The electronic version of this file/report should have the file name:

Report. HW. 932052. 2000-07-10. April 2000_GW_ Monitoring-Summary. pdf

Type of document . Site Number . Year-Month . File *Year-Year* or Report name . pdf

---

_____ . _____ - ___ . File _____ . pdf

example: *letter . Year-Month . File Year-Year . pdf*

_____ . _____ - ___ . _____ . pdf

example: *report . Site Number . Year-Month . Report Name . pdf*

Project Site numbers will be proceeded by the following:

Municipal Brownfields - B
Superfund - HW
Spills - SP
ERP - E
VCP - V
BCP - C

Golder
Associates

Golder Associates Inc.

2221 Niagara Falls Boulevard, Suite 9
Niagara Falls, NY 14304
Telephone (716) 215-0650
Fax (716) 215-0655

REPORT ON

APRIL 2000 QUARTERLY HYDRAULIC MONITORING EVENT AND SUMMARY OF OFF-SITE AND ON-SITE GROUNDWATER EXTRACTION SYSTEM OPERATION FORMER TEXTRON INC. WHEATFIELD, NEW YORK FACILITY

Submitted to:

Textron Inc.
40 Westminster Street
Providence, Rhode Island 02903-6028

DISTRIBUTION:

8 Copies - Textron Inc.; Providence, Rhode Island
1 Copy - Golder Associates Inc.; Buffalo, New York

July 2000

973-9158

Golder Associates Inc.

2221 Niagara Falls Boulevard, Suite 9
Niagara Falls, NY 14304
Telephone (716) 215-0650
Fax (716) 215-0655

July 10, 2000

973-9158

Textron Inc.
40 Westminster Street
Providence, Rhode Island, 02903-6028

Attention: Ms. Leslie Alden

RE: REPORT ON APRIL 2000 QUARTERLY
HYDRAULIC MONITORING EVENT AND SUMMARY OF OFF-SITE AND ON-SITE GROUNDWATER EXTRACTION SYSTEM OPERATION,
FORMER TEXTRON INC., WHEATFIELD, NEW YORK FACILITY

Dear Ms. Alden:

Golder Associates Inc. (Golder) is pleased to submit this report on the April 2000 Quarterly Hydraulic Monitoring Event and Summary of the Off-Site and On-Site Groundwater Extraction System Operation. This report presents a summary of the performance of the Off-Site Groundwater Extraction System and the On-Site Groundwater Extraction and Treatment System from March 2000 through May 2000.

Golder appreciates the opportunity to provide continuing professional engineering services to Textron Inc. If you have any questions regarding this report, please do not hesitate to call.

Very truly yours,

GOLDER ASSOCIATES INC.

Anthony L. Grasso, P.G.
Associate/Project Director

ALG:dml

Attachments

F/N: G:\Projects\973-9158\Reports\April-2000\finalqtr.doc

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Background

This report provides the results of the April 2000 Quarterly Hydraulic Monitoring Event at the former Textron Inc. (Textron) facility located in Wheatfield, New York. This report also presents a summary of the system operations for the Off-Site Groundwater Extraction System (Off-Site System) and On-Site Groundwater Extraction and Treatment System (On-Site System), during the period of March 2000 through May 2000 (quarter).

The field procedures and specific monitoring points for the hydraulic measurements for the monitoring event were conducted in accordance with the October 1998 Revision of the Groundwater Monitoring Plan (GMP) (Golder Associates Inc., (Golder) October 1998) as approved by the New York State Department of Environmental Conservation (NYSDEC).

The summary of the operational results of the Off-Site and On-Site System during this quarter is presented herein in accordance with Textron's NYSDEC Title 6 New York Code of Rules and Regulations (6NYCRR) Part 373 Post-Closure Permit, effective September 24, 1998 (Permit No. 9-2940-00001/000079). The summary of system operations for both the On-Site and Off-Site Systems is for the period from March 1, 2000 through May 31, 2000.

1.2 Scope of Report and Organization

Section 1 provides an overview of the project and provides the organizational structure of the report. Section 2 provides an overview of the field activities regarding the hydraulic monitoring measurements. Section 3 provides an overview of the Off-Site and On-Site System operations for the quarter; and Section 4 provides a summary of the hydraulic monitoring data and Off-Site and On-Site System operations.

2. HYDRAULIC MONITORING ACTIVITIES

2.1 Quarterly Monitoring

Golder's personnel performed hydraulic monitoring activities on the wells listed in Table 1 on April 26, 2000. Groundwater elevations were measured at each monitoring well and extraction well using an electronic water level meter. A summary of the water level measurements obtained during April 2000 is presented in Table 1. In addition, the water level elevations from the Zone 1 wells (as listed in Table 1) during the quarter are presented on Figures 1 and 2.

