

**HAWTHORN PARK LANDFILL
APPENDIX III-4E
SITE HYDROGEOLOGIC DATA**

TABLE III-4-8
HAWTHORN PARK RECYCLING & DISPOSAL FACILITY
HISTORICAL DATA

	P-1	P-2	P-3	P-4	P-1PC	P-1PD	P1-PE	W-1	P-5	P-6	P-7	P-1P	P-3BP	P-4P	P-5P	P-5PA	P-8	P-9	P-10	
05/02/86	DRY	84.00	87.50						85.20											
05/13/86				80.80						77.20										
05/16/86	DRY	82.90	86.80	80.50					84.80	76.80		78.70			85.60					
07/10/86					83.40			82.90				79.00	75.70		86.30	87.50				
07/17/86	DRY	84.00	87.70	85.70	83.60				85.40	78.50		80.20	74.40		86.20	87.50				
07/24/86																				
07/25/86					82.90			82.40				79.80	74.70		86.10	87.20				
08/26/86					81.20			80.70				78.00	71.50		85.30	86.50				
09/10/86	DRY		86.50	84.10	81.40				84.70	76.20		78.40	72.90		85.50	86.70				
09/22/86	DRY		87.00		82.50				84.70	76.40		78.70	72.70		85.50	86.70				
10/28/86					83.60				85.30	78.00			73.60		86.10	87.10				
11/03/86					83.20					77.80		79.80	73.50		86.10	87.20				
11/25/86					90.90							82.30	73.80		86.60	87.70				
12/24/86					95.10					83.00		86.30	76.50		87.10	88.60				
01/29/87					91.20							86.90	78.10		88.40	89.40				
03/11/87	DRY	89.60	88.20	86.20					82.00				76.60		87.30	88.30				
03/25/87																				
09/10/87											78.50									
10/01/87																				
10/19/87																				
06/28/88																	30.10	28.90	26.50	
07/12/88																	87.70	28.50	27.60	
07/15/88																	30.00	28.80	28.10	
07/20/88																	30.00	28.80	28.00	
11/13/91			84.01			90.80	90.40													
12/30/91		91.78	86.98		96.14	94.24	92.86	84.91		81.86	80.29			88.72	87.79	89.33	31.03	28.40	27.90	
12/31/91								94.61		88.56	81.47									
01/03/92		91.37	87.19		94.72	93.84	91.43	94.55		88.48	82.31			88.62	88.00	87.30	31.05	28.52	27.88	
11/03/92		84.66	84.47	86.36			81.38				81.27				87.66	86.97				29.32

**TABLE III-4-9
HAWTHORN PARK RECYCLING & DISPOSAL FACILITY
MONITORING WELL - HISTORICAL DATA**

	MW-B1	MW-B2	MW-B3	MW-B4	MW-A1	MW-A2	MW-A3	MW-A4	MW-A5
04/17/86	84.61	78.09	72.47	76.85					
11/03/86	82.41	76.59	72.57	76.25					
08/25/87	89.11	81.29	78.37	81.95					
02/19/88	87.11	72.19	83.17	76.25					
03/31/89	82.41	77.49	61.57	67.65					
03/27/90	72.91	82.59	74.07	70.65					
12/27/90	84.52	82.11	77.75	79.46					
03/19/91	87.92	84.39	80.60	85.68					
08/06/91	89.33	84.71	80.69	86.83					
11/13/91	88.48	84.17	80.87	86.16					
01/10/92	91.52	86.61	64.65	97.28					
01/13/92	92.08	86.95	85.27	98.02					
01/21/92	92.50	87.01	85.41	98.02					
03/16/92	94.52	88.41	86.45	84.88					
11/03/92	90.36	86.11	81.19	87.26					
02/05/87					92.23	91.93	93.94	94.58	92.45
06/05/87					86.63	86.43	89.44	87.98	84.55
12/29/87					88.03	87.13	91.24	87.78	87.15
06/20/88					85.63	84.63	88.54	88.08	87.05
12/07/88					84.33	82.23	83.44	86.78	82.95
06/09/89						85.93	87.34	87.18	86.15
08/15/89					87.63				
12/26/89					24.33	81.93		85.58	84.75
06/05/90					86.43	86.33	90.34	91.08	86.25
12/21/90					DRY	87.64	87.69	86.37	86.10
05/15/91					87.50	87.81	91.34	96.47	90.90
06/03/91					87.50	93.32			
08/07/91					90.90	91.63	90.07	92.28	90.12
11/13/91					90.12	90.77	90.11	89.21	86.68
12/30/91					97.70	93.11	94.59	92.47	94.40
01/10/92					98.50	98.06	95.69	98.37	95.30
01/13/92					98.90	98.47	94.97	98.99	96.04
01/21/92					98.38	98.47	95.07	99.29	96.74
06/27/92									92.35
11/03/92					88.68	88.65	86.57	88.99	89.16

**TABLE III-4-10
HAWTHORN PARK RECYCLING & DISPOSAL FACILITY
EXISTING MONITORING WELL WATER ELEVATION**

Well ID	TOC	Groundwater Elevations (ft msl)															
		12/9/2004	12/19-20/2005	12/13-14/2006	12/17-18/2007	12/29/2008	12/21/2009	12/9/2010	12/1/2011	12/10-11/2012	12/9-10/2013	12/8-9/2014	12/7-8/2015	12/19/2016	12/11-12/2017	12/17-18/2018	12/12-13/2019
MW-6	107.80	95.67	91.56	93.25	97.56	93.30	96.02	92.35	89.85	89.45	89.55	85.97	93.15	94.10	95.22	97.10	95.75
MW-7	105.34	93.06	89.68	92.09	96.29	89.99	94.52	91.34	88.24	87.44	86.24	79.46	89.96	92.93	93.96	97.19	95.86
MW-8	105.29	92.47	89.34	91.64	95.34	89.49	93.74	90.84	87.76	87.06	85.91	78.89	89.34	92.44	93.39	96.49	95.19
MW-9	108.45	90.15	87.65	89.90	94.45	86.91	88.54	87.30	77.45	78.67	84.23	81.55	87.95	92.80	93.44	95.46	94.31
MW-10	105.20	92.85	90.25	90.76	94.36	90.20	92.85	90.00	88.72	86.60	87.40	83.52	90.40	92.46	93.10	95.20	93.80
MW-11	105.51	93.54	89.03	88.09	94.31	91.09	90.71	88.73	86.16	87.51	89.31	88.46	92.60	92.73	93.10	94.61	93.21
MW-12	105.10	93.19	86.75	89.30	96.42	89.63	84.25	87.08	85.12	87.70	88.30	91.50	94.77	93.50	94.03	95.20	94.20
MW-13	105.14	91.21	86.99	87.92	95.44	88.01	88.42	86.76	85.59	87.14	87.94	88.69	95.04	93.22	93.64	95.69	94.24
MW-14	106.43	86.90	84.29	88.93	95.43	82.98	79.13	81.43	82.05	83.83	87.35	88.05	95.15	94.57	95.53	100.03	95.63
MW-15	106.76	87.86	85.97	88.89	95.39	85.51	84.06	84.26	84.76	86.43	87.82	88.56	95.06	93.96	94.84	96.21	94.86
MW-16	106.26	88.89	86.40	89.34	95.76	86.08	84.81	84.91	84.96	87.08	88.16	88.86	95.53	92.38	95.26	96.74	95.26
MW-17	105.83	87.37	85.15	87.91	95.61	82.33	79.78	80.73	83.41	85.07	87.33	87.98	95.28	95.31	96.70	98.03	96.33
MW-18	106.34	90.44	86.99	89.82	95.94	86.69	83.54	83.59	84.74	86.19	88.34	88.44	95.76	96.19	97.34	98.79	96.96
MW-19	109.07	91.81	88.31	90.75	97.40	88.77	86.92	86.37	86.52	87.77	89.57	89.22	96.37	96.17	97.57	98.92	97.02
MW-20	110.69	93.93	89.87	91.66	98.19	92.31	92.09	89.79	88.69	89.97	91.79	90.74	97.44	96.59	97.74	99.04	97.24
MW-21	107.94	95.17	90.79	92.73	97.44	93.54	95.02	91.94	89.64	89.64	90.04	87.24	93.73	94.39	95.62	96.92	95.89

