



# Glenn Springs Holdings, Inc.

A subsidiary of Occidental Petroleum

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January 21, 2010

Reference No. 001069

Ms. Gloria M. Sosa  
United States Environmental Protection Agency  
Region II, Site Investigation & Compliance Branch  
290 Broadway, 20th Floor  
New York, NY 10007-1866

Mr. Will Welling  
New York State Department of Conservation  
Remedial Bureau D, 12<sup>th</sup> Floor  
625 Broadway  
Albany, NY 12233-7013

Dear Ms. Sosa and Mr. Welling:

Re: **Quarterly Operations Report - Fourth Quarter 2009**  
Hyde Park Remedial Program  
Bedrock and Overburden Monitoring Programs

In accordance with the July 2006 "Performance Monitoring Plan," the following is the quarterly data report for the Hyde Park Remedial Program for the period October 1, 2009 through December 31, 2009. A total of 6.8 million gallons of aqueous phase liquid (APL) was collected, treated, and discharged in compliance with our City of Niagara Falls Publicly Owned Treatment Works (POTW) permit; no non-aqueous phase liquid (NAPL) was shipped for incineration. The potentiometric contours are consistent with previous interpretations. Flow zones 6, 7, and 9 have large dewatered areas between the landfill and the gorge face. The current data continue to support the interpretation of effective hydraulic containment.

The performance monitoring data are presented as follows:

1. Figures 1-9: Showing groundwater contours for the flow zones and overburden
2. Figure 10: Showing continuously recorded water levels at flow zone piezometer PMW-1M-09
3. Table 1: Water Level Elevation Summary
4. Tables 2, 3, and 4: Daily, Weekly, and Quarterly Treatment System Effluent Monitoring Data
5. Attachment 1: Purge well performance graphs indicating daily level and flow information

Review of the pumping wells graph data in Attachment 1 indicates that there may be communication issues or pumping issues in some of the pumping wells.

PW-5UR stopped pumping on December 27, 2009. It was determined that the breaker had malfunctioned. The breaker was replaced on January 4, 2010, and the well is currently pumping.

APW-1 stopped pumping on December 12, 2009. Troubleshooting is currently being performed at this well.

PW-2L stopped pumping on December 26, 2009. Troubleshooting indicated that the pump motor was bad. The motor will be replaced during the beginning of the first quarter of 2010.

January 21, 2010

Reference No. 001069

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An electronic copy of this report is included on the attached CD as an Adobe® Acrobat® file. If you have any questions, please feel free to contact me at 972-687-7506 or by email at [clint\\_babcock@oxy.com](mailto:clint_babcock@oxy.com).

Very truly yours,

GLENN SPRINGS HOLDINGS, INC.

  
Ralph Schupp  
Operations Coordinator  
484-941-3000 Cell

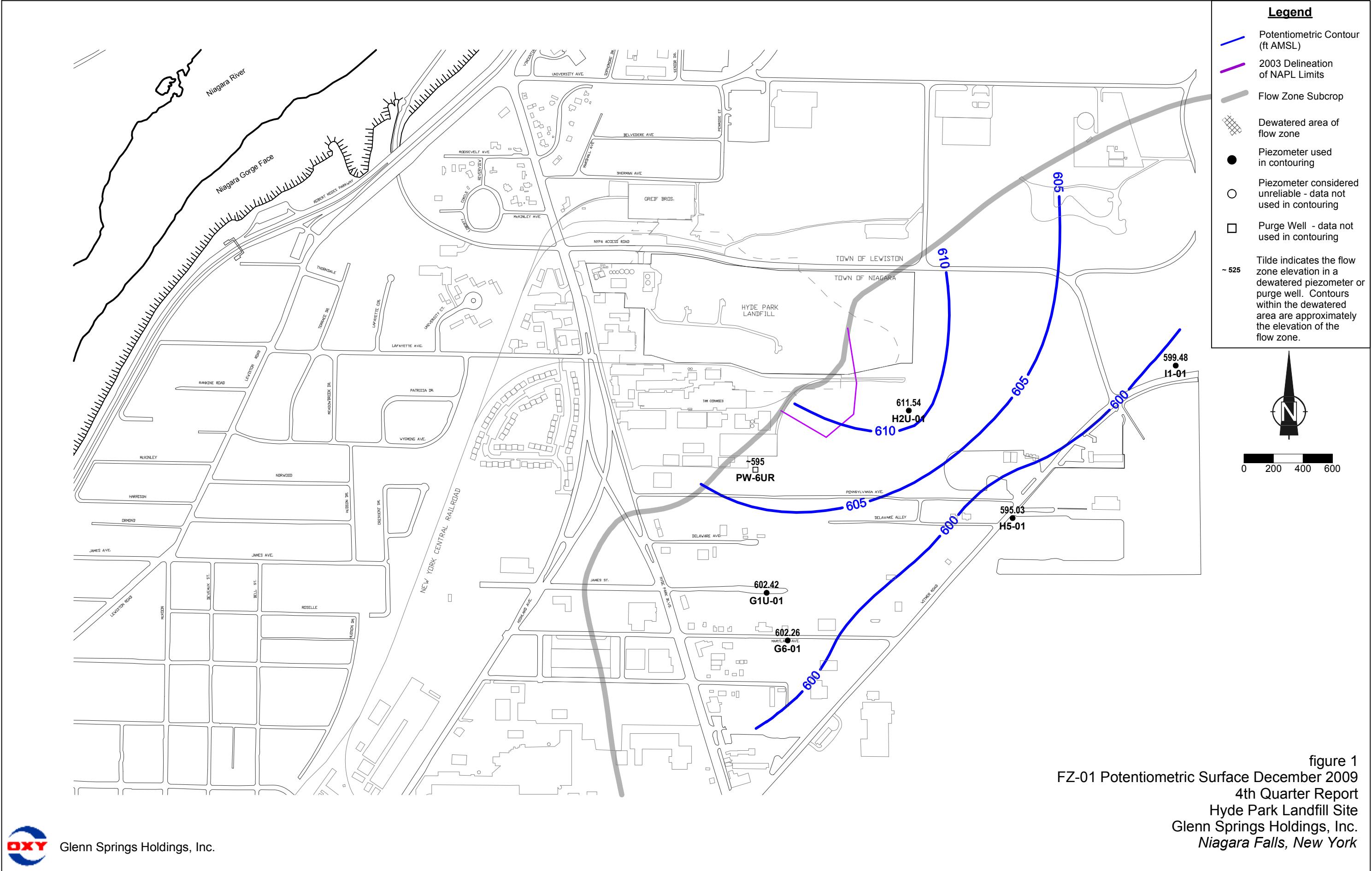
  
Clint Babcock (for Clint Babcock)  
Project Manager  
859-421-4233 Cell

CB/JW/cs/adh/28  
Encl.

