



# Glenn Springs Holdings, Inc.

A subsidiary of Occidental Petroleum

**Clint Babcock  
Project Manager  
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October 30, 2008

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 - 3rd Quarter 2008**  
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 July 1, 2008 to September 30, 2008. A total of 6.3 million gallons of aqueous phase liquid (APL) were 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.

Inconsistencies with the APW levels have been caused by radio problems. These radios are scheduled to be replaced in the 4th quarter of 2008.

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.

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).

Sincerely,

Clinton J. Babcock  
Project Manager

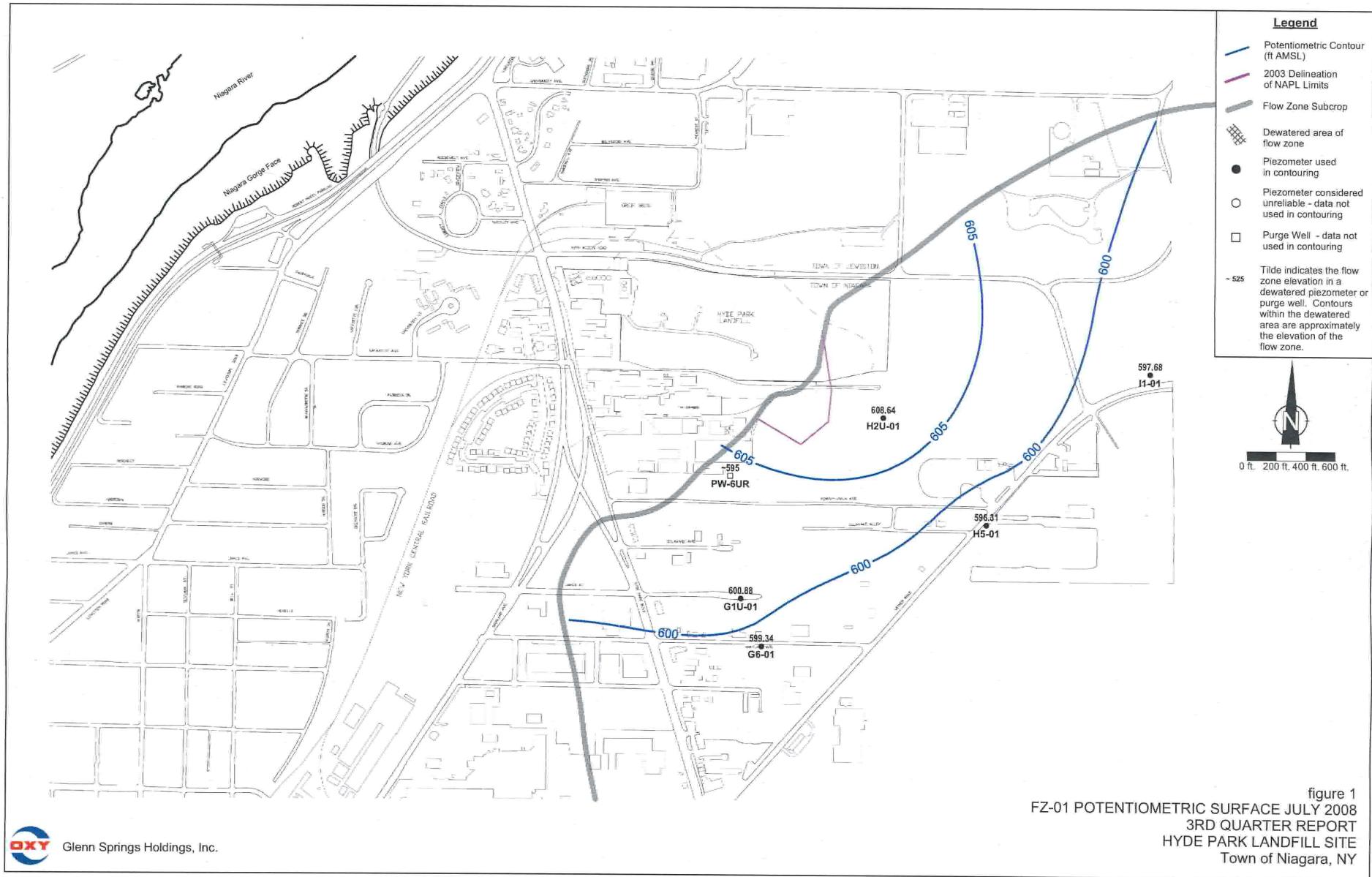
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Enclosure

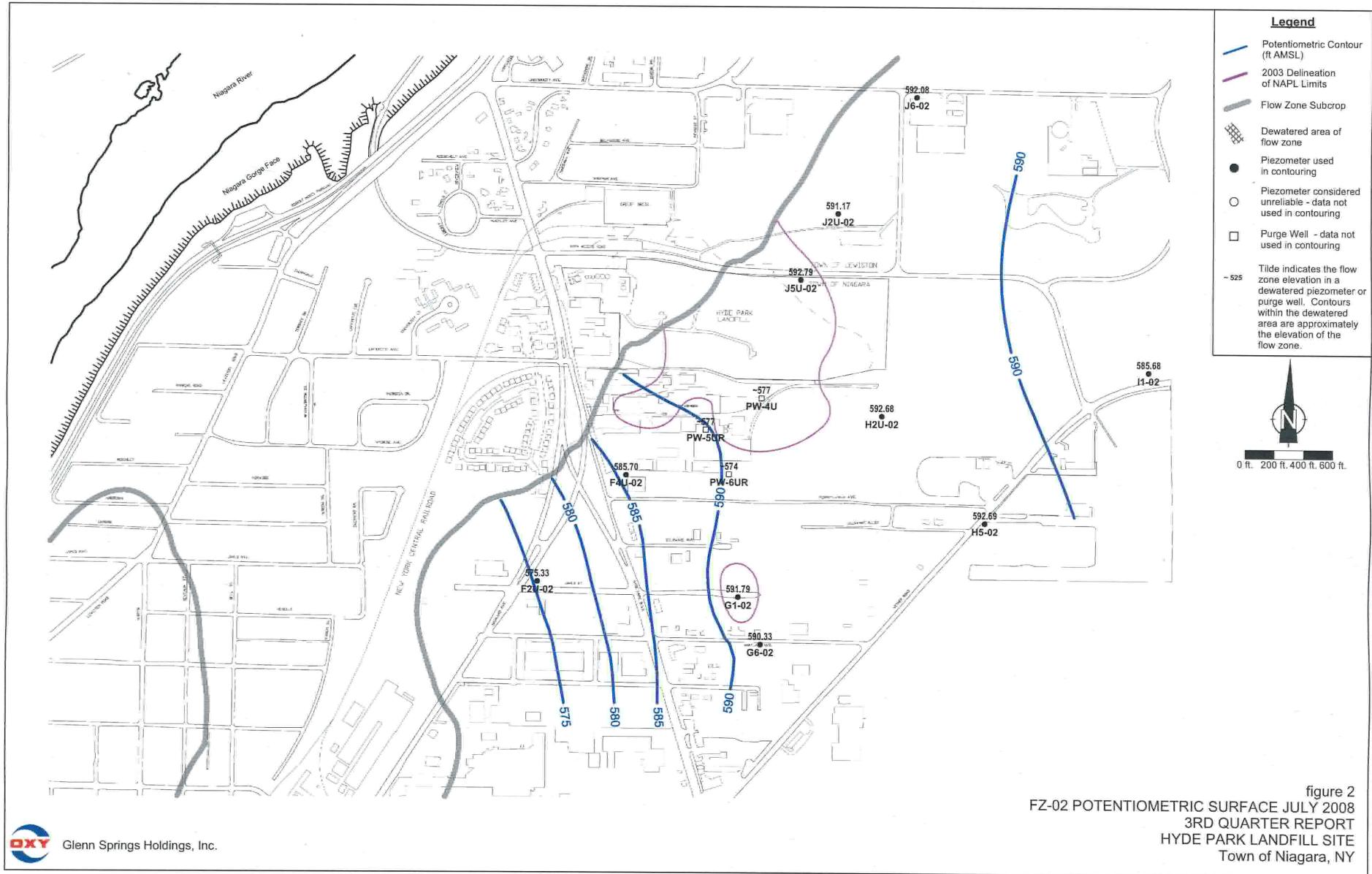
M. Anderson, GSHI - 1\*  
M. Forcucci, NYSDOH - 1\*  
D. Hoyt, CRA - 1  
J. Kaczor, EarthTech - 1\*