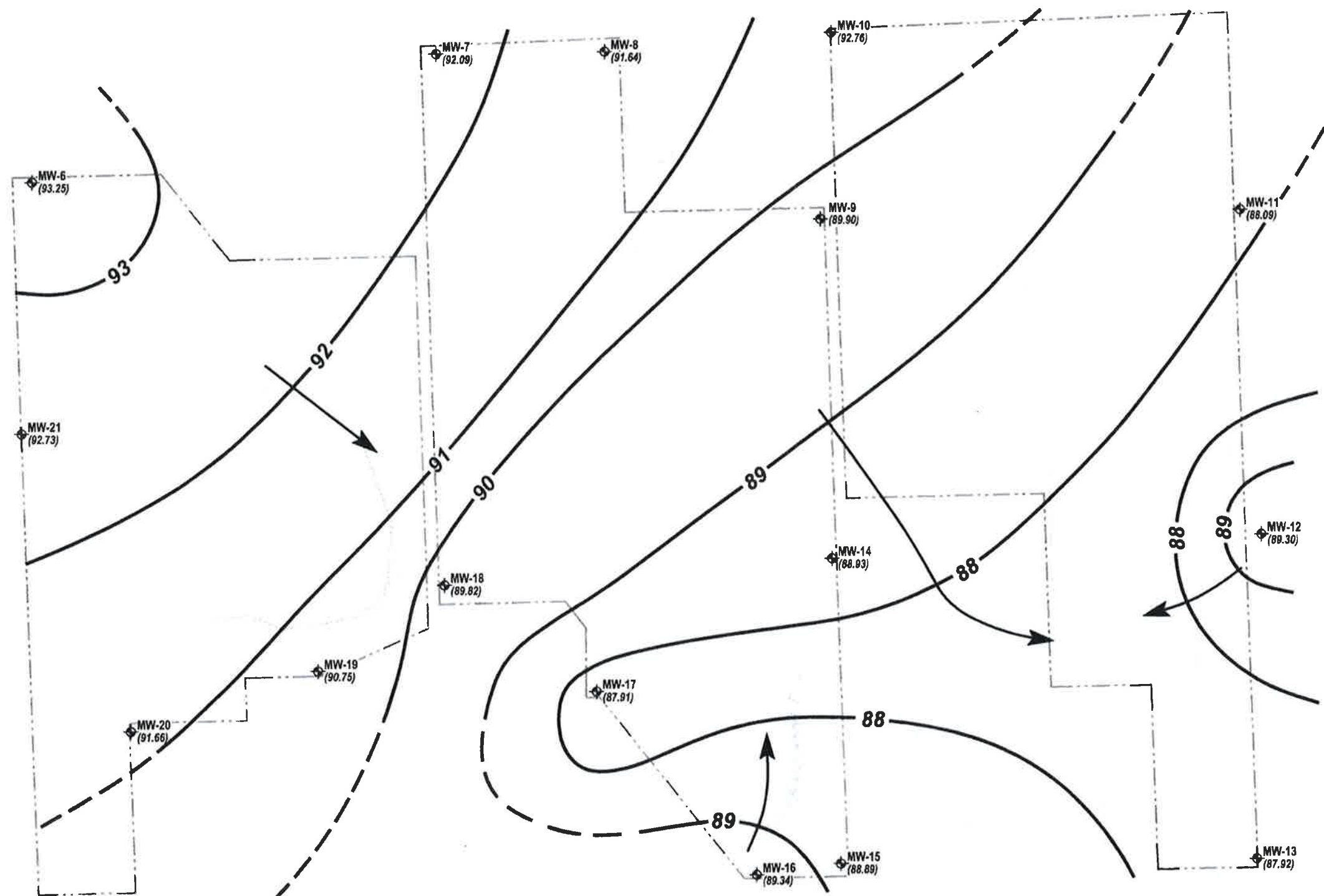
**Table III-4-11
Hawthorne Park Recycling & Disposal Facility
Groundwater Observations During Drilling**

Boring Number	Install Date	Surface Elevation (msl)	Total Depth (ft)	Water Level During Drilling Depth to Water (ft)	Groundwater Elevation During Drilling (msl)	Stabilized Depth to Water (ft)
McBride-Ratcliffe Associates 1987						
CB-21	3/5/1987	106	100	31.0	75.0	17.4
CB-22	3/9/1987	106	100	12.0	94.0	6.5
CB-27	10/17/1987	105	100	22.0	83.0	
WB-28	10/16/1987	105	100		105.0	
McBride-Ratcliffe Associates 1986						
CB-1	2/13/1986	104	80	26.5	77.5	15.4
CB-2	2/12/1986	104	80	25.0	79.0	
CB-3	2/12/1986	104	80	36.3	67.7	30.3
CB-4	2/11/1986	102	80	23.0	79.0	21.8
CB-5	11/16/1985	103	80	26.0	77.0	18.3
CB-6	2/11/1986	102	80	22.0	80.0	
CB-7	2/26/1986	104	100	24.0	80.0	21.0
CB-8	2/26/1986	103	100	23.0	80.0	16.5
CB-9	2/24/1986	103	100	27.0	76.0	12.5
CB-10	2/24/1986	102	100	24.0	78.0	19.7
CB-11	2/24/1986	104	100	27.0	77.0	24.0
CB-12	2/26/1986	86	100	12.0	74.0	3.6
CB-13	2/25/1986	87	100	14.0	73.0	4.3
CB-16	2/28/1986	106	100	21.0	85.0	
CB-18	2/26/1986	103	100	27.0	76.0	16.8
Aviles Engineering Corp						
B-1	10/7/1982	103	60	33.0	70.0	
B-2	10/5/1982	103	60	52.0	51.0	
B-3	10/4/1982	103	60	43.0	60.0	
B-4	10/5/1982	103	60	52.0	51.0	
B-5	9/30/1982	103	40	8.0	95.0	
B-6	9/28/1982	103	40	28.0	75.0	
B-7	9/30/1982	103	40	7.0	96.0	
B-8	9/29/1982	103	40	20.0	83.0	
B-9	9/30/1982	103	40	5.0	98.0	
B-10	10/4/1982	103	40	6.0	97.0	
B-11	10/4/1982	103	40	13.0	90.0	
B-12	9/30/1982	103	40	13.0	90.0	
McBride-Ratcliffe Associates 1983						
CB-2C	8/3/1983	105	100	37.0	68.0	38.1
Pizeometers Installed 1983-1984						
P-A	1/24/1984	105.5	60		105.5	19.0
P-5	1/9/1984	105	62		105.0	20.9
P-6	1/3/1984	105	61		105.0	19.5
P-7	1/3/1984	105	100		105.0	18.2
P-8	1/4/1984	105	48		105.0	16.6

**Table III-4-11
Hawthorne Park Recycling & Disposal Facility
Groundwater Observations During Drilling**

Boring Number	Install Date	Surface Elevation (msl)	Total Depth (ft)	Water Level During Drilling Depth to Water (ft)	Groundwater Elevation During Drilling (msl)	Stabilized Depth to Water (ft)
P-10	11/6/1984	105	83		105.0	24.8
P-12	11/9/1984	105	85		105.0	24.5
McBride-Ratcliffe Associates						
CB-1 ¹	1/5/1981	103.5	50	26.0	77.5	
CB-3 ¹	1/5/1981	102.4	50	28.0	74.4	
CB-4 ¹	1/9/1981	103	42	42.0	61.0	
CB-5 ¹	1/5/1981	102	35	15.0	87.0	
CB-6 ¹	1/9/1981	102	35	27.0	75.0	
CB-7 ¹	4/1/1981	101.5	48	38.0	63.5	23.1
CB-8 ¹	4/1/1981	102	24	4.0	98.0	
CB-3	4/5/1982	104	50	31.0	73.0	10.6
CB-4	3/31/1982	104	50	37.0	67.0	27.9
CB-7	4/2/1982	84.5	20	12.5	72.0	
CB-8	4/2/1982	90.8	50	19.0	71.8	8.6
CB-11	4/2/1982	97	58	19.0	78.0	
Western Contractor Services, Inc.						
CB-2	8/31/1983	105	100	37.0	68.0	38.1
CB-12	9/28/1984	105	90	27.5	77.5	23.3
CB-13	10/2/1984	105	90	29.0	76.0	21.2
CB-14	10/2/1984	105	90	23.0	82.0	20.7
CB-15	10/1/1984	105	90	24.0	81.0	22.5

* Estimated surface elevation. Surface elevation was not included on boring log.
NI-Not included on log



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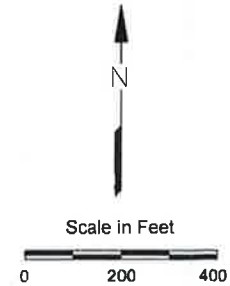
- Notes:
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 07-06-00.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION

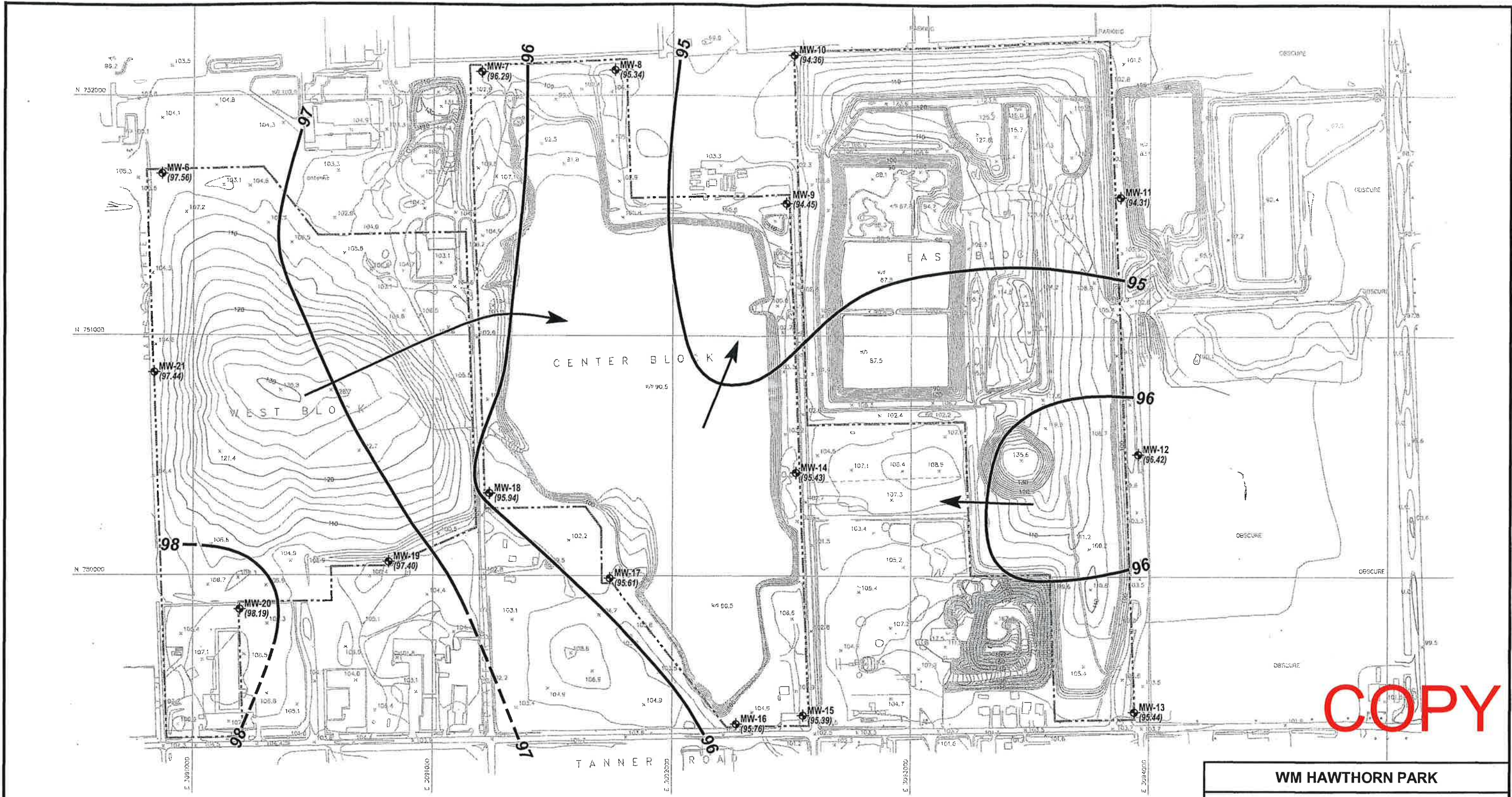
Permit Boundary	Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
Monitor Well Location	Groundwater Flow Direction
Water Level Elevation (Ft MSL)	



The seal appearing on this document was authorized by Eric C. Matzner, P.G. 0795 on January 18, 2007.