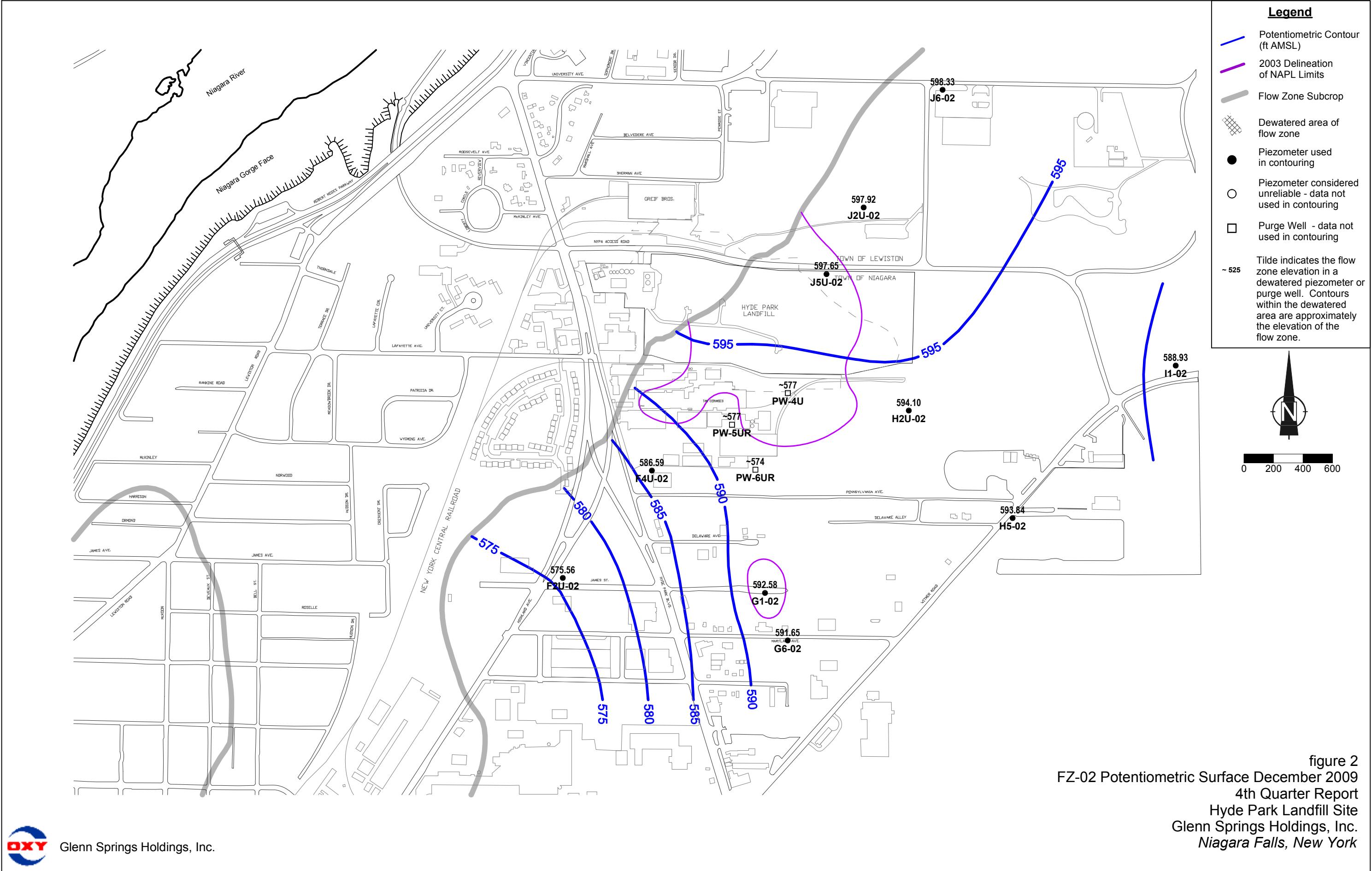
c.c.:	M. Anderson, GSH - 1*	T. Raby, AECOM Environmental - 1*
	M. Forcucci, NYSDOH - 1*	B. Sadowski, NYSDEC - CD Only
	D. Hoyt, CRA - 1	G. Sosa, USEPA - 4*
	J. Pentilchuk, CRA - 1	W. Welling, NYSDEC - 1*

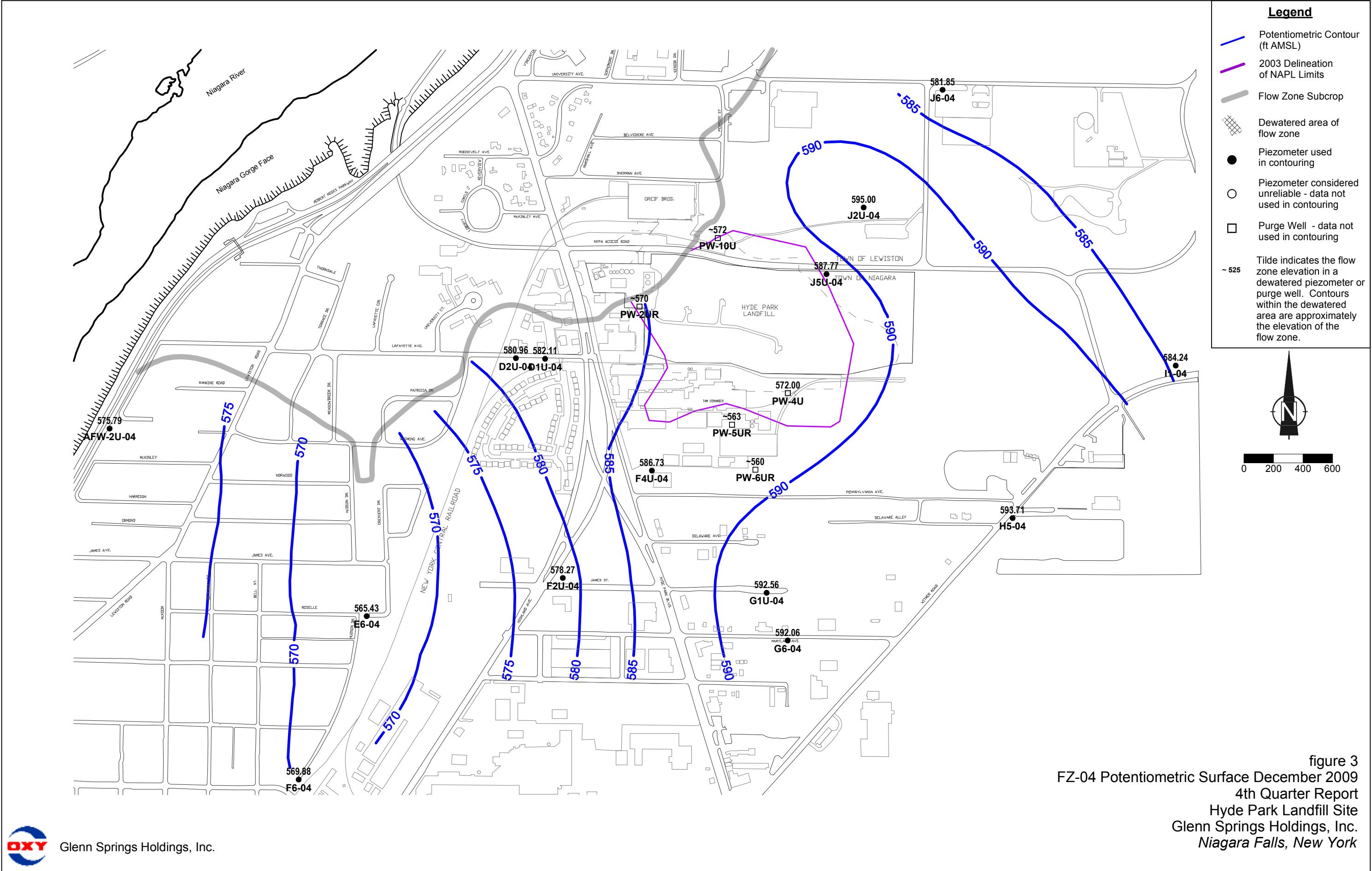
\*Include one copy on CD

## FIGURES



Glenn Springs Holdings, Inc.