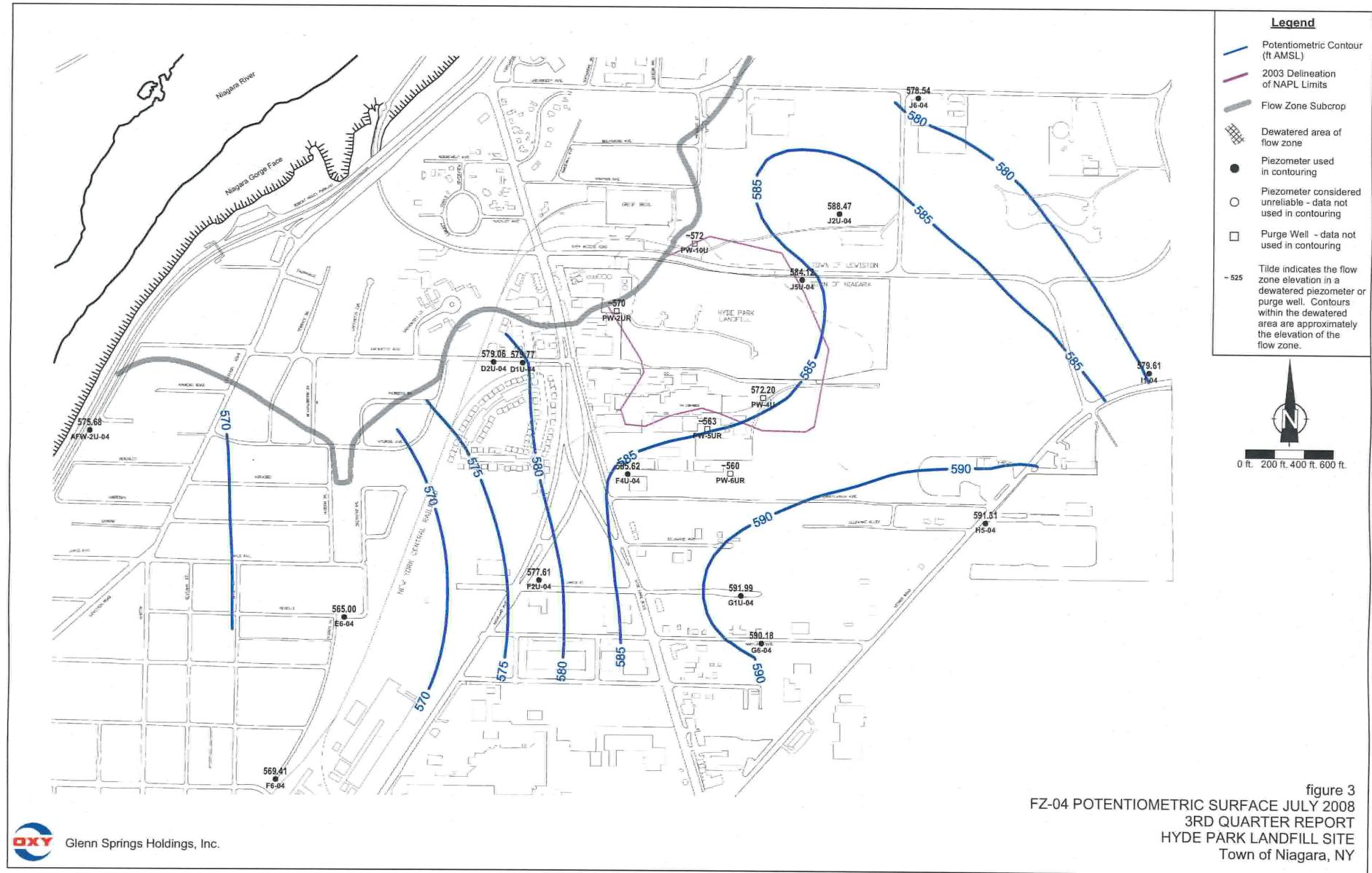
J. Pentilchuk, CRA - 1  
B. Sadowski, NYSDEC - 1\*  
G. Sosa, USEPA - 4\*  
W. Welling, NYSDEC - 2\*