WM HAWTHORN PARK		
Figure 1 POTENTIOMETRIC SURFACE DECEMBER 13, 2006		
PROJECT: 1256	BY: ZGK	REVISIONS:
DATE: JAN., 2007	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		



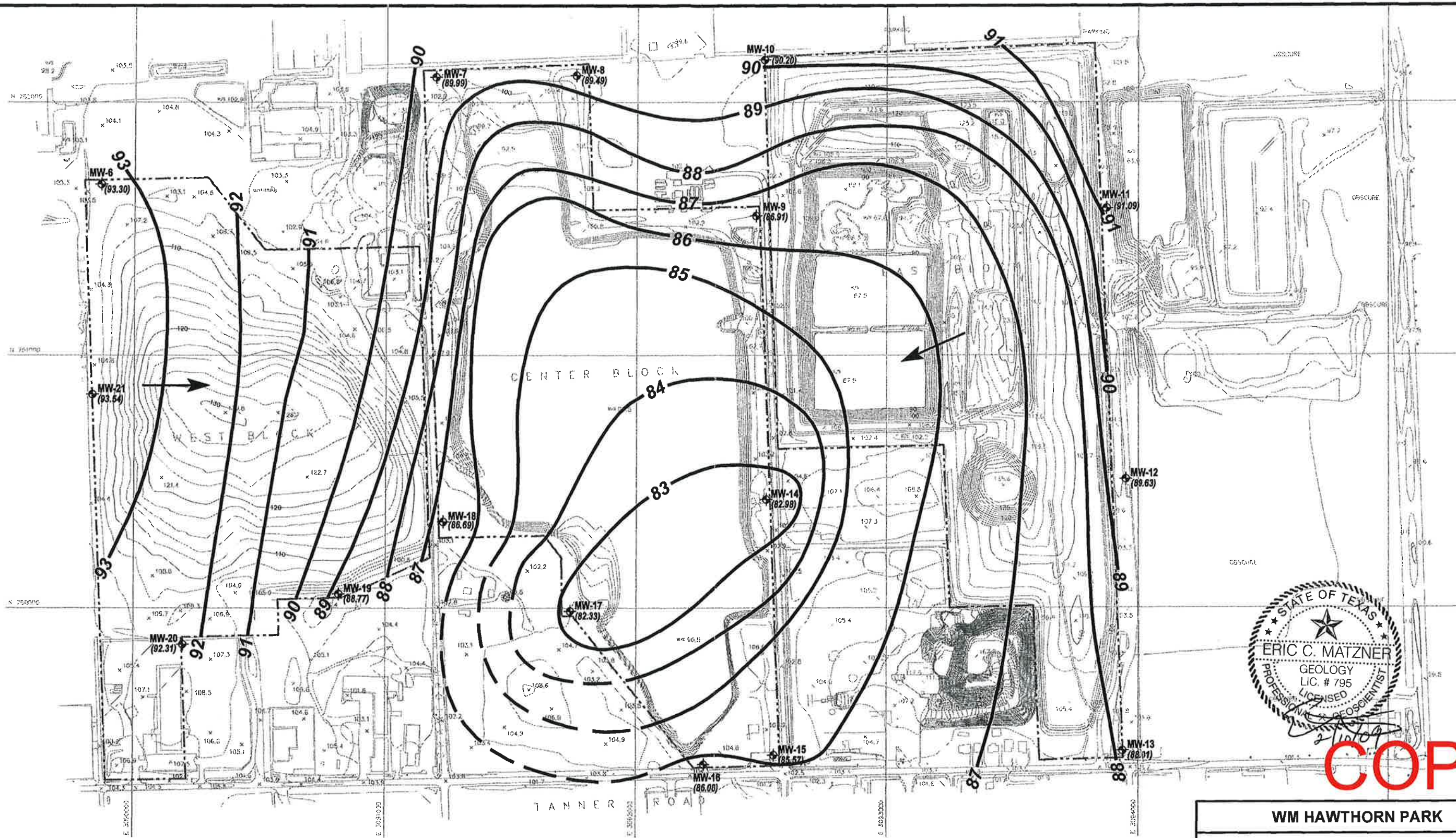
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- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 04-12-2007.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION	
<p>--- Permit Boundary</p> <p>MW-12 (95.61) Monitor Well Location</p> <p>Water Level Elevation (Ft MSL)</p>	<p>—97— Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)</p> <p>↙ Groundwater Flow Direction</p>



WM HAWTHORN PARK		
Figure 1		
POTENTIOMETRIC SURFACE DECEMBER 17-18, 2007		
PROJECT: 1256	BY: ZGK	REVISIONS
DATE: JAN., 2008	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		



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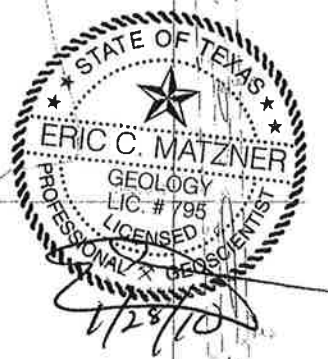
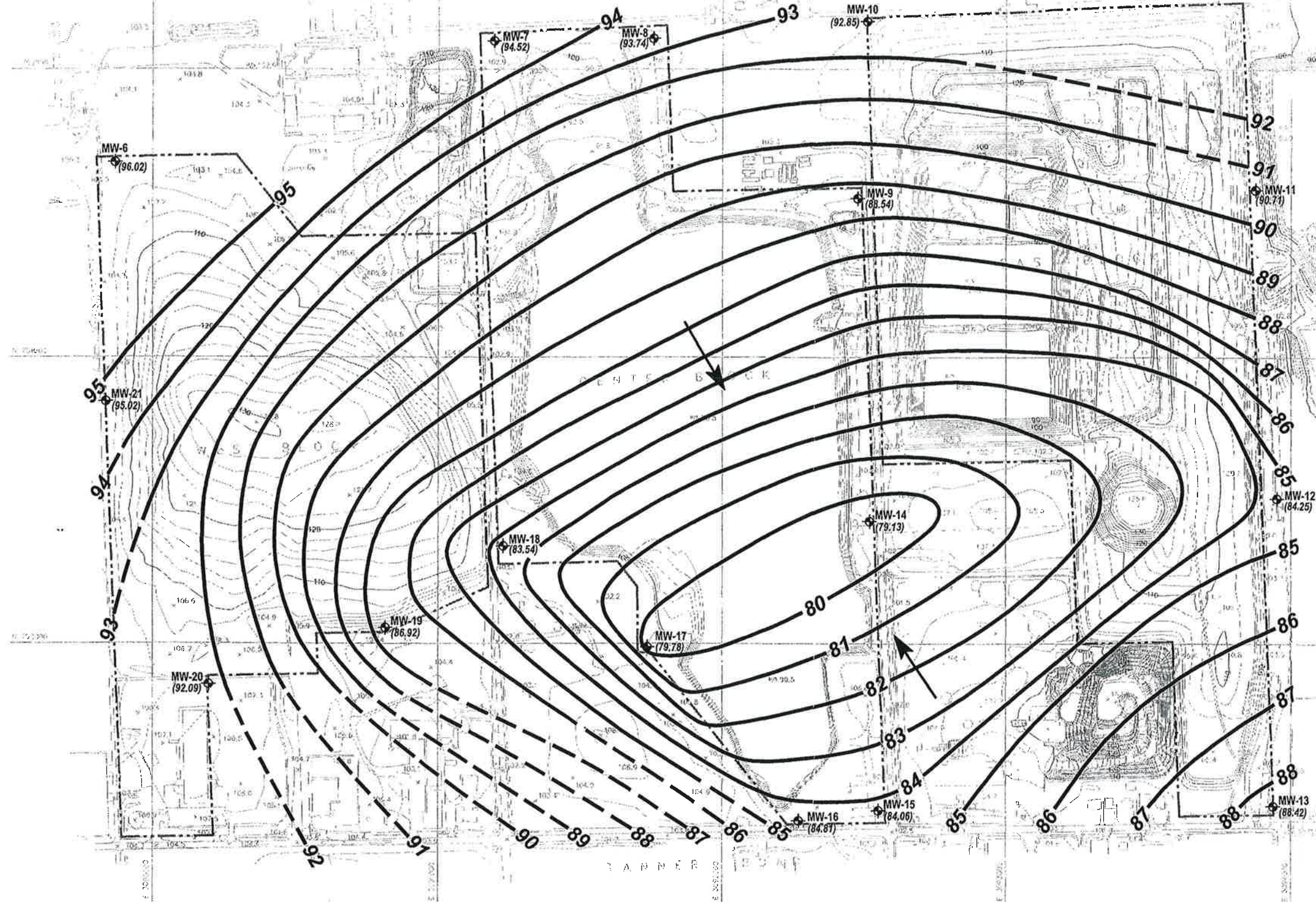
EXPLANATION

