROUND WATER OBSERVATIONS (from TOC)

ater Level	3.00		
Time	1400		
Date	12/02/88		
ling Depth	5'		

Weather Sunny, 30°F
Date/Time Start 1/29/88 1130
Date/Time Finish 1/29/88 1200

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0	0-2	S-1	5	Top Soil - Roots/organic material & very fine sand, trace angular gravel
	rec = 6.0"		1	
	SS		3	
			1	
0.2	2-4	S-2	29	Orange/Grey m-c sand, well sorted saturated.
	rec = 6.0"		4	
	SS		10	
			12	
0	4-6	S-3	15	Orange/Brown m-c sand grading into stiff clay with silt, trace gravel
	rec = 12"		15	
	SS		9	
			13	
				End of Boring 6.0' @ 1200

WELL SCHEMATIC

Grout	2" PVC RISER		1
Bentonite			2½
SAND		3'	
	2" PVC SCREEN		5'

Comments: High blow count due to tree root

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: M. Leggare-Rochester Drilling
Inspector: L. Dobson - Eng. Sci.
Rig Type: Mobile B-61
Drilling Method: HSA 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: Nash Rd
PROJECT NO.: SY012.19

BORING NO.: 4-B (shallow) (2)
Sheet 1 of 1
Location: mound 15' out from edge of pond.

GROUND WATER OBSERVATIONS

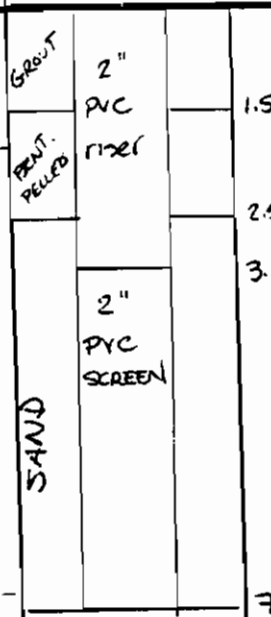
Water Level			
Time			
Date			
Casing Depth			

Weather: 25°F Partly Sunny
Date/Time Start: 2/04/88 1130
Date/Time Finish: 2/04/88 1230

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0.8	0-2	S-1	5	fine medium gray sand, trace angular gravel upper 6" frozen rest saturated
	rec=10"		3	
	SS		2	
			6	
0.6	2-4	S-2	10	v.f. gray sand with some clay grading into a m-c orange/brown sand (wet)
	rec=12"		10	
	SS		20	
			19	
0.	4-6	S-3	13	med. brown/orange m-c sand (wet)
	rec=12"		24	
	SS		26	
			23	
0.1	6-8	S-4	3	m-c brown sand trace rounded black gravel grading into stiff red/gray clay @ 7.0'
			7	
			15	
			21	
–	8-10		19	No sample
			~~20~~ 12	
			20	
			18	Boring terminated 10' @ 1230

WELL SCHEMATIC



Comments: No return on 1st or 2nd attempts in SS.

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
B = BIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Brian Delude

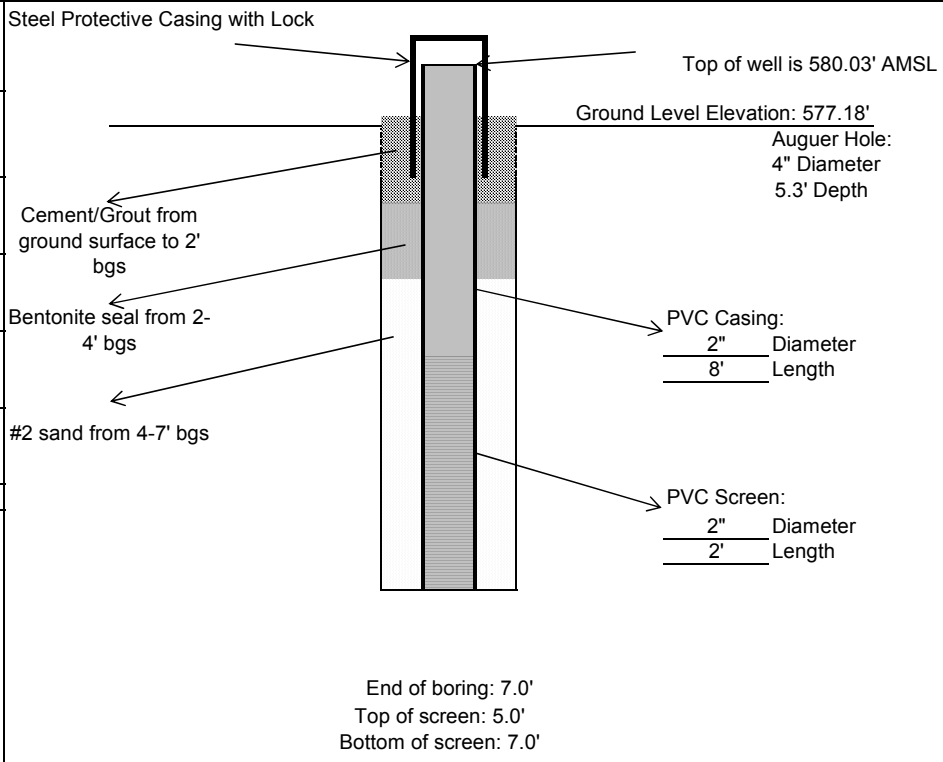
Rig Make/Model:
Diedrich D-50

Date:
8/15/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 4'-7' bgs
		SEAL MATERIAL
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	Type: Bentonite Setting: 2'- 4' bgs
		Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 4', bentonite seal from 4' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **OW-14BR**

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.: 5401Z.19

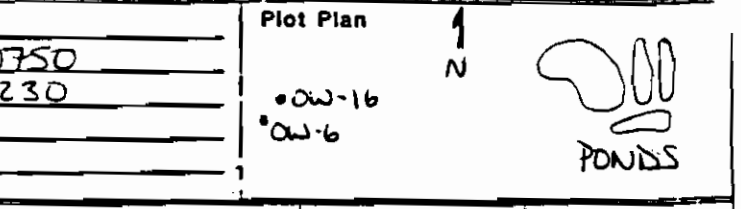
BORING NO. OW-16 (2)
Sheet 1 of 1
Location: WEST END OF SITE

GROUND WATER OBSERVATIONS

Water Level	8.5'	1.0'
Time	0919	0735
Date	12/8	12/10
Casing Depth	10.'	10.'

Weather:
Date/Time Start: 12/8/87 0750
Date/Time Finish: 12/8/87 1230

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	0-2	S-1	2	BROWN CLAY, SOME SAND, TRACE SILT	BENT. PEL. / CEMENT/BENT. GROUT; 2" ID PVC RISER; 3'; 4'	
	REC= 12		3			
			4			
			15			
0.0	2-4	S-2	11			
	REC= 6		13			
			4			
			8			
0.5	4-6	S-3	1			
	REC= 10		1			
			2	WET BROWN & GREY SILT, SOME SAND, TRASH PRESENT.		
			6			
0.0	6-8	S-4	6		#4 Q-ROCK; 2" ID SLOTTED PVC SCREEN; 5'; 10'	S-4: WOOD IN NOSE
	REC= 3		9			
			2			
			4			
0.0	8-10	S-5	7	MOIST BROWN CLAY, SOME SILT.		
	REC= 7		8			
			3			
			10			
				Boring terminated at 10'		

SPT = STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary: SOIL FILL TO 4.5' OVER SOIL AND NON-SOIL FILL TO 8' SILTY CLAY.

SOIL BORING LOG

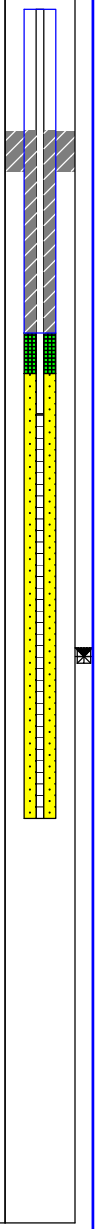
ID NO. **SB-D/OW-21**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	2.7	NA	3.5/4.0'	Gray, Silty Clay. Moist		4" Steel protective standpipe set in concrete
					Tan-Brown, fine to medium Sand, little to some Silt, trace organics. Moist		2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.5		4.0/4.0'	Tan-Brown, fine to medium Sand. Saturated.	Lab sample collected 4-8'.	#00N Silica Sand Filter Sand
		0.1			Brown Clay. Hard.		2" PVC, 10 slot screen 3-8'
10	S#3, 8-12'	0.0		3.0/4.0'		Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

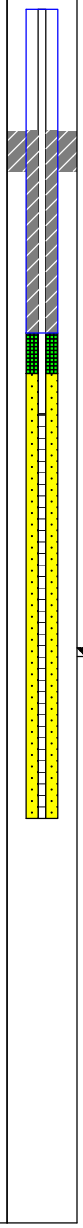
ID NO. **SB-C/OW-22**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	4.1	NA	2.0/4.0'	Fill - Brown, Silty Clay, trace to little f-c Sand & f-c Gravel, trace debris, trace organics. Moist		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	4.7		0/4.0'	No Recovery 4-8'. Collected slough from S#3 for field screening, presumed from 4-8 interval. Slough consisted of a mixture of Fill and sand.		#00N Silica Sand Filter Sand
	S#3, 8-12'	0.4		4.0'/4.0	Brown, Clay, trace Silt. Faint solvent odor. Moist.		2" PVC, 10 slot screen 3-8'
10						Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

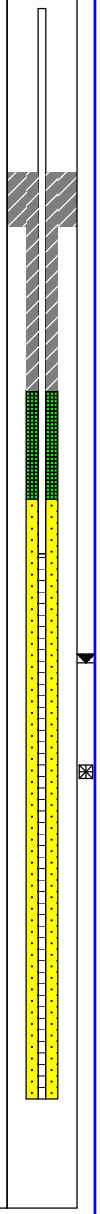
ID NO. **SB-F/MW-23**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **8 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**6/3/13**	Sampling Method:	**Macro Core**
Drilling Company:	**Quality Inspection Services**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Acker Soil Scout**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	4.0/4.0'	Brown-gray, Silty Clay, trace organics. Moist.		4" Steel protective standpipe set in concrete
		0.5			Black, fine to medium Sand, trace Silt. Moist to wet. Grades to tan from 3-4'.		2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.6		3.0/4.0'	Tan, fine to medium Sand. Wet.	Lab sample collected 4-6'.	#00N Silica Sand Filter Sand
		0.0			Brown, CLAY. Hard.		2" PVC, 10 slot screen 3-8'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

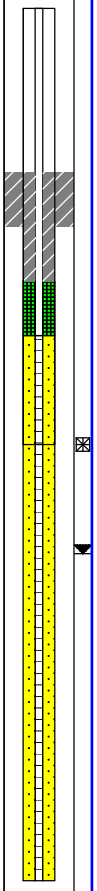
ID NO. **SB-S/OW-31**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.0	NA	75%	Brown, SILT and CLAY, little f.Sand, tr organics. Wet.		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
		0.3			Tan-brown, f-m SAND, little Silt. Moist to wet.	Lab sample collected 1-3'.	Hydrated bentonite chips
5	S#2, 4-8'	0.0		100%	Brown, hard CLAY. Moist.		#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 1-6'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

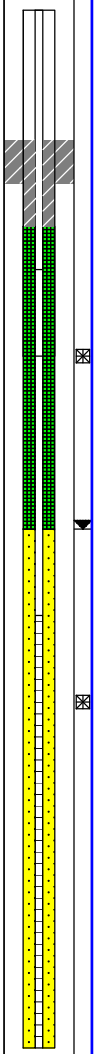
ID NO. **SB-T/OW-32**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/15/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	75%	FILL - Brown, Silty CLAY w/Debris. Debris includes metal, plastic, glass. Shiny metallic balls, size of coarse sand.	Lab sample collected 0-3'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
		0.3			Tan, f-m SAND, tr Silt. Moist		
5	S#2, 4-8'	0.4		100%	Brown, f.Silty SAND. Grades to grey at 6-7 ftbg. Wet. Slight odor observed.	Lab sample collected 4-8'	#00N Silica Sand Filter Sand
	S#3, 8-12'	0.0		100%	Grey, f.SAND, tr Silt. Wet.		
10					Grey, hard CLAY. Moist.		2" PVC, 10 slot screen 5-10'



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

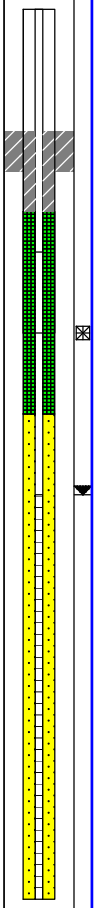
ID NO. **SB-W/OW-33**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/16/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.1	NA	50%	FILL - 6" Clayey Silt topcover, over glass, plastic, ash, cinders, sand & gravel, tile, wood. Dry to Moist.	Lab sample collected 0-3'	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
5	S#2, 4-8'	0.1		90%	Tan-brown, fine SAND. Contains trace seashells (clams) Wet. Grades to f-m Sand at 6 ftbg.	Lab sample collected 4-8'	#00N Silica Sand Filter Sand
	S#3, 8-12'	0.0		100%			2" PVC, 10 slot screen 4-9'
10		0.0			Grey, hard CLAY. Moist.	Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

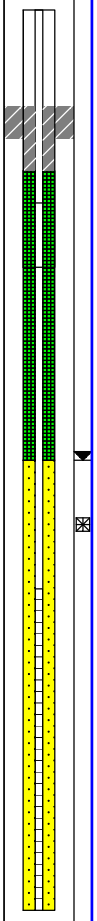
ID NO. **SB-Y/OW-34**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **16 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.3	NA	100%	Brown, Sandy SILT, tr Clay, tr organics. Dry.		4" Steel protective standpipe set in 2' PVC riser to approx 2 ft above surface
					Dark brown, fine SAND. Moist.		
					Brown, Clayey SILT, tr-little f.SAND. Dry to moist.		
	S#2, 4-8'	0.3		100%	Grey-brown, silty f.SAND. Moist.		Hydrated bentonite chips
5					Grey-brown, f-m SAND. Wet-saturated.	Lab sample collected 5-7'	
					Grey-brown, silty f.SAND. Moist.		
	S#3, 8-12'	0.4		75%	Grey-brown, f-m SAND. Wet-saturated.		#00N Silica Sand Filter Sand
10		0.2					
	S#4, 12-16'			100%			2" PVC, 10 slot screen 7-12'
15					Brown, Hard CLAY. Moist.		
						Boring Terminated at 16'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

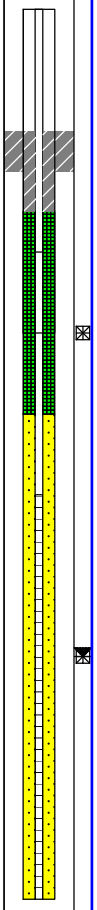
ID NO. **SB-BB/OW-35**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.6	NA	75%	Brown, Clayey SILT, tr-little f-c Sand, tr organics, tr brick fragments, tr glass fragments. Dry.		4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface
5	S#2, 4-8'	1.9		100%	Grey-brown, f-m SAND, tr Silt. Moist to wet. Wet at 6 ftbg.	Lab sample collected 5-7'	Hydrated bentonite chips
	S#3, 8-12'	0.0		80%			#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 4-9'
10					Brown, Hard CLAY. Moist.		
						Boring Terminated at 12'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

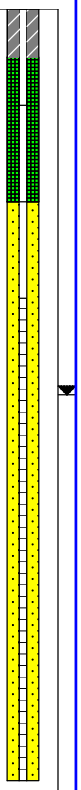
ID NO. **SB-DD/OW-36**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **12 ftbg.**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **3 in.**	WELL DIA.:

Logged By:	**E. Popken**	Drilling Method:	**Direct Push**
Dates Drilled:	**4/17/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental, Inc.**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	9.3	NA	40%	FILL - Brown, Clayey SILT, tr-little debris (glass, metal, plastic, wood), some f-c Sand. Moist. Slight solvent odor.		Hydrated bentonite chips
	S#2, 4-8'	15.8		10%		Lab sample collected 4-8'.	
5					Grey, f-m SAND. Wet. Slight solvent odor.		#00N Silica Sand Filter Sand
	S#3, 8-12'	1.2		100%	Brown, hard, CLAY. Moist.		2" PVC, 10 slot screen 4-9'
10						Boring Terminated at 12 ftbg.	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

SOIL BORING LOG

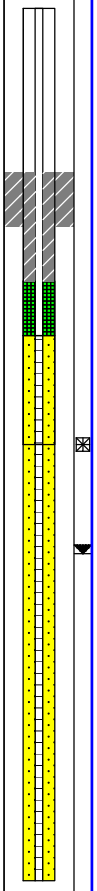
ID NO. **SB-II/OW-37**

Groundwater & Environmental Services, Inc.

PROJECT:	**Nash Rd Landfill, Site #932054**	SURFACE ELEV.:	TOTAL DEPTH: **8 ftbg**
ADDRESS:	**Wheatfield, New York**	WATER DEPTH:	CASING EL.:
JOB NO.	**0901536**	BOREHOLE DIA.: **12 in.**	WELL DIA.: **2 in.**

Logged By:	**E. Popken**	Drilling Method:	**Direct Push / 4.25 in. Hollow Stem Auger**
Dates Drilled:	**4/21/14**	Sampling Method:	**Macro Core**
Drilling Company:	**TREC Environmental**	Soil Class. System:	**Burmister**
Drill Rig Type:	**Geoprobe 6620 DT**	Field Screening:	**MiniRae 2000 PID w/10.6 eV lamp (PPM)**

Depth (feet)	Sample Interval	Field Screen	Blow Counts	Rec.	SAMPLE LITHOLOGY	COMMENTS	COMPLETION DETAILS
0	S#1, 0-4'	0.5	NA	50%	FILL - brown to black, clayey silt w/debris - plastic, metal, glass, cinders. Moist.	Lab sample collected 1-3'.	4" Steel protective standpipe set in concrete 2" PVC riser to approx 2 ft above surface Hydrated bentonite chips
	S#2, 4-8'	0.5		90%	Black-brown, f-m SAND, tr-little clayey Silt. Wet.		
5		0.0			Brown, hard CLAY. Moist.		#00N Silica Sand Filter Sand 2" PVC, 10 slot screen 1-6'
						Boring Terminated at 8'	



Location:
Northing/Latitude:
Easting/Longitude:
Horizontal Datum: **Lat/Long**
Vertical Datum: **Assumed 100 ft. elev. benchmark**

General Comments:
ftbg = Feet Below Grade
NC = Not Collected

Symbol Key:
Apparent Water Level
Lab Sample Location

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Brian Delude

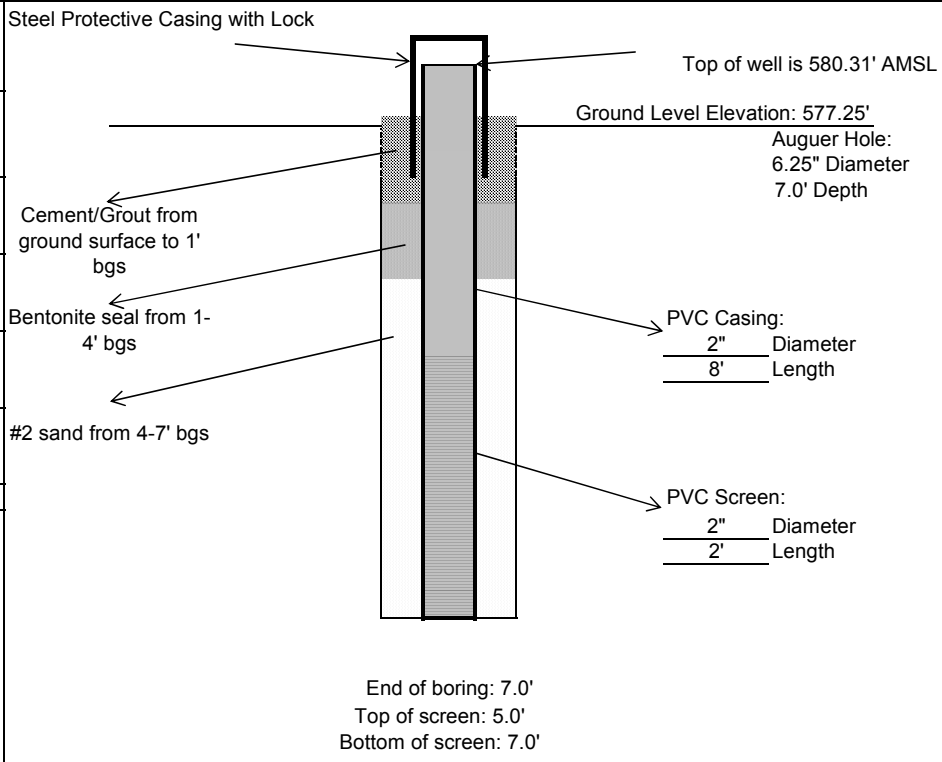
Rig Make/Model:
Diedrich D-50

Date:
8/15/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 4'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 4' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 4', bentonite seal from 4' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-01S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

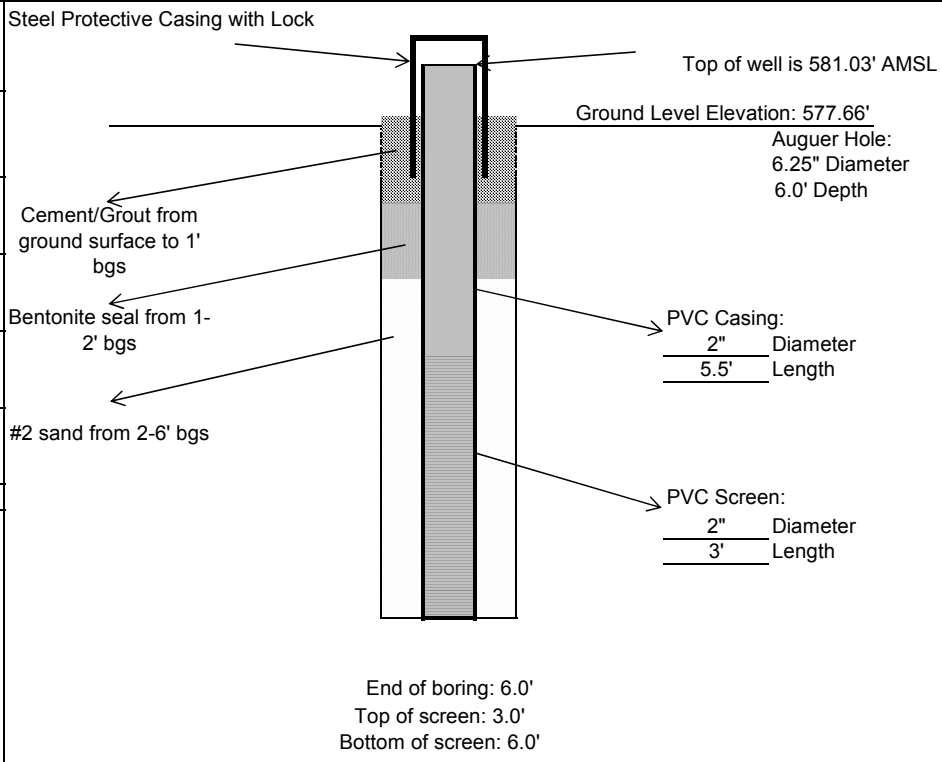
Rig Make/Model:
N/A

Date:
7/27/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 6.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-02S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

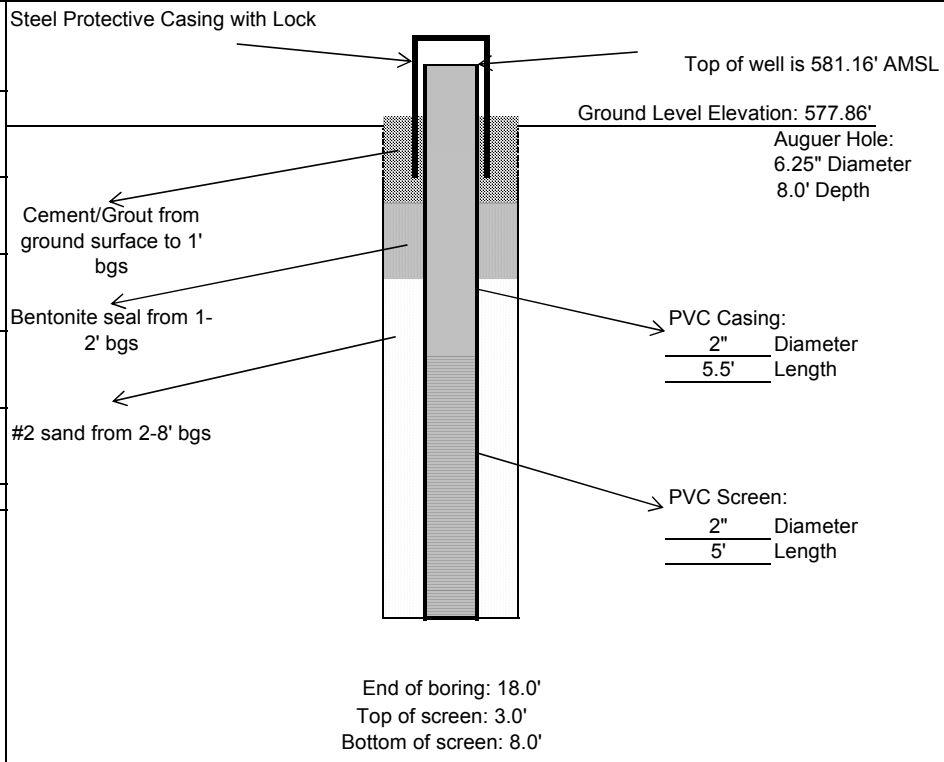
Rig Make/Model:
N/A

Date:
7/25/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See Boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-8' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 18.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 8' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-03S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

Rig Make/Model:
N/A

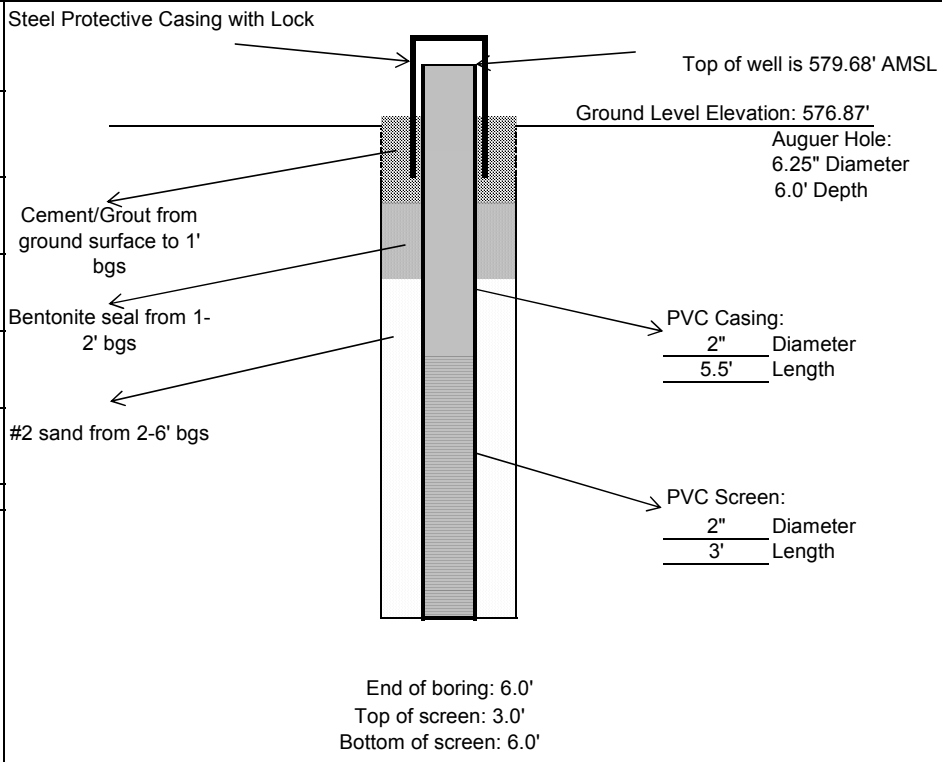
Date:
7/26/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 6.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-04S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

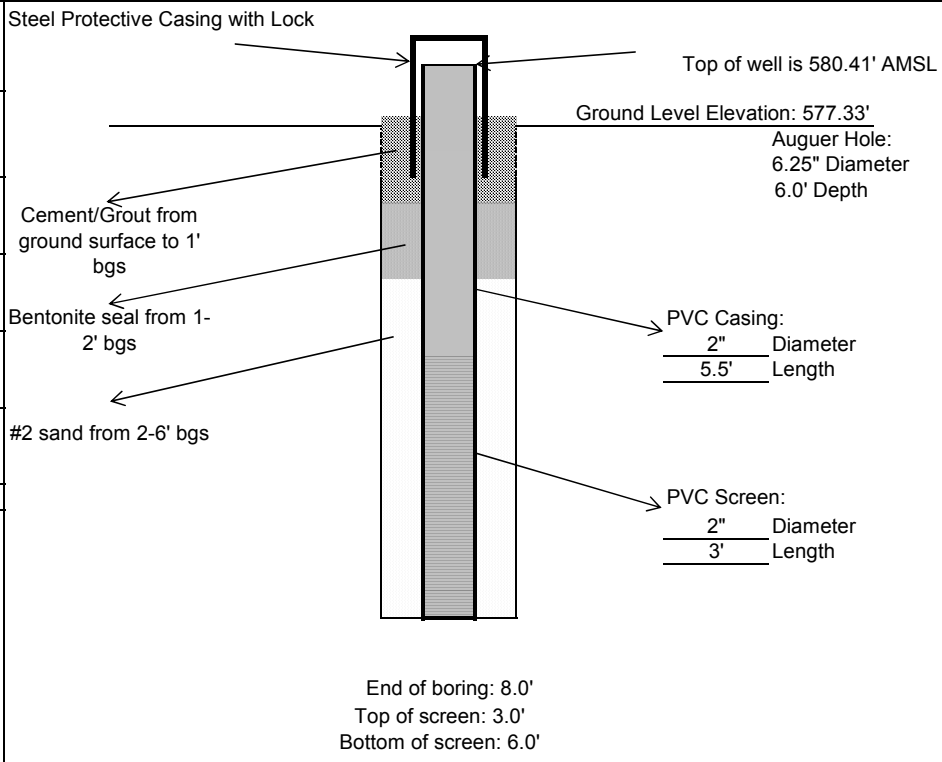
Rig Make/Model:
N/A

Date:
7/25/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 8.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-05S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

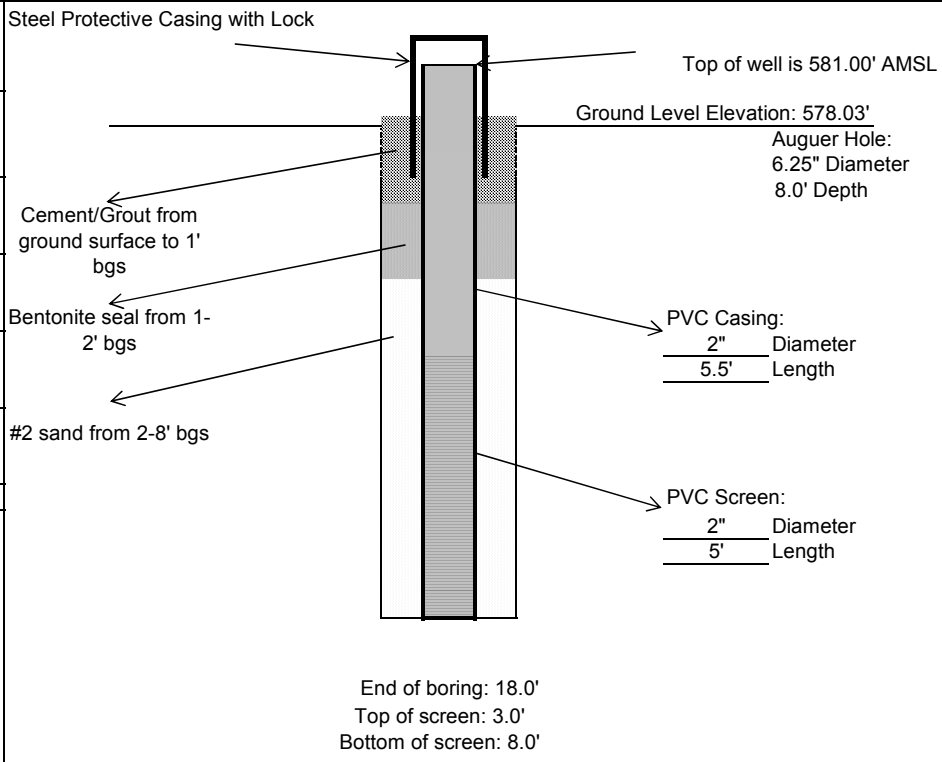
Rig Make/Model:
N/A

Date:
7/26/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boing log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-8' bgs
		SEAL MATERIAL
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	Type: Bentonite Setting: 1'- 2' bgs
		Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 18.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 8' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-06S**

DRILLING SUMMARY

Geologist:
Kris Charney

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
N/A

Rig Make/Model:
N/A

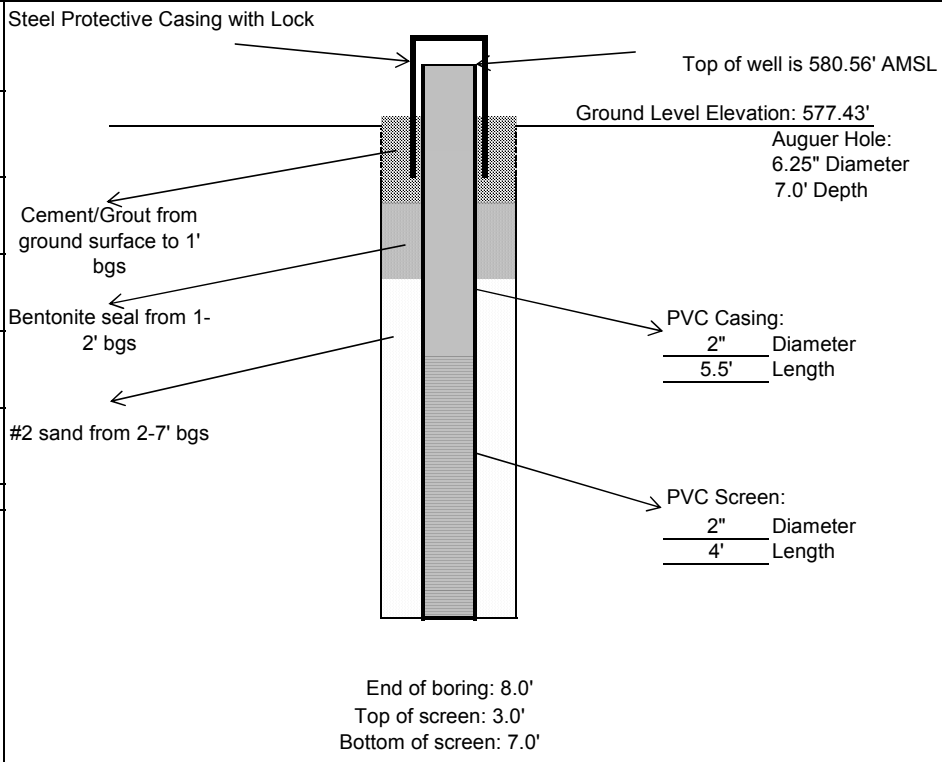
Date:
7/26/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 1'- 2' bgs Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-07S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Brian Delude

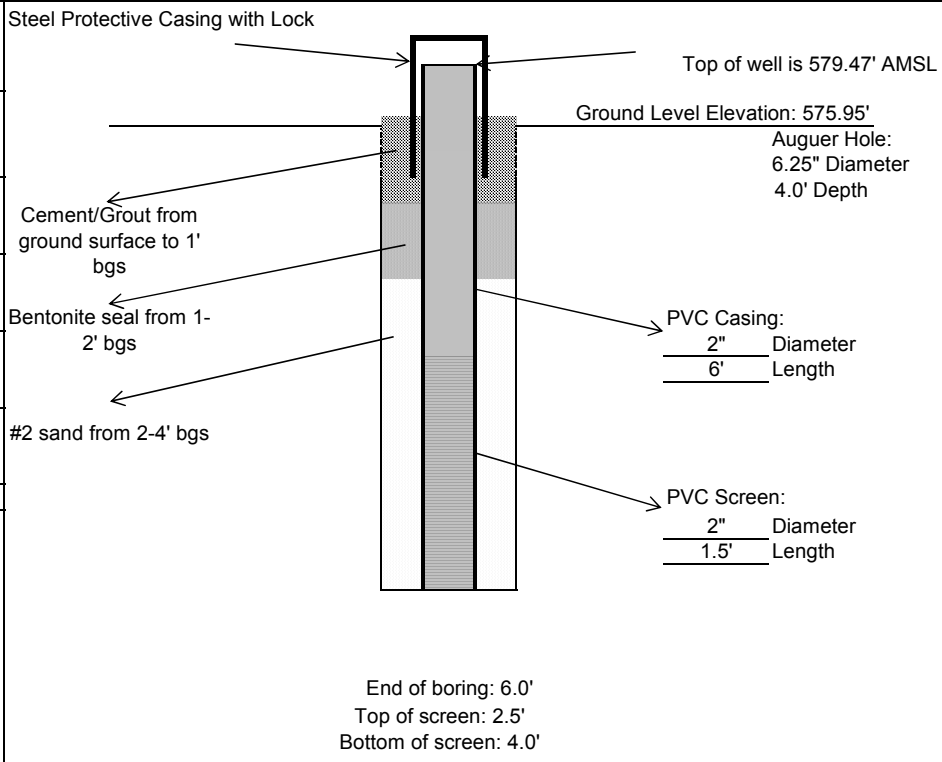
Rig Make/Model:
Diedrich D-50

Date:
8/15/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



End of boring: 6.0'
Top of screen: 2.5'
Bottom of screen: 4.0'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2'-4' bgs
		SEAL MATERIAL
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	Type: Bentonite Setting: 1'- 2' bgs
		Type: Cement Grout Setting: 0' - 1' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 4.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 4' to 2', bentonite seal from 2' to 1' and slurry mix from 1' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-08S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

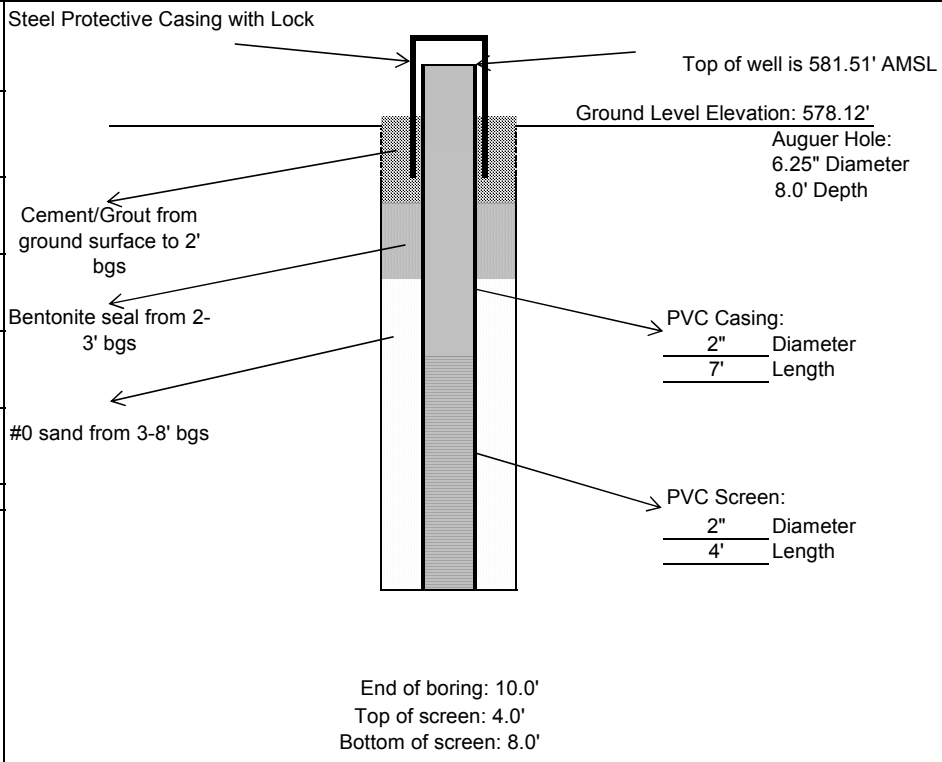
Rig Make/Model:
CME 550X

Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



End of boring: 10.0'
Top of screen: 4.0'
Bottom of screen: 8.0'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-8' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 8.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 8' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-09S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

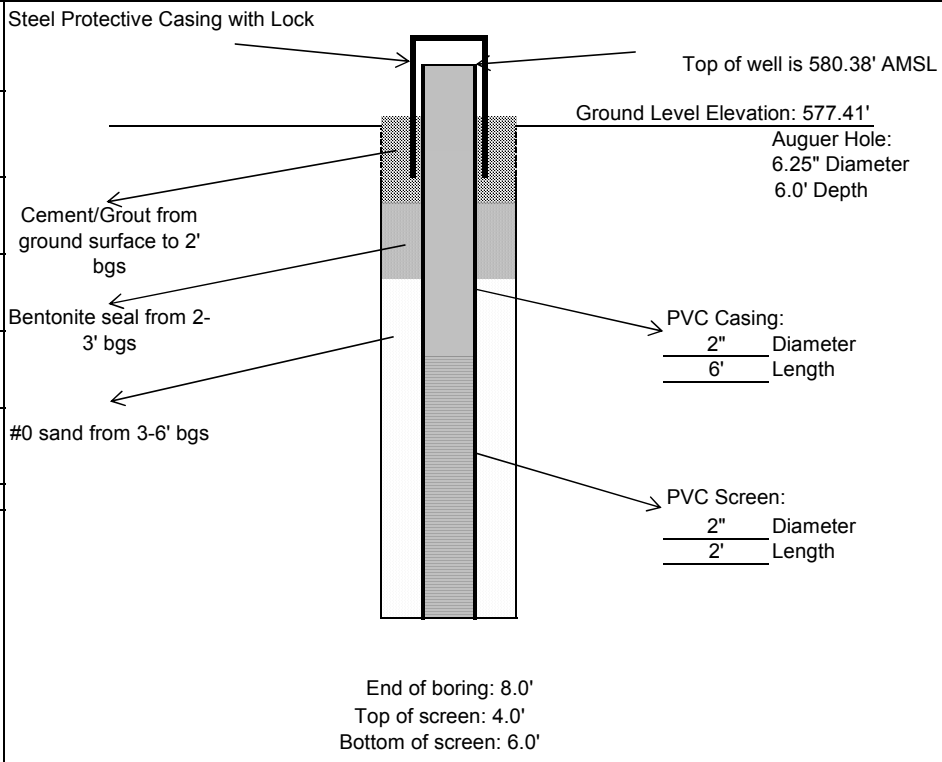
Rig Make/Model:
CME 550X

Date:
9/14/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring logs

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-6' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 6.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. Borehole was backfilled with soil cuttings for completion of well. The well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 6' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-10S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

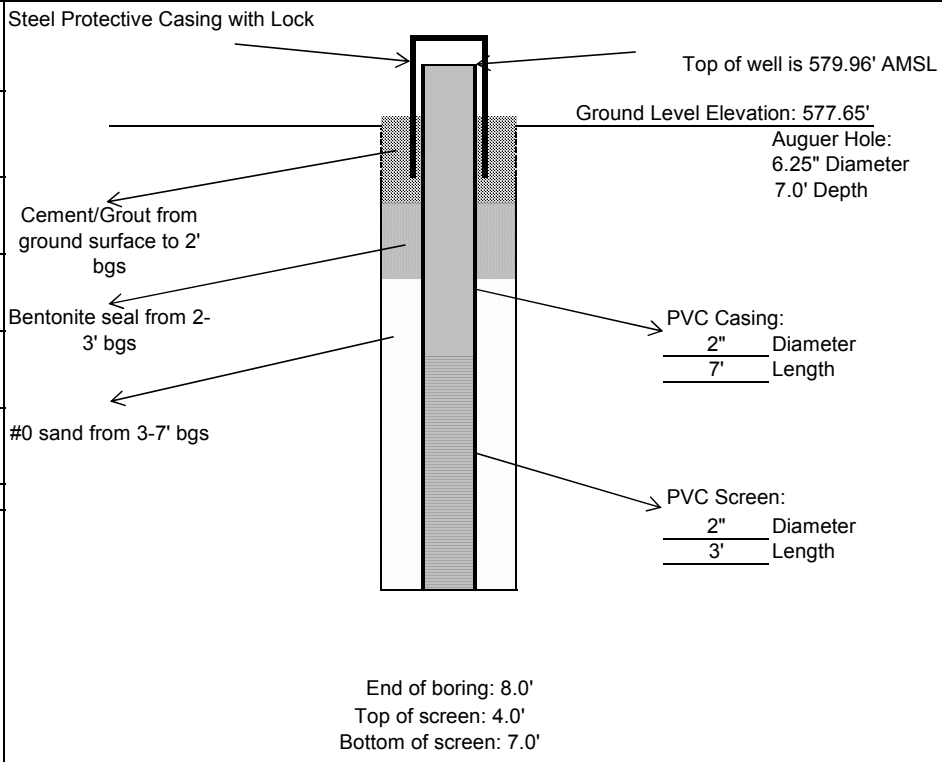
Rig Make/Model:
CME 550X

Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring logs

MONITORING WELL CONSTRUCTION LOG



End of boring: 8.0'
Top of screen: 4.0'
Bottom of screen: 7.0'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-11S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

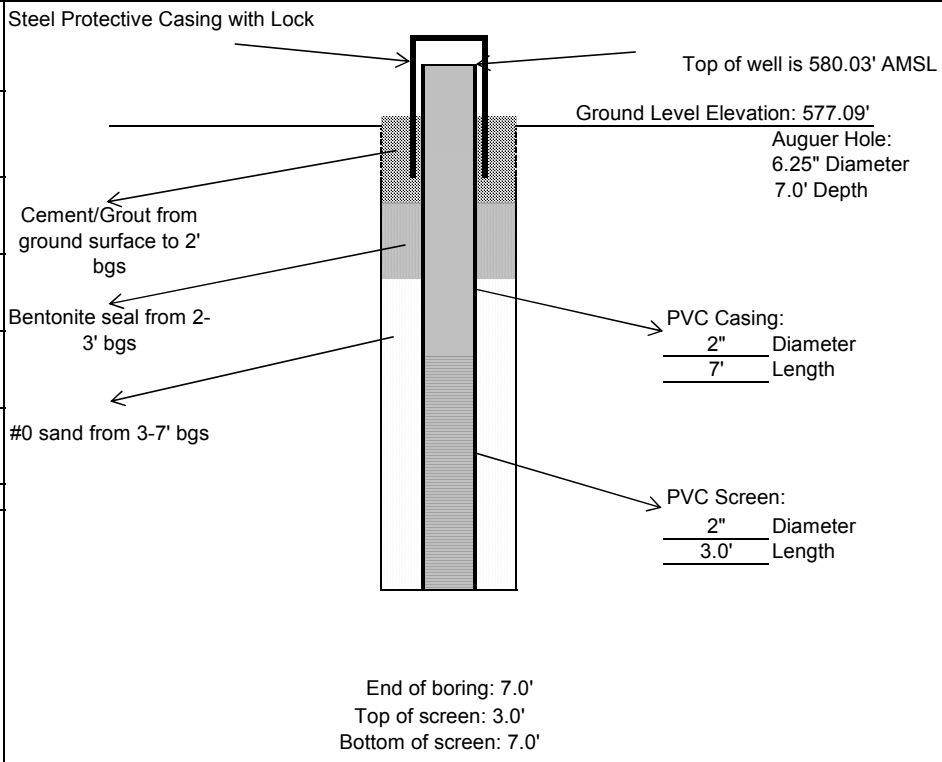
Rig Make/Model:
CME 550X

Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 3'-7' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2'- 3' bgs Type: Cement Grout Setting: 0' - 2' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.0' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7' to 3', bentonite seal from 3' to 2' and slurry mix from 2' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-12S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
SJB/Empire Geo Serv. Inc.

Driller:
Dan Delude

Rig Make/Model:
CME 550X

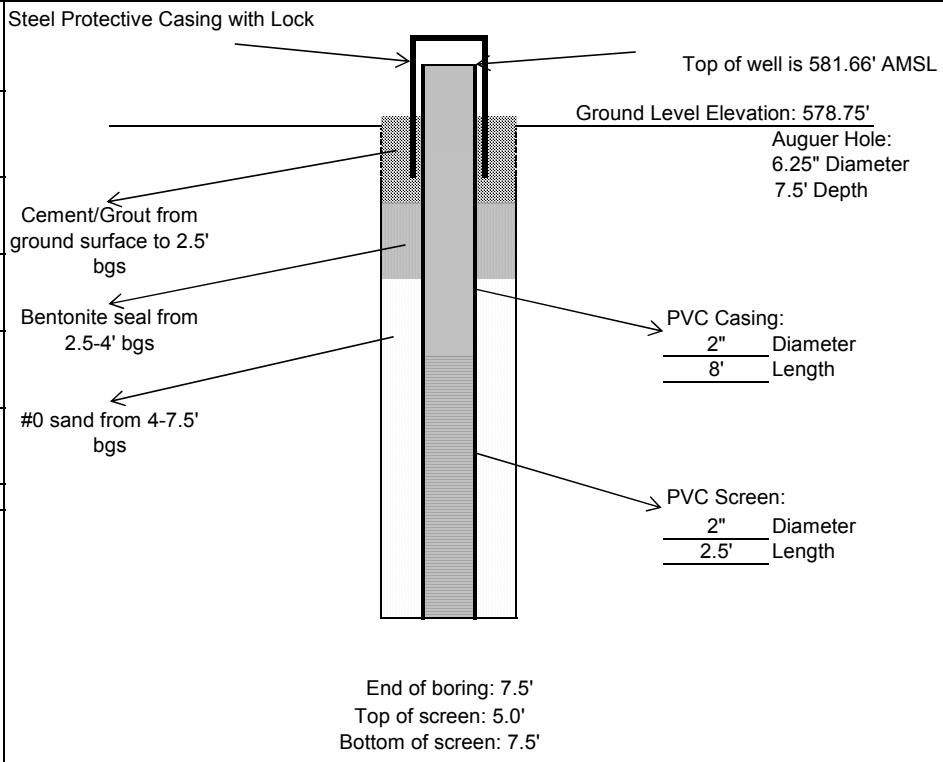
Date:
9/13/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 0 SAND Setting: 4'-7.5' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 2.5'- 4' bgs Type: Cement Grout Setting: 0' - 2.5' bgs

COMMENTS:

The contractor was directed to install the borehole to a total depth of 7.5' bgs. All soils were screened with a PID meter and checked for olfractory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 7.5' to 4', bentonite seal from 4' to 2.5' and slurry mix from 2.5' to ground surface. The well was completed to grade with a steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Cement Grout
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-13S**

DRILLING SUMMARY

Geologist: Andrew Koons

Drilling Company: Earth Dimensions

Driller: Phil Hence

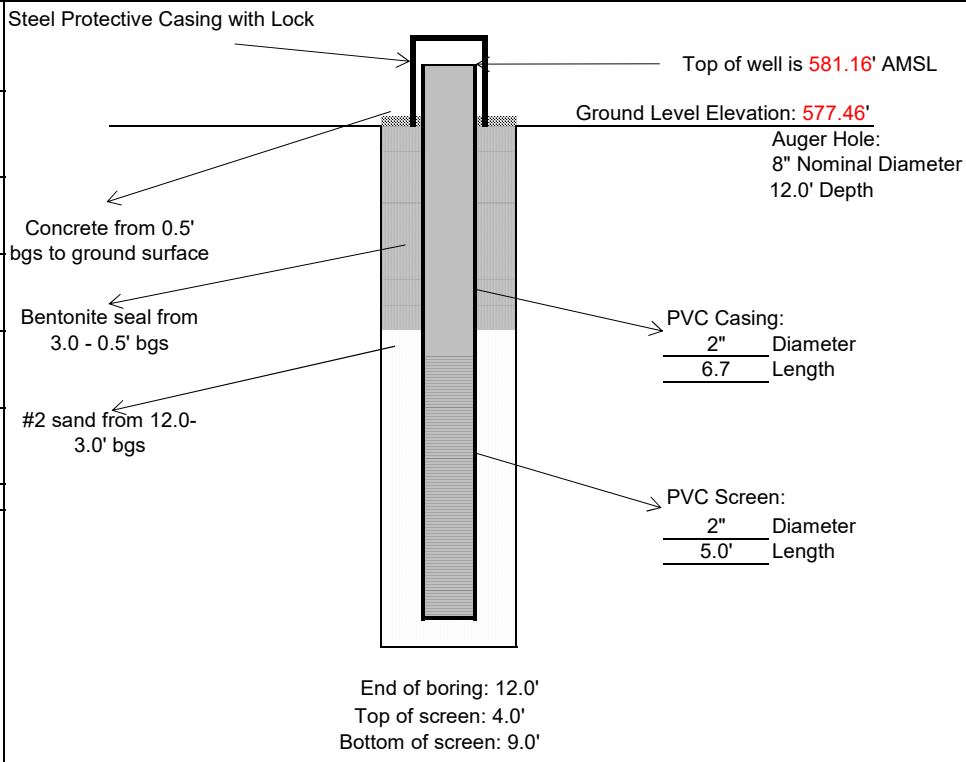
Rig Make/Model: D-50

Date: 10/19/2021

GEOLOGIC LOG

Depth (ft.)	Description

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.0-12.0' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.010"	*SEAL MATERIAL*
		Type: Bentonite Setting: 0.5'- 3.0' bgs
		Type: Concrete Pad Setting: 0.5' - 0 bgs

COMMENTS:

The driller was directed to install the borehole to a total depth of 12.0' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.010" slot diameter screen, with the sand pack from 12.0' to 3.0', bentonite seal from 3.0' to 0.5'. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-14S**

DRILLING SUMMARY

Geologist: Andrew Koons

Drilling Company: Earth Dimensions

Driller: Phil Hence

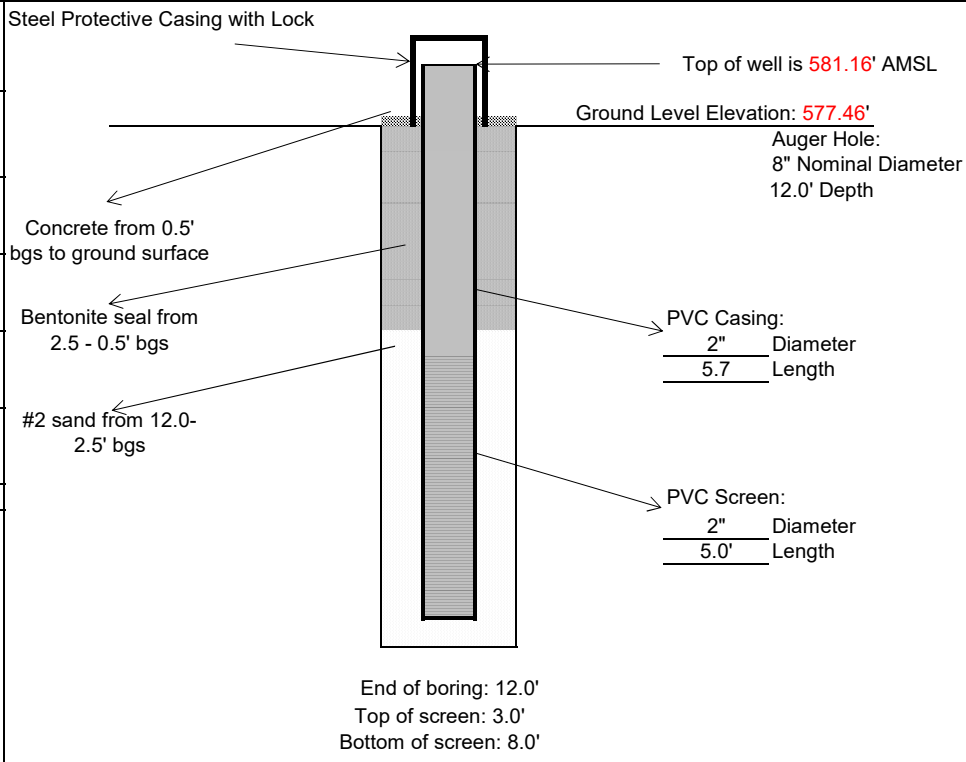
Rig Make/Model: D-50

Date: 10/19/2021

GEOLOGIC LOG

Depth (ft.)	Description

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: Steel Protective Casing	Type: 2" Schedule 40 PVC	Type: No. 2 SAND Setting: 2.5-12.0' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.010"	SEAL MATERIAL Type: Bentonite Setting: 0.5'- 2.5' bgs Type: Concrete Pad Setting: 0.5' - 0 bgs

COMMENTS:

The driller was directed to install the borehole to a total depth of 12.0' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.010" slot diameter screen, with the sand pack from 12.0' to 2.5', bentonite seal from 2.0' to 0.5'. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	LOCATION:	Project No.
NYSDEC	Niagara Sanitation	17-013-0289

LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-15S**

DRILLING SUMMARY

Geologist:
J. Williams (Liro)

Drilling Company:
Buffalo Drilling

Driller:

Rig Make/Model:
CME 55

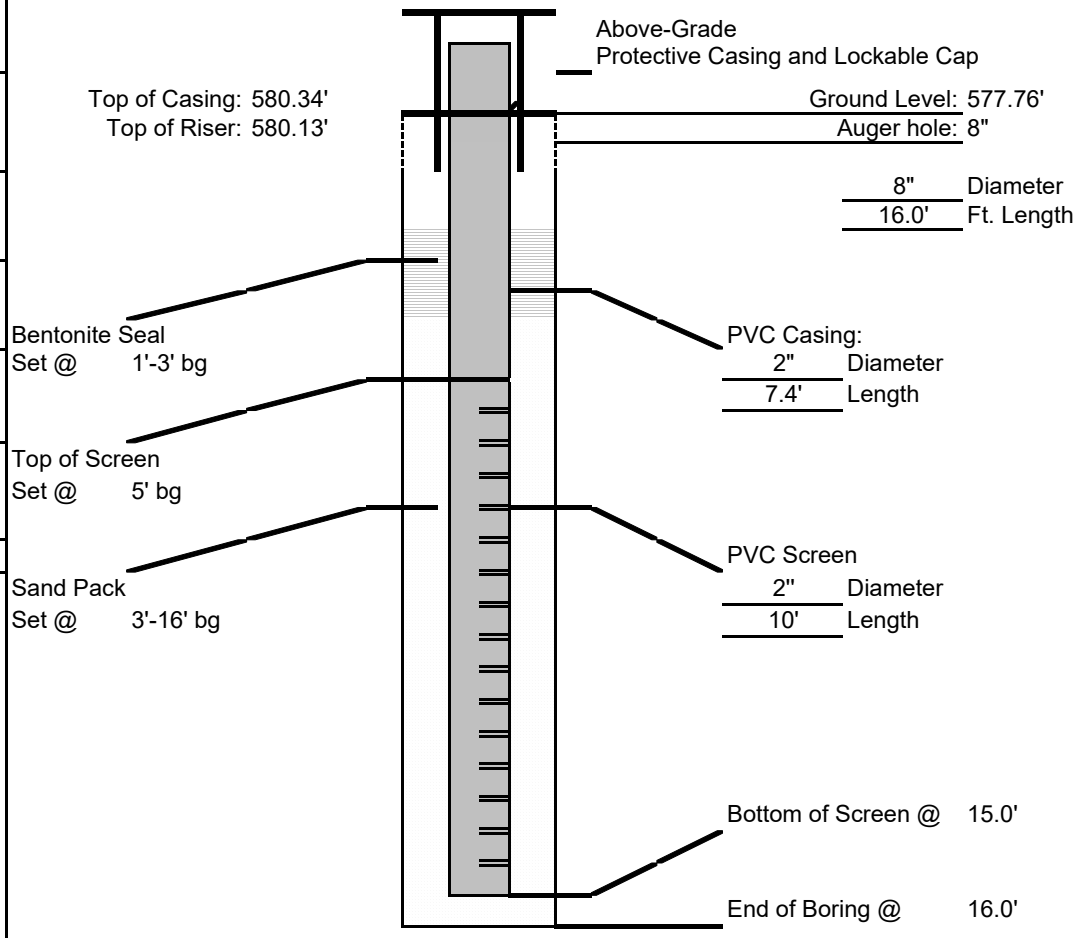
Date:
10/4/2023

GEOLOGIC LOG

Depth (ft.)	Description
	SEE LOG

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILL MATERIAL*
Surface: Concrete	Type: 2" Schedule 40 PVC	Type: Silica sand Setting: 3' to 16'
Monitor: Schedule 40 PVC	Slot Diameter: 0.010"	*SEAL MATERIAL* Type: Bentonite Chips Setting: 1' to 3' Type: Concrete Pad Setting: 0' to 1'

COMMENTS:

A well was constructed of schedule 40 PVC piping, 10 ft of 0.010 slot 2" diameter screen and 7.4 ft riser, sand pack from 3 to 16 ftbg., bentonite sealed from 1 to 3 ftbg and completed with concrete to grade.

The well was completed above grade with a locking steel protective casing.

LEGEND:

- PVC Casing
- PVC Screen
- No.2 Sand Pack
- Bentonite Seal

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-16S**

DRILLING SUMMARY

Geologist:
J. Williams (Liro)

Drilling Company:
Buffalo Drilling

Driller:

Rig Make/Model:
CME 55

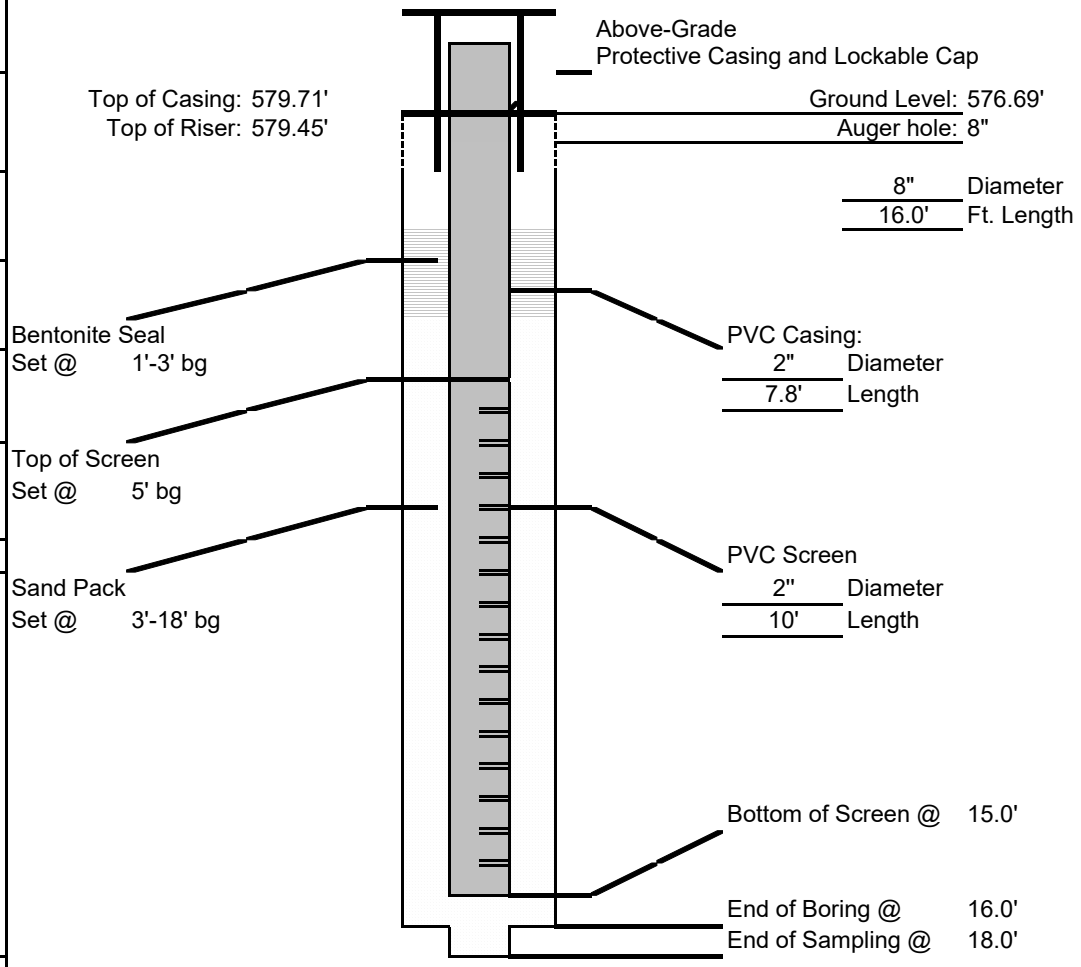
Date:
10/3/2023

GEOLOGIC LOG

Depth (ft.)	Description
	SEE LOG

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILL MATERIAL*
Surface: Concrete	Type: 2" Schedule 40 PVC	Type: Silica sand Setting: 3' to 18'
Monitor: Schedule 40 PVC	Slot Diameter: 0.010"	*SEAL MATERIAL* Type: Bentonite Chips Setting: 1' to 3' Type: Concrete Pad Setting: 0' to 1'

COMMENTS:

A well was constructed of schedule 40 PVC piping, 10 ft of 0.010 slot 2" diameter screen and 7.8 ft riser, sand pack from 3 to 18 ftbg., bentonite sealed from 1 to 3 ftbg and completed with concrete to grade.

The well was completed above grade with a locking steel protective casing.