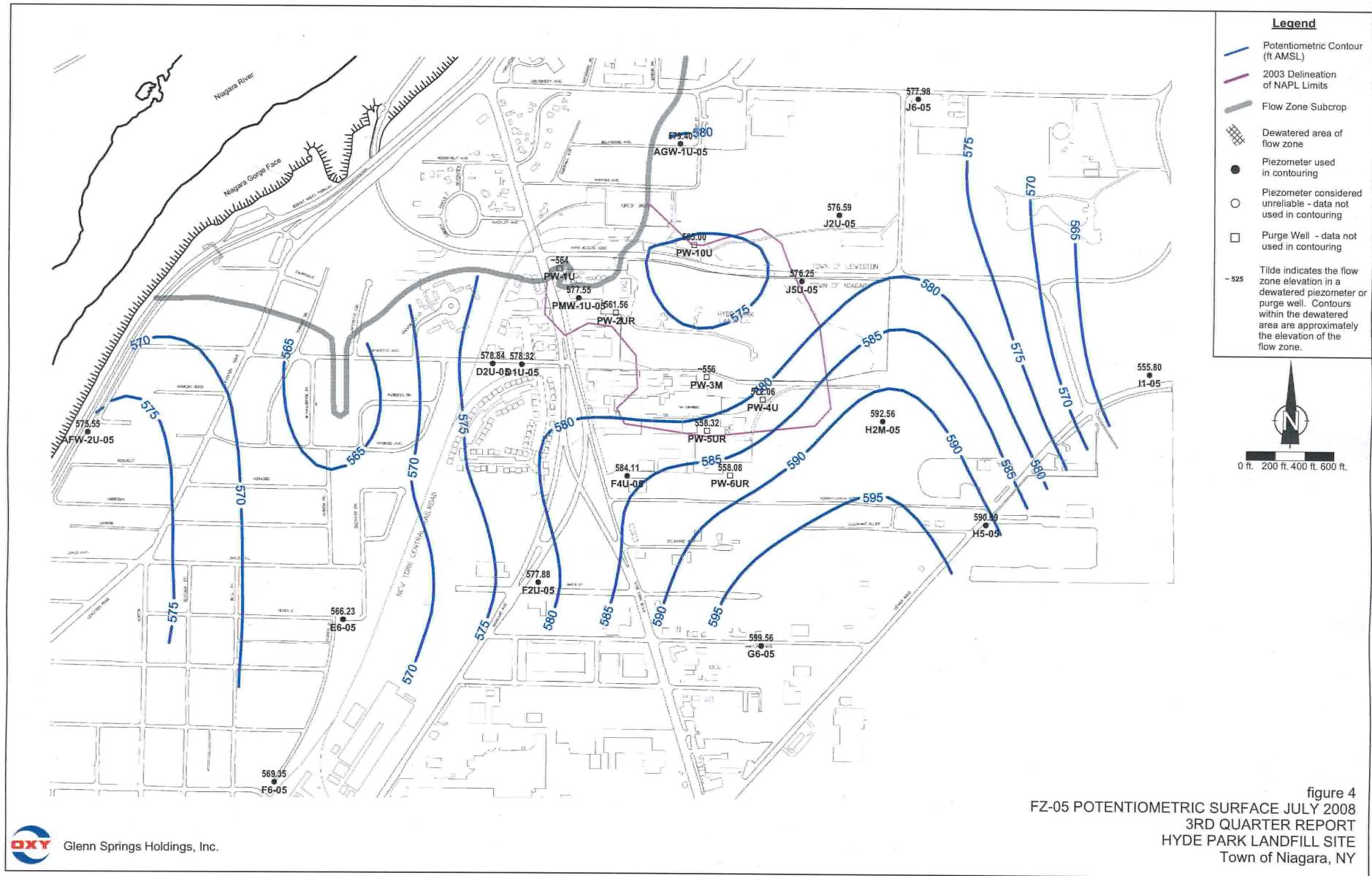
\*Include one copy on CD

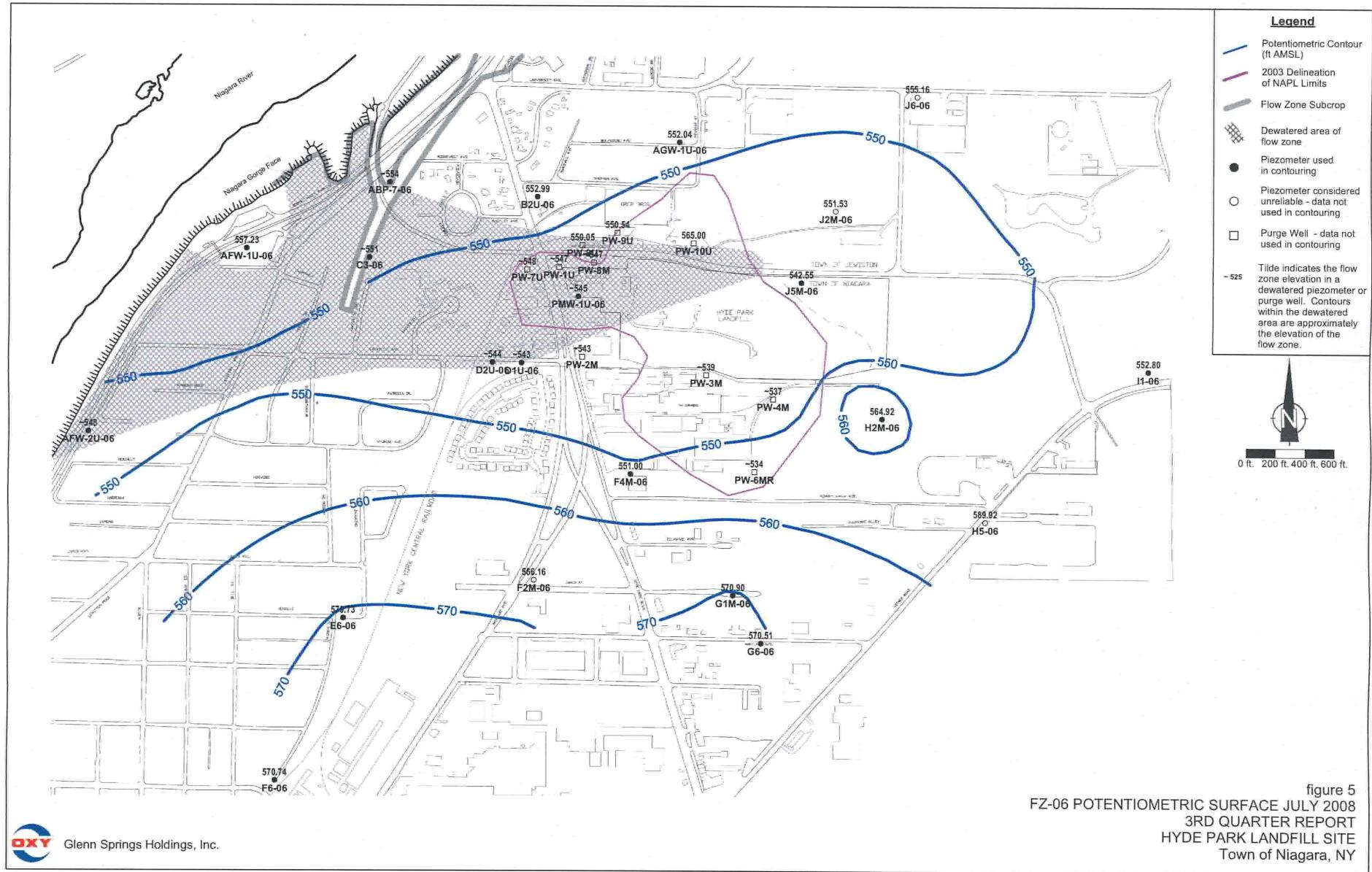
## FIGURES