3. SUMMARY OF OFF-SITE AND ON-SITE EXTRACTION SYSTEM OPERATIONS

3.1 Review of Off-Site and On-Site System Operations

3.1.1 Off-Site System

There were no operational changes made to the Off-Site System during the quarter. During this quarter the monthly average pumping rate for the Off-Site extraction system ranged between 66,031 and 67,308 gallons per day (gpd). The pumping rates (pump on) for well EW-2 averaged 23 gallons per minute (gpm), the pumping rate for well EW-3 averaged 9 gpm, the pumping rate for well EW-4 averaged 6 gpm, and the pumping rate for well EW-5 averaged 8 gpm. EW-6 remains off-line.

3.1.2 On-Site System

There was one operational change made to the On-Site System during the quarter. The submersible pump heads in extraction wells DW-10 and DW-12 were changed from Grundfos 10E8 to Grundfos 16E4 models on April 7, 2000, while the pump heads in extraction wells EW-8 and DW-11 were changed from Grundfos 10E8 to Grundfos 16E4 models on April 14, 2000. These changes were made to increase the drawdown produced in these wells. There was minor downtime (0.5 hours) on May 25, 2000 associated with a power failure. During this quarter, the monthly average influent flow to the treatment plant ranged from approximately 44.8 gpm to 46.5 gpm (64526 to 67029 gpd). The current pumping rates (pump on, since the installation of the new pumps) for well EW-7 is approximately 7 gpm, the pumping rate for well EW-8 is approximately 2 gpm, DW-10 pumping rate is approximately 7 gpm, DW-11 pumping rate is approximately 7 gpm, DW-12 pumping rate is approximately 11 gpm, and the EW-13 pumping rate is approximately 20 gpm. The pumping rate for EW-8 is noted to be low, however, the measured drawdown at the well is considered acceptable (see Section 3.3.2). Textron is currently evaluating the potential causes of the low pump rate from EW-8. The thermal oxidizer, scrubber, air stripper ST-2, carbon units, and extraction well DW-9 remain off-line.

3.2 Discharge Monitoring

3.2.1 Off-Site System

As required by Textron's Niagara County Sewer District No. 1 (NCSD) Industrial Discharge Permit (No. 98-07), the extracted groundwater from the Off-Site System is required to be monitored for flow on a monthly basis and sampled on a semi-annual basis. Results of the most recent sewer discharge sampling, conducted on March 6, 2000, indicate that Textron was in compliance with the NCSD permit.

3.2.2 On-Site System

Textron applied for and was granted a modification to their State Pollutant Discharge Elimination System (SPDES) permit No. NY-0000469. The modified monitoring requirements for the SPDES permit are presented in a letter, dated April 21, 2000, from the NYSDEC. Textron is no longer required to monitor Outfall 002 for volatile organics on a quarterly basis or base/neutral & acid extractables, pesticides, and PCBs on an annual basis, as per this modification. Textron will continue to monitor for trichloroethylene, 1,2-(trans)-dichloroethylene, methylene chloride, vinyl chloride, and pH, as well as discharge flow, on a monthly basis. The extracted groundwater is discharged to the Walmore Road storm sewer from the On-Site System. Results of the monthly discharge monitoring indicate that Textron was in compliance with the SPDES permit during this quarter.

3.3 Hydraulic Response for Off-Site and On-Site Systems

3.3.1 Off-Site System

A groundwater equipotential map of the Zone 1 bedrock aquifer in the vicinity of the On-Site and Off-Site System for the April 2000 Monitoring Event is presented on Figure 1. A review of this map indicates there is a consistent and significant overlap of the cone-of-depression and the contaminant plume in the off-site area. Groundwater flow directions, as shown by the arrows on Figure 1, have remained relatively consistent within the cone-of-

depression. The flow direction is toward the four pumping extraction wells (EW-2 through EW-5) of the Off-Site System.

3.3.2 On-Site System

The hydraulic response of the On-Site System has met the design expectations of establishing a zone of groundwater capture over the DNAPL plume; maintaining an upward gradient between the Zone 3 and Zone 1 aquifers; maintaining a downward gradient between the overburden and the Zone 1 aquifer; and maintaining a groundwater capture zone along the southern boundary of the On-Site area between extraction wells EW-7, EW-13, and EW-8.

A groundwater capture zone has been created by the operation of the On-Site System, in the Zone 1 aquifer. An examination of the Zone 1 equipotential map for April 2000 (as shown on Figure 2), indicates that the operation of the On-Site System is producing a hydraulic capture zone in Zone 1 over the entire DNAPL plume. Further review of Figure 2 shows a complete capture zone has developed along the southern boundary of the Textron facility along Niagara Falls Boulevard, between EW-7, EW-13, and EW-8.