LEGEND:

- PVC Casing
- PVC Screen
- No.2 Sand Pack
- Bentonite Seal

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-17S**

DRILLING SUMMARY

Geologist:
J. Williams (Liro)

Drilling Company:
Buffalo Drilling

Driller:

Rig Make/Model:
CME 55

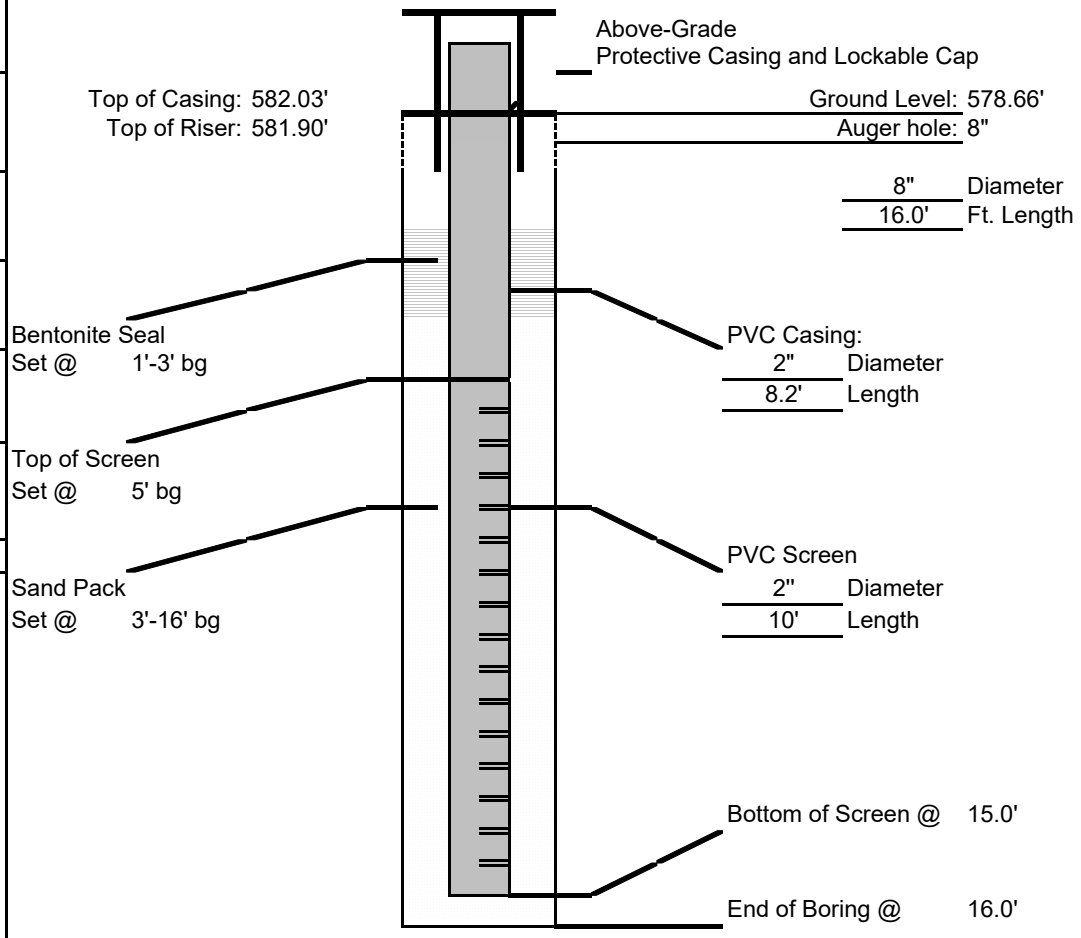
Date:
10/4/2023

GEOLOGIC LOG

Depth (ft.)	Description
	SEE LOG

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILL MATERIAL*
Surface: Concrete	Type: 2" Schedule 40 PVC	Type: Silica sand Setting: 3' to 16'
Monitor: Schedule 40 PVC	Slot Diameter: 0.010"	*SEAL MATERIAL* Type: Bentonite Chips Setting: 1' to 3' Type: Concrete Pad Setting: 0' to 1'

COMMENTS:

A well was constructed of schedule 40 PVC piping, 10 ft of 0.010 slot 2" diameter screen and 8.2 ft riser, sand pack from 3 to 16 ftbg., bentonite sealed from 1 to 3 ftbg and completed with concrete to grade.

The well was completed above grade with a locking steel protective casing.

LEGEND:

- PVC Casing
- PVC Screen
- No.2 Sand Pack
- Bentonite Seal

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LPZ-18S**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

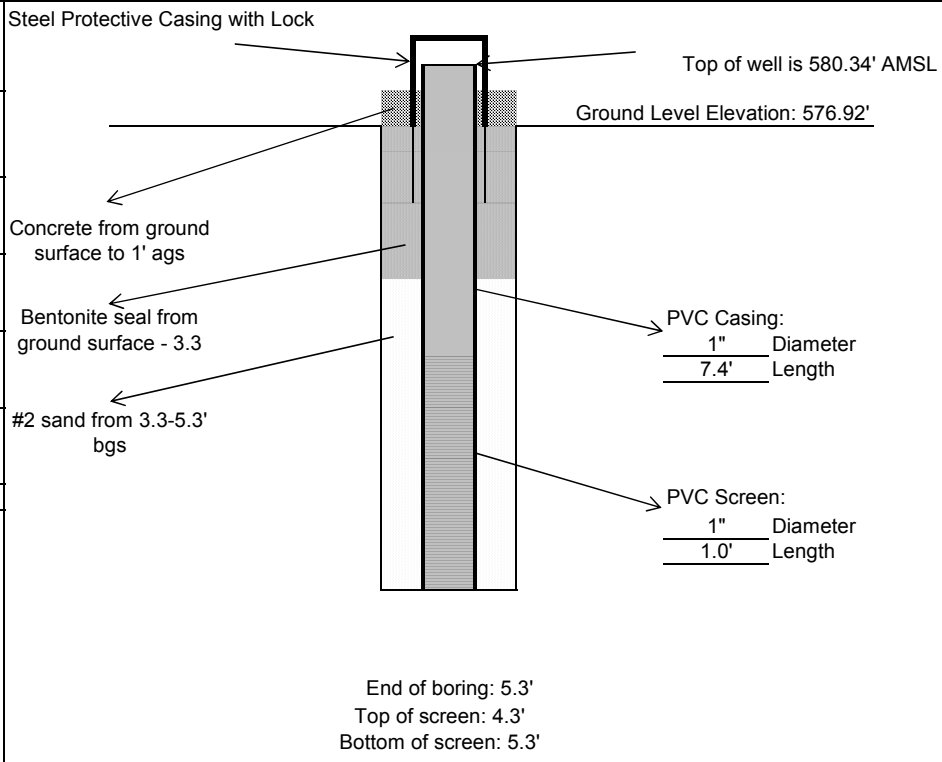
Rig Make/Model:
Hand Auger

Date:
8/24/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



End of boring: 5.3'
Top of screen: 4.3'
Bottom of screen: 5.3'

NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.3', bentonite seal from 3.3' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:
- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-01**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

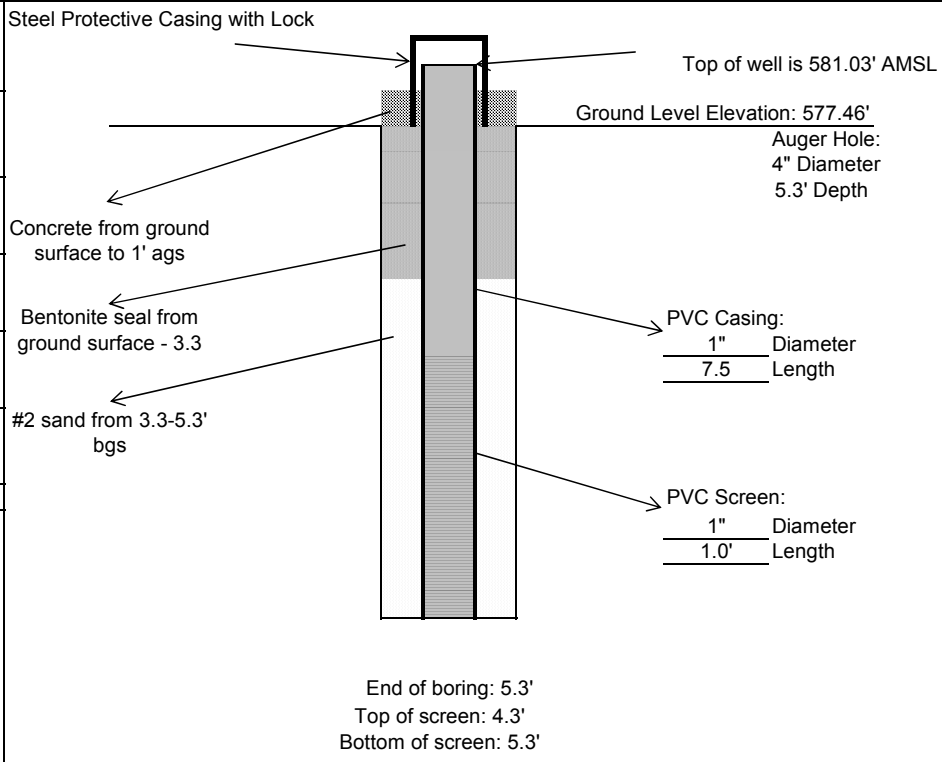
Rig Make/Model:
Hand Auger

Date:
8/24/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.3', bentonite seal from 3.3' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-02**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Andrew Koons

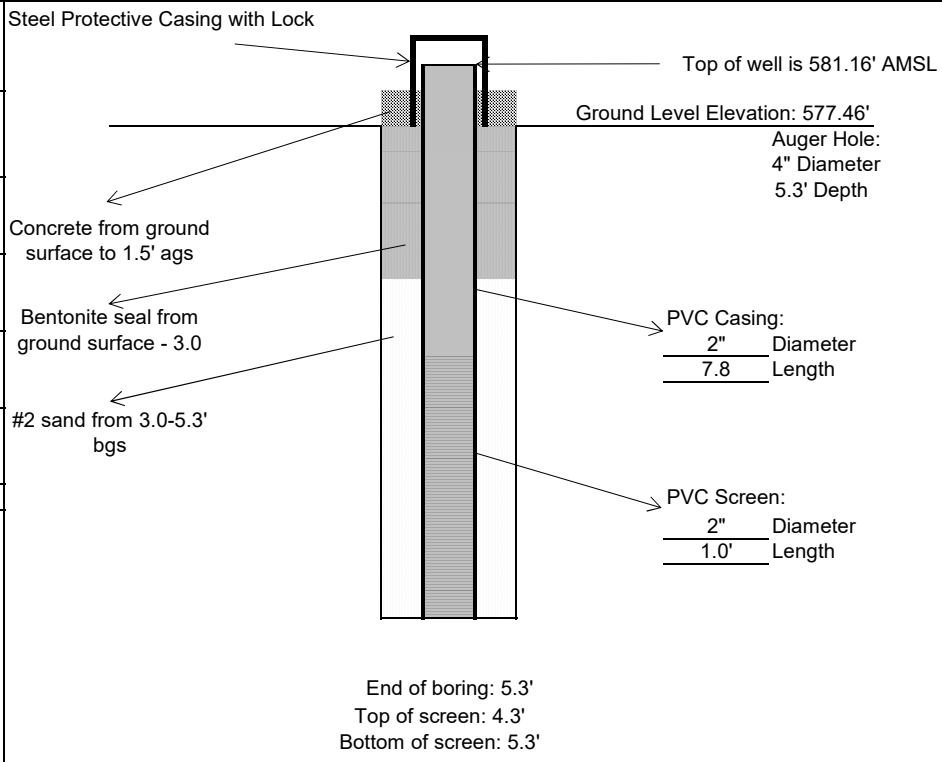
Rig Make/Model:
Hand Auger

Date:
11/20/2019

GEOLOGIC LOG

Depth (ft.)	Description

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.0', bentonite seal from 3.0' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-02R**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

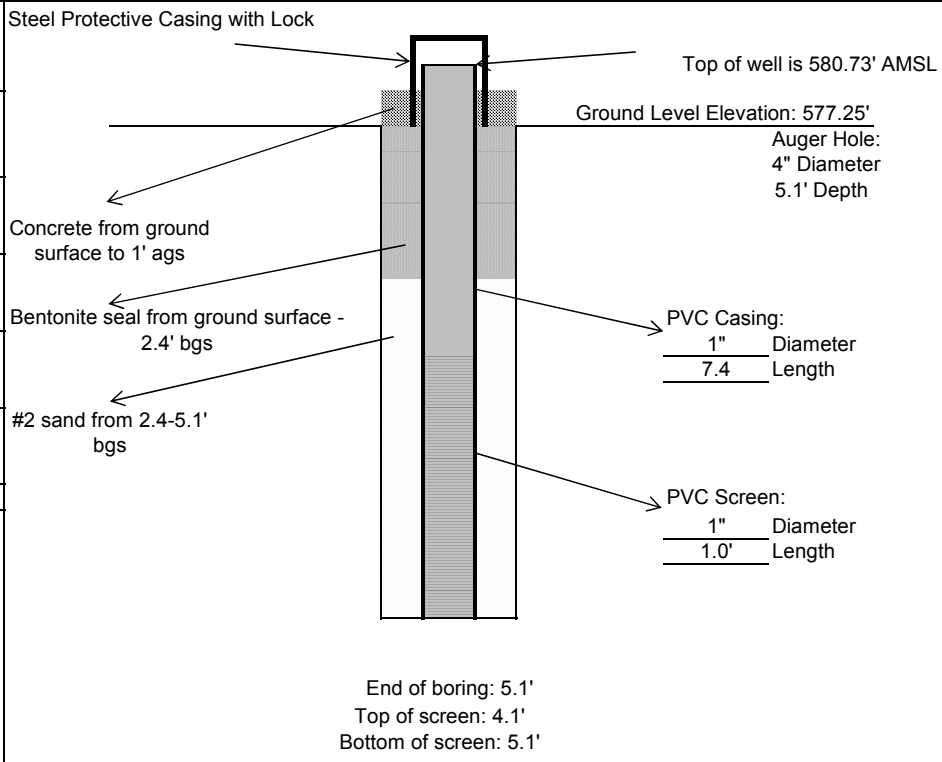
Rig Make/Model:
Hand Auger

Date:
8/24/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring logs

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 2.4'-5.1' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 2.4' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.1' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.1' to 2.4', bentonite seal from 2.4' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-03**

DRILLING SUMMARY

Geologist:
Andrew Koons

Drilling Company:
LiRo Engineers

Driller:
Eric Miller

Rig Make/Model:
Hand Auger

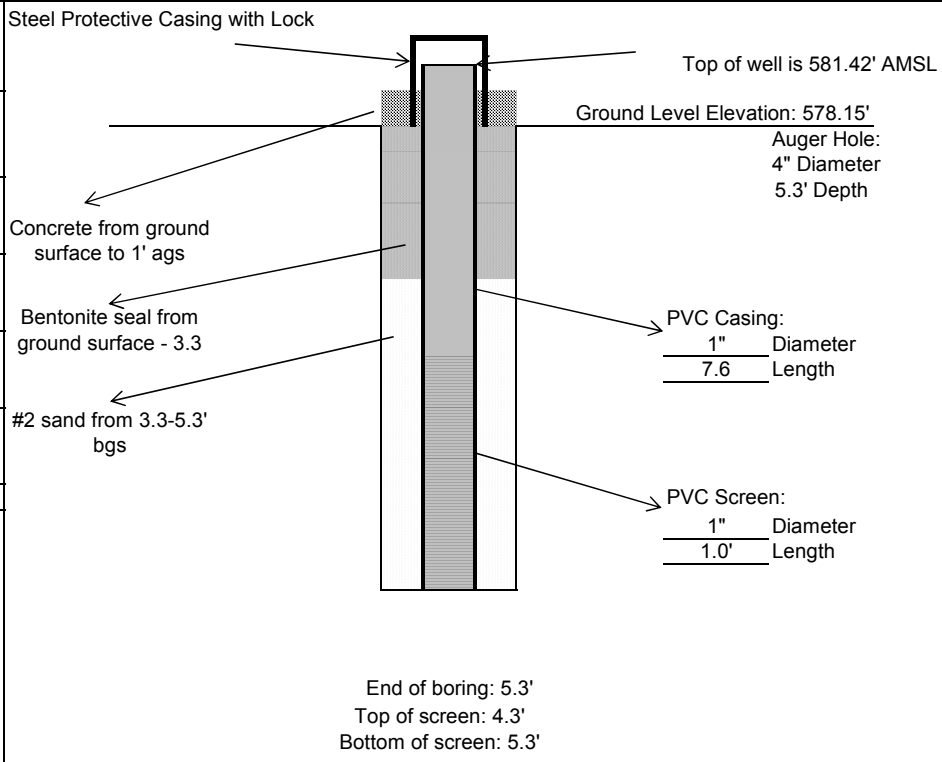
Date:
8/24/2017-8/25/2017

GEOLOGIC LOG

Depth (ft.)	Description
	See boring log

WELL DESIGN

MONITORING WELL CONSTRUCTION LOG



NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*FILTER MATERIAL*
Surface: Steel Protective Casing	Type: 1" Schedule 40 PVC	Type: No. 2 SAND Setting: 3.3'-5.3' bgs
Monitor: Schedule 40 PVC	Slot Diameter: 0.020"	*SEAL MATERIAL* Type: Bentonite Setting: 0'- 3.3' bgs Type: Concrete Pad Setting: 0' - 1' ags

COMMENTS:

The driller was directed to install the borehole to a total depth of 5.3' bgs. All soils were screened with a PID meter and checked for olfactory and visual evidence of petroleum product contamination. All PID readings were noted. A well was constructed of schedule 40 PVC piping and 0.020" slot diameter screen, with the sand pack from 5.3' to 3.3', bentonite seal from 3.3' to ground surface. The well was completed to grade with a concrete pad and steel protective casing.

LEGEND:

- PVC Casing
- #2 Sand
- Bentonite
- Concrete Pad
- PVC Screen

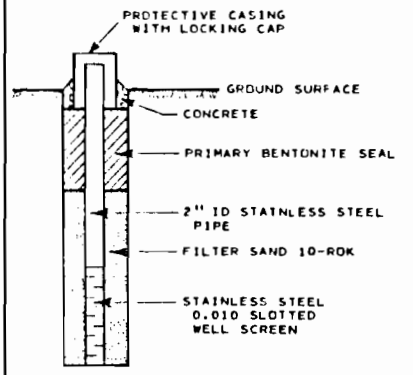
CLIENT:	**LOCATION:**	Project No.
NYSDEC	Niagara Sanitation	17-013-0289
LiRo Engineers, Inc.	**Monitoring Well Construction Details**	*Well Number:* **LDP-04**

Upper Clay Aquitard Wells

BORING OW-2
NASH ROAD SITE

WELL SCHEMATICS

OW-2



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO & TYPE	RUN NO.	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, MUDDY
10	1 ▣					0	ML	LIGHT BROWN MOIST STIFF SILT, LITTLE FINE SAND
11	2 ▣						SW	GRAY WET MEDIUM DENSE FINE SAND, TRACE SILT
13	3 ▣					5		GRAY AND BROWN MOIST STIFF LAYERED CLAY AND SILT; SILT LAYERS ABOUT 1/2" THICK
34	4 ▣						CL	GRADES TO MEDIUM
18	5 ▣					10		GRADES TO SOFT
5	6 ▣						CH	GRAY MOIST, VERY SOFT LAYERED CLAY; RED CLAY LAYERS ARE APPROXIMATELY 1/5" THICK AT 3/4" INTERVALS
3	7 ▣					15		BORING TERMINATED AT A DEPTH OF 14.0' ON JUNE 6, 1984.

SOIL SAMPLING INFORMATION

- ▣ STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- ⊠ DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

Lower Sand Wells

DRILLING CONTRACTOR:
Driller: M. Legare - Roch. Drilling
Inspector: L. Dobson - ES
Rig Type: ATV
Drilling Method: 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: Nasn Rd
PROJECT NO.: 54012.19

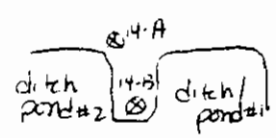
BORING NO. 14-A (deep) (2)
Sheet 1 of 2
Location

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather: 10°F | snowing
Date/Time Start: 2/04/88 1645
Date/Time Finish: 2/08/88 1100

Plot Plan



Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
-	0-2			See 14-B drilling log for soil description from 0-7'		3.5' stickup
-	5-7					No elevated photovac readings in auger cuttings
1.5	10-12	S-1	3	Gray / Red Clay and fine sand (stiff)		
	rec = 24"		3			
	SS		4			
			4			
0	15-17	S-2	1	Gray / Red Clay - layering evident smooth, moist, plastic.		
	rec = 24"		2			
	SS		2			
			1			
0	20-22	S-3	0*	same as above with trace of silt @ 20'		* spoon went 2' under weight of rod
	rec = 24"		0			
	SS		0			
			0			
0.1	25-27	S-4	1	Gray / Red Clay - smooth / moist		
	rec = 24"		2			
	SS		1			
			2			
						30.5
	30-32	S-5	1	Red / Gray Clay - layering evident trace fine sand and gravel.	bentonite	
			1			32.5
			1			
			1			
0	32-34		0*	Gray / Red Clay grading into fine sand & gravel w/ clay @ 33'		
			0			
			0			
			0			
						33.5

SAND
2.0" PVC SCREEN

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Iler: M. Lecore - Roch drill.
pector: L. Dorson - ES
g Type ATV
illing Method 4.25" I.D.

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME Nash Rd.
PROJECT NO. 5402.19

BORING NO. 14-A (deep) (2)
Sheet 2 of 2
Location

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather 10°F / snowing
Date/Time Start 2/04/88 1645
Date/Time Finish 2/05/88 1100

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0	34-36	1	13	fine sand & gravel w/ clay grading into dense light gray silt w/ some gravel & med. sand.	SAND / 2" PVC SCREEN	
	36	1	35			
		1	82			
		1	47			
		1				
	36-38	1	12	damp, gray-brown silt, sand, clay w/ angular to subangular pebbles.		36.5
	Rec.=2.0	1	63			
	55	1	70			
		1	91			
		1				
	38-40	1	104	Same as above		Auger refusal at 40'
	rec=0.5"	1	100/5"			
		1		boring terminated @ 40' 2/08/88		

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON

Soil Stratigraphy Summary

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.: 54012.19

BORING NO.: OW-15 (2)
Sheet: 1 of 3
Location: DOWNGRADIENT, ALONG NORTH BORDER OF SITE

GROUND WATER OBSERVATIONS

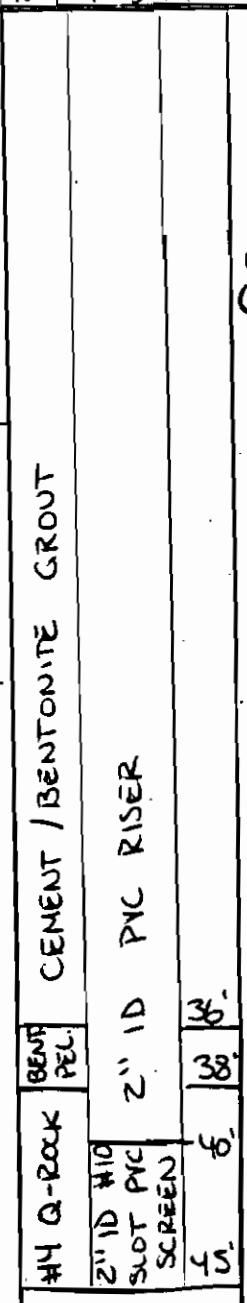
Water Level			
Time			
Date			
Casing Depth			

Weather:
Date/Time Start: 12 | 9 | 87 | 1415
Date/Time Finish: 12 | 11 | 87 | 0945

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL
0.0	0-2	S-1	3	BROWN CLAY, SOME SILT
	"		4	
	"		2	
	"		1	
	"			
	"			
	"			
	"			
	"			
	"			
0.0	5-7	S-2	9	BROWN MOIST SAND
	REC = 12		5	
	"		7	BROWN MOIST CLAY
	"		11	
	"			
	"			
	"			
	"			
	"			
	"			
0.0	10-12	S-3	6	REDDISH-BROWN WET PLASTIC "STICKY" CLAY
	REC = 22		18	
	"		14	
	"		15	
	"			
	"			
	"			
	"			
	"			
	"			
0.0	15-17	S-4	1	
	REC = 24		1	
	"		1	
	"		3	
	"			
	"			
	"			
	"			
	"			

WELL SCHEMATIC Not To Scale



Comments: GREY WET CUTTINGS (W/TRASH) AT 3'

SPT = STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary: SOIL AND NON SOIL FILL TO 3' OVER MOIST SAND TO 6' OVER LEAN CLAY TO 10' OVER FAT CLAY TO 39' TOP WATER BEARING SAND & CLAY WITH GRAVEL

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼ ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD.
PROJECT NO.:

BORING NO. OW-15 (2)
Sheet 2 of 3
Location: DOWNGRADIENT, NORTH BORDER OF SITE

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather:
Date/Time Start:
Date/Time Finish:

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	20-22	S-5	1*	REDDISH-BROWN WET PLASTIC "STICKY" CLAY		*SPOON PUSH BY WEIGHT O ROD
	REC= 24		1*			
			1			
			1			
0.0	25-27	S-6	1*			
	REC= 24		1*			
			1			
			2			
0.2	30-32	S-7	2			
	REC= 24		2			
			1			
			3			
	NO SAMPLE					NO SAMPLE TAKEN AT 32 PLUG PUSHED I WHILE AUGER
0.0	34-36	S-8	1*			
	REC= 24		1			
			1			
			1			
0.0	36-38	S-9	1*			
	REC= 24		1*			
			1*			
			1*			
0.0	38-40	S-10	1*			
	REC= 24		1*			
			2	REDDISH-BROWN CLAY AND SAND, SOME GRAVEL		
			2			

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

Soil Stratigraphy Summary:

DRILLING CONTRACTOR:
Driller: D. MILLER
Inspector: K. ISAKOWER
Rig Type: MOBILE 61
Drilling Method: 4¼" ID HSA

ENGINEERING-SCIENCE DRILLING RECORD

PROJECT NAME: NASH RD
PROJECT NO.:

BORING NO. OW-15 (2)
Sheet 3 of 3
Location: DOWNGRADIENT NORTH BORDER OF SITE

GROUND WATER OBSERVATIONS

Water Level			
Time			
Date			
Casing Depth			

Weather:
Date/Time Start:
Date/Time Finish:

Plot Plan

Photovac Reading	SAMPLE DEPTHS	SAMPLE I.D.	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL SCHEMATIC	Comments
0.0	40-42	S-11	1	REDDISH-BROWN CLAY AND SAND, SOME GRAVEL		SPOON PUSHED BY WEIGHT OF ROD.
	REC= 24		1			
			14			
			16			
0.0	42-44	S-12	1*			
	REC= 24		6			
			18			
			74			COARSE GRAVEL
0.0	44-46	S-13	45			
	REC= 24		71/6"			
				Boring terminated at 45'		

SPT - STANDARD PENETRATION TEST
D = DRY W = WASHED C = CORED
U = UNDISTURBED SS = SPLIT SPOON
P = PIT A = AUGER CUTTINGS

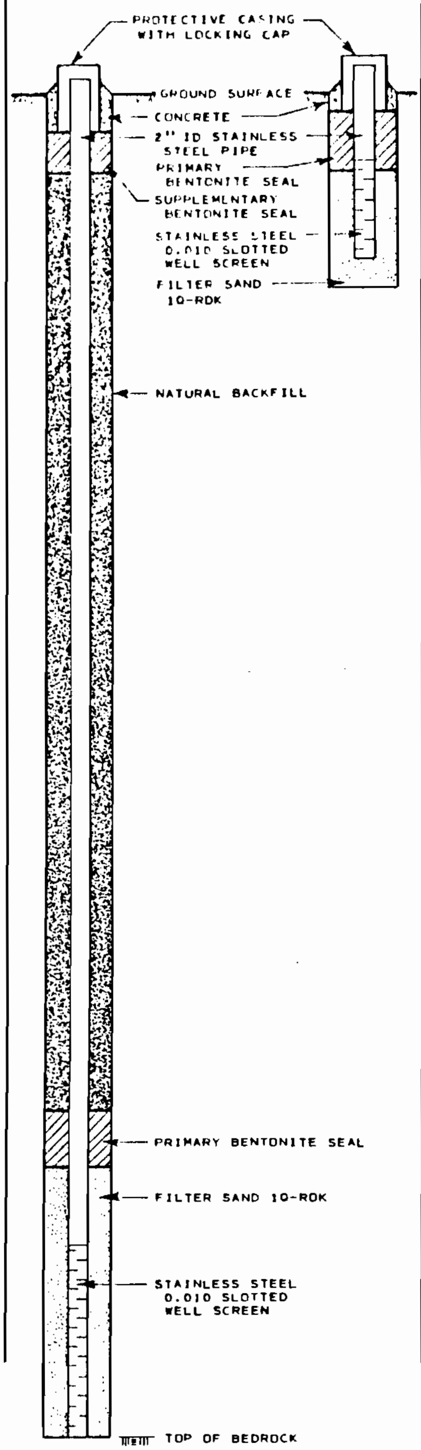
Soil Stratigraphy Summary:

Glacial Till Wells

BORING OW-1
NASH ROAD SITE

WELL SCHEMATICS

OW-1B | OW-1



SAMPLING

Blow Count	Sample No & Type	Run No	Core Rec	Core RQD	Fractures
5	1				
15	2				
15	3				
35	4				
15	5				
9	6				
10	7				
2	8				
2	9				
	10				
	11				
9	1B:1				
4	1B:2				
38/6"	1B:3				
55/6"	1B:4				
16/6"	1B:5				
20/6"	1B:6				
98	1B:7				
55/6"	1B:8				
65/6"	1B:9				
76/6"	1B:10				

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65

GRAPHIC LOG

DESCRIPTIVE GEOLOGIC NOTES

SURFACE CONDITIONS: GRASSY, WET.

LIGHT BROWN MOIST MEDIUM SILT AND CLAY, TRACE OF SAND, OCCASIONAL BLACK ORGANIC STAINS

GRAY MOIST STIFF LAYERED CLAY AND SILT WITH OCCASIONAL SEAMS OF FINE TO MEDIUM SAND, 1/8" IN THICKNESS

GRADES TO LESS STIFF

GRAY MOIST MEDIUM LAYERED CLAY, RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT IRREGULAR INTERVALS

GRADES TO VERY SOFT CLAY

GRADES TO SOFT

GRADES TO VERY SOFT

BROWN, MOIST SILT AND COARSE TO FINE GRAVEL, LITTLE CLAY, LITTLE FINE SAND (TILL)

GRADES TO WET

GRADES TO MOIST, DENSE SILT, SOME FINE TO COARSE SAND, LITTLE FINE GRAVEL

GRADES TO WET

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 CORE RUN

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

BORING OW-I

NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLING: SAMPLE NO & TYPE	SAMPLING: RUN NO	SAMPLING: CORE REC	SAMPLING: CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK AT 68.6'. BEDROCK IS DOLOSTONE.
		1B;11					70		BORING TERMINATED AT A DEPTH OF 68.6' ON JUNE 11, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

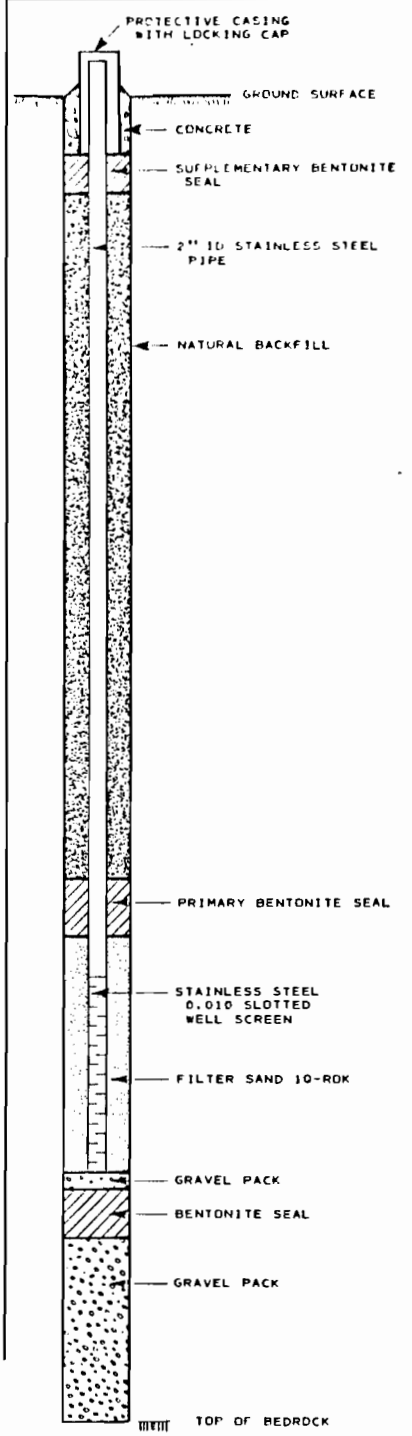
DAMES & MOORE

BORING OW-3

NASH ROAD SITE

WELL SCHEMATICS

OW-3



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, TALL BRUSH
6	1 ▣					0		MIXED SAND/WASTE FILL
11	2 ▣							
7/.5'	3A ▣							
9/.5'	3B ▣					5	CL	GRAY AND BROWN MOIST MEDIUM LAYERED CLAY AND SILT, TRACE FINE SAND, BROWN SILT LAYERS APPROXIMATELY 1/2" -1" IN THICKNESS AT 1 1/2" INTERVALS
32	4 ▣							GRADES TO STIFF AT 6.0'
20	5 ▣							GRAY MOIST MEDIUM LAYERED CLAY
7	6 ▣					10		RED CLAY LAYERS APPROXIMATELY 1/10" THICK AT 1/2" INTERVALS
6	7 ▣							GRADES TO SOFT WITH OCCASIONAL SILT LAYERS APPROXIMATELY 1/2" THICK AT 10.0'
4	8 ▣							CLAY LAYERS BECOME LESS DISTINCT AT 12.0'
2	9 ▣					15	CH	GRADES TO VERY SOFT AT 16.0'
2	10 ▣							
2	11 ▣					20		
3	12A ▣					25	CL	GRAY AND BROWN/RED MOIST MEDIUM STIFF LAYERED CLAY AND SILT AT 26.0'
3	12B ▣							SEAM OF MOIST MEDIUM TO FINE SAND AT 26.3'
72/5'	13 ▣							BROWN MOIST MEDIUM SILT AND COARSE TO FINE GRAVEL, TRACE FINE SAND, TRACE CLAY (TILL)
	14 ▣					30		GRADES TO DRY AND VERY STIFF SILT AT 28.5'
65/5'	15 ▣					35		GRADES TO MOIST AND HARD SILT
100/4"	16 ▣							
29	17 ▣					40	GM	GRADES TO MOIST AND MEDIUM
21	18 ▣					45		GRADES TO WET
23	19 ▣					50		
17	20 ▣					55		
75/5'	21 ▣					60		GRADES TO COARSE TO FINE GRAVEL AND BROWN DRY HARD SILT, SOME WEATHERED ROCK FRAGMENTS, TRACE FINE SAND
96/5'	22 ▣					65		

SOIL SAMPLING INFORMATION

- ▣ STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- ▨ DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- RQD / PERCENT CORE RECOVERY — CORE LOSS ZONE
- RQD — CORE ROD

2-01-80 — PIEZOMETRIC SURFACE & DATE TESTED

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

FIGURE B-24

BORING OW-3

NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLE NO. & TYPE	RUN NO	CORE REC	CORE RQD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK 68.7' BEDROCK IS DOLOSTONE BORING TERMINATED AT A DEPTH OF 68.7' ON JUNE 7, 1984.
							70		

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

RQD — CORE LOSS ZONE; PERCENT CORE RECOVERY

82 — CORE POD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

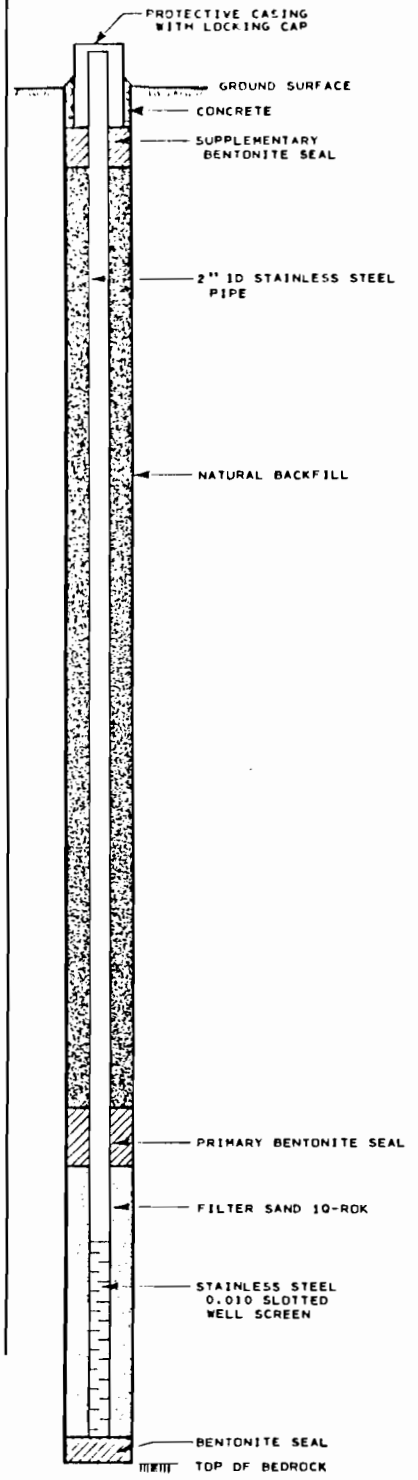
DAMES & MOORE

BORING OW-4

NASH ROAD SITE

WELL SCHEMATICS

OW-4



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, SOME SURFACE TRASH
						0		
								MIXED SAND/WASTE FILL
								GRAY MOIST SILT AND CLAY
22	1					5	ML	
15	2							GRAY WET MEDIUM TO FINE SAND, TRACE SILT, ORGANIC ODOR, SOME BLACK STAIN
17	3						SW	
33	4							GRAY AND BROWN MOIST LAYERED SILT AND CLAY, TRACE FINE SAND
10	5							LAYERS APPROX. 1/2" THICK
18	6					10	CL	
16								GRADES TO WET BROWN SILT AND CLAY
8	7							
6	8							
5	9							
2	10					15		GRADES TO CLAY, TRACE SILT
3								
2	11					20		
2								
2	12					25	CH	
2								
2	13					30		
2								
2	14					35		
2								
26	15					40		BROWN WET SILT AND FINE TO COARSE SAND, LITTLE MEDIUM TO FINE GRAVEL
46	16						SW	
								BROWN WET MEDIUM TO FINE SAND
							SP	
50/.2'	17					45		BROWN MOIST SILT, AND COARSE TO FINE SAND, LITTLE FINE TO COARSE SAND (TILL)
	18							
80/.5'	19					50		GRADES TO WET
							GM	
50/.5'	20					55		GRADES TO MOIST
50/.4'	21					60		
50/.5'	22					65		

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-4
NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: B. ON COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF BEDROCK 70.3' BEDROCK IS DOLOSTONE
							70		BORING TERMINATED AT A DEPTH OF 70.3' ON JUNE 13, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

80 — CORE LOSS ZONE

PERCENT CORE RECOVERY

82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

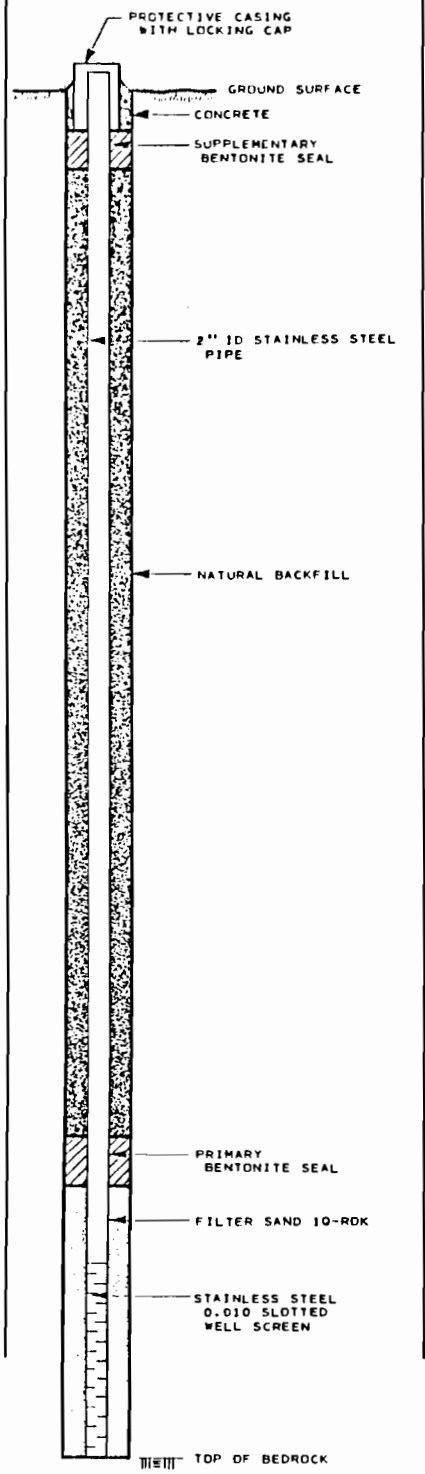
- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-5
NASH ROAD SITE

WELL SCHEMATICS

OW-5



SAMPLING					FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
BLOW COUNT	SAMPLE NO. & TYPE	RUN NO	CORE REC	CORE ROD				
								SURFACE CONDITIONS: GRASSY, ATOP FILL
						0		
17	1 ■						SW	GRAY, WET MEDIUM TO FINE SAND, TRACE SILT
11/6"	2 ■					5		
9/6"	3 ■							GRADES TO FINE SAND
12	4							GRAY AND BROWN MOIST LAYERED CLAY AND SILT, TRACE FINE SAND
29	5 ■					10	CL	SILT LAYERS APPROXIMATELY 1/2" THICK, OCCASIONAL SEAMS OF WET FINE TO MEDIUM SAND APPROXIMATELY 1/8" THICKNESS
5	6 ■							GRAY WET SOFT LAYERED CLAY
6	7 ■					15		RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT IRREGULAR INTERVALS
2	8 ■					20		GRADES TO VERY SOFT
2	9 ■					25	CH	
2	10 ■					30		
2	11 ■					35		RED CLAY LAYERS APPROXIMATELY 1/10" THICKNESS AT 3/4" INTERVALS
2	12 ■					40		
							SP	BROWN WET LAYERED SILT AND COARSE TO FINE SAND
39&5'	13 ■					45		BROWN WET SILT AND FINE TO COARSE GRAVEL, SOME COARSE TO FINE SAND, TRACE CLAY (TILL)
50&4'	14 ■							
50&2'	15 ■					50		GRADES TO MOIST
							GM	
60&4'	16 ■					55		GRADES TO MORE GRAVEL, LESS SILT, DRY
65&5'	17 ■					60		
	18 ■					65		GRADES TO WET SILT, SOME MEDIUM TO FINE GRAVEL, LITTLE WEATHERED BEDROCK FRAGMENTS AT 65.0'

SOIL SAMPLING INFORMATION

- ■ STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- ■ DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-5
NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	GM	TOP OF DOLOSTONE BEDROCK AT 69.8'
							70		BORING TERMINATED AT A DEPTH OF 70.0' ON JUNE 14, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- 80 — PERCENT CORE RECOVERY
- CORE LOSS ZONE
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

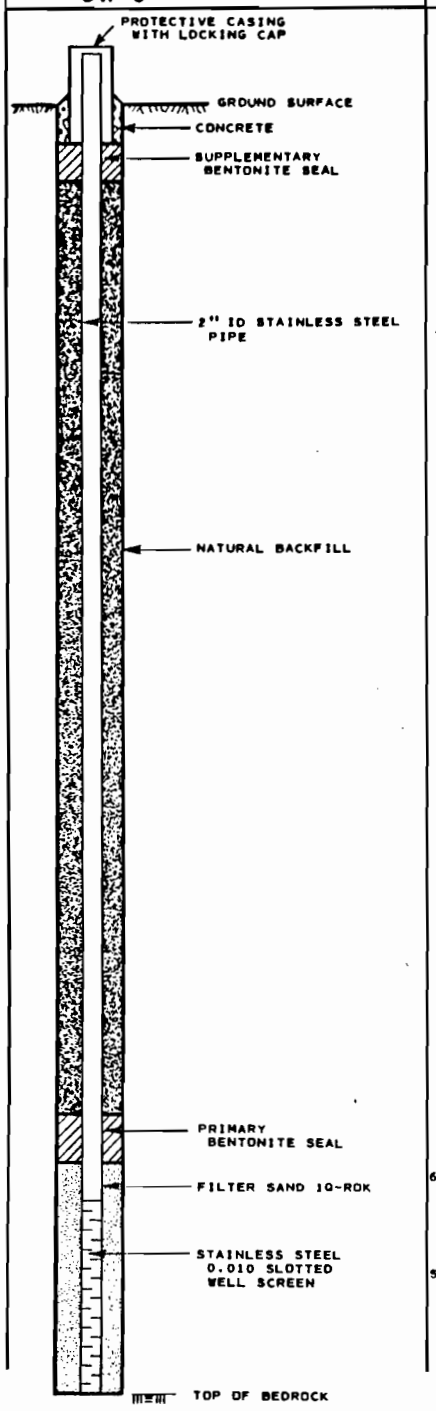
DAMES & MOORE

BORING OW-6

NASH ROAD SITE

WELL SCHEMATICS

OW-6



BLOW COUNT	SAMPLE NO & TYPE	RUN NO.	CORE REC.	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
						0		SURFACE CONDITIONS: VERY MUDDY WITH STANDING WATER; MARSHY GRASS
								MIXED SAND/WASTE FILL
12	1 S					5	SW	GRAY WET MEDIUM TO FINE SAND, LITTLE SILT, SOME BLACK STAINS
31	2 S							
17	3 S							
41	4 S					10	CL	GRAY AND BROWN MOIST STIFF LAYERED CLAY AND SILT, SILT LAYERS APPROXIMATELY 1/4" THICK AT 1" INTERVALS
15	5 S							GRAY MOIST STIFF CLAY
								GRADES TO MEDIUM CLAY AT 13.0'
4	6 S					15		GRADES TO SOFT AT 18.0'
2	7 S					20		GRADES TO WET
								RED CLAY LAYERS APPROXIMATELY 1/2" THICK AT 1 1/2 TO 2" INTERVALS (DETECTABLE ORGANIC ODOR)
2	8 S					25	CH	
2	9 S					30		
2	10 S					35		RED CLAY LAYERS APPROXIMATELY 2" THICK AT 1" INTERVALS AT 35.0'
								TRACE SMALL BLACK MOTTLES OF ORGANIC MATERIAL IN RED LAYERS
2	11 S					40		
39	12 S					45		BROWN DRY MEDIUM SILT, AND MEDIUM TO FINE GRAVEL, TRACE CLAY, TRACE FINE TO COARSE SAND (TILL)
39	13 S					50		GRADES TO MOIST
6/45'	14 S					55	GM	
								GRADES TO WET, MORE GRAVEL, LESS SILT
55/5'	15 S					60		
						65		

SOIL SAMPLING INFORMATION

- S STANDARD PENETRATION TEST
- ■ UNDISTURBED SAMPLE
- S DISTURBED SAMPLE
- □ NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- B0 — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- B2 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

BORING OW-6
NASH ROAD SITE

WELL SCHEMATICS	SAMPLING: BLOW COUNT	SAMPLE NO & TYPE	RUN NO	CORE REC	CORE ROD	FRACTURES	DEPTH IN FEET	GRAPHIC LOG	DESCRIPTIVE GEOLOGIC NOTES
							65	SM	TOP OF BEDROCK 66.0' BEDROCK IS DOLOSTONE
							70		BORING TERMINATED AT A DEPTH OF 66.0' ON JUNE 19, 1984.

SOIL SAMPLING INFORMATION

- STANDARD PENETRATION TEST
- UNDISTURBED SAMPLE
- DISTURBED SAMPLE
- NO SAMPLE RECOVERED

ROCK CORE INFORMATION

- 80 — CORE LOSS ZONE
- PERCENT CORE RECOVERY
- 82 — CORE ROD

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

KEY TO WELL SCHEMATIC

- Grout
- Bentonite Seal
- Sand Filter
- Well Screen

DAMES & MOORE

FIGURE B-6B

APPENDIX C
WELL DEVELOPMENT LOGS

Fill/Upper Sand Wells

2017 Remedial Investigation

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-01**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

A). Total casing and screen length in feet: 10.54

B). Water level below top of casing in feet: 4.20

	start	end
C). Number of feet standing water [A-B]:	6.34	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	1.08	
F). Volume of water to remove (gal.) [Ex5]:	5.40	
G). Volume of water actually removed (gal.):	5.50	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	15:32	7.15	2.39	3.66	17.53	-172	42.0	clear
2.5	15:37	6.80	2.50	2.64	16.26	-179	98.4	clear
4.0	15:47	6.81	2.47	2.23	17.27	-153	26.9	clear
5.5	15:58	6.89	2.54	2.63	16.35	-166	0.7	clear

Comments: Well Re-Development
Sulfur and unidentifiable odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-13**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/17/2017-8/23/2017

Staff: A. Koons

A). Total casing and screen length in feet:	8.02	
B). Water level below top of casing in feet:	4.11	
	start	end
C). Number of feet standing water [A-B]:	3.91	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.66	
F). Volume of water to remove (gal.) [Ex5]:	3.30	
G). Volume of water actually removed (gal.):	3.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	9:17	7.56	3.99	4.23	16.59	-173	>800	very cloudy
2.0	15:28	6.94	3.78	3.66	18.52	-166	>800	cloudy, yellow
3.0	15:00	7.29	3.89	3.30	21.1	-188	683	cloudy, yellow

Comments: Well Re-Development
Well went dry after 1 gal and 2 gal
Leachate odor
Well casing has heaved, will not be used for sampling.

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-14B**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017

Staff: K. Charney

A). Total casing and screen length in feet: 7.28

B). Water level below top of casing in feet: 4.64

start end

C). Number of feet standing water [A-B]: 2.64

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.45

F). Volume of water to remove (gal.) [Ex5]: 2.25

G). Volume of water actually removed (gal.): 2.0

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	9:02	7.25	1.98	6.19	19.34	-263	50.3	light brown
2.0	9:12	7.37	2.45	2.76	19.25	-261	559	brown

Comments: Well Re-Development

Well sand found in bottom of well and casing is heaved, well compromised.

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-14BR**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017

Staff: A. Koons

A). Total casing and screen length in feet:	9.54	
B). Water level below top of casing in feet:	4.90	
	start	end
C). Number of feet standing water [A-B]:	4.64	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.79	
F). Volume of water to remove (gal.) [Ex5]:	3.95	
G). Volume of water actually removed (gal.):	20.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
5.0	11:10	7.33	1.40	3.59	18.81	68	250	cloudy
10.0	11:21	7.38	1.38	2.54	18.86	74	334	cloudy
15.0	11:34	7.37	1.37	3.08	19.01	80	137	slightly cloudy
20.0	11:47	7.37	1.36	2.44	19.12	85	41.5	clear

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-16**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet: 12.90

B). Water level below top of casing in feet: 6.63

start end

C). Number of feet standing water [A-B]: 6.27

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.07

F). Volume of water to remove (gal.) [Ex5]: 5.35

G). Volume of water actually removed (gal.): 6.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	--	6.58	2.13	3.73	20.25	-221	539.0	black
2.3	--	6.48	2.17	2.43	17.34	-190	119.0	slightly cloudy
3.8	--	6.33	2.28	2.55	14.92	-195	86.7	clear
5.0	--	6.28	2.26	2.21	14.43	-198	71.9	clear
6.0	--	6.27	2.25	1.96	14.68	-192	41.6	clear

Comments: Well Re-Development

Sulfur odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-21**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

A). Total casing and screen length in feet: 10.19

B). Water level below top of casing in feet: 5.92

	start	end
C). Number of feet standing water [A-B]:	4.27	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.73	
F). Volume of water to remove (gal.) [Ex5]:	3.65	
G). Volume of water actually removed (gal.):	3.75	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	14:36	6.97	1.86	2.56	19.42	-206	612	cloudy
2.5	14:43	6.70	2.09	1.48	17.95	-201	>800	brown
3.0	14:50	6.71	1.85	1.66	17.81	-201	796	cloudy
3.5	14:55	6.66	1.80	1.60	18.18	-198	124	slightly cloudy
3.75	14:57	6.62	1.77	1.43	18.48	-202	36.9	clear

Comments: Well Re-Development

Sulfur odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-22**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/17/2017

Staff: A. Koons

A). Total casing and screen length in feet: 10.24

B). Water level below top of casing in feet: 5.02

	start	end
C). Number of feet standing water [A-B]:	5.22	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.89	
F). Volume of water to remove (gal.) [Ex5]:	4.45	
G). Volume of water actually removed (gal.):	70.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
2.0	11:18	7.15	1.37	2.10	17.84	-149	>800	cloudy
5.0	11:24	7.04	1.36	1.51	17.79	-161	>800	cloudy
10.0	11:36	7.05	1.36	2.04	18.07	-164	>800	cloudy
15.0	11:47	7.10	1.36	2.02	18.29	-172	691	cloudy
20.0	11:58	7.13	1.37	1.42	18.04	-165	321	cloudy
25.0	12:03	7.06	1.37	1.30	18.02	-165	307	cloudy
30.0	12:09	7.06	1.38	5.07	17.90	-168	214	slightly cloudy
35.0	12:18	7.02	1.39	1.15	17.70	-168	204	slightly cloudy
40.0	12:25	6.97	1.39	1.01	17.63	-167	182	slightly cloudy

Comments: Well Re-Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-22**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/17/2017

Staff: A. Koons

A). Total casing and screen length in feet: 10.24

B). Water level below top of casing in feet: 5.02

start end

C). Number of feet standing water [A-B]: 5.22

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.89

F). Volume of water to remove (gal.) [Ex5]: 4.45

G). Volume of water actually removed (gal.): 70.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
45.0	12:57	7.03	1.33	1.52	19.19	-166	301	slightly cloudy
50.0	13:05	7.06	1.36	1.07	18.57	-162	205	slightly cloudy
55.0	13:13	7.00	1.38	1.15	18.60	-169	211	slightly cloudy
60.0	13:21	7.06	1.35	0.90	18.34	-160	170	slightly cloudy
65.0	13:28	6.97	1.37	0.63	18.29	-166	168	slightly cloudy
70.0	13:37	6.95	1.37	0.71	18.18	-166	125	slightly cloudy

Comments: Well Re-Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-23**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017

Staff: A. Koons, D. Sheldon

A). Total casing and screen length in feet: 10.25

B). Water level below top of casing in feet: 3.98

start end

C). Number of feet standing water [A-B]: 6.27

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.07

F). Volume of water to remove (gal.) [Ex5]: 5.35

G). Volume of water actually removed (gal.): 27.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
2.0	13:50	6.86	1.68	0.72	19.25	-150	>800	cloudy
5.0	13:57	6.82	1.70	1.30	19.10	-112	>800	cloudy
10.0	14:06	6.85	1.68	1.89	18.96	-110	>800	cloudy
15.0	14:19	7.02	1.66	2.20	19.12	-113	>800	cloudy
20.0	14:31	7.16	1.66	2.37	19.49	-112	>800	cloudy
25.0	14:44	6.95	1.67	2.28	19.53	-111	194	slightly cloudy
27.0	14:49	6.86	1.66	2.03	19.10	-111	34.2	clear

Comments: Well Re-Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-31**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

	start	end
A). Total casing and screen length in feet:	8.26	
B). Water level below top of casing in feet:	6.99	
C). Number of feet standing water [A-B]:	1.27	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.22	
F). Volume of water to remove (gal.) [Ex5]:	1.10	
G). Volume of water actually removed (gal.):	1.75	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	14:03	7.46	2.85	3.36	20.09	-215	>800	brown
1.5	14:13	7.21	2.64	2.49	20.73	-148	330	cloudy
1.75	14:24	7.09	2.63	2.05	20.93	-118	28.3	clear

Comments: Well Re-Development

Sulfur odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-32**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/4/2017

Staff: K. Charney

A). Total casing and screen length in feet:	13.10		
B). Water level below top of casing in feet:	6.64		
	start	end	
C). Number of feet standing water [A-B]:	6.46		
D). Volume of water/foot of casing (gal.):	0.17		
E). Volume of water in casing (gal. [CxD]:	1.10		
F). Volume of water to remove (gal.) [Ex5]:	5.50		
G). Volume of water actually removed (gal.):	8.00		

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	10:28	6.99	2.11	4.23	16.79	-207	179	cloudy
2.0	10:32	6.98	2.19	2.43	14.33	-220	>800	brown
4.0	10:36	6.99	2.21	2.20	14.26	-216	659	cloudy
6.0	10:39	6.93	2.23	2.17	14.40	-205	378	cloudy
8.0	10:46	6.82	2.22	2.09	15.03	-180	43.6	clear

Comments: Well Re-Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-33**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/9/2017

Staff: J. Williams, M. DeLozier

	start	end
A). Total casing and screen length in feet:	11.15	
B). Water level below top of casing in feet:	7.54	
C). Number of feet standing water [A-B]:	3.61	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.61	
F). Volume of water to remove (gal.) [Ex5]:	3.05	
G). Volume of water actually removed (gal.):	8.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.8	12:46	7.65	2.94	4.74	15.87	-211	173	cloudy
1.5	12:48	7.22	2.95	3.28	14.36	-199	457	cloudy
2.5	12:51	7.19	2.96	2.85	13.73	-202	588	cloudy
4.5	12:57	7.27	2.84	2.98	14.38	-173	>800	cloudy
6.5	13:01	7.13	3.04	1.94	14.27	-172	247	cloudy
7.0	13:07	7.06	2.99	1.64	14.38	-183	61.0	clear
8.0	13:10	7.01	2.96	1.62	14.38	-176	19.2	clear

Comments: Well Re-Development

Odor noted

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-34**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: K. Charney, D. Sheldon

A). Total casing and screen length in feet: 15.37

B). Water level below top of casing in feet: 6.51

start end

C). Number of feet standing water [A-B]: 8.86

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.51

F). Volume of water to remove (gal.) [Ex5]: 7.55

G). Volume of water actually removed (gal.): 8.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	9:00	7.17	1.59	3.63	14.56	-204	675	brown
2.5	9:02	6.62	1.47	2.78	14.44	-174	302	cloudy
3.0	9:04	6.33	1.46	2.70	13.26	-171	282	cloudy
3.5	9:06	6.26	1.46	2.49	12.51	-170	281	cloudy
4.0	9:06	6.08	1.40	3.80	13.01	-159	462	cloudy
5.0	--	6.89	1.50	1.92	14.89	-132	289	cloudy
6.0	--	6.17	1.33	2.17	14.71	-116	117	cloudy
6.3	--	6.23	1.40	2.84	13.23	-137	248	cloudy
6.5	--	6.09	1.36	2.45	13.25	-134	437	cloudy

Comments: Well Re-Development

Well went dry after 4.0 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-34**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: K. Charney, D. Sheldon

	start	end
A). Total casing and screen length in feet:	15.37	
B). Water level below top of casing in feet:	6.51	
C). Number of feet standing water [A-B]:	8.86	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	1.51	
F). Volume of water to remove (gal.) [Ex5]:	7.55	
G). Volume of water actually removed (gal.):	8.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
7.0	--	6.12	1.34	2.87	13.69	-134	190	slightly cloudy
8.0	--	7.00	1.48	1.25	16.17	-123	2.1	clear

Comments: Well Re-Development

Well went dry after 4.0 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-35**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/4/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet:	12.10		
B). Water level below top of casing in feet:	6.74		
	start	end	
C). Number of feet standing water [A-B]:	5.36		
D). Volume of water/foot of casing (gal.):	0.17		
E). Volume of water in casing (gal. [CxD]:	0.91		
F). Volume of water to remove (gal.) [Ex5]:	4.55		
G). Volume of water actually removed (gal.):	3.00		

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	11:33	7.35	1.89	4.55	16.35	-243	98.8	slightly cloudy
2.0	11:38	7.37	1.86	2.92	16.18	-256	354	slightly cloudy
3.0	11:45	7.30	1.91	2.48	15.59	-241	46.3	clear

Comments: Well Re-Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-36**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/25/2017

Staff: A. Koons

	start	end
A). Total casing and screen length in feet:	10.37	
B). Water level below top of casing in feet:	6.50	
C). Number of feet standing water [A-B]:	3.87	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.66	
F). Volume of water to remove (gal.) [Ex5]:	3.30	
G). Volume of water actually removed (gal.):	7.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
2.0	11:02	6.83	1.41	2.81	16.08	-143	489	cloudy
5.0	11:21	6.89	1.38	1.92	15.41	-131	63.3	clear
7.0	11:33	6.90	1.40	1.90	15.25	-155	59.3	clear

Comments: Well Re-Development

Petroleum odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-37**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017

Staff: K. Charney

	start	end
A). Total casing and screen length in feet:	8.90	
B). Water level below top of casing in feet:	5.18	
C). Number of feet standing water [A-B]:	3.72	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.63	
F). Volume of water to remove (gal.) [Ex5]:	3.15	
G). Volume of water actually removed (gal.):	4.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	10:39	7.23	1.97	2.06	14.68	-223	73.2	slightly yellow
4.0	10:48	7.10	1.91	2.13	14.52	-246	45.6	clear

Comments: Well Re-Development

Petroleum odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-01S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017

Staff: A. Koons

A). Total casing and screen length in feet:	9.94	
B). Water level below top of casing in feet:	5.70	
	start	end
C). Number of feet standing water [A-B]:	4.24	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.72	
F). Volume of water to remove (gal.) [Ex5]:	3.60	
G). Volume of water actually removed (gal.):	25.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.5	8:51	6.31	1.64	4.60	17.21	119	>800	cloudy
1.5	8:57	6.81	1.69	2.55	17.11	80	>800	cloudy
3.0	9:00	6.88	1.68	2.73	17.19	54	>800	cloudy
5.0	9:06	6.94	1.66	2.81	17.20	31	>800	cloudy
7.5	9:15	7.04	1.69	2.37	17.35	10	>800	cloudy
10.0	9:25	7.21	1.68	1.80	17.34	-2	320	cloudy
15.0	9:45	7.30	1.65	3.10	17.75	6	178	slightly cloudy
17.5	9:55	7.26	1.66	3.03	17.89	-9	186	slightly cloudy
20.0	10:05	7.13	1.68	2.28	17.30	-19	76.2	clear
25.0	10:27	7.28	1.66	2.44	17.78	-11	29.2	clear

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-02S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-8/9/2017

Staff: K. Charney, M. DeLozier, J. Williams

	start	end
A). Total casing and screen length in feet:	9.25	
B). Water level below top of casing in feet:	5.90	
C). Number of feet standing water [A-B]:	3.35	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.57	
F). Volume of water to remove (gal.) [Ex5]:	2.85	
G). Volume of water actually removed (gal.):	53.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	8:47	7.52	2.79	6.50	13.92	34	>800	brown
5.0	8:57	7.13	2.61	2.82	13.66	35	>800	brown
10.0	9:13	7.13	2.57	2.25	13.64	34	>800	brown
15.0	9:31	7.08	2.46	6.89	14.76	31	>800	brown
20.0	9:48	7.32	2.47	2.31	14.84	21	>800	brown
25.0	10:08	6.99	2.55	5.01	13.93	37	>800	brown
30.0	10:25	6.96	2.57	1.84	13.70	39	>800	brown
31.0	15:21	8.01	2.44	3.61	16.18	-60	716	brown
35.0	15:34	7.53	2.44	3.63	15.47	-30	491	cloudy
40.0	15:47	7.25	2.53	1.57	14.44	-12	340	cloudy

Comments: Initial Well Development
Well developed on 8/8 and 8/9

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-02S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-8/9/2017

Staff: K. Charney, M. DeLozier, J. Williams

	start	end
A). Total casing and screen length in feet:	9.25	
B). Water level below top of casing in feet:	5.90	
C). Number of feet standing water [A-B]:	3.35	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.57	
F). Volume of water to remove (gal.) [Ex5]:	2.85	
G). Volume of water actually removed (gal.):	53.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
45.0	16:06	7.29	2.48	1.66	15.04	-4	155	slightly cloudy
49.0	9:13	--	--	--	--	--	--	very turbid
52.5	9:27	7.26	2.47	3.27	15.50	39	226	slightly cloudy
53.0	9:30	7.08	2.50	2.05	14.42	38	46.6	clear

Comments: Initial Well Development

Well developed on 8/8 and 8/9

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-03S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet: 10.74

B). Water level below top of casing in feet: 6.60 start — end

C). Number of feet standing water [A-B]: 4.14

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.70

F). Volume of water to remove (gal.) [Ex5]: 3.50

G). Volume of water actually removed (gal.): 15.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	8:30	6.13	1.56	9.17	18.27	-169	>800	brown
1.0	8:32	6.01	1.59	7.62	17.01	-177	>800	brown
2.5	8:34	5.94	1.57	6.65	18.24	-189	>800	brown
3.0	9:15	6.02	1.65	1.79	16.06	-167	382	slightly cloudy
3.3	9:17	6.09	1.55	2.02	16.18	-159	>800	brown
5.5	--	6.11	1.57	2.08	16.7	-149	150	slightly cloudy
6.3	--	6.43	1.48	1.96	17.82	-117	209	slightly cloudy
6.8	--	6.22	1.5	2.07	19.57	-175	352	slightly cloudy
7.0	--	6.22	1.51	1.95	19.11	-175	396	slightly cloudy

Comments: Initial Well Development
Well went dry after 1.5 gal and 2.0 gal

Leachate odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-03S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet: 10.74

B). Water level below top of casing in feet: 6.60

	start	end
C). Number of feet standing water [A-B]:	4.14	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.70	
F). Volume of water to remove (gal.) [Ex5]:	3.50	
G). Volume of water actually removed (gal.):	15.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
11.0	--	6.80	1.49	7.64	17.31	-143	75.5	clear
13.5	--	6.29	1.48	2.04	19.09	-171	344	slightly cloudy
15.0	--	6.85	1.12	1.39	31.16	-202	49.7	clear

Comments: Initial Well Development
Well went dry after 1.5 gal and 2.0 gal

Leachate odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-04S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet: 9.06

B). Water level below top of casing in feet: 5.69 (start) end

C). Number of feet standing water [A-B]: 3.37

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.57

F). Volume of water to remove (gal.) [Ex5]: 2.85

G). Volume of water actually removed (gal.): 12.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	--	6.02	5.83	2.22	16.97	-75	>800	brown
2.0	--	6.14	6.05	2.25	16.89	-121	>800	brown
2.5	--	6.32	6.01	2.84	17.11	-113	>800	brown
3.5	--	6.04	6.19	3.43	16.84	-68	774	brown
4.0	--	6.25	6.1	2.86	16.64	-78	>800	brown
4.1	--	6.43	5.87	2.65	17.16	-90	575	cloudy
5.0	--	5.85	6.07	2.07	17.67	-36	80.2	slightly cloudy
6.0	--	6.22	5.96	2.16	17.91	-3	75.4	slightly cloudy
9.0	--	6.45	6.07	2.48	17.52	-44	67.1	slightly cloudy

Comments: Initial Well Development
Well went dry after 2.5 gal and 4.125 gal.

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-04S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/2/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet: 9.06

B). Water level below top of casing in feet: 5.69

	start	end
C). Number of feet standing water [A-B]:	3.37	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.57	
F). Volume of water to remove (gal.) [Ex5]:	2.85	
G). Volume of water actually removed (gal.):	12.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
12.0	--	6.48	5.97	1.75	17.34	-66	41.5	clear

Comments: Initial Well Development
Well went dry after 2.5 gal and 4.125 gal.