- Permit Boundary
- Monitor Well Location
- (86.08) Water Level Elevation (Ft MSL)
- 86** Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
- Groundwater Flow Direction



- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 04-12-2007.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

WM HAWTHORN PARK		
Figure 1		
POTENTIOMETRIC SURFACE DECEMBER 29, 2009		
PROJECT: 1256	BY: ZGK	REVISIONS
DATE: FEB., 2009	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		

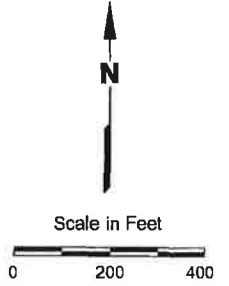


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- Notes:
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 04-12-2007.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION

Permit Boundary	Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
Monitor Well Location Water Level Elevation (Ft MSL)	Groundwater Flow Direction

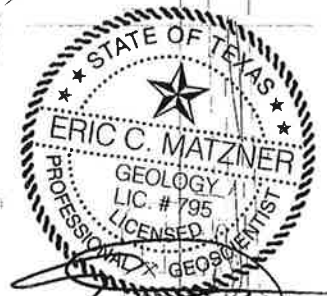
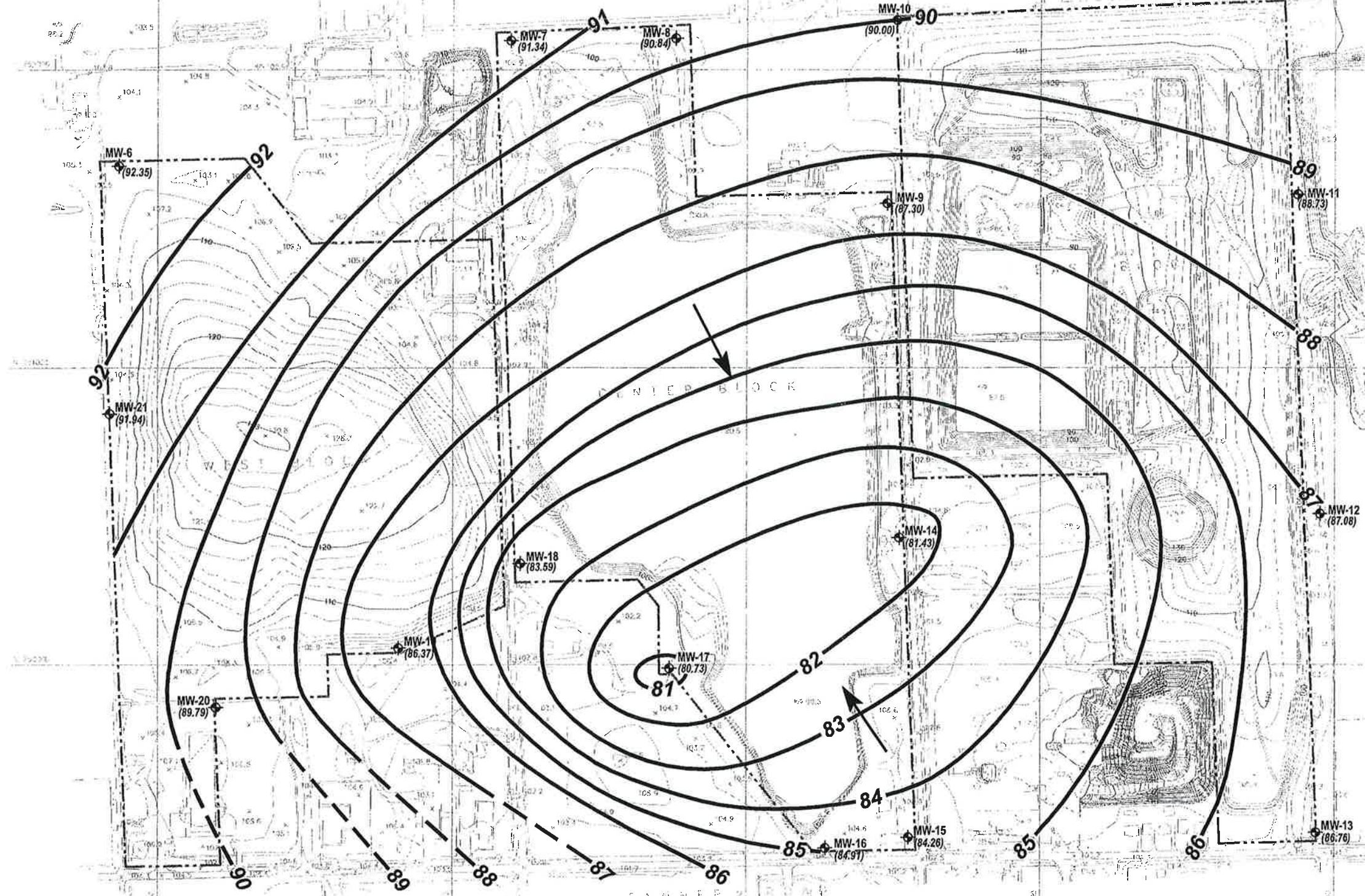


WM HAWTHORN PARK

Figure 1
**POTENTIOMETRIC SURFACE
DECEMBER 21, 2009**

PROJECT: 1256	BY: ZGK	REVISIONS
DATE: JAN., 2010	CHECKED: ECM	

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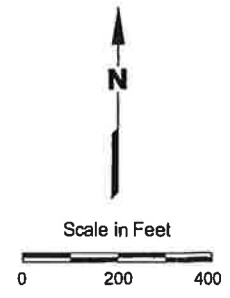


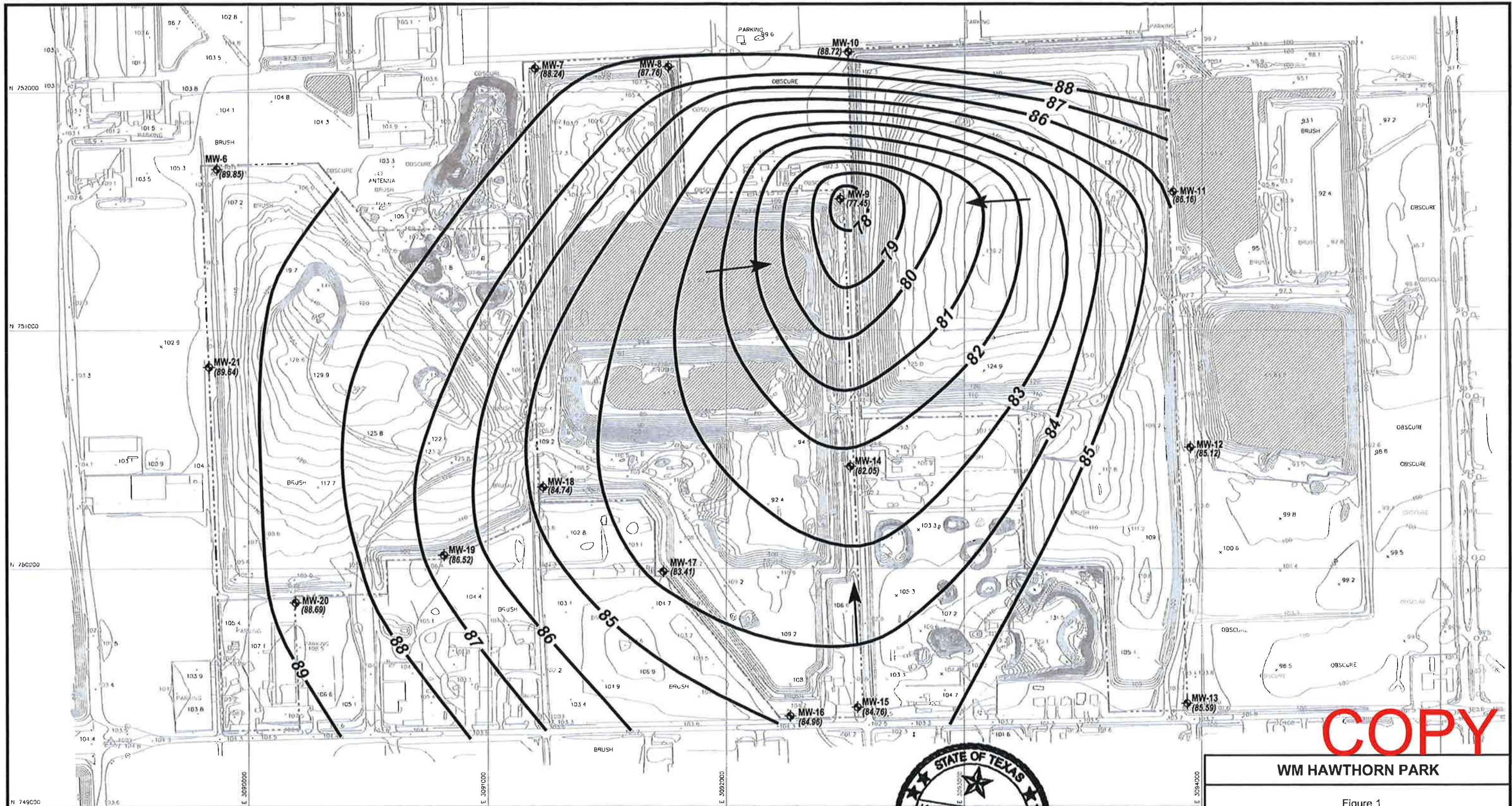
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WM HAWTHORN PARK		
Figure 1		
POTENTIOMETRIC SURFACE DECEMBER 9, 2010		
PROJECT: 1256	BY: ZGK	REVISIONS
DATE: JAN., 2011	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		

- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 04-12-2007.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION	
- - - - -	Permit Boundary
MW-12	Monitor Well Location
(80.73)	Water Level Elevation (Ft MSL)
— 88 —	Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
↙	Groundwater Flow Direction





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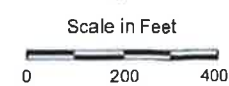
WM HAWTHORN PARK

Figure 1

**POTENTIOMETRIC SURFACE
DECEMBER 1, 2011**

PROJECT: 1256	BY: ZGK	REVISIONS
DATE: JAN., 2012	CHECKED: ECM	

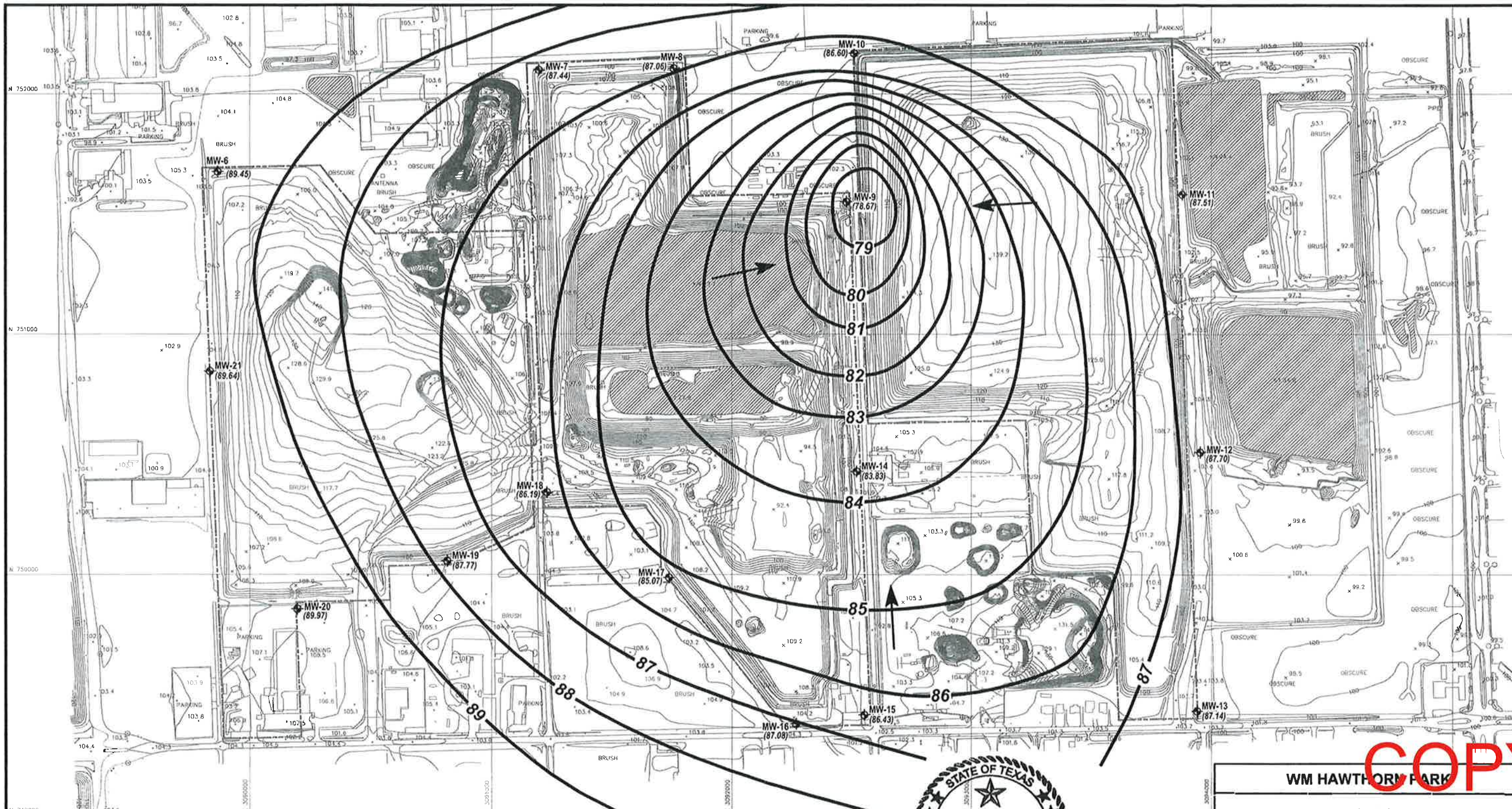
PASTOR, BEHLING & WHEELER, LLC
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EXPLANATION

- Permit Boundary
- Monitor Well Location
- Water Level Elevation (Ft MSL)
- Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
- Groundwater Flow Direction

- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 03-31-2011
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.



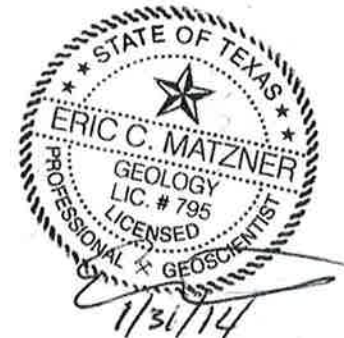
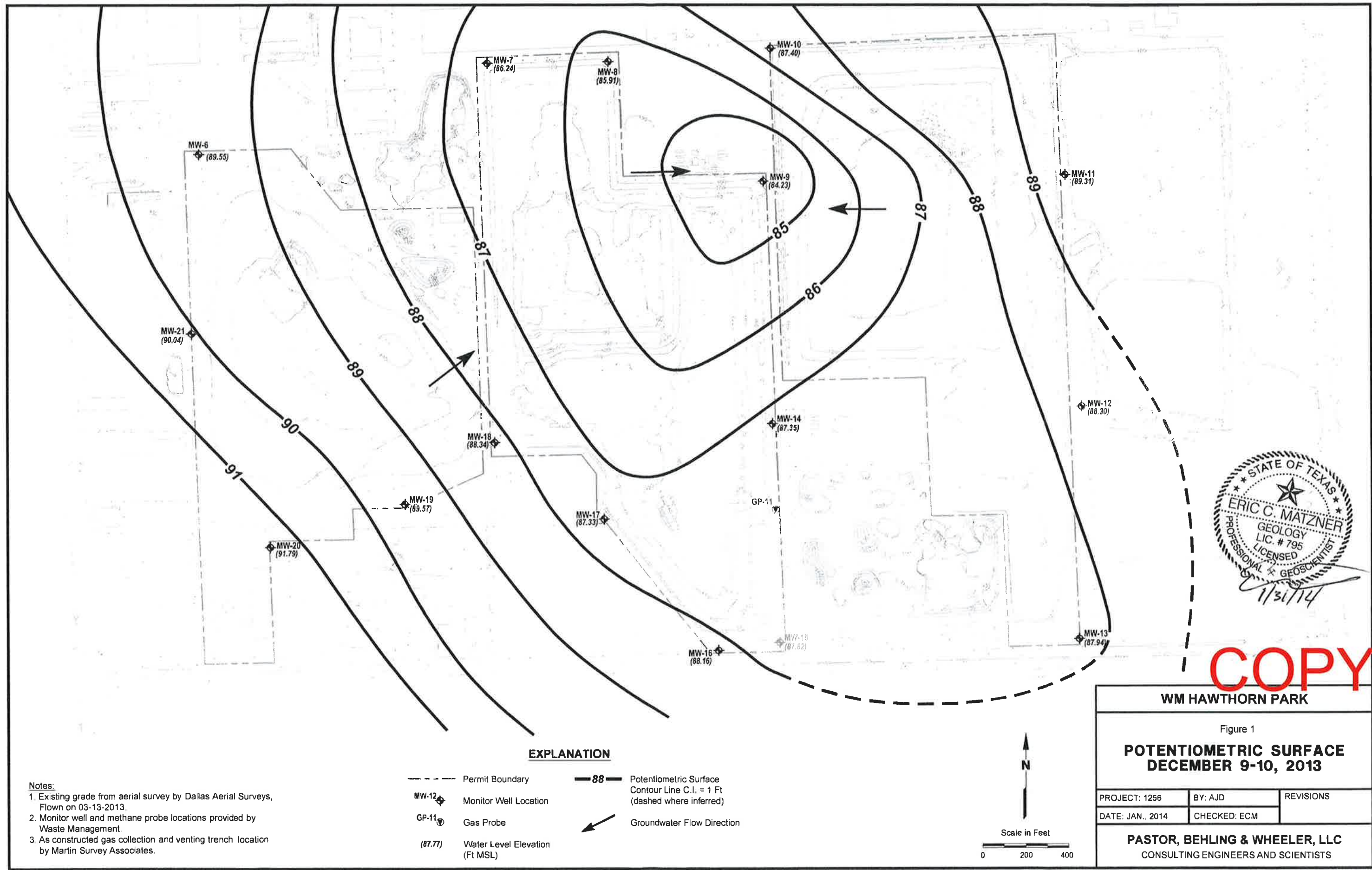
Notes:
 1. Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269. Flown on 03-31-2011
 2. Monitor well and methane probe locations provided by Waste Management.
 3. As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION	
	Permit Boundary
	Monitor Well Location
	Water Level Elevation (Ft MSL)
	Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
	Groundwater Flow Direction



COPY

WM HAWTHORN PARK		
Figure 1		
POTENTIOMETRIC SURFACE DECEMBER 10-11, 2012		
PROJECT: 1256	BY: ZGK	REVISIONS
DATE: JAN., 2013	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		