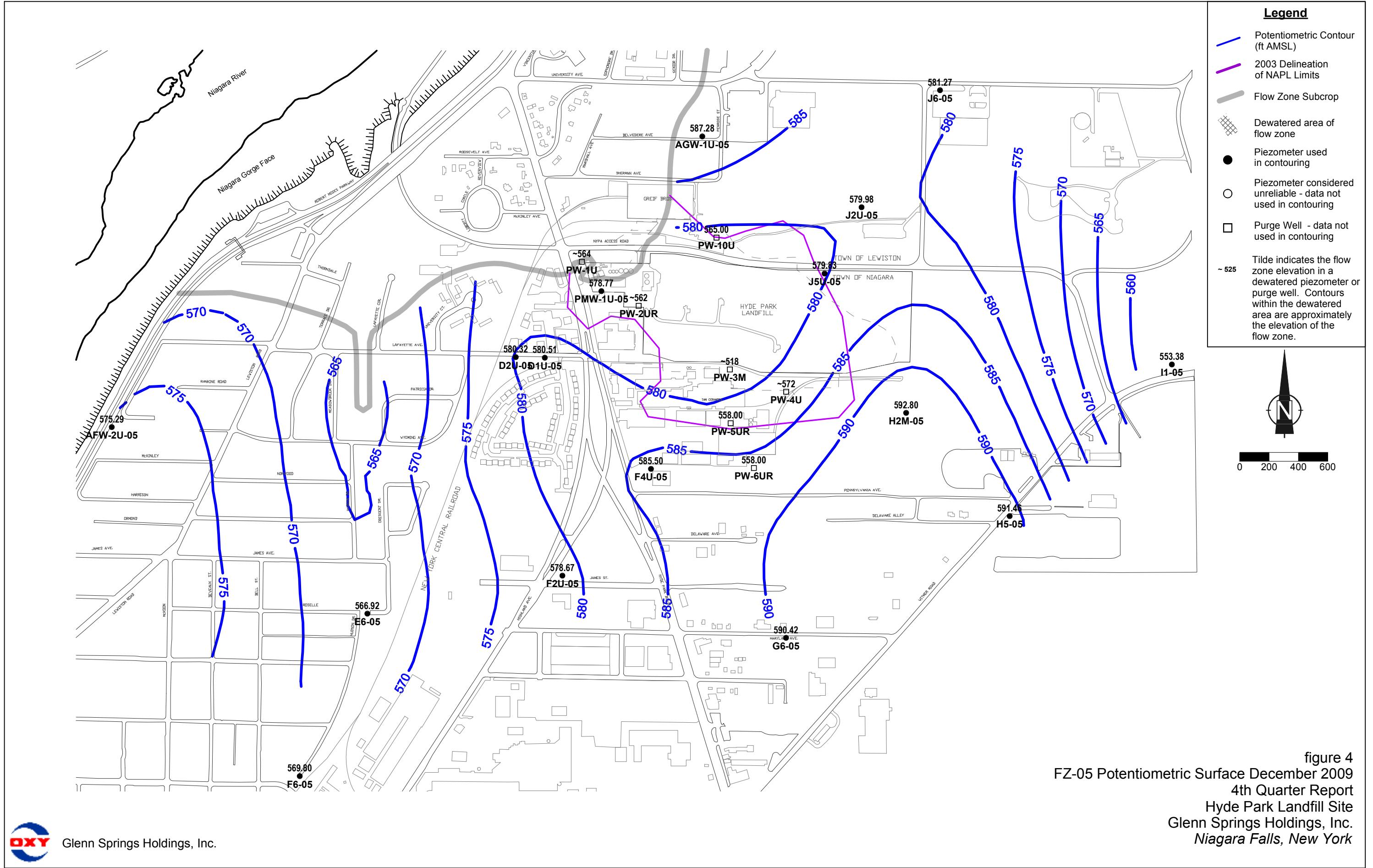
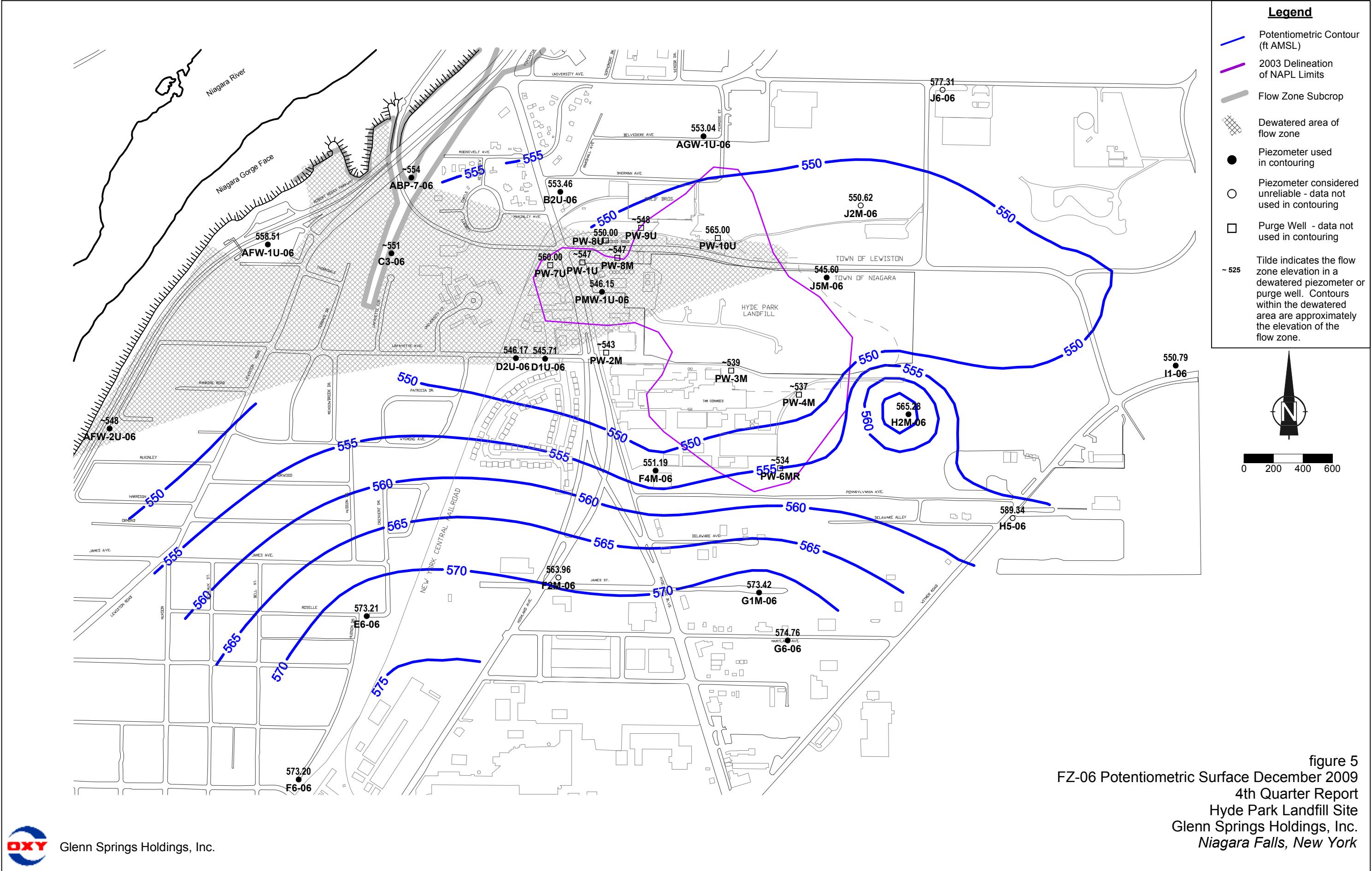


figure 4

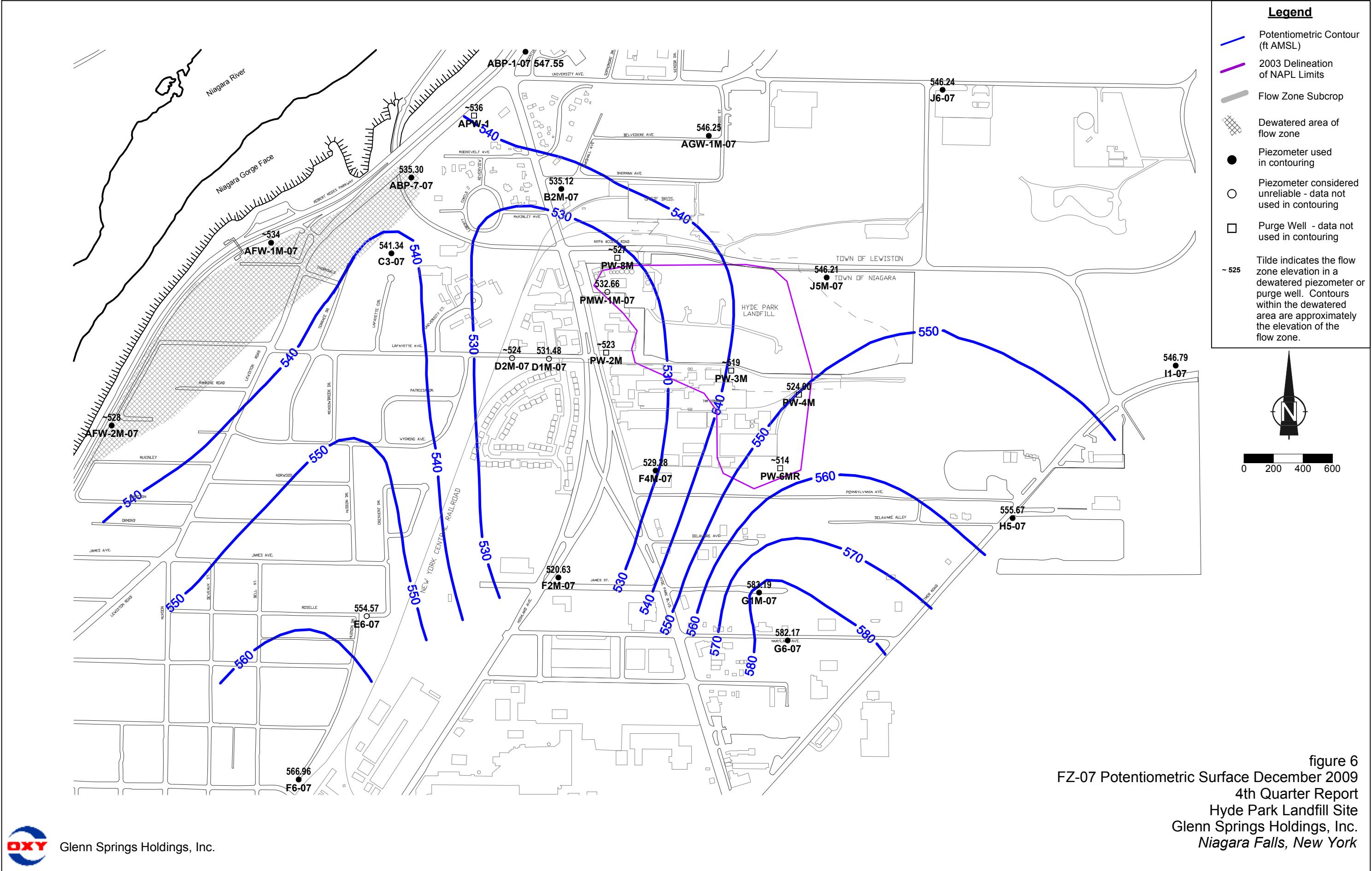
FZ-05 Potentiometric Surface December 2009  
4th Quarter Report  
Hyde Park Landfill Site  
Glenn Springs Holdings, Inc.  
*Niagara Falls, New York*