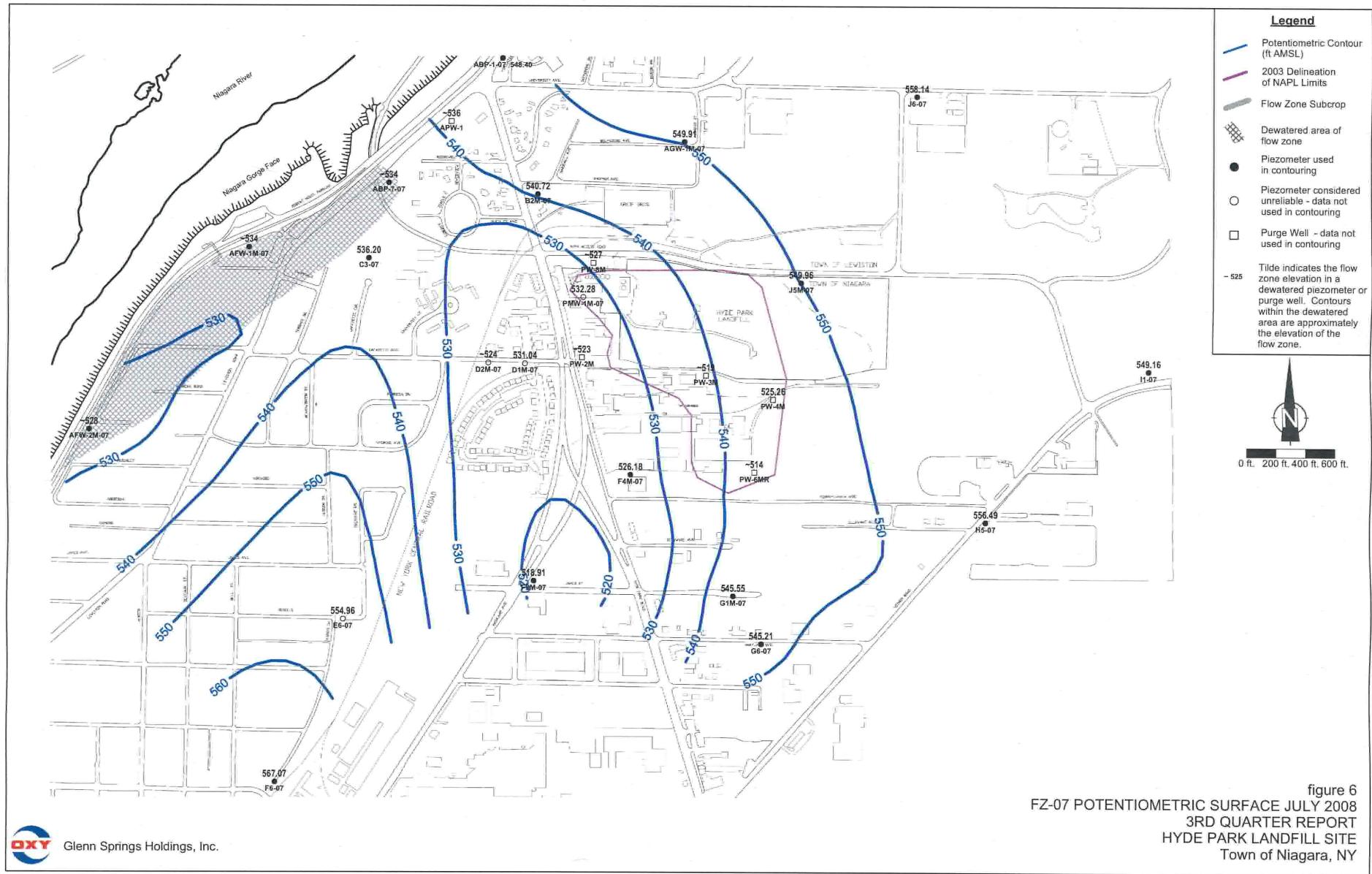


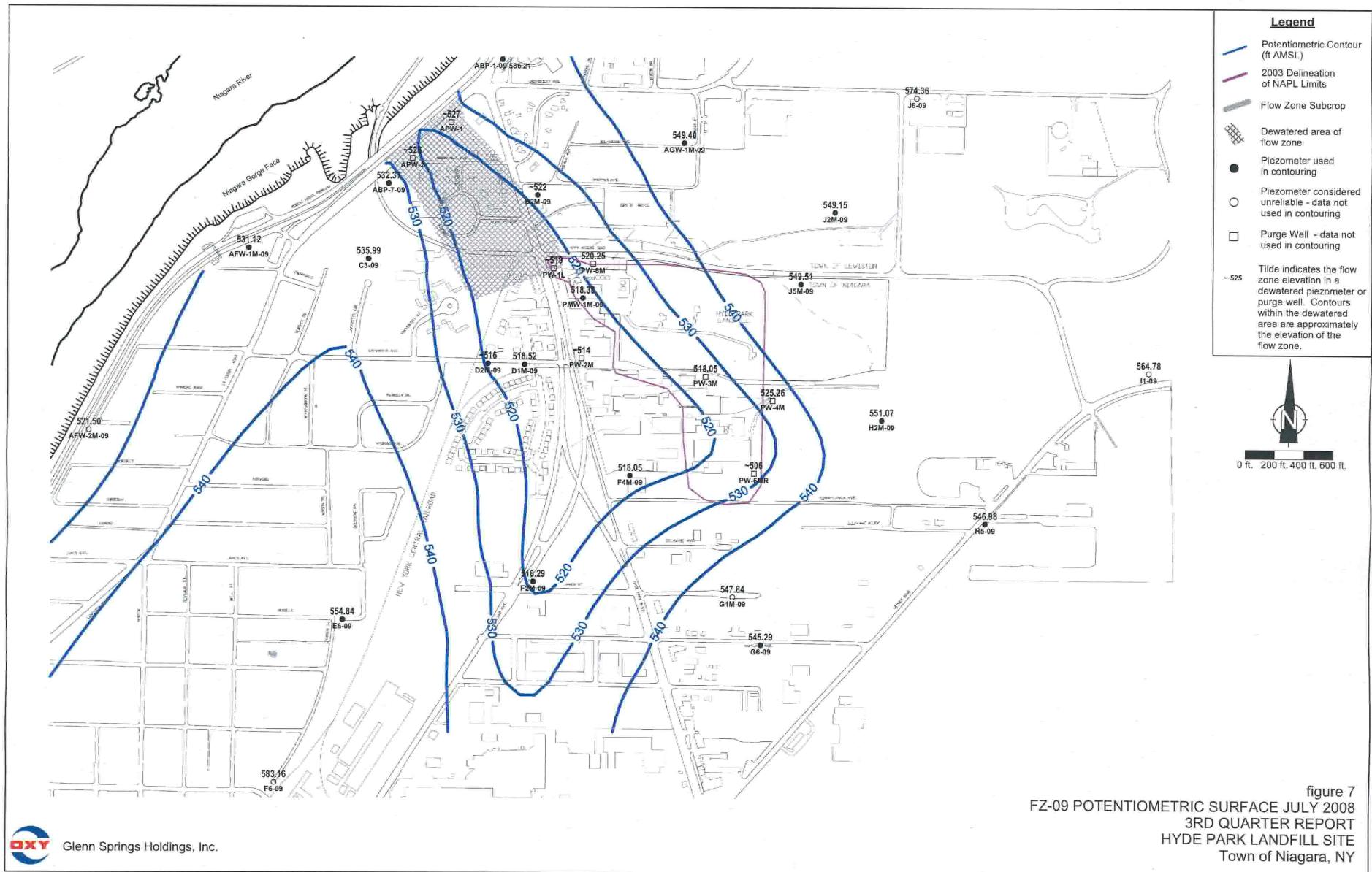


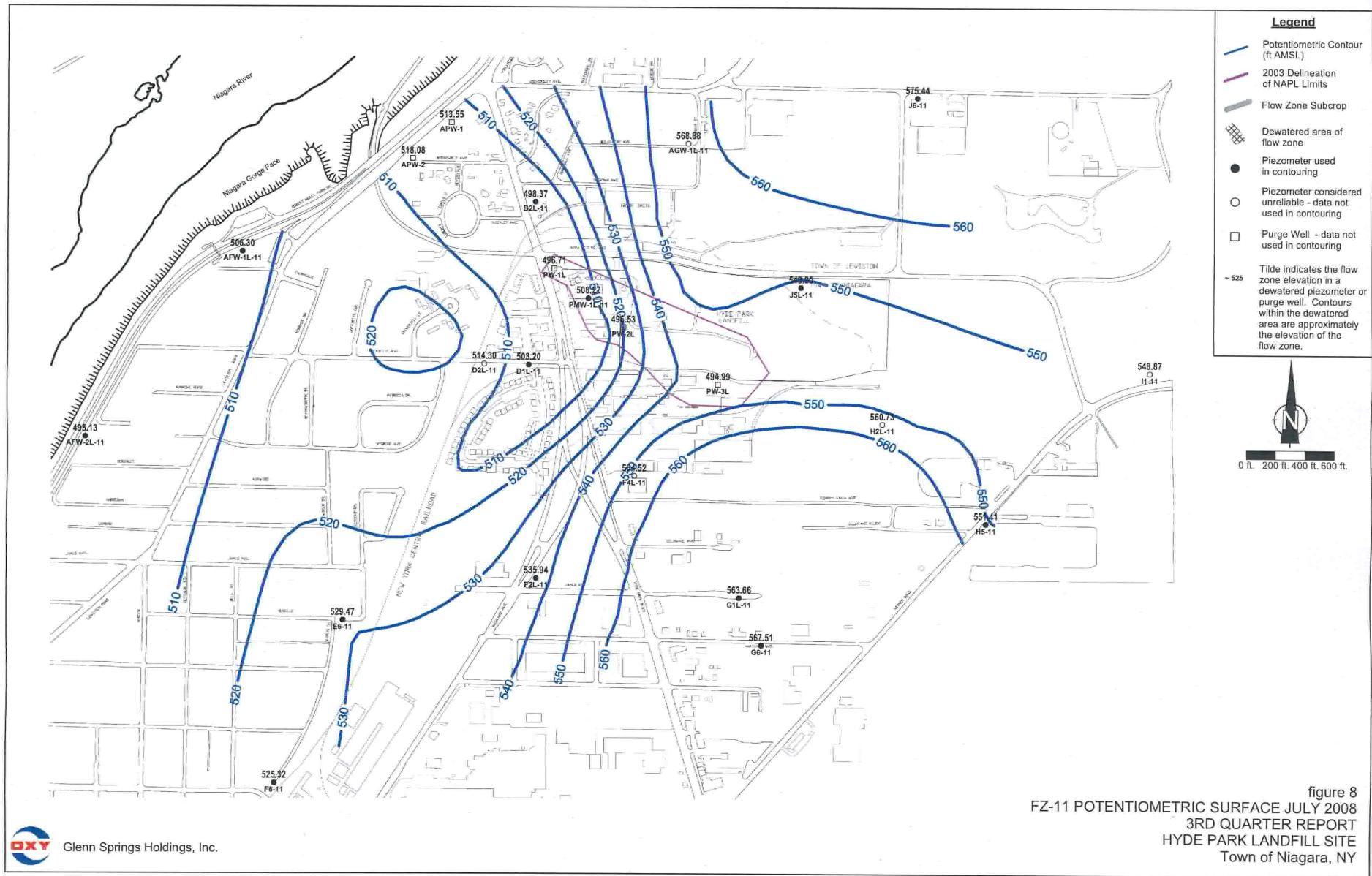