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-05S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

A). Total casing and screen length in feet: 9.19

B). Water level below top of casing in feet: 6.60 start — end

C). Number of feet standing water [A-B]: 2.59

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.44

F). Volume of water to remove (gal.) [Ex5]: 2.20

G). Volume of water actually removed (gal.): 10.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	8:43	6.57	2.38	2.99	21.00	-223	11.8	cloudy
3.0	8:53	6.48	2.36	2.30	19.79	-221	>800	brown
4.0	10:26	6.68	2.52	3.79	18.19	-147	745	cloudy
5.0	15:37	6.68	2.39	1.77	19.19	-207	198	slightly cloudy
6.0	10:46	6.60	2.39	1.75	19.66	-198	150	slightly cloudy
7.0	10:54	6.86	2.20	1.8	22.66	-218	265	slightly cloudy
8.0	12:10	6.83	2.29	2.83	24.78	-195	201	slightly cloudy
9.0	12:20	6.99	2.28	1.67	22.48	-215	79.0	slightly cloudy
9.5	12:28	6.82	2.29	1.86	22.26	-210	84.0	slightly cloudy

Comments: Initial Well Development
Well went dry after 3.0 gal

Sulfur odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-05S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

A). Total casing and screen length in feet: 9.19

B). Water level below top of casing in feet: 6.60

start end

C). Number of feet standing water [A-B]: 2.59

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.44

F). Volume of water to remove (gal.) [Ex5]: 2.20

G). Volume of water actually removed (gal.): 10.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
10.0	12:44	6.92	2.33	3.41	21.74	-219	68.3	clear
10.5	12:49	6.85	2.34	1.92	20.89	-214	30.3	clear

Comments: Initial Well Development
Well went dry after 3.0 gal

Sulfur odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-06S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

A). Total casing and screen length in feet:	10.88		
B). Water level below top of casing in feet:	6.64		
	start	end	
C). Number of feet standing water [A-B]:	4.24		
D). Volume of water/foot of casing (gal.):	0.17		
E). Volume of water in casing (gal. [CxD]:	0.72		
F). Volume of water to remove (gal.) [Ex5]:	3.60		
G). Volume of water actually removed (gal.):	8.00		

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	9:00	6.94	1.40	2.64	19.06	-71	>800	brown
2.5	9:05	6.95	1.36	1.75	19.50	-88	522.0	brown
3.0	9:17	6.66	1.38	3.39	20.53	-118	>800	brown
5.0	11:06	7.56	1.40	3.51	20.73	-63	>800	brown
6.8	11:21	7.22	1.40	2.42	20.93	-43	694	cloudy
7.0	11:31	6.96	1.35	2.18	20.80	-33	238	slightly cloudy
7.5	11:41	7.09	1.36	3.73	20.90	2	123	slightly cloudy
7.8	11:47	6.89	1.35	2.17	20.56	11	147	slightly cloudy
8.0	11:51	6.90	1.36	2.15	20.51	26	24.5	clear

Comments: Initial Well Development
Well went dy after 3.0 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-07S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/3/2017

Staff: K. Charney, M. DeLozier

	start	end
A). Total casing and screen length in feet:	10.73	
B). Water level below top of casing in feet:	6.34	
C). Number of feet standing water [A-B]:	4.39	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.75	
F). Volume of water to remove (gal.) [Ex5]:	3.75	
G). Volume of water actually removed (gal.):	8.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	9:29	6.59	2.72	1.42	18.87	-115	658	cloudy
3.0	9:37	6.35	2.77	1.39	16.68	-147	>800	brown
4.0	9:43	6.50	2.82	2.77	16.32	-156	>800	brown
6.0	9:54	6.57	2.69	2.70	18.55	-9	715	cloudy
6.5	9:59	6.81	2.81	2.37	17.62	-58	212	slightly cloudy
7.0	10:06	6.59	2.84	2.12	17.05	-62	79.1	slightly cloudy
7.5	10:12	6.58	2.87	2.31	16.95	-64	117	slightly cloudy
8.0	10:17	6.47	2.8	2.23	17.48	85	20.9	clear

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-08S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017

Staff: A. Koons, D. Sheldon

A). Total casing and screen length in feet: 7.20

B). Water level below top of casing in feet: 5.58 (start) end

C). Number of feet standing water [A-B]: 1.62

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.28

F). Volume of water to remove (gal.) [Ex5]: 1.40

G). Volume of water actually removed (gal.): 15.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	15:24	6.74	3.53	3.06	18.81	-103	>800	cloudy
5.0	15:45	6.91	2.99	2.54	18.96	-118	692	cloudy
10.0	16:01	7.20	1.95	2.10	19.23	-163	>800	cloudy
15.0	16:19	6.95	2.42	1.57	18.95	-130	171	yellow

Comments: Initial Well Development
Sulfur/leachate odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-09S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/19/2017

Staff: A. Koons, E. Miller

A). Total casing and screen length in feet: 10.90

B). Water level below top of casing in feet: 7.52 (start) end

C). Number of feet standing water [A-B]: 3.38

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.57

F). Volume of water to remove (gal.) [Ex5]: 2.85

G). Volume of water actually removed (gal.): 15.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	9:56	7.04	2.73	0.99	16.35	-22	>800	very cloudy
5.0	10:20	7.00	2.78	0.46	16.36	-79	>800	very cloudy
7.0	10:43	6.92	2.82	0.40	16.14	-129	590	cloudy
10.0	11:03	6.73	2.84	0.00	15.80	-102	282	cloudy
13.0	11:27	6.88	2.87	0.00	16.06	-127	198	cloudy
15.0	11:50	6.85	2.88	0.00	16.35	-94	127	slightly cloudy

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-10S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/19/2017

Staff: A. Koons

A). Total casing and screen length in feet: 8.95

B). Water level below top of casing in feet: 6.72 (start) end

C). Number of feet standing water [A-B]: 2.23

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.38

F). Volume of water to remove (gal.) [Ex5]: 1.90

G). Volume of water actually removed (gal.): 40.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	8:23	7.53	3.59	2.02	16.23	-124	>800	cloudy
5.0	8:31	7.10	3.95	1.68	16.19	-149	>800	cloudy
7.0	8:39	6.92	4.03	0.94	16.23	-159	>800	cloudy
10.0	8:45	6.94	4.10	1.42	16.24	-163	660	cloudy
12.0	8:51	6.94	4.14	1.80	16.25	-163	>800	cloudy
15.0	8:58	6.92	4.17	1.20	16.28	-162	800	cloudy
20.0	9:08	6.96	4.17	1.23	16.33	-160	630	cloudy
25.0	9:30	6.94	4.19	1.47	16.86	-156	744	cloudy
30.0	9:43	6.92	4.2	1.33	16.93	-153	491	cloudy/yellow

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-10S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/19/2017

Staff: A. Koons

A). Total casing and screen length in feet: 8.95

B). Water level below top of casing in feet: 6.72

	start	end
C). Number of feet standing water [A-B]:	2.23	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.38	
F). Volume of water to remove (gal.) [Ex5]:	1.90	
G). Volume of water actually removed (gal.):	40.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
35.0	10:24	7.00	4.06	0.82	18.32	-113	770	cloudy/yellow
40.0	10:37	6.96	4.00	1.25	18.21	-162	42	clear

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-11S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/18/2017

Staff: A. Koons

A). Total casing and screen length in feet: 9.79

B). Water level below top of casing in feet: 6.03 (start) end

C). Number of feet standing water [A-B]: 3.76

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.64

F). Volume of water to remove (gal.) [Ex5]: 3.20

G). Volume of water actually removed (gal.): 20.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	13:04	7.03	1.54	1.06	18.71	47	>800	cloudy
3.0	13:22	6.89	1.57	3.30	17.76	-15	>800	cloudy
5.0	13:35	6.92	1.55	3.64	17.39	-15	144	slightly cloudy
7.0	13:57	6.91	1.58	3.15	17.64	25	120	slightly cloudy
10.0	14:22	6.93	1.51	3.05	17.97	7	89.0	slightly cloudy
15.0	14:54	6.95	1.55	2.67	18.00	16	65.7	clear
20.0	15:34	6.97	1.57	2.09	17.52	-46	47.3	clear

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-12S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/18/2017

Staff: A. Koons, E. Miller

A). Total casing and screen length in feet:	10.10	
B). Water level below top of casing in feet:	6.35	
	start	end
C). Number of feet standing water [A-B]:	3.75	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.64	
F). Volume of water to remove (gal.) [Ex5]:	3.20	
G). Volume of water actually removed (gal.):	10.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	12:48	7.13	1.83	0.68	18.99	-124	>800	very cloudy
5.0	13:51	7.17	1.75	0.81	17.60	-110	689	cloudy
8.0	15:20	7.04	1.69	0.55	18.80	-25	130	slightly cloudy
10.0	15:40	6.92	1.76	0.83	17.36	-156	80.9	clear

Comments: Initial Well Development

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-13S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/18/2017-9/19/2017

Staff: A. Koons, E. Miller

A). Total casing and screen length in feet: 10.55

B). Water level below top of casing in feet: 8.00 start — end

C). Number of feet standing water [A-B]: 2.55

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.43

F). Volume of water to remove (gal.) [Ex5]: 2.15

G). Volume of water actually removed (gal.): 30.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	10:53	7.03	3.32	1.33	17.11	-130	>800	cloudy
3.0	11:01	7.03	3.29	1.09	16.56	-80	428	cloudy
5.0	11:04	6.89	3.41	1.15	16.22	-58	246	cloudy
7.0	11:18	6.97	3.35	1.17	16.52	-29	107	slightly cloudy
10.0	11:32	6.94	3.33	1.12	16.59	-8	55.4	clear
14.0	12:03	6.87	3.28	1.74	17.40	16	132	slightly cloudy
20.0	16:07	6.98	3.29	2.34	17.18	23	57.1	clear
21.0	8:35	7.04	3.35	3.05	15.99	111	143	slightly cloudy
25.0	8:48	7.05	3.38	2.40	15.76	140	113	slightly cloudy

Comments: Initial Well Development
Well developed on 9/18 and 9/19

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-13S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 9/18/2017-9/19/2017

Staff: A. Koons, E. Miller

A). Total casing and screen length in feet:	10.55	
B). Water level below top of casing in feet:	8.00	
	start	end
C). Number of feet standing water [A-B]:	2.55	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.43	
F). Volume of water to remove (gal.) [Ex5]:	2.15	
G). Volume of water actually removed (gal.):	30.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
30.0	9:31	6.93	3.36	2.12	16.48	146	35	clear

Comments: Initial Well Development
Well developed on 9/18 and 9/19

2021 Sampling Event

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-14S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 10/21/2021

Staff: A. Koons

A). Total casing and screen length in feet:	11.90	
B). Water level below top of casing in feet:	8.05 start	8.11 end
C). Number of feet standing water [A-B]:	3.85	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	0.65	
F). Volume of water to remove (gal.) [Ex5]:	3.27	
G). Volume of water actually removed (gal.):	8.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	11:04	6.85	0.682	6.45	16.03	43	>1000	very turbid
2.0	11:16	7.09	1.17	3.13	15.85	49	169	slightly turbid
4.0	11:48	6.87	1.19	2.41	15.90	22	119	slightly turbid
6.0	13:27	6.81	1.23	17.25	16.1	83	>1000	very turbid
8.0	13:53	6.85	1.25	0.00	15.89	14	68.9	clear

Comments: Well was surged with a bailer and purged with a peristaltic pump.
Well went dry @ 3.0, 6.0 and 8.0 gals.

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-15S**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 10/21/2021

Staff: A. Koons

A). Total casing and screen length in feet: 10.95

B). Water level below top of casing in feet: 5.92 start / 5.99 end

C). Number of feet standing water [A-B]: 5.03

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.86

F). Volume of water to remove (gal.) [Ex5]: 4.28

G). Volume of water actually removed (gal.): 15.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	8:41	7.98	0.898	23.18	16.16	149	>1000	very turbid
1.0	8:44	7.43	0.921	19.97	16.18	150	616	very turbid
2.0	8:54	5.87	0.871	3.75	16.22	111	>1000	very turbid
4.0	9:00	5.91	1.04	7.22	16.3	42	212	turbid
6.0	9:19	5.97	0.826	4.72	16.33	-28	79.1	slightly turbid
8.0	9:32	6.07	0.837	4.14	16.35	-36	46.1	clear
10.0	9:46	6.19	1.03	1.36	16.37	-42	37.5	clear
12.0	9:58	6.24	1.03	0.56	16.36	-46	242	turbid
15.0	10:20	6.31	1.04	0	16.39	-45	28.6	clear

Comments: Well was surged with a bailer and purged with a peristaltic pump.

Upper Clay Aquitard Wells

2017 Remedial Investigation

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-02**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017

Staff: D. Sheldon, K. Charney

A). Total casing and screen length in feet:	11.45	
B). Water level below top of casing in feet:	3.20	
	start	end
C). Number of feet standing water [A-B]:	8.25	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	1.40	
F). Volume of water to remove (gal.) [Ex5]:	7.01	
G). Volume of water actually removed (gal.):	1.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	11:06	7.59	1.840	1.38	16.62	-247	34	clear

Comments: Well Re-Development

Lower Sand Wells

2017 Remedial Investigation

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-14A**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017-9/12/2017

Staff: A. Koons, D. Sheldon

A). Total casing and screen length in feet: 39.65

B). Water level below top of casing in feet: 11.38

start end

C). Number of feet standing water [A-B]: 28.27

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 4.81

F). Volume of water to remove (gal.) [Ex5]: 24.05

G). Volume of water actually removed (gal.): 30.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	13:26	8.20	0.384	2.83	18.24	-194	>800	very cloudy
5.0	15:02	7.98	0.395	1.52	16.81	-149	>800	very couldy
7.0	8:45	8.82	0.380	5.79	14.66	-23	>800	very cloudy
9.0	14:38	8.47	0.341	3.95	17.94	-65	>800	very cloudy
13.0	11:13	8.72	0.360	4.20	15.08	67	>800	very cloudy
15.0	11:58	8.87	0.369	5.32	16.52	36	>800	very cloudy
16.0	10:28	8.67	0.419	2.1	11.52	-3	405	cloudy
20.0	10:33	8.85	0.385	2.55	12.02	-6	321	cloudy
21.0	10:36	8.95	0.376	2.03	11.97	-8	684	cloudy

Comments: Well Re-Development

Well developed on 8/16, 8/17, 8/23, 9/1, 9/5 and 9/12

Well pumped dry at 4 gal, 9 gal, 15 gal, 21 gal, 25 gal and 30 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-14A**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/16/2017-9/12/2017

Staff: A. Koons, D. Sheldon

	start	end
A). Total casing and screen length in feet:	39.65	
B). Water level below top of casing in feet:	11.38	
C). Number of feet standing water [A-B]:	28.27	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	4.81	
F). Volume of water to remove (gal.) [Ex5]:	24.05	
G). Volume of water actually removed (gal.):	30.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
22.0	10:07	8.50	0.390	3.30	12.67	2	216	slightly cloudy
26.0	--	8.63	0.379	2.50	12.96	42	49.1	clear

Comments: Well Re-Development
Well developed on 8/16, 8/17, 8/23, 9/1, 9/5 and 9/12
Well pumped dry at 4 gal, 9 gal, 15 gal, 21 gal, 25 gal and 30 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-15**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-9/5/2017

Staff: D. Sheldon, K. Charney, J. Williams
M. DeLozier, A. Koons

A). Total casing and screen length in feet: 47.03

B). Water level below top of casing in feet: 11.79 (start) end

C). Number of feet standing water [A-B]: 35.24

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 5.99

F). Volume of water to remove (gal.) [Ex5]: 29.95

G). Volume of water actually removed (gal.): 42.5

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	13:30	10.13	0.92	6.91	14.68	-188	8	clear
5.0	13:53	10.10	0.98	2.27	11.58	-399	122	slightly cloudy
6.0	14:06	10.92	0.90	3.49	11.46	-294	118	slightly cloudy
10.0	14:20	10.43	0.55	2.32	11.72	-281	260	cloudy
12.0	14:55	--	--	--	--	--	--	very turbid
12.8	10:28	8.84	0.443	3.91	13.02	-49	59.6	clear
17.8	10:47	9.02	0.445	2.38	12.79	-45	241	slightly cloudy
22.0	13:44	8.50	0.461	2.57	13.76	-147	454	cloudy
25.5	14:46	8.51	0.483	2.59	12.93	-66	>800	very cloudy

Comments: Well Re-Development
Well developed on 8/8, 8/9, 9/1 and 9/5
Well went dry after 12 gal, 21 gal, 29 gal, 33.5 gal and 42.5 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-15**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-9/5/2017

Staff: D. Sheldon, K. Charney, J. Williams
M. DeLozier, A. Koons

A). Total casing and screen length in feet: 47.03

B). Water level below top of casing in feet: 11.79 start — end

C). Number of feet standing water [A-B]: 35.24

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 5.99

F). Volume of water to remove (gal.) [Ex5]: 29.95

G). Volume of water actually removed (gal.): 42.5

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
26.5	11:22	8.90	0.499	1.06	11.55	-60	149	clear
30.5	11:36	9.78	0.46	1.37	11.34	-73	122	clear
33.5	11:40	9.88	0.47	0.00	11.24	-67	206	clear
35.5	11:30	8.79	0.50	2.35	12.33	-36	164	clear
38.5	11:32	9.22	0.46	2.20	11.95	-36	70.4	clear

Comments: Well Re-Development
Well developed on 8/8, 8/9, 9/1 and 9/5
Well went dry after 12 gal, 21 gal, 29 gal, 33.5 gal and 42.5 gal

Glacial Till Wells

2017 Remedial Investigation

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-01B**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/9/2017-9/12/2017

Staff: A. Koons J. Williams

A). Total casing and screen length in feet:	64.80	
B). Water level below top of casing in feet:	13.45	
	start	end
C). Number of feet standing water [A-B]:	51.35	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	8.73	
F). Volume of water to remove (gal.) [Ex5]:	43.65	
G). Volume of water actually removed (gal.):	50.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
4.0	15:58	8.81	0.634	4.88	15.55	-44	>800	cloudy
8.0	16:26	9.23	0.645	5.84	14.02	-51	>800	cloudy
12.0	16:48	9.14	0.651	4.95	13.28	-41	>800	cloudy
16.0	10:58	8.55	0.694	7.74	13.1	-106	696	cloudy
20.0	11:39	8.73	0.699	3.41	12.96	-90	>800	cloudy
23.0	9:36	8.41	0.788	0.86	10.88	-20	>800	cloudy
25.0	9:41	8.73	0.773	0.63	10.91	-27	>800	cloudy
30.0	9:57	8.69	0.765	0.76	11.08	-29	>800	cloudy
37.0	9:22	8.61	0.765	1.86	11.78	23	>800	cloudy

Comments: Well Re-Development
Well developed on 8/9, 8/10, 9/1, 9/6 and 9/12
Well went dry after 12 gal, 20 gal, 30 gal, 42 gal and 52 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-01B**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/9/2017-9/12/2017

Staff: A. Koons J. Williams

	start	end
A). Total casing and screen length in feet:	64.80	
B). Water level below top of casing in feet:	13.45	
C). Number of feet standing water [A-B]:	51.35	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	8.73	
F). Volume of water to remove (gal.) [Ex5]:	43.65	
G). Volume of water actually removed (gal.):	50.00	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
42.0	9:35	8.68	0.765	2.20	11.92	23	>800	cloudy
43.0	--	8.25	0.827	0.65	13.69	27	666	cloudy
47.0	--	8.60	0.774	1.83	12.22	24	57.4	clear
50.0	--	8.56	0.774	2.12	12.5	29	61.6	clear

Comments: Well Re-Development
Well developed on 8/9, 8/10, 9/1, 9/6 and 9/12
Well went dry after 12 gal, 20 gal, 30 gal, 42 gal and 52 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-03**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/17/2017-9/12/2017

Staff: A. Koons

A). Total casing and screen length in feet: 53.45

B). Water level below top of casing in feet: 14.06 (start) end

C). Number of feet standing water [A-B]: 39.39

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 6.70

F). Volume of water to remove (gal.) [Ex5]: 33.50

G). Volume of water actually removed (gal.): 51.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
2.0	10:26	8.11	0.893	2.92	15.12	6	537	cloudy
5.0	10:30	7.92	0.807	1.41	14.05	-76	>800	very cloudy
9.0	15:03	7.86	0.747	2.85	18.60	-22	>800	very cloudy
14.0	15:48	8.09	0.903	3.82	15.5	3	>800	very cloudy
15.0	9:21	7.99	0.915	1.87	13.56	81	41	clear
20.5	14:33	8.03	0.856	1.07	13.67	29	409	cloudy
22.0	14:38	7.86	0.879	0.8	12.59	-132	237	cloudy
26.0	9:00	8.01	0.939	0	10.06	100	399	cloudy
27.0	9:05	7.89	0.916	0	10.47	-39	126	slightly cloudy

Comments: Well Re-Development

Well developed on 8/17, 8/23, 8/31, 9/1, 9/5, 9/6, and 9/12

Well went dry after 5 gal, 9 gal, 14 gal, 23 gal, 29 gal, 36 gal, 44 gal, and 51 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-03**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/17/2017-9/12/2017

Staff: A. Koons

A). Total casing and screen length in feet: 53.45

B). Water level below top of casing in feet: 14.06

start end

C). Number of feet standing water [A-B]: 39.39

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 6.70

F). Volume of water to remove (gal.) [Ex5]: 33.50

G). Volume of water actually removed (gal.): 51.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
31.0	9:29	8.46	0.965	2.13	13.62	59	>800	cloudy
34.0	9:35	8.16	0.889	1.35	12.29	-51	240	slightly cloudy
41.0	8:45	8.01	0.902	6.60	12.01	86	>800	cloudy
45.0	--	8.55	0.954	1.77	17.12	110	>800	cloudy
49.0	--	8.23	0.859	1.13	14.42	-22	256	slightly cloudy
51.0	--	7.90	0.850	1.03	13.50	-7	165	slightly cloudy

Comments: Well Re-Development

Well developed on 8/17, 8/23, 8/31, 9/1, 9/5, 9/6, and 9/12

Well went dry after 5 gal, 9 gal, 14 gal, 23 gal, 29 gal, 36 gal, 44 gal, and 51 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-04**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-9/12/2017

Staff: D. Sheldon, K. Charney
J. Williams, M. DeLozier, A. Koons

	start	end
A). Total casing and screen length in feet:	70.80	
B). Water level below top of casing in feet:	13.84	
C). Number of feet standing water [A-B]:	56.96	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	9.68	
F). Volume of water to remove (gal.) [Ex5]:	48.40	
G). Volume of water actually removed (gal.):	63.50	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	13:35	9.12	0.720	1.96	12.90	-347	>800	Grey
5.0	13:51	7.64	0.671	1.87	14.73	-248	>800	Grey
10.0	14:47	9.26	0.757	6.50	13.88	-261	>800	Grey
12.5	9:53	7.91	0.976	2.22	12.83	-228	162	Clearing Slightly
15.5	10:00	Insufficient flow for parameters						Turbid Dark Grey
18.5	10:17	Insufficient flow for parameters						Clearing Slightly
19.5	11:13	8.30	0.863	2.25	17.15	-162	>800	Light Grey
22.5	13:39	7.81	1.010	2.21	15.13	-167	221	Slightly Cloudy
23.5	13:50	8.15	1.000	1.26	15.00	-174	197	Slightly Cloudy

Comments: Well Re-Development
Difficulty pumping, black shards found in water removed (possible tubing from previous well sampling/development?)
Well developed on 8/8, 8/9, 8/31, 9/1, 9/5 and 9/12
Well went dry after 10.0 gal, 28.5 gal, 39.5 gal, and 67.5 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-04**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-9/12/2017

Staff: D. Sheldon, K. Charney
J. Williams, M. DeLozier, A. Koons

	start	end
A). Total casing and screen length in feet:	70.80	
B). Water level below top of casing in feet:	13.84	
C). Number of feet standing water [A-B]:	56.96	
D). Volume of water/foot of casing (gal.):	0.17	
E). Volume of water in casing (gal. [CxD]:	9.68	
F). Volume of water to remove (gal.) [Ex5]:	48.40	
G). Volume of water actually removed (gal.):	63.50	

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
25.0	14:24	7.99	0.932	4.73	14.48	-74	761	cloudy
28.5	14:40	7.95	0.974	2.27	15.31	-44	483	cloudy
29.5	10:25	8.22	1.150	0.00	13.23	48	187	clear
33.5	10:27	8.21	1.170	0.83	12.60	-18	371	slightly cloudy
38.5	10:32	8.14	1.170	0.22	12.19	-84	>800	very cloudy
40.5	10:59	8.44	1.180	1.02	12	27	>800	very cloudy
43.5	11:10	8.30	1.200	1.95	12.07	-51	>800	very cloudy
48.5	11:57	9.09	1.140	0	11.35	-25	>800	very cloudy
50.5	10:36	8.37	1.130	2.3	12.90	36	>800	very cloudy

Comments: Well Re-Development
Difficulty pumping, black shards found in water removed (possible tubing from previous well sampling/development?)
Well developed on 8/8, 8/9, 8/31, 9/1, 9/5 and 9/12
Well went dry after 10.0 gal, 28.5 gal, 39.5 gal, and 67.5 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-04**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/8/2017-9/12/2017

Staff: D. Sheldon, K. Charney
J. Williams, M. DeLozier, A. Koons

A). Total casing and screen length in feet: 70.80

B). Water level below top of casing in feet: 13.84

start end

C). Number of feet standing water [A-B]: 56.96

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 9.68

F). Volume of water to remove (gal.) [Ex5]: 48.40

G). Volume of water actually removed (gal.): 63.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
53.5	10:46	8.23	1.190	1.00	12.48	-99	>800	very cloudy
58.5	11:12	8.20	1.170	0.32	12.70	-47	>800	very cloudy
59.5	--	8.47	1.130	3.50	15.00	56	>800	very cloudy
63.5	--	8.37	1.170	0.00	13.33	-49	>800	very cloudy

Comments: Well Re-Development
Difficulty pumping, black shards found in water removed (possible tubing from previous well sampling/development?)
Well developed on 8/8, 8/9, 8/31, 9/1, 9/5 and 9/12
Well went dry after 10.0 gal, 28.5 gal, 39.5 gal, and 67.5 gal

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-05**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/10/2017

Staff: A. Koons, D. Sheldon

A). Total casing and screen length in feet: 70.82

B). Water level below top of casing in feet: 14.34

start end

C). Number of feet standing water [A-B]: 56.48

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 9.60

F). Volume of water to remove (gal.) [Ex5]: 48.00

G). Volume of water actually removed (gal.): 47.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
1.0	8:50	7.97	0.639	3.91	12.24	-269	16.1	Clear (sulfur odor)
7.0	8:58	8.07	0.755	1.91	14.19	-297	730	Cloudy
15.0	9:16	8.23	0.849	2.67	12.33	-260	203	Cloudy
20.0	9:20	8.24	0.865	3.62	11.3	-264	259	Cloudy
25.0	9:26	6.32	0.861	4.08	11.78	-262	627	Cloudy
30.0	9:31	8.28	0.867	1.44	11.36	-243	253	Cloudy
35.0	9:37	8.33	0.872	1.47	11.35	-236	197	Cloudy
40.0	9:41	8.34	0.870	1.34	11.25	-249	94.0	Cloudy
47.0	9:52	8.35	0.867	2.85	11.58	-225	37.0	Cloudy

Comments: Well Re-Development
Sulfur odor

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-06**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/7/2017-9/1/2017

Staff: K. Charney, A. Koons

A). Total casing and screen length in feet: 68.46

B). Water level below top of casing in feet: 16.85

start end

C). Number of feet standing water [A-B]: 51.61

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 8.77

F). Volume of water to remove (gal.) [Ex5]: 43.85

G). Volume of water actually removed (gal.): 90.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
0.0	14:01	8.87	0.726	10.03	15.27	-212	576.0	Brown
3.0	14:04	8.38	1.680	3.77	12.49	-297	>800	Brown
6.0	14:10	8.17	2.300	2.45	11.54	-292	>800	Brown
9.0	14:16	8.12	2.400	1.99	12.63	-231	674	Slightly Grey
12.0	14:21	8.05	2.440	1.67	12.05	-243	336	Brown
15.0	14:27	8.13	2.610	2.11	11.17	-260	641	Brown
18.0	14:32	8.08	2.500	1.76	12.07	-146	--	Grey
21.0	14:37	8.30	1.720	1.97	13.13	-235	--	Brown
24.0	14:44	8.43	2.580	1.49	11.36	-263	--	Slightly Grey/Brown

Comments: Well Re-Development
Well developed on 8/7 and 9/1

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-06**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/7/2017-9/1/2017

Staff: K. Charney, A. Koons

A). Total casing and screen length in feet: 68.46

B). Water level below top of casing in feet: 16.85

start end

C). Number of feet standing water [A-B]: 51.61

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 8.77

F). Volume of water to remove (gal.) [Ex5]: 43.85

G). Volume of water actually removed (gal.): 90.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
27.0	14:48	8.26	2.630	1.66	10.96	-249	--	Slightly Grey/Brown
30.0	14:55	8.15	2.620	1.50	10.96	-253	--	Slightly Grey/Brown
33.0	14:58	8.09	2.560	1.45	11.70	-198	317	Slightly Clear
36.0	15:05	8.05	2.530	1.91	12.13	-138	128	Slightly Clear
39.0	15:10	8.09	2.610	1.33	11.27	-217	89.7	Slightly Clear
42.0	15:16	8.08	2.620	1.46	11.09	-232	80.2	Slightly Clear
45.0	15:22	7.94	2.600	1.46	11.54	-174	33.8	Slightly Clear
48.0	15:28	8.05	2.630	1.36	11.13	-231	54.7	Slightly Clear
50.0	15:34	7.98	2.540	4.13	12.15	-143	36.1	Clear

Comments: Well Re-Development
Well developed on 8/7 and 9/1

WELL DEVELOPMENT LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-06**

Site Name: Niagara Sanitation - 7415 Nash Road

Date: 8/7/2017-9/1/2017

Staff: K. Charney, A. Koons

A). Total casing and screen length in feet: 68.46

B). Water level below top of casing in feet: 16.85

start end

C). Number of feet standing water [A-B]: 51.61

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 8.77

F). Volume of water to remove (gal.) [Ex5]: 43.85

G). Volume of water actually removed (gal.): 90.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Volume Purged in Gallons	Time (hh:mm)	pH (SU)	Conductivity (uS/m)	Dissolved Oxygen (mg/L)	Temperature (˚C)	ORP (mV)	Turbidity (NTU)	Appearance
51.0	12:37	8.45	1.860	1.00	11.28	7	280.0	Slightly Grey/Brown
55.0	12:40	8.32	2.470	0.22	11.07	10	360	Slightly Grey/Brown
60.0	12:45	8.16	2.910	0.00	11.01	-69	267	Slightly Grey/Brown
65.0	12:51	8.18	2.790	0.00	10.99	-140	260	Slightly Grey/Brown
70.0	12:56	8.19	2.980	0.00	10.97	-147	509	Slightly Grey/Brown
75.0	13:00	8.16	3.070	0	10.94	-144	381	Slightly Grey/Brown
80.0	13:05	8.12	3.160	0	10.9	-136	456	Slightly Grey/Brown
85.0	13:11	8.08	3.160	0	10.89	-143	262	Slightly Grey/Brown
90.0	13:17	8.05	3.140	0	10.91	-148	190	Slightly Grey/Brown

Comments: Well Re-Development
Well developed on 8/7 and 9/1

APPENDIX D
GROUNDWATER PURGE & SAMPLE LOGS

Fill/Upper Sand Wells

2017 Remedial Investigation

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-1**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/28/2017

Staff: A. Koons, D. Henson

Time: 12:40 (sample collected)

A). Total casing and screen length in feet:	10.54
B). Water level below top of casing in feet:	3.90
C). Number of feet standing water [A-B]:	6.64
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	1.13
F). Volume of water to remove (gal.) [Ex3]:	3.39
G). Volume of water actually removed (gal.):	2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:15	17.00	7.22	-53	3.01	14.2	2.10	22.1	clear
12:20	16.62	6.85	-107	2.98	11.5	1.12	11.6	clear
12:25	16.69	6.81	-126	2.91	12.3	1.60	16.8	clear
12:30	16.57	6.75	-103	2.92	11.9	0.91	9.4	clear
12:35	**16.58**	**6.78**	**-111**	**2.94**	**12.3**	**1.03**	**10.5**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
Lab duplicate sample taken at this location

Sampling ID: NS-OW1-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-14BR**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/28/2017

Staff: A. Koons, D. Henson

Time: 14:25 (sample collected)

A). Total casing and screen length in feet:	9.54
B). Water level below top of casing in feet:	5.29
C). Number of feet standing water [A-B]:	4.25
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.72
F). Volume of water to remove (gal.) [Ex3]:	2.16
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:05	19.26	7.29	-135	1.62	14.4	1.50	16.4	clear
14:10	19.09	7.18	-131	1.54	12.3	1.62	18.1	clear
14:15	18.91	7.15	-130	1.52	12.4	1.94	21.5	clear
14:20	**18.84**	**7.11**	**-130**	**1.53**	**12.4**	**1.63**	**17.9**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW14BR-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-16**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/30/2017

Staff: A. Koons, D. Henson

Time: 9:25 (sample collected)

A). Total casing and screen length in feet:	12.90
B). Water level below top of casing in feet:	7.25
C). Number of feet standing water [A-B]:	5.65
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.96
F). Volume of water to remove (gal.) [Ex3]:	2.88
G). Volume of water actually removed (gal.):	2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:00	15.59	6.80	-139	2.36	29.1	2.29	23.9	clear
9:05	15.08	6.97	-142	2.41	25.1	1.53	15.5	clear
9:10	15.03	6.83	-149	2.45	25.1	1.82	18.6	clear
9:15	14.94	6.80	-157	2.47	22.6	2.01	20.7	clear
9:20	**14.89**	**6.80**	**-146**	**2.47**	**21.7**	**1.54**	**15.7**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
Lab duplicate sample taken at this location

Sampling ID: NS-OW16-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-21**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/28/2017

Staff: A. Koons, D. Henson

Time: 11:40 (sample collected)

A). Total casing and screen length in feet:	10.19
B). Water level below top of casing in feet:	6.25
C). Number of feet standing water [A-B]:	3.94
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.67
F). Volume of water to remove (gal.) [Ex3]:	2.01
G). Volume of water actually removed (gal.):	2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:15	18.19	6.96	-105	2.26	22.1	0.53	5.6	clear
11:20	18.16	6.87	-141	1.91	32.9	0.83	8.8	clear
11:25	18.03	6.82	-138	1.90	21.8	0.81	8.5	clear
11:30	17.95	6.85	-144	1.91	20.0	0.53	5.5	clear
11:35	**17.81**	**6.80**	**-141**	**1.90**	**16.8**	**0.89**	**9.2**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW21-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-22**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/28/2017

Staff: A. Koons, D. Henson

Time: 10:40 (sample collected)

A). Total casing and screen length in feet:	10.24
B). Water level below top of casing in feet:	5.19
C). Number of feet standing water [A-B]:	5.05
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.86
F). Volume of water to remove (gal.) [Ex3]:	2.58
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:20	17.90	7.05	-170	1.44	17.4	0.19	2.1	clear
10:25	17.45	6.97	-159	1.32	12.2	0.19	2.0	clear
10:30	17.54	7.01	-165	1.35	13.9	0.82	8.2	clear
10:35	**17.43**	**6.93**	**-161**	**1.38**	**13.5**	**0.32**	**3.1**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
Sulfur odor

Sampling ID: NS-OW22-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs
☐ CP-51 VOCs & SVOCs
☐ Full List TCL & CP-51 VOC
☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-23**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/28/2017

Staff: A. Koons, D. Henson

Time: 9:15 (sample collected)

A). Total casing and screen length in feet:	10.25
B). Water level below top of casing in feet:	4.33
C). Number of feet standing water [A-B]:	5.92
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	1.01
F). Volume of water to remove (gal.) [Ex3]:	3.03
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:55	14.72	7.72	-132	1.97	17.9	2.60	28.8	clear
9:00	15.73	7.08	-147	1.97	19.4	2.06	21.6	clear
9:05	16.42	7.04	-145	1.89	16.2	2.10	22.4	clear
9:10	**16.61**	**7.00**	**-152**	**1.89**	**14.7**	**1.51**	**17.0**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
Sulfur odor

Sampling ID: NS-OW23-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs
☐ CP-51 VOCs & SVOCs
☐ Full List TCL & CP-51 VOC
☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-31**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/22/2017

Staff: A. Koons

Time: 11:55 (sample collected)

A). Total casing and screen length in feet:	8.26
B). Water level below top of casing in feet:	6.33
C). Number of feet standing water [A-B]:	1.93
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.33
F). Volume of water to remove (gal.) [Ex3]:	0.99
G). Volume of water actually removed (gal.):	2.67

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:20	20.82	7.03	39	3.03	37.4	1.81	--	clear
11:25	20.09	6.96	-90	3.01	49.1	1.29	--	clear
11:35	19.94	6.95	-119	3.03	26.3	1.61	--	clear
11:40	19.44	6.93	-106	2.89	14.9	1.11	--	clear
11:45	19.34	6.91	-97	2.93	13.8	0.91	--	clear
11:50	19.21	6.92	-90	2.90	14.0	1.19	--	clear

Comments: Pumping at a rate of 444mL/min. for 10 min. and slowed to 301 mL/min for the remainder of time (well going dry)
Bold readings are sampling parameters

Sampling ID: NS-OW31-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-32**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/30/2017

Staff: A. Koons, D. Henson

Time: 11:20 (sample collected)

A). Total casing and screen length in feet:	13.10
B). Water level below top of casing in feet:	6.85
C). Number of feet standing water [A-B]:	6.25
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	1.06
F). Volume of water to remove (gal.) [Ex3]:	3.18
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:00	15.28	7.34	-92	2.61	19.1	2.03	21.1	clear
11:05	15.20	6.96	-105	2.64	17.7	1.60	16.6	clear
11:10	15.39	6.91	-101	2.71	17.5	2.55	26.4	clear
11:15	**15.65**	**6.87**	**-115**	**2.68**	**18.8**	**2.21**	**23.1**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW32-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-33**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/29/2017

Staff: A. Koons, D. Henson

Time: 12:50 (sample collected)

A). Total casing and screen length in feet:	11.15
B). Water level below top of casing in feet:	6.68
C). Number of feet standing water [A-B]:	4.47
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.76
F). Volume of water to remove (gal.) [Ex3]:	2.28
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:30	15.71	7.27	-70	3.24	16.0	3.40	35.6	clear
12:35	14.75	7.18	-130	2.21	13.9	2.01	21.0	clear
12:40	14.48	7.01	-128	3.27	13.4	2.11	20.9	clear
12:45	**14.25**	**6.98**	**-129**	**3.23**	**15.4**	**1.77**	**18.2**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW33-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-34**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/22/2017

Staff: A. Koons

Time: 10:20 (sample collected)

A). Total casing and screen length in feet:	15.37
B). Water level below top of casing in feet:	6.47
C). Number of feet standing water [A-B]:	8.90
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	1.51
F). Volume of water to remove (gal.) [Ex3]:	4.53
G). Volume of water actually removed (gal.):	3.52

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:50	20.13	7.18	-61	1.32	20.3	2.01	--	clear
9:55	18.78	7.10	-114	1.37	15.4	1.89	--	clear
10:00	18.22	6.95	-117	1.36	11.7	1.45	--	clear
10:05	17.95	6.89	-116	1.38	12.0	1.47	--	clear
10:10	17.54	6.86	-115	1.39	12.2	1.36	--	clear
10:15	**17.46**	**6.85**	**-117**	**1.27**	**11.4**	**1.27**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW34-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-35**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/30/2017

Staff: A. Koons, D. Henson

Time: 10:35 (sample collected)

A). Total casing and screen length in feet:	12.10
B). Water level below top of casing in feet:	6.90
C). Number of feet standing water [A-B]:	5.20
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.88
F). Volume of water to remove (gal.) [Ex3]:	2.64
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:15	15.42	7.22	-87	2.11	21.4	1.61	16.6	clear
10:20	15.06	6.98	-145	2.14	22.2	4.35	44.9	clear
10:25	15.15	6.93	-142	2.14	19.6	1.92	19.9	clear
10:30	**14.88**	**6.92**	**-154**	**2.16**	**18.3**	**1.62**	**16.3**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW35-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-36**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/29/2017

Staff: A. Koons, D. Henson

Time: 14:45 (sample collected)

A). Total casing and screen length in feet: 10.37

B). Water level below top of casing in feet: 6.20

C). Number of feet standing water [A-B]: 4.17

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal.) [CxD]: 0.71

F). Volume of water to remove (gal.) [Ex3]: 2.13

G). Volume of water actually removed (gal.): 2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:25	16.47	7.01	-138	1.20	15.8	1.15	12.3	clear
14:30	15.70	6.62	-144	1.26	14.0	1.10	11.5	clear
14:35	15.52	6.57	-136	1.34	15.2	0.99	10.5	clear
14:40	**15.53**	**6.58**	**-142**	**1.39**	**15.5**	**0.86**	**8.5**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
Slight petroleum odor

Sampling ID: NS-OW36-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-37**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/29/2017

Staff: A. Koons, D. Henson

Time: 13:45 (sample collected)

A). Total casing and screen length in feet: 8.90

B). Water level below top of casing in feet: 5.35

C). Number of feet standing water [A-B]: 3.55

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal.) [CxD]: 0.60

F). Volume of water to remove (gal.) [Ex3]: 1.80

G). Volume of water actually removed (gal.): 2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:20	16.06	7.09	-35	2.43	20.3	2.59	26.3	clear
13:25	15.99	7.01	-160	2.02	24.7	2.21	23.3	clear
13:30	15.90	6.87	-136	2.10	19.0	1.54	15.7	clear
13:35	15.67	6.81	-145	2.29	15.4	1.64	17.1	clear
13:40	**15.52**	**6.82**	**-134**	**2.42**	**15.7**	**1.46**	**15.1**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-OW37-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-01S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/29/2017

Staff: A. Koons, D. Henson

Time: 9:15 (sample collected)

A). Total casing and screen length in feet:	9.94
B). Water level below top of casing in feet:	5.50
C). Number of feet standing water [A-B]:	4.44
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.75
F). Volume of water to remove (gal.) [Ex3]:	2.25
G). Volume of water actually removed (gal.):	3.52

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:45	15.68	7.26	-107	1.94	21.4	1.90	20.1	clear
8:50	16.11	7.23	-157	1.95	16.6	1.75	19.3	clear
8:55	16.32	7.14	-160	1.95	20.3	1.90	19.5	clear
9:00	16.38	7.11	-156	1.94	16.2	1.73	17.7	clear
9:05	16.42	7.06	-142	1.93	14.3	1.04	10.9	clear
9:10	**16.44**	**7.07**	**-140**	**1.93**	**14.0**	**1.45**	**15.4**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
Lab duplicate sample taken at this location

Sampling ID: NS-LPZ01S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs
☐ CP-51 VOCs & SVOCs
☐ Full List TCL & CP-51 VOC
☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-02S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/29/2017

Staff: A. Koons, D. Henson

Time: 11:05 (sample collected)

A). Total casing and screen length in feet: 9.25

B). Water level below top of casing in feet: 6.10

C). Number of feet standing water [A-B]: 3.15

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal.) [CxD]: 0.54

F). Volume of water to remove (gal.) [Ex3]: 1.62

G). Volume of water actually removed (gal.): 2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:40	15.64	7.06	47	3.35	17.5	2.34	24.3	clear
10:45	15.29	6.80	55	3.29	12.6	1.38	14.3	clear
10:50	15.16	6.82	59	3.25	13.2	1.74	18.0	clear
10:55	15.05	6.75	62	3.23	12.9	1.40	14.5	clear
11:00	**15.01**	**6.79**	**65**	**3.23**	**13.5**	**1.59**	**16.4**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ02S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-03S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/21/2017

Staff: A. Koons, D. Sheldon

Time: 10:45 (sample collected)

A). Total casing and screen length in feet:	10.74
B). Water level below top of casing in feet:	5.42
C). Number of feet standing water [A-B]:	5.32
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.90
F). Volume of water to remove (gal.) [Ex3]:	2.70
G). Volume of water actually removed (gal.):	5.28

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:00	22.99	7.33	-154	1.45	30.4	2.44	--	clear
10:05	22.37	7.19	-131	1.40	43.9	2.04	--	clear
10:10	21.80	7.08	-135	1.43	28.7	1.91	--	clear
10:15	21.44	6.95	-131	1.45	16.1	1.63	--	clear
10:20	21.03	6.95	-134	1.47	17.1	1.71	--	clear
10:25	20.92	6.84	-139	1.48	21.2	1.63	--	clear
10:30	20.78	6.95	-150	1.53	16.8	1.51	--	clear

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ03S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-03S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/21/2017

Staff: A. Koons, D. Sheldon

Time: 10:45 (sample collected)

A). Total casing and screen length in feet:	10.74
B). Water level below top of casing in feet:	5.42
C). Number of feet standing water [A-B]:	5.32
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.90
F). Volume of water to remove (gal.) [Ex3]:	2.70
G). Volume of water actually removed (gal.):	5.28

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:35	20.64	6.93	-155	1.51	16.5	1.60	--	clear
10:40	**20.46**	**6.97**	**-154**	**1.54**	**20.6**	**1.46**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ03S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-04S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/21/2017

Staff: A. Koons, D. Sheldon

Time: 12:00 (sample collected)

A). Total casing and screen length in feet:	9.06
B). Water level below top of casing in feet:	5.34
C). Number of feet standing water [A-B]:	3.72
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.63
F). Volume of water to remove (gal.) [Ex3]:	1.89
G). Volume of water actually removed (gal.):	4.11

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:25	22.60	7.30	-43	4.77	27.6	1.64	--	clear
11:30	21.71	7.34	-100	5.04	17.3	2.08	--	clear
11:35	21.33	7.22	-79	5.08	14.7	1.84	--	clear
11:40	21.07	7.26	-93	5.07	12.7	1.78	--	clear
11:45	20.78	7.24	-90	5.13	11.3	1.83	--	clear
11:50	**20.76**	**7.27**	**-87**	**5.19**	**12.6**	**1.68**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ04S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-05S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/21/2017

Staff: A. Koons, D. Sheldon

Time: 13:30 (sample collected)

A). Total casing and screen length in feet:	9.19
B). Water level below top of casing in feet:	5.25
C). Number of feet standing water [A-B]:	3.94
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.67
F). Volume of water to remove (gal.) [Ex3]:	2.01
G). Volume of water actually removed (gal.):	3.52

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:00	25.00	7.22	-178	2.55	120.0	2.01	--	clear
13:05	23.78	7.06	-163	2.36	13.7	1.45	--	clear
13:10	23.39	7.12	-165	2.46	16.1	1.36	--	clear
13:15	23.11	7.07	-161	2.56	20.4	1.05	--	clear
13:20	22.98	7.09	-164	2.58	22.4	1.02	--	clear
13:25	**22.50**	**7.10**	**-161**	**2.54**	**36.2**	**1.01**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ05S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-06S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/21/2017

Staff: A. Koons, D. Sheldon

Time: 14:35 (sample collected)

A). Total casing and screen length in feet:	10.88
B). Water level below top of casing in feet:	5.47
C). Number of feet standing water [A-B]:	5.41
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.92
F). Volume of water to remove (gal.) [Ex3]:	2.76
G). Volume of water actually removed (gal.):	2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:10	24.42	7.34	-69	1.46	12.7	1.46	--	clear
14:15	23.33	7.26	-72	1.41	14.9	1.89	--	clear
14:20	23.02	7.21	-36	1.45	15.2	1.78	--	clear
14:25	22.52	7.18	-31	1.44	17.0	1.34	--	clear
14:30	**22.30**	**7.22**	**-27**	**1.44**	**18.2**	**1.45**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ06S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-07S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/21/2017

Staff: A. Koons, D. Sheldon

Time: 15:30 (sample collected)

A). Total casing and screen length in feet:	10.73
B). Water level below top of casing in feet:	5.92
C). Number of feet standing water [A-B]:	4.81
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.82
F). Volume of water to remove (gal.) [Ex3]:	2.46
G). Volume of water actually removed (gal.):	2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
15:05	21.97	6.96	-94	3.04	21.2	1.48	--	clear
15:10	21.55	6.89	-127	3.15	15.6	1.32	--	clear
15:15	20.84	6.79	-130	3.22	12.7	1.14	--	clear
15:20	20.52	6.75	-128	3.29	14.9	1.26	--	clear
15:25	**20.38**	**6.78**	**-127**	**3.31**	**15.5**	**1.21**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ07S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-08S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/29/2017

Staff: A. Koons, D. Sheldon

Time: 11:50 (sample collected)

A). Total casing and screen length in feet:	7.20
B). Water level below top of casing in feet:	4.63
C). Number of feet standing water [A-B]:	2.57
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.44
F). Volume of water to remove (gal.) [Ex3]:	1.32
G). Volume of water actually removed (gal.):	2.34

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:30	15.70	6.98	-75	3.60	28.5	2.23	23.6	clear
11:35	16.98	6.86	-151	3.61	37.5	7.75	83.4	clear
11:40	16.95	6.81	-158	3.77	28.9	1.61	17.2	clear
11:45	**16.99**	**6.80**	**-155**	**3.56**	**21.1**	**1.39**	**14.4**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ08S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-09S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/21/2017

Staff: A. Koons, E. Miller

Time: 14:00 (sample collected)

A). Total casing and screen length in feet:	10.90
B). Water level below top of casing in feet:	7.60
C). Number of feet standing water [A-B]:	3.30
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.56
F). Volume of water to remove (gal.) [Ex3]:	1.68
G). Volume of water actually removed (gal.):	3.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:35	17.27	7..25	-93	2.77	71.2	0.52	5.6	clear
13:40	16.48	7.05	-116	2.82	44.1	0.40	4.3	clear
13:45	16.21	6.95	-121	2.85	27.0	0.80	8.4	clear
13:50	16.04	6.90	-125	2.85	23.8	0.65	7.0	clear
13:55	**15.83**	**6.86**	**-116**	**2.92**	**22.3**	**0.72**	**7.9**	**clear**

Comments: Pumping at a rate of 519 mL/min.
Bold readings are sampling parameters
Lab duplicate sample taken

Sampling ID: NS-LPZ09S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs
☐ CP-51 VOCs & SVOCs
☐ Full List TCL & CP-51 VOC
☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-10S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017

Staff: A. Koons, E. Miller

Time: 14:00 (sample collected)

A). Total casing and screen length in feet:	8.95
B). Water level below top of casing in feet:	6.85
C). Number of feet standing water [A-B]:	2.10
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.36
F). Volume of water to remove (gal.) [Ex3]:	1.08
G). Volume of water actually removed (gal.):	3.38

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:45	21.03	7.10	-95	3.98	35.5	1.43	16.3	clear
12:50	19.87	6.97	-140	4.01	20.5	1.12	12.5	clear
12:55	19.37	6.92	-155	4.02	12.1	1.15	13.0	clear
13:00	18.93	6.86	-155	4.00	12.3	0.60	6.7	clear
13:05	**18.82**	**6.87**	**-161**	**3.96**	**13.0**	**0.58**	**6.4**	**clear**

Comments: Pumping at a rate of 512 mL/min.
Bold readings are sampling parameters
Lab duplicate sample taken

Sampling ID: NS-LPZ10S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-11S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/21/2017

Staff: A. Koons, E. Miller

Time: 11:05 (sample collected)

A). Total casing and screen length in feet:	9.79
B). Water level below top of casing in feet:	6.18
C). Number of feet standing water [A-B]:	3.61
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal.) [CxD]:	0.61
F). Volume of water to remove (gal.) [Ex3]:	1.83
G). Volume of water actually removed (gal.):	3.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:40	17.62	7.27	101	1.61	36.5	1.77	19.2	clear
10:45	16.81	7.20	97	1.59	20.0	1.85	19.8	clear
10:50	16.58	7.10	93	1.61	14.0	3.18	33.8	clear
10:55	16.39	7.09	77	1.61	16.2	1.40	14.8	clear
11:00	**16.3**	**7.11**	**43**	**1.61**	**17.3**	**1.52**	**16.1**	**clear**

Comments: Pumping at a rate of 519 mL/min.
Bold readings are sampling parameters
MS/MSD sample taken

Sampling ID: NS-LPZ11S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-12S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/21/2017

Staff: A. Koons, E. Miller

Time: 13:20 (sample collected)

A). Total casing and screen length in feet: 10.10

B). Water level below top of casing in feet: 6.55

C). Number of feet standing water [A-B]: 3.55

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal.) [CxD]: 0.60

F). Volume of water to remove (gal.) [Ex3]: 1.80

G). Volume of water actually removed (gal.): 3.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:50	18.28	7.21	-143	1.82	89.4	1.75	19.1	clear
12:55	16.94	7.14	-166	0.84	103	1.09	11.7	slightly cloudy
13:00	16.23	7.08	-171	1.87	65.9	1.73	18.3	clear
13:05	16.08	7.09	-168	1.82	178	1.52	16.0	slightly cloudy
13:15	**16.35**	**7.10**	**-160**	**1.81**	**73.5**	**2.80**	**29.6**	**clear**

Comments: Pumping at a rate of 519 mL/min. Pump was shut off from 13:05-13:10 to let well recharge
Bold readings are sampling parameters
MS/MSD sample taken

Sampling ID: NS-LPZ12S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LPZ-13S**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017

Staff: A. Koons, E. Miller

Time: 14:30 (sample collected)

A). Total casing and screen length in feet: 10.55

B). Water level below top of casing in feet: 8.18

C). Number of feet standing water [A-B]: 2.37

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal.) [CxD]: 0.40

F). Volume of water to remove (gal.) [Ex3]: 1.20

G). Volume of water actually removed (gal.): 4.06

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:00	19.98	7.13	46	3.37	17.7	1.80	20.5	clear
14:05	17.94	7.03	55	3.35	13	2.70	29.7	clear
14:10	17.17	6.91	74	3.33	10.4	2.60	28.1	clear
14:15	16.71	6.93	79	3.43	10	2.69	28.8	clear
14:20	16.29	6.92	86	3.42	11.7	2.78	29.6	clear
14:25	**16.43**	**6.84**	**93**	**3.43**	**13.4**	**2.06**	**21.8**	**clear**

Comments: Pumping at a rate of 512 mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LPZ13S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LDP-01**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/24/2017-8/25/2017

Staff: A. Koons

Time: 16:26 & 08:40
(sample collected)

A). Total casing and screen length in feet: 8.36

B). Water level below top of casing in feet: 5.20

C). Number of feet standing water [A-B]: 3.16

D). Volume of water/foot of casing (gal.): 0.04

E). Volume of water in casing (gal.) [CxD]: 0.13

F). Volume of water to remove (gal.) [Ex3]: 0.39

G). Volume of water actually removed (gal.): 2.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:03	19.31	7.30	62	1.11	>800	4.54	--	cloudy
13:52	19.55	7.36	83	1.12	141.0	4.30	--	slightly cloudy
16:26	**20.29**	**7.33**	**102**	**1.09**	**34.6**	**3.61**	**--**	**clear**
8:40	**15.95**	**7.32**	**144**	**1.19**	**692.0**	**3.82**	**--**	**slightly cloudy**

Comments: Pumping at a rate of 240mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LDP01-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LDP-02**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/24/2017-8/25/2017

Staff: A. Koons

Time: 12:42 & 8:54 (sample collected)

A). Total casing and screen length in feet:	8.49
B). Water level below top of casing in feet:	5.29
C). Number of feet standing water [A-B]:	3.20
D). Volume of water/foot of casing (gal.):	0.04
E). Volume of water in casing (gal.) [CxD]:	0.13
F). Volume of water to remove (gal.) [Ex3]:	0.39
G). Volume of water actually removed (gal.):	0.75

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:42	**21.76**	**7.30**	**27**	**1.08**	**90.0**	**3.15**	**--**	**slightly cloudy**
8:54	**19.90**	**7..25**	**132**	**1.07**	**115.0**	**3.11**	**--**	**slightly cloudy**

Comments: Pumping at a rate of 240mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LDP02-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LDP-03**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/24/2017-8/25/2017

Staff: A. Koons

Time: 15:30 & 09:10 (sample collected)

A). Total casing and screen length in feet: 8.39

B). Water level below top of casing in feet: 5.35

C). Number of feet standing water [A-B]: 3.04

D). Volume of water/foot of casing (gal.): 0.04

E). Volume of water in casing (gal.) [CxD]: 0.12

F). Volume of water to remove (gal.) [Ex3]: 0.36

G). Volume of water actually removed (gal.): 1.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:24	7.40	7.40	70	1.22	32.4	4.59	--	clear
15:30	**7.24**	**7.24**	**95**	**1.19**	**21.1**	**4.35**	**--**	**clear**
9:09	**7.29**	**7.29**	**134**	**1.28**	**78.7**	**4.40**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LDP03-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **LDP-04**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/25/2017

Staff: A. Koons

Time: 13:30 (sample collected)

A). Total casing and screen length in feet:	8.61
B). Water level below top of casing in feet:	6.77
C). Number of feet standing water [A-B]:	1.84
D). Volume of water/foot of casing (gal.):	0.04
E). Volume of water in casing (gal.) [CxD]:	0.07
F). Volume of water to remove (gal.) [Ex3]:	0.21
G). Volume of water actually removed (gal.):	3.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:56	13.36	7.32	-101	1.39	185.0	2.42	--	clear
12:04	**17.36**	**7.32**	**-72**	**1.49**	**42.3**	**2.21**	**--**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters

Sampling ID: NS-LDP04-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

2019 Sampling Event

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-14B

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 14:20
(sample collected)

A). Total casing and screen length in feet: Not Recorded

B). Water level below top of casing in feet: 5.45

C). Number of feet standing water [A-B]:

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]:

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:03	14.70	7.69	74	3.430	>1000	9.71	NR	very turbid
14:08	13.72	7.54	-22	3.070	146.0	8.88	NR	slightly turbid
14:13	13.4	7.6	-2	3.130	6.0	7.37	NR	clear
14:18	**13.50**	**7.62**	**-2**	**3.150**	**0.0**	**10.54**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-14B

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-14BR

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 10:45
(sample collected)

A). Total casing and screen length in feet: 9.56

B). Water level below top of casing in feet: 6.95

C). Number of feet standing water [A-B]: 2.61

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.4437

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:25	12.08	7.81	-33	2.180	0.0	5.80	NR	clear
10:30	12.05	7.73	-37	2.140	0.0	7.06	NR	clear
10:35	12.64	7.6	-24	2.210	0.0	6.88	NR	clear
10:40	**12.74**	**7.52**	**-16**	**2.200**	**0.0**	**6.29**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-14BR

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-16

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019-10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 13:15
(sample collected)

A). Total casing and screen length in feet: 12.80

B). Water level below top of casing in feet: 9.92

C). Number of feet standing water [A-B]: 2.88

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.4896

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:15	12.65	7.26	-9	2.770	36.3	8.16	NR	clear
12:20	**12.74**	**7.51**	**-62**	**2.810**	**13.4**	**7.11**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled
VOCs and SVOCs samples on 10/24, Pesticides and metals sampled on 10/25

Sampling ID: OW-16

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-21

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019-10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 13:10
(sample collected)

A). Total casing and screen length in feet: 10.19

B). Water level below top of casing in feet: 8.40

C). Number of feet standing water [A-B]: 1.79

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.304

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:02	13.54	7.49	-27	2.990	101.0	17.00	NR	slightly turbid
11:07	**13.11**	**7.28**	**-39**	**2.890**	**737.0**	**14.81**	**NR**	**very turbid**

Comments: **Bold readings are sampling parameters**
VOCs and SVOCs samples on 10/23, Pesticides, PCBs and metals sampled on 10/24

Sampling ID: OW-21

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-35

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 13:40
(sample collected)

A). Total casing and screen length in feet: 12.30

B). Water level below top of casing in feet: 8.48

C). Number of feet standing water [A-B]: 3.82

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.649

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:50	12.04	7.43	-50	2.280	>1000	9.80	NR	very turbid
10:55	12.20	7.30	-82	2.190	32.0	9.15	NR	clear
11:00	**12..22**	**7.55**	**-65**	**2.180**	**27.7**	**9.69**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: OW-35

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-36

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 12:00
(sample collected)

A). Total casing and screen length in feet: 10.30

B). Water level below top of casing in feet: 7.54

C). Number of feet standing water [A-B]: 2.76

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.469

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:22	12.06	7.17	-45	1.420	67.2	5.50	NR	clear
11:27	12.06	7.13	-93	1.470	5.9	7.13	NR	clear
11:32	12.08	7.21	-87	1.530	5.2	6.88	NR	clear
11:40	**12.20**	**7.04**	**-84**	**1.560**	**30.3**	**11.06**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled.
Sulfur odor noted.

Sampling ID: OW-36

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: OW-37

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 12:00
(sample collected)

A). Total casing and screen length in feet: 8.80

B). Water level below top of casing in feet: 7.00

C). Number of feet standing water [A-B]: 1.80

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.306

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:00	11.49	7.54	19	2.120	16.6	9.84	NR	clear
10:05	**11.45**	**7.46**	**-70**	**2.010**	**0.0**	**13.03**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled.

Sampling ID: OW-37

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-01S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 14:45
(sample collected)

A). Total casing and screen length in feet: 9.94

B). Water level below top of casing in feet: 5.98

C). Number of feet standing water [A-B]: 3.96

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.673

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:37	13.59	7.42	28	2.140	0.0	6.03	NR	clear
14:42	13.56	7.48	9	2.070	0.0	8.81	NR	clear
14:47	13.50	7.5	3	2.070	0.0	9.88	NR	clear
14:52	**13.50**	**7.56**	**-1**	**2.080**	**0.0**	**7.27**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
MS/MSD sample taken at this location
Sulfur odor noted.

Sampling ID: LPZ-01S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-03S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/22/2019

Staff: DS
(person who collected the sample)

Time: 10:00
(sample collected)

A). Total casing and screen length in feet: 10.74

B). Water level below top of casing in feet: 8.63

C). Number of feet standing water [A-B]: 2.11

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.359

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:17	14.48	6.97	-3	1.370	0.0	12.56	NR	clear
8:23	15.03	6.85	-9	1.390	0.0	3.94	NR	clear
8:28	**14.82**	**6.89**	**-14**	**1.400**	**0.0**	**4.84**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Duplicate sample taken at this location
Well purged dry then sampled.

Sampling ID: LPZ-03S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-04S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/22/2019

Staff: DS
(person who collected the sample)

Time: 14:00
(sample collected)

A). Total casing and screen length in feet: 9.06

B). Water level below top of casing in feet: 6.55

C). Number of feet standing water [A-B]: 2.51

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.427

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:23	15.80	7.18	122	4.510	113.0	13.55	NR	clear
13:40	15.44	7.30	114	4.650	68.0	13.32	NR	clear
13:50	**15.53**	**7.43**	**100**	**4.510**	**7.8**	**11.47**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**

Sampling ID: LPZ-04S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-05S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/22/0219

Staff: DS DH
(person who collected the sample)

Time: 14:40
(sample collected)

A). Total casing and screen length in feet: 9.19

B). Water level below top of casing in feet: 7.24

C). Number of feet standing water [A-B]: 1.95

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.332

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:08	15.23	7.04	2	2.660	2.7	4.14	NR	clear
14:20	14.98	7.16	-35	2.480	41.6	6.29	NR	clear
14:30	**15.07**	**7.40**	**17**	**2.510**	**18.9**	**12.36**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Well purged dry then sampled.

Sampling ID: LPZ-05S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-06S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/23/2019

Staff: DS DH
(person who collected the sample)

Time: 9:00
(sample collected)

A). Total casing and screen length in feet: 10.88

B). Water level below top of casing in feet: 6.35

C). Number of feet standing water [A-B]: 4.53

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.770

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:28	12.35	7.02	115	1.550	3.9	7.31	NR	clear
8:33	12.33	6.93	111	1.560	0.0	15.97	NR	clear
8:38	12.27	7.2	109	1.580	0.0	15.75	NR	clear
8:43	12.61	7.18	104	1.610	4.4	11.03	NR	clear
8:48	**12.85**	**7.31**	**102**	**1.620**	**39.9**	**14.80**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
MS/MSD sample taken at this location

Sampling ID: LPZ-06S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-08S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 14:45
(sample collected)

A). Total casing and screen length in feet: 7.20

B). Water level below top of casing in feet: 5.50

C). Number of feet standing water [A-B]: 1.70

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.289

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:03	12.50	6.86	-23	4.770	205.0	8.18	NR	slightly turbid
10:08	12.84	7.10	-71	4.140	1.5	11.45	NR	clear
10:15	12.79	7.1	-58	4.150	0.0	5.91	NR	clear
10:18	**12.99**	**6.92**	**-53**	**4.170**	**0.0**	**5.91**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
MS/MSD sample taken at this location
Sulfur odor noted.

Sampling ID: LPZ-08S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-11S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 10:15
(sample collected)

A). Total casing and screen length in feet: 9.80

B). Water level below top of casing in feet: 5.90

C). Number of feet standing water [A-B]: 3.90

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.663

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:52	12.52	7.79	135	1.300	2.0	8.18	NR	very turbid
9:57	12.65	7.61	134	1.470	0.0	8.80	NR	turbid
10:02	12.74	7.6	118	1.490	0.0	10.88	NR	clear
10:07	12.74	7.57	96	1.480	0.0	11.69	NR	clear
10:12	**12.74**	**7.55**	**70**	**1.490**	**0.0**	**14.43**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Duplicate sample taken at this location.

Sampling ID: LPZ-11S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LPZ-12S

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/25/2019

Staff: DS DH
(person who collected the sample)

Time: 9:30
(sample collected)

A). Total casing and screen length in feet: 10.00

B). Water level below top of casing in feet: 6.02

C). Number of feet standing water [A-B]: 3.98

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.6766

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:00	9.64	7.70	44	1.640	>1000	7.99	NR	very turbid
9:15	10.45	7.43	-61	1.150	469.0	8.65	NR	turbid
9:20	10.31	7.4	-66	1.510	55.8	8.80	NR	clear
9:25	**11.13**	**7.26**	**-80**	**1.520**	**20.6**	**13.09**	**NR**	**clear**

Comments: **Bold readings are sampling parameters**
Duplicate sample taken at this location.