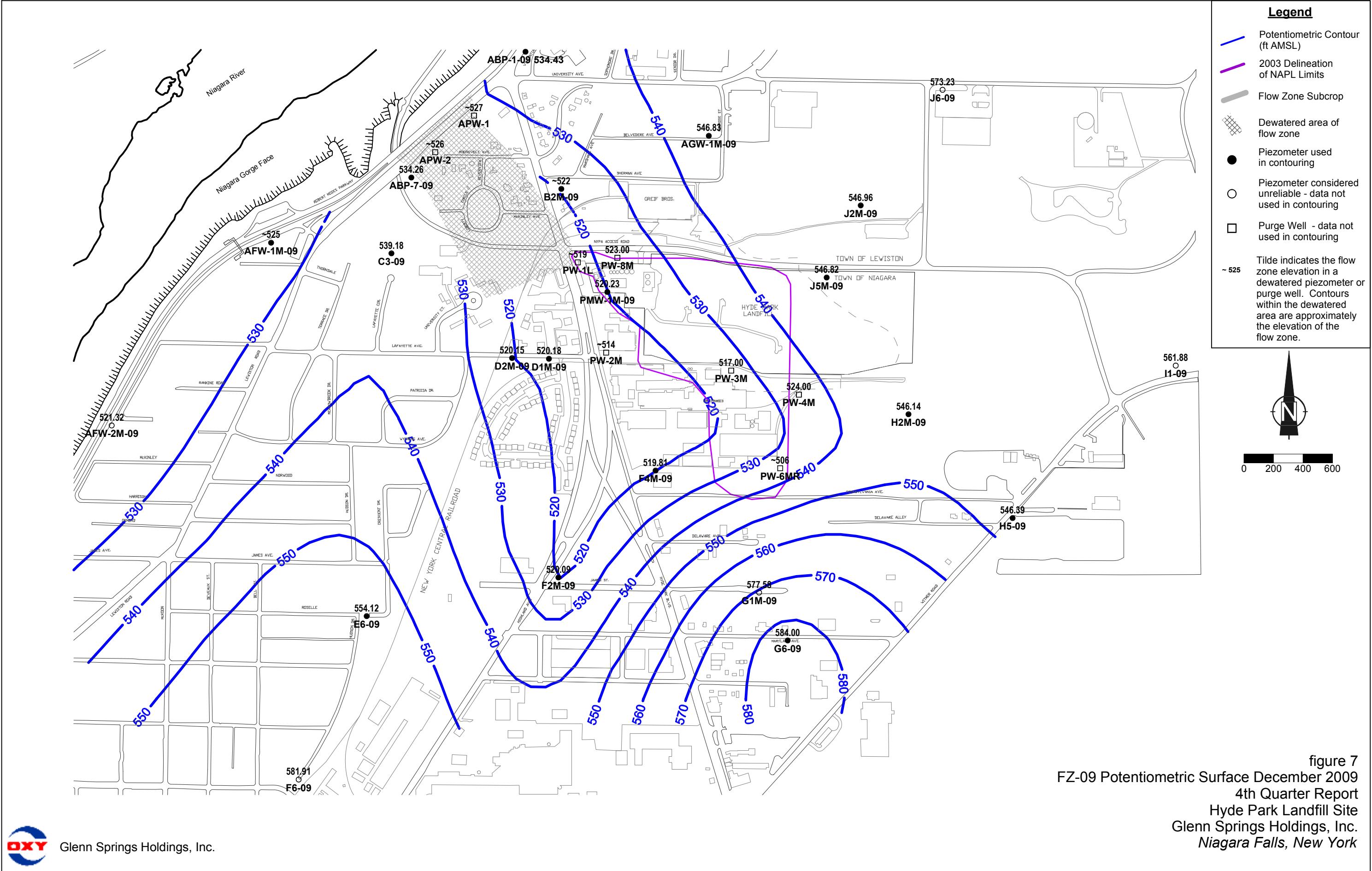
Glenn Springs Holdings, Inc.



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Glenn Springs Holdings, Inc.

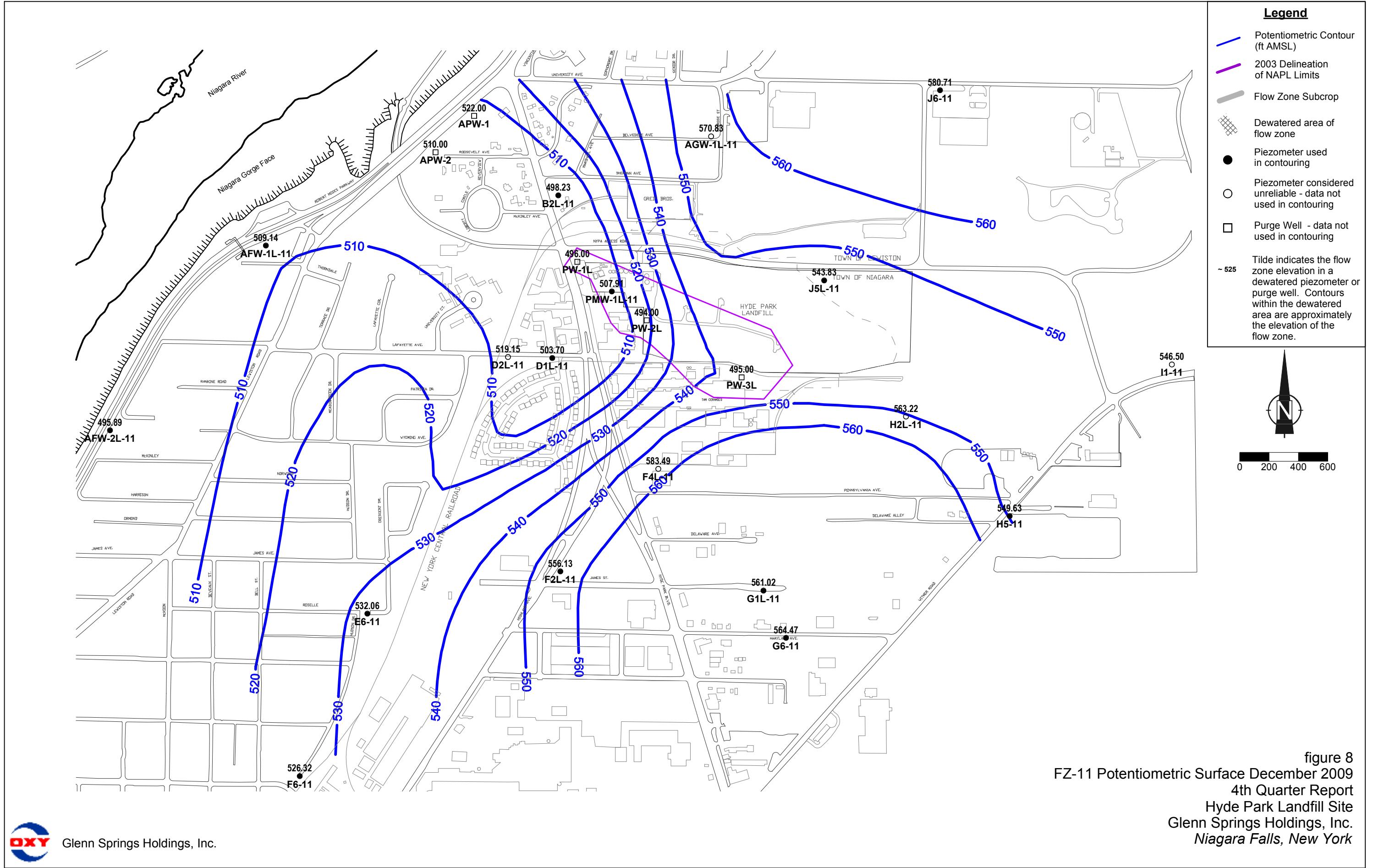


figure 8

FZ-11 Potentiometric Surface December 2009  
4th Quarter Report  
Hyde Park Landfill Site  
Glenn Springs Holdings, Inc.  
*Niagara Falls, New York*



Glenn Springs Holdings, Inc.