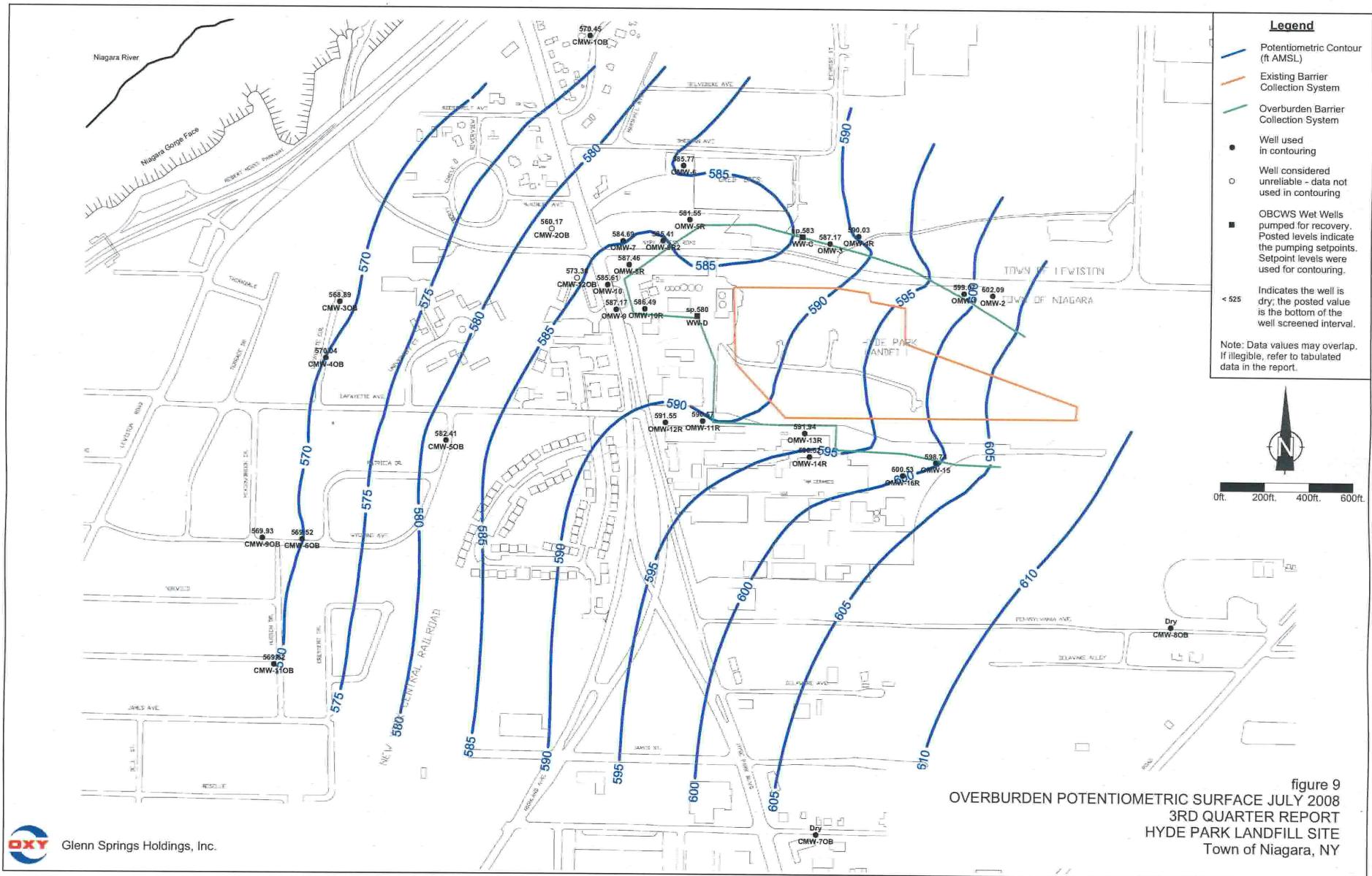












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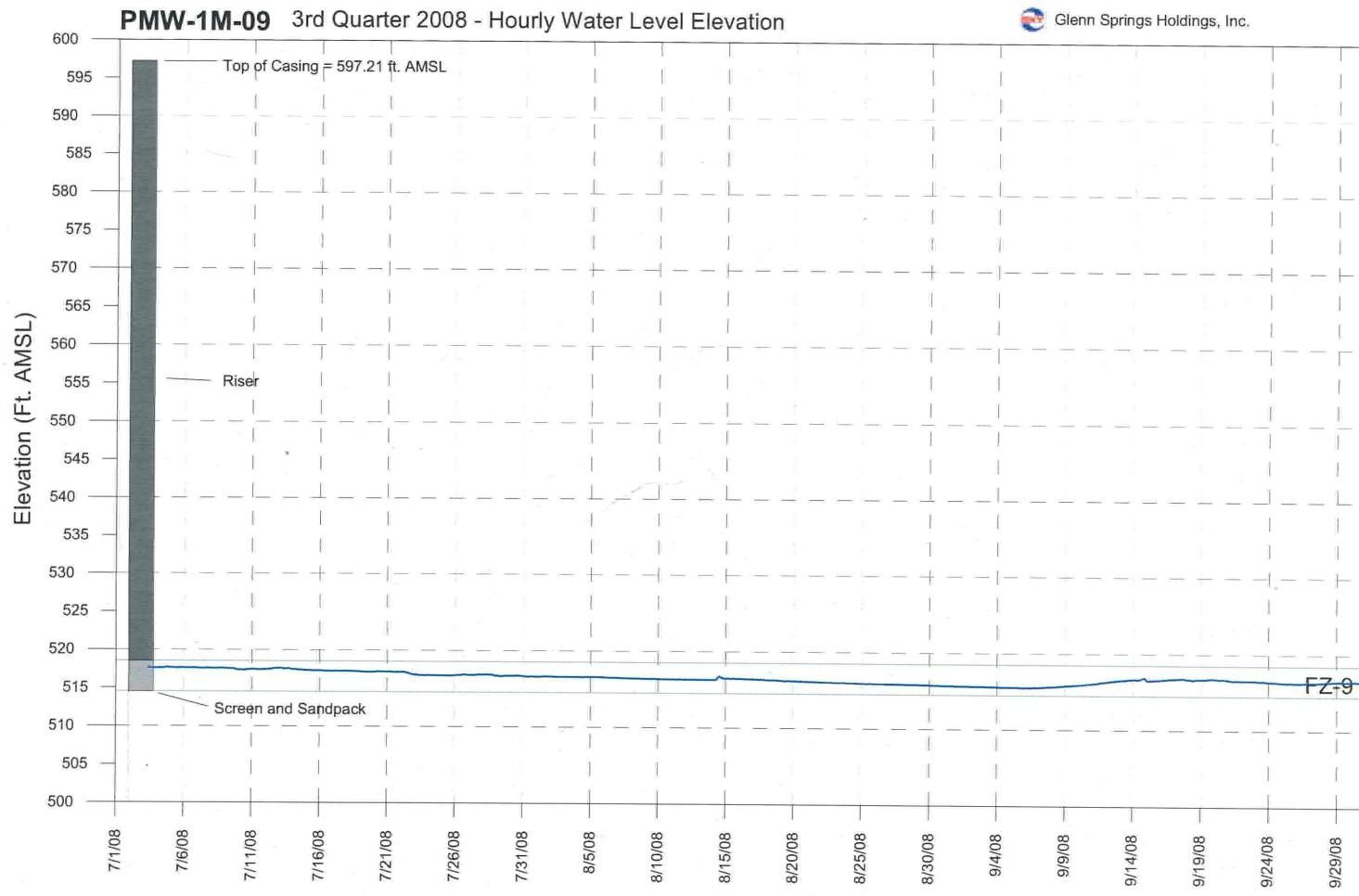