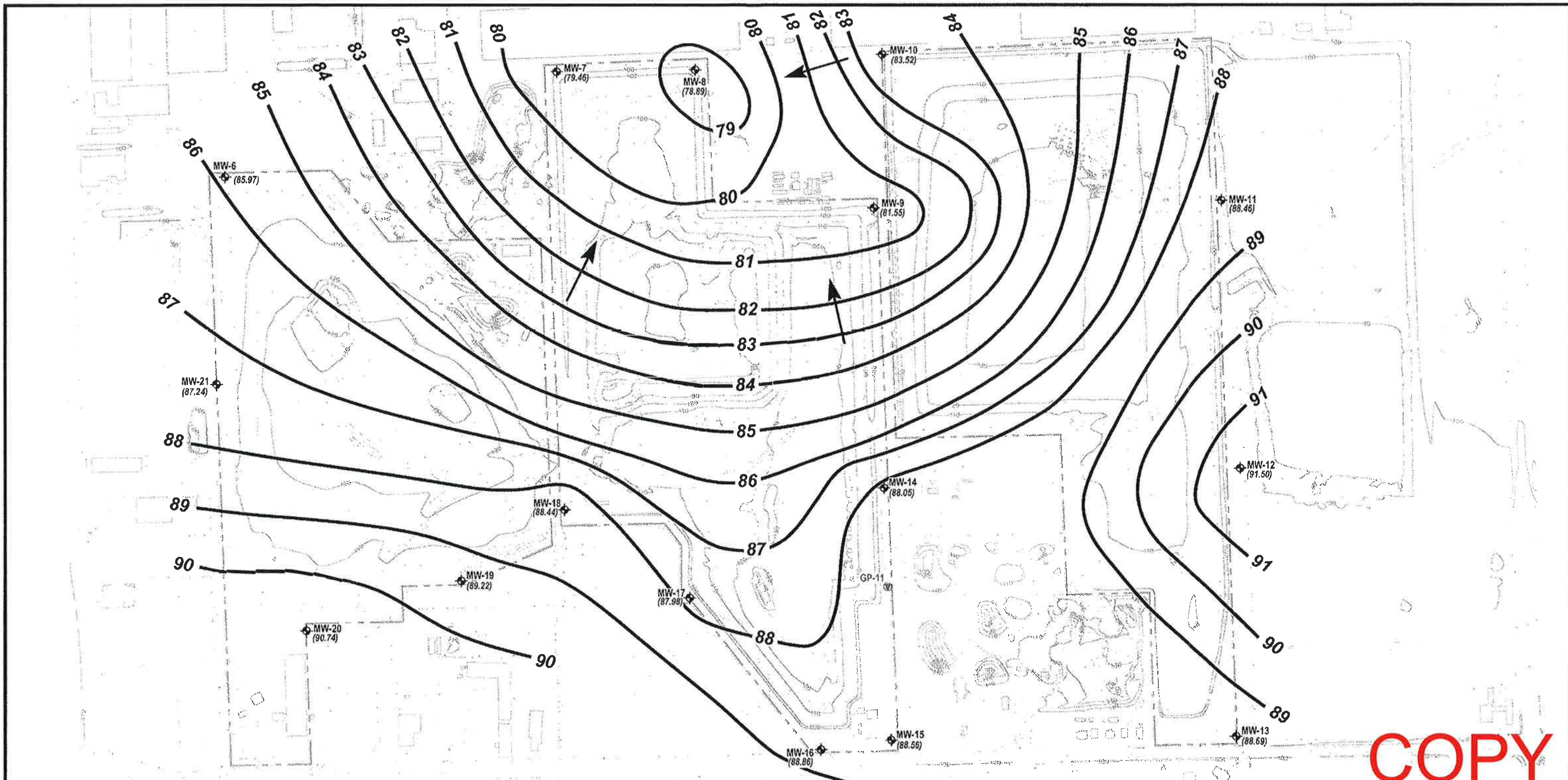
COPY

Notes:
 1. Existing grade from aerial survey by Dallas Aerial Surveys, Flown on 03-13-2013
 2. Monitor well and methane probe locations provided by Waste Management.
 3. As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION

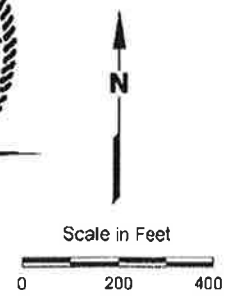
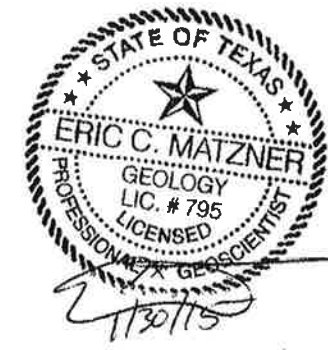
Permit Boundary	Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
MW-12 Monitor Well Location	Groundwater Flow Direction
GP-11 Gas Probe	
(87.77) Water Level Elevation (Ft MSL)	

WM HAWTHORN PARK		
Figure 1 POTENTIOMETRIC SURFACE DECEMBER 9-10, 2013		
PROJECT: 1256	BY: AJD	REVISIONS
DATE: JAN., 2014	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		



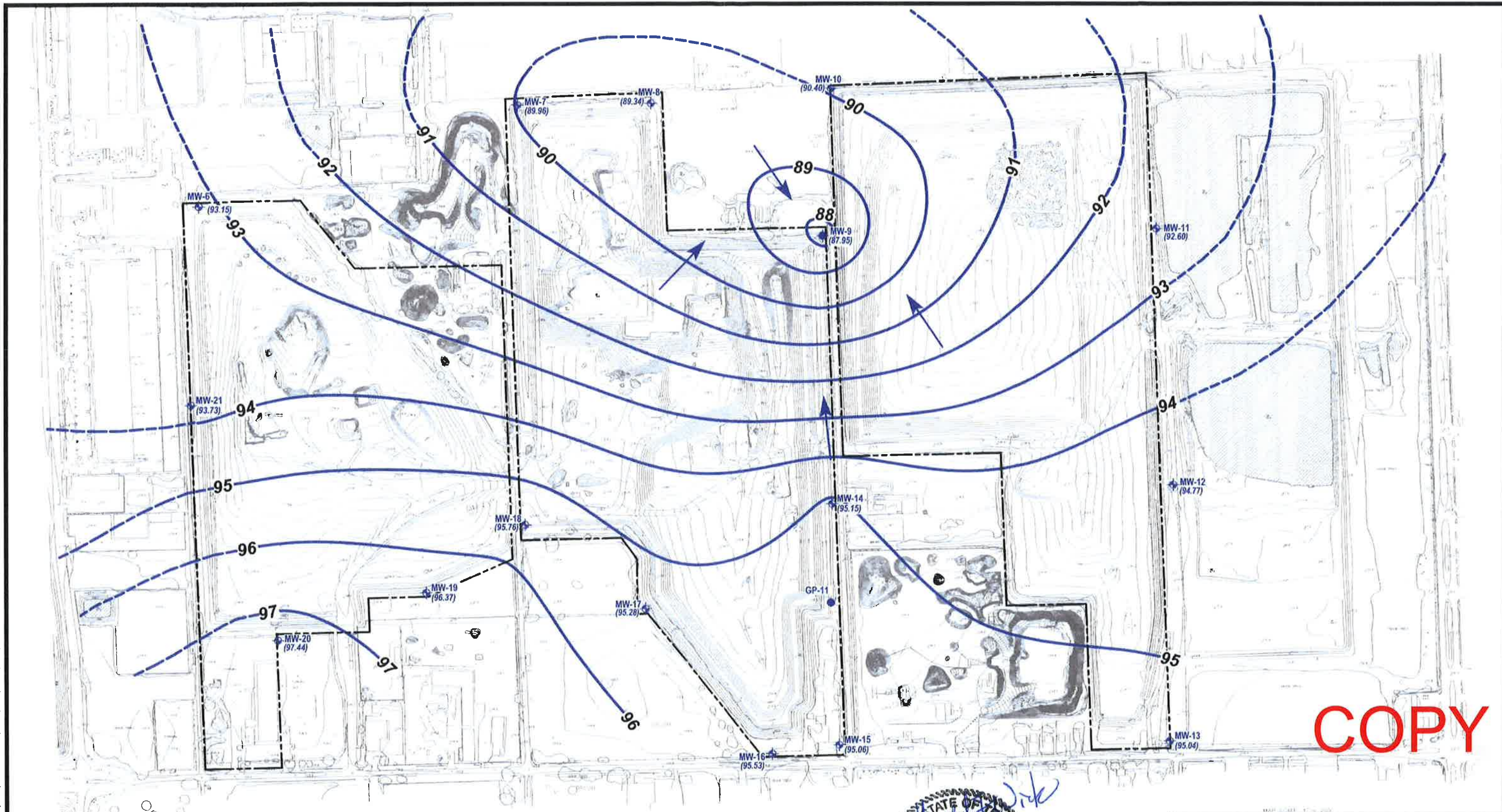
- Notes:**
- Existing grade from aerial survey by Dallas Aerial Surveys, Flown on 03-13-2013.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION	
	Permit Boundary
	Monitor Well Location
	Gas Probe
	Water Level Elevation (Ft MSL)
	Potentiometric Surface Contour Line C.I. = 1 Ft (dashed where inferred)
	Groundwater Flow Direction



WM HAWTHORN PARK		
Figure 1 POTENTIOMETRIC SURFACE DECEMBER 8-9, 2014		
PROJECT: 1256	BY: ADJ	REVISIONS
DATE: JAN., 2015	CHECKED: ECM	
PASTOR, BEHLING & WHEELER, LLC CONSULTING ENGINEERS AND SCIENTISTS		

File: K:\PROJECTS\Waste_Management\01_Reports\Hawthorn_Park\01_Reports\GM_Reports\Hawthorne2015_12.dwg Layout: Fig 1 Plotted: Jan 29, 2016 - 8:01am