Data from the April 2000 hydraulic monitoring event (presented in Table 1) indicate that the desired downward gradient between the overburden and Zone 1 is present in five of the eight relevant on-site well pairs measured (well pairs 87-01, 87-04, 87-10, 87-13, 87-14, 87-15, 87-17, and 87-18). Well pairs with upward gradients include 87-04, 87-15, and 87-17. These slight upward gradients have occasionally been noted previously, are transient in nature, and have been associated with significant precipitation events. Table 1 data also indicate that the desired upward gradient between Zone 3 and Zone 1 is present in five of the six relevant well pairs measured (87-02, 87-04, 87-05, 87-13, 87-14, and 87-15). A very slight (-0.001 ft/ft) downward gradient was noted in well pair 87-15. As above, these anomalous gradients are transient in nature and have been associated with significant precipitation events. The well pairs with anomalous gradients will continue to be monitored during future quarterly monitoring events to demonstrate that these gradients are temporary.

Table 2 presents a summary of vertical hydraulic gradients between Zones 1 and 3 from the April 2000 hydraulic monitoring data. The data indicate that gradients range from -0.001 ft/ft (downward) to 0.67 ft/ft (upward).

3.4 Routine Operational Corrective Measures for Monitoring Points

During this quarter's monitoring event, Golder personnel conducted an operation and maintenance checklist inspection that reviewed the condition of each monitoring and extraction well that was monitored. The checklist inspection revealed no deficiencies.

4. SUMMARY

4.1 Hydraulic Monitoring Data

As discussed in Section 2, water level measurements were obtained manually from all of the monitoring wells and extraction wells required for quarterly hydraulic monitoring on April 26, 2000. Table 1 provides a summary of the water level measurements obtained during this quarterly event.

4.2 Off-Site and On-Site System Performance

The Off-Site System has maintained an inward hydraulic gradient over the dissolved phase plume toward the extraction wells throughout the quarter and is consistent with the groundwater capture zone observed during previous quarterly monitoring events. As such, the performance of the Off-Site System is considered acceptable.

The performance of the On-Site System is achieving its design goals. The On-Site System has been effective in creating a groundwater capture zone in Zone 1 over the DNAPL plume and in maintaining the proper direction of vertical hydraulic gradients between the overburden, Zone 1, and Zone 3. A groundwater capture zone has also developed in Zone 1 along the southern edge of the Textron facility between EW-7, EW-13, and EW-8. As such, the performance of the On-Site System is considered acceptable.

GOLDER ASSOCIATES INC.

David C. Wehn
Hydrogeologist

Anthony L. Grasso, P.G.
Associate/Project Director

DCW/ALG:dcw/dml

F/N: G:\Projects\973-9158\Reports\April-2000\finalqtr.doc

REFERENCES

Golder Associates Inc., October 1998, "Groundwater Monitoring Plan, Former Textron Inc. Wheatfield, New York Facility, October 1998 Revision".

TABLE 1
SUMMARY OF HYDRAULIC MONITORING DATA
APRIL 2000 MONITORING EVENT
FORMER TEXTRON INC.
WHEATFIELD, NEW YORK FACILITY
(Measurements Recorded April 26, 2000)

WELL NAME	TOP OF RISER ELEVATION (FT. MSL)	WATER LEVEL (FT. BTOR)	WATER LEVEL ELEVATION (FT. MSL)
87-01(0)	588.10	13.03	575.07
87-01(1)	587.99	15.78	572.21
87-02(1)	589.21	15.39	573.82
87-02(3)	588.63	11.99	576.64
87-04(0)	589.32	8.40	580.92
87-04(1)	589.08	12.21	576.87
87-04(3)	589.49	11.72	577.77
87-05(1)	589.37	15.83	573.54
87-05(3)	589.46	11.26	578.20
87-06(1)	588.27	12.13	576.14
87-08(1)	589.48	11.60	577.88
87-10(0)	587.30	11.33	575.97
87-10(1)	587.52	15.89	571.63
87-12(1)	583.84	14.55	569.29
87-13(0)	589.77	8.81	580.96
87-13(1)	590.06	13.35	576.71
87-13(3)	589.91	11.75	578.16
87-14(0)	589.56	9.21	580.35
87-14(1)	589.06	11.96	577.10
87-14(3)	590.35	11.72	578.63
87-15(0)	590.70	12.03	578.67
87-15(1)	590.27	11.56	578.71
87-15(3)	589.87	11.17	578.70
87-16(3B)	590.51	12.02	578.49
87-17(0)	589.50	11.68	577.82
87-17(1)	589.62	11.25	578.37
87-18(0)	585.95	12.01	573.94
87-18(1)	586.02	17.73	568.29
87-19(0)	581.57	5.63	575.94
87-19(1)	581.47	12.90	568.57
87-20(0)	578.77	5.92	572.85
87-20(1)	579.01	9.73	569.28
87-21(0)	577.23	6.74	570.49
87-21(1)	577.33	8.40	568.93
87-22(0)	583.80	8.62	575.18
87-22(1)	583.97	14.07	569.90
87-23(0)	587.27	4.66	582.61
87-23(1)	587.13	13.69	573.44
89-03(1)	581.01	15.34	565.67
89-04(1)	577.92	7.36	570.56
89-05(1A)	577.56	15.89	561.67
89-05(1B)	577.77	9.70	568.07