figure 10

TABLES

TABLE 1

**WATER LEVEL ELEVATION SUMMARY  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

Well	Reference Elevation (ft AMSL)	Depth to Water (ft)	Water Level Elevation (ft AMSL)
<b>Overburden</b>			
CMW-2OB	573.32	13.15	560.17
CMW-3OB	582.76	13.87	568.89
CMW-4OB	575.05	5.01	570.04
CMW-5OB	584.08	1.67	582.41
CMW-6OB	572.72	3.20	569.52
CMW-7OB	611.38	-	-
CMW-8OB	616.78	-	-
CMW-9OB	572.10	2.17	569.93
CMW-1OB	576.80	6.35	570.45
CMW-11OB	573.32	3.70	569.62
CMW-12OB	595.26	21.90	573.36
OMW-1	605.87	6.80	599.07
OMW-2	606.39	4.30	602.09
OMW-3	599.27	12.10	587.17
OMW-4R	601.83	11.80	590.03
OMW-5R	588.25	6.70	581.55
OMW-6	588.27	2.50	585.77
OMW-7	593.39	8.70	584.69
OMW-8R	598.16	10.70	587.46
OMW-8R2	595.31	9.90	585.41
OMW-9	595.97	8.80	587.17
OMW-10	595.51	9.90	585.61
OMW-10R	595.79	9.30	586.49
OMW-11R	598.07	7.50	590.57
OMW-12R	596.95	5.40	591.55
OMW-13R	602.04	10.10	591.94
OMW-14R	599.42	2.90	596.52
OMW-15	608.04	9.30	598.74
OMW-16R	608.23	7.70	600.53
SC-2	*	*	595.50
SC-3	*	*	598.10
SC-4	*	*	599.80
SC-5	*	*	605.70
SC-6	*	*	578.20
<b>Shallow Bedrock</b>			
CMW-1SH	576.47	14.01	562.46
CMW-2SH	573.32	25.00	548.32
CMW-3SH	582.74	29.01	553.73
CMW-4SH	574.92	11.25	563.67
CMW-5SH	584.04	8.20	575.84
CMW-6SH	572.67	10.64	562.03
CMW-7SH	611.16	9.00	602.16
CMW-8SH	617.01	9.90	607.11
CMW-9SH	572.18	12.23	559.95
CMW-11SH	573.40	8.40	565.00
CMW-12SH	597.65	28.00	569.65
<b>Flow Zone 1</b>			
G1U-01	617.08	16.20	600.88
G6-01	608.11	8.77	599.34
H2U-01	620.92	12.28	608.64
H5-01	617.61	21.30	596.31
I1-01	621.55	23.87	597.68
I1-01	621.55	23.87	597.68

TABLE 1

**WATER LEVEL ELEVATION SUMMARY  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

Well	Reference Elevation (ft AMSL)	Depth to Water (ft)	Water Level Elevation (ft AMSL)
<b>Flow Zone 2</b>			
F2U-02	599.89	24.56	575.33
F4U-02	602.32	16.62	585.70
G1-02	616.86	25.07	591.79
G6-02	608.11	17.78	590.33
H2U-02	620.88	28.20	592.68
H5-02	617.47	24.78	592.69
I1-02	621.42	35.74	585.68
J2U-02	609.66	18.49	591.17
J5U-02	606.21	13.42	592.79
J6-02	609.23	17.15	592.08
<b>Flow Zone 4</b>			
AFW-2U-04	593.48	17.80	575.68
D1U-04	593.77	14.00	579.77
D2U-04	590.65	11.59	579.06
E6-04	578.23	13.23	565.00
F2U-04	599.76	22.15	577.61
F4U-04	602.19	16.57	585.62
F6-04	588.06	18.65	569.41
G1U-04	616.96	24.97	591.99
G6-04	608.11	17.93	590.18
H5-04	617.40	26.09	591.31
I1-04	621.31	41.70	579.61
J2U-04	609.42	20.95	588.47
J5U-04	606.05	21.93	584.12
J6-04	609.12	30.58	578.54
<b>Flow Zone 5</b>			
AFW-2U-05	593.33	17.78	575.55
AGW-1U-05	591.80	12.40	579.40
D1U-05	593.51	15.19	578.32
D2U-05	590.56	11.72	578.84
E6-05	578.04	11.81	566.23
F2U-05	599.64	21.76	577.88
F4U-05	602.06	17.95	584.11
F6-05	587.85	18.50	569.35
G6-05	608.11	8.55	599.56
H2M-05	621.59	29.03	592.56
H5-05	617.31	26.32	590.99
I1-05	621.21	65.41	555.80
J2U-05	609.30	32.71	576.59
J5U-05	605.87	29.62	576.25
J6-05	609.02	31.04	577.98
PMW-1U-05	598.00	20.45	577.55

TABLE 1

**WATER LEVEL ELEVATION SUMMARY  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

Well	Reference Elevation (ft AMSL)	Depth to Water (ft)	Water Level Elevation (ft AMSL)
<b>Flow Zone 6</b>			
ABP-7-06	575.78	-	-
AFW-1U-06	571.83	14.60	557.23
AFW-2U-06	593.22	48.11	545.11
AGW-1U-06	591.66	39.62	552.04
B2U-06	589.29	36.30	552.99
C3-06	585.78	37.42	548.36
D1U-06	593.25	-	-
D2U-06	590.38	46.72	543.66
E6-06	577.99	7.26	570.73
F2M-06	599.06	32.90	566.16
F4M-06	602.05	51.05	551.00
F6-06	587.84	17.10	570.74
G1M-06	616.75	45.85	570.90
G6-06	608.11	37.60	570.51
H2M-06	621.42	56.50	564.92
H5-06	617.17	27.25	589.92
I1-06	621.08	68.28	552.80
J2M-06	608.94	57.41	551.53
J5M-06	606.22	63.67	542.55
J6-06	608.93	53.77	555.16
PMW-1U-06	597.92	53.12	544.80
<b>Flow Zone 7</b>			
ABP-1-07	576.98	28.58	548.40
ABP-7-07	575.67	42.21	533.46
AFW-1M-07	571.41	-	-
AFW-2M-07	593.44	66.80	526.64
AGW-1M-07	592.91	43.00	549.91
B2M-07	589.52	48.80	540.72
C3-07	585.62	49.42	536.20
D1M-07	594.15	63.11	531.04
D2M-07	590.77	70.60	520.17
E6-07	577.91	22.95	554.96
F2M-07	598.91	80.00	518.91
F4M-07	601.91	75.73	526.18
F6-07	587.68	20.61	567.07
G1M-07	616.68	71.13	545.55
G6-07	608.11	62.90	545.21
H5-07	617.05	60.56	556.49
I1-07	620.97	71.81	549.16
J5M-07	606.07	56.11	549.96
J6-07	608.85	50.71	558.14
PMW-1M-07	598.50	66.22	532.28