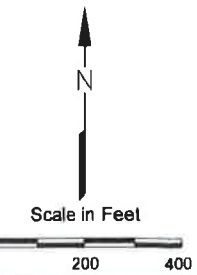


COPY

- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 02-27-2014
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

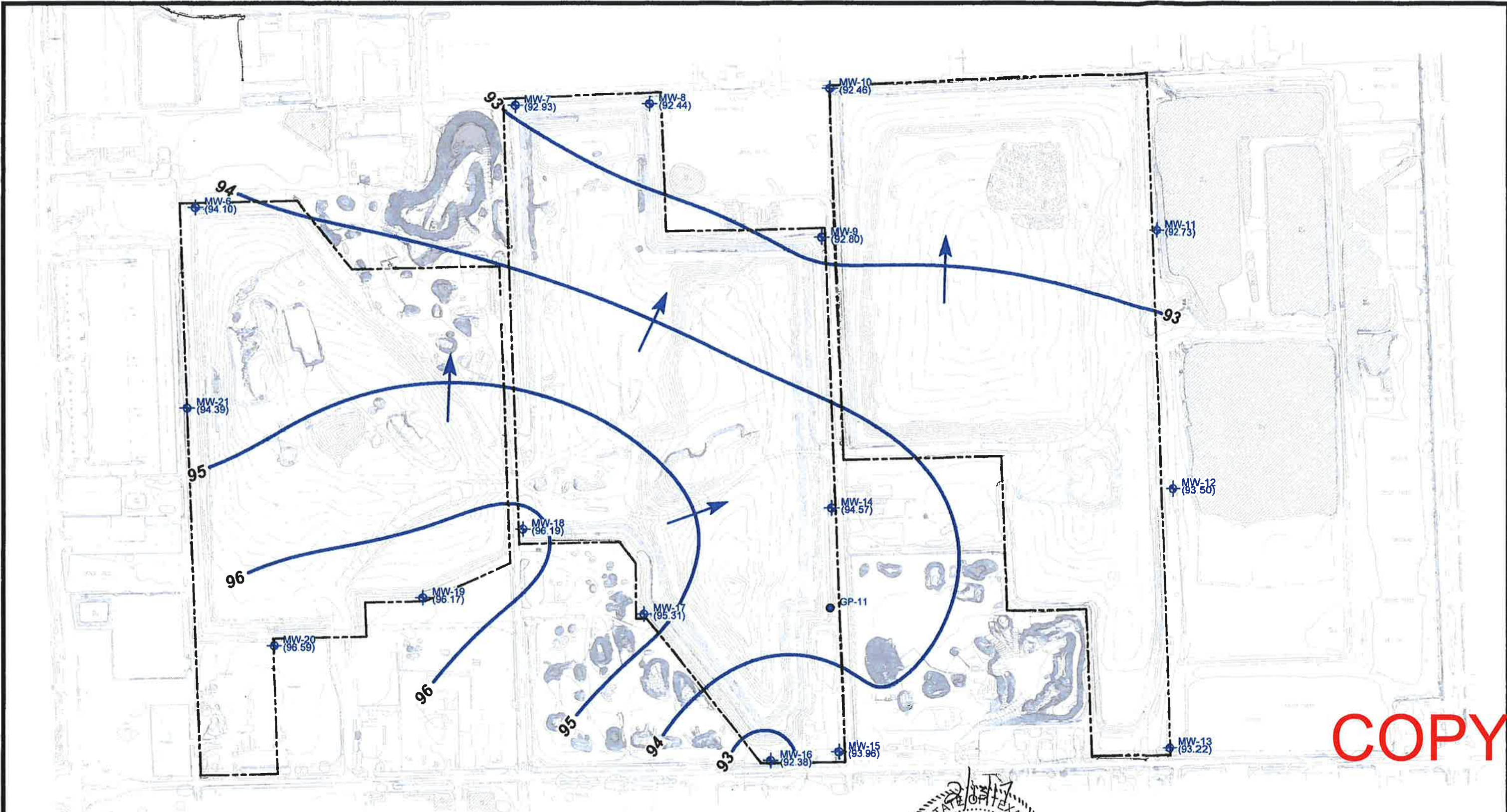
EXPLANATION

- Permit Boundary
- MW-12 Monitor Well Location
- (87.77) Water Level Elevation (Ft MSL)
- GP-11 Gas Probe
- 88 Potentiometric Surface Contour Line - Contour Interval = 1 ft (dashed where inferred)
- Groundwater Flow Direction



AECOM	Client: USA WASTE HAWTHORN PARK LANDFILL		
	Title: Figure 1 POTENTIOMETRIC SURFACE DECEMBER 7-8, 2015		
9400 Amberglen Blvd Austin, TX 78729 Phone: (512) 454-4797 Fax: (512) 419-5474	Date: Jan 29, 2016	Drawing File: Hawthorne2015_12.dwg	Figure: 1
Drawn by: john_wade			

File: K:\PROJECTS\...e_Management\01_Reports\Hawthorn_Park\01_Reports\GW_Reports\GW_Reports\GWE2016_1219\Hawthorne2016_12.dwg Layer...:fig 1 Plotted: Jan 26, 2017 - 10:11am

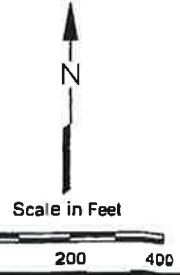
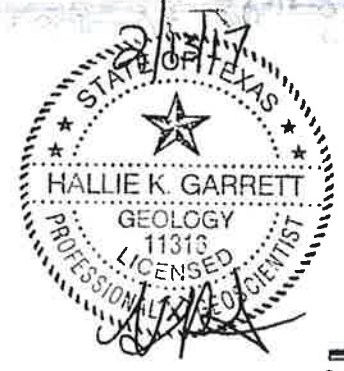


COPY

- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc Peachtree City, GA 30269, Flown on 02-17-2016
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates

EXPLANATION

- Permit Boundary
- MW-12 Monitor Well Location
- (87.77) Water Level Elevation (Ft MSL)
- GP-11 Gas Probe
- 88 Potentiometric Surface Contour Line - Contour Interval = 1 ft (dashed where inferred)
- Groundwater Flow Direction



AECOM	Client USA WASTE HAWTHORN PARK LANDFILL		
	Title Figure 1 POTENTIOMETRIC SURFACE DECEMBER 19, 2016		
9400 Amberglen Blvd Austin, TX 78729 Phone (512) 454-4787 Fax (512) 419-5474	Date Jan 26, 2017	Drawing File Hawthorne2016_12.dwg	Figure 1
Drawn by gary callahan			

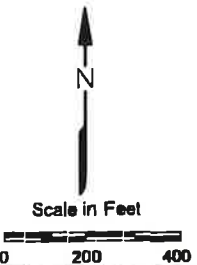
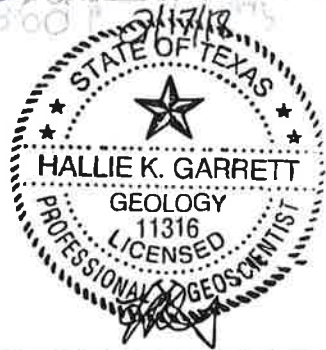
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COPY

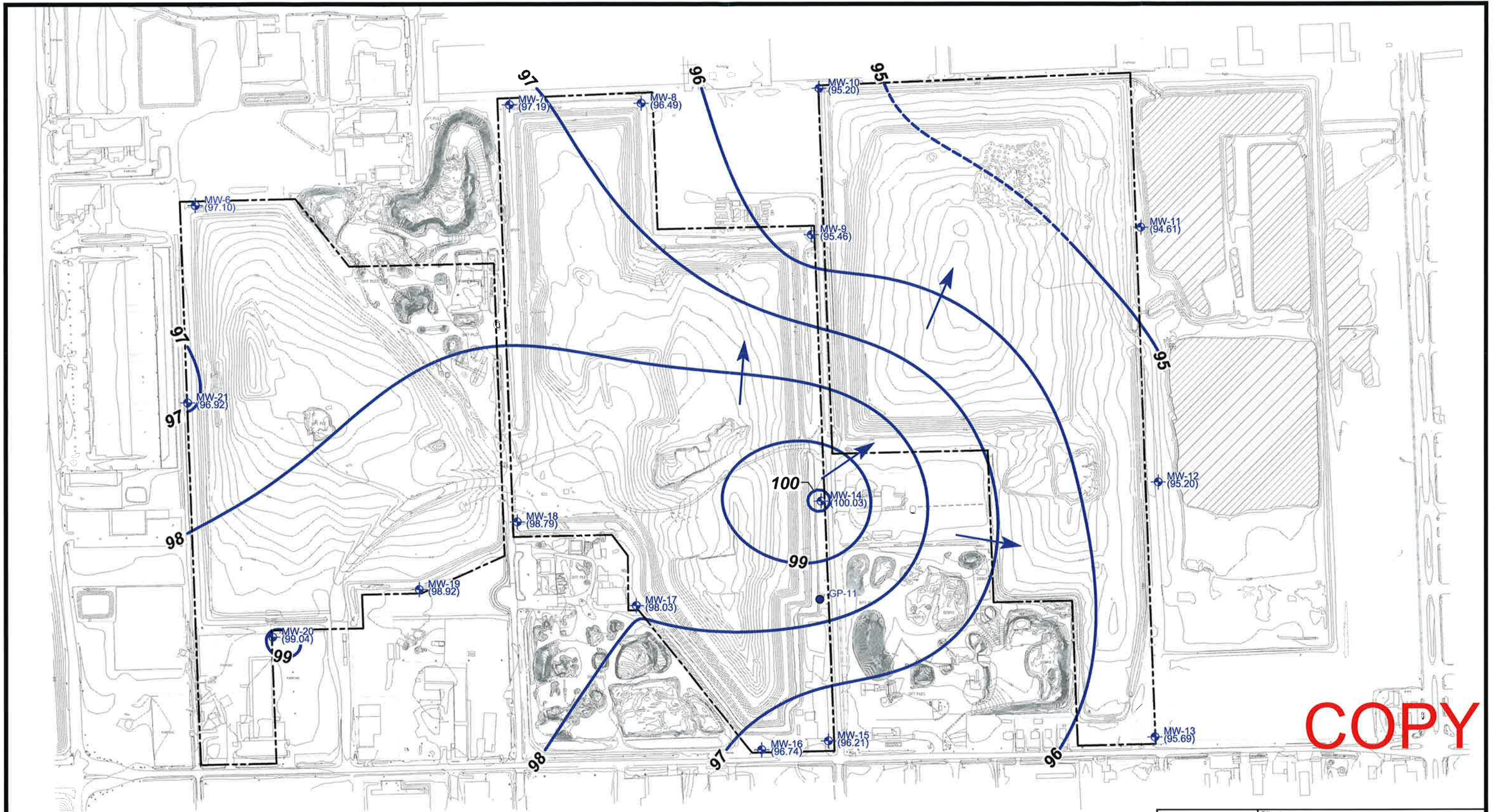
- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 04-06-2017.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