TABLE 1
SUMMARY OF HYDRAULIC MONITORING DATA
APRIL 2000 MONITORING EVENT
FORMER TEXTRON INC.
WHEATFIELD, NEW YORK FACILITY
(Measurements Recorded April 26, 2000)

WELL NAME	TOP OF RISER ELEVATION (FT. MSL)	WATER LEVEL (FT. BTOR)	WATER LEVEL ELEVATION (FT. MSL)
89-06(1)	575.93	10.14	565.79
89-07(1A)	577.66	12.00	565.66
89-07(1B)	577.48	10.15	567.33
89-12(1)	586.60	15.33	571.27
89-13(0)	588.18	8.99	579.19
89-14(0)	587.45	7.34	580.11
89-14(1)	587.59	10.64	576.95
89-15(1)	588.76	15.85	572.91
89-16(1)	576.76	6.19	570.57
89-17(1)	577.59	6.31	571.28
89-18(1)	576.75	13.16	563.59
93-02(1)	579.05	18.03	561.02
93-03(1)	572.30	12.50	559.80
94-02(1)	574.50	8.71	565.79
96-01(1)	585.18	16.28	568.90
96-02(1)	584.82	15.85	568.97
B-8(0)	590.26	8.86	581.40
B-12(0)	589.48	11.24	578.24
B-13(1)	588.41	12.41	576.00
B-14(1)	589.54	13.87	575.67
89-SW(2)	577.54	8.49	569.05
EW-2	568.15	5.35	562.80
EW-3	569.56	13.40	556.16
EW-4	570.07	15.50	554.57
EW-5	569.47	17.20	552.27
EW-6	568.17	6.30	561.87
EW-7 (**)	580.96	14.40	566.56
EW-8 (**)	578.44	12.42	566.02
DW-9 (**)	581.30	4.06	577.24
DW-10 (**)	583.95	8.00	575.95
DW-11 (**)	583.05	12.62	570.43
DW-12 (**)	580.48	9.96	570.52
EW-13	579.84	11.58	568.26

NOTES:

BTOR = Below top of riser (or measuring point).
MSL = Mean sea level.
(**) Water level elevation measured from top of vault grate.
DRY = No measurable quantity in well at time of measurement.
NA = Not applicable.

TABLE 2
SUMMARY OF VERTICAL HYDRAULIC GRADIENTS
APRIL 2000 QUARTERLY HYDRAULIC MONITORING EVENT
FORMER TEXTRON INC.
WHEATFIELD, NEW YORK FACILITY

WELL NAME	TOP OF RISER ELEVATION (FT. MSL)	WATER LEVEL (FT. BTOR)	DATE MEASURED	WATER LEVEL ELEVATION (FT. MSL)	HEAD DIFFERENCE ZONE 3 - ZONE 1 (dH) (FT.)	THICKNESS ZONE 2 (dL) (FT.)	VERTICAL GRADIENT dH/dL
87-02(1)	589.21	15.39	4/26/00	573.82	2.82	7.00	0.40
87-02(3)	588.63	11.99	4/26/00	576.64			
87-04(1)	589.08	12.21	4/26/00	576.87	0.90	7.00	0.13
87-04(3)	589.49	11.72	4/26/00	577.77			
87-05(1)	589.37	15.83	4/26/00	573.54	4.66	7.00	0.67
87-05(3)	589.46	11.26	4/26/00	578.20			
87-13(1)	590.06	13.35	4/26/00	576.71	1.45	7.00	0.21
87-13(3)	589.91	11.75	4/26/00	578.16			
87-14(1)	589.06	11.96	4/26/00	577.10	1.53	7.00	0.22
87-14(3)	590.35	11.72	4/26/00	578.63			
87-15(1)	590.27	11.56	4/26/00	578.71	-0.01	7.00	-0.001
87-15(3)	589.87	11.17	4/26/00	578.70			

NOTES:

BTOR = Below top of riser.
MSL = Mean sea level.
NOTE: Positive vertical