TABLE 1

**WATER LEVEL ELEVATION SUMMARY  
THIRD QUARTER - 2008  
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	576.73	40.52	536.21
ABP-7-09	575.67	43.30	532.37
AFW-1M-09	571.12	40.00	531.12
AFW-2M-09	593.32	71.82	521.50
AGW-1M-09	592.75	43.35	549.40
B2M-09	589.34	68.40	520.94
C3-09	585.54	49.55	535.99
D1M-09	594.02	75.50	518.52
D2M-09	589.50	-	-
E6-09	577.82	22.98	554.84
F2M-09	598.71	80.42	518.29
F4M-09	601.79	83.74	518.05
F6-09	587.53	4.37	583.16
G1M-09	616.58	68.74	547.84
G6-09	608.11	62.82	545.29
H2M-09	621.32	70.25	551.07
H5-09	616.93	69.95	546.98
I1-09	620.86	56.08	564.78
J2M-09	608.77	59.62	549.15
J5M-09	605.82	56.31	549.51
J6-09	608.76	34.40	574.36
PMW-1M-09	598.34	79.96	518.38
<b>Flow Zone 11</b>			
AFW-1L-11	572.10	65.80	506.30
AFW-2L-11	593.43	98.30	495.13
AGW-1L-11	592.71	23.83	568.88
B2L-11	589.65	91.28	498.37
D1L-11	593.80	90.60	503.20
D2L-11	589.30	75.00	514.30
E6-11	577.72	48.25	529.47
F2L-11	598.94	63.00	535.94
F4L-11	602.22	37.70	564.52
F6-11	587.40	62.08	525.32
G1L-11	616.84	53.18	563.66
G6-11	608.11	40.60	567.51
H2L-11	620.73	60.00	560.73
H5-11	616.81	65.40	551.41
I1-11	620.71	71.84	548.87
J5L-11	607.20	58.30	548.90
J6-11	608.68	33.24	575.44
PMW-1L-11	598.84	90.57	508.27

## Notes

- \* Data loggers in wells, not manual measurements.
- Dry well.

TABLE 2

Page 1 of 3

**LEACHATE TREATMENT SYSTEM DAILY EFFLUENT MONITORING DATA  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

Date	Effluent			Comments
	Phenol (mg/L)	pH (su)	Flow (gal)	
07/01/08	-	7.10	164000	
07/02/08	0.018 U	7.20	121,000	
07/03/08	-	7.30	78,000	
07/04/08	-	-	-	
07/05/08	-	-	-	
07/06/08	-	-	-	
07/07/08	-	7.20	173,000	
07/08/08	-	7.20	165,000	
07/09/08	0.0040 J	7.10	124,000	
07/10/08	-	7.20	85,000	
07/11/08	-	7.20	82,000	
07/12/08	-	-	-	
07/13/08	-	-	-	
07/14/08	-	7.20	140,000	
07/15/08	-	7.20	105,000	
07/16/08	0.030	7.20	126,000	
07/17/08	-	7.20	94,000	
07/18/08	-	7.20	75,000	
07/19/08	-	-	-	
07/20/08	-	-	-	
07/21/08	-	7.20	165,000	
07/22/08	-	7.10	158,000	
07/23/08	0.010 U	7.30	78,000	
07/24/08	-	7.30	77,000	
07/25/08	-	7.30	75,000	
07/26/08	-	-	-	
07/27/08	-	-	-	
07/28/08	-	7.20	159,000	
07/29/08	-	7.20	105,000	
07/30/08	0.014 U	7.30	76,000	
07/31/08	-	7.30	67,000	

TABLE 2

Page 2 of 3

**LEACHATE TREATMENT SYSTEM DAILY EFFLUENT MONITORING DATA  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

Date	Effluent			Comments
	Phenol (mg/L)	pH (su)	Flow (gal)	
08/01/08	-	7.20	72,000	
08/02/08	-	-	-	
08/03/08	-	-	-	
08/04/08	-	7.30	151,000	
08/05/08	-	7.20	104,000	
08/06/08	0.012	7.20	76,000	
08/07/08	-	7.30	67,000	
08/08/08	-	7.30	66,000	
08/09/08	-	-	-	
08/10/08	-	-	-	
08/11/08	-	7.30	152,000	
08/12/08	-	7.20	120,000	
08/13/08	0.033	7.20	71,000	
08/14/08	-	7.20	43,000	
08/15/08	-	7.30	78,000	
08/16/08	-	-	-	
08/17/08	-	-	-	
08/18/08	-	7.30	111,000	
08/19/08	-	7.20	122,000	
08/20/08	0.010 U	7.30	68,000	
08/21/08	-	7.20	61,000	
08/22/08	-	7.20	63,000	
08/23/08	-	-	-	
08/24/08	-	-	-	
08/25/08	-	7.20	141,000	
08/26/08	-	7.10	97,000	
08/27/08	0.010 U	7.20	66,000	
08/28/08	-	7.10	61,000	
08/29/08	-	7.20	56,000	
08/30/08	-	-	-	
08/31/08	-	-	-	

TABLE 2

Page 3 of 3

**LEACHATE TREATMENT SYSTEM DAILY EFFLUENT MONITORING DATA  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

Date	Effluent			Comments
	Phenol (mg/L)	pH (su)	Flow (gal)	
09/01/08	-	-	-	
09/02/08	-	7.10	129,000	
09/03/08	0.0069	7.10	143,000	
09/04/08	-	7.10	63,000	
09/05/08	-	7.00	58,000	
09/06/08	-	-	-	
09/07/08	-	-	-	
09/08/08	-	7.10	161,000	
09/09/08	-	7.10	124,000	
09/10/08	0.0066	7.20	78,000	
09/11/08	-	7.10	57,000	
09/12/08	-	7.10	59,000	
09/13/08	-	-	-	
09/14/08	-	-	-	
09/15/08	-	7.20	168,000	
09/16/08	-	7.20	159,000	
09/17/08	0.0089	7.20	96,000	
09/18/08	-	7.30	70,000	
09/19/08	-	7.20	71,000	
09/20/08	-	-	-	
09/21/08	-	-	-	
09/22/08	-	7.20	159,000	
09/23/08	-	7.20	88,000	
09/24/08	0.0020	7.10	65,000	
09/25/08	-	7.20	55,000	
09/26/08	-	7.20	52,000	
09/27/08	-	-	-	
09/28/08	-	-	-	
09/29/08	-	7.20	149,000	
09/30/08	-	7.10	53,000	

TABLE 3

**ANALYTICAL RESULTS SUMARY  
WEEKLY SAMPLING - LEACHATE TREATMENT SYSTEM  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

## Effluent

TABLE 3

**ANALYTICAL RESULTS SUMMARY  
WEEKLY SAMPLING - LEACHATE TREATMENT SYSTEM  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

**Effluent**

Parameter	Units	Treatment					
		Level	08/27/08	09/03/08	09/10/08	09/17/08	09/24/08
1,1,1-Trichloroethane	ug/L	200	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	0.053	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	800	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	70	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	180	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	75	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	ug/L	120	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
3-Chlorotoluene	ug/L	120	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
4-Chlorotoluene	ug/L	120	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Benzene	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	80	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	80	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	8.5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1000	0.24 J	3.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	3.6	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	80	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	190	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	0.34 J	0.70 J	0.50 J	0.45 J	0.44 J
cis-1,3-Dichloropropene	ug/L	0.44	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	350	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	30	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
m-Monochlorobenzotrifluoride	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
o-Monochlorobenzotrifluoride	ug/L	50	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
p-Monochlorobenzotrifluoride	ug/L	50	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	100	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1000	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	0.44	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	5	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	-	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Vinyl acetate	ug/L	-	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2	2.3	47	36	40	20
Xylene (total)	ug/L	10000	3.0 U	9.0 U	3.0 U	3.0 U	3.0 U

## Notes:

- Not available/not applicable.
- J Estimated at associated value.
- U Non-detect at associated value.