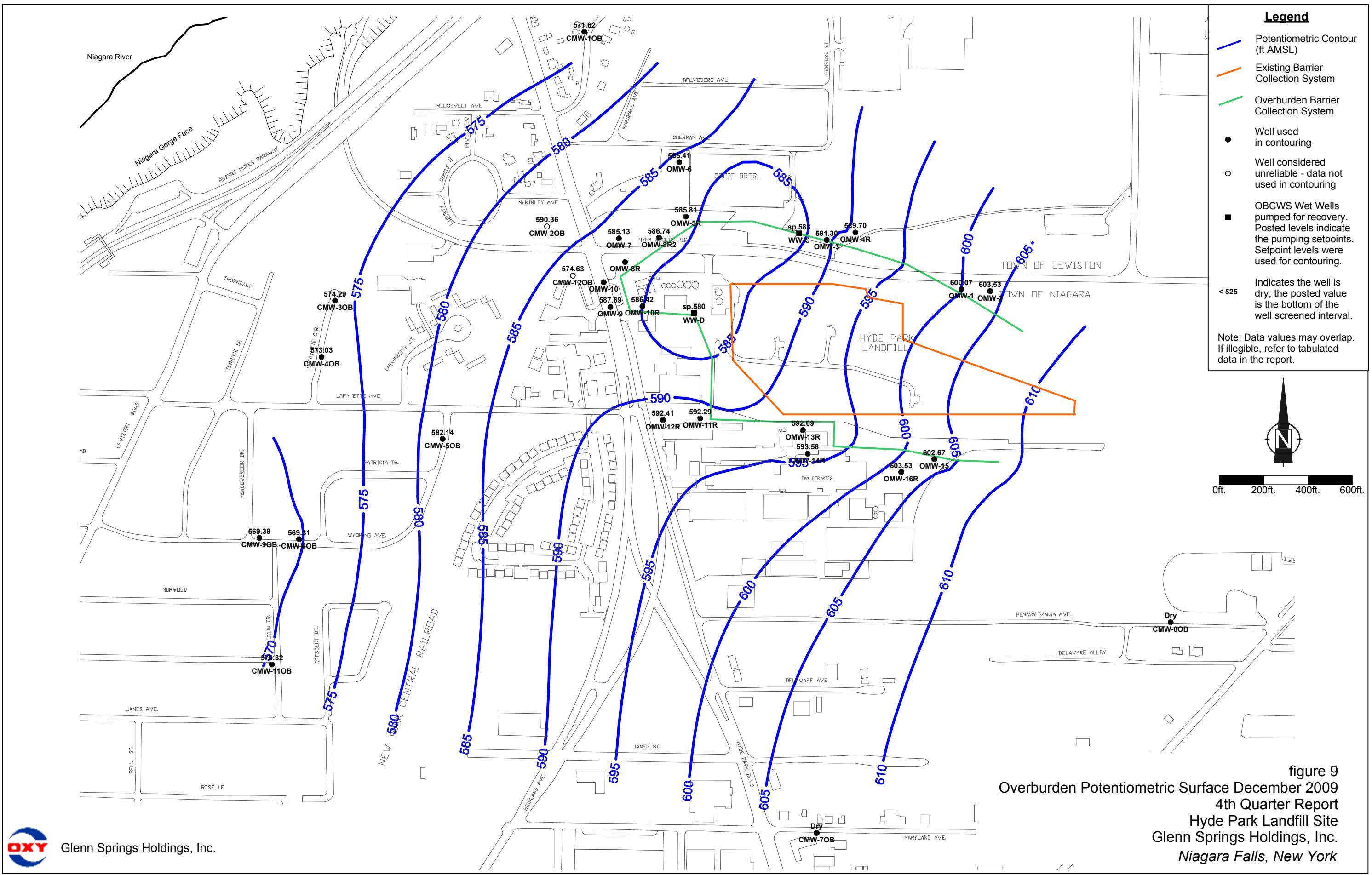


figure 9

Overburden Potentiometric Surface December 2009  
4th Quarter Report  
Hyde Park Landfill Site  
Glenn Springs Holdings, Inc.  
*Niagara Falls, New York*



Glenn Springs Holdings, Inc.

**PMW-1M-09** 4th Quarter 2009 - Hourly Water Level Elevation

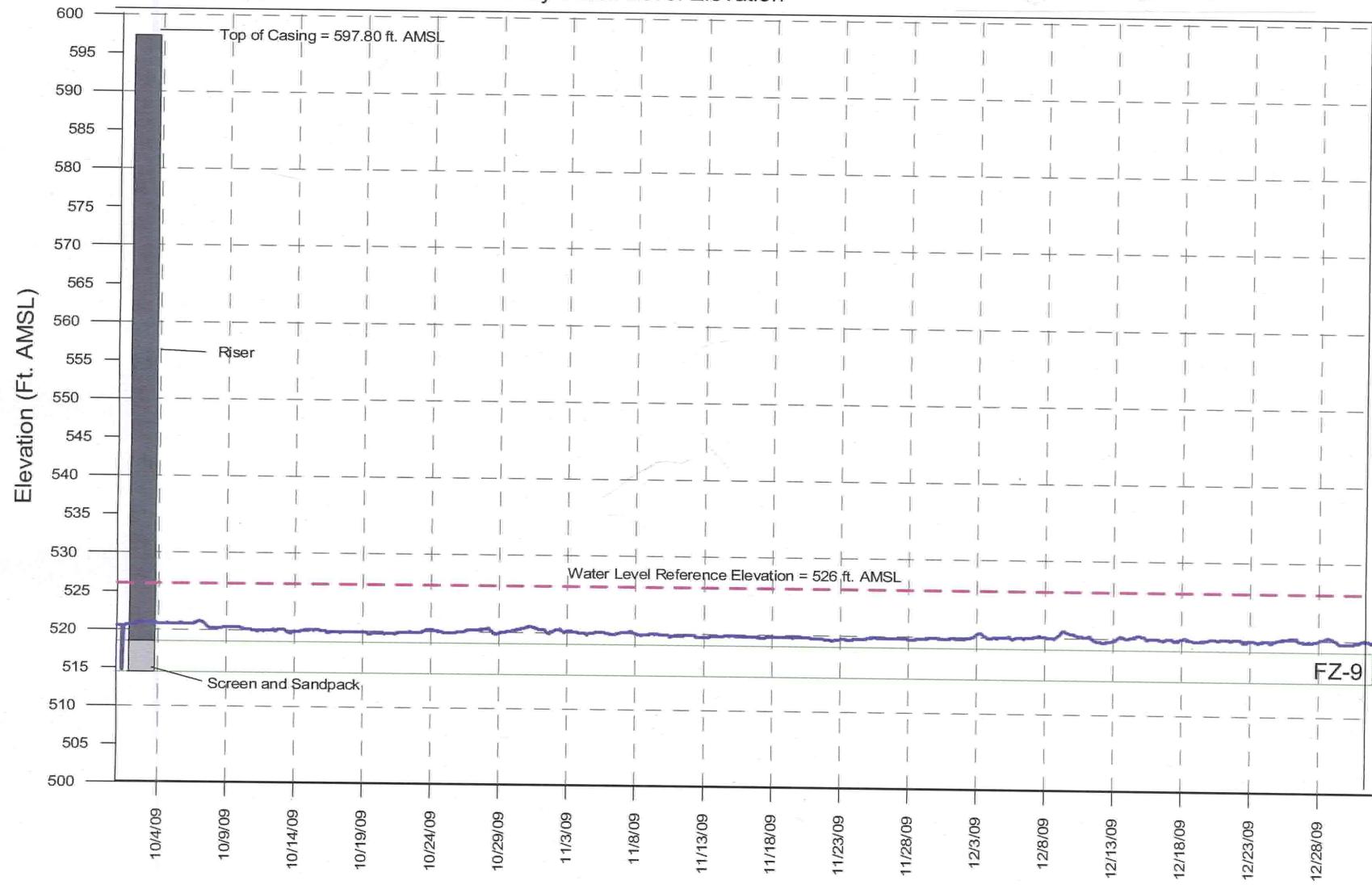


figure 10

## TABLES

TABLE 1

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**WATER LEVEL ELEVATION SUMMARY  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