Sampling ID: LPZ-12S

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: LDP-03

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 10/24/2019

Staff: DS DH
(person who collected the sample)

Time: 15:00
(sample collected)

A). Total casing and screen length in feet: 7.75

B). Water level below top of casing in feet: 7.03

C). Number of feet standing water [A-B]: 0.72

D). Volume of water/foot of casing (gal.): 0.04

E). Volume of water in casing (gal. [CxD]: 0.0288

F). Volume of water to remove (gal.) [Ex3]: NA - Low Flow

G). Volume of water actually removed (gal.):

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:30	**12.41**	**8.33**	**124**	**1.180**	**>1000**	**13.20**	**NR**	**turbid**

Comments: **Bold readings are sampling parameters**
Only enough water for VOC samples

Sampling ID: LDP-03

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☑ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

2021 Sampling Event

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-01

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 10/29/2021

Staff: A.Koons, R.Cich

Time: 11:05 (sample collected)

A). Total casing and screen length in feet: 10.56

B). Water level below top of casing in feet: 3.56

C). Number of feet standing water [A-B]: 7.00

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.19

F). Volume of water to remove (gal.) [Ex3]: 3.57

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:13	12.41	8.18	32	2.610	17.2	5.13	NR	clear
10:18	13.29	7.09	21	1.560	9.4	0.00	NR	clear
10:25	13.52	6.97	57	1.510	7.1	0.91	NR	clear
10:40	13.64	7.29	76	1.570	14.6	2.63	NR	clear
10:48	13.75	7.02	57	1.630	6.7	0.00	NR	clear
10:56	13.82	6.93	44	1.650	5.6	1.82	NR	clear

Comments:

Sampling ID: NS-OW01-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-13

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/4/2021

Staff: J. Williams, A. Kolpinski

Time: 9:00 (sample collected)

A). Total casing and screen length in feet: 8.00

B). Water level below top of casing in feet: 4.30

C). Number of feet standing water [A-B]: 3.70

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.629

F). Volume of water to remove (gal.) [Ex3]: 1.887

G). Volume of water actually removed (gal.): 1.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:46	2.17	7.66	103	2.480	350.0	3.26	NR	clear
8:54	7.65	6.80	-98	1.530	341.0	2.95	NR	clear

Comments: well went dry after 1 gal

Sampling ID: NS-OW13-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-14B

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/1/2021

Staff: J. Williams, A. Kolpinski

Time: 9:40 (sample collected)

A). Total casing and screen length in feet: 8.65

B). Water level below top of casing in feet: 4.77

C). Number of feet standing water [A-B]: 3.88

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.6596

F). Volume of water to remove (gal.) [Ex3]: 1.9788

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:08	9.45	8.69	69	2.830	81.0	15.99	NR	clear
9:14	11.53	7.23	-21	1.980	12.9	1.94	NR	clear
9:20	11.82	6.97	6	1.540	16.9	3.34	NR	clear
9:26	12.11	6.97	12	1.760	15.0	3.09	NR	clear
9:32	12.23	6.93	13	1.350	20.7	3.76	NR	clear
9:38	12.47	6.88	24	1.700	10.4	3.15	NR	clear

Comments:

Sampling ID: NS-OW14B-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-14BR

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/1/2021

Staff: J. Williams, A. Kolpinski

Time: 10:45 (sample collected)

A). Total casing and screen length in feet: 9.60

B). Water level below top of casing in feet: 4.88

C). Number of feet standing water [A-B]: 4.72

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.8024

F). Volume of water to remove (gal.) [Ex3]: 2.4072

G). Volume of water actually removed (gal.): 4.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:13	11.52	7.54	71	1.110	68.5	3.04	NR	clear
10:20	13.01	7.24	-24	1.140	9.5	1.37	NR	clear
10:25	13.43	6.97	14	1.090	5.9	0.00	NR	clear
10:32	13.09	7.04	41	0.961	15.6	3.06	NR	clear
10:37	13.8	6.9	42	1.060	4.9	0.00	NR	clear

Comments:

Sampling ID: NS-OW14BR-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-16

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/4/2021

Staff: J. Williams, A. Kolpinski

Time: 13:05 (sample collected)

A). Total casing and screen length in feet: 13.00

B). Water level below top of casing in feet: 7.04

C). Number of feet standing water [A-B]: 5.96

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.0132

F). Volume of water to remove (gal.) [Ex3]: 3.0396

G). Volume of water actually removed (gal.): 2.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:44	11.15	7.22	120	2.390	272.0	35.21	NR	clear
12:49	12	6.62	-25	1.540	80.2	3.50	NR	clear
12:53	12.36	6.42	-36	1.560	71.3	3.79	NR	clear
12:59	12.54	6.54	-40	2.010	41.8	3.52	NR	clear

Comments: well goes dry around 2 gal

Sampling ID: NS-OW16-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-21

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 10/29/2021

Staff: A. Koons. R.Cich

Time: 14:05 (sample collected)

A). Total casing and screen length in feet: 10.25

B). Water level below top of casing in feet: 5.54

C). Number of feet standing water [A-B]: 4.71

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.8007

F). Volume of water to remove (gal.) [Ex3]: 2.4021

G). Volume of water actually removed (gal.): 3.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:39	14.20	7.21	52	2.770	7.3	18.89	NR	clear
13:45	14.42	6.89	-46	2.370	56.1	0.00	NR	clear
13:50	14.41	6.94	-23	2.230	50.5	0.00	NR	clear
13:59	14.55	6.87	-21	2.200	43.1	1.38	NR	clear

Comments:

Sampling ID: NS-OW21-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-31

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/2/2021

Staff: J. Williams, A. Kolpinski

Time: 9:35 (sample collected)

A). Total casing and screen length in feet: 8.20

B). Water level below top of casing in feet: 5.10

C). Number of feet standing water [A-B]: 3.10

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.527

F). Volume of water to remove (gal.) [Ex3]: 1.581

G). Volume of water actually removed (gal.): 3.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:04	7.00	7.77	151	2.940	747.0	2.10	NR	clear
9:13	10.95	6.99	1	2.760	50.3	3.10	NR	clear
9:17	11.89	6.91	46	2.660	47.2	3.51	NR	clear
9:25	12.40	6.96	76	3.000	50.8	3.39	NR	clear

Comments: well starts to go dry at 3 gal

Sampling ID: NS-OW31-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-34

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/3/2021

Staff: J. Williams, A. Kolpinski

Time: 15:00 (sample collected)

A). Total casing and screen length in feet: 15.17

B). Water level below top of casing in feet: 5.57

C). Number of feet standing water [A-B]: 9.60

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.632

F). Volume of water to remove (gal.) [Ex3]: 4.896

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:19	12.36	7.32	-29	0.662	90.4	4.48	NR	clear
14:23	13.74	6.55	0	0.581	67.7	4.04	NR	clear
14:29	14.18	6.42	-31	1.520	26.6	3.02	NR	clear
14:36	14.28	6.49	-43	1.250	35.4	3.27	NR	clear
14:45	14.48	6.46	-43	1.520	24.1	3.05	NR	clear
14:53	14.54	6.5	-44	1.750	45.0	4.12	NR	clear

Comments:

Sampling ID: NS-OW34-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-35

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/3/2021

Staff: J. Williams, A. Kolpinski

Time: 13:20 (sample collected)

A). Total casing and screen length in feet: 12.12

B). Water level below top of casing in feet: 6.86

C). Number of feet standing water [A-B]: 5.26

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.8942

F). Volume of water to remove (gal.) [Ex3]: 2.6826

G). Volume of water actually removed (gal.): 2.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:59	10.19	7.49	137	1.020	106.0	5.16	NR	clear
13:05	11.71	6.63	-48	1.090	88.5	3.56	NR	clear
13:09	12.19	6.68	-31	0.945	55.5	3.42	NR	clear
13:15	12.24	6.78	-44	1.100	188.0	3.57	NR	clear

Comments:

Sampling ID: NS-OW35S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-36

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/3/2021

Staff: J. Williams, A. Kolpinski

Time: 14:00 (sample collected)

A). Total casing and screen length in feet:	10.15
B). Water level below top of casing in feet:	5.77
C). Number of feet standing water [A-B]:	4.38
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.7446
F). Volume of water to remove (gal.) [Ex3]:	2.2338
G). Volume of water actually removed (gal.):	3.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:35	12.36	7.02	-3	0.979	54.2	24.46	NR	clear
13:41	12.64	6.18	-40	0.637	62.0	3.59	NR	clear
13:49	12.89	6.44	-53	0.755	27.2	3.19	NR	clear
13:56	13.13	6.38	-48	0.621	49.3	3.13	NR	clear

Comments:

Sampling ID: NS-OW36-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: OW-37

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/4/2021

Staff: J. Williams, A. Kolpinski

Time: 14:00 (sample collected)

A). Total casing and screen length in feet: 8.94

B). Water level below top of casing in feet: 5.51

C). Number of feet standing water [A-B]: 3.43

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.5831

F). Volume of water to remove (gal.) [Ex3]: 1.7493

G). Volume of water actually removed (gal.): 3.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:21	11.48	7.69	-37	0.928	44.7	5.21	NR	clear
13:27	12.12	6.56	20	0.930	37.5	3.14	NR	clear
13:32	12.23	6.49	30	0.796	35.3	3.41	NR	clear
13:48	12.27	6.51	39	1.320	8.8	2.44	NR	clear

Comments: running low on water at 2 gal so on and off purging from 2-3 gal

Sampling ID: NS-OW-37-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-01S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/1/2021

Staff: J. Williams, A. Kolpinski

Time: 11:45 (sample collected)

A). Total casing and screen length in feet: 10.00

B). Water level below top of casing in feet: 5.19

C). Number of feet standing water [A-B]: 4.81

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.8177

F). Volume of water to remove (gal.) [Ex3]: 2.4531

G). Volume of water actually removed (gal.): 4.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:14	13.02	7.35	92	1.560	10.6	2.59	NR	clear
11:18	13.56	7.08	87	1.600	8.0	0.00	NR	clear
11:23	13.58	7.00	54	1.400	15.8	2.73	NR	clear
11:31	13.63	6.94	30	1.410	10.2	2.61	NR	clear
11:38	13.74	6.93	25	1.400	14.7	2.75	NR	clear

Comments:

Sampling ID: NS-LPZ01S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-02S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/1/2021

Staff: J. Williams, A. Kolpinski

Time: 15:05 (sample collected)

A). Total casing and screen length in feet: 7.40

B). Water level below top of casing in feet: 6.00

C). Number of feet standing water [A-B]: 1.40

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.238

F). Volume of water to remove (gal.) [Ex3]: 0.714

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:31	12.90	7.43	78	3.400	63.3	3.80	NR	clear
14:37	13.21	6.90	-19	3.300	17.8	2.72	NR	clear
14:42	13.2	6.87	-23	2.420	32.9	3.47	NR	clear
14:49	13.15	6.87	-42	2.980	22.0	3.09	NR	clear
14:56	13.31	6.77	-41	3.390	6.1	0.63	NR	clear
15:01	12.9	6.82	-48	2.650	21.5	2.95	NR	clear

Comments:

Sampling ID: NS-LPZ02S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-03S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/5/2021

Staff: J. Williams, A. Kolpinski

Time: 11:10 (sample collected)

A). Total casing and screen length in feet:	10.78
B). Water level below top of casing in feet:	5.40
C). Number of feet standing water [A-B]:	5.38
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.9146
F). Volume of water to remove (gal.) [Ex3]:	2.7438
G). Volume of water actually removed (gal.):	4.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:37	9.09	7.60	15	0.630	53.5	4.28	NR	clear
10:42	12.14	6.44	67	0.884	27.9	3.08	NR	clear
10:49	12.87	6.25	55	1.000	12.7	0.00	NR	clear
10:57	13.28	6.22	25	0.994	12.0	0.00	NR	clear
11:03	13.6	6.4	7	0.946	21.2	2.60	NR	clear

Comments:

Sampling ID: NS-LPZ03S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-04S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 10/29/2021

Staff: A.Koons, R.Cich

Time: 15:10 (sample collected)

A). Total casing and screen length in feet: 9.07

B). Water level below top of casing in feet: 3.80

C). Number of feet standing water [A-B]: 5.27

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.8959

F). Volume of water to remove (gal.) [Ex3]: 2.6877

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:33	14.28	7.39	64	2.620	75.0	5.54	NR	clear
14:39	14.39	7.48	61	2.610	46.8	2.50	NR	clear
14:44	14.55	7.33	0	2.600	16.1	1.49	NR	clear
14:49	14.63	7.11	-47	2.560	8.9	0.00	NR	clear
14:56	14.53	7.33	-47	1.410	44.3	3.72	NR	clear
15:02	14.58	7.25	-42	1.980	22.9	2.96	NR	clear

Comments:

Sampling ID: NS-LPZ04S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-05S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/2/2021

Staff: J. Williams, A. Kolpinski

Time: 11:55 (sample collected)

A). Total casing and screen length in feet: 9.44

B). Water level below top of casing in feet: 4.12

C). Number of feet standing water [A-B]: 5.32

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.9044

F). Volume of water to remove (gal.) [Ex3]: 2.7132

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:19	10.14	7.17	8	1.090	98.9	2.76	NR	clear
11:25	11.98	6.79	-58	0.757	63.9	3.55	NR	clear
11:29	12.69	6.90	-28	0.707	41.2	3.50	NR	clear
11:36	13.23	6.80	-8	1.160	13.3	0.00	NR	clear
11:42	13.2	6.76	-7	1.190	17.7	3.56	NR	clear
11:49	13.46	6.74	-12	1.180	14.1	0.93	NR	clear

Comments:

Sampling ID: NS-LPZ05S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-06S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/4/2021

Staff: J. Williams, A. Kolpinski

Time: 10:00 (sample collected)

A). Total casing and screen length in feet: 10.90

B). Water level below top of casing in feet: 4.88

C). Number of feet standing water [A-B]: 6.02

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 1.0234

F). Volume of water to remove (gal.) [Ex3]: 3.0702

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:24	10.20	7.96	-31	1.300	19.7	1.59	NR	clear
9:30	11.42	6.84	14	0.861	48.4	3.72	NR	clear
9:36	11.72	6.84	17	0.607	53.1	4.06	NR	clear
9:43	12.51	6.75	28	0.968	34.5	3.37	NR	clear
9:52	12.91	6.58	41	1.180	8.3	0.00	NR	clear
9:57	13.33	6.45	48	1.190	7.6	0.00	NR	clear

Comments:

Sampling ID: NS-LPZ06S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-07S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/2/2021

Staff: J. Williams, A. Kolpinski

Time: 10:35 (sample collected)

A). Total casing and screen length in feet:	9.90
B). Water level below top of casing in feet:	4.79
C). Number of feet standing water [A-B]:	5.11
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.8687
F). Volume of water to remove (gal.) [Ex3]:	2.6061
G). Volume of water actually removed (gal.):	5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:01	10.28	7.40	101	2.730	459.0	3.49	NR	clear
10:10	11.64	6.75	-52	2.190	59.6	3.29	NR	clear
10:14	12.14	6.78	-57	1.730	40.2	3.22	NR	clear
10:19	12.96	6.73	-40	1.640	13.9	0.00	NR	clear
10:24	12.91	6.59	-24	1.450	14.5	1.26	NR	clear
10:29	12.66	6.61	-17	1.210	20.6	2.52	NR	clear

Comments:

Sampling ID: NS-LPZ07S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-08S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/2/2021

Staff: J. Williams, A. Kolpinski

Time: 14:20 (sample collected)

A). Total casing and screen length in feet:	7.20
B). Water level below top of casing in feet:	4.50
C). Number of feet standing water [A-B]:	2.70
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	0.459
F). Volume of water to remove (gal.) [Ex3]:	1.377
G). Volume of water actually removed (gal.):	5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:44	10.89	7.83	77	2.160	254.0	6.47	NR	clear
13:51	12.52	6.84	-66	2.080	67.0	3.66	NR	clear
13:55	13.08	6.66	-63	2.570	18.9	2.72	NR	clear
14:04	13.18	6.59	-59	2.720	11.6	1.91	NR	clear
14:10	13.25	6.58	-62	1.850	42.1	2.62	NR	clear
14:14	13.24	6.59	-60	2.140	23.7	3.00	NR	clear

Comments: battery was dying, leachate odor from well

Sampling ID: NS-LPZ08S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-11S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/1/2021

Staff: J. Williams, A. Kolpinski

Time: 14:00 (sample collected)

A). Total casing and screen length in feet: 9.82

B). Water level below top of casing in feet: 4.72

C). Number of feet standing water [A-B]: 5.10

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.867

F). Volume of water to remove (gal.) [Ex3]: 2.601

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:28	13.77	7.67	42	1.050	68.1	3.96	NR	clear
13:34	13.64	6.96	-54	1.140	8.2	0.00	NR	clear
13:39	13.65	6.97	-5	1.130	6.5	0.20	NR	clear
13:45	13.56	6.89	15	1.060	11.1	2.35	NR	clear
13:51	13.59	6.89	28	0.787	30.7	3.33	NR	clear
13:57	13.59	6.97	30	0.895	21.4	3.28	NR	clear

Comments:

Sampling ID: NS-LPZ11S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-12S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/5/2021

Staff: J. Williams, A. Kolpinski

Time: 10:00 (sample collected)

A). Total casing and screen length in feet: 10.15

B). Water level below top of casing in feet: 4.64

C). Number of feet standing water [A-B]: 5.51

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.9367

F). Volume of water to remove (gal.) [Ex3]: 2.8101

G). Volume of water actually removed (gal.): 4.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:28	8.89	7.21	16	0.825	103.0	2.98	NR	clear
9:35	11.53	6.59	-37	0.862	203.0	2.24	NR	clear
9:40	12.04	6.43	-38	0.956	22.8	1.32	NR	clear
9:49	11.18	6.65	-50	0.889	46.9	1.66	NR	clear
9:57	11.56	6.71	-53	0.882	48.6	3.68	NR	clear

Comments:

Sampling ID: NS-LPZ12S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-14S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/8/2021

Staff: J. Williams, A. Kolpinski

Time: 9:00 (sample collected)

A). Total casing and screen length in feet: 11.90

B). Water level below top of casing in feet: 6.97

C). Number of feet standing water [A-B]: 4.93

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.8381

F). Volume of water to remove (gal.) [Ex3]: 2.5143

G). Volume of water actually removed (gal.): 5.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:25	10.24	7.78	105	1.360	509.0	37.87	NR	clear
8:32	11.3	6.34	67	0.657	206.0	3.39	NR	clear
8:36	12.22	6.30	51	0.799	111.0	4.07	NR	clear
8:43	13.21	6.15	31	0.900	45.2	2.84	NR	clear
8:48	13.12	6.26	18	0.760	49.9	3.94	NR	clear
8:57	13.48	6.24	7	0.769	45.4	4.07	NR	clear

Comments:

Sampling ID: NS-LPZ14S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LPZ-15S

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/8/2021

Staff: J. Williams, A. Kolpinski

Time: 10:10 (sample collected)

A). Total casing and screen length in feet: 10.97

B). Water level below top of casing in feet: 5.10

C). Number of feet standing water [A-B]: 5.87

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.9979

F). Volume of water to remove (gal.) [Ex3]: 2.9937

G). Volume of water actually removed (gal.): 6.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:18	12.96	7.78	23	0.602	288.0	4.65	NR	clear
9:24	13.11	6.45	-3	0.780	158.0	3.94	NR	clear
9:29	13.22	6.43	-22	1.070	65.9	3.55	NR	clear
9:37	13.28	6.31	-31	0.777	54.7	3.84	NR	clear
9:45	13.49	6.32	-42	1.290	11.1	3.70	NR	clear
9:53	13.54	6.92	-48	0.770	46.4	3.63	NR	clear
10:00	13.71	6.55	-56	0.632	60.2	3.72	NR	clear

Comments:

Sampling ID: NS-LPZ15S-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Other (list parameters below)

_____

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LDP-01

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/3/2021

Staff: J. Williams, A. Kolpinski

Time: 9:10 (sample collected)

A). Total casing and screen length in feet: 7.80

B). Water level below top of casing in feet: 4.07

C). Number of feet standing water [A-B]: 3.73

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.6341

F). Volume of water to remove (gal.) [Ex3]: 1.9023

G). Volume of water actually removed (gal.): 0.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:53	7.04	8.20	120	1.480	1000.0	3.65	NR	clear
9:02	9.44	7.04	104	0.669	136.0	3.41	NR	clear

Comments: well going dry after 0.5 gal

Sampling ID: NS-LDP01-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LDP-03

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/3/2021

Staff: J. Williams, A. Kolpinski

Time: 9:50 (sample collected)

A). Total casing and screen length in feet: 7.60

B). Water level below top of casing in feet: 4.60

C). Number of feet standing water [A-B]: 3.00

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.51

F). Volume of water to remove (gal.) [Ex3]: 1.53

G). Volume of water actually removed (gal.): 0.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:34	8.20	7.34	126	0.698	640.0	3.87	NR	clear
9:43	10.11	6.93	114	0.741	102.0	3.27	NR	clear

Comments: well went dry

Sampling ID: NS-LDP03-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara station

Well Number: LDP-04

Site Name: Niagara Sanitation- 7415 Nash Rd

Date: 11/3/2021

Staff: J. Williams, A. Kolpinski

Time: 10:35 (sample collected)

A). Total casing and screen length in feet: 8.65

B). Water level below top of casing in feet: 6.40

C). Number of feet standing water [A-B]: 2.25

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 0.3825

F). Volume of water to remove (gal.) [Ex3]: 1.1475

G). Volume of water actually removed (gal.): 0.50

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:18	9.01	7.31	134	0.833	545.0	3.52	NR	clear
10:27	10.58	7.18	150	1.360	448.0	2.60	NR	clear

Comments: well went dry. Bailer used to purge. Very low flow used to sample

Sampling ID: NS-LDP04-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs ☐ Other (list parameters below)

☐ CP-51 VOCs & SVOCs

■ Full List TCL VOCs, SVOCs, Metals, Mercury, PCBs and Pesticides

Upper Clay Aquitard Wells

2017 Remedial Investigation

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-2**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/28/2017

Staff: A. Koons, D. Henson

Time: 13:30 (sample collected)

A). Total casing and screen length in feet:	11.45
B). Water level below top of casing in feet:	2.52
C). Number of feet standing water [A-B]:	8.93
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	1.52
F). Volume of water to remove (gal.) [Ex3]:	4.56
G). Volume of water actually removed (gal.):	2.93

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:00	19.07	7.54	-187	2.15	17.0	1.76	19.7	clear
13:05	18.27	7.25	-184	2.15	12.3	1.55	17.0	clear
13:10	18.05	7.17	-179	2.15	19.2	1.69	185.0	clear
13:15	18.03	7.23	-177	2.18	14.4	4.74	51.9	clear
13:25	**17.91**	**7.25**	**-186**	**2.17**	**15.1**	**3.49**	**37.9**	**clear**

Comments: Pumping at a rate of 444mL/min.
Bold readings are sampling parameters
(pumping stopped between 13:15 and 13:20 to let well recharge)

Sampling ID: NS-OW2-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below) _____

Lower Sand Wells

2017 Remedial Investigation

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-14A**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/25/2017

Staff: A. Koons

Time: 9:10 (sample collected)

A). Total casing and screen length in feet: 39.65

B). Water level below top of casing in feet: 16.61

C). Number of feet standing water [A-B]: 23.04

D). Volume of water/foot of casing (gal.): 0.17

E). Volume of water in casing (gal. [CxD]: 3.92

F). Volume of water to remove (gal.) [Ex3]: 11.76

G). Volume of water actually removed (gal.): 7.06

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:08	13.58	8.77	34	0.377	108.0	2.40	23.8	clear
10:10	13.09	8.83	36	0.359	78.9	2.30	21.5	clear
10:14	13.11	8.71	38	0.456	>800	0.88	8.6	cloudy
8:53	15.33	9.11	32	0.636	200.0	3.20	33.0	slightly cloudy
8:58	13.89	8.91	28	0.386	35.3	3.29	33.0	clear
9:03	**13.32**	**8.86**	**28**	**0.354**	**30.6**	**3.14**	**31.2**	**clear**

Comments: Purged with high flow pump (6.0 gal on 9/20), sampled with low flow at 519ml/min on 9/25.
Bold readings are sampling parameters
Slow recharge

Sampling ID:NS-OW14A-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-15**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 13:50 (sample collected)

A). Total casing and screen length in feet:	47.03
B). Water level below top of casing in feet:	11.89
C). Number of feet standing water [A-B]:	35.14
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	5.97
F). Volume of water to remove (gal.) [Ex3]:	17.91
G). Volume of water actually removed (gal.):	10.10

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:03	13.00	8.85	-29	0.544	83.9	1.30	13.0	clear
11:30	13.89	9.36	-33	0.446	65.0	1.15	11.4	clear
11:33	13.16	9.56	-35	0.459	59.0	1.07	10.6	clear
13:20	16.85	8.94	119	0.462	14.0	2.60	27.7	clear
13:25	14.76	9.18	119	0.442	17.0	1.55	15.8	clear
13:30	13.74	9.12	119	0.460	20.2	1.64	16.4	clear
13:35	13.48	9.06	128	0.447	18.8	1.57	15.6	clear

Comments: Purged with high flow pump (6.0 gal on 9/20), sampled with low flow at 519ml/min on 9/22.
Bold readings are sampling parameters

Sampling ID:NS-OW15-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-15**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 13:50 (sample collected)

A). Total casing and screen length in feet:	47.03
B). Water level below top of casing in feet:	11.89
C). Number of feet standing water [A-B]:	35.14
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	5.97
F). Volume of water to remove (gal.) [Ex3]:	17.91
G). Volume of water actually removed (gal.):	10.10

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
13:40	13.52	8.95	134	0.450	25.1	1.58	15.6	clear
13:45	**13.14**	**8.93**	**135**	**0.444**	**26.2**	**1.80**	**17.8**	**clear**

Comments: Purged with high flow pump (6.0 gal on 9/20), sampled with low flow at 519ml/min on 9/22.
Bold readings are sampling parameters

Sampling ID:NS-OW15-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

Glacial Till Wells

2017 Remedial Investigation

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-1B**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 10:25 (sample collected)

A). Total casing and screen length in feet:	64.80
B). Water level below top of casing in feet:	13.65
C). Number of feet standing water [A-B]:	51.15
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	8.70
F). Volume of water to remove (gal.) [Ex3]:	26.10
G). Volume of water actually removed (gal.):	12.74

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:30	13.05	8.43	15	0.918	580.0	1.00	9.9	slightly cloudy
9:32	12.27	8.61	14	0.811	82.1	1.39	13.4	clear
9:35	11.84	8.65	16	0.806	57.0	1.41	13.6	clear
10:05	13.96	8.49	91	0.807	57.3	3.63	36.4	clear
10:10	12.93	8.68	89	0.818	44.6	3.01	29.6	clear
10:15	12.63	8.78	90	0.801	46.3	2.75	26.9	clear
10:20	**12.41**	**8.71**	**96**	**0.818**	**54.8**	**2.62**	**25.5**	**clear**

Comments: Purged with high flow pump (10.0 gal on 9/20), sampled with low flow at 519ml/min on 9/22.
Bold readings are sampling parameters
Lab duplicate sample taken

Sampling ID:NS-OW1B-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-3**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 9:10 (sample collected)

A). Total casing and screen length in feet:	53.45
B). Water level below top of casing in feet:	13.99
C). Number of feet standing water [A-B]:	39.46
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	6.71
F). Volume of water to remove (gal.) [Ex3]:	20.13
G). Volume of water actually removed (gal.):	13.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
9:03	13.34	8.20	88	0.933	330	1.14	11.3	cloudy
9:06	12.29	8.14	77	0.926	81.4	0.83	8.0	clear
9:10	12.09	8.04	40	0.903	58.8	1.08	10.5	clear
8:40	13.08	8.17	147	1.04	232	2.32	22.9	cloudy
8:50	12.57	7.97	-47	0.933	47.3	1.81	17.5	clear
9:00	12.44	7.88	-71	0.915	35.1	1.30	12.6	clear
8:45	13.16	8.2	158	1.060	42.8	3.02	29.8	clear

Comments: Purged with high flow pump (7.0 gal on 9/20), purged with low flow (3.0 gal on 9/21 and lost water), sampled with low flow at 519ml/min on 9/22.

Bold readings are sampling parameters

Sampling ID: NS-OW3-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-3**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 9:10 (sample collected)

A). Total casing and screen length in feet:	53.45
B). Water level below top of casing in feet:	13.99
C). Number of feet standing water [A-B]:	39.46
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	6.71
F). Volume of water to remove (gal.) [Ex3]:	20.13
G). Volume of water actually removed (gal.):	13.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
8:50	12.40	8.12	160	0.945	218	2.70	26.1	cloudy
8:55	12.1	8.00	137	0.936	93.1	1.90	18.3	clear
9:00	12.13	7.93	118	0.939	71.6	1.58	15.3	clear
9:05	**12.32**	**7.89**	**97**	**0.937**	**69.1**	**1.75**	**16.9**	**clear**

Comments: Purged with high flow pump (7.0 gal on 9/20), purged with low flow (3.0 gal on 9/21 and lost water), sampled with low flow at 519ml/min on 9/22.

Bold readings are sampling parameters

Sampling ID: NS-OW3-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-4**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 11:40 (sample collected)

A). Total casing and screen length in feet:	70.80
B). Water level below top of casing in feet:	14.01
C). Number of feet standing water [A-B]:	56.79
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	9.65
F). Volume of water to remove (gal.) [Ex3]:	28.95
G). Volume of water actually removed (gal.):	12.74

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
10:31	14.21	8.29	10	1.15	>800	1.30	12.8	very cloudy
10:33	12.96	8.32	-19	1.20	373	0.60	6.0	cloudy
10:37	12.96	8.33	-73	1.21	468	0.00	0.0	cloudy
10:52	13.59	8.28	-81	1.21	541	0.00	0.0	cloudy
11:20	15.35	8.42	124	1.21	47.0	1.90	19.7	clear
11:25	14.2	8.45	125	1.21	28.6	1.55	15.6	clear
11:30	13.34	8.45	125	1.24	26.7	1.15	11.1	clear

Comments: Purged with high flow pump (10.0 gal on 9/20), sampled with low flow at 519ml/min on 9/22.
Bold readings are sampling parameters

Sampling ID: NS-OW4-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-4**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/20/2017-9/22/2017

Staff: A. Koons

Time: 11:40 (sample collected)

A). Total casing and screen length in feet:	70.80
B). Water level below top of casing in feet:	14.01
C). Number of feet standing water [A-B]:	56.79
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	9.65
F). Volume of water to remove (gal.) [Ex3]:	28.95
G). Volume of water actually removed (gal.):	12.74

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:35	**13.06**	**8.42**	**127**	**1.24**	**26.2**	**1.35**	**13.3**	**clear**

Comments: Purged with high flow pump (10.0 gal on 9/20), sampled with low flow at 519ml/min on 9/22.
Bold readings are sampling parameters

Sampling ID: NS-OW4-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-5**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/31/2017

Staff: A. Koons

Time: 13:36 (sample collected)

A). Total casing and screen length in feet:	70.82
B). Water level below top of casing in feet:	14.33
C). Number of feet standing water [A-B]:	56.49
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	9.60
F). Volume of water to remove (gal.) [Ex3]:	28.8
G). Volume of water actually removed (gal.):	71.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:12	12.10	8.11	-43	0.843	67.5	1.15	11.1	clear
11:17	11.79	8.06	-120	0.905	>800	0.87	8.3	very cloudy
11:21	11.5	8.00	-169	0.911	230.0	1.17	11.1	cloudy
11:26	11.43	8.00	-165	0.905	180.0	0.30	2.9	cloudy
11:31	11.42	8.01	-173	0.907	164.0	0.00	0.0	cloudy
11:35	11.28	8.00	-176	0.898	162.0	0.00	0.0	cloudy
11:40	11.27	8.00	-181	0.901	180.0	0.00	0.0	cloudy

Comments: Purged with high flow pump (71.0 gal), sampled with low flow at 444ml/min.

Sampling ID: NS-OW5-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-5**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/31/2017

Staff: A. Koons

Time: 13:36 (sample collected)

A). Total casing and screen length in feet:	70.82
B). Water level below top of casing in feet:	14.33
C). Number of feet standing water [A-B]:	56.49
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	9.60
F). Volume of water to remove (gal.) [Ex3]:	28.8
G). Volume of water actually removed (gal.):	71.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
11:47	11.35	8.01	-162	0.900	109.0	0.00	0.0	slightly cloudy
11:52	11.34	8.02	-172	0.900	82.9	0.00	0.0	clear
11:58	11.40	8.05	-172	0.900	164.0	0.00	0.0	slightly cloudy
12:10	11.77	8.02	-161	0.864	134.0	0.17	1.6	slightly cloudy
12:19	11.67	7.96	-172	0.878	72.0	0.00	0.0	clear
12:26	11.68	8.03	-175	0.887	54.7	0.00	0.0	clear
12:32	11.72	8.12	-173	0.893	78.0	0.00	0.0	clear

Comments: Purged with high flow pump (71.0 gal), sampled with low flow at 444ml/min.

Sampling ID: NS-OW5-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-5**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 8/31/2017

Staff: A. Koons

Time: 13:36 (sample collected)

A). Total casing and screen length in feet:	70.82
B). Water level below top of casing in feet:	14.33
C). Number of feet standing water [A-B]:	56.49
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	9.60
F). Volume of water to remove (gal.) [Ex3]:	28.8
G). Volume of water actually removed (gal.):	71.00

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
12:39	11.64	8.17	-154	0.892	49.7	0.45	4.3	clear
13:14	12.52	8.26	-35	0.889	30.4	0.61	5.7	clear
13:36	**12.72**	**8.25**	**-47**	**0.882**	**29.0**	**0.80**	**7.8**	**cloudy**

Comments: Purged with high flow pump (71.0 gal), sampled with low flow at 444ml/min.
Bold readings are sampling parameters

Sampling ID: NS-OW5-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-6**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/22/2017

Staff: A. Koons

Time: 15:40 (sample collected)

A). Total casing and screen length in feet:	68.46
B). Water level below top of casing in feet:	16.52
C). Number of feet standing water [A-B]:	51.94
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	8.83
F). Volume of water to remove (gal.) [Ex3]:	26.49
G). Volume of water actually removed (gal.):	33.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
14:26	14.33	8.25	155	2.86	91.8	1.20	12.1	clear
14:32	13.04	8.14	108	2.96	73.0	0.00	0.0	clear
14:39	**12.61**	**8.06**	**36**	**3.12**	**70.6**	**0.00**	**0.0**	**clear**
14:45	12.40	8.13	-32	3.09	60.1	0.00	0.0	clear
14:52	12.2	8.1	-53	3.09	77.9	0.00	0.0	clear
14:58	12.21	8.12	-72	3.14	47.9	0.00	0.0	clear
15:15	14.04	8.19	43	1.93	56.8	1.30	13.1	clear

Comments: Purged with high flow pump (30.0 gal), sampled with low flow at 519ml/min.
Bold readings are sampling parameters

Sampling ID: NS-OW6-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

☐ CP-51 VOCs & SVOCs

☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

WELL PURGE LOG

LiRo Engineers, Inc.

Project Title: NYSDEC I&R - Niagara Sanitation

Well Number: **OW-5**

Site Name: Niagara Sanitation - 7415 Nash Rd

Date: 9/22/2017

Staff: A. Koons

Time: 15:40 (sample collected)

A). Total casing and screen length in feet:	68.46
B). Water level below top of casing in feet:	16.52
C). Number of feet standing water [A-B]:	51.94
D). Volume of water/foot of casing (gal.):	0.17
E). Volume of water in casing (gal. [CxD]:	8.83
F). Volume of water to remove (gal.) [Ex3]:	26.49
G). Volume of water actually removed (gal.):	33.43

Well ID	Volume (gal/ft)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PURGE DATA

Time	Temperature (˚C)	pH	ORP (mV)	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Dissolved Oxygen %	Appearance
15:20	13.44	8.35	44	2.10	65.7	1.67	16.7	clear
15:25	13.18	8.34	45	2.38	90.1	0.94	9.4	clear
15:30	13.1	8.27	48	2.78	200	0.52	5.2	cloudy
15:35	**12.85**	**8.22**	**43**	**3.03**	**96.0**	**0.45**	**4.4**	**clear**

Comments: Purged with high flow pump (30.0 gal), sampled with low flow at 519ml/min.
Bold readings are sampling parameters

Sampling ID: NS-OW6-GW

Sampling Parameters: (check one)

☐ CP-51 VOCs

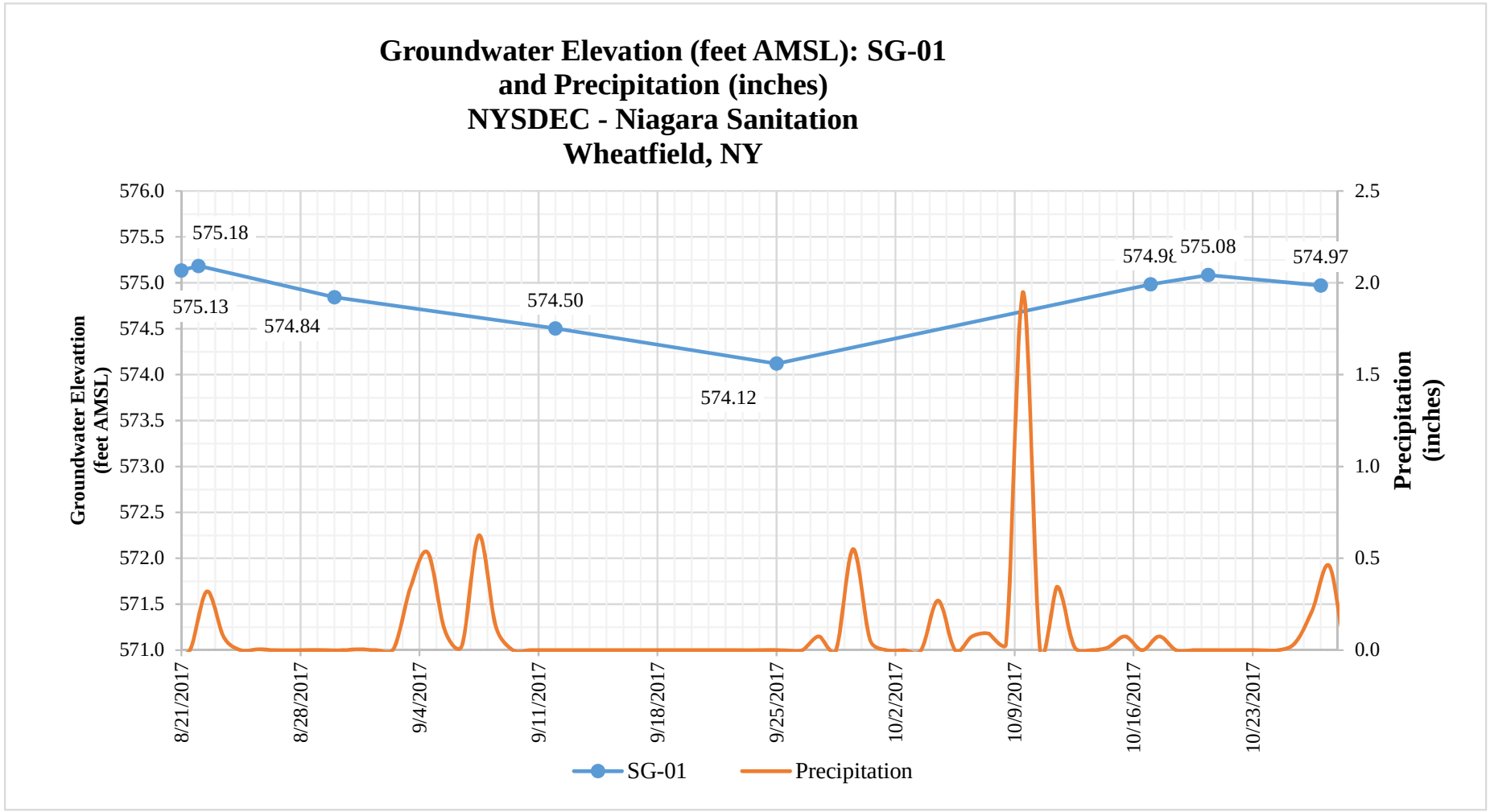
☐ CP-51 VOCs & SVOCs

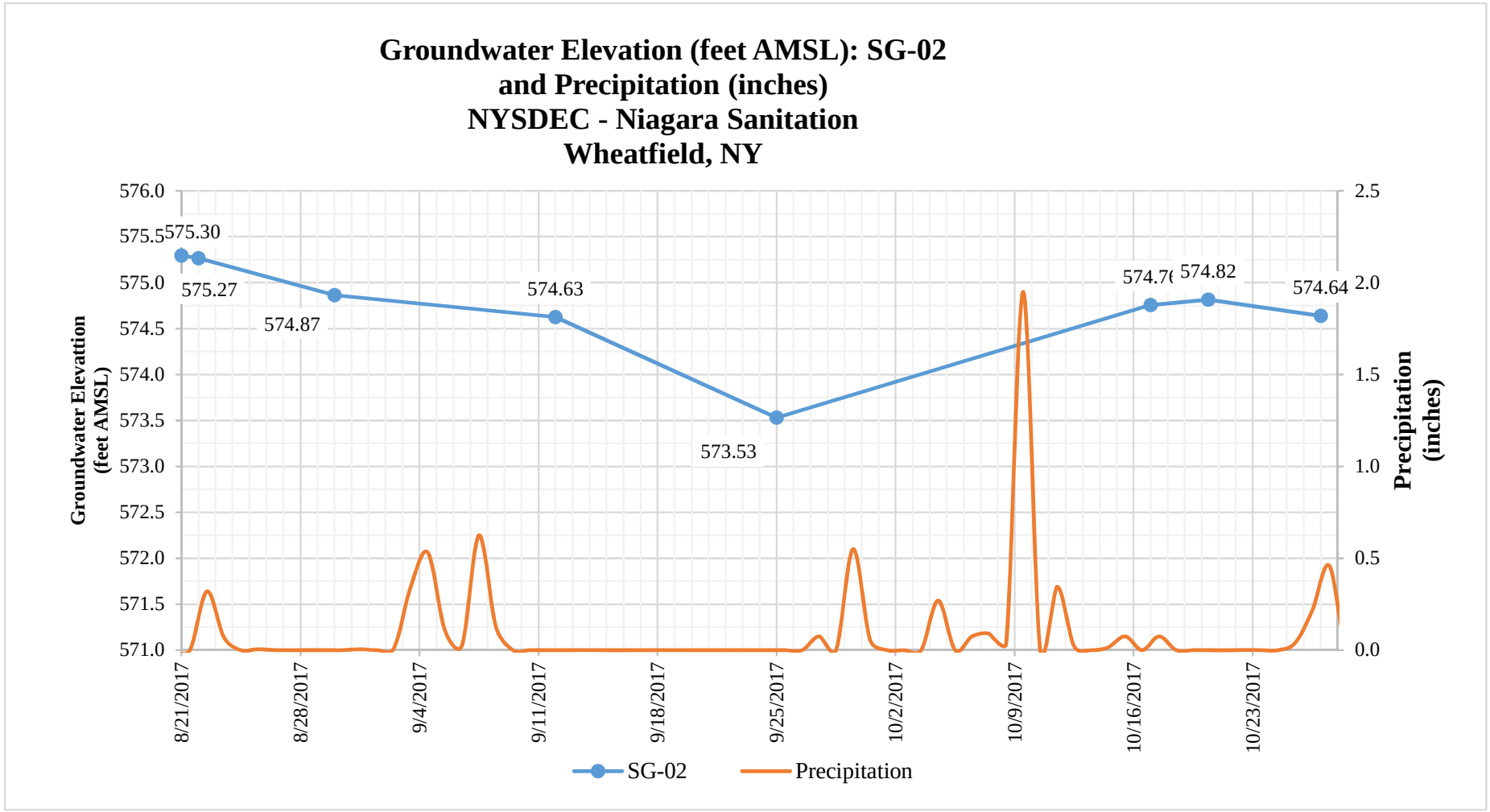
☐ Full List TCL & CP-51 VOC

☐ Other (list parameters below)

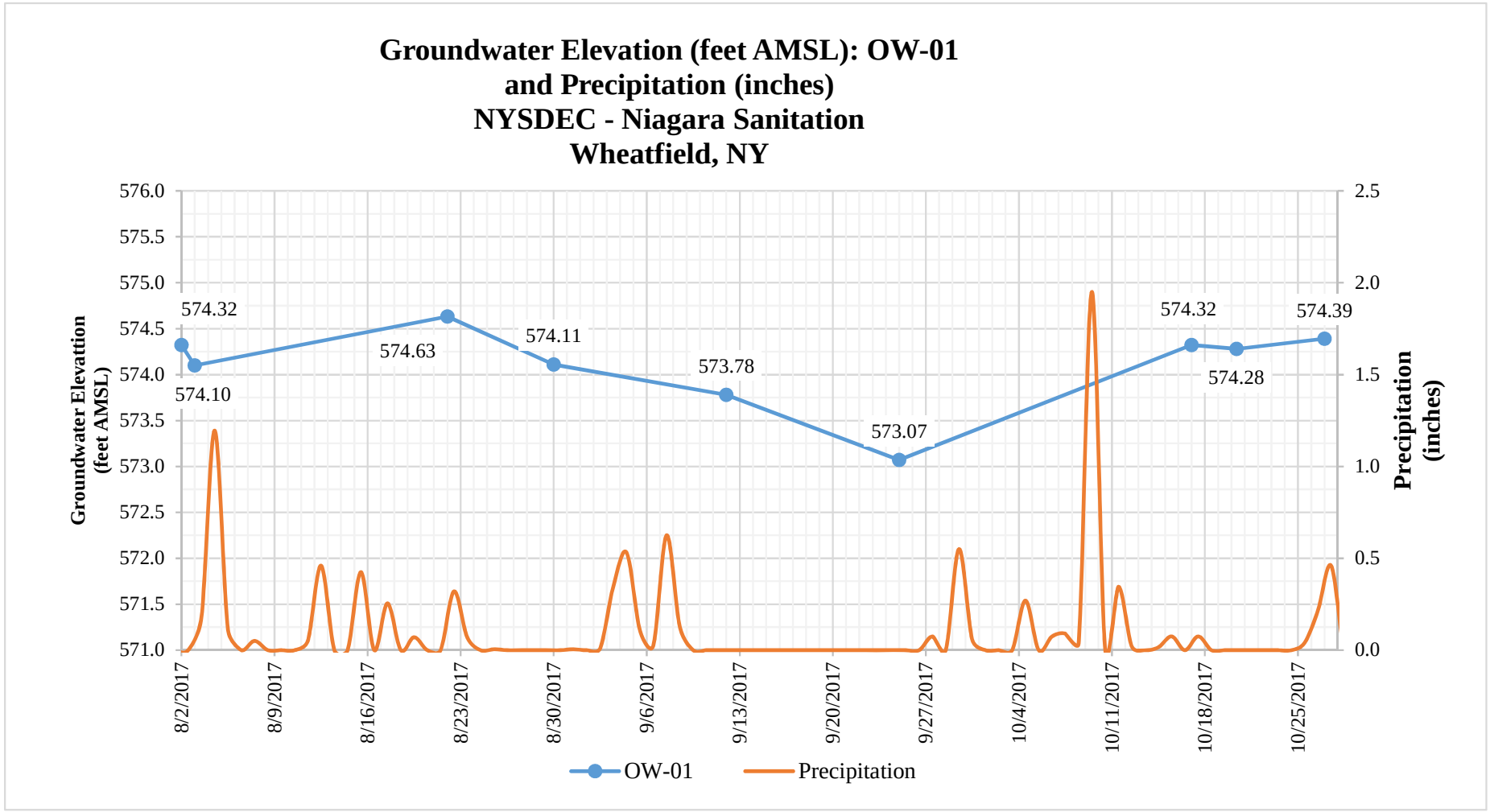
APPENDIX E
SELECT HYDROGRAPHS WITH PRECIPITATION DATA

Staff Gauges


Groundwater Elevation (feet AMSL): SG-01
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.18
575.13
574.84
574.50
574.12
575.08
574.97
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
SG-01
Precipitation


Groundwater Elevation (feet AMSL): SG-02
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.30
575.27
574.87
574.63
573.53
574.82
574.64
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
SG-02
Precipitation

Fill/Upper Sand Wells


Groundwater Elevation (feet AMSL): OW-01
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.32
574.10
574.63
574.11
573.78
573.07
574.32
574.28
574.39
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
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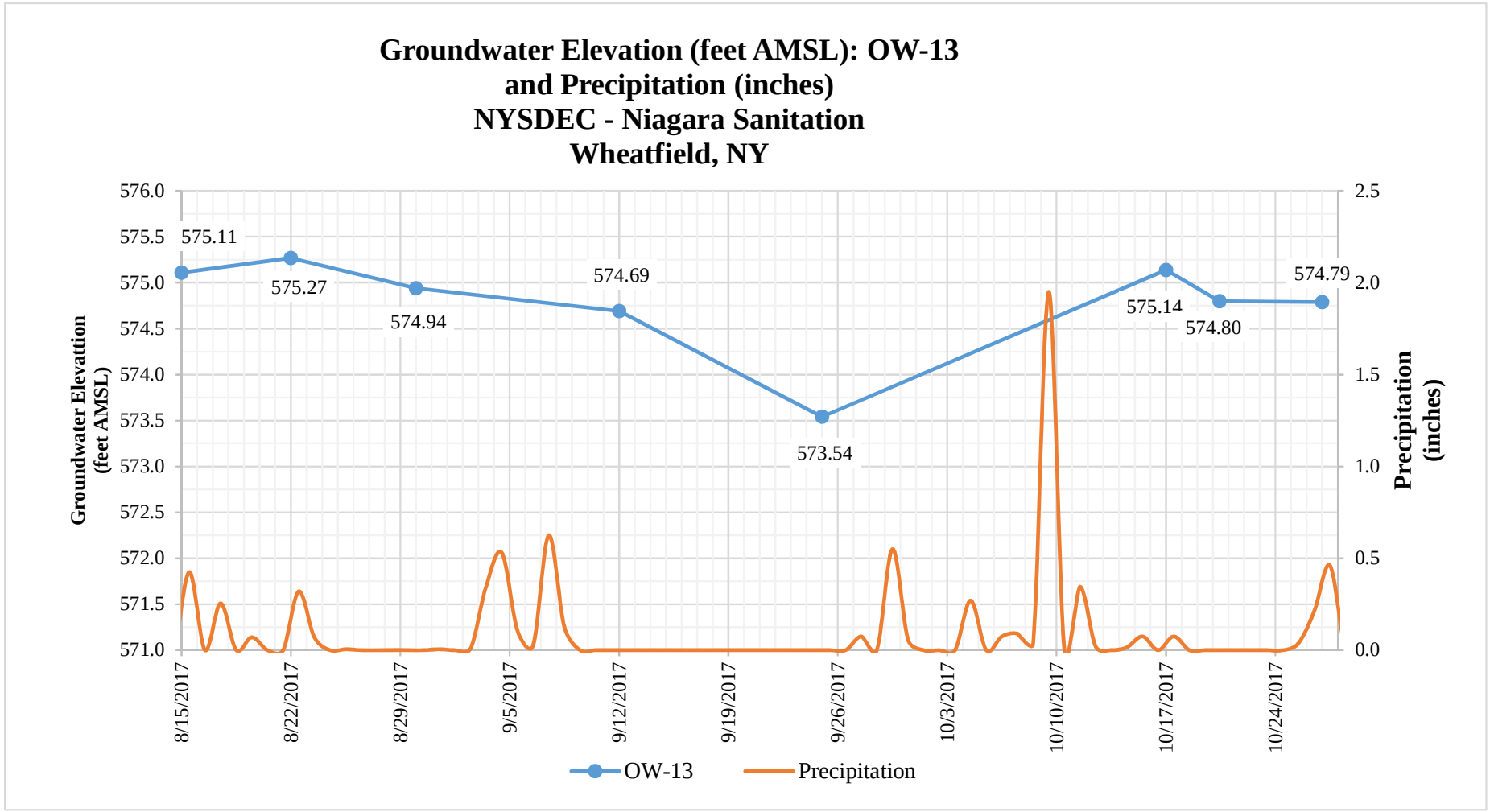
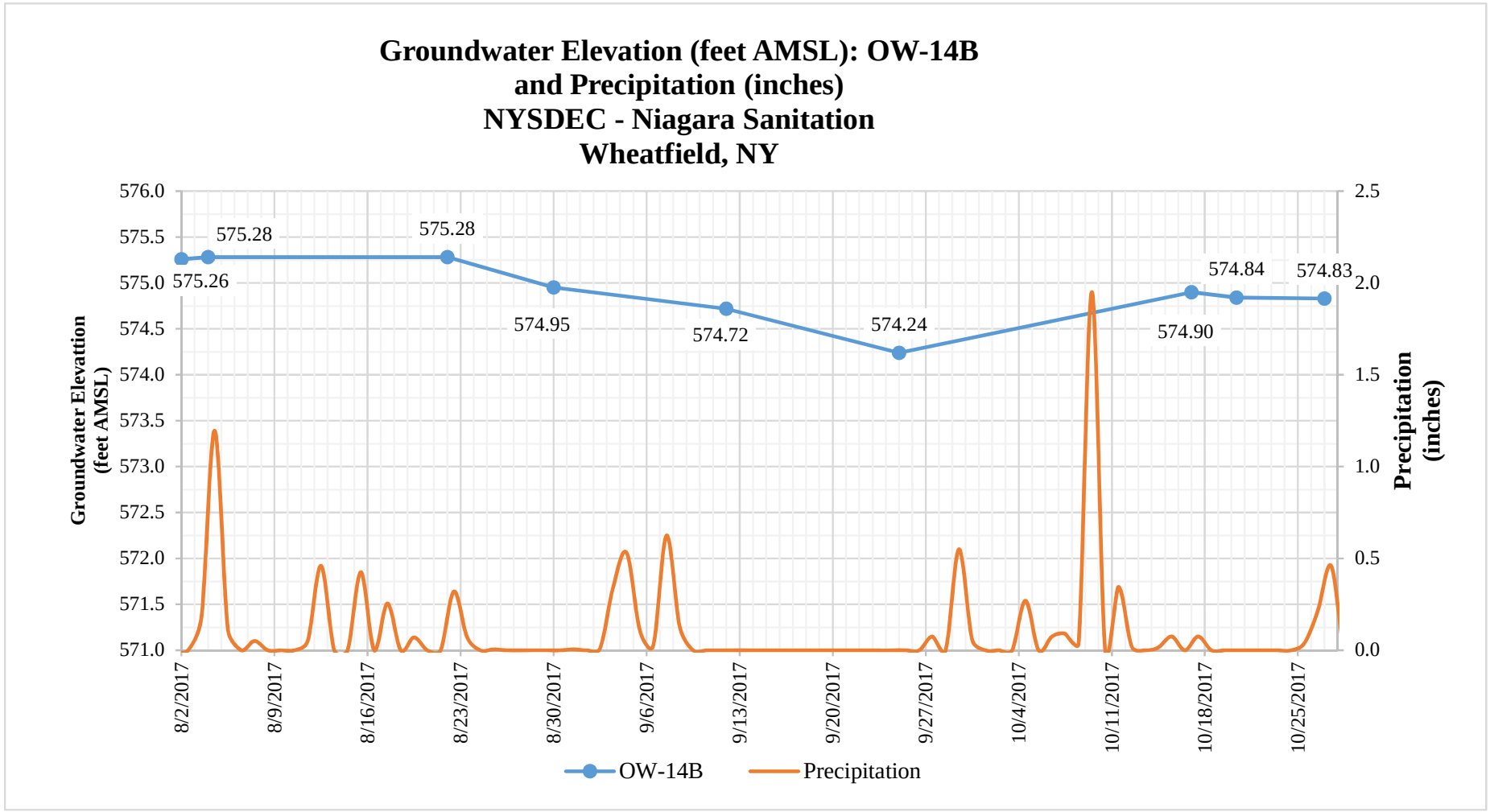
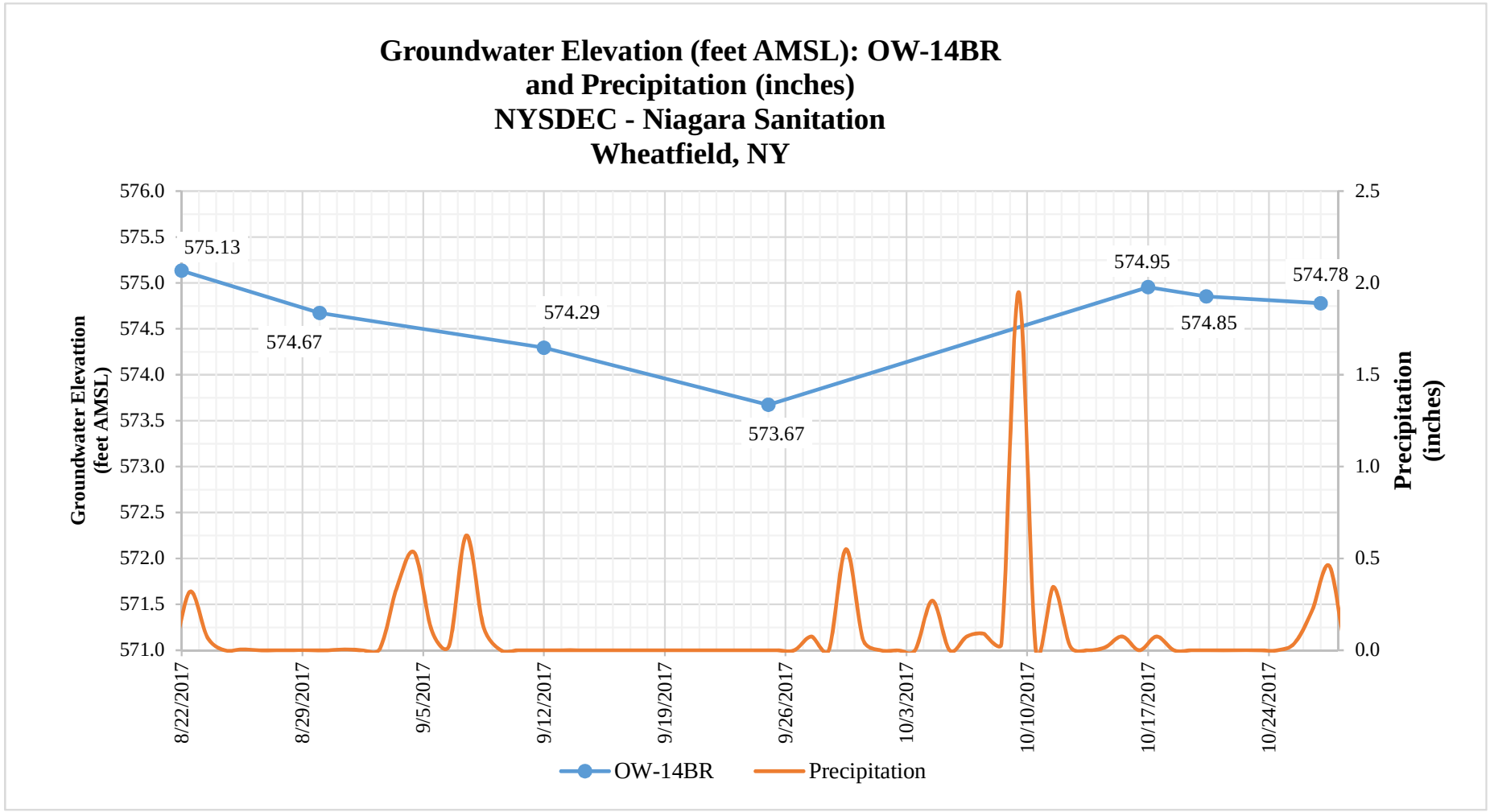
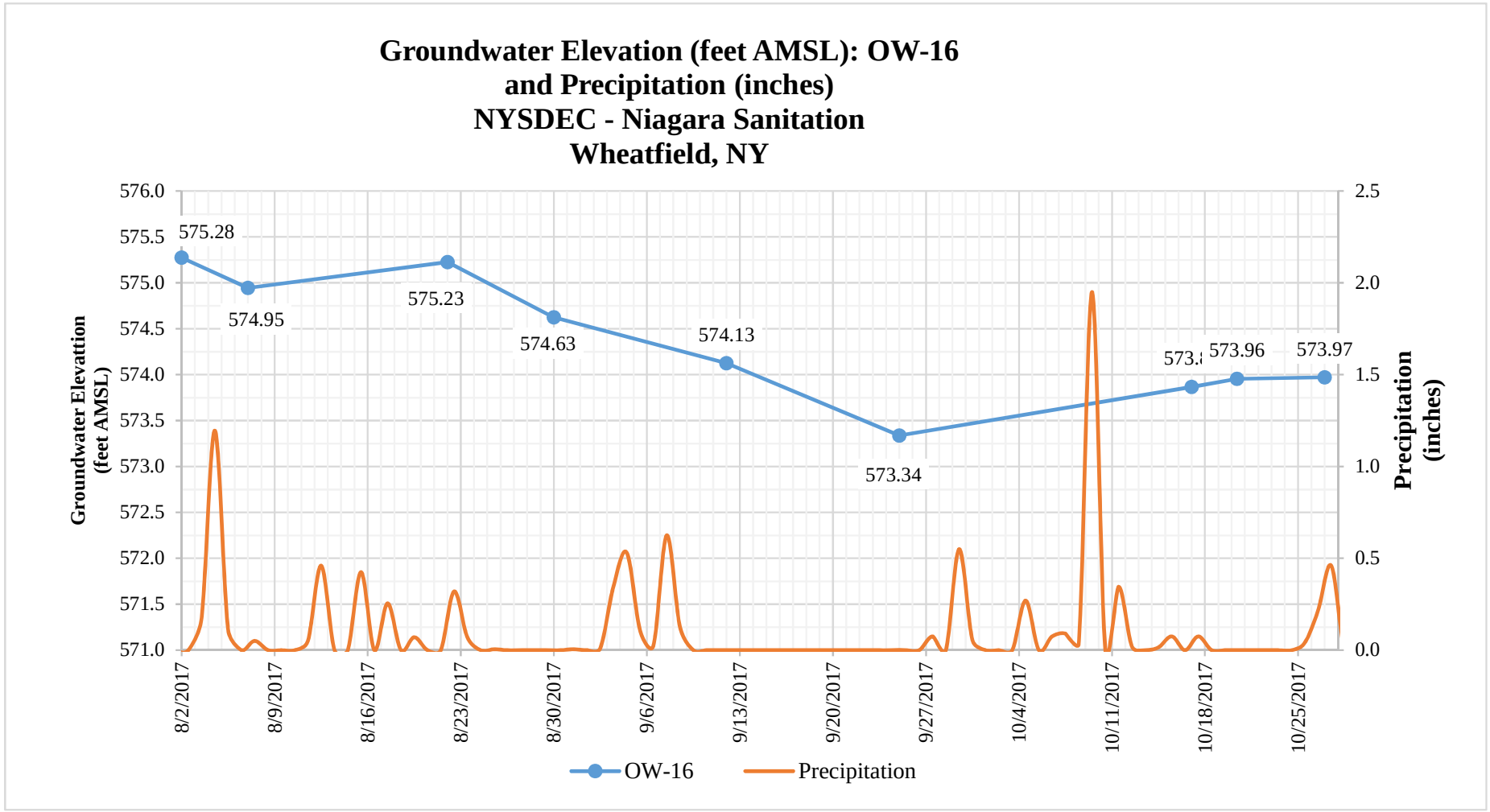
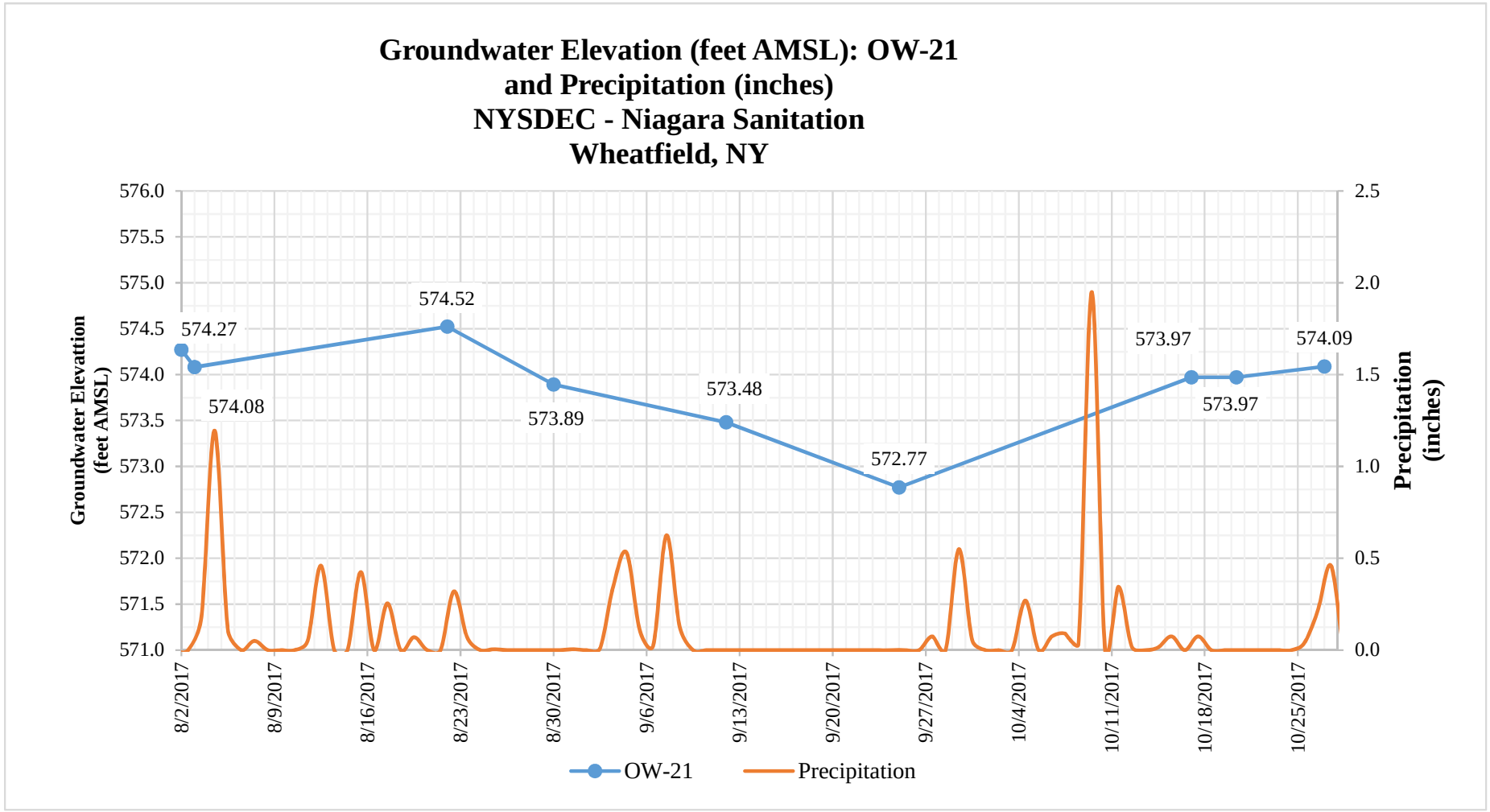
10/18/2017
10/25/2017
OW-01
Precipitation