TABLE 4

Page 1 of 1

**ANALYTICAL RESULTS SUMMARY  
QUARTERLY SAMPLING - LEACHATE TREATMENT SYSTEM  
THIRD QUARTER - 2008  
HYDE PARK RRT PROGRAM**

**Effluent**

Parameter	Units	Treatment	July 2008
		Level	
Phosphorus	mg/L	-	0.21
Vinyl Chloride	ug/L	-	5.0 U

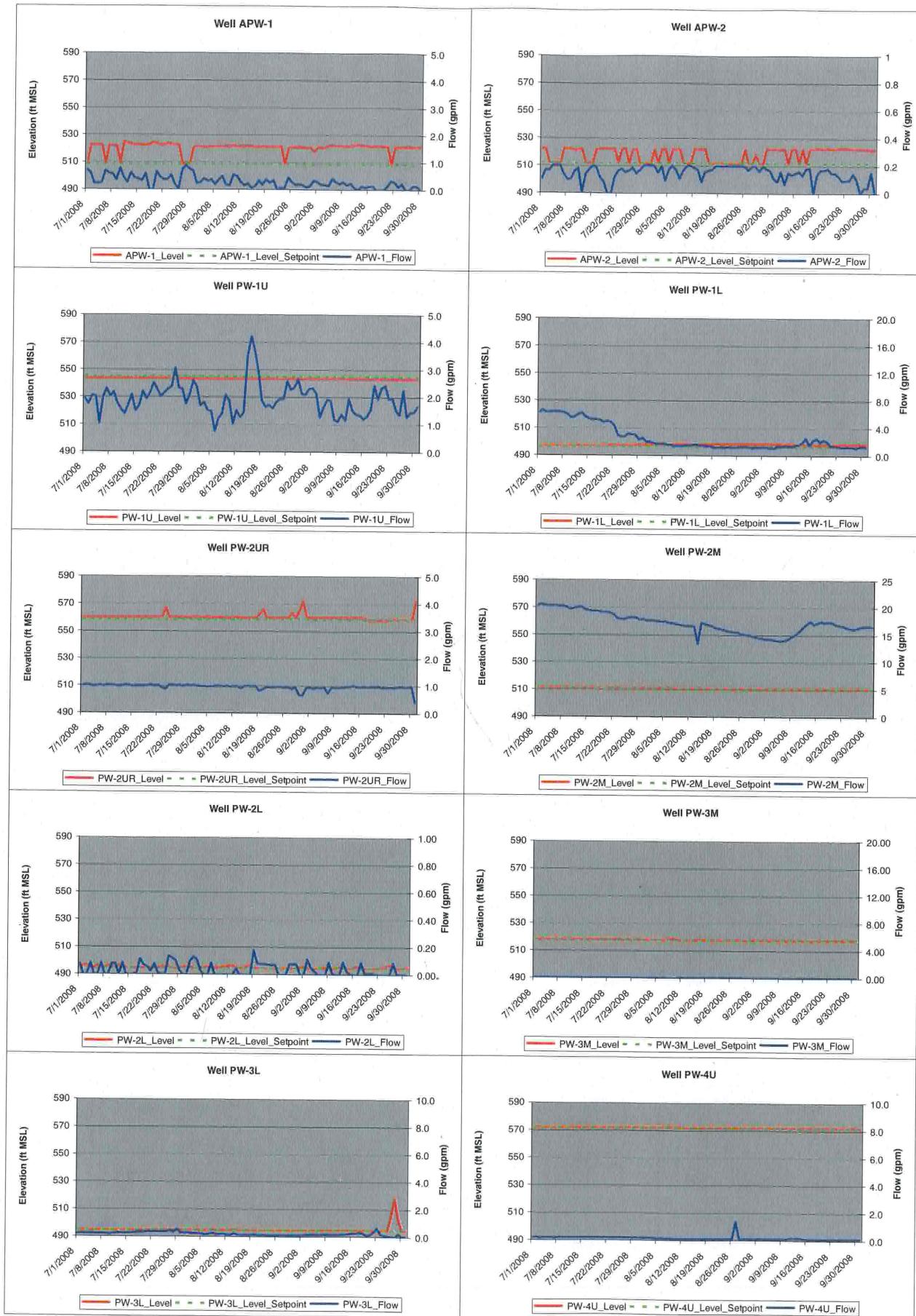
**Notes:**

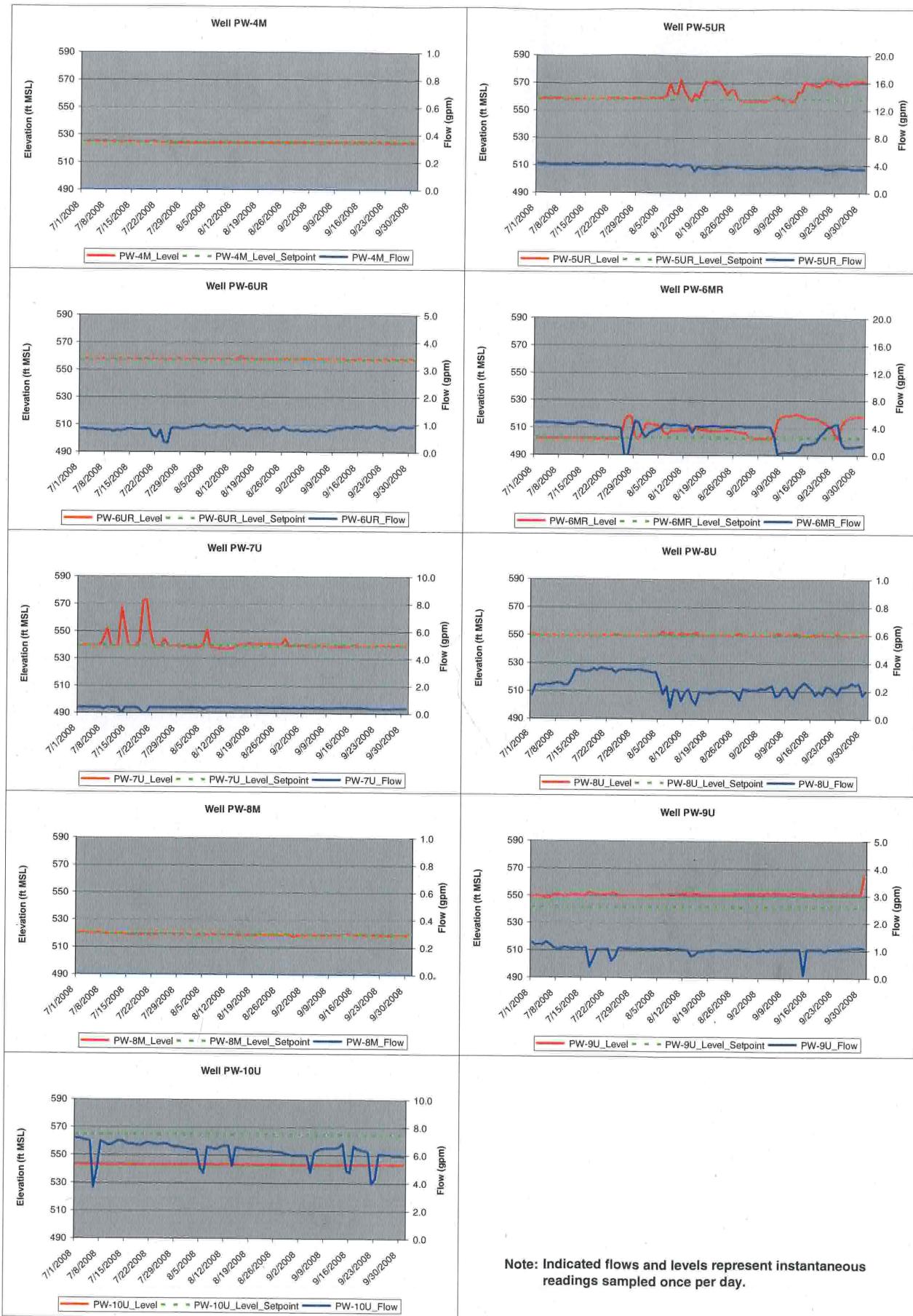
- Not available/not applicable.
- J Associated value is estimated.
- U Non-detect at associated value.

**ATTACHMENT 1**  
**PURGE WELL PERFORMANCE GRAPHS**

**ATTACHMENT 1**  
**PUMPING LEVELS AND FLOWS**  
**HYDE PARK**

Page 1 of 2





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