Well	Reference Elevation (ft AMSL)	Depth to Water (ft)	Water Level Elevation (ft AMSL)
<b>Overburden</b>			
CMW-2OB	590.79	0.43	590.36
CMW-3OB	582.13	7.84	574.29
CMW-4OB	574.28	1.25	573.03
CMW-5OB	583.43	1.29	582.14
CMW-6OB	571.89	2.58	569.31
CMW-7OB	611.00	Dry	-
CMW-8OB	616.11	Dry	-
CMW-9OB	571.76	2.37	569.39
CMW-1OB	576.80	5.18	571.62
CMW-11OB	572.85	2.53	570.32
CMW-12OB	594.74	20.11	574.63
OMW-1	605.28	5.21	600.07
OMW-2	605.99	2.46	603.53
OMW-3	598.63	7.33	591.30
OMW-4R	601.17	11.47	589.70
OMW-5R	591.31	5.50	585.81
OMW-6	587.62	2.21	585.41
OMW-7	592.74	7.61	585.13
OMW-8R2	594.67	7.93	586.74
OMW-9	595.52	7.83	587.69
OMW-10R	595.13	8.71	586.42
OMW-11R	597.52	5.23	592.29
OMW-12R	596.79	4.38	592.41
OMW-13R	601.50	8.81	592.69
OMW-14R	599.64	6.06	593.58
OMW-15	607.48	4.81	602.67
OMW-16R	607.62	4.09	603.53
SC-2	625.61	18.50	607.11
SC-3	638.72	28.20	610.52
SC-4	639.35	17.10	622.25
SC-5	634.07	-	-
SC-6	631.15	16.30	614.85
<b>Shallow Bedrock</b>			
CMW-1SH	576.11	11.69	564.42
CMW-2SH	590.51	17.82	572.69
CMW-3SH	581.91	28.64	553.27
CMW-4SH	574.16	7.22	566.94
CMW-5SH	583.36	6.58	576.78
CMW-6SH	572.05	10.19	561.86
CMW-7SH	610.58	11.36	599.22
CMW-8SH	615.95	6.82	609.13
CMW-9SH	571.96	11.85	560.11
CMW-11SH	573.21	8.23	564.98
CMW-12SH	597.02	24.37	572.65
<b>Flow Zone 1</b>			
G1U-01	617.08	14.66	602.42
G6-01	609.24	6.98	602.26
H2U-01	620.92	9.38	611.54
H5-01	617.61	22.58	595.03
I1-01	621.55	22.07	599.48

TABLE 1

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**WATER LEVEL ELEVATION SUMMARY  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

<b>Well</b>	<b>Reference Elevation (ft AMSL)</b>	<b>Depth to Water (ft)</b>	<b>Water Level Elevation (ft AMSL)</b>
<b>Flow Zone 2</b>			
F2U-02	599.89	24.33	575.56
F4U-02	602.32	15.73	586.59
G1-02	616.86	24.28	592.58
G6-02	608.65	17.00	591.65
H2U-02	620.88	26.78	594.10
H5-02	617.47	23.63	593.84
I1-02	621.42	32.49	588.93
J2U-02	609.66	11.74	597.92
J5U-02	606.21	8.56	597.65
J6-02	609.23	10.90	598.33
<b>Flow Zone 4</b>			
AFW-2U-04	593.48	17.69	575.79
D1U-04	593.77	11.66	582.11
D2U-04	590.65	9.69	580.96
E6-04	578.23	12.80	565.43
F2U-04	599.76	21.49	578.27
F4U-04	602.19	15.46	586.73
F6-04	588.06	18.18	569.88
G1U-04	616.96	24.40	592.56
G6-04	609.15	17.09	592.06
H5-04	617.40	23.69	593.71
I1-04	621.31	37.07	584.24
J2U-04	609.42	14.42	595.00
J5U-04	606.05	18.28	587.77
J6-04	609.12	27.27	581.85
<b>Flow Zone 5</b>			
AFW-2U-05	593.33	18.04	575.29
AGW-1U-05	591.80	4.52	587.28
D1U-05	593.51	13.00	580.51
D2U-05	590.56	10.24	580.32
E6-05	578.04	11.12	566.92
F2U-05	599.64	20.97	578.67
F4U-05	602.06	16.56	585.50
F6-05	587.85	18.05	569.80
G6-05	609.13	18.71	590.42
H2M-05	621.59	28.79	592.80
H5-05	617.31	25.85	591.46
I1-05	621.21	67.83	553.38
J2U-05	609.30	29.32	579.98
J5U-05	605.87	26.04	579.83
J6-05	609.02	27.75	581.27
PMW-1U-05	598.00	19.23	578.77

TABLE 1

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**WATER LEVEL ELEVATION SUMMARY  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

<b>Well</b>	<b>Reference Elevation (ft AMSL)</b>	<b>Depth to Water (ft)</b>	<b>Water Level Elevation (ft AMSL)</b>
<b>Flow Zone 6</b>			
ABP-7-06	575.78	Dry	-
AFW-1U-06	571.83	13.32	558.51
AFW-2U-06	593.22	48.19	545.03
AGW-1U-06	591.66	38.62	553.04
B2U-06	589.29	35.83	553.46
C3-06	585.78	Dry	-
D1U-06	593.25	47.54	545.71
D2U-06	590.38	44.21	546.17
E6-06	577.99	4.78	573.21
F2M-06	599.06	35.10	563.96
F4M-06	602.05	50.86	551.19
F6-06	587.84	14.64	573.20
G1M-06	616.75	43.33	573.42
G6-06	609.09	34.33	574.76
H2M-06	621.42	56.14	565.28
H5-06	617.17	27.83	589.34
I1-06	621.08	70.29	550.79
J2M-06	608.94	58.32	550.62
J5M-06	606.22	60.62	545.60
J6-06	608.93	31.62	577.31
PMW-1U-06	597.92	51.77	546.15
<b>Flow Zone 7</b>			
ABP-1-07	576.44	28.89	547.55
ABP-7-07	575.73	40.43	535.30
AFW-1M-07	571.41	Dry	-
AFW-2M-07	593.44	66.83	526.61
AGW-1M-07	592.91	46.66	546.25
B2M-07	589.52	54.40	535.12
C3-07	585.62	44.28	541.34
D1M-07	594.15	62.67	531.48
D2M-07	590.77	Dry	-
E6-07	577.91	23.34	554.57
F2M-07	598.91	78.28	520.63
F4M-07	601.91	72.63	529.28
F6-07	587.68	20.72	566.96
G1M-07	616.68	33.49	583.19
G6-07	609.06	26.89	582.17
H5-07	617.05	61.38	555.67
I1-07	620.97	74.18	546.79
J5M-07	606.07	59.86	546.21
J6-07	608.85	62.61	546.24
PMW-1M-07	598.50	65.84	532.66

TABLE 1

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**WATER LEVEL ELEVATION SUMMARY  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

Well	Reference Elevation (ft AMSL)	Depth to Water (ft)	Water Level Elevation (ft AMSL)
<b>Flow Zone 9</b>			
ABP-1-09	575.49	41.06	534.43
ABP-7-09	575.67	41.41	534.26
AFW-1M-09	571.12	46.44	524.68
AFW-2M-09	593.32	72.00	521.32
AGW-1M-09	592.75	45.92	546.83
B2M-09	589.34	68.69	520.65
C3-09	585.00	45.82	539.18
D1M-09	594.02	73.84	520.18
D2M-09	590.66	70.51	520.15
E6-09	577.82	23.70	554.12
F2M-09	598.71	78.62	520.09
F4M-09	601.79	81.98	519.81
F6-09	587.53	5.62	581.91
G1M-09	616.58	39.00	577.58
G6-09	608.98	24.98	584.00
H2M-09	621.32	75.18	546.14
H5-09	616.93	70.54	546.39
I1-09	620.86	58.98	561.88
J2M-09	608.77	61.81	546.96
J5M-09	605.82	59.00	546.82
J6-09	608.76	35.53	573.23
PMW-1M-09	598.34	78.11	520.23
<b>Flow Zone 11</b>			
AFW-1L-11	572.10	62.96	509.14
AFW-2L-11	593.43	97.54	495.89
AGW-1L-11	592.71	21.88	570.83
B2L-11	589.65	91.42	498.23
D1L-11	593.80	90.10	503.70
D2L-11	590.21	71.06	519.15
E6-11	577.72	45.66	532.06
F2L-11	598.94	42.81	556.13
F4L-11	602.22	18.73	583.49
F6-11	587.40	61.08	526.32
G1L-11	616.84	55.82	561.02
G6-11	608.89	44.42	564.47
H2L-11	620.73	57.51	563.22
H5-11	616.81	67.18	549.63
I1-11	620.71	74.21	546.50
J5L-11	607.20	63.37	543.83
J6-11	608.68	27.97	580.71
PMW-1L-11	598.84	90.93	507.91

## Notes

- Not available.