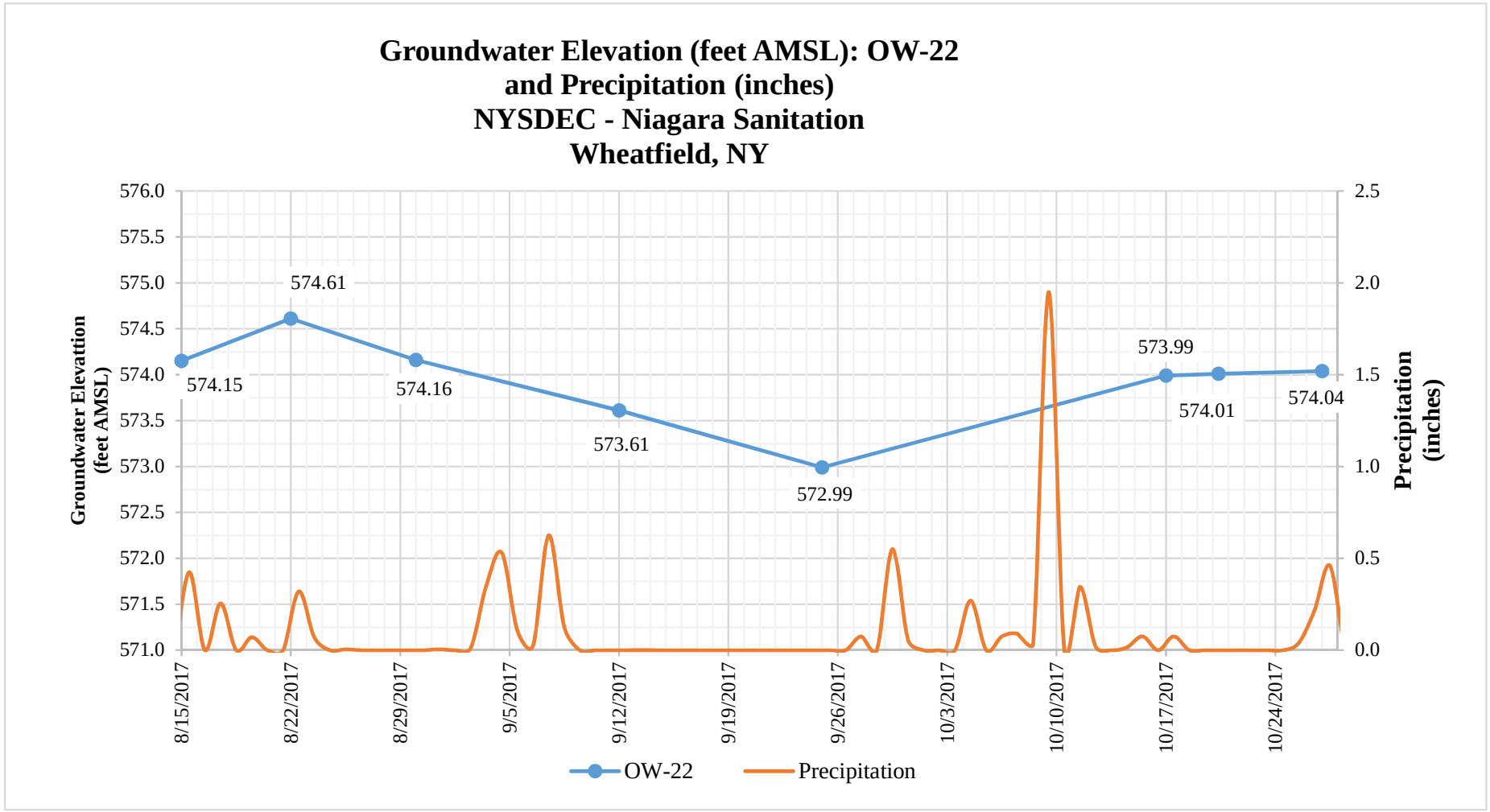

Groundwater Elevation (feet AMSL): OW-13
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.11
575.27
574.94
574.69
573.54
575.14
574.80
574.79
8/15/2017
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
OW-13
Precipitation

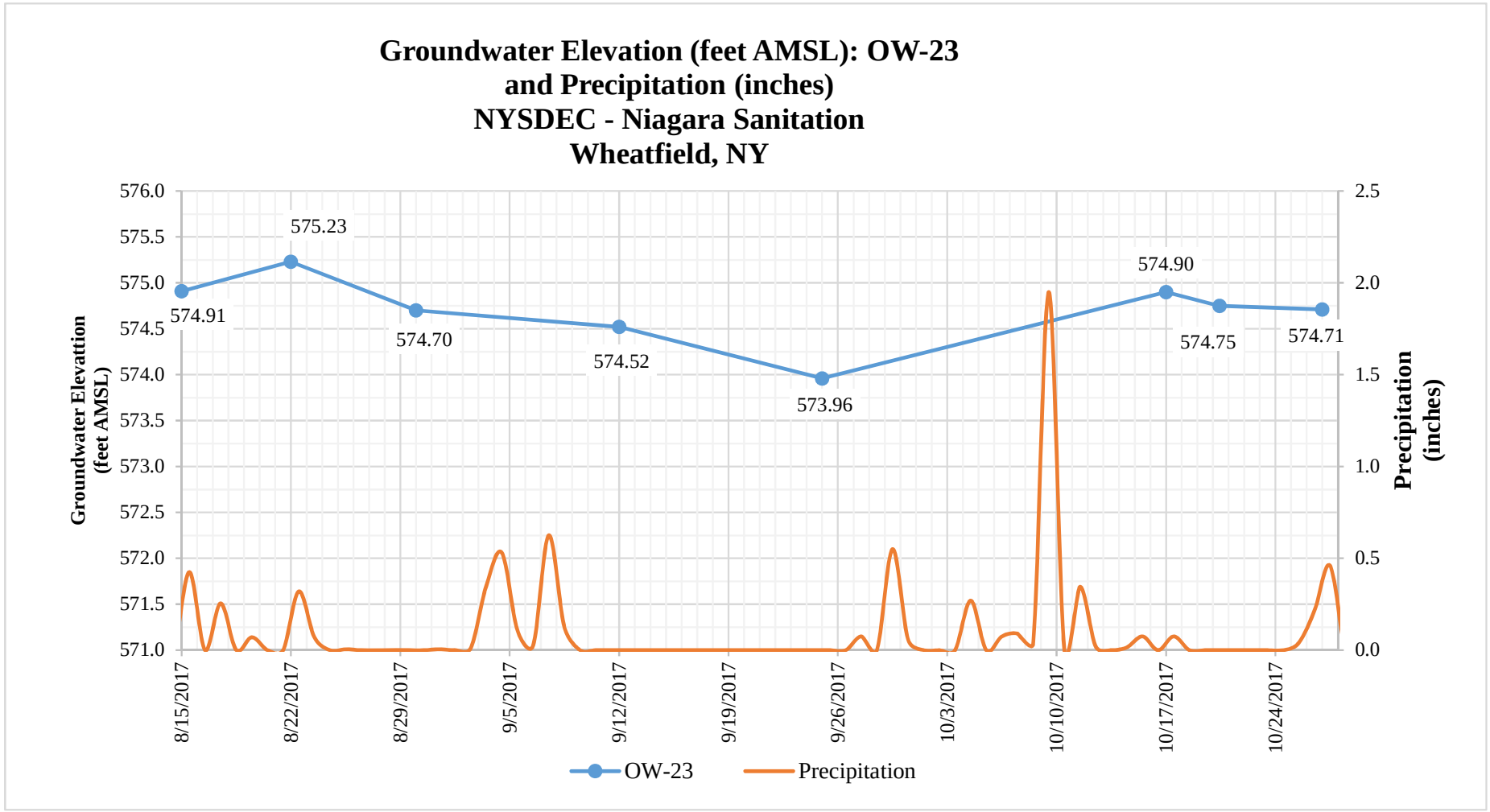

Groundwater Elevation (feet AMSL): OW-14B
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.26
575.28
575.28
574.95
574.72
574.24
574.90
574.84
574.83
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-14B
Precipitation

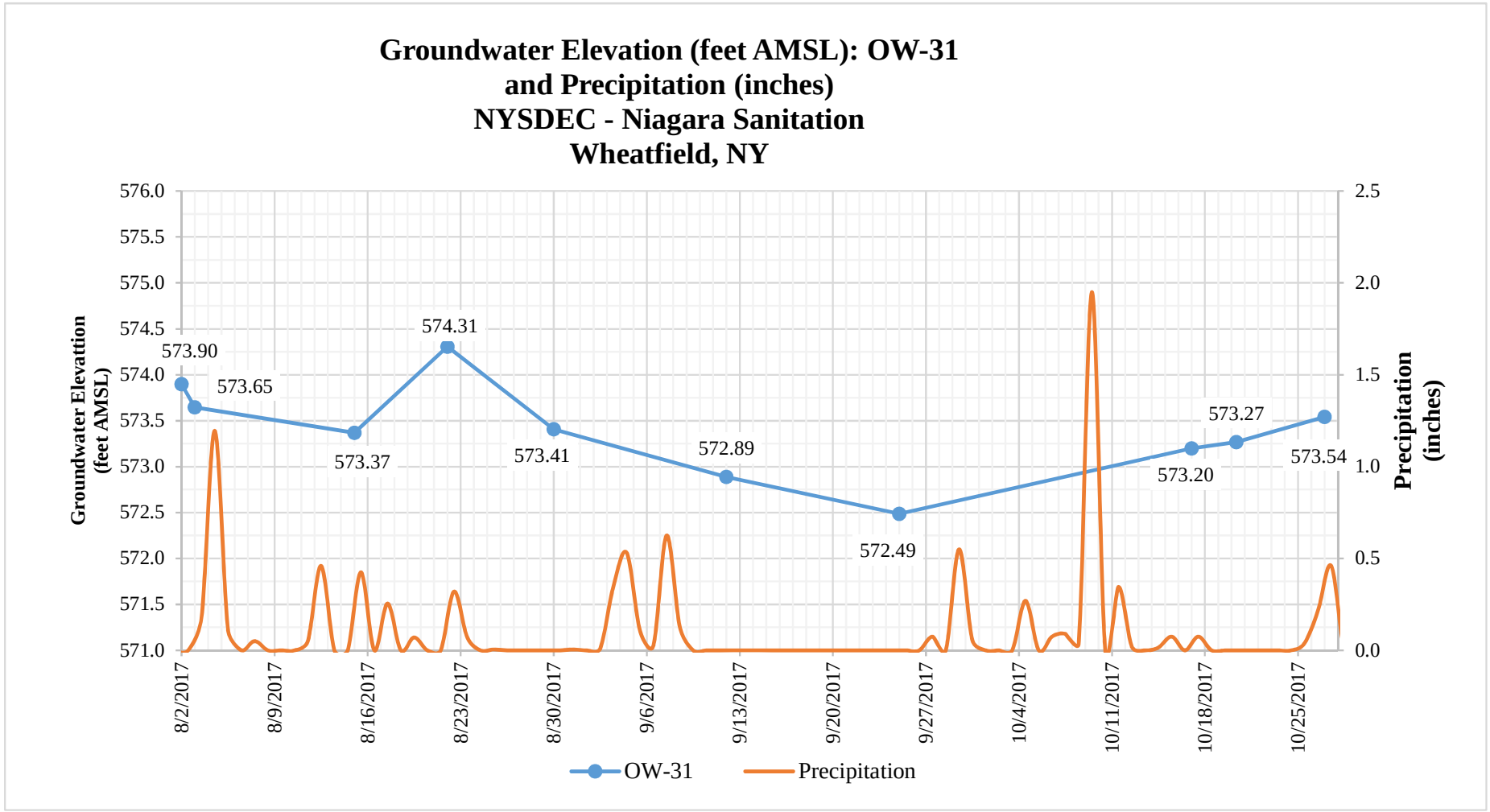

Groundwater Elevation (feet AMSL): OW-14BR
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.13
574.67
574.29
573.67
574.95
574.85
574.78
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
OW-14BR
Precipitation

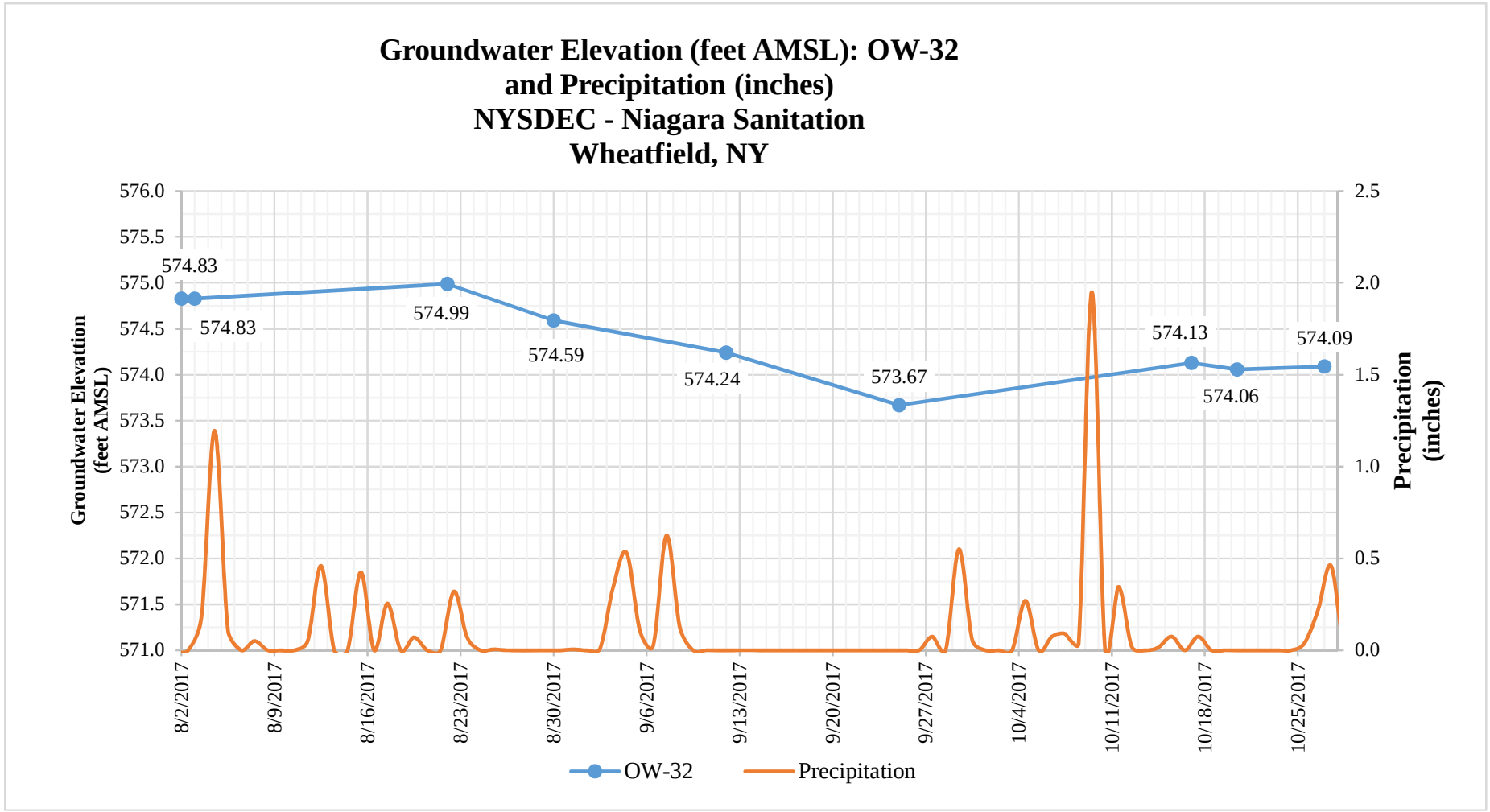

Groundwater Elevation (feet AMSL): OW-16
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.28
574.95
575.23
574.63
574.13
573.34
573.96
573.97
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-16
Precipitation

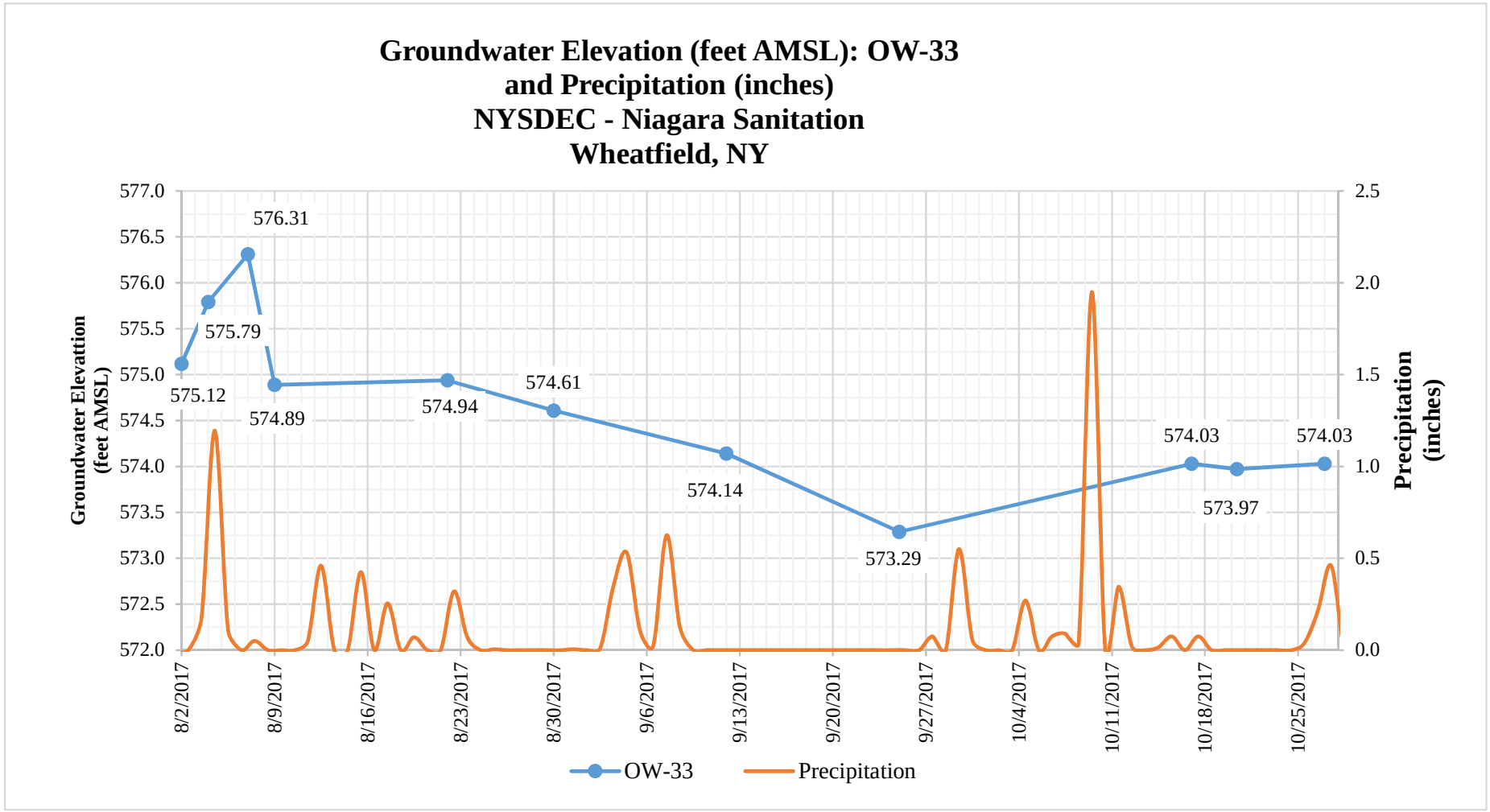

Groundwater Elevation (feet AMSL): OW-21
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.27
574.08
574.52
573.89
573.48
572.77
573.97
573.97
574.09
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-21
Precipitation

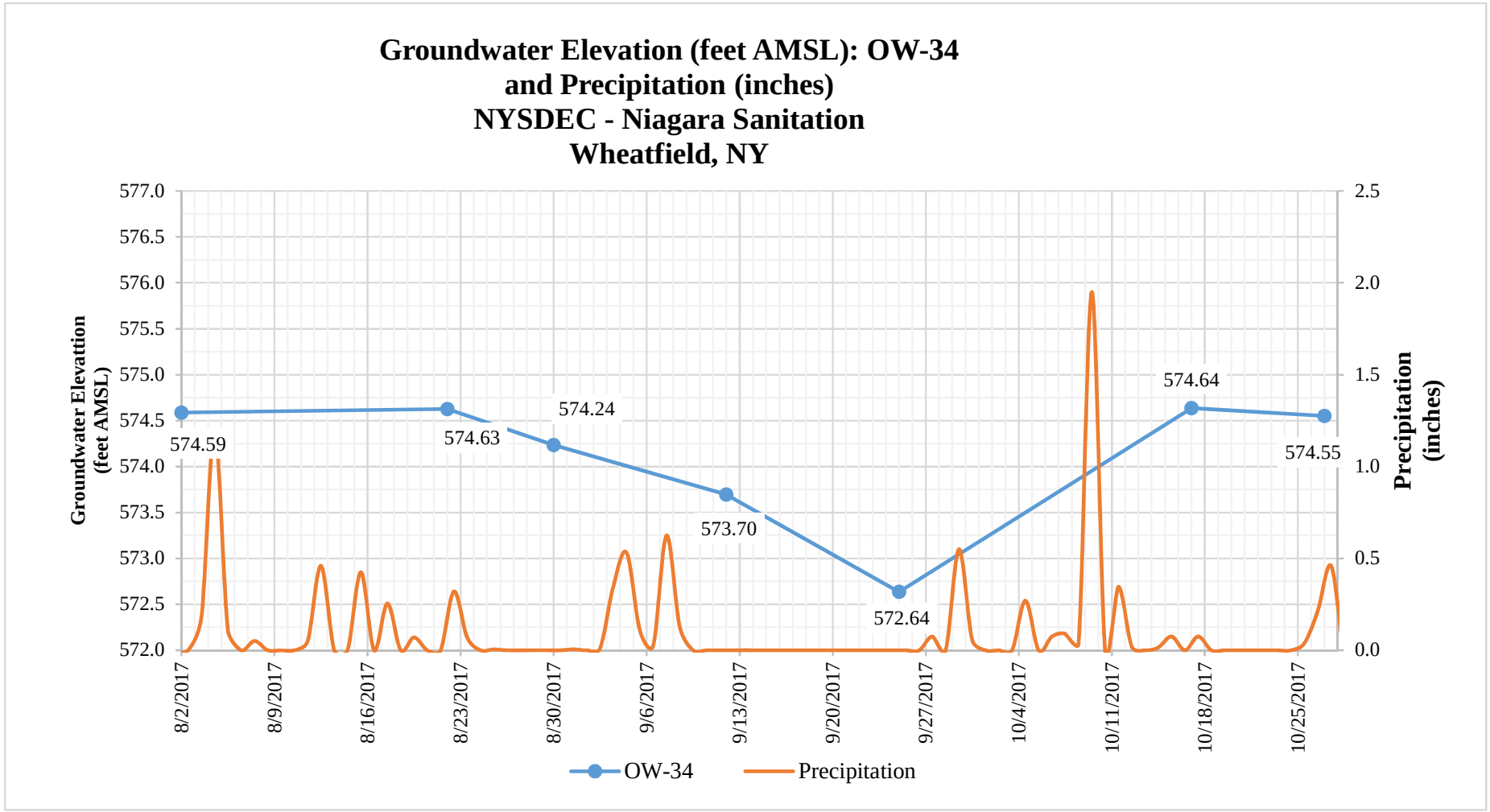

Groundwater Elevation (feet AMSL): OW-22
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.15
574.61
574.16
573.61
572.99
573.99
574.01
574.04
8/15/2017
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
OW-22
Precipitation

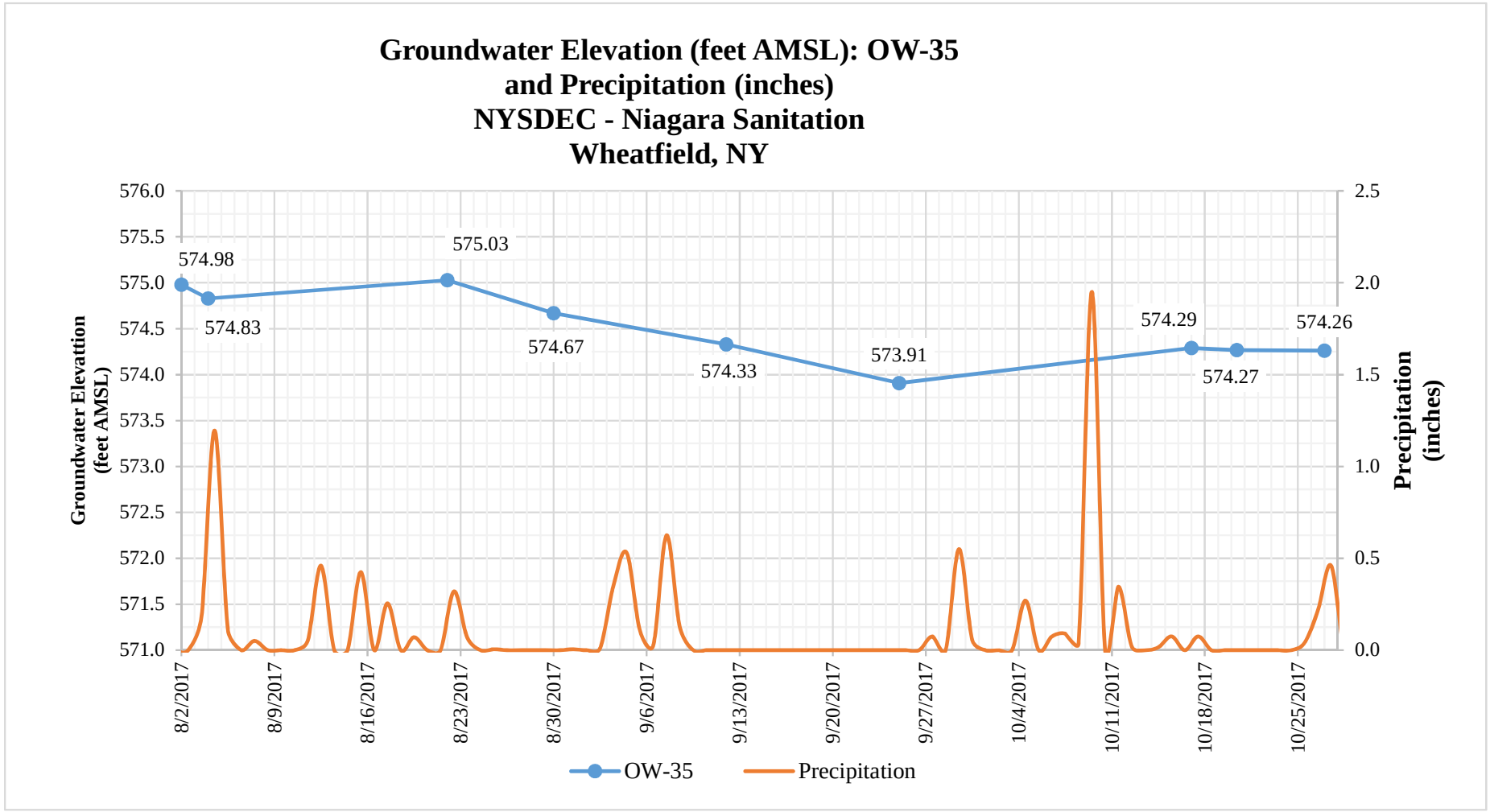

Groundwater Elevation (feet AMSL): OW-23
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.91
575.23
574.70
574.52
573.96
574.90
574.75
574.71
8/15/2017
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
OW-23
Precipitation

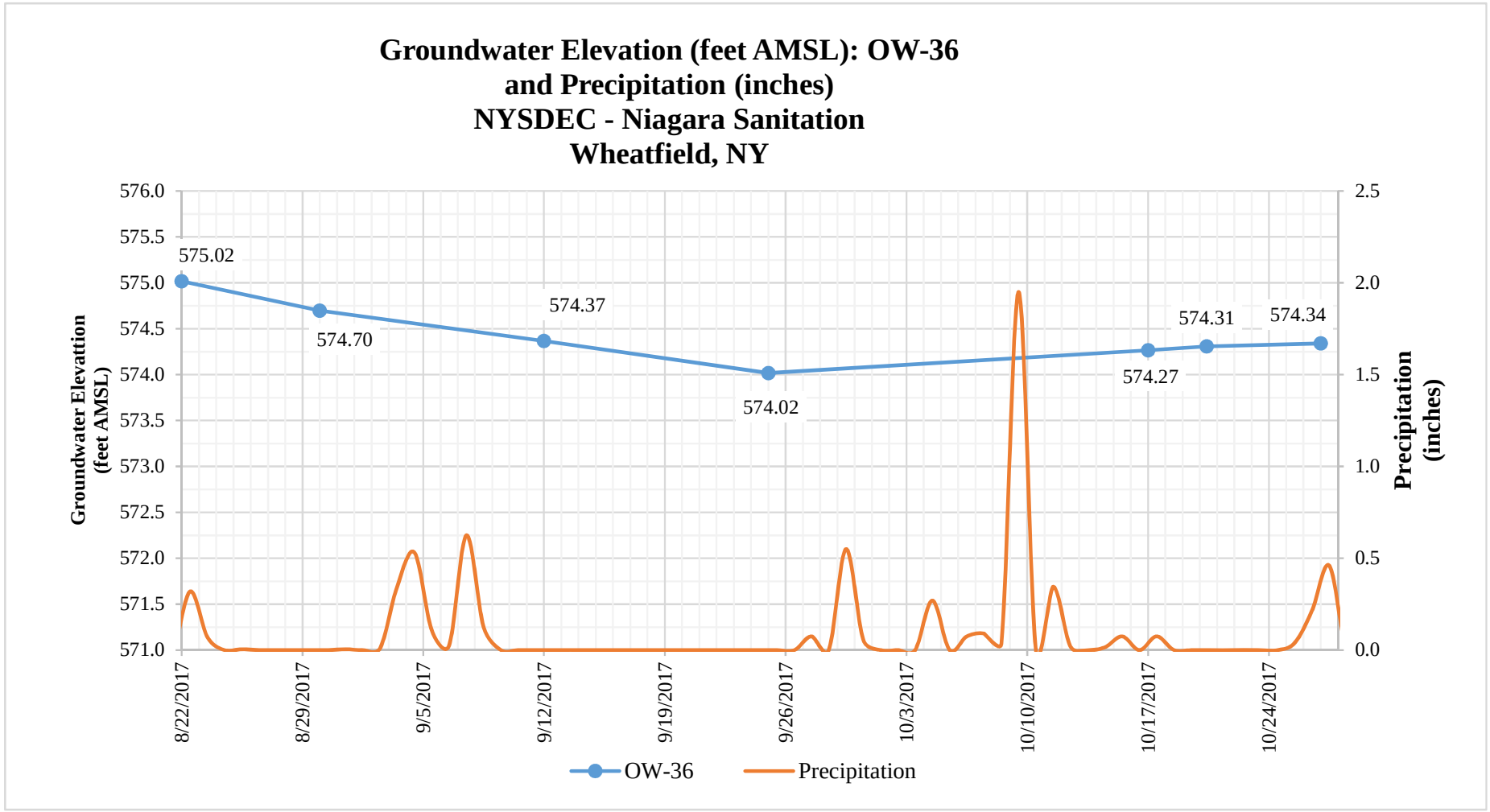

Groundwater Elevation (feet AMSL): OW-31
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.90
573.65
573.37
574.31
573.41
572.89
572.49
573.20
573.27
573.54
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-31
Precipitation

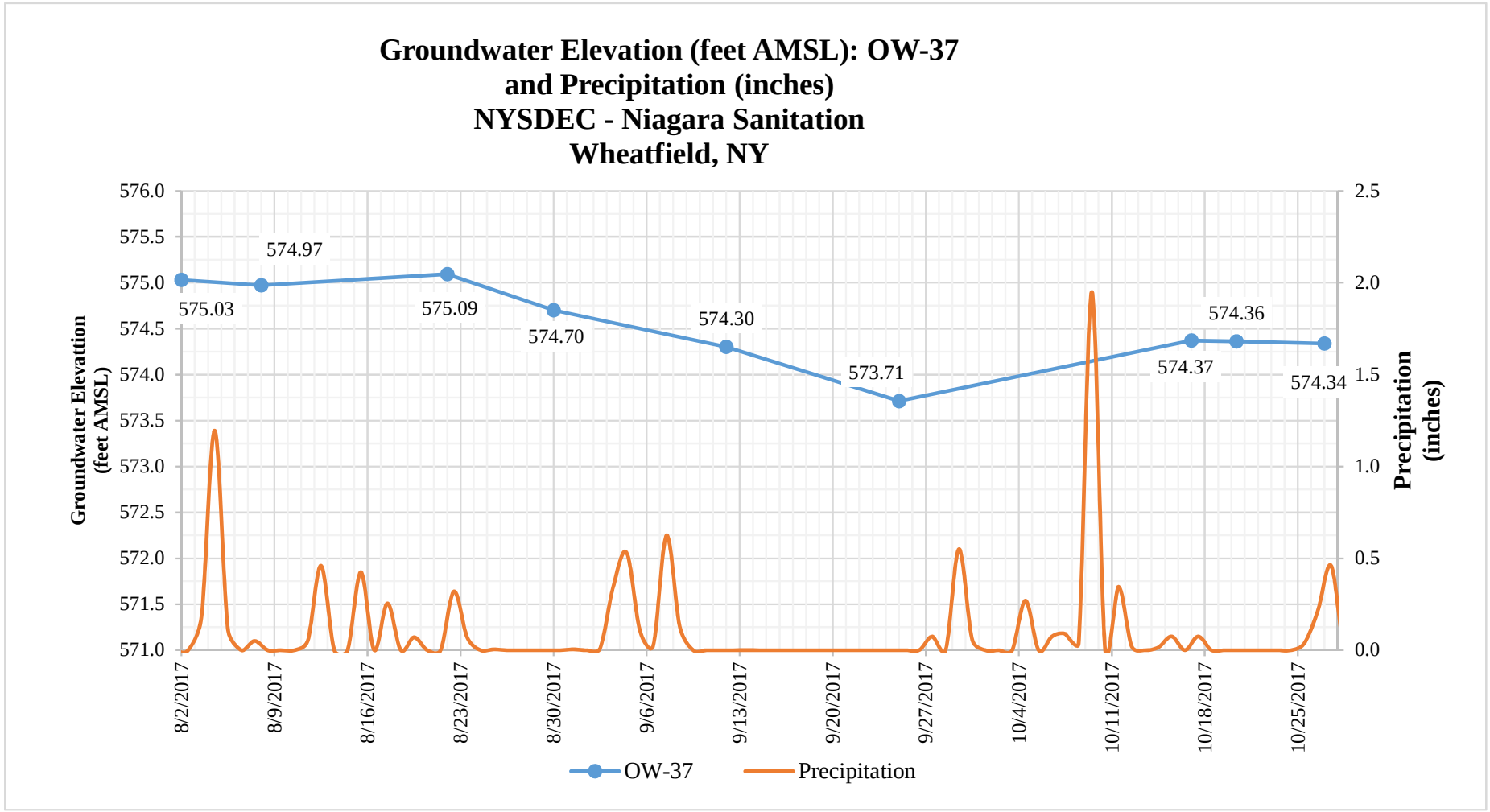

Groundwater Elevation (feet AMSL): OW-32
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.83
574.83
574.99
574.59
574.24
573.67
574.13
574.06
574.09
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-32
Precipitation

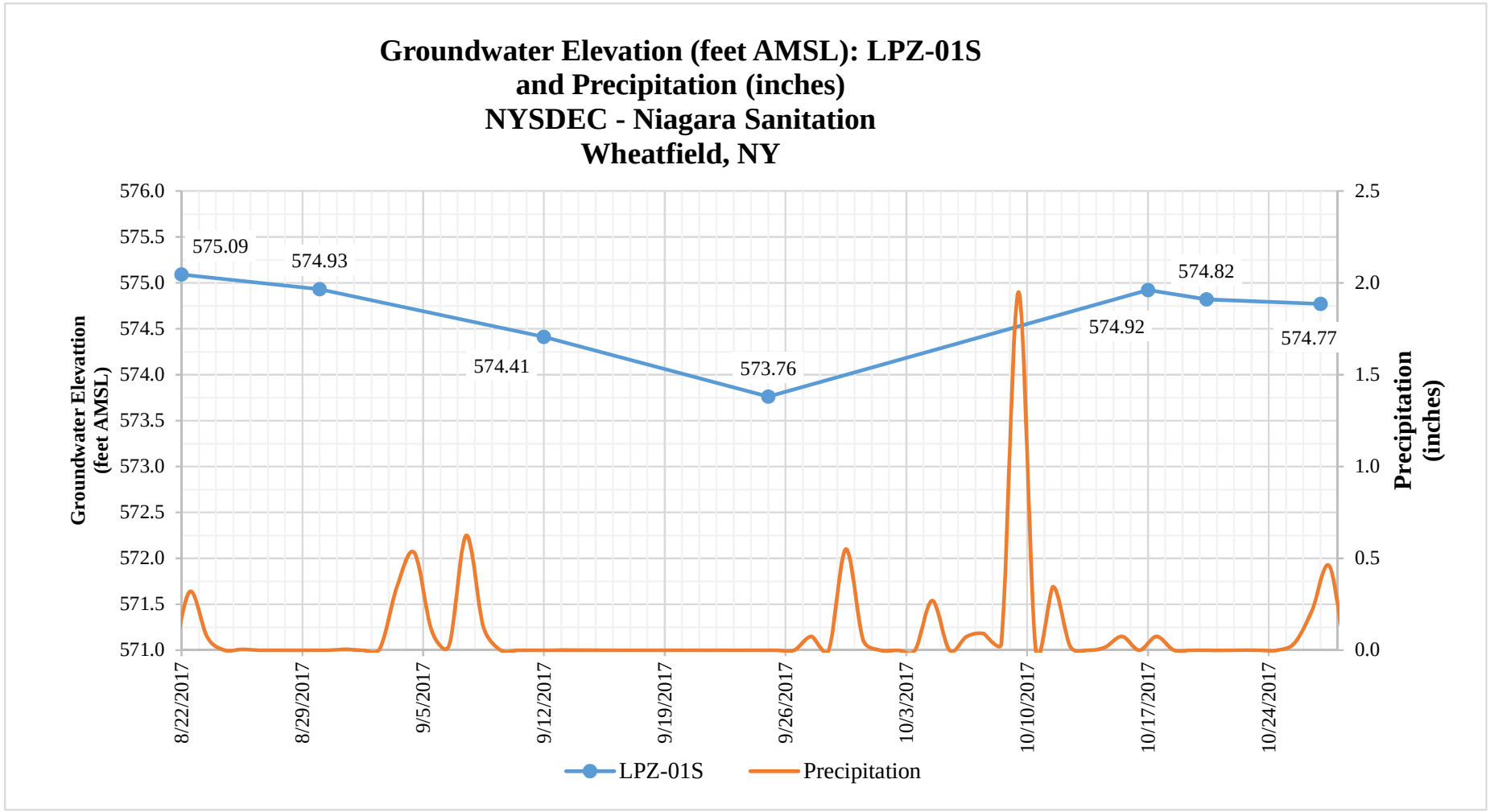

Groundwater Elevation (feet AMSL): OW-33
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
577.0
576.5
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
2.5
2.0
1.5
1.0
0.5
0.0
576.31
575.79
575.12
574.89
574.94
574.61
574.14
573.29
573.97
574.03
574.03
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-33
Precipitation

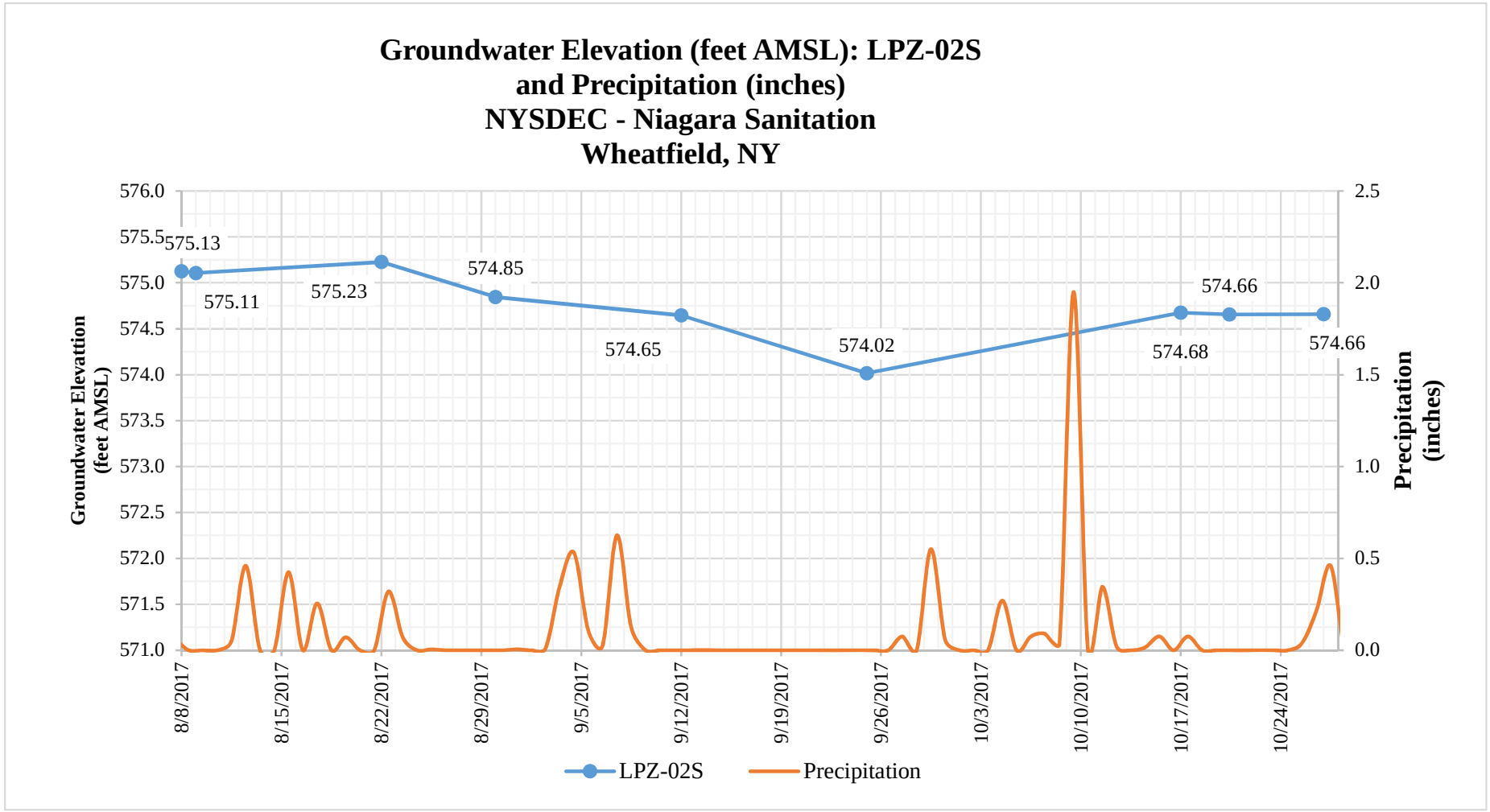

Groundwater Elevation (feet AMSL): OW-34
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
577.0
576.5
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
2.5
2.0
1.5
1.0
0.5
0.0
574.59
574.63
574.24
573.70
572.64
574.64
574.55
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-34
Precipitation

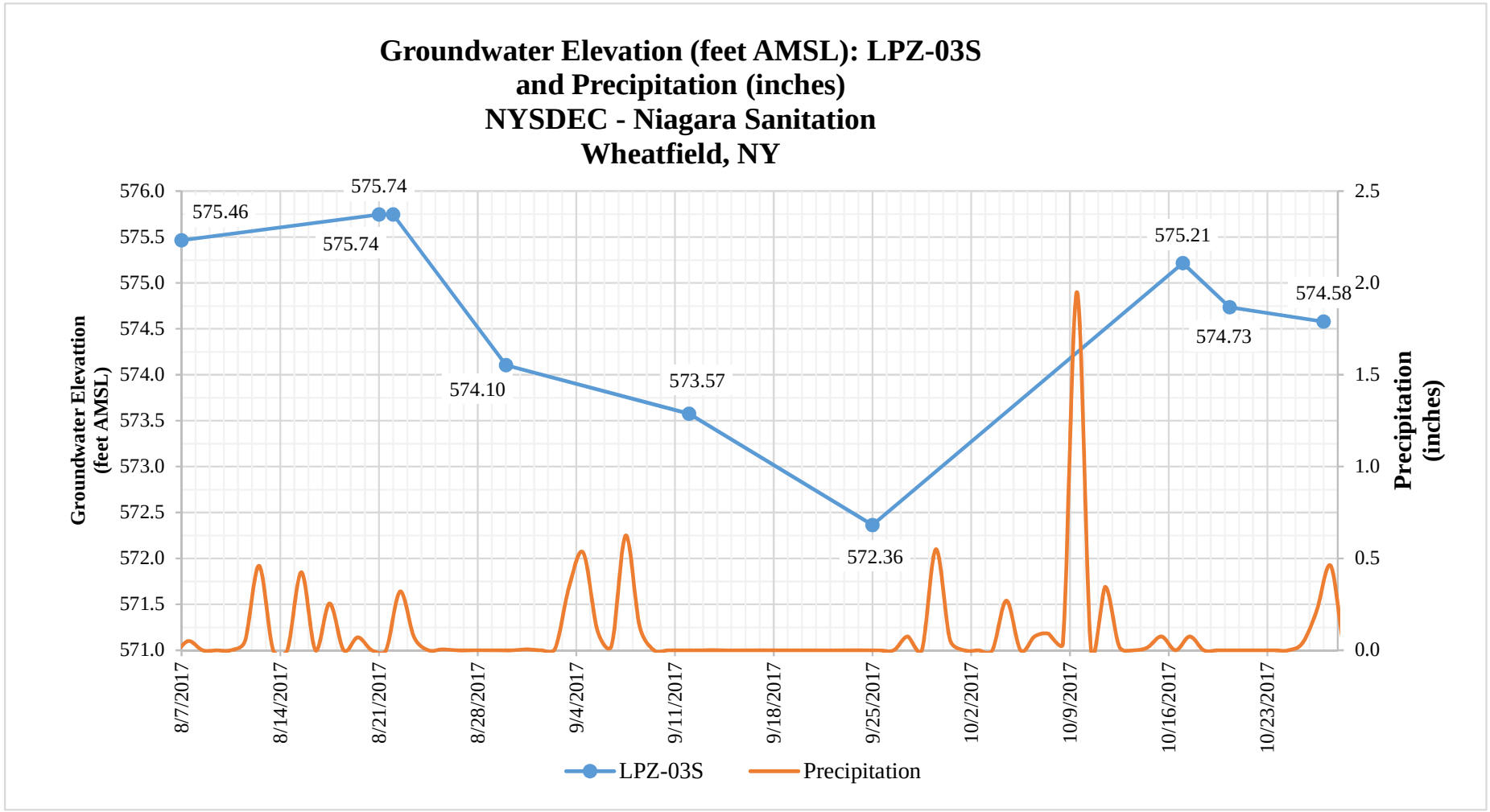

Groundwater Elevation (feet AMSL): OW-35
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.98
574.83
575.03
574.67
574.33
573.91
574.29
574.27
574.26
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-35
Precipitation

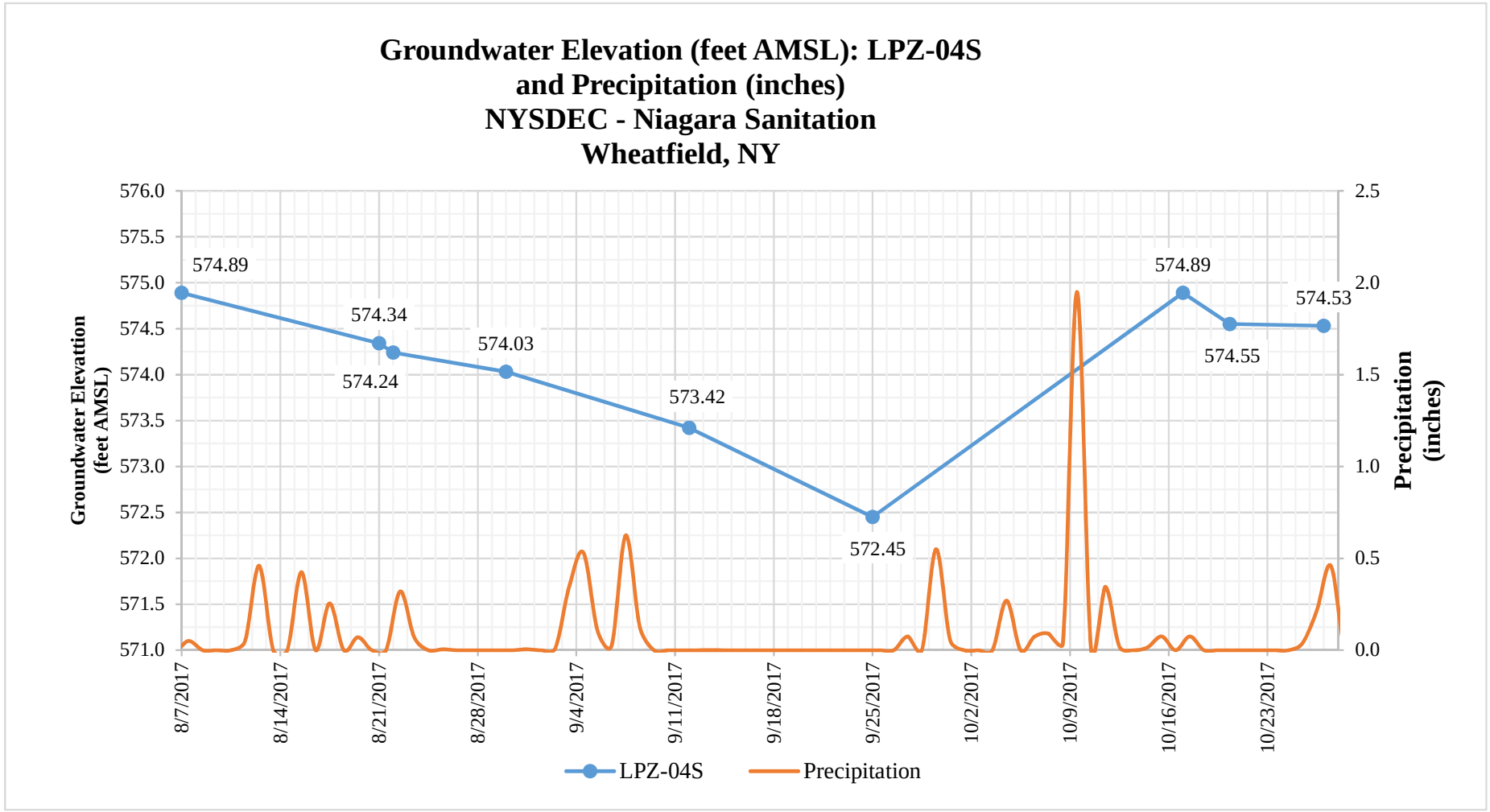

Groundwater Elevation (feet AMSL): OW-36
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.02
574.70
574.37
574.02
574.27
574.31
574.34
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
OW-36
Precipitation

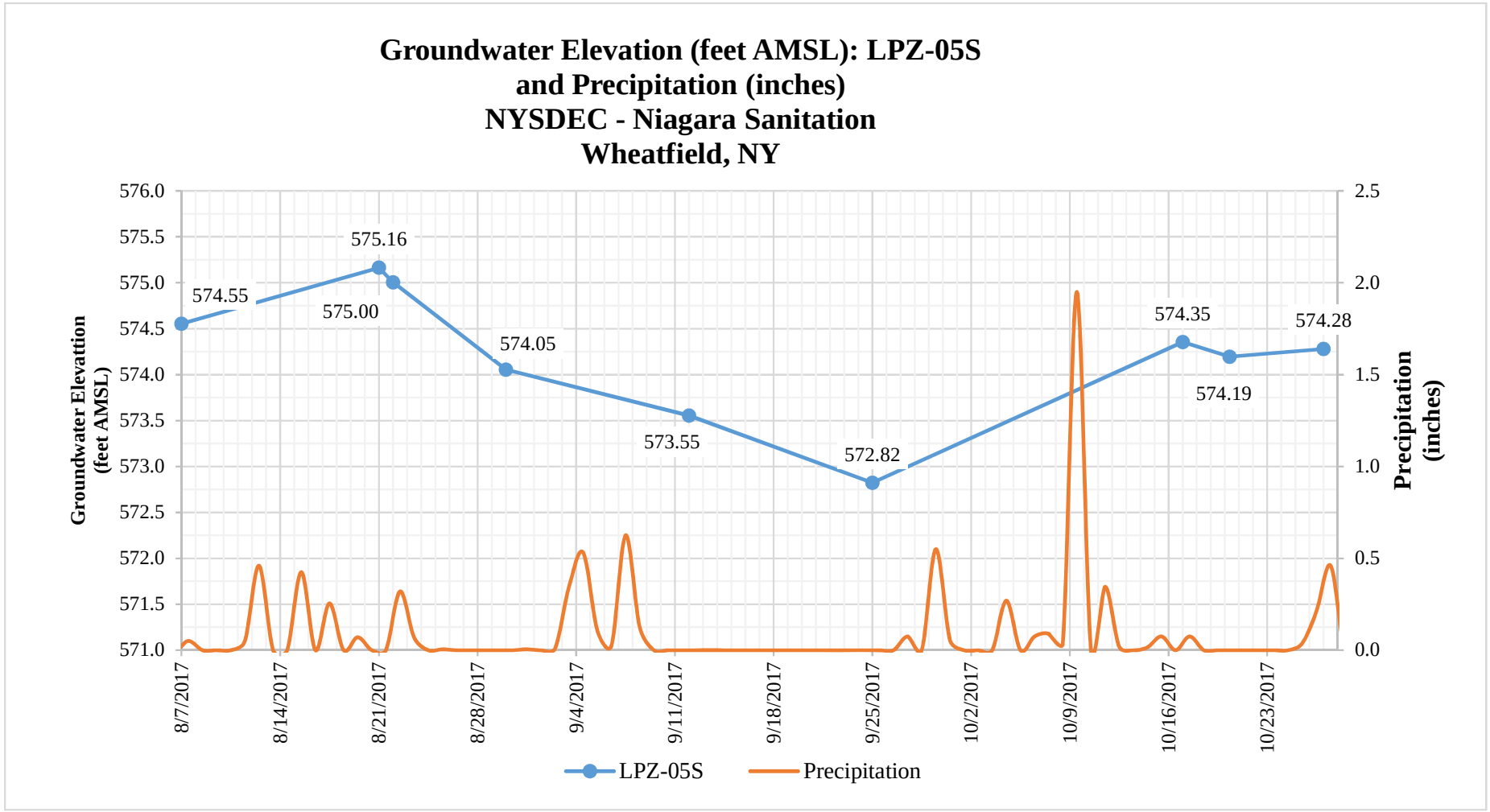

Groundwater Elevation (feet AMSL): OW-37
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.03
574.97
575.09
574.70
574.30
573.71
574.37
574.36
574.34
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-37
Precipitation

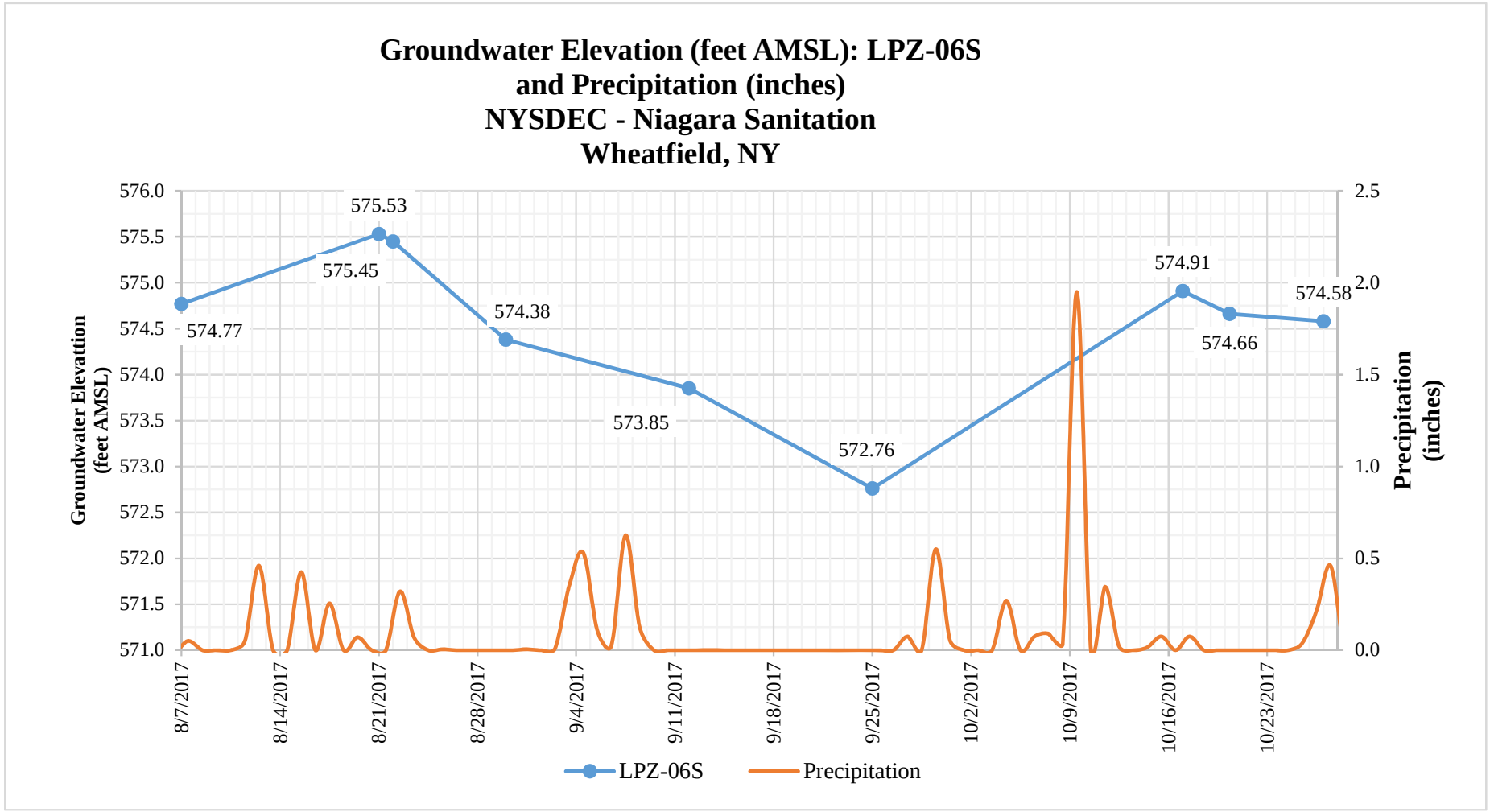

Groundwater Elevation (feet AMSL): LPZ-01S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.09
574.93
574.41
573.76
574.92
574.82
574.77
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
LPZ-01S
Precipitation

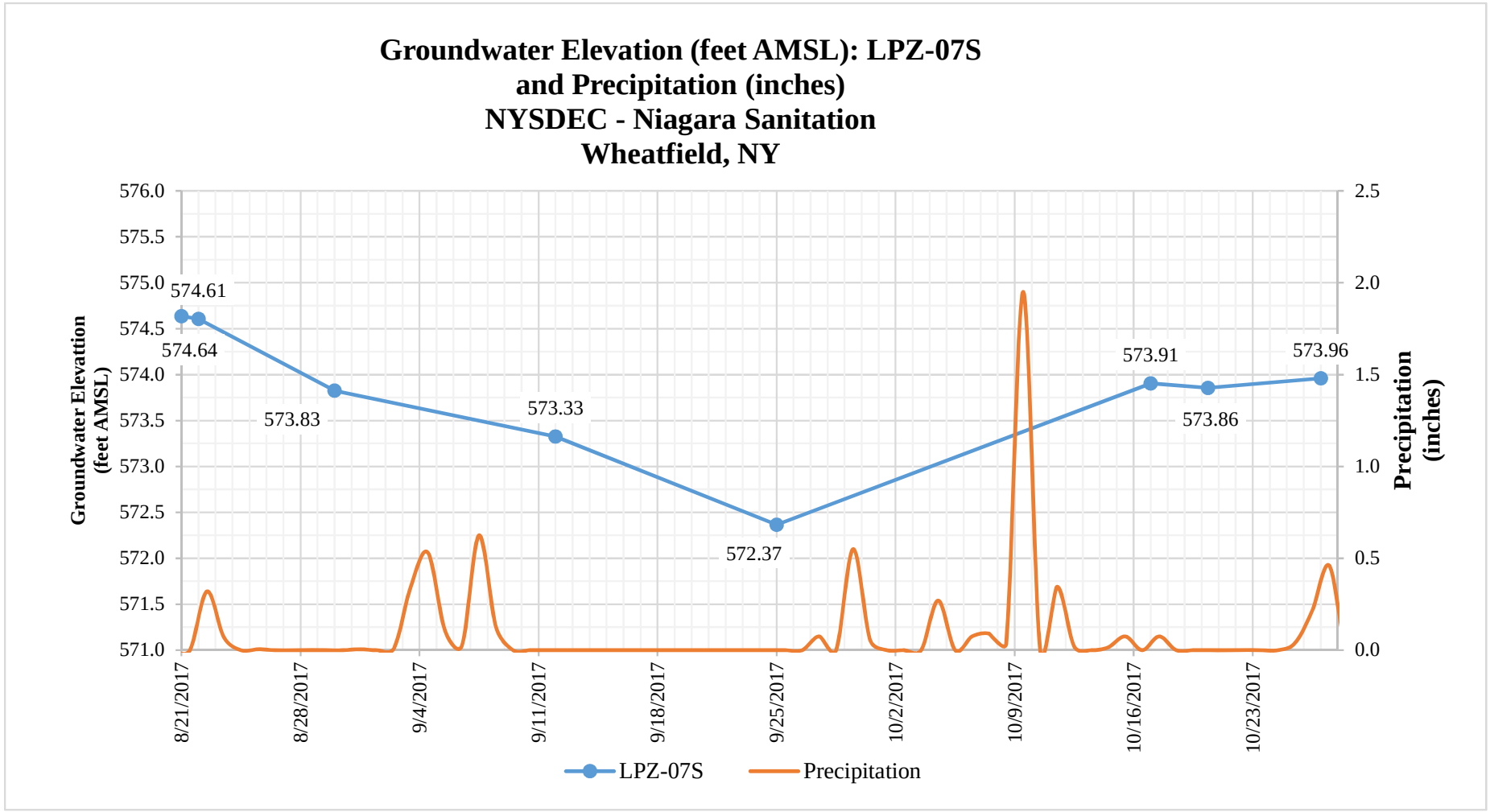

Groundwater Elevation (feet AMSL): LPZ-02S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.13
575.11
575.23
574.85
574.65
574.02
574.68
574.66
574.66
8/8/2017
8/15/2017
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
LPZ-02S
Precipitation

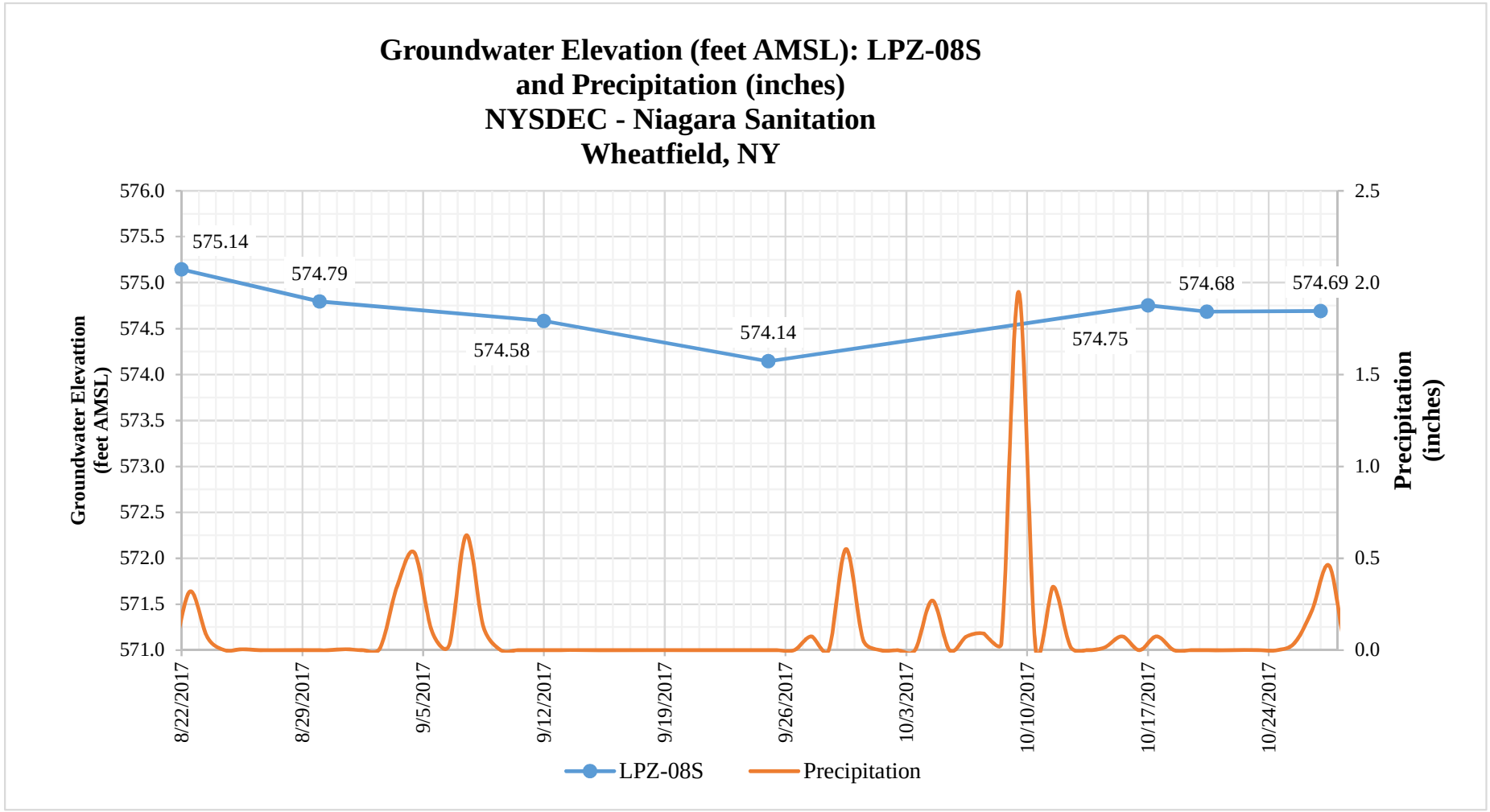

Groundwater Elevation (feet AMSL): LPZ-03S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.46
575.74
575.74
574.10
573.57
572.36
575.21
574.73
574.58
8/7/2017
8/14/2017
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-03S
Precipitation

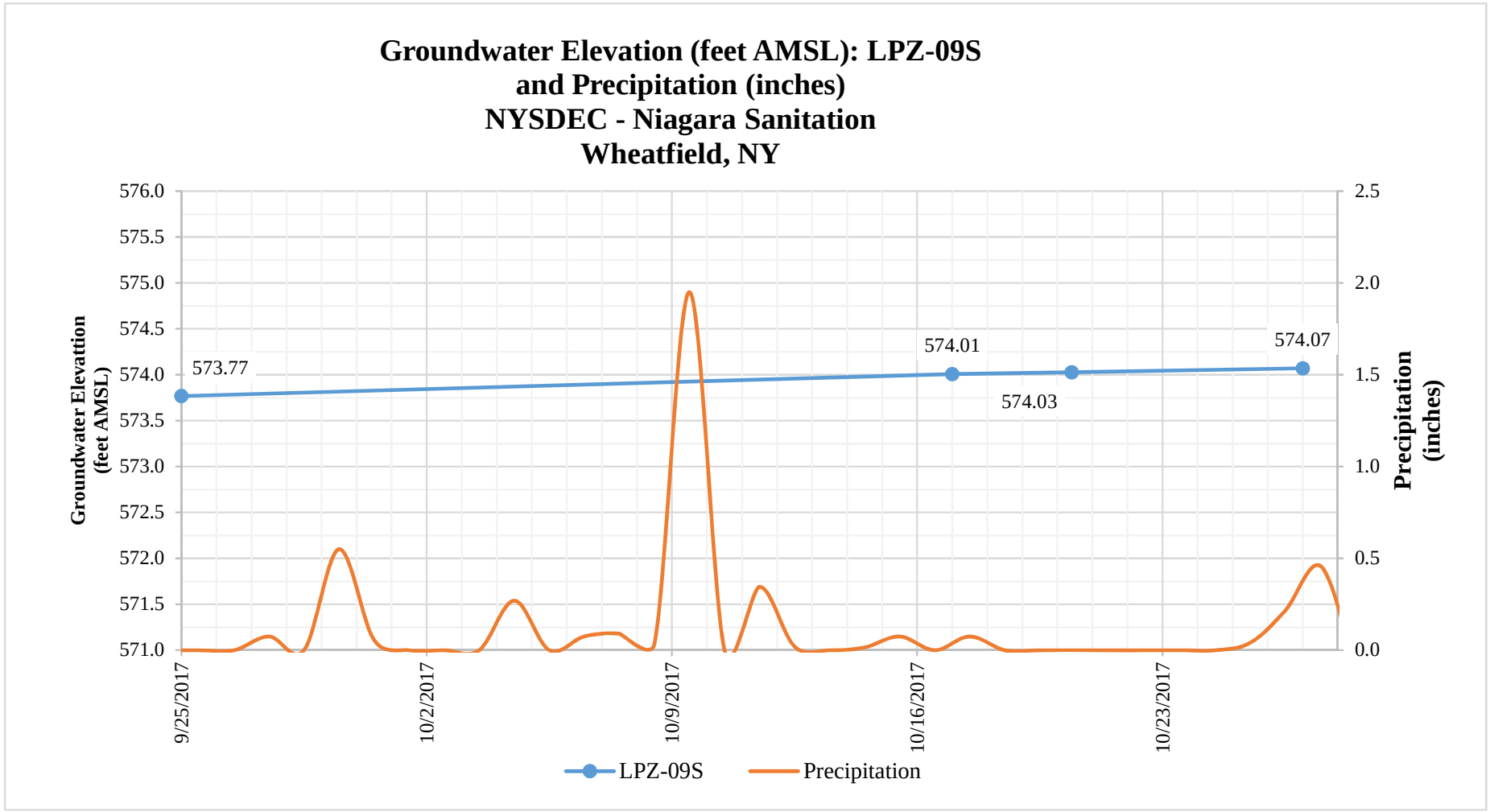

Groundwater Elevation (feet AMSL): LPZ-04S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.89
574.34
574.24
574.03
573.42
572.45
574.89
574.55
574.53
8/7/2017
8/14/2017
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-04S
Precipitation

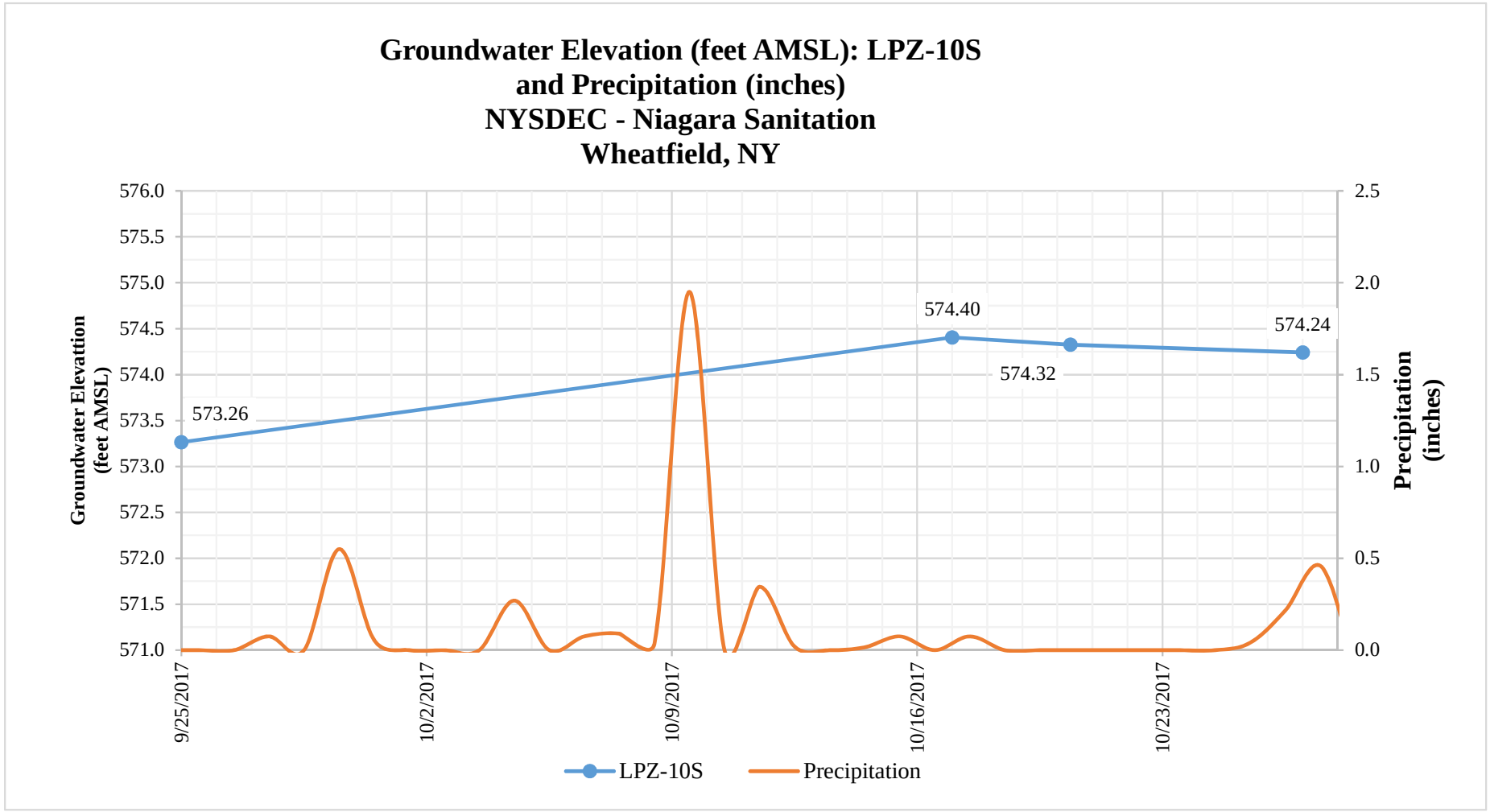

Groundwater Elevation (feet AMSL): LPZ-05S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.55
575.16
575.00
574.05
573.55
572.82
574.35
574.19
574.28
8/7/2017
8/14/2017
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-05S
Precipitation

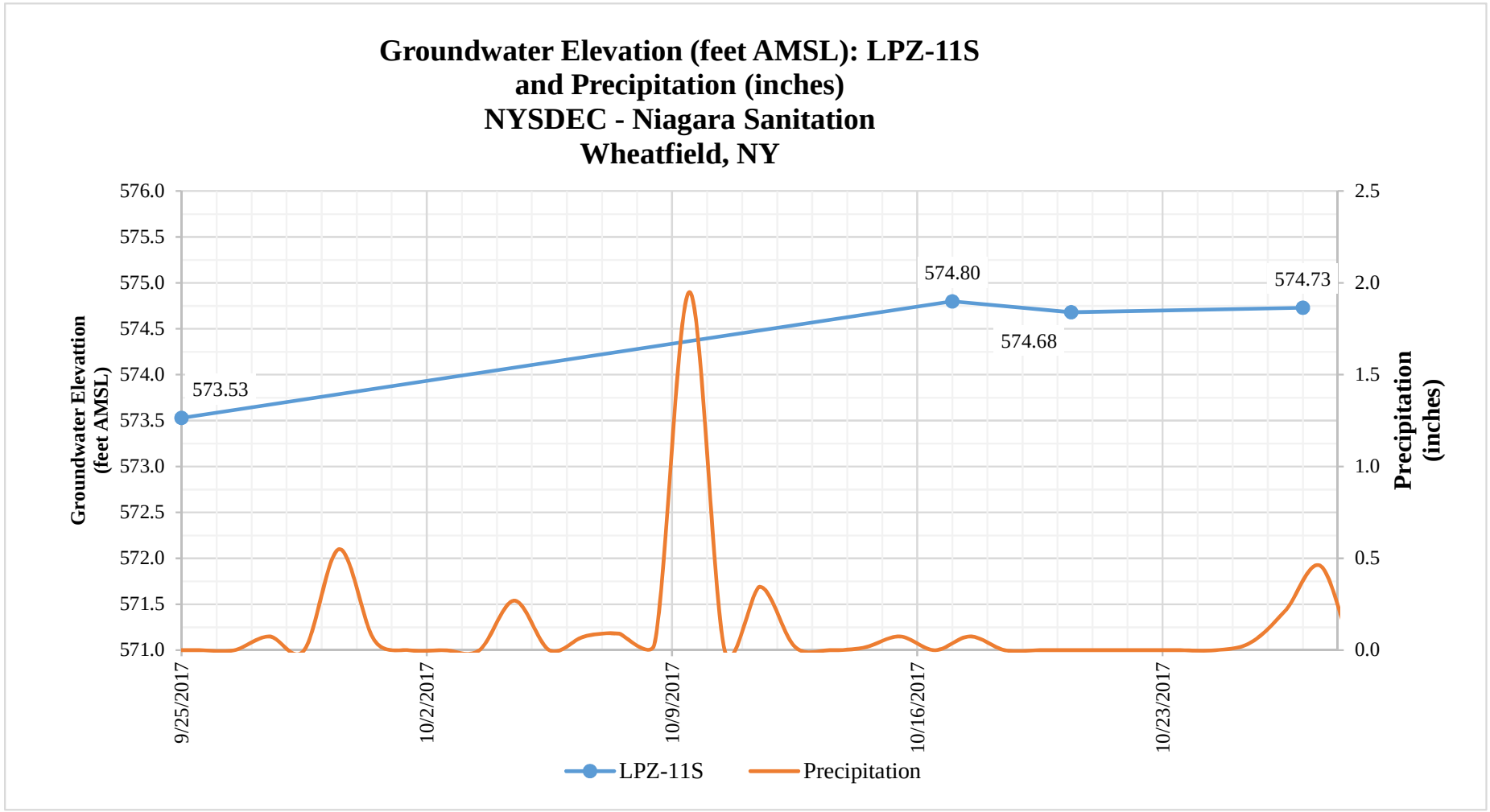

Groundwater Elevation (feet AMSL): LPZ-06S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.77
575.53
575.45
574.38
573.85
572.76
574.91
574.66
574.58
8/7/2017
8/14/2017
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-06S
Precipitation

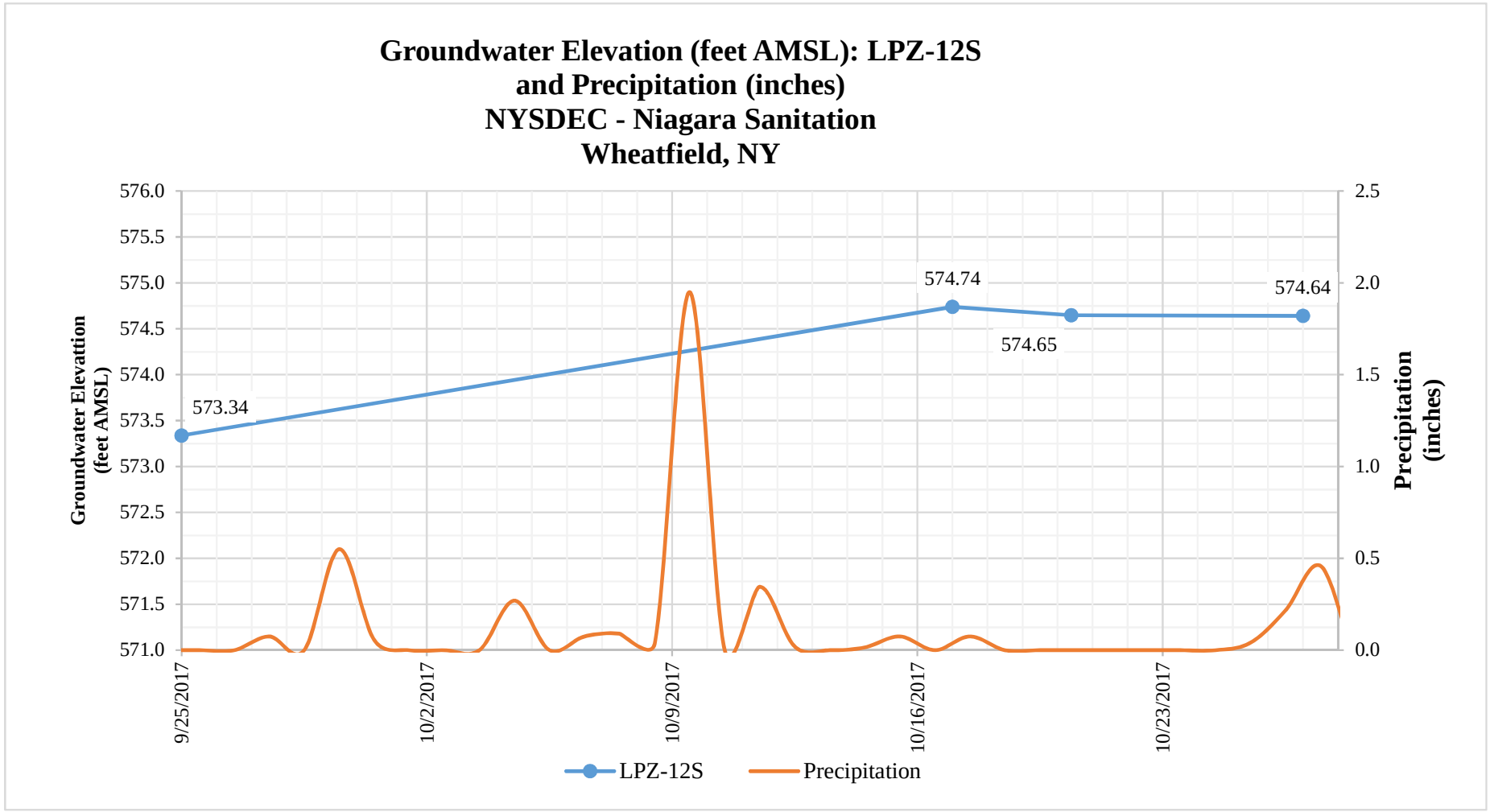

Groundwater Elevation (feet AMSL): LPZ-07S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.61
574.64
573.83
573.33
572.37
573.91
573.86
573.96
8/21/2017
8/28/2017
9/4/2017
9/11/2017
9/18/2017
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-07S
Precipitation

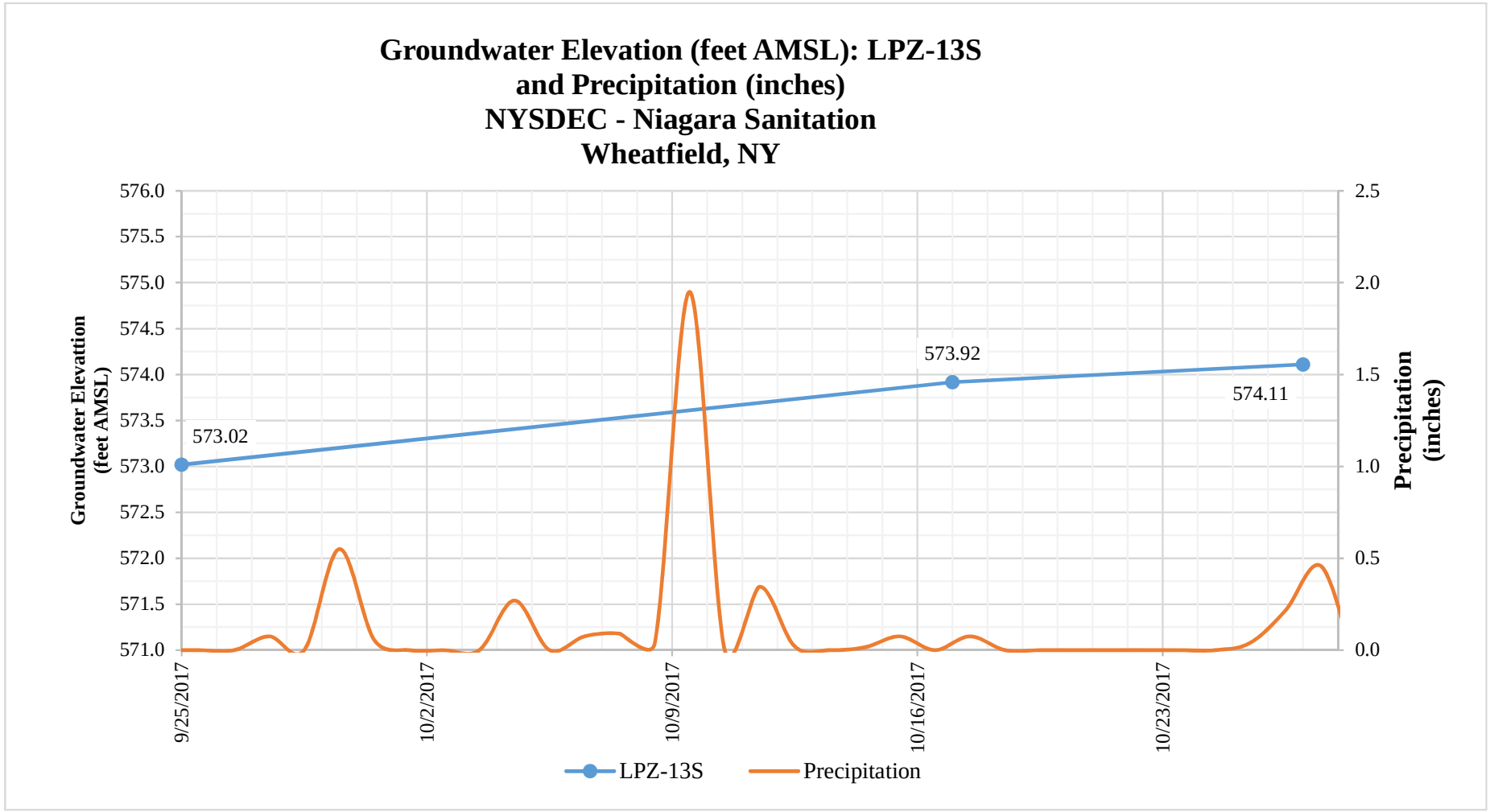

Groundwater Elevation (feet AMSL): LPZ-08S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
575.14
574.79
574.58
574.14
574.75
574.68
574.69
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
LPZ-08S
Precipitation

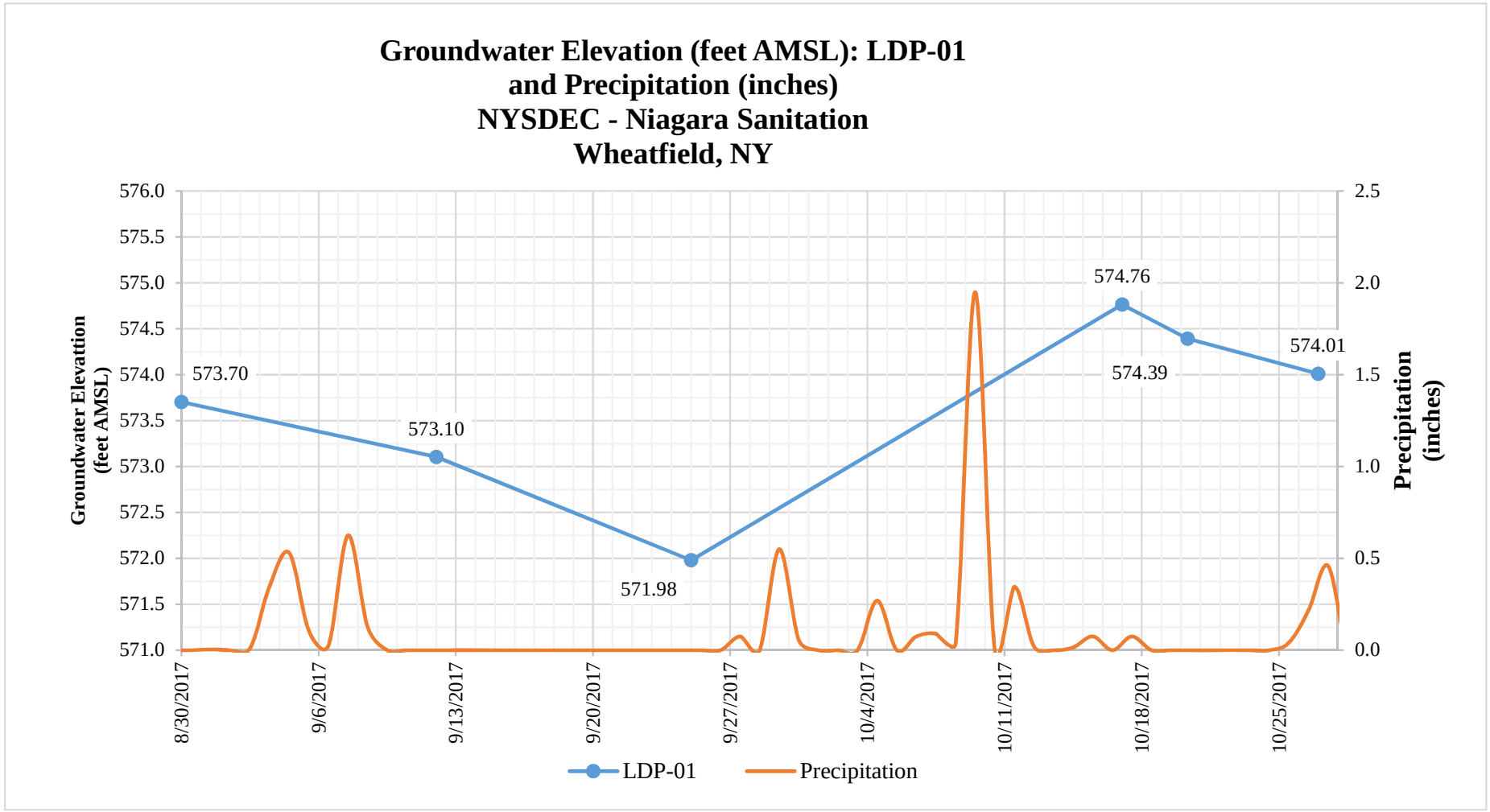

Groundwater Elevation (feet AMSL): LPZ-09S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.77
574.01
574.03
574.07
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-09S
Precipitation

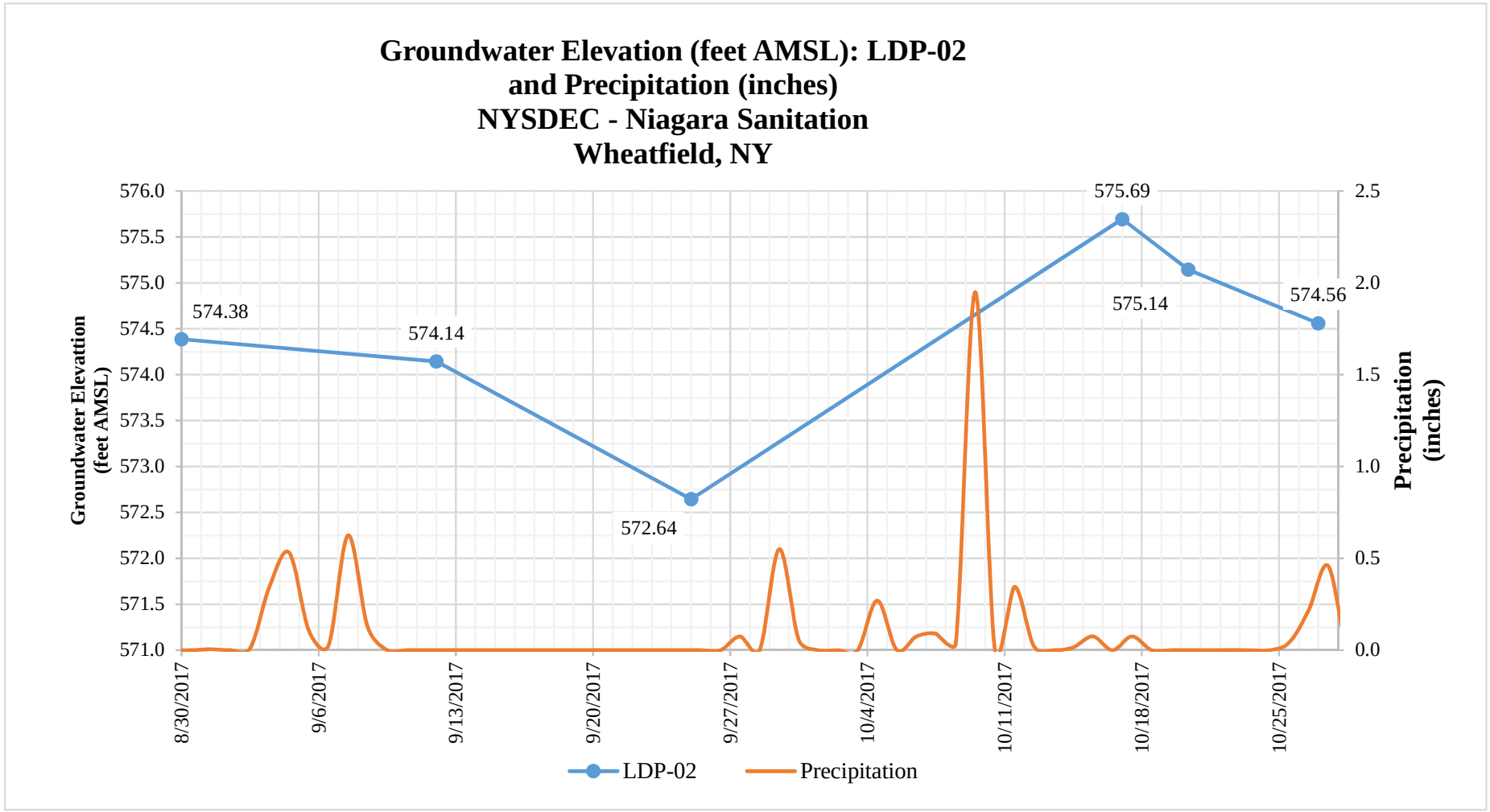

Groundwater Elevation (feet AMSL): LPZ-10S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.26
574.40
574.32
574.24
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-10S
Precipitation

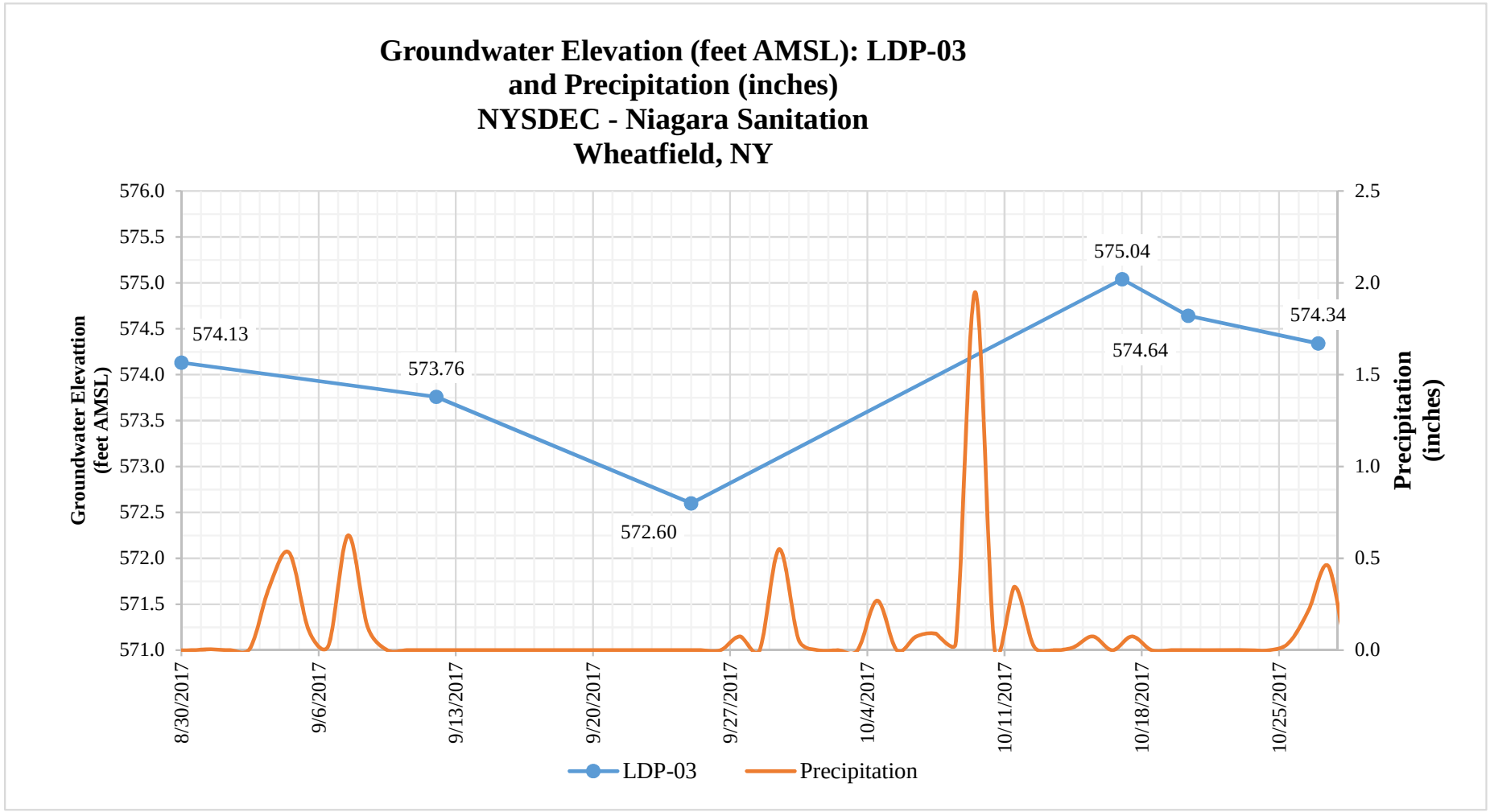

Groundwater Elevation (feet AMSL): LPZ-11S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.53
574.80
574.68
574.73
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-11S
Precipitation

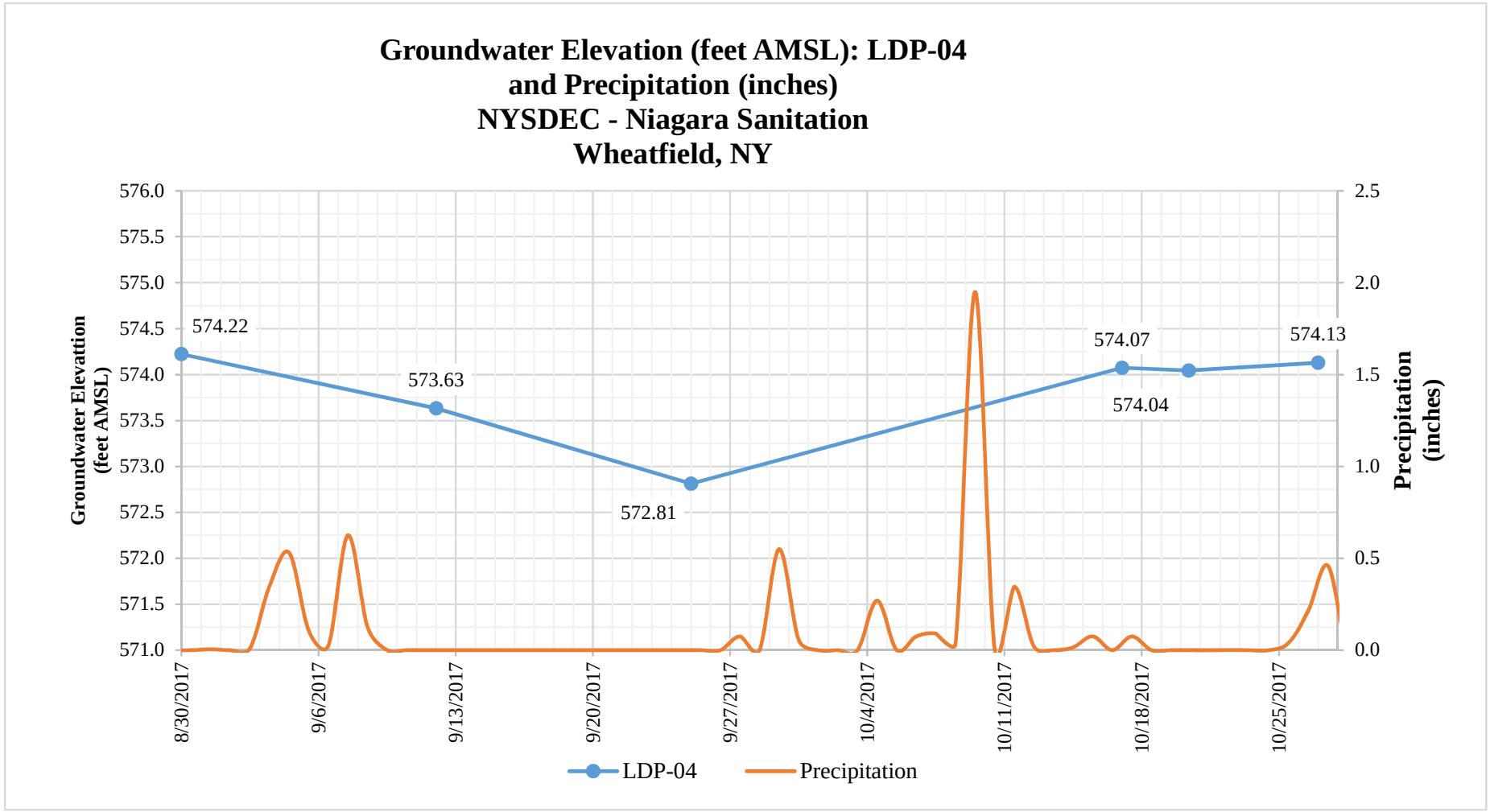

Groundwater Elevation (feet AMSL): LPZ-12S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.34
574.74
574.65
574.64
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-12S
Precipitation


Groundwater Elevation (feet AMSL): LPZ-13S
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.02
573.92
574.11
9/25/2017
10/2/2017
10/9/2017
10/16/2017
10/23/2017
LPZ-13S
Precipitation

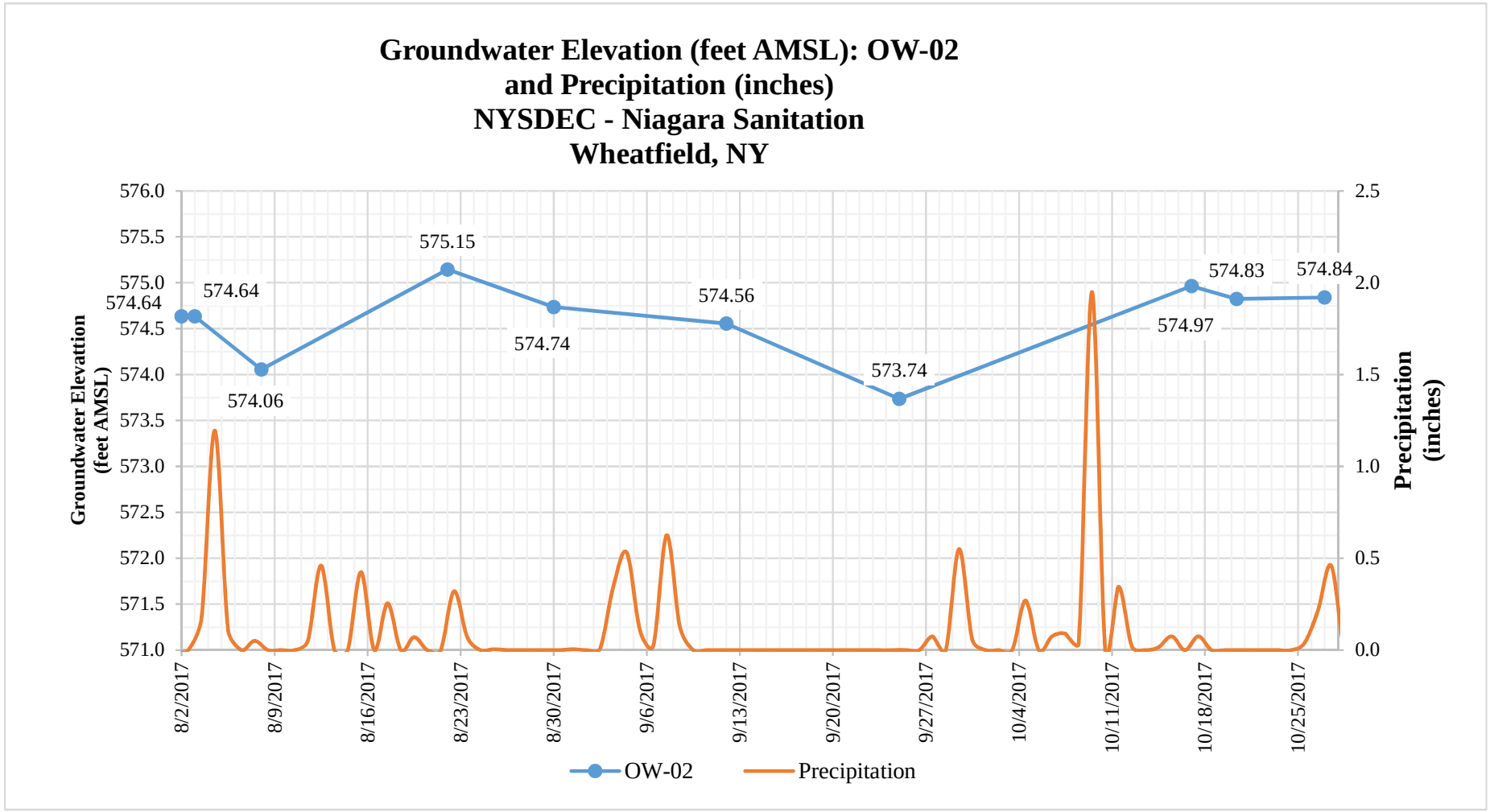

Groundwater Elevation (feet AMSL): LDP-01
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
573.70
573.10
571.98
574.39
574.76
574.01
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
LDP-01
Precipitation


Groundwater Elevation (feet AMSL): LDP-02
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.38
574.14
572.64
575.14
575.69
574.56
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
LDP-02
Precipitation

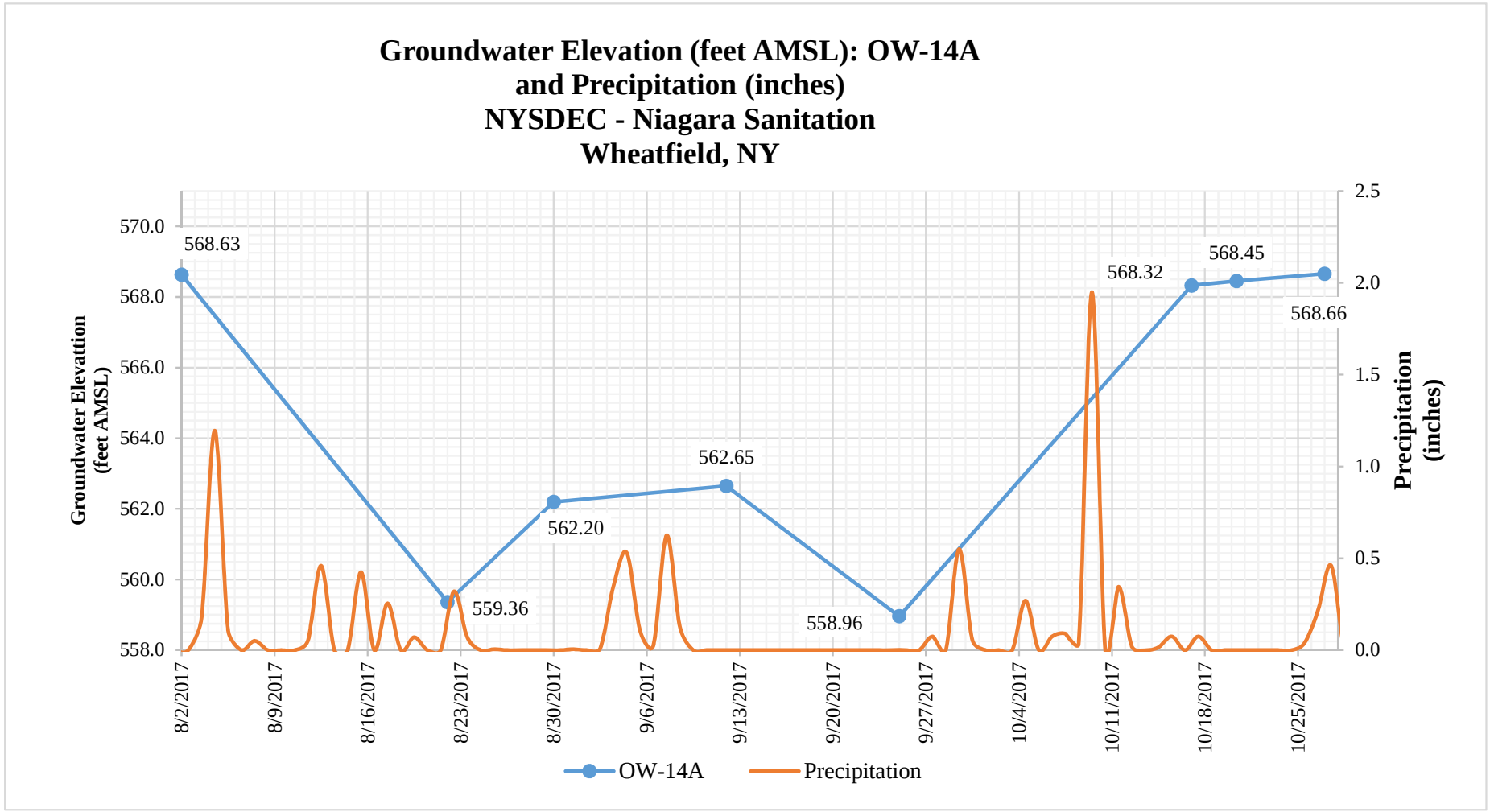

Groundwater Elevation (feet AMSL): LDP-03
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.13
573.76
572.60
574.64
575.04
574.34
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
LDP-03
Precipitation

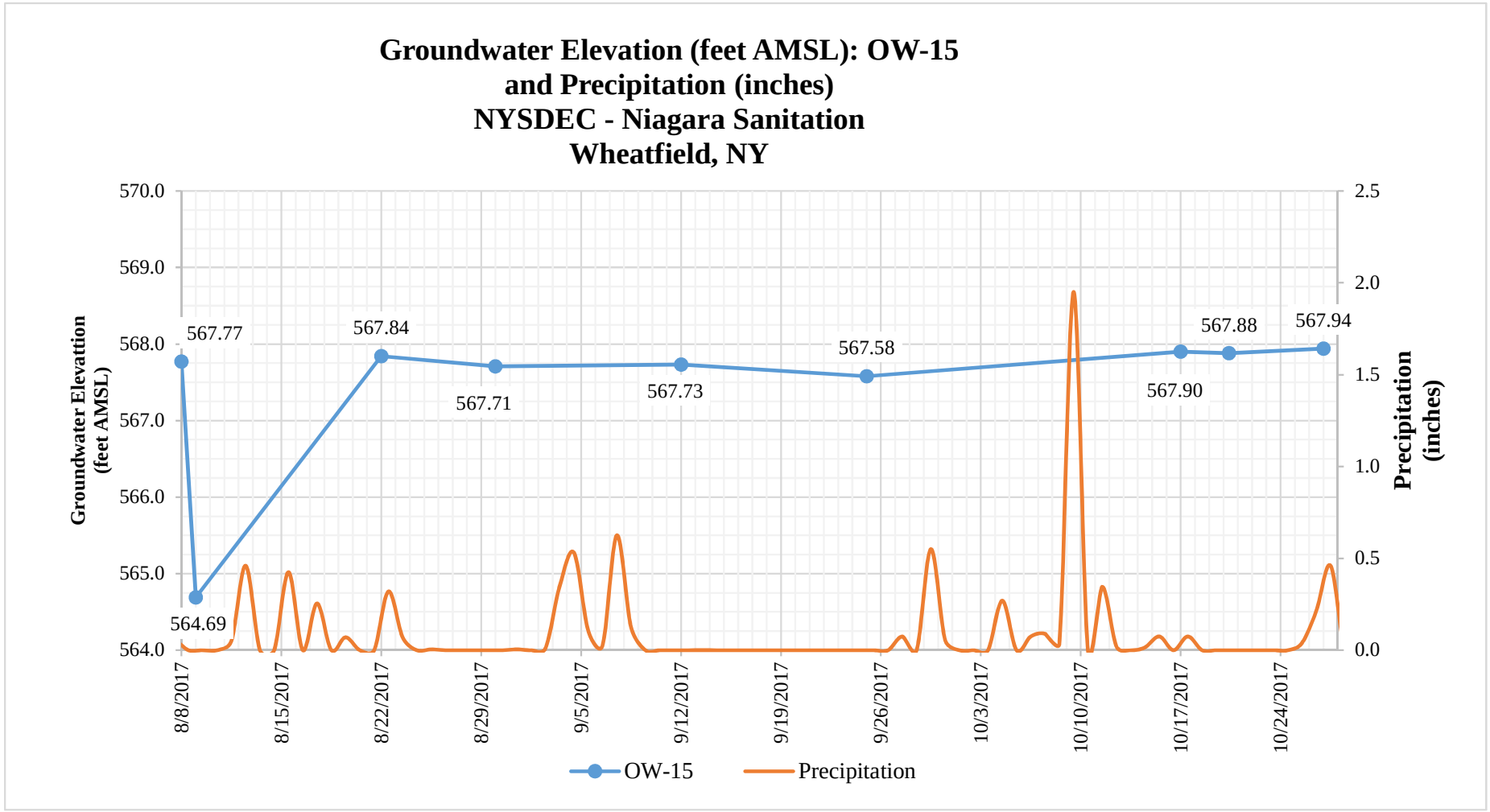

Groundwater Elevation (feet AMSL): LDP-04
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.22
573.63
572.81
574.04
574.07
574.13
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
LDP-04
Precipitation

Upper Clay Aquitard Wells

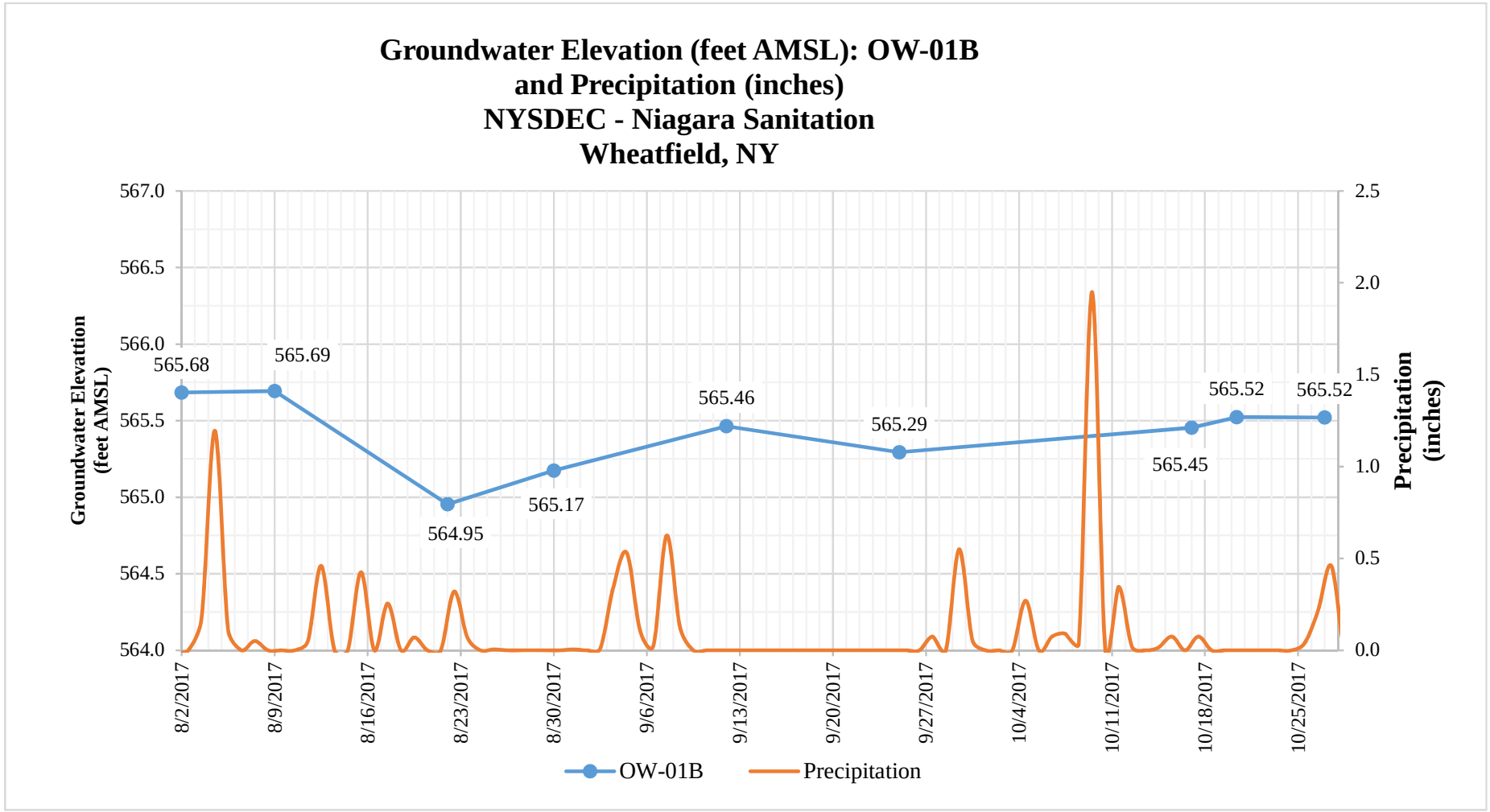

Groundwater Elevation (feet AMSL): OW-02
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
576.0
575.5
575.0
574.5
574.0
573.5
573.0
572.5
572.0
571.5
571.0
2.5
2.0
1.5
1.0
0.5
0.0
574.64
574.64
574.06
575.15
574.74
574.56
573.74
574.97
574.83
574.84
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-02
Precipitation

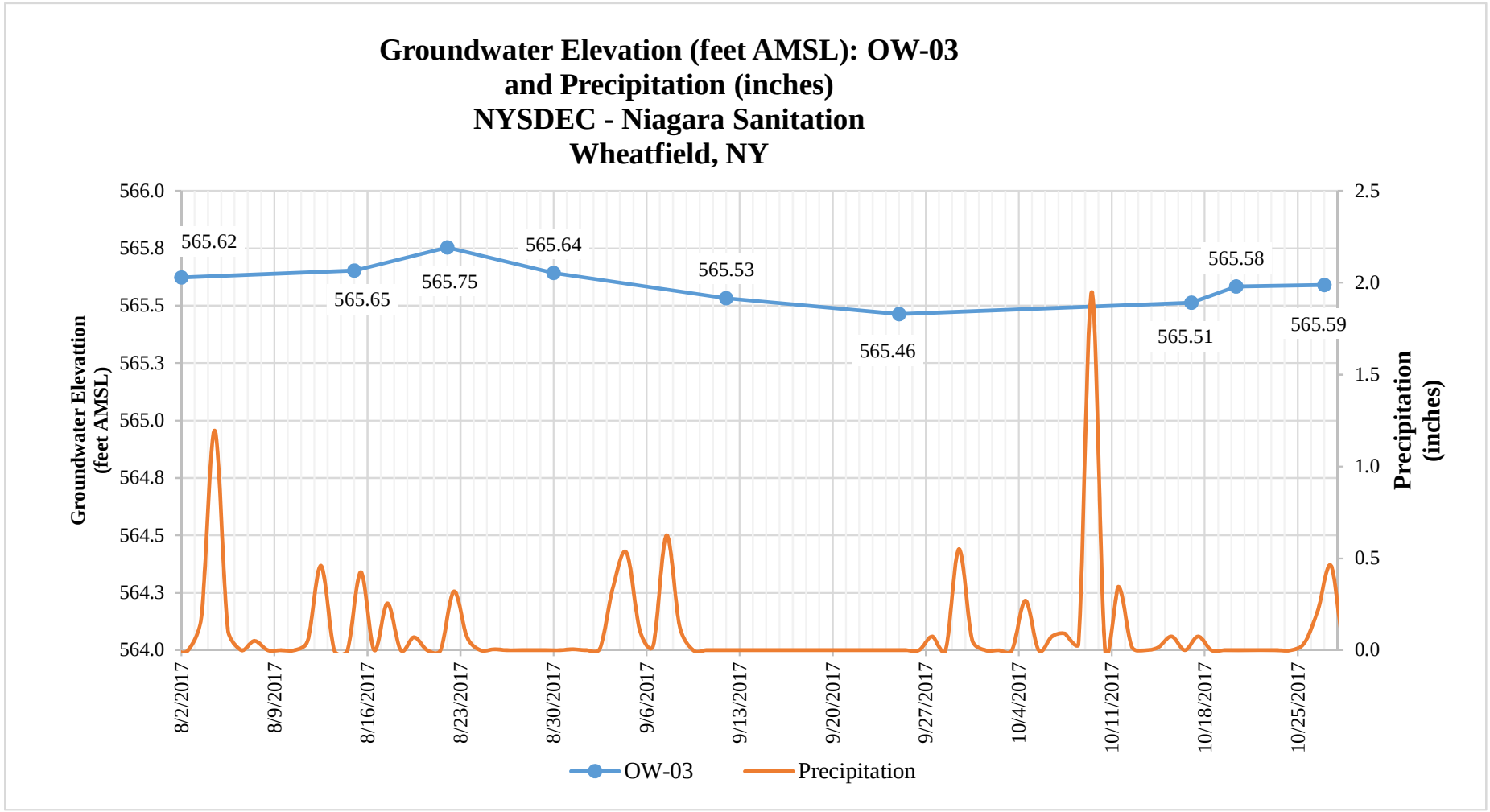
Lower Sand Wells

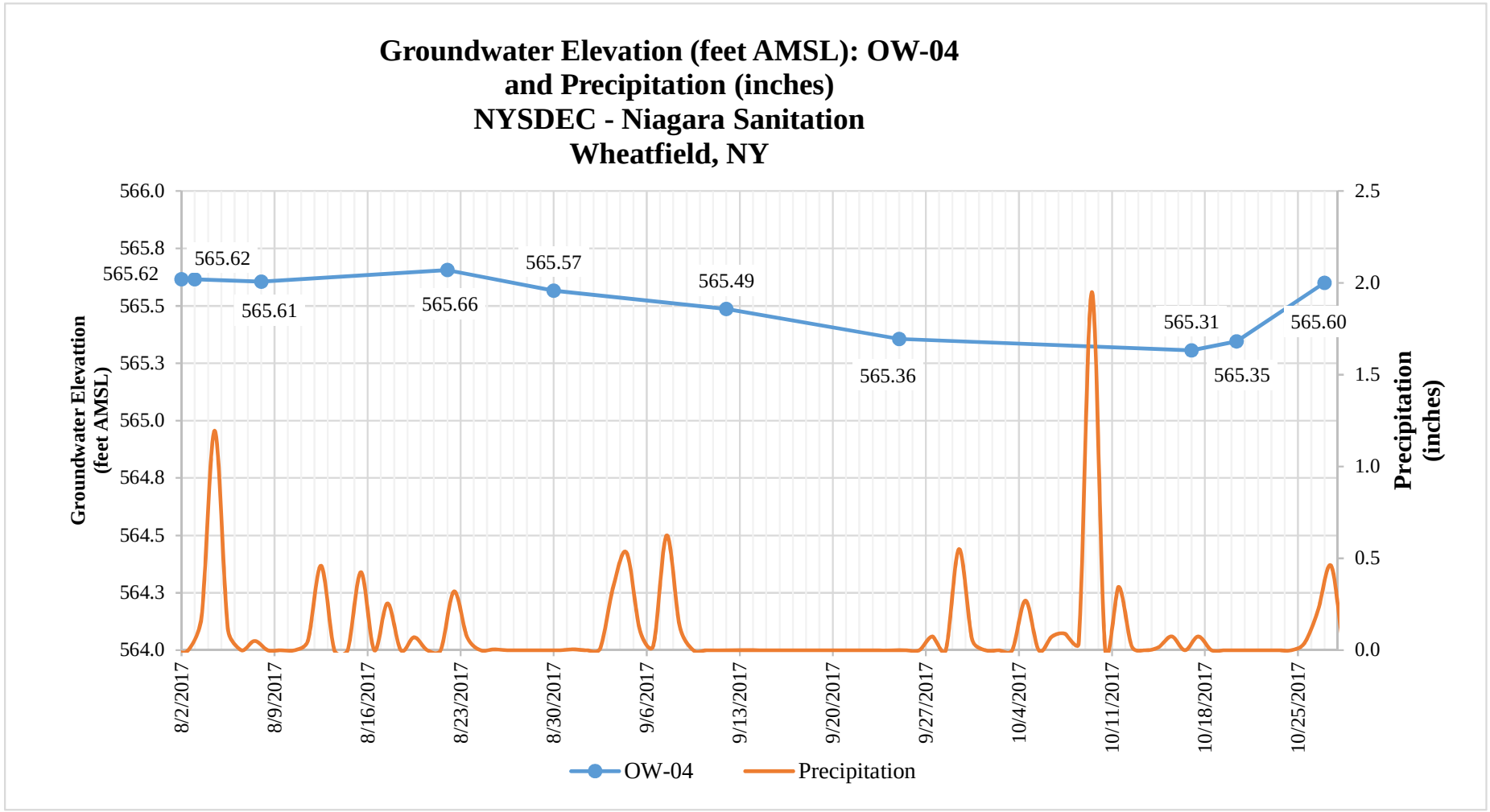

Groundwater Elevation (feet AMSL): OW-14A
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
570.0
568.0
566.0
564.0
562.0
560.0
558.0
2.5
2.0
1.5
1.0
0.5
0.0
568.63
559.36
562.20
562.65
558.96
568.32
568.45
568.66
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-14A
Precipitation


Groundwater Elevation (feet AMSL): OW-15
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
570.0
569.0
568.0
567.0
566.0
565.0
564.0
2.5
2.0
1.5
1.0
0.5
0.0
567.77
564.69
567.84
567.71
567.73
567.58
567.90
567.88
567.94
8/8/2017
8/15/2017
8/22/2017
8/29/2017
9/5/2017
9/12/2017
9/19/2017
9/26/2017
10/3/2017
10/10/2017
10/17/2017
10/24/2017
OW-15
Precipitation

Glacial Till Wells


Groundwater Elevation (feet AMSL): OW-01B
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
567.0
566.5
566.0
565.5
565.0
564.5
564.0
2.5
2.0
1.5
1.0
0.5
0.0
565.68
565.69
564.95
565.17
565.46
565.29
565.45
565.52
565.52
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-01B
Precipitation


Groundwater Elevation (feet AMSL): OW-03
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
566.0
565.8
565.5
565.3
565.0
564.8
564.5
564.3
564.0
2.5
2.0
1.5
1.0
0.5
0.0
565.62
565.65
565.75
565.64
565.53
565.46
565.51
565.58
565.59
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-03
Precipitation


Groundwater Elevation (feet AMSL): OW-04
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
566.0
565.8
565.5
565.3
565.0
564.8
564.5
564.3
564.0
2.5
2.0
1.5
1.0
0.5
0.0
565.62
565.62
565.61
565.66
565.57
565.49
565.36
565.31
565.35
565.60
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
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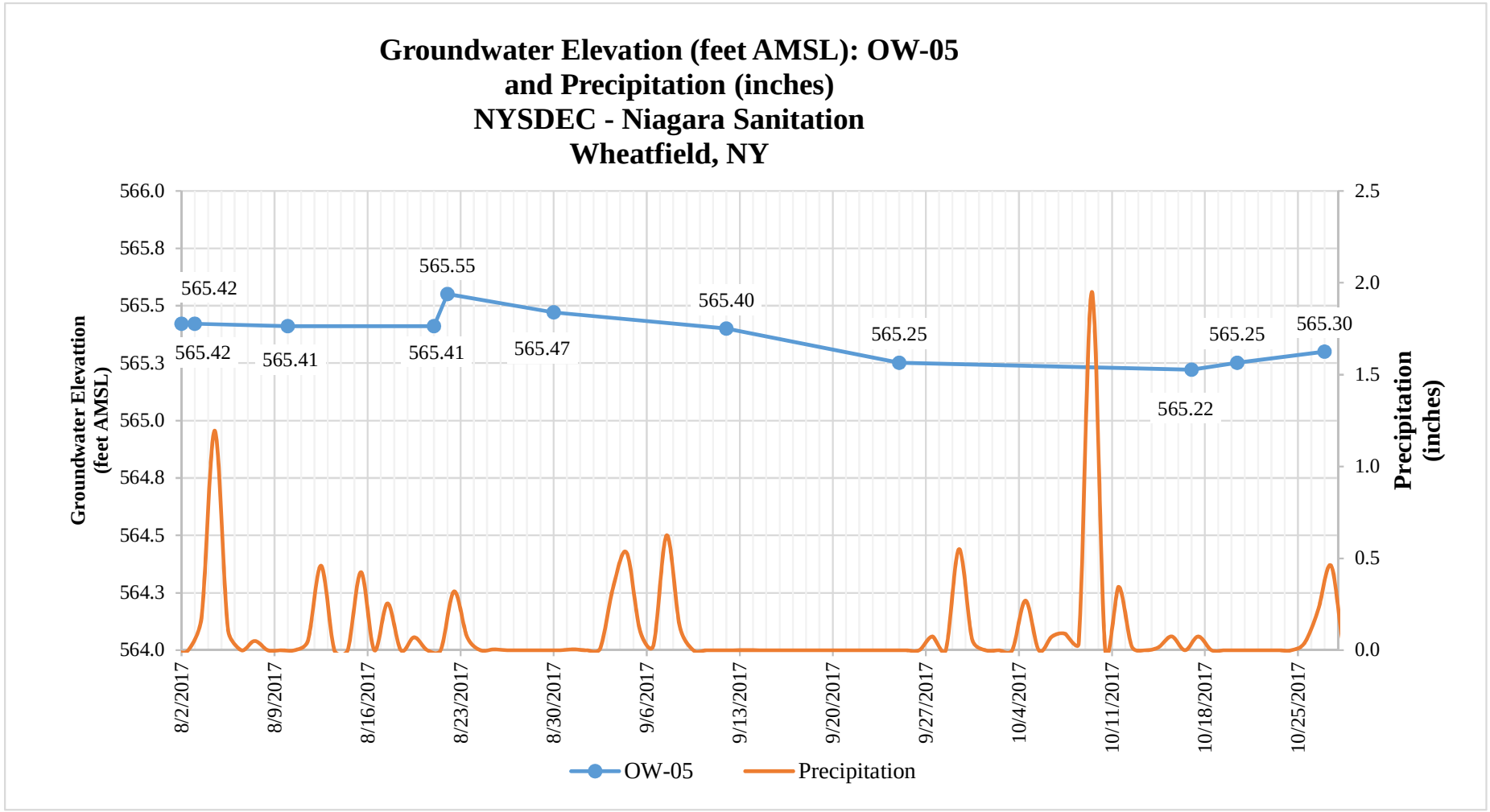
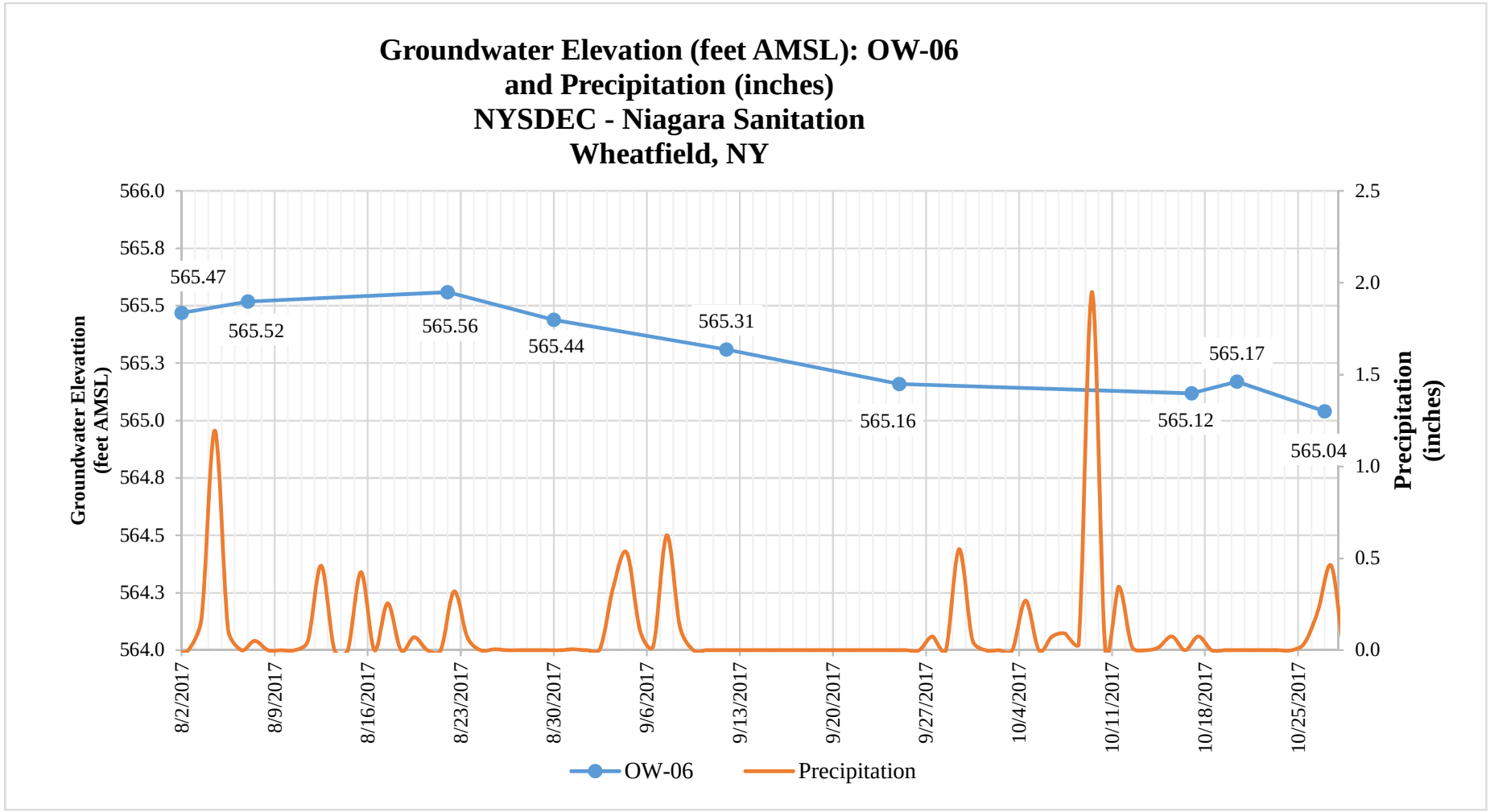
10/18/2017
10/25/2017
OW-04
Precipitation


Groundwater Elevation (feet AMSL): OW-05
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
566.0
565.8
565.5
565.3
565.0
564.8
564.5
564.3
564.0
2.5
2.0
1.5
1.0
0.5
0.0
565.42
565.42
565.41
565.41
565.55
565.47
565.40
565.25
565.22
565.25
565.30
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-05
Precipitation


Groundwater Elevation (feet AMSL): OW-06
and Precipitation (inches)
NYSDEC - Niagara Sanitation
Wheatfield, NY
Groundwater Elevation (feet AMSL)
Precipitation (inches)
566.0
565.8
565.5
565.3
565.0
564.8
564.5
564.3
564.0
2.5
2.0
1.5
1.0
0.5
0.0
565.47
565.52
565.56
565.44
565.31
565.16
565.12
565.17
565.04
8/2/2017
8/9/2017
8/16/2017
8/23/2017
8/30/2017
9/6/2017
9/13/2017
9/20/2017
9/27/2017
10/4/2017
10/11/2017
10/18/2017
10/25/2017
OW-06
Precipitation

APPENDIX F
GRAIN SIZE ANALYSIS
TEST DATA

Reworked Soil

R&R
INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-11	2-4	14.8	4.5	3.4	5.9	7.0	60.2	4.2	ML

R&R INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-16	2-4	0.1	2.3	18.6	31.8	14.2	26.2	6.8	SM
	6-8	26.9	5.1	4.3	8.6	8.6	25.3	21.2	GM

Brown Silt & Clay Deposit

FILE

BY DATE

CHECKED BY DATE

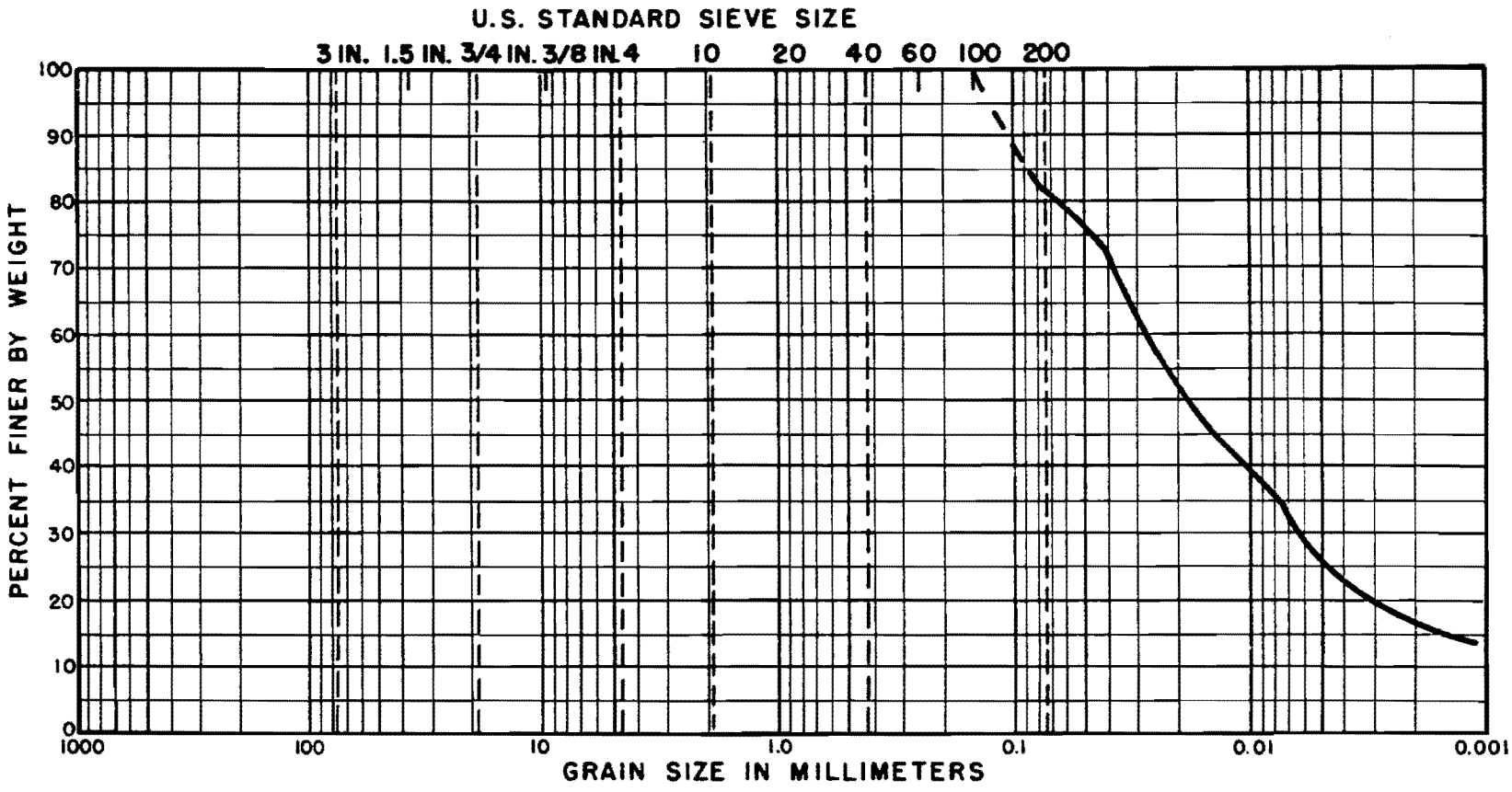
REVISIONS

BY DATE

BY DATE

PLATE OF

757.2 (REV. 4-62)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW-1	2.0' - 4.0'	ML	YELLOW SILT	15.2%				NASH ROAD SITE

Note: Black sand sized particles and froth on top of solution in hydrometer; soapy odor

Color: Yellow

GRADATION CURVE

DAMES & MOORE

FIGURE B.7

Upper Sand Deposit

FILE 13505 OW3-19

BY D. Thomas DATE 5/14/84

CHECKED BY _____ DATE _____

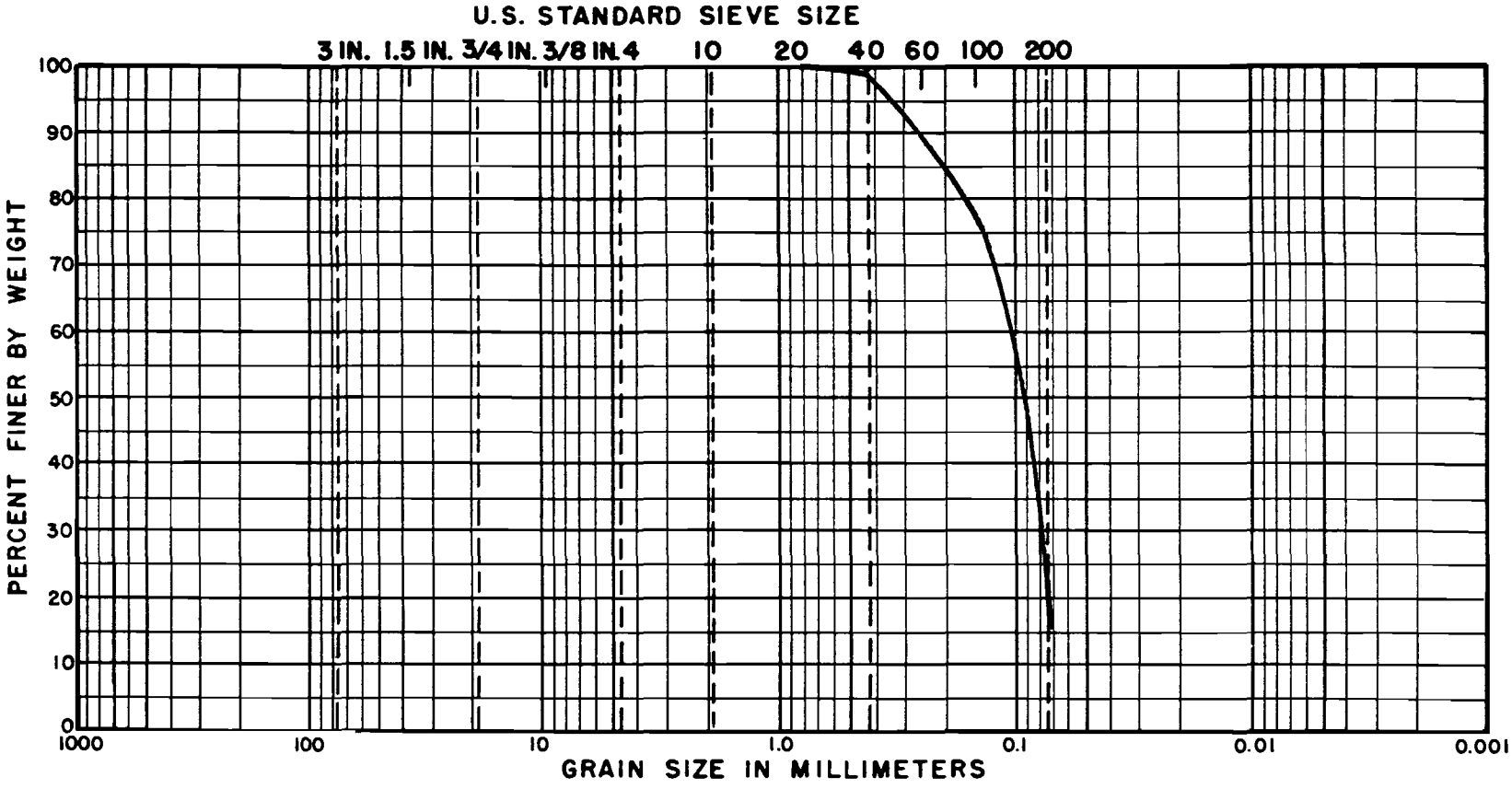
REVISIONS

BY _____ DATE _____

BY _____ DATE _____

PLATE _____ OF _____

757.2 (REV. 4-62)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW-5	5.0 - 7.0'	SW	UPPER SAND UNIT					NASH ROAD SITE

DAMES & MOORE

GRADATION CURVE

FIGURE B.12

R&R
INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-13	2-4	0.3	0.2	0.2	54.9	32.3	12.1		SM

R&R INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-14B	4-6	0.0	0.0	0.9	46.0	27.5	23.2	2.4	SM

Gray-Brown Silty Clay Deposit

FILE

BY DATE

CHECKED BY DATE

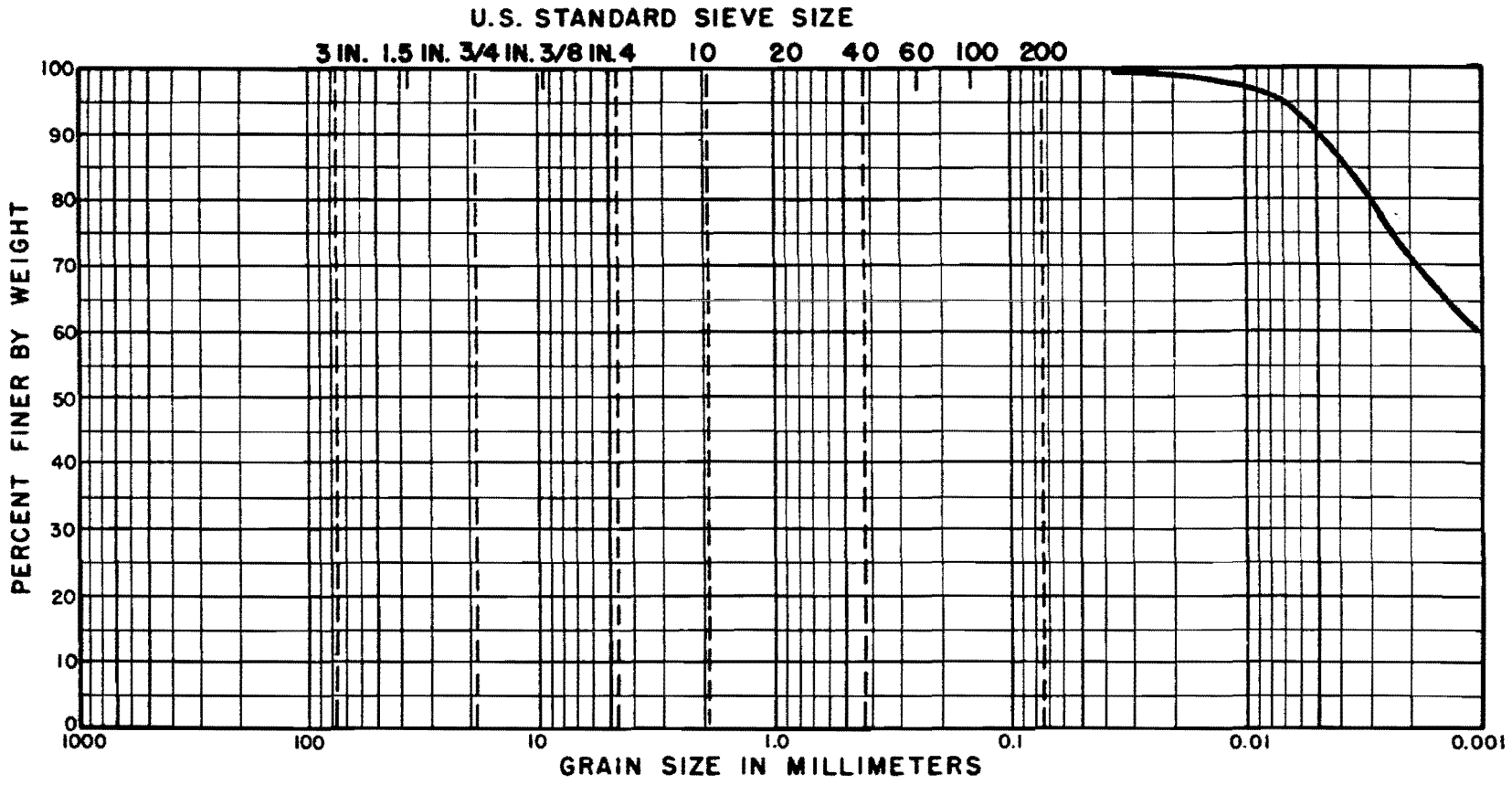
REVISIONS

BY DATE

BY DATE

PLATE OF

757.2 (REV. 4-62)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW-4	12.0' - 13.0'	CL	GRAY BROWN LACUSTRINE CLAY	33.2%				NASH ROAD SITE

COLOR: GRAY - BROWN

GRADATION CURVE

DAMES & MOORE

FIGURE B.9

R&R
INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

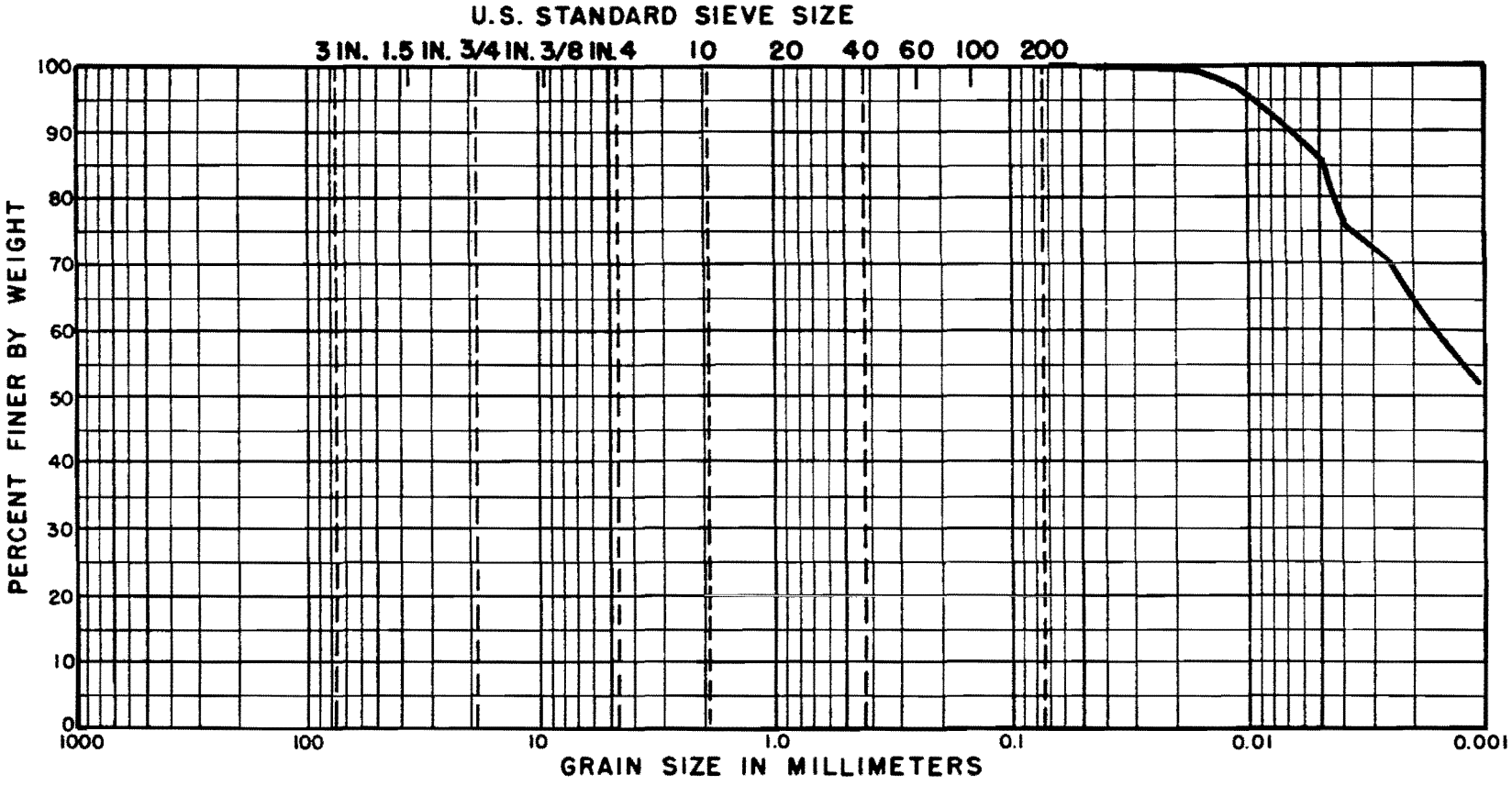
BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-12	5-7	0.3	0.5	0.5	3.2	2.5	69.8	23.2	ML
OW-13	4-6	0.1	0.3	0.3	1.0	3.2	95.1		ML

Red-Gray Layered Clay Deposit

FILE
BY DATE
CHECKED BY DATE

REVISIONS
BY DATE
BY DATE
PLATE OF

757.2 (REV. 4-82)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW-4	30.0' - 32.0'	CLT	BROWN LACUSTRINE CLAY	36.5%				NASH ROAD SITE

NOTE: Small bubbles throughout solution in hydrometer

COLOR: Light brown

GRADATION CURVE

DAMES & MOORE

FIGURE B.10

R&R
INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-12									
	20-22	0.0	0.1	0.2	0.4	0.2	15.1	84.0	CL

R&R INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

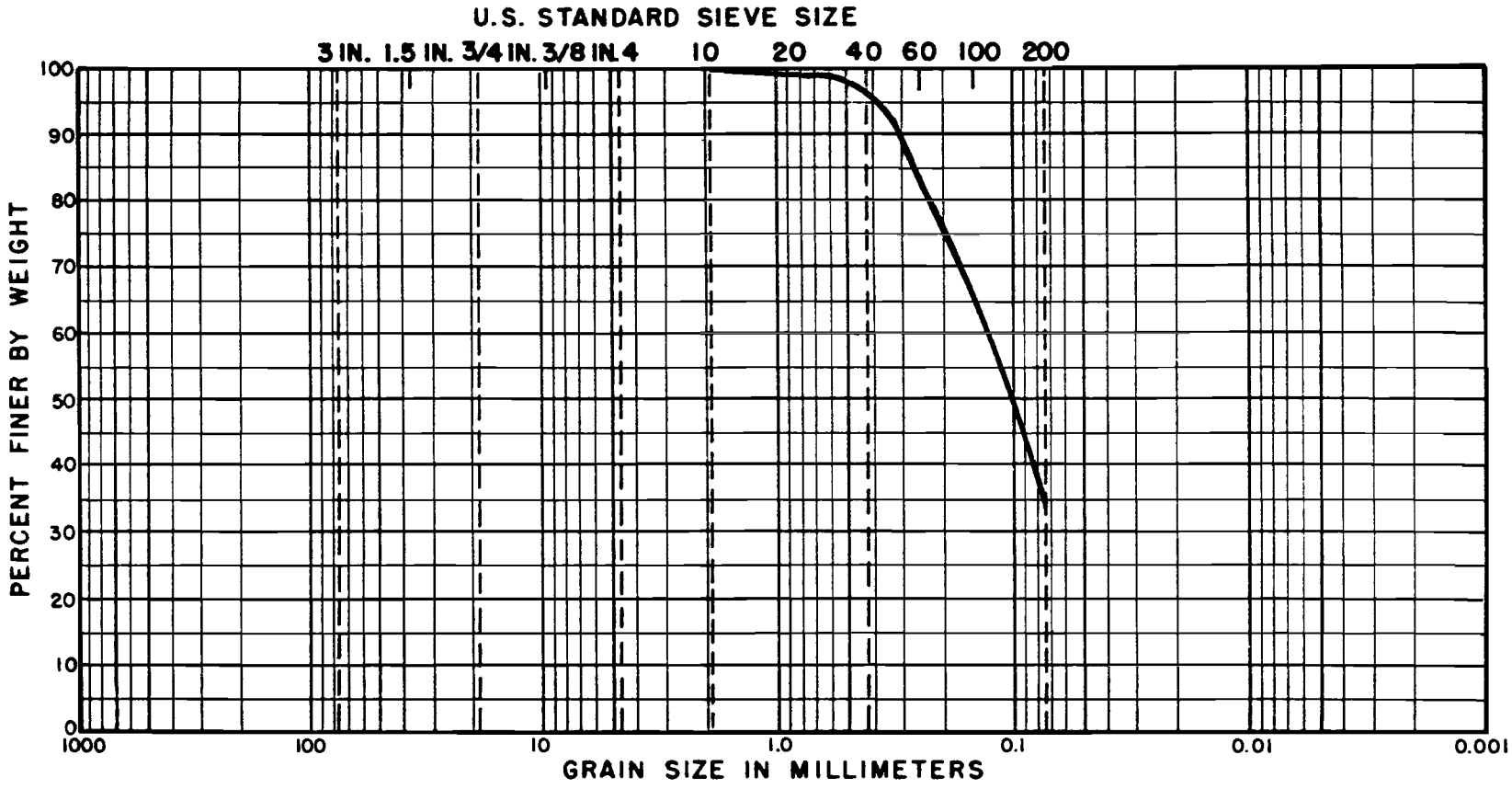
MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-14A	25-27	0.0	0.1	0.1	0.1	0.0	13.7	86.0	CL
OW-15	15-17	0.0	0.2	0.2	0.1	0.1	16.4	83.0	CL

Lower Sand Deposit

757.2 (REV. 4-62)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW-4	44.6 - 45.0'	SP	LOWER SAND UNIT					NASH ROAD SITE

DAMES & MOORE

FIGURE B.11

GRADATION CURVE

R&R
INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-12									
	30-32	10.2	6.0	8.1	8.8	9.6	57.3		ML

R&R INTERNATIONAL, INC.

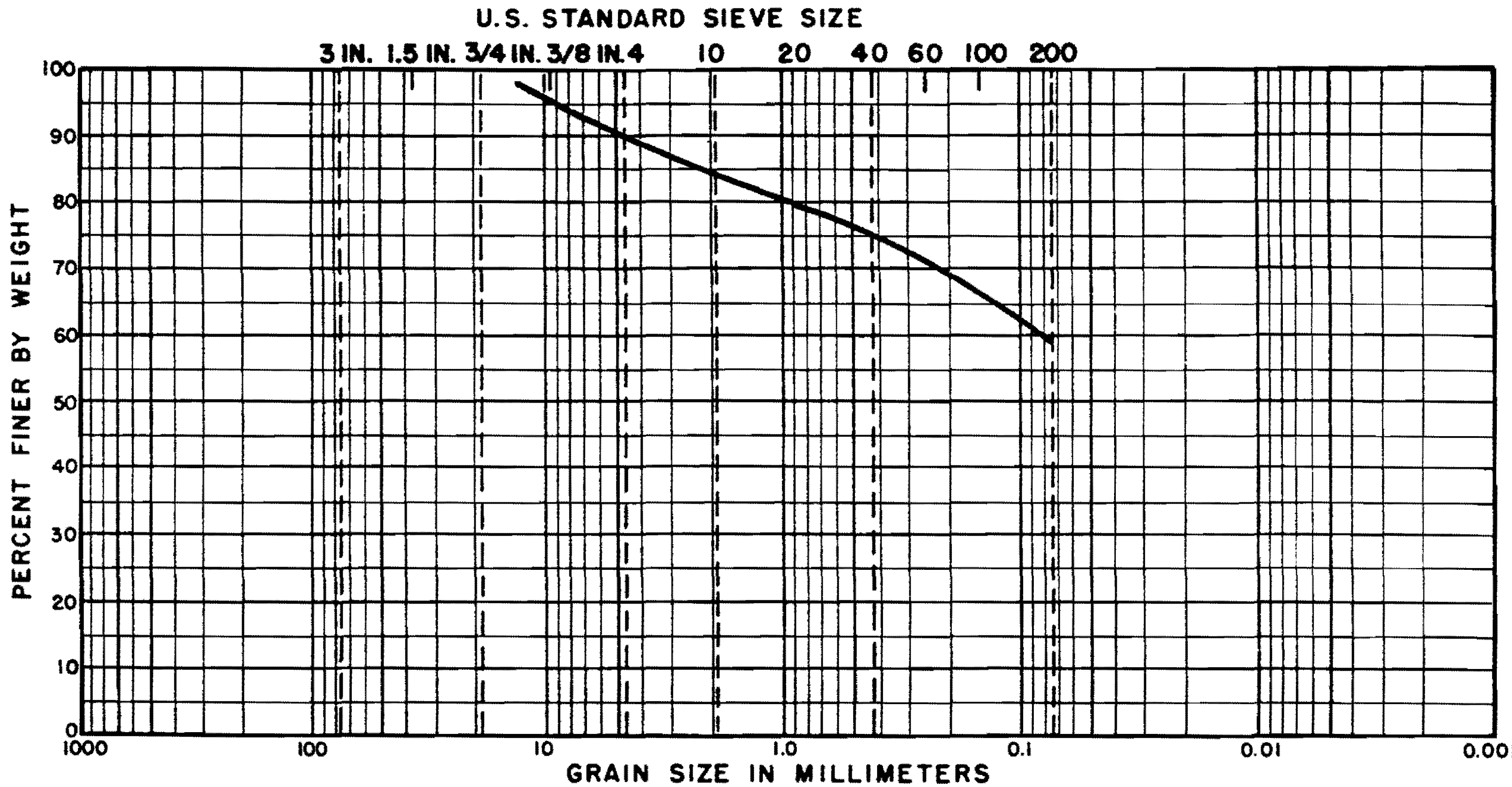
PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-15									
	42-44	18.3	5.6	7.5	8.4	8.9	39.2	12.1	ML

Glacial Till Deposit



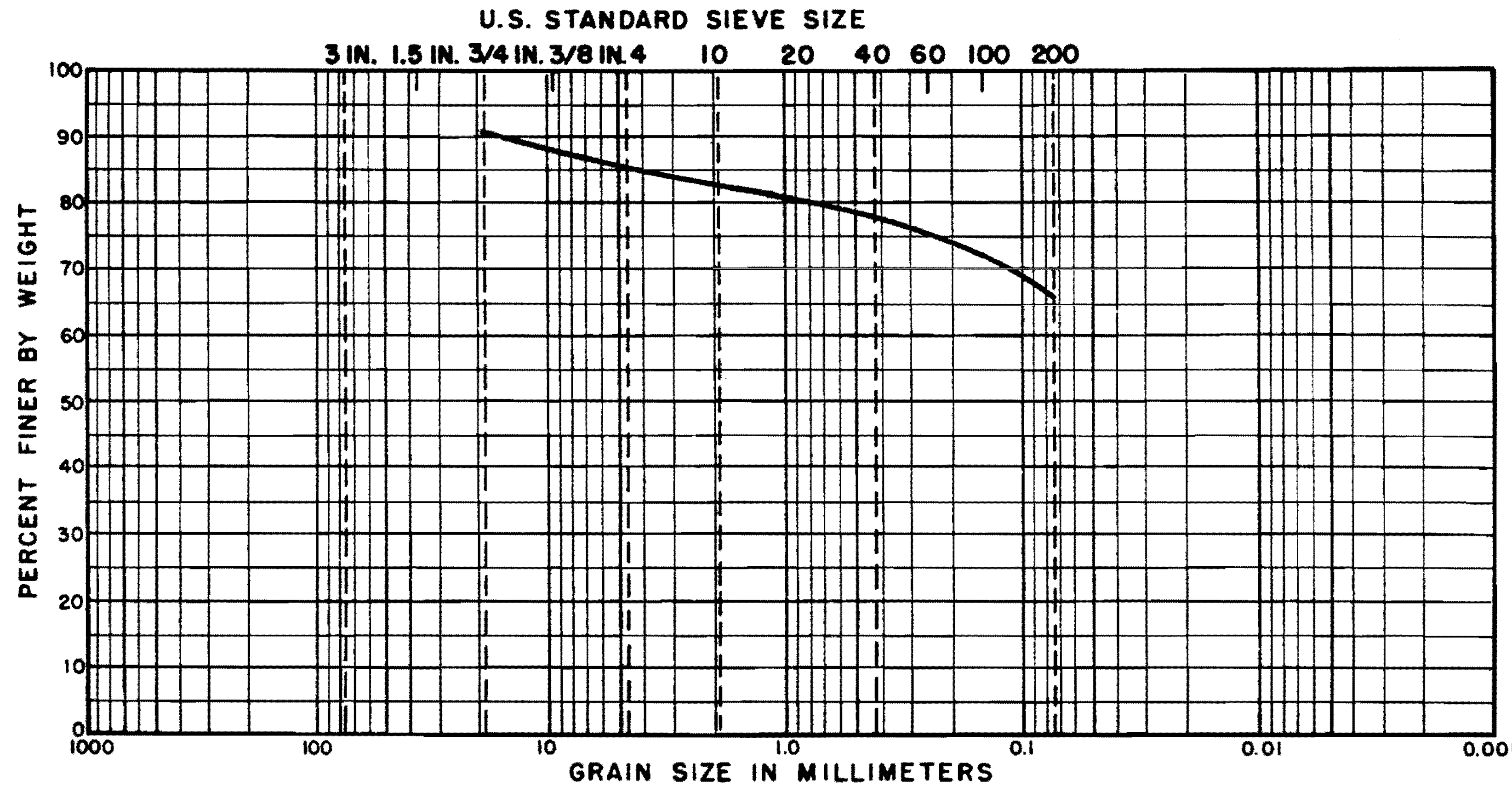
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW1-B	50.0 - 51.5'	GM	PINKISH BROWN TILL					NASH ROAD SITE

DAMES & MOORE

GRADATION CURVE

FIGURE B.8



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

BORING	DEPTH	CLASSIFICATION		NAT. WC	LL	PL	PI	
OW-6	60.0 - 60.5'	GM	PINKISH BROWN TILL					NASH ROAD SITE

DAMES & MOORE

GRADATION CURVE

FIGURE B.13

R&R INTERNATIONAL, INC.

PROJECT: ENGINEERING SCIENCE, NASH ROAD PROJECT NUMBER: 870833

MOISTURE AND GRADATION ANALYSIS

Gradation
(% Retained on Standard Sieve)

BORING NUMBER	DEPTH (FT.)	#4	#10	#40	#100	#200	SILT	CLAY	CLASSIFICATION
OW-14A									
	36-38	15.3	5.1	7.4	10.7	11.0	11.4	39.1	CL

APPENDIX G
HYDRAULIC CONDUCTIVITY
TEST DATA

Upper Sand Wells

CALIBRATION DATA
Well 1 OW1
A=-5.6258E 01
B= 6.4516E-02
D= 0.0000E 00
J0= 272
T0= 81493

ET(sec)= 30
WELL DRAWDOWN

OW1 -2.96

ET(sec)= 61
WELL DRAWDOWN

OW1 -3.63

ET(sec)= 90
WELL DRAWDOWN

OW1 -4.27

ET(sec)= 121
WELL DRAWDOWN

OW1 -4.88

ET(sec)= 151
WELL DRAWDOWN

OW1 -5.22

ET(sec)= 180
WELL DRAWDOWN

OW1 -5.46

ET(sec)= 211
WELL DRAWDOWN

OW1 -5.61

ET(sec)= 241
WELL DRAWDOWN

OW1 -5.76

ET(sec)= 271
WELL DRAWDOWN

OW1 -5.87

ET(sec)= 301
WELL DRAWDOWN

OW1 -5.93

ET(sec)= 330
WELL DRAWDOWN

OW1 -6.00

ET(sec)= 361
WELL DRAWDOWN

OW1 -6.06

ET(sec)= 390
WELL DRAWDOWN

OW1 -6.12

ET(sec)= 421
WELL DRAWDOWN

ET(sec)= 421
WELL DRAWDOWN

OW1 -6.19

ET(sec)= 451
WELL DRAWDOWN

OW1 -6.19

ET(sec)= 481
WELL DRAWDOWN

OW1 -6.25

ET(sec)= 511
WELL DRAWDOWN

OW1 -6.32

ET(sec)= 540
WELL DRAWDOWN

OW1 -6.32

ET(sec)= 571
WELL DRAWDOWN

OW1 -6.32

ET(sec)= 600
WELL DRAWDOWN

OW1 -6.38

ET(sec)= 631
WELL DRAWDOWN

OW1 -6.38

ET(sec)= 661
WELL DRAWDOWN

OW1 -6.38

ET(sec)= 690
WELL DRAWDOWN

OW1 -6.38

ET(sec)= 721
WELL DRAWDOWN

OW1 -6.45

ET(sec)= 751
WELL DRAWDOWN

OW1 -6.45

ET(sec)= 781
WELL DRAWDOWN

OW1 -6.45

ET(sec)= 811
WELL DRAWDOWN

OW1 -6.45

ET(sec)= 841
WELL DRAWDOWN

OW1 -6.45

ET(sec)= 871
WELL DRAWDOWN

OW1 -6.45

ET(sec)= 901
WELL DRAWDOWN

OW1 -6.49

ET(sec)= 930
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 961
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 990
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1021
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1051
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1080
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1110
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1141
WELL DRAWDOWN

OW1 -6.51

ET(sec)= 1171
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1200
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1231
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1261
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1291
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1320
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1350
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1380
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1410
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1380
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1410
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1441
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1471
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1500
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1530
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1561
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1591
WELL DRAWDOWN

OW1 -6.58

ET(sec)= 1621
WELL DRAWDOWN

OW1 -6.62

ET(sec)= 1651
WELL DRAWDOWN

OW1 -6.62

ET(sec)= 1681
WELL DRAWDOWN

OW1 -6.64

ET(sec)= 1711
WELL DRAWDOWN

OW1 -6.64

ET(sec)= 1741
WELL DRAWDOWN

OW1 -6.64

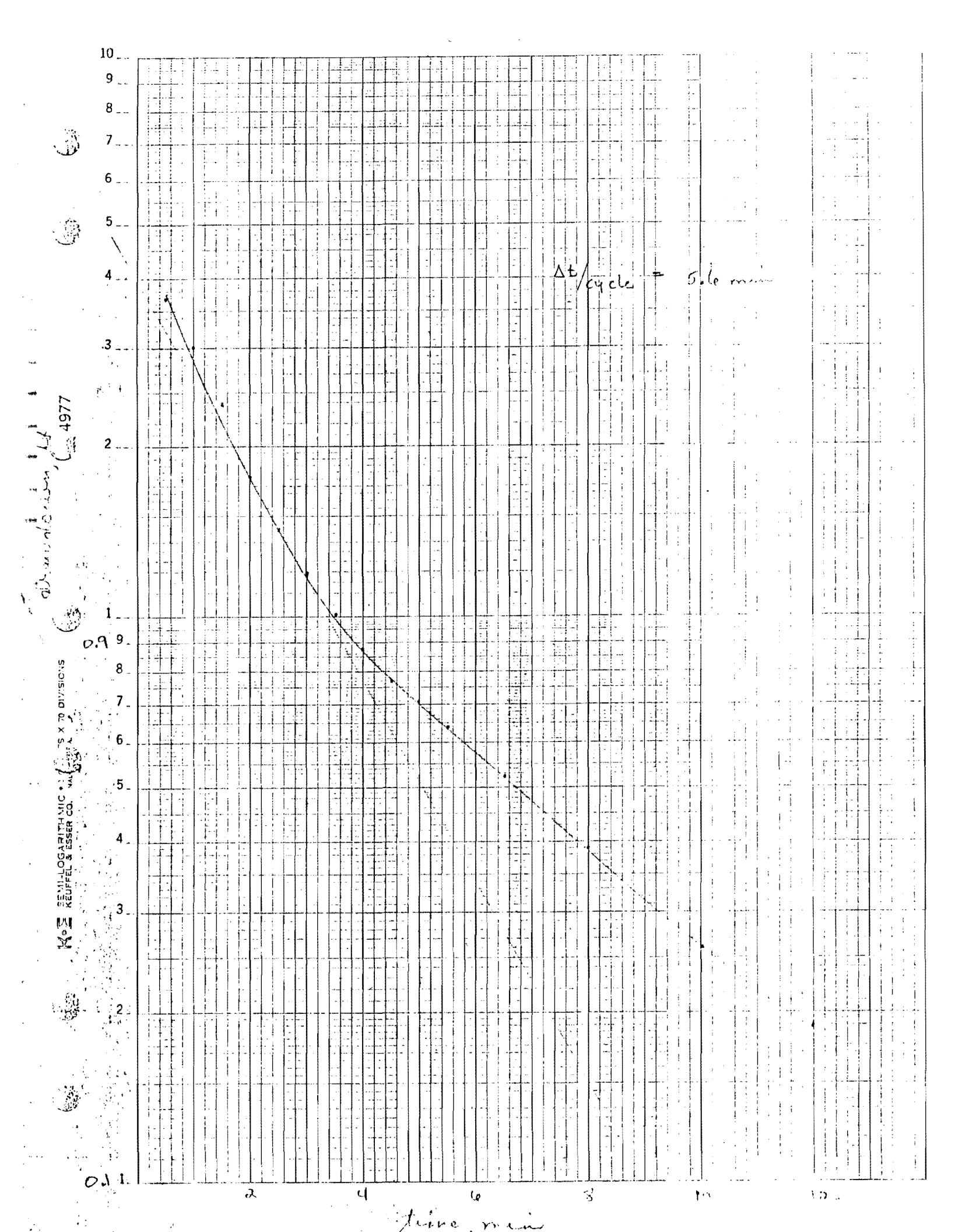
ET(sec)= 1771
WELL DRAWDOWN

OW1 -6.64

ET(sec)= 1800
WELL DRAWDOWN

OW1 -6.64

ET(sec)= 1830
WELL DRAWDOWN


Δt/cycle = 5.le min
time, min
SEMI-LOGARITHMIC
KEUFFEL & ESSER CO.
4977

~~case 1~~ ~~OW-10~~

Case F OW-1

from straight line

assume $m = 1$ $H_1 = 2.63 \text{ ft} = 80.2 \text{ cm}$

$L = 6 \text{ ft} = 183 \text{ cm}$ $t_1 = 60 \text{ sec}$

$D = 17 \text{ cm}$ $H_2 = 0.34 \text{ ft} = 10.4 \text{ cm}$

$d = 5 \text{ cm}$ $t_2 = 360 \text{ sec}$

$$\frac{2mL}{D} = \frac{2(182.9)}{17} > 4$$

$$k_h = \frac{d^2 \ln\left(\frac{4mL}{D}\right)}{8L(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$k_h = \frac{5^2 \ln\left(\frac{4(1)(183)}{17}\right)}{8(183)(300)} \ln\left(\frac{80.2}{10.4}\right)$$

$$k_h = \frac{25(3.763)}{439200}(2.04)$$

$$k_h = 4.37 \times 10^{-4} \text{ cm/sec}$$

Upper Clay Aquitard Wells

ET(sec)= 1370
WELL DRAWDOWN

OW2 -3.05

ET(sec)= 1396
WELL DRAWDOWN

OW2 -2.85

ET(sec)= 1422
WELL DRAWDOWN

OW2 -2.69

ET(sec)= 1449
WELL DRAWDOWN

OW2 -2.51

ET(sec)= 1475
WELL DRAWDOWN

OW2 -2.31

ET(sec)= 1501
WELL DRAWDOWN

OW2 -2.11

ET(sec)= 1527
WELL DRAWDOWN

OW2 -1.96

ET(sec)= 1554
WELL DRAWDOWN

OW2 -1.78

ET(sec)= 1580
WELL DRAWDOWN

OW2 -1.58

ET(sec)= 1606
WELL DRAWDOWN

OW2 -1.42

ET(sec)= 1633
WELL DRAWDOWN

OW2 -1.24
J0= 273
T0= 59355

ET(sec)= 16
WELL DRAWDOWN

OW2 -0.57

ET(sec)= 42
WELL DRAWDOWN

OW2 -0.57

ET(sec)= 68
WELL DRAWDOWN

OW2 -0.57

ET(sec)= 94
WELL DRAWDOWN

ET(sec)=
WELL DRAWDOWN

OW2 -1.15

ET(sec)= 119
WELL DRAWDOWN

OW2 -1.73

ET(sec)= 145
WELL DRAWDOWN

OW2 -2.33

ET(sec)= 171
WELL DRAWDOWN

OW2 -2.91

ET(sec)= 196
WELL DRAWDOWN

OW2 -3.51

ET(sec)= 222
WELL DRAWDOWN

OW2 -4.12

ET(sec)= 248
WELL DRAWDOWN

OW2 -4.72

ET(sec)= 273
WELL DRAWDOWN

OW2 -5.25

ET(sec)= 299
WELL DRAWDOWN

OW2 -5.65

ET(sec)= 325
WELL DRAWDOWN

OW2 -5.99

ET(sec)= 351
WELL DRAWDOWN

OW2 -6.28

ET(sec)= 377
WELL DRAWDOWN

OW2 -6.52

ET(sec)= 403
WELL DRAWDOWN

OW2 -6.72

ET(sec)= 429
WELL DRAWDOWN

OW2 -6.86

ET(sec)= 455
WELL DRAWDOWN

OW2 -7.01

ET(sec)= 481
WELL DRAWDOWN

OW2 -7.12

ET(sec)= 507
WELL DRAWDOWN

OW2 -7.26

ET(sec)= 533
WELL DRAWDOWN

WELL DRAWDOWN

OW2 -7.26

ET(sec)= 533
WELL DRAWDOWN

OW2 -7.32

ET(sec)= 560
WELL DRAWDOWN

OW2 -7.39

ET(sec)= 586
WELL DRAWDOWN

OW2 -7.46

ET(sec)= 612
WELL DRAWDOWN

OW2 -7.50

ET(sec)= 638
WELL DRAWDOWN

OW2 -7.52

ET(sec)= 665
WELL DRAWDOWN

OW2 -7.59

ET(sec)= 691
WELL DRAWDOWN

OW2 -7.59

ET(sec)= 717
WELL DRAWDOWN

OW2 -7.66

ET(sec)= 743
WELL DRAWDOWN

OW2 -7.66

ET(sec)= 769
WELL DRAWDOWN

OW2 -7.66

ET(sec)= 796
WELL DRAWDOWN

OW2 -7.70

ET(sec)= 822
WELL DRAWDOWN

OW2 -7.72

ET(sec)= 848
WELL DRAWDOWN

OW2 -7.72

ET(sec)= 874
WELL DRAWDOWN

OW2 -7.72

ET(sec)= 900
WELL DRAWDOWN

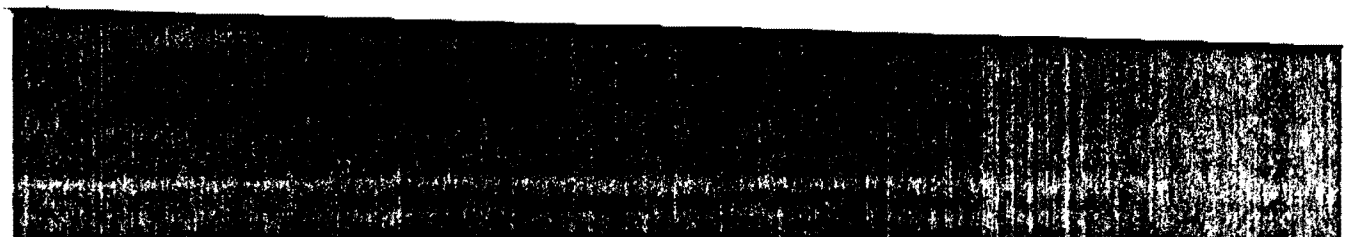
OW2 -7.72

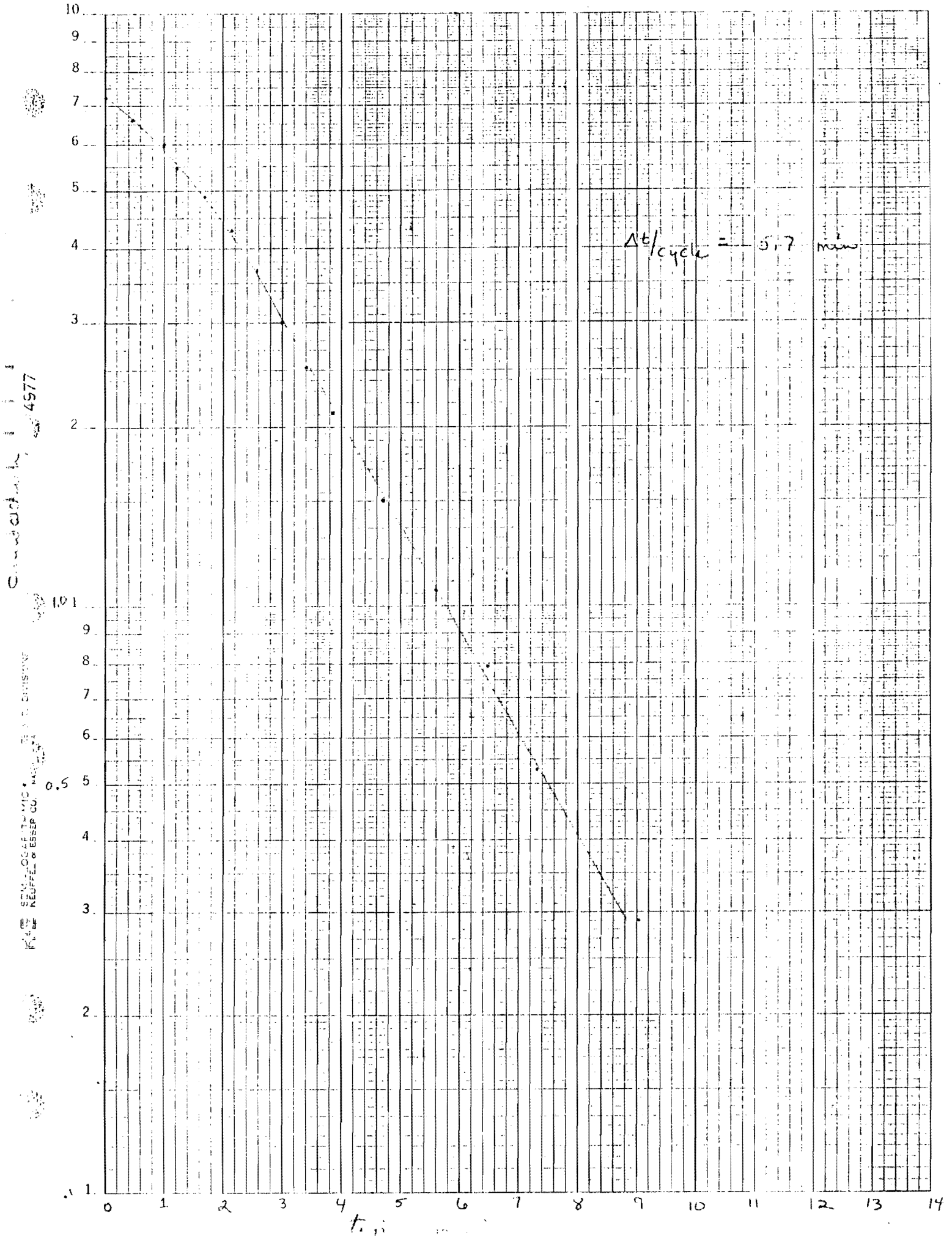
ET(sec)= 926
WELL DRAWDOWN

OW2 -7.79

ET(sec)= 952
WELL DRAWDOWN

OW2	-7.70
ET(sec)=	822
WELL	DRAWDOWN
OW2	-7.72
ET(sec)=	848
WELL	DRAWDOWN
OW2	-7.72
ET(sec)=	874
WELL	DRAWDOWN
OW2	-7.72
ET(sec)=	900
WELL	DRAWDOWN
OW2	-7.72
ET(sec)=	926
WELL	DRAWDOWN
OW2	-7.79
ET(sec)=	952
WELL	DRAWDOWN
OW2	-7.79
ET(sec)=	979
WELL	DRAWDOWN
OW2	-7.79




Δt/cycle = 5.7 min
4977
SEMI-LOGARITHMIC
KEUFFEL & ESSER CO.
0
1.0
0.5
1
2
3
4
5
6
7
8
9
10
11
12
13
14
t_{ij}

Case F

OW-2

Assume $m = 1$

$L = 9\,ft = 274.3\,cm$

$D = 17\,cm$

$d = 5\,cm$

$H_1 = 4.4' = 670.6\,cm$

$t_1 = 120\,sec$

$H_2 = 0.42' = 12.8\,cm$

$t_2 = 480\,sec$

$$k_h = \frac{d^2 \ln\left(\frac{4mL}{D}\right)}{8L(t_2 - t_1)} \ln\frac{H_1}{H_2}$$

$$k_h = \frac{5^2 \ln\left(\frac{4(1)(274.3)}{5}\right)}{8(274.3)(480-120)} \ln\left(\frac{670.6}{12.8}\right)$$

$$\frac{(25)\quad 5.3911}{789984} \quad 3.9587$$

$k_h = 6.75 \times 10^{-4}$ cm/sec

Glacial Till Wells

CALIBRATION DATA
Well 1 OW1B
A=-5.6923E 01
B= 8.5279E-02
D= 0.0000E 00

J0= 223
I0= 62293

ET(sec)= 61
WELL DRAWDOWN

OW1B -1.58

ET(sec)= 121
WELL DRAWDOWN

OW1B -1.76

ET(sec)= 180
WELL DRAWDOWN

OW1B -1.89

ET(sec)= 241
WELL DRAWDOWN

OW1B -1.95

ET(sec)= 301
WELL DRAWDOWN

OW1B -2.08

ET(sec)= 361
WELL DRAWDOWN

OW1B -2.19

ET(sec)= 420
WELL DRAWDOWN

OW1B -2.28

ET(sec)= 481
WELL DRAWDOWN

OW1B -2.35

ET(sec)= 541
WELL DRAWDOWN

OW1B -2.48

ET(sec)= 601
WELL DRAWDOWN

OW1B -2.54

ET(sec)= 661
WELL DRAWDOWN

OW1B -2.61

ET(sec)= 721
WELL DRAWDOWN

OW1B -2.74

ET(sec)= 780
WELL DRAWDOWN

OW1B -2.80

ET(sec)= 840
WELL DRAWDOWN

OW1B -2.87

ET(sec)= 900
WELL DRAWDOWN

WELL DRAWDOWN

OW1B -2.87

ET(sec)= 900
WELL DRAWDOWN

OW1B -2.93

ET(sec)= 960
WELL DRAWDOWN

OW1B -3.00

ET(sec)= 1021
WELL DRAWDOWN

OW1B -3.06

ET(sec)= 1081
WELL DRAWDOWN

OW1B -3.17

ET(sec)= 1141
WELL DRAWDOWN

OW1B -3.26

ET(sec)= 1200
WELL DRAWDOWN

OW1B -3.32

ET(sec)= 1261
WELL DRAWDOWN

OW1B -3.39

ET(sec)= 1321
WELL DRAWDOWN

OW1B -3.45

ET(sec)= 1381
WELL DRAWDOWN

OW1B -3.52

ET(sec)= 1440
WELL DRAWDOWN

OW1B -3.59

ET(sec)= 1500
WELL DRAWDOWN

OW1B -3.65

ET(sec)= 1561
WELL DRAWDOWN

OW1B -3.72

ET(sec)= 1621
WELL DRAWDOWN

OW1B -3.78

ET(sec)= 1681
WELL DRAWDOWN

OW1B -3.85

ET(sec)= 1741
WELL DRAWDOWN

OW1B -3.91

ET(sec)= 1800
WELL DRAWDOWN

OW1B -3.98

ET(sec)= 1861
WELL DRAWDOWN

ET(sec)= 1961
WELL DRAWDOWN

OW1B -4.17

ET(sec)= 2041
WELL DRAWDOWN

OW1B -4.24

ET(sec)= 2101
WELL DRAWDOWN

OW1B -4.33

ET(sec)= 2161
WELL DRAWDOWN

OW1B -4.43

ET(sec)= 2220
WELL DRAWDOWN

OW1B -4.46

ET(sec)= 2280
WELL DRAWDOWN

OW1B -4.56

ET(sec)= 2340
WELL DRAWDOWN

OW1B -4.56

ET(sec)= 2400
WELL DRAWDOWN

OW1B -4.65

ET(sec)= 2461
WELL DRAWDOWN

OW1B -4.70

ET(sec)= 2520
WELL DRAWDOWN

OW1B -4.76

ET(sec)= 2580
WELL DRAWDOWN

OW1B -4.83

ET(sec)= 2640
WELL DRAWDOWN

OW1B -4.89

ET(sec)= 2701
WELL DRAWDOWN

OW1B -4.96

ET(sec)= 2761
WELL DRAWDOWN

OW1B -5.02

ET(sec)= 2821
WELL DRAWDOWN

OW1B -5.09

ET(sec)= 2880
WELL DRAWDOWN

ET(sec)
WELL DRAWDOWN

OW1B -5.02

ET(sec)= 2821
WELL DRAWDOWN

OW1B -5.09

ET(sec)= 2880
WELL DRAWDOWN

OW1B -5.15

ET(sec)= 2941
WELL DRAWDOWN

OW1B -5.22

ET(sec)= 3001
WELL DRAWDOWN

OW1B -5.28

ET(sec)= 3061
WELL DRAWDOWN

OW1B -5.35

ET(sec)= 3121
WELL DRAWDOWN

OW1B -5.41

ET(sec)= 3181
WELL DRAWDOWN

OW1B -5.46

ET(sec)= 3240
WELL DRAWDOWN

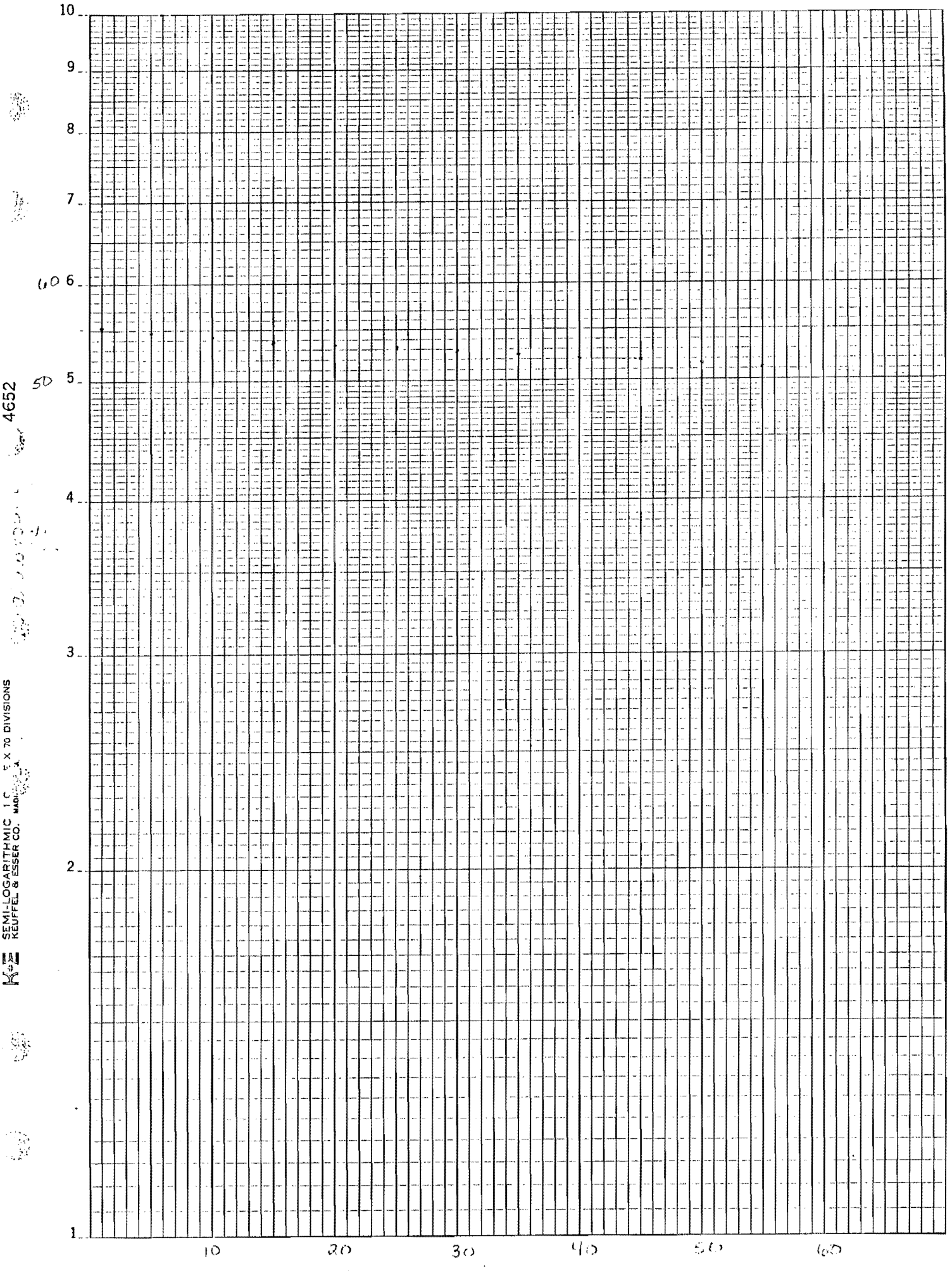
OW1B -5.48

ET(sec)= 3300
WELL DRAWDOWN

OW1B -5.54

ET(sec)= 3361
WELL DRAWDOWN

OW1B -5.61


10
9
8
7
6
5
4
3
2
1
10
20
30
40
50
60
4652
SEMI-LOGARITHMIC 1 C 5 X 70 DIVISIONS
KEUFFEL & ESSER CO.

Layer 1 OW-10

assume $n = 1$ $H_1 = 55.3\ ft = 1685.5\ cm$

$L = 14\ ft = 426.7\ cm$ $t_1 = 60\ sec$

$D = 17\ cm$ $H_2 = 51.\ ft = 1554.5\ cm$

$d = 5\ cm$ $t_2 = 3300\ sec$

$$k_h = \frac{d^2 \ln\left(\frac{4nL}{D}\right)}{8L(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$k_h = \frac{(5^2) \ln\left(\frac{4(1)(426.7)}{17}\right)}{8(426.7)(3300-60)} \ln\left(\frac{1686}{1555}\right)$$

$$k_h = \frac{25\ (4.609)}{11060064} \quad 0.08088$$

$$k_h = 8.43 \times 10^{-7}\ cm/sec$$

CALIBRATION DATA
Well 1 OW3
A=-6.7066E 01
B= 8.2644E-02
D= 1.5000E 01
)0= 272
T0= 71820

ET(sec)= 60
WELL DRAWDOWN

OW3 8.09

ET(sec)= 121
WELL DRAWDOWN

OW3 7.93

ET(sec)= 180
WELL DRAWDOWN

OW3 7.85

ET(sec)= 241
WELL DRAWDOWN

OW3 7.76

ET(sec)= 301
WELL DRAWDOWN

OW3 7.60

ET(sec)= 360
WELL DRAWDOWN

OW3 7.52

ET(sec)= 421
WELL DRAWDOWN

OW3 7.43

ET(sec)= 481
WELL DRAWDOWN

OW3 7.30

ET(sec)= 541
WELL DRAWDOWN

OW3 7.19

ET(sec)= 600
WELL DRAWDOWN

OW3 7.10

ET(sec)= 661
WELL DRAWDOWN

OW3 7.02

ET(sec)= 721
WELL DRAWDOWN

OW3 6.94

ET(sec)= 781
WELL DRAWDOWN

OW3 6.77

ET(sec)= 841
WELL DRAWDOWN

OW3 6.69

ET(sec)= 900
WELL DRAWDOWN

OW3 6.61

ET(sec)= 961
WELL DRAWDOWN

OW3 6.44

ET(sec)= 1021
WELL DRAWDOWN

OW3 6.36

ET(sec)= 1081
WELL DRAWDOWN

OW3 6.28

ET(sec)= 1141
WELL DRAWDOWN

OW3 6.19

ET(sec)= 1200
WELL DRAWDOWN

OW3 6.11

ET(sec)= 1261
WELL DRAWDOWN

OW3 6.36

ET(sec)= 1321
WELL DRAWDOWN

OW3 6.28

ET(sec)= 1381
WELL DRAWDOWN

OW3 6.19

ET(sec)= 1441
WELL DRAWDOWN

OW3 6.11

ET(sec)= 1501
WELL DRAWDOWN

OW3 6.03

ET(sec)= 1561
WELL DRAWDOWN

OW3 5.95

ET(sec)= 1621
WELL DRAWDOWN

OW3 5.86

ET(sec)= 1681
WELL DRAWDOWN

OW3 5.78

ET(sec)= 1741
WELL DRAWDOWN

OW3 5.61

ET(sec)= 1800
WELL DRAWDOWN

OW3 5.61

ET(sec)= 1861
WELL DRAWDOWN

OW3 5.50

ET(sec)= 1921
WELL DRAWDOWN

OW3 5.37

ET(sec)= 1981
WELL DRAWDOWN

OW3 5.37

ET(sec)= 1921
WELL DRAWDOWN

OW3 5.37

ET(sec)= 1981
WELL DRAWDOWN

OW3 5.37

ET(sec)= 2041
WELL DRAWDOWN

OW3 5.28

ET(sec)= 2101
WELL DRAWDOWN

OW3 5.15

ET(sec)= 2160
WELL DRAWDOWN

OW3 5.04

ET(sec)= 2220
WELL DRAWDOWN

OW3 4.95

ET(sec)= 2280
WELL DRAWDOWN

OW3 4.87

ET(sec)= 2340
WELL DRAWDOWN

OW3 4.79

ET(sec)= 2400
WELL DRAWDOWN

OW3 4.71

ET(sec)= 2461
WELL DRAWDOWN

OW3 4.62

ET(sec)= 2521
WELL DRAWDOWN

OW3 4.54

ET(sec)= 2581
WELL DRAWDOWN

OW3 4.46

ET(sec)= 2641
WELL DRAWDOWN

OW3 4.38

ET(sec)= 2700
WELL DRAWDOWN

OW3 4.29

ET(sec)= 2760
WELL DRAWDOWN

OW3 4.21

ET(sec)= 2821
WELL DRAWDOWN

OW3 4.13

ET(sec)= 2881
WELL DRAWDOWN

OW3 4.04

ET(sec)= 2941

ET(sec)= 2700
WELL DRAWDOWN

OW3 4.29

ET(sec)= 2760
WELL DRAWDOWN

OW3 4.21

ET(sec)= 2821
WELL DRAWDOWN

OW3 4.13

ET(sec)= 2881
WELL DRAWDOWN

OW3 4.04

ET(sec)= 2941
WELL DRAWDOWN

OW3 3.96

ET(sec)= 3001
WELL DRAWDOWN

OW3 3.88

ET(sec)= 3061
WELL DRAWDOWN

OW3 3.80

ET(sec)= 3121
WELL DRAWDOWN

OW3 3.71

ET(sec)= 3181
WELL DRAWDOWN

OW3 3.63

ET(sec)= 3241
WELL DRAWDOWN

OW3 3.55

ET(sec)= 3301
WELL DRAWDOWN

OW3 3.47

ET(sec)= 3360
WELL DRAWDOWN

OW3 3.38

ET(sec)= 3421
WELL DRAWDOWN

OW3 3.30

ET(sec)= 3481
WELL DRAWDOWN

OW3 3.22

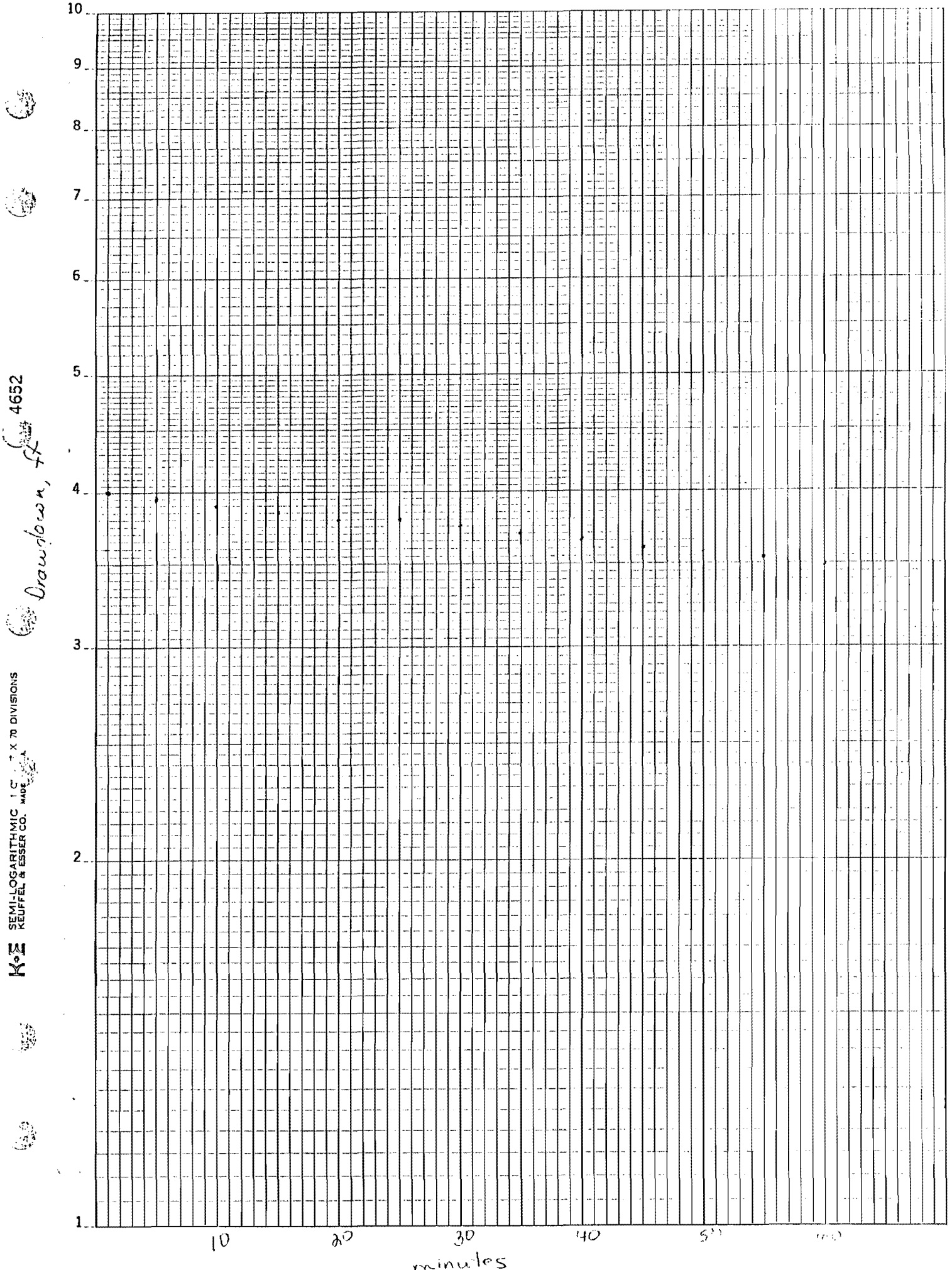
ET(sec)= 3541
WELL DRAWDOWN

OW3 3.14

ET(sec)= 3601
WELL DRAWDOWN

OW3 3.08

ET(sec)= 3660
WELL DRAWDOWN


10
9
8
7
6
5
4
3
2
1
10
20
30
40
50
minutes
4652
Drawdown, ft
SEMI-LOGARITHMIC
KEUFFEL & ESSER CO.
MADE IN U.S.A.