EXPLANATION	
	Permit Boundary
	Monitor Well Location Water Level Elevation (Ft MSL)
	Gas Probe
	Potentiometric Surface Contour Line - Contour Interval = 1 ft (dashed where inferred)
	Groundwater Flow Direction



 9400 Amberglen Blvd. Austin, TX 78729 Phone (512) 454-4797 Fax (512) 24 548807	Client:	USA WASTE HAWTHORN PARK LANDFILL	
	Title:	Figure 1 POTENTIOMETRIC SURFACE DECEMBER 11-12, 2017	
Drawn by: gary.cellehan	Date: Jan 05, 2018	Drawing File: Hawthorne2017_12.dwg	Figure: 1

File: K:\PROJECTS\waste_management\Hawthorn_Park\01_Reports\CW_Reports\CW_Reports (CWE2018_12)\Hawthorne2018_12.dwg Layout: rig 1 Plotted: Feb 06, 2019 -- 9:06pm

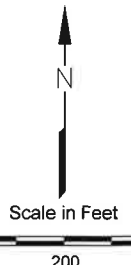


COPY

- Notes:
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 03-06-2018.
 - Monitor well and methane probe locations provided by Waste Management.
 - As constructed gas collection and venting trench location by Martin Survey Associates.

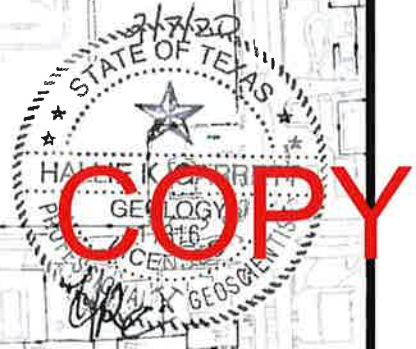
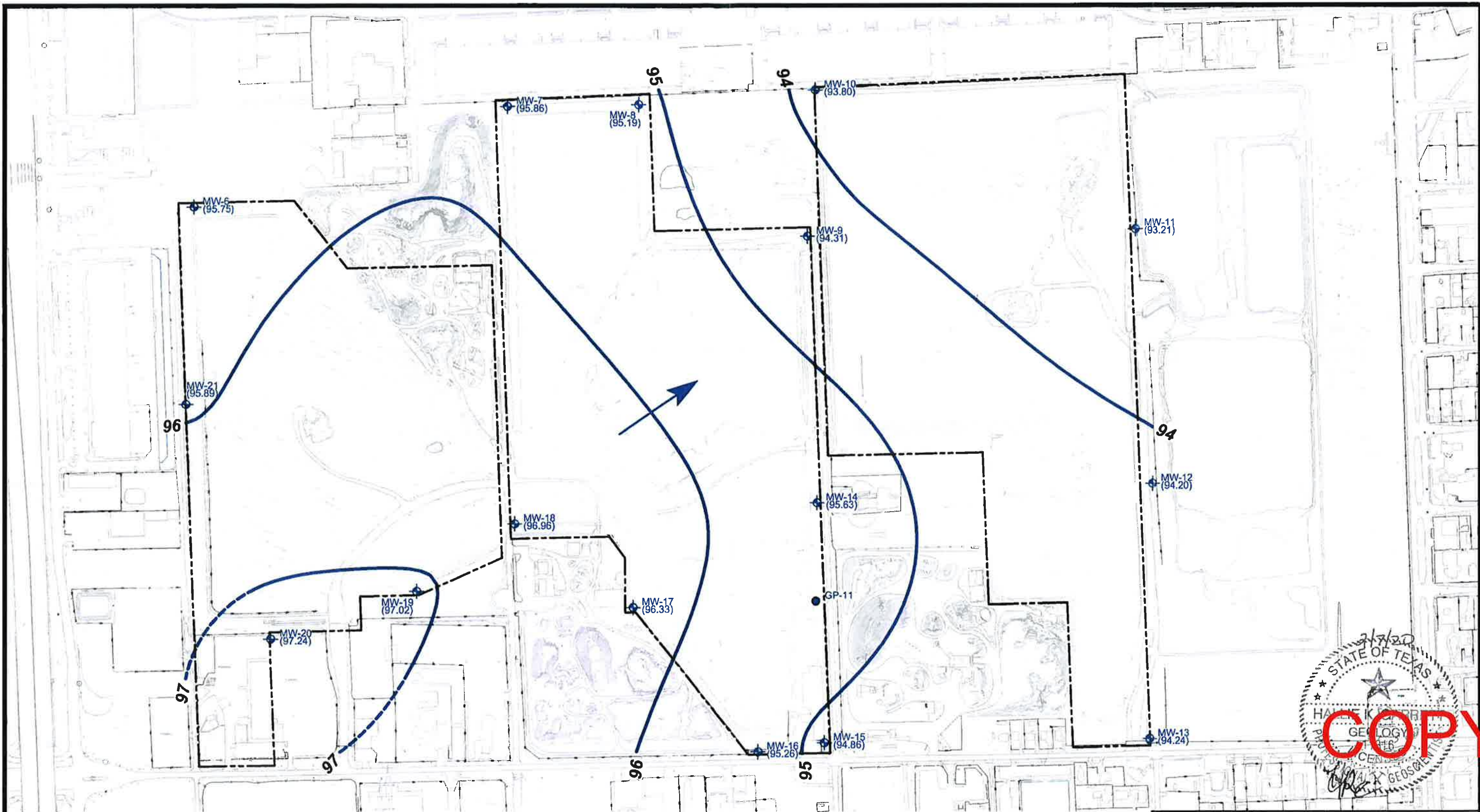
EXPLANATION

- Permit Boundary
- Monitor Well Location
- Water Level Elevation (Ft MSL)
- Gas Probe
- Potentiometric Surface Contour Line - Contour Interval = 1 ft (dashed where inferred)
- Groundwater Flow Direction



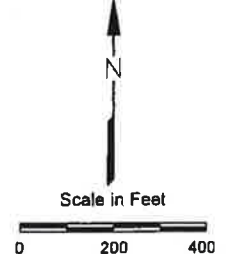
AECOM 9400 Amberglenn Blvd Austin, TX 78729 Phone: (512) 454-4797 Fax: (512) 454-8807	Client: USA WASTE HAWTHORN PARK LANDFILL		
	Title: Figure 1 POTENTIOMETRIC SURFACE DECEMBER 17-18, 2018		
Drawn by: gary.callahan	Date: Feb 06, 2019	Drawing File: Hawthorne2018_12.dwg	Figure: 1

File: C:\GIS\Projects\GIS AMERICA\Central Region US\Hawthorne Park\02_Workspace\Hawthorne2019.dwg Layout: Fig 1 Plottext: Jan 27, 2020 - 3:57pm



- Notes:**
- Existing grade from aerial survey by Landair Surveying, Inc. Peachtree City, GA 30269, Flown on 03-06-2019.
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EXPLANATION	
	Permit Boundary
	Monitor Well Location
	Water Level Elevation (Ft MSL)
	Gas Probe
	Potentiometric Surface Contour Line - Contour Interval = 1 ft (dashed where inferred)
	Groundwater Flow Direction



 9400 Amberglenn Blvd. Austin, TX 78729 Phone (512) 454-4797 Fax (512) 454-8807	Client: USA WASTE HAWTHORNE PARK LANDFILL	
	Title: Figure 1 POTENTIOMETRIC SURFACE DECEMBER 12-13, 2019	
Drawn by: nicolaemariacatalin	Date: Jan 27, 2020	Drawing File: Hawthorne2019.dwg
		Figure: 1



COMPUTATION SHEET

Project Title: Hawthorn Park Landfill
Description: Permit Amendment
Prep. By: ESF Date: 12/17/2020 Chkd. By: JMS

Project No.: 101.24.102
Sheet 1 of 1
Date: 12/24/2020

GROUNDWATER VELOCITY CALCULATIONS

$$V = \frac{Ki}{n_e}$$

WHERE:

- V = Groundwater Flow Velocity
- K = Hydraulic Conductivity
- i = Hydraulic Gradient
- n_e = Effective Porosity



Stratum I - East and South Perimeter

K = 1.97E-02 cm/sec (Geometric mean of Layer II values, see Table III-4-7)
i = 0.003 ft/ft (From potentiometric surface maps-Figures III-4E-6 through III-4E-19)
 n_e = 0.2

$$V = \frac{1.97E-02 \times 0.003}{0.2} \times 2835 = 0.837743 \text{ ft/day}$$
$$= 0.838 \times 365 = 305.78 \text{ ft/year}$$

Note: 2835 is a multiplier that converts cm/sec to ft/day