TABLE 2

**LEACHATE TREATMENT SYSTEM DAILY EFFLUENT MONITORING DATA  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

Date	Effluent		
	Phenol (mg/L)	pH (su)	Flow (gal)
10/02/09	-	7.10	118,000
10/05/09	-	6.80	143,000
10/06/09	-	6.80	141,000
10/07/09	0.025	-	-
10/08/09	-	6.90	120,000
10/09/09	-	6.70	97,000
10/12/09	-	6.80	133,000
10/13/09	-	7.00	122,000
10/14/09	0.020	-	-
10/15/09	-	7.00	114,000
10/19/09	-	7.00	133,000
10/20/09	-	7.10	126,000
10/21/09	0.010 U	-	-
10/22/09	-	7.00	120,000
10/26/09	-	6.90	116,000
10/27/09	-	6.90	111,000
10/28/09	0.010 U	6.90	86,000
10/30/09	-	6.90	117,000
11/02/09	-	7.10	120,000
11/03/09	-	7.10	75,000
11/04/09	0.010 U	6.90	100,000
11/08/09	-	6.90	283,000
11/12/09	-	7.10	107,000
11/13/09	0.0094 J	-	-
11/14/09	-	6.80	278,000
11/19/09	-	6.90	105,000
11/20/09	0.010 U	-	-
11/21/09	-	6.90	344,000
11/28/09	-	6.90	379,000
11/29/09	0.031	6.90	39,000
12/04/09	-	7.10	398,000
12/05/09	-	7.00	290,000
12/06/09	0.015	7.10	26,000
12/08/09	-	7.10	75,000
12/09/09	0.014	6.90	116,000
12/11/09	-	6.90	422,000
12/14/09	-	6.70	128,000
12/15/09	-	6.90	124,000
12/16/09	0.0050 J	7.10	128,000
12/17/09	-	7.10	137,000
12/18/09	-	7.20	136,000
12/21/09	-	7.10	128,000
12/22/09	0.018	7.20	152,000
12/23/09	-	7.20	110,000
12/24/09	-	7.10	62,000
12/27/09	-	7.00	258,000
12/28/09	-	7.00	23,000
12/29/09	-	7.00	112,000
12/30/09	0.010 U	7.20	165,000
12/31/09	-	7.30	126,000

## Notes:

- J      Estimated concentration.
- gal    Gallons.
- mg/L   Milligram per liter.
- su     Standard unit.
- U     Non-detect at associated value.
- Not available.

TABLE 3

Page 1 of 2

**ANALYTICAL RESULTS SUMMARY  
WEEKLY SAMPLING - LEACHATE TREATMENT SYSTEM  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

**Effluent**

Parameter	Units	10/07/09	10/14/09	10/21/09	10/28/09	11/04/09	11/13/09	11/20/09	11/29/09
<b>Volatiles</b>									
1,1,1-Trichloroethane	µg/L	5.0 U							
1,1,2,2-Tetrachloroethane	µg/L	5.0 U							
1,1,2-Trichloroethane	µg/L	5.0 U							
1,1-Dichloroethane	µg/L	5.0 U							
1,1-Dichloroethene	µg/L	5.0 U							
1,2,4-Trichlorobenzene	µg/L	10 U							
1,2-Dichlorobenzene	µg/L	10 U							
1,2-Dichloroethane	µg/L	5.0 U							
1,2-Dichloropropane	µg/L	5.0 U							
1,3-Dichlorobenzene	µg/L	10 U							
1,4-Dichlorobenzene	µg/L	10 U							
2-Chlorotoluene	µg/L	5.0 U							
3-Chlorotoluene	µg/L	5.0 U							
4-Chlorotoluene	µg/L	5.0 U							
Benzene	µg/L	5.0 U	5.0 UJ	5.0 U	5.0 U				
Bromodichloromethane	µg/L	5.0 U							
Bromoform	µg/L	5.0 U							
Bromomethane (Methyl Bromide)	µg/L	5.0 U							
Carbon disulfide	µg/L	5.0 U							
Carbon tetrachloride	µg/L	5.0 U							
Chlorobenzene	µg/L	5.0 U							
Chloroethane	µg/L	5.0 U							
Chloroform (Trichloromethane)	µg/L	5.0 U							
Chloromethane (Methyl Chloride)	µg/L	5.0 U							
cis-1,2-Dichloroethene	µg/L	5.0 U							
cis-1,3-Dichloropropene	µg/L	5.0 U							
Dichlorodifluoromethane (CFC-12)	µg/L	5.0 U							
Ethylbenzene	µg/L	5.0 U							
Methylene chloride	µg/L	5.0 U							
m-Monochlorobenzotrifluoride	µg/L	5.0 U							
o-Monochlorobenzotrifluoride	µg/L	5.0 U							
p-Monochlorobenzotrifluoride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Styrene	µg/L	5.0 U							
Tetrachloroethene	µg/L	5.0 U							
Toluene	µg/L	5.0 U							
trans-1,2-Dichloroethene	µg/L	5.0 U							
trans-1,3-Dichloropropene	µg/L	5.0 U							
Trichloroethene	µg/L	5.0 U							
Trichlorofluoromethane (CFC-11)	µg/L	5.0 U							
Vinyl acetate	µg/L	5.0 U							
Vinyl chloride	µg/L	1.9 J	5.0 U	5.0 U	2.4 J	5.0 U	5.0 U	5.0 U	5.0 U
Xylene (total)	µg/L	5.0 U							

TABLE 3

**ANALYTICAL RESULTS SUMMARY  
WEEKLY SAMPLING - LEACHATE TREATMENT SYSTEM  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

**Effluent**

Parameter	Units	12/06/09	12/09/09	12/16/09	12/22/09	12/30/09
1,1,1-Trichloroethane	µg/L	5.0 U				
1,1,2,2-Tetrachloroethane	µg/L	5.0 U				
1,1,2-Trichloroethane	µg/L	5.0 U				
1,1-Dichloroethane	µg/L	5.0 U				
1,1-Dichloroethene	µg/L	5.0 U				
1,2,4-Trichlorobenzene	µg/L	10 U				
1,2-Dichlorobenzene	µg/L	10 U				
1,2-Dichloroethane	µg/L	5.0 U				
1,2-Dichloropropane	µg/L	5.0 U				
1,3-Dichlorobenzene	µg/L	10 U				
1,4-Dichlorobenzene	µg/L	10 U				
2-Chlorotoluene	µg/L	5.0 U				
3-Chlorotoluene	µg/L	5.0 U				
4-Chlorotoluene	µg/L	5.0 U				
Benzene	µg/L	5.0 U				
Bromodichloromethane	µg/L	5.0 U				
Bromoform	µg/L	5.0 U				
Bromomethane (Methyl Bromide)	µg/L	5.0 U				
Carbon disulfide	µg/L	5.0 U				
Carbon tetrachloride	µg/L	5.0 U				
Chlorobenzene	µg/L	5.0 U				
Chloroethane	µg/L	5.0 U				
Chloroform (Trichloromethane)	µg/L	5.0 U				
Chloromethane (Methyl Chloride)	µg/L	5.0 U				
cis-1,2-Dichloroethene	µg/L	5.0 U				
cis-1,3-Dichloropropene	µg/L	5.0 U				
Dichlorodifluoromethane (CFC-12)	µg/L	5.0 U				
Ethylbenzene	µg/L	5.0 U				
Methylene chloride	µg/L	5.0 U				
m-Monochlorobenzotrifluoride	µg/L	5.0 U				
o-Monochlorobenzotrifluoride	µg/L	5.0 U				
p-Monochlorobenzotrifluoride	µg/L	5.0 U				
Styrene	µg/L	5.0 U				
Tetrachloroethene	µg/L	5.0 U				
Toluene	µg/L	5.0 U				
trans-1,2-Dichloroethene	µg/L	5.0 U				
trans-1,3-Dichloropropene	µg/L	5.0 U				
Trichloroethene	µg/L	5.0 U				
Trichlorofluoromethane (CFC-11)	µg/L	5.0 U				
Vinyl acetate	µg/L	5.0 U				
Vinyl chloride	µg/L	5.0 U	1.5 J	1.7 J	1.6 J	1.4 J
Xylene (total)	µg/L	5.0 U				

Notes:

- Not available/not applicable.
- J Estimated at associated value.
- U Non-detect at associated value.
- µg/L Microgram per liter.