Case F

OW-3

Assume $m = 1$

$L = 12\ ft = 366\ cm$

$D = 12\ cm$

$d = 5\ cm$

$H_1 = 4\ ft = 121.9\ cm$

$t_1 = 60\ sec$

$H_2 = 3.5\ ft = 106.7\ cm$

$t_2 = 3600\ sec$

$$k_h = \frac{d^2 \ln\left(\frac{4mL}{D}\right)}{8L(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$k_h = \frac{(5^2) \ln\left(\frac{4(1)(366)}{17}\right)}{8(366)(3600-60)} \ln\left(\frac{121.9}{106.7}\right)$$

$$k_h = \frac{25\ (4.4557)}{10365120}\ (0.1332)$$

$$k_h = 1.43 \times 10^{-6}\ cm/sec$$

CALIBRATION DATA
Well] OW4
A=-6.1285E 01
B= 7.1428E-02
D= 0.0000E 00
]0= 273
T0= 81079

ET(sec)= 60
WELL DRAWDOWN

OW4 -14.00

ET(sec)= 121
WELL DRAWDOWN

OW4 -14.21

ET(sec)= 180
WELL DRAWDOWN

OW4 -14.35

ET(sec)= 241
WELL DRAWDOWN

OW4 -14.50

ET(sec)= 300
WELL DRAWDOWN

OW4 -14.64

ET(sec)= 361
WELL DRAWDOWN

OW4 -14.78

ET(sec)= 420
WELL DRAWDOWN

OW4 -14.85

ET(sec)= 481
WELL DRAWDOWN

OW4 -15.00

ET(sec)= 541
WELL DRAWDOWN

OW4 -15.07

ET(sec)= 600
WELL DRAWDOWN

OW4 -15.14

ET(sec)= 661
WELL DRAWDOWN

OW4 -15.21

ET(sec)= 720
WELL DRAWDOWN

OW4 -15.28

ET(sec)= 781
WELL DRAWDOWN

OW4 -15.35

ET(sec)= 841
WELL DRAWDOWN

OW4 -15.42

ET(sec)= 900
WELL DRAWDOWN

OW4 -15.50

ET(sec)= 960
WELL DRAWDOWN

OW4	-15.50
ET(sec)=	960
WELL	DRAWDOWN
OW4	-15.57
ET(sec)=	1021
WELL	DRAWDOWN
OW4	-15.64
ET(sec)=	1081
WELL	DRAWDOWN
OW4	-15.64
ET(sec)=	1141
WELL	DRAWDOWN
OW4	-15.71
ET(sec)=	1201
WELL	DRAWDOWN
OW4	-15.78
ET(sec)=	1261
WELL	DRAWDOWN
OW4	-15.85
ET(sec)=	1321
WELL	DRAWDOWN
OW4	-15.85
ET(sec)=	1380
WELL	DRAWDOWN
OW4	-15.92
ET(sec)=	1440
WELL	DRAWDOWN
OW4	-16.00
ET(sec)=	1501
WELL	DRAWDOWN
OW4	-16.07
ET(sec)=	1561
WELL	DRAWDOWN
OW4	-16.07
ET(sec)=	1621
WELL	DRAWDOWN
OW4	-16.14
ET(sec)=	1680
WELL	DRAWDOWN
OW4	-16.21
ET(sec)=	1740
WELL	DRAWDOWN
OW4	-16.21
ET(sec)=	1801
WELL	DRAWDOWN
OW4	-16.28
ET(sec)=	1861
WELL	DRAWDOWN
OW4	-16.35
ET(sec)=	1920
WELL	DRAWDOWN
OW4	-16.42

ET(sec)= 1801
WELL DRAWDOWN

OW4 -16.28

ET(sec)= 1861
WELL DRAWDOWN

OW4 -16.35

ET(sec)= 1920
WELL DRAWDOWN

OW4 -16.42

ET(sec)= 1980
WELL DRAWDOWN

OW4 -16.50

ET(sec)= 2040
WELL DRAWDOWN

OW4 -16.50

ET(sec)= 2100
WELL DRAWDOWN

OW4 -16.57

ET(sec)= 2161
WELL DRAWDOWN

OW4 -16.57

ET(sec)= 2221
WELL DRAWDOWN

OW4 -1.49

ET(sec)= 2280
WELL DRAWDOWN

OW4 -1.35

ET(sec)= 2341
WELL DRAWDOWN

OW4 -1.21

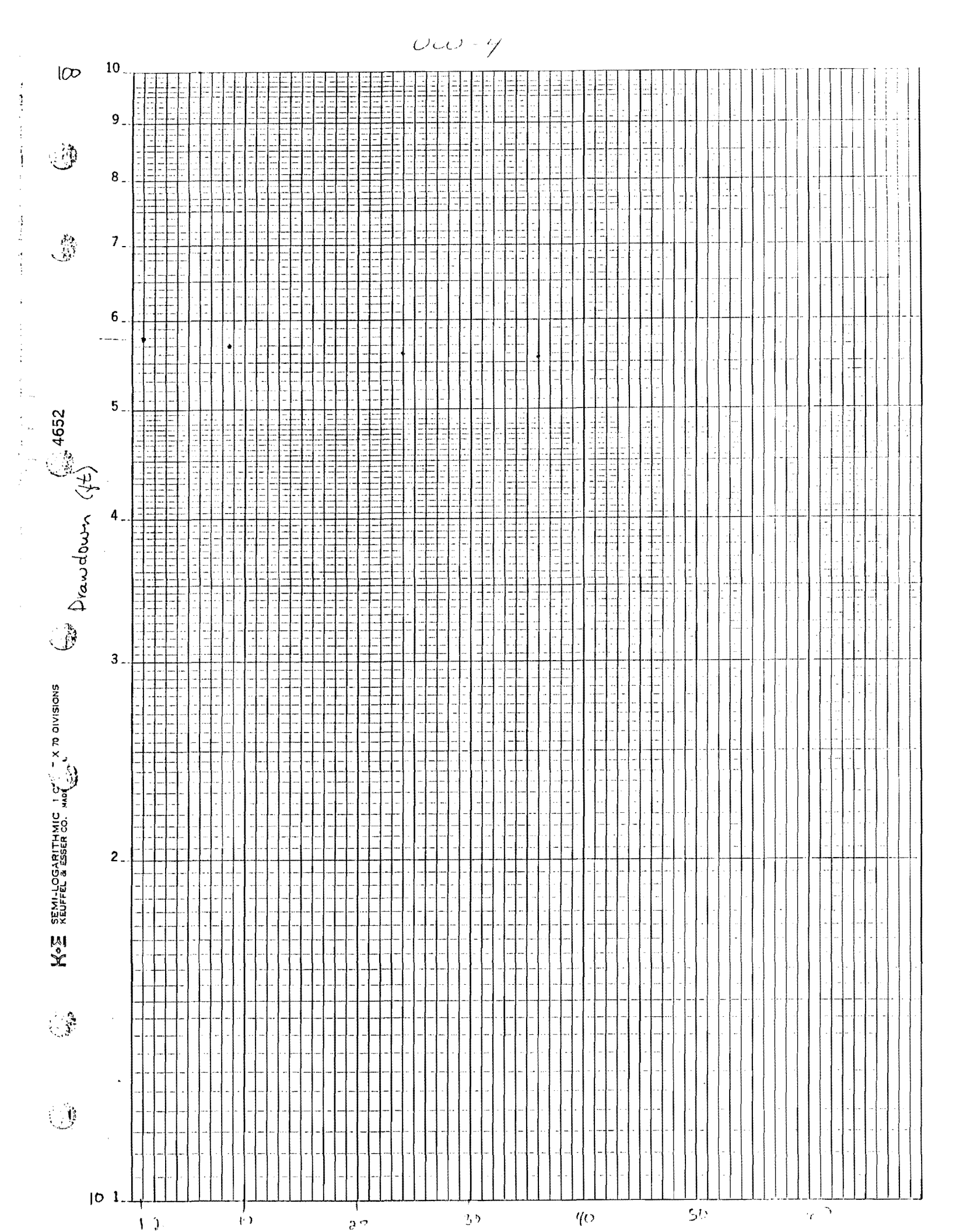
ET(sec)= 2401
WELL DRAWDOWN

OW4 -0.99

OUT OF WATER
CONTACT POINT

ET(sec)= 2461
WELL DRAWDOWN

'W4 -0.92


Drawdown (ft)
4652
SEMI-LOGARITHMIC
KEUFFEL & ESSER CO.
X 70 DIVISIONS

Case F

OW-4

assume $m = 1$

$\frac{2mL}{D} = \frac{2(1)(396)}{17} = 46 > 4$

$L = 13\ ft = 396\ cm$

$D = 6.75\ in = 17\ cm$

$d = 2\ in = 5\ cm$

pt 2 $H_1 = 5.8\ ft = 177$

$t_1 = 60\ sec$ 169

$H_2 = 5.54\ ft = 169$

$t_2 = 2160\ sec$

$$k_h = \frac{d^2 \ln\left(\frac{4mL}{D}\right)}{8L(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$k_h = \frac{(5)^2 \ln\left(\frac{4(1)(396)}{17}\right)}{8(396)(2160-60)} \ln \frac{177}{169} \quad \frac{1770}{1690}$$

$$\frac{25(4.53)}{6652800.} \quad (.046875) \quad (.04625)$$

113.4

$k_h =$ ~~3.685×10^{-5}~~ 7.88×10^{-7} cm/sec

RECOVERY TEST
7/11/84

WATER LEVEL
IS WATER
ABOVE XDUCER
TRANSDUCER AT
DEPTH OF 30'

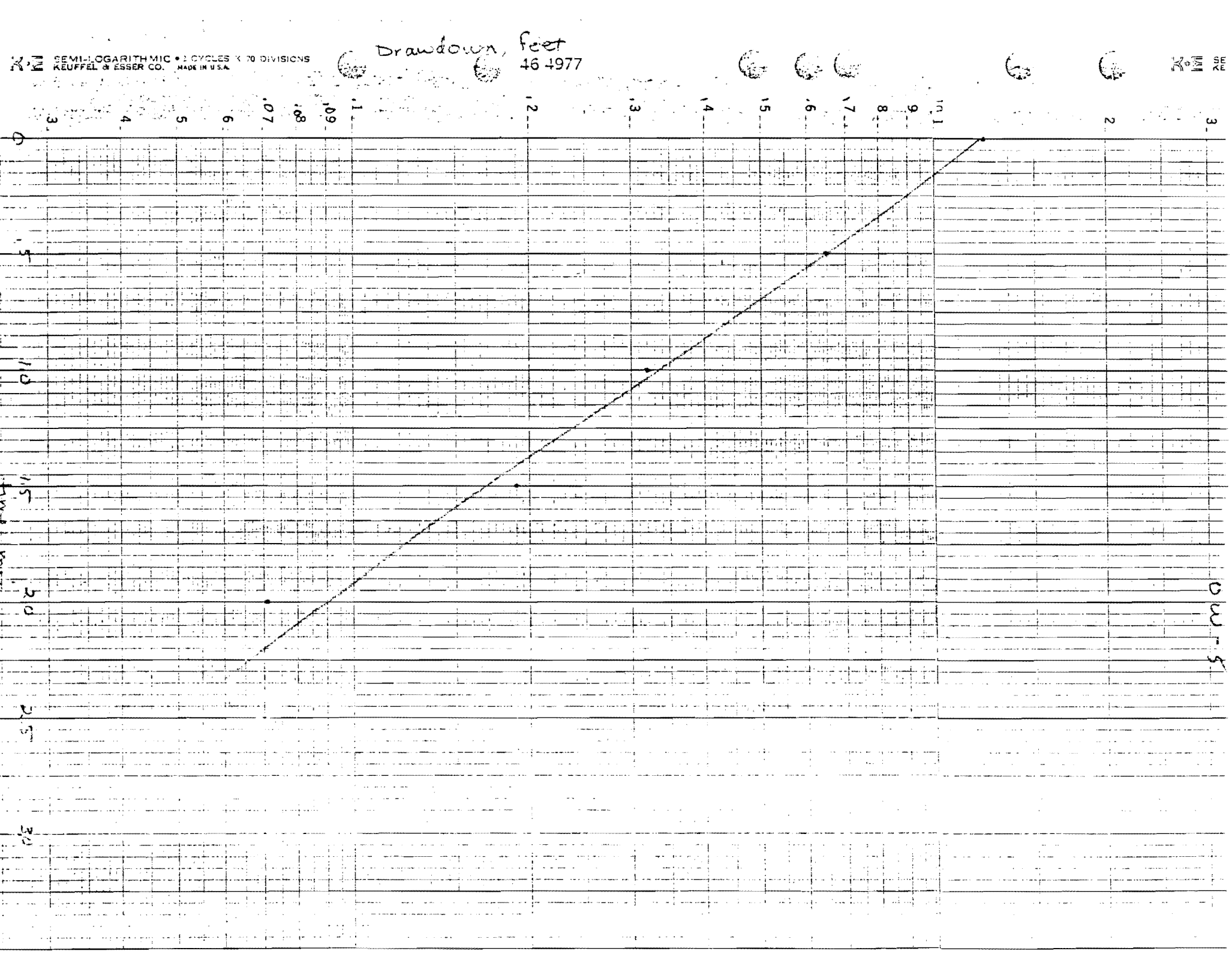
OW-5
TIME WATER LEVEL
17.0556 16.7000
17.0611 16.7000
17.0625 16.7000

17.0933 15.7967
17.0933 16.7645
17.0933 15.2161
17.0933 15.4096
17.0933 15.5387
17.0933 15.6032
17.0933 15.8612
1 15.5387
17.0933 15.6677
17.0933 15.2806
17.0933 14.9580
17.0933 15.1516

17.1122 15.3451
17.1122 15.4741
17.1122 15.6032
17.1122 15.7322
17.1122 15.7967
17.1122 15.9258
17.1247 16.3129
17.1318 16.5709
START

17.1512 15.6032
17.1542 16.1838
17.1613 16.5064
17.1642 16.6354
17.1712 16.7645
17.1743 16.7645
17.1812 16.7645
17.1842 16.8290
17.1913 16.8290
17.1942 16.8290
17.2012 16.8290
17.2043 16.8290
17.2112 16.7645
17.2142 16.8290

static 14.3' below
top of casing
S.U. 1.3'


K+E SEMI-LOGARITHMIC • 3 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
Drawdown, feet
46 4977
K+E SE
KE
Drawdown, feet

Case F

OW-5

assume $m = 1$

$L = 14\ ft = 426.7\ cm$

$D = 17\ cm$

$d = 5\ cm$

$$k_h = \frac{d^2 \ln\left(\frac{4mL}{D}\right)}{8L(t_2 - t_1)} \ln\left(\frac{H_1}{H_2}\right)$$

$H_1 = 0.65' = 19.8$

$t_1 = 0.5\ min = 30$

$H_2 = 0.09' = 2.7$

$t_2 = 2\ min = 120$

$$k_h = \frac{115.2\,(5^2)\ \ln\left(\frac{4(1)(427)}{17}\right)}{8(427)(120-30)} \ln\left(\frac{19.8}{2.7}\right)$$

4.6

307440

(1.99)

7.5×10^{-4}

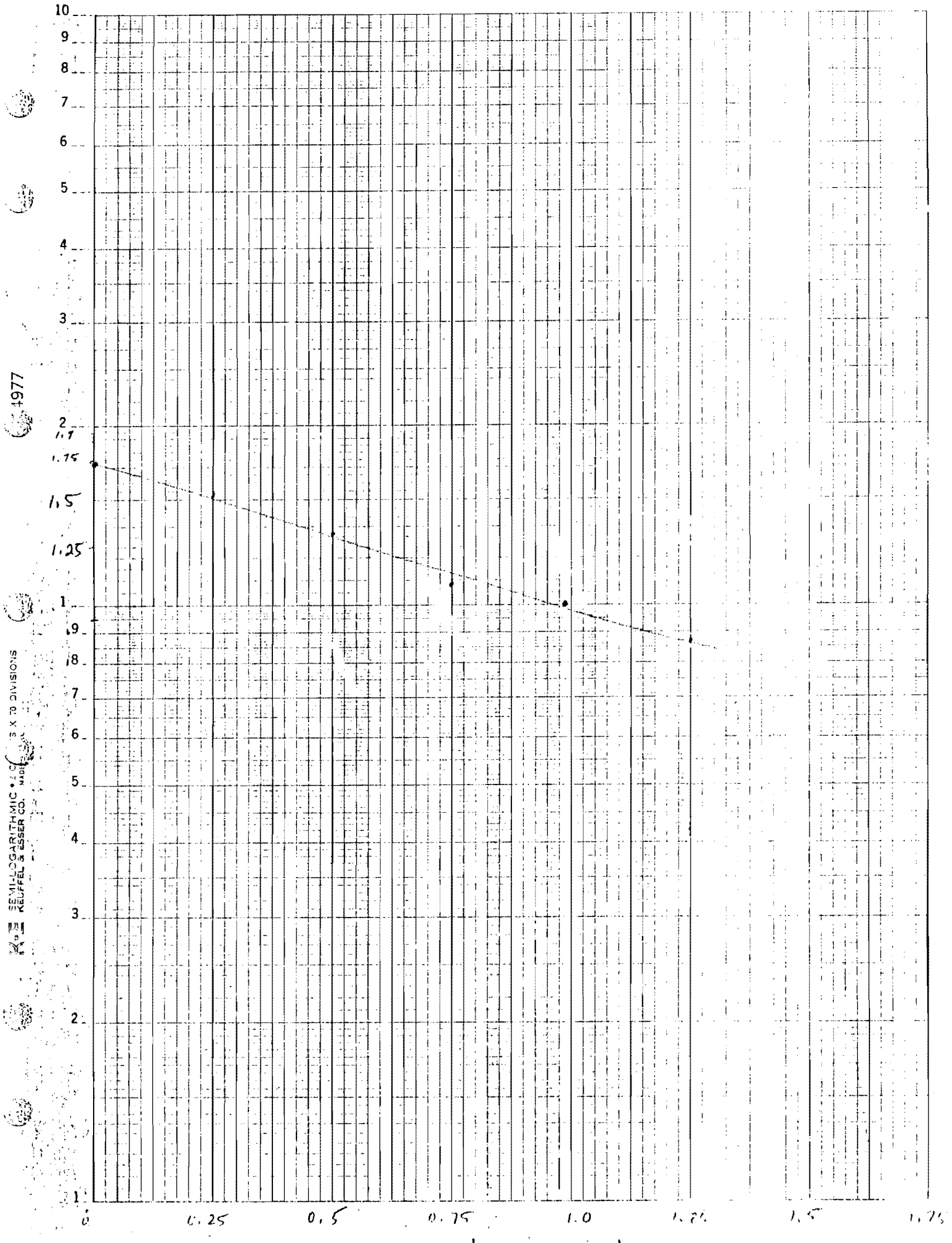
XDUCER AT
~35.0 DOWN HOLE

OW-6

	TIME	WATER LEVEL
	17.4344	17.7653
	17.4354	17.7653
	17.4404	17.7653
	17.4923	15.0202
	17.4933	15.8045
	17.4944	16.0006
1	17.5021	15.8045
2	17.5036	16.0006
3	17.5051	16.2620
4	17.5106	16.4581
5	17.5121	16.5888
6	17.5136	16.7196
7	17.5205	17.5432*

* SUSPECT DATA

static = 17.25' stick up 2.9'


10
9
8
7
6
5
4
3
2
1.9
1.8
1.7
1.6
5
4
3
2
1
0
0.25
0.5
0.75
1.0
1.5
1.75
1.75
1.5
1.25
1977
SEMILOGARITHMIC
KEUFFEL & ESSER CO.

Case 1 OW-6

M = 1

L = 12.1' = ~~33~~ 368.8 cm

ID = 17 cm

d = 5 cm

H_1 - 1.5 = 45.75

b_1 - 0.25 = 45

H_2 - .87 = 26.5

t_2 - 1.25 = 75

$$k_h = \frac{(25)\ \ln\left(4 \cdot \frac{368.8}{17}\right)}{8\,(368.8)(30)} \left[\ln \frac{15.7}{26.5}\right]$$

$$\frac{(111.5)\,.\,(.54)}{88512}$$

5.
66.0
53.9
12.1

$$6.8 \times 10^{-4}$$

APPENDIX H
GEOCHEMICAL DATA

Table H-1
General Water Quality Analyses of Surface Water from the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
35.5	8.9	2.3	4.2	0.0	146.3	1.9	6.7	0.0	2.27	SG-01	120.0	146.3	08/28/17
35.50	**8.90**	**2.30**	**4.20**		**146.30**	**1.90**	**6.70**				**120.00**		**Mean**
35.50	**8.90**	**2.30**	**4.20**		**146.30**	**1.90**	**6.70**				**120.00**		**Geo. Mean**
35.50	**8.90**	**2.30**	**4.20**		**146.30**	**1.90**	**6.70**				**120.00**		**Median**
-------	**-------**	**-------**	**-------**		**-------**	**-------**	**-------**				**-------**		**Stnd. Dev.**
35.50	**8.90**	**2.30**	**4.20**		**146.30**	**1.90**	**6.70**				**120.00**		**Minimum**
35.50	**8.90**	**2.30**	**4.20**		**146.30**	**1.90**	**6.70**				**120.00**		**Maximum**
1	**1**	**1**	**1**		**1**	**1**	**1**				**1**		**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

------- **Standard deviation cannot be calculated for one sample.**

This sample was collected from the northern ditch in the northeast corner of the site near well OW-1.

Table H-2
General Water Quality Analyses of Groundwater from Fill Material at the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
168.0	85.9	81.9	42.0	0.0	1499.6	77.7	10.0	0.0	-14.64	OW-16	1230.0	1499.6	08/30/17
197.0	30.5	42.9	9.2	0.0	847.4	44.5	9.9	0.0	-3.05	OW-22	695.0	847.4	08/28/17
373.0	163.0	153.0	22.1	0.0	815.7	127.0	1150.0	0.0	-2.06	OW-33	669.0	815.7	08/29/17
124.0	94.0	116.0	36.9	0.0	1255.8	95.6	9.8	0.0	-8.24	OW-35	1030.0	1255.8	08/30/17
150.0	33.1	10.3	18.0	0.0	914.4	6.9	1.0	0.0	-15.53	OW-36	750.0	914.4	08/29/17
278.0	95.4	49.7	20.4	0.0	1131.4	32.4	356.0	0.0	-4.81	OW-37	928.0	1131.4	08/29/17
228.0	69.5	39.0	19.4	0.0	1177.8	36.9	6.0	0.0	-2.98	LPZ-12S	966.0	1177.8	09/21/17
216.86	**81.63**	**70.40**	**24.00**		**1091.73**	**60.14**	**220.39**				**895.43**		**Mean**
203.70	**70.68**	**53.44**	**21.67**		**1068.12**	**44.51**	**21.86**				**876.06**		**Geo. Mean**
197.00	**85.90**	**49.70**	**20.40**		**1131.40**	**44.50**	**9.90**				**928.00**		**Median**
85.75	**44.90**	**49.69**	**11.42**		**248.19**	**41.68**	**430.03**				**203.58**		**Stnd. Dev.**
124.00	**30.50**	**10.30**	**9.20**		**815.70**	**6.90**	**1.00**				**669.00**		**Minimum**
373.00	**163.00**	**153.00**	**42.00**		**1499.60**	**127.00**	**1150.00**				**1230.00**		**Maximum**
7	**7**	**7**	**7**		**7**	**7**	**7**				**7**		**Count**

Notes:

25.38	**Mass balance error greater than 10%.**
OW-22	**Wells with low sulfate results. Shaded values indicate that sulfate was not detected. The value shown is 1/2 the reporting limit.**

Table H-3
General Water Quality Analyses of Groundwater from the Upper Sand Deposit at the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
441.0	102.0	66.1	14.3	0.0	1147.3	135.0	648.0	0.0	-3.54	OW-1	941.0	1147.3	08/28/17
238.0	54.2	27.1	11.5	0.0	543.8	34.2	378.0	0.0	0.17	OW-14BR	446.0	543.8	08/28/17
261.0	52.6	64.0	10.0	0.0	1127.8	94.8	8.0	0.0	-2.24	OW-21	925.0	1127.8	08/28/17
277.0	45.7	63.9	13.2	0.0	836.4	69.5	267.0	0.0	-1.26	OW-23	686.0	836.4	08/28/17
476.0	93.4	61.0	3.0	0.0	803.5	131.0	847.0	0.0	-0.49	OW-31	659.0	803.5	08/22/17
315.0	106.0	90.7	26.2	0.0	1292.4	75.1	425.0	0.0	-5.06	OW-32	1060.0	1292.4	08/30/17
209.0	34.8	56.9	10.9	0.0	743.7	22.0	178.0	0.0	-1.44	OW-34	610.0	743.7	08/22/17
272.0	74.1	42.9	13.7	0.0	836.4	30.9	407.0	0.0	-2.60	LPZ-01S	686.0	836.4	08/29/17
514.0	114.0	61.6	16.0	0.0	881.5	50.6	1210.0	0.0	-3.73	LPZ-02S	723.0	881.5	08/29/17
244.0	47.1	28.3	10.2	0.0	703.5	28.4	292.0	0.0	-2.42	LPZ-03S	577.0	703.5	08/21/17
320.0	293.0	500.0	33.2	0.0	785.2	664.0	1360.0	0.0	2.25	LPZ-04S	644.0	785.2	08/21/17
199.0	174.0	198.0	12.4	0.0	1389.9	80.2	326.0	0.0	2.07	LPZ-05S	1140.0	1389.9	08/21/17
178.0	66.7	66.3	4.0	0.0	647.4	18.0	273.0	0.0	1.62	LPZ-06S	531.0	647.4	08/21/17
594.0	131.0	45.7	12.4	0.0	868.1	29.8	1380.0	0.0	-1.25	LPZ-07S	712.0	868.1	08/21/17
532.0	128.0	98.7	14.4	0.0	1402.1	117.0	812.0	0.0	-1.71	LPZ-08S	1150.0	1402.1	08/29/17
160.0	41.6	15.8	1.3	0.0	547.4	11.3	216.0	0.0	-6.41	LDP-01	449.0	547.4	08/24/17
148.0	37.3	23.4	1.9	0.0	508.4	39.8	84.3	0.0	1.36	LDP-02	417.0	508.4	08/24/17
187.0	48.8	13.8	0.99	0.0	601.1	16.1	197.0	0.0	-1.54	LDP-03	493.0	601.1	08/24/17
179.0	71.6	51.0	9.7	0.0	838.8	39.4	112.0	0.0	0.28	LDP-04	688.0	838.8	08/25/17
504.0	101.0	34.9	11.8	0.0	1121.7	30.5	790.0	0.0	-0.58	LPZ-09S	920.0	1121.7	09/21/17
780.0	114.0	100.0	3.2	0.0	1219.2	239.0	1510.0	0.0	-4.90	LPZ-10S	1000.0	1219.2	09/20/17
200.0	68.8	46.2	13.6	0.0	886.4	39.1	123.0	0.0	-0.54	LPZ-11S	727.0	886.4	09/21/17
546.0	118.0	87.0	15.2	0.0	853.5	59.9	1540.0	0.0	-7.44	LPZ-13S	700.0	853.5	09/20/17
338.00	**92.07**	**80.14**	**11.44**		**895.02**	**89.37**	**581.88**				**734.09**		**Mean**
300.64	**79.60**	**56.35**	**8.48**		**857.88**	**53.10**	**359.23**				**703.63**		**Geo. Mean**
272.00	**74.10**	**61.00**	**11.80**		**838.80**	**39.80**	**378.00**				**688.00**		**Median**
173.23	**57.08**	**99.34**	**7.58**		**267.00**	**135.85**	**499.16**				**218.99**		**Stnd. Dev.**
148.00	**34.80**	**13.80**	**0.99**		**508.40**	**11.30**	**8.00**				**417.00**		**Minimum**
780.00	**293.00**	**500.00**	**33.20**		**1402.10**	**664.00**	**1540.00**				**1150.00**		**Maximum**
23	**23**	**23**	**23**		**23**	**23**	**23**				**23**		**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

Table H-4
General Water Quality Analyses of Groundwater from the Upper Clay Aquitard at the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
282.0	87.3	49.1	4.1	0.0	627.9	41.5	663.0	0.0	-3.63	OW-2	515.0	627.9	08/30/17
282.00	**87.30**	**49.10**	**4.10**		**627.90**	**41.50**	**663.00**				**515.00**		**Mean**
282.00	**87.30**	**49.10**	**4.10**		**627.90**	**41.50**	**663.00**				**515.00**		**Geo. Mean**
282.00	**87.30**	**49.10**	**4.10**		**627.90**	**41.50**	**663.00**				**515.00**		**Median**
-------	**-------**	**-------**	**-------**		**-------**	**-------**	**-------**				**-------**		**Stnd. Dev.**
282.00	**87.30**	**49.10**	**4.10**		**627.90**	**41.50**	**663.00**				**515.00**		**Minimum**
282.00	**87.30**	**49.10**	**4.10**		**627.90**	**41.50**	**663.00**				**515.00**		**Maximum**
1	**1**	**1**	**1**		**1**	**1**	**1**				**1**		**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

------- **Standard deviation cannot be calculated for one sample.**

Table H-5
General Water Quality Analyses of Groundwater from the Lower Sand Deposit at the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
16.8	3.2	50.8	1.9	0.0	64.0	3.0	112.0	0.0	-1.55	OW-14A	52.5	64.0	09/25/17
18.2	8.3	64.5	1.4	0.0	82.5	15.8	125.0	0.0	0.36	OW-15	67.7	82.5	09/22/17
17.50	**5.75**	**57.65**	**1.65**		**73.25**	**9.40**	**118.50**				**60.10**		**Mean**
17.49	**5.15**	**57.24**	**1.63**		**72.66**	**6.88**	**118.32**				**59.62**		**Geo. Mean**
17.50	**5.75**	**57.65**	**1.65**		**73.25**	**9.40**	**118.50**				**60.10**		**Median**
0.99	**3.61**	**9.69**	**0.35**		**13.08**	**9.05**	**9.19**				**10.75**		**Stnd. Dev.**
16.80	**3.20**	**50.80**	**1.40**		**64.00**	**3.00**	**112.00**				**52.50**		**Minimum**
18.20	**8.30**	**64.50**	**1.90**		**82.50**	**15.80**	**125.00**				**67.70**		**Maximum**
2	**2**	**2**	**2**		**2**	**2**	**2**				**2**		**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

Table H-6A
General Water Quality Analyses of Groundwater from the Glacial Till Deposit at the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
36.8	29.8	93.3	2.1	0.0	98.8	7.5	310.0	0.0	0.69	OW-1B	81.0	98.8	09/22/17
68.2	46.7	54.3	2.7	0.0	256.0	5.0	261.0	0.0	-0.49	OW-3	210.0	256.0	09/22/17
88.7	41.7	107.0	2.3	0.0	66.4	25.9	491.0	0.0	2.15	OW-4	54.5	66.4	09/22/17
64.4	25.1	84.8	1.9	0.0	75.5	34.8	332.0	0.0	-0.64	OW-5	61.9	75.5	08/31/17
446.0	102.0	131.0	3.4	0.0	42.6	13.2	1790.0	0.0	-2.55	OW-6	34.9	42.6	09/22/17
140.82	**49.06**	**94.08**	**2.48**		**107.86**	**17.28**	**636.80**				**88.46**		**Mean**
91.44	**43.09**	**90.35**	**2.43**		**88.41**	**13.49**	**472.73**				**72.50**		**Geo. Mean**
68.20	**41.70**	**93.30**	**2.30**		**75.50**	**13.20**	**332.00**				**61.90**		**Median**
171.60	**30.85**	**28.28**	**0.59**		**85.22**	**12.69**	**650.40**				**69.92**		**Stnd. Dev.**
36.80	**25.10**	**54.30**	**1.90**		**42.60**	**5.00**	**261.00**				**34.90**		**Minimum**
446.00	**102.00**	**131.00**	**3.40**		**256.00**	**34.80**	**1790.00**				**210.00**		**Maximum**
5	**5**	**5**	**5**		**5**	**5**	**5**				**5**		**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

Table H-6B
General Water Quality Analyses of Groundwater from the Glacial Till Deposit at the Niagara Sanitation Landfill
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Total Calcium	Total Magnesium	Total Sodium	Total Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date
36.8	29.8	93.3	2.1	0.0	98.8	7.5	310.0	0.0	0.69	OW-1B	81.0	98.8	09/22/17
68.2	46.7	54.3	2.7	0.0	256.0	5.0	261.0	0.0	-0.49	OW-3	210.0	256.0	09/22/17
88.7	41.7	107.0	2.3	0.0	66.4	25.9	491.0	0.0	2.15	OW-4	54.5	66.4	09/22/17
64.4	25.1	84.8	1.9	0.0	75.5	34.8	332.0	0.0	-0.64	OW-5	61.9	75.5	08/31/17
64.53	**35.83**	**84.85**	**2.25**		**124.18**	**18.30**	**348.50**				**101.85**		**Mean**
61.53	**34.74**	**82.34**	**2.23**		**106.12**	**13.56**	**338.89**				**87.04**		**Geo. Mean**
66.30	**35.75**	**89.05**	**2.20**		**87.15**	**16.70**	**321.00**				**71.45**		**Median**
21.34	**10.07**	**22.33**	**0.34**		**88.94**	**14.42**	**99.53**				**72.96**		**Stnd. Dev.**
36.80	**25.10**	**54.30**	**1.90**		**66.40**	**5.00**	**261.00**				**54.50**		**Minimum**
88.70	**46.70**	**107.00**	**2.70**		**256.00**	**34.80**	**491.00**				**210.00**		**Maximum**
4	**4**	**4**	**4**		**4**	**4**	**4**				**4**		**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

The results from well OW-6 have been omitted.

Table H-7
General Water Quality Analyses of Groundwater from the Camillus Shale in the Tonawanda Area
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date	Sites/Comments
470.0	110.0	140.0	13.0	0.0	64.6	5.8	2000.0	0.0	-4.82	W-1	53.0	64.6	11/21/89	Seaway/Niagara Landfill
401.0	131.0	136.0	11.0	0.0	54.4	5.8	2000.0	0.0	-7.17	"	44.6	54.4	05/31/90	" " "
472.0	115.0	158.0	9.9	0.0	48.6	25.2	2320.0	0.0	-10.75	"	39.9	48.6	11/17/94	" " "
474.0	118.0	149.0	11.6	0.0	55.2	5.1	1980.0	0.0	-2.59	"	45.3	55.2	05/29/96	" " "
439.0	116.0	167.0	18.2	0.0	42.2	5.9	2460.0	0.0	-14.13	"	34.6	42.2	08/13/97	" " "
480.0	150.0	220.0	13.0	0.0	82.9	78.0	2200.0	0.0	-3.32	W-2	68.0	82.9	11/21/89	" " "
409.0	216.0	172.0	11.0	0.0	76.1	83.6	2350.0	0.0	-6.69	"	62.4	76.1	05/31/90	" " "
439.0	158.0	210.0	11.4	0.0	73.0	88.2	2400.0	0.0	-9.51	"	59.9	73.0	11/21/94	" " "
425.0	158.0	200.0	15.7	0.0	82.9	75.9	2240.0	0.0	-7.31	"	68.0	82.9	05/30/96	" " "
440.0	110.0	120.0	8.7	0.0	90.2	9.0	1900.0	0.0	-6.23	W-3	74.0	90.2	11/21/89	" " "
424.0	135.0	104.0	7.2	0.0	91.1	10.6	2000.0	0.0	-8.04	"	74.7	91.1	05/31/90	" " "
484.0	110.0	138.0	7.2	0.0	97.4	21.0	2100.0	0.0	-7.65	"	79.9	97.4	11/17/94	" " "
583.0	146.0	155.0	7.3	0.0	69.5	9.1	1900.0	0.0	7.95	"	57.0	69.5	02/21/95	" " "
612.0	151.0	145.0	8.2	0.0	81.1	9.1	1770.0	0.0	12.56	"	66.5	81.1	02/21/95	" " "
487.0	111.0	128.0	8.0	0.0	95.5	9.1	1970.0	0.0	-4.43	"	78.3	95.5	05/29/96	" " "
440.0	130.0	160.0	10.0	0.0	53.6	3.6	2200.0	0.0	-7.98	W-6	44.0	53.6	11/22/89	" " "
491.0	148.0	175.0	8.3	0.0	60.8	7.7	2180.0	0.0	-2.31	"	49.9	60.8	05/31/90	" " "
475.0	147.0	186.0	8.4	0.0	36.5	16.8	2320.0	0.0	-5.64	"	29.9	36.5	11/17/94	" " "
466.0	148.0	172.0	9.4	0.0	57.8	7.5	2570.0	0.0	-11.77	"	47.4	57.8	05/29/96	" " "
516.0	150.0	192.0	13.7	0.0	53.9	6.9	2320.0	0.0	-2.69	"	44.2	53.9	08/12/97	" " "
480.0	150.0	180.0	20.0	0.0	93.9	23.0	2200.0	0.0	-3.63	W-7	77.0	93.9	11/21/89	" " "
409.0	192.0	148.0	17.0	0.0	114.2	9.1	2100.0	0.0	-3.12	"	93.7	114.2	05/31/90	" " "
474.0	152.0	171.0	17.3	0.0	113.0	13.9	2240.0	0.0	-5.21	"	92.7	113.0	05/29/96	" " "
424.0	137.0	175.0	23.1	0.0	105.3	11.9	2610.0	0.0	-16.25	"	86.4	105.3	08/13/97	" " "
460.0	160.0	330.0	27.0	0.0	134.1	170.0	2500.0	0.0	-7.15	W-8	110.0	134.1	11/22/89	" " "
410.0	232.0	348.0	20.0	0.0	117.8	141.0	2260.0	0.0	2.06	"	96.6	117.8	05/31/90	" " "
450.0	199.0	416.0	36.6	0.0	340.2	252.0	2880.0	0.0	-11.33	"	279.0	340.2	11/21/94	" " "
444.0	209.0	410.0	52.3	0.0	351.1	242.0	2590.0	0.0	-6.39	"	288.0	351.1	05/30/96	" " "
436.0	194.0	456.0	56.8	0.0	332.8	285.0	2750.0	0.0	-9.05	"	273.0	332.8	08/13/97	" " "
480.0	130.0	130.0	15.0	0.0	170.7	8.0	2100.0	0.0	-6.93	W-10	140.0	170.7	11/21/89	" " "
395.0	232.0	130.0	34.0	0.0	21.7	8.1	2300.0	0.0	-3.36	"	17.8	21.7	05/31/90	" " "
499.0	147.0	172.0	11.0	0.0	54.9	83.7	2240.0	0.0	-5.43	"	45.0	54.9	11/22/94	" " "
475.0	148.0	147.0	10.8	0.0	55.2	6.1	2230.0	0.0	-5.51	"	45.3	55.2	05/29/96	" " "
424.0	139.0	156.0	15.6	0.0	53.9	6.9	2590.0	0.0	-16.06	"	44.2	53.9	08/13/97	" " "
470.0	140.0	300.0	43.0	0.0	121.9	33.0	2300.0	0.0	-1.70	W-11	100.0	121.9	11/21/89	" " "
427.0	166.0	233.0	38.0	0.0	190.2	43.8	2440.0	0.0	-8.97	"	156.0	190.2	05/31/90	" " "
443.0	154.0	305.0	30.5	0.0	200.0	88.6	2420.0	0.0	-6.99	"	164.0	200.0	11/22/94	" " "
460.0	165.0	313.0	54.8	0.0	206.0	50.1	2310.0	0.0	-1.28	"	169.0	206.0	05/30/96	" " "
402.0	141.0	302.0	53.1	0.0	187.8	39.0	2590.0	0.0	-11.46	"	154.0	187.8	08/13/97	" " "

Table H-7
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Wheatfield, New York

Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date	Sites/Comments
490.0	180.0	440.0	51.0	0.0	426.7	380.0	2800.0	0.0	-12.02	W-12	350.0	426.7	11/22/89	Seaway/Niagara Landfill
411.0	186.0	410.0	41.0	0.0	268.2	252.0	2860.0	0.0	-13.01	"	220.0	268.2	05/31/90	" " "
464.0	228.0	476.0	64.7	0.0	452.3	322.0	2970.0	0.0	-9.86	"	371.0	452.3	05/30/96	" " "
543.0	229.0	457.0	59.6	0.0	458.4	385.0	2930.0	0.0	-8.21	"	376.0	458.4	08/12/97	" " "
520.0	150.0	200.0	15.0	0.0	97.5	34.0	2300.0	0.0	-3.14	W-13	80.0	97.5	12/04/89	" " "
503.0	214.0	179.0	9.5	0.0	104.4	29.1	2110.0	0.0	4.39	"	85.6	104.4	05/31/90	" " "
459.0	159.0	204.0	11.8	0.0	109.6	147.0	2420.0	0.0	-11.00	"	89.9	109.6	11/22/94	" " "
469.0	159.0	187.0	12.1	0.0	128.0	31.8	2110.0	0.0	-2.18	"	105.0	128.0	05/29/96	" " "
422.0	146.0	183.0	15.4	0.0	100.7	29.9	2350.0	0.0	-10.77	"	82.6	100.7	08/13/97	" " "
500.0	170.0	370.0	51.0	0.0	42.7	300.0	2500.0	0.0	-4.15	W-14D	35.0	42.7	11/22/89	" " "
452.0	191.0	372.0	27.6	0.0	474.3	420.0	2540.0	0.0	-13.59	"	389.0	474.3	11/21/94	" " "
473.0	196.0	352.0	27.7	0.0	391.4	236.0	2670.0	0.0	-10.38	"	321.0	391.4	05/29/96	" " "
529.0	201.0	375.0	39.8	0.0	369.4	224.0	2360.0	0.0	-1.02	"	303.0	369.4	08/12/97	" " "
460.0	143.0	160.0	26.0	0.0	89.0	16.0	2000.0	0.0	-1.41	W-15	73.0	89.0	12/04/89	" " "
474.0	155.0	142.0	19.0	0.0	100.8	16.9	2430.0	0.0	-10.08	"	82.7	100.8	05/31/90	" " "
444.0	155.0	176.0	20.1	0.0	121.8	29.4	2760.0	0.0	-16.65	"	99.9	121.8	11/21/94	" " "
491.0	166.0	171.0	21.9	0.0	132.9	27.1	2290.0	0.0	-4.61	"	109.0	132.9	05/29/96	" " "
499.0	162.0	190.0	28.8	0.0	119.4	51.5	1940.0	0.0	3.77	"	97.9	119.4	08/12/97	" " "
532.0	162.0	187.0	28.6	0.0	114.7	53.9	2240.0	0.0	-1.31	"	-------	-------	-------	" " "
389.0	115.0	130.0	11.0	0.0	74.0	9.1	2270.0	0.0	-16.67	W-16	60.7	74.0	05/31/90	" " "
452.0	146.0	172.0	11.3	0.0	66.9	98.6	2200.0	0.0	-7.98	"	54.9	66.9	11/22/94	" " "
471.0	150.0	161.0	11.8	0.0	65.4	13.5	2250.0	0.0	-5.63	"	53.6	65.3	05/29/96	" " "
543.0	161.0	192.0	18.2	0.0	77.3	16.5	2220.0	0.0	1.24	"	63.4	77.3	08/12/97	" " "
468.0	105.0	110.0	3.8	0.0	39.7	5.3	2140.0	0.0	-10.32	W-17	32.6	39.7	05/31/90	" " "
479.0	112.0	146.0	4.2	0.0	37.7	4.4	2180.0	0.0	-7.65	"	30.9	37.7	05/29/96	" " "
526.0	116.0	169.0	7.0	0.0	32.8	5.2	1820.0	0.0	5.79	"	26.9	32.8	08/12/97	" " "
486.0	48.2	128.0	41.2	0.0	87.4	12.6	1800.0	0.0	-5.97	BW-9	71.7	87.4	07/25/96	Spaulding Composites
497.0	35.7	136.0	37.7	0.0	93.5	11.6	1840.0	0.0	-7.42	"	76.7	93.5	11/26/96	" "
439.0	101.0	68.8	13.7	0.0	117.2	18.2	2020.0	0.0	-14.01	BW-10	96.1	117.2	07/24/96	" "
474.0	108.0	76.1	13.1	0.0	135.3	17.3	1850.0	0.0	-6.51	"	111.0	135.3	11/25/96	" "
474.0	92.7	60.5	29.6	0.0	128.0	89.8	1950.0	0.0	-13.22	BW-12	105.0	128.0	07/24/96	" "
510.0	92.3	66.0	28.0	0.0	115.7	88.9	1700.0	0.0	-4.15	"	94.9	115.7	11/26/96	" "
476.0	133.0	231.0	15.7	0.0	76.2	177.0	2203.0	0.0	-7.16	81-1T	62.5	76.2	09/25/95	U.S. Geological Survey
507.0	154.0	249.0	28.6	0.0	43.0	176.0	2290.0	0.0	-3.71	"	35.3	43.0	07/30/96	" " "
504.0	141.0	271.0	20.6	0.0	48.5	169.0	1790.0	0.0	6.78	"	39.8	48.5	12/18/97	" " "
570.0	72.6	29.9	2.8	0.0	123.1	29.2	1420.0	0.0	4.96	81-2TA	101.0	123.1	09/20/95	" " "
464.0	70.5	31.9	3.6	0.0	107.5	30.0	1920.0	0.0	-16.64	"	88.2	107.5	07/30/96	" " "
601.0	81.7	45.1	4.3	0.0	118.9	32.9	1370.0	0.0	10.52	"	97.5	118.9	12/18/97	" " "

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Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date	Sites/Comments
472.13	147.18	204.59	21.61		130.16	77.79	2242.12				106.93			Mean
470.07	140.73	178.01	16.88		101.18	32.55	2218.62				82.86			Geo. Mean
472.00	148.00	172.00	15.70		97.40	29.20	2240.00				79.10			Median
45.12	40.22	106.24	15.35		109.14	104.13	321.11				90.10			Stnd. Dev.
389.00	35.70	29.90	2.80		21.70	3.60	1370.00				17.80			Minimum
612.00	232.00	476.00	64.70		474.30	420.00	2970.00				389.00			Maximum
77	77	77	77		77	77	77				76			Count

Notes:

25.38	**Mass balance error greater than 20%. There are 19 samples with errors greater than this.**
-------	**This sample was in an earlier version of this table and the specified information was not given.**

Table H-8
General Water Quality Analyses of Groundwater from the Upper Lockport Dolostone in the Niagara Falls Area
NYSDEC Hydrogeologic Report
Niagara Sanitation Site, Site No. 932054
Wheatfield, New York

Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date	Sites/Comments
390.0	122.0	57.0	2.7	0.0	390.1	78.0	1130.0	0.0	-0.12	87-01	320.0	390.1	Apr-98	Bell Aerospce
200.0	89.0	119.0	2.7	0.0	268.2	190.0	550.0	0.0	3.06	87-02	220.0	268.2	Apr-98	" "
250.0	79.0	102.0	2.8	0.0	341.4	170.0	630.0	0.0	-0.05	87-04	280.0	341.4	Apr-98	" "
160.0	120.0	45.0	2.4	0.0	499.9	44.0	520.0	0.0	-0.96	87-08	410.0	499.9	10/01/94	" "
210.0	172.0	88.0	2.3	0.0	526.7	120.0	740.0	0.0	1.95	87-08	432.0	526.7	Apr-98	" "
350.0	110.0	76.0	3.5	0.0	390.1	130.0	990.0	0.0	-1.26	87-12	320.0	390.1	01/01/95	" "
300.0	101.0	161.0	3.2	0.0	280.4	290.0	840.0	0.0	0.16	87-12	230.0	280.4	Apr-98	" "
210.0	150.0	40.0	11.0	0.0	524.3	53.0	670.0	0.0	1.64	87-15	430.0	524.3	Apr-98	" "
470.0	123.0	56.0	2.7	0.0	378.0	78.0	1300.0	0.0	0.86	87-17	310.0	378.0	Apr-98	" "
420.0	120.0	57.0	3.3	0.0	390.1	77.0	1200.0	0.0	-0.23	87-18	320.0	390.1	10/01/94	" "
340.0	102.0	131.0	3.0	0.0	329.2	200.0	900.0	0.0	2.23	87-18	270.0	329.2	Apr-98	" "
160.0	116.0	53.0	2.1	0.0	287.7	83.0	630.0	0.0	-0.72	87-19	236.0	287.7	Apr-98	" "
530.0	110.0	66.0	3.6	0.0	378.0	110.0	1400.0	0.0	0.02	87-20	310.0	378.0	01/01/95	" "
340.0	160.0	57.0	3.4	0.0	475.5	81.0	1100.0	0.0	-0.44	87-22	390.0	475.5	10/01/94	" "
290.0	178.0	52.0	2.9	0.0	607.2	71.0	995.0	0.0	-1.90	87-22	498.0	607.2	Apr-98	" "
520.0	103.0	63.0	3.3	0.0	419.4	110.0	1300.0	0.0	0.27	89-02	344.0	419.4	Apr-98	" "
210.0	64.0	14.0	2.3	0.0	378.0	21.0	500.0	0.0	-2.34	89-03	310.0	378.0	01/01/95	" "
572.0	136.0	80.0	0.8	0.0	321.9	163.0	1628.0	0.0	-0.62	89-04	264.0	321.9	Apr-98	" "
580.0	60.0	76.0	3.3	0.0	304.8	130.0	1400.0	0.0	-0.72	89-05	250.0	304.8	01/01/95	" "
620.0	101.0	111.0	5.2	0.0	365.8	200.0	1500.0	0.0	1.54	89-05	300.0	365.8	Apr-98	" "
420.0	110.0	43.0	5.4	0.0	414.5	59.0	1200.0	0.0	-2.18	89-06	340.0	414.5	01/01/95	" "
540.0	140.0	54.0	6.1	0.0	424.3	60.0	1600.0	0.0	-1.20	89-06	348.0	424.3	Apr-98	" "
261.0	153.0	157.0	2.8	0.0	365.8	272.0	891.0	0.0	0.45	89-14	300.0	365.8	Apr-98	" "
560.0	126.0	82.0	3.7	0.0	312.1	150.0	1600.0	0.0	-0.81	89-17	256.0	312.1	Apr-98	" "
290.0	150.0	103.0	3.3	0.0	353.6	170.0	1000.0	0.0	-0.06	93-02	290.0	353.6	Apr-98	" "
518.0	119.0	51.0	5.7	0.0	387.7	83.0	1470.0	0.0	-1.68	93-03	318.0	387.7	Apr-98	" "
423.0	126.0	56.0	2.7	0.0	397.5	78.0	1180.0	0.0	1.03	B-14	326.0	397.5	Apr-98	" "
112.0	42.0	9.4	0.0	0.0	382.0	25.0	118.0	0.0	0.16	308-850-1	N/A		08/07/57	U.S. Air Force
144.0	50.0	27.0	0.0	0.0	429.0	47.0	196.0	0.0	0.14	"	"		11/18/58	Well redrilled August, 1958
316.0	65.0	30.0	0.0	0.0	356.0	40.0	740.0	0.0	0.11	"	"		07/21/59	U.S. Air Force
244.0	52.0	29.0	0.0	0.0	360.0	36.0	516.0	0.0	0.16	"	"		10/10/60	" " "
116.0	40.0	17.0	0.0	0.0	341.0	33.0	156.0	0.0	0.26	"	"		02/06/62	" " "
127.0	43.0	21.0	0.0	0.0	363.0	50.0	163.0	0.0	0.16	"	"		10/09/62	" " "
113.0	41.0	24.0	0.0	0.0	348.0	50.0	138.0	0.0	0.34	"	"		10/08/63	" " "
124.0	40.0	21.0	0.0	0.0	368.0	47.0	144.0	0.0	0.17	"	"		10/01/64	" " "
124.0	46.0	32.0	0.0	0.0	370.0	75.0	151.0	0.0	0.17	"	"		10/07/65	" " "
106.0	43.0	13.0	0.0	0.0	358.0	26.0	131.0	0.0	0.34	308-850-2	N/A		09/17/56	" " "
107.0	44.0	9.7	0.0	0.0	354.0	27.0	133.0	0.0	0.26	"	"		08/07/57	" " "

Table H-8
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Calcium	Magnesium	Sodium	Potassium	Carbonate	Bicarbonate	Chloride	Sulfate	TDS	Percent Error	Sample Location	Alkalinity	Bicarbonate (Calculated)	Sample Date	Sites/Comments
100.0	43.0	15.0	0.0	0.0	338.0	27.0	137.0	0.0	0.14	308-850-2	N/A		07/23/58	U.S. Air Force
248.0	68.0	43.0	0.0	0.0	360.0	61.0	585.0	0.0	0.10	"	"		07/21/59	Well redrilled August, 1958
100.0	42.0	27.0	0.0	0.0	331.0	49.0	130.0	0.0	0.55	"	"		02/06/62	U.S. Air Force
118.0	44.0	14.0	0.0	0.0	342.0	46.0	151.0	0.0	0.35	"	"		10/09/62	" " "
111.0	42.0	12.0	0.0	0.0	334.0	42.0	134.0	0.0	0.35	"	"		10/08/63	" " "
112.0	42.0	18.0	0.0	0.0	340.0	42.0	146.0	0.0	0.15	"	"		10/01/64	" " "
108.0	42.0	19.0	0.0	0.0	332.0	44.0	143.0	0.0	0.06	"	"		10/07/65	" " "
215.0	48.7	27.4	1.02	0.0	390.1	38.0	350.0	0.0	3.91	MW-101B	320.0	390.1	06/05/97	Vanadium
141.0	36.7	54.7	2.89	0.0	231.7	50.0	300.0	0.0	4.40	MW-102B	190.0	231.7	06/05/97	"
109.0	67.3	37.7	2.18	0.0	475.5	24.0	170.0	0.0	2.68	MW-103B	390.0	475.5	06/05/97	"
72.0	34.0	3.9	0.0	0.0	283.0	10.0	78.0	0.0	0.11	309-850-1	N/A		02/04/60	U.S. Army
109.0	36.0	20.0	0.0	0.0	310.0	42.0	132.0	0.0	1.40	309-850-2	N/A		02/04/60	U.S. Army
227.0	78.5	44.8	4.7	0.0	252.4	42.9	730.0	0.0	-1.71	MW-9D	207.0	252.4	12/11/96	Frontier Pendleton Site
265.43	**85.69**	**51.36**	**2.10**		**369.82**	**83.23**	**679.14**				**313.84**			**Mean**
220.42	**75.16**	**38.72**	**-------**		**363.68**	**64.62**	**462.49**				**306.42**			**Geo. Mean**
215.00	**78.50**	**44.80**	**2.30**		**360.00**	**59.00**	**630.00**				**310.00**			**Median**
162.32	**43.08**	**37.72**	**2.22**		**70.54**	**64.14**	**507.61**				**70.22**			**Stnd. Dev.**
72.00	**34.00**	**3.90**	**0.00**		**231.70**	**10.00**	**78.00**				**190.00**			**Minimum**
620.00	**178.00**	**161.00**	**11.00**		**607.20**	**290.00**	**1628.00**				**498.00**			**Maximum**
51	**51**	**51**	**51**		**51**	**51**	**51**				**31**			**Count**

Notes:

25.38 **Mass balance error greater than 10%.**

------- **Geometric mean cannot be calculated when a sample have a value of 0.**

APPENDIX I
PHOTOS

Fill Material

Figure I-1. Photo showing landfill waste from a test pit completed on National Fuel Gas property west of the main Niagara Sanitation landfill. Photo taken by Steven Moeller on July 20, 2020.

Figure I-2. Close-up photo of the landfill waste shown in Figure I-1. Photo taken by Steven Moeller on July 20, 2020.

Figure I-3. Close-up photo of the landfill waste shown in Figure I-1. Photo taken by Steven Moeller on July 20, 2020.

Figure I-4. Photo showing landfill waste in a test pit completed on National Fuel Gas property west of the main Niagara Sanitation landfill. Photo taken by Steven Moeller on July 20, 2020.

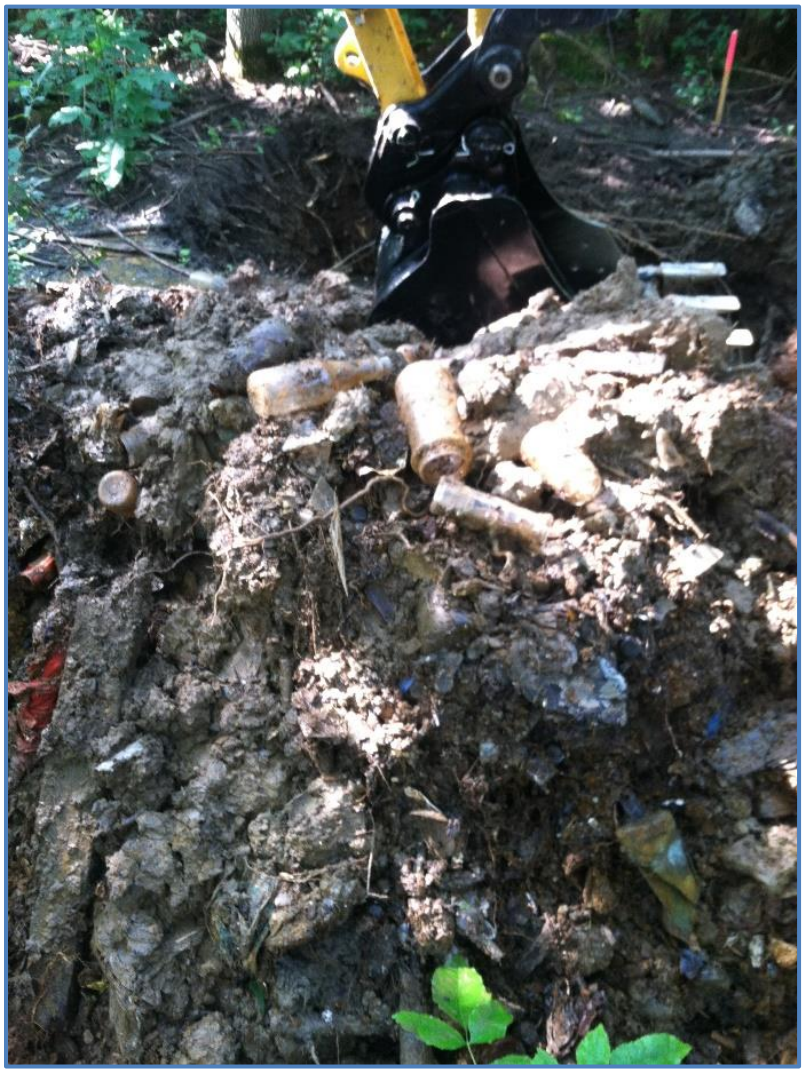

Figure I-5. Photo showing landfill waste from a test pit completed on the main Niagara Sanitation landfill property. Photo taken by Glenn M. May on July 21, 2017.

Figure I-6. Photo showing landfill waste from a test pit completed on the main Niagara Sanitation landfill property. Photo taken by Glenn M. May on July 21, 2017.

Figure I-7. Photo showing landfill waste on the root ball of a fallen tree on the main Niagara Sanitation landfill property. Photo taken by Steven Moeller on October 16, 2023.

Figure I-8. Photo showing landfill waste from a test pit completed on the main Niagara Sanitation landfill property. Photo taken by Steven Moeller on June 7, 2021.

Figure I-9. Photo showing landfill waste from a test pit completed on the main Niagara Sanitation landfill property. Photo taken by Steven Moeller on June 7, 2021.

Figure I-10. Photo showing landfill waste from a test pit completed on the main Niagara Sanitation landfill property. Photo taken by Steven Moeller on June 7, 2021.

Figure I-11. Photo showing landfill waste from a test pit completed on the main Niagara Sanitation landfill property. Photo taken by Steven Moeller on June 7, 2021.

Figure I-12. Photo showing landfill waste on the ground surface of the main Niagara Sanitation landfill property. Photo taken by Glenn M. May on August 29, 2017.

Figure I-13. Photo showing landfill waste on the ground surface of the main Niagara Sanitation landfill property. Photo taken by Glenn M. May on August 29, 2017.

Figure I-14. Photo showing landfill waste on the ground surface of the main Niagara Sanitation landfill property. Notice the ash-like nature of this material. Photo taken by Glenn M. May on August 29, 2017.

Upper Sand Deposit

Figure I-15. Photo showing the upper sand deposit (yellow-brown) in test pit TP-5 completed along the southern boundary of the Niagara Sanitation landfill. Photo taken by Glenn M. May on July 19, 2017.

Figure I-16. Photo showing the upper sand deposit (yellow-brown) that was excavated from test pit TP-5. Photo taken by Glenn M. May on July 19, 2017.

Figure I-17. Photo showing the upper sand (yellow-brown) and underlying silty clay (brown) deposits in test pit TP-9 completed along the southern boundary of the Niagara Sanitation landfill. Photo taken by Glenn M. May on July 20, 2017.

Figure I-18. Photo showing the upper sand deposit (yellow-brown) that was excavated from test pit TP-9. Photo taken by Glenn M. May on July 20, 2017.

Figure I-19. Photo showing the upper sand (yellow-brown) and underlying silty clay (brown) deposits in test pit TP-10 completed along the southern boundary of the Niagara Sanitation landfill. Photo taken by Glenn M. May on July 20, 2017.

Figure I-20. Photo showing the upper sand deposit from 4’ to 6’ depth in a split-spoon sample collected from soil boring LPZ-18S. Photo taken by Steven Moeller on October 4, 2023.

Gray-Brown Silty Clay Deposit

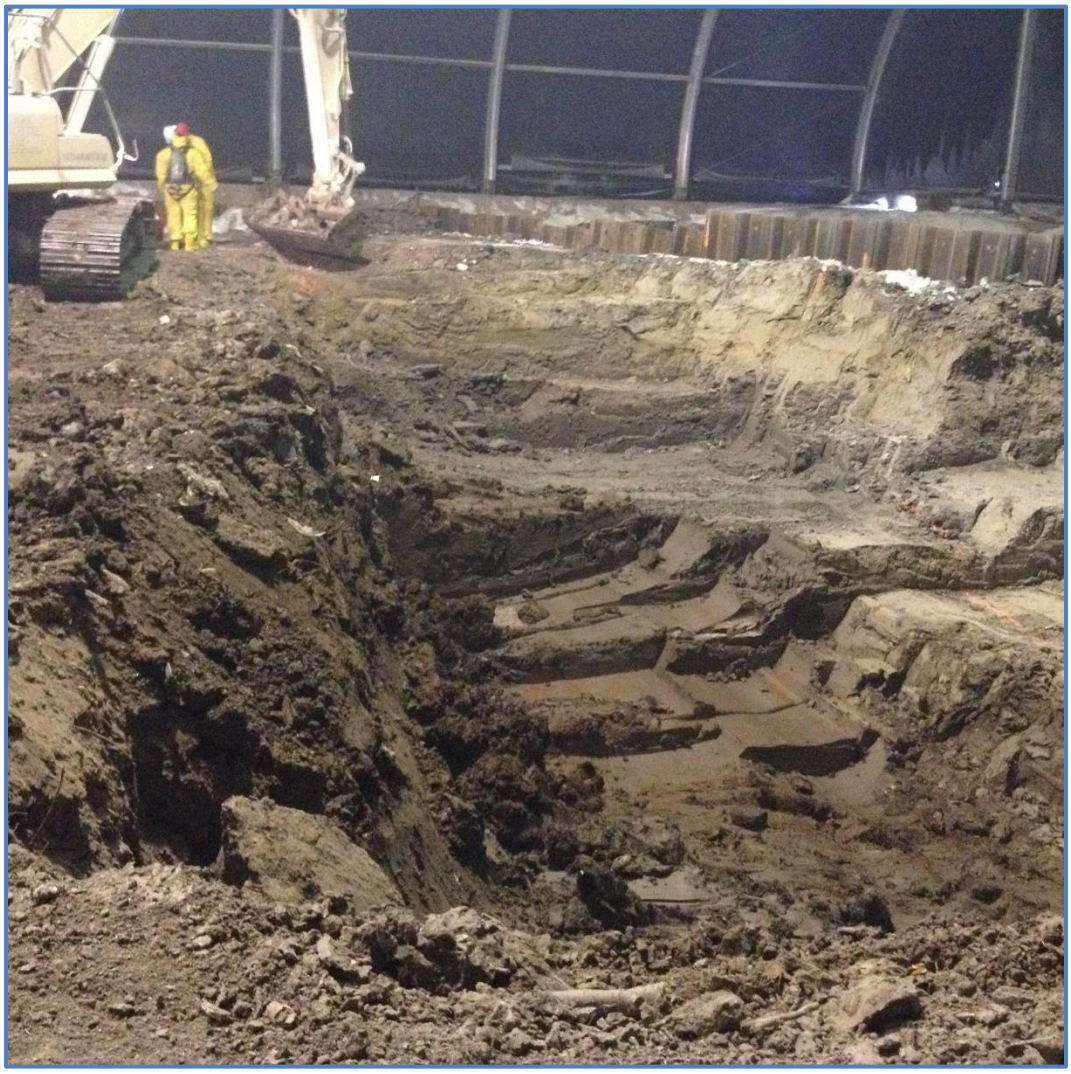

Figure I-21. Photo showing the upper sand deposit (yellow-brown) and the underlying silty clay deposit (brown and reddish-brown) in the IRM excavation area. Photo taken by Kevin Glaser on February 27, 2015.

Figure I-22. Photo showing the upper sand deposit (yellow-brown) and the underlying silty clay deposit (brown and reddish-brown) in the IRM excavation area. Photo taken by Kevin Glaser on February 27, 2015.

Figure I-23. Photo showing the silty clay deposit from 4’ to 6’ depth in a split-spoon sample collected from soil boring LPZ-18S. Photo taken by Steven Moeller on October 4, 2023.

Figure I-24. Photo showing the silty clay deposit from 14’ to 16’ depth in a split-spoon sample collected from soil boring LPZ-18S. Photo taken by Steven Moeller on October 4, 2023.