**TABLE 4**

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**ANALYTICAL RESULTS SUMMARY  
QUARTERLY SAMPLING - LEACHATE TREATMENT SYSTEM  
FOURTH QUARTER - 2009  
HYDE PARK RRT PROGRAM**

*Effluent*

<i>Parameter</i>	<i>Sample ID:</i>	<i>EFF-1109-3</i>	<i>EFF-1109-4</i>
	<i>Sample Date:</i>	<i>11/13/09</i>	<i>11/13/09</i>
Phosphorus, Total	mg/L	0.13 J	-
Vinyl chloride	µg/L	-	5.0 U

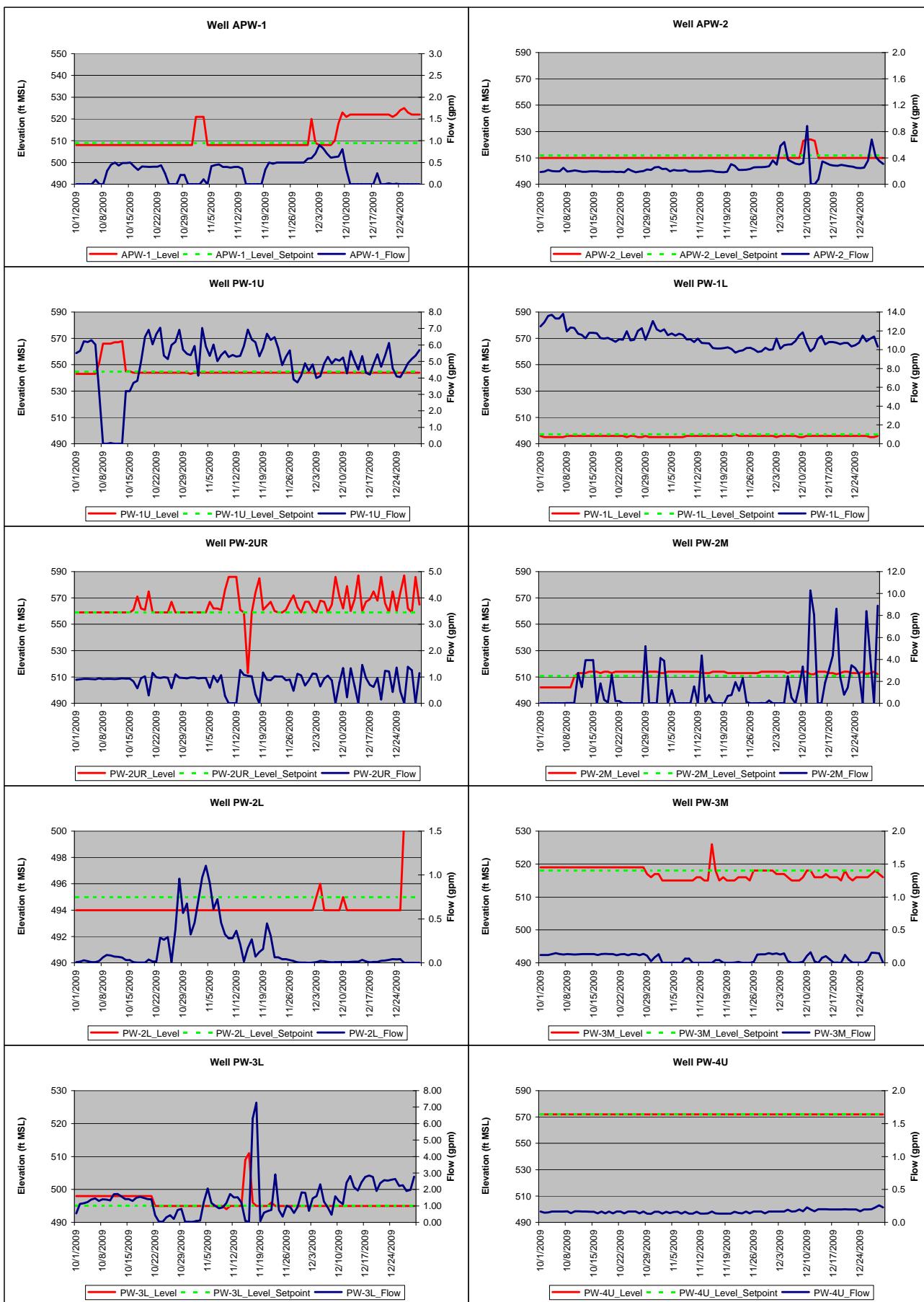
Notes:

- Not available/not applicable.
- mg/L Milligrams per liter.
- µg/L Micrograms per liter.

ATTACHMENT 1

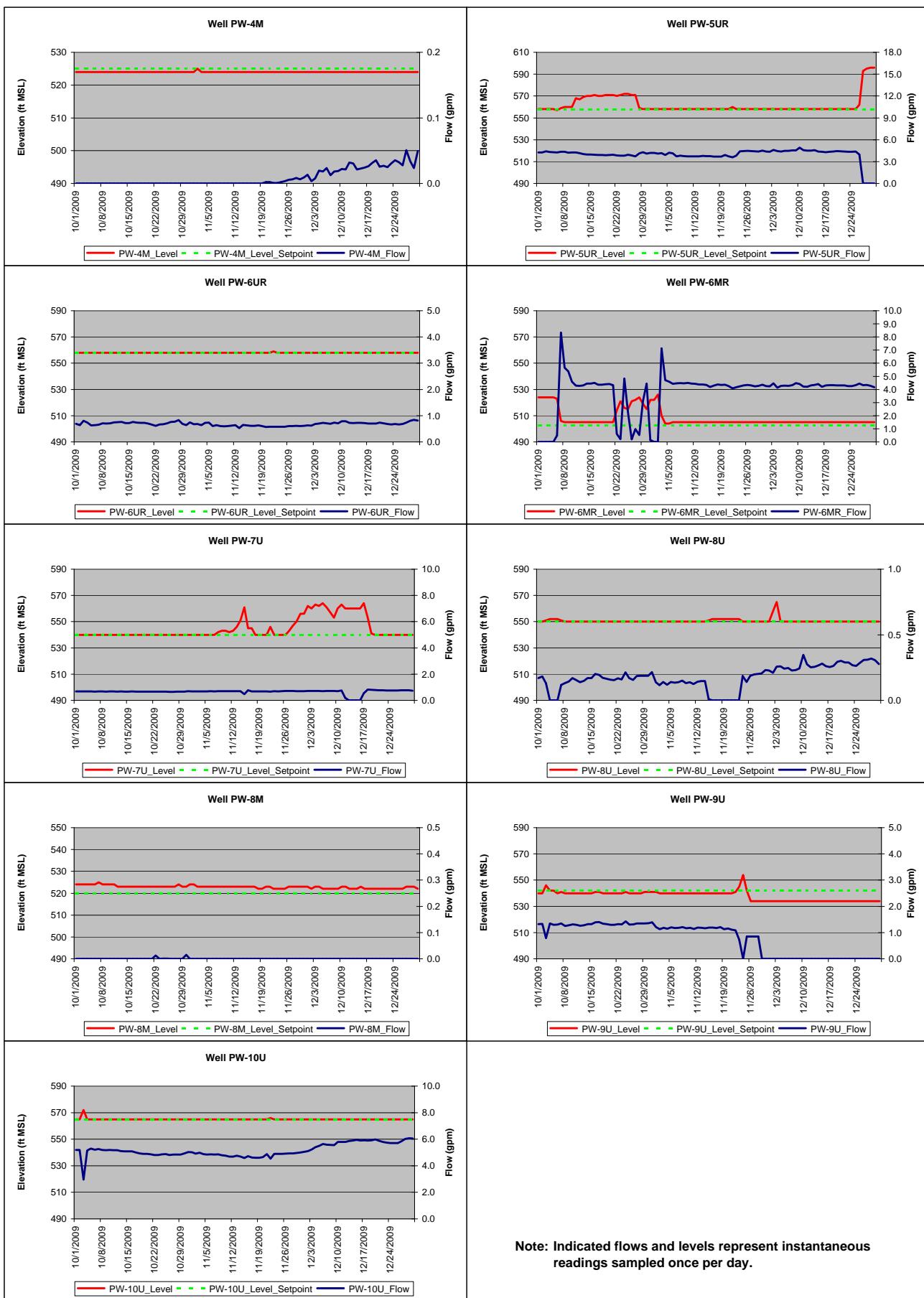
**Attachment 1**  
**4<sup>th</sup> Quarter 2009 - Pumping levels and Flows**  
**Hyde Park**

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**Attachment 1**  
**4<sup>th</sup> Quarter 2009 - Pumping levels and Flows**  
**Hyde Park**

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Note: Indicated flows and levels represent instantaneous readings sampled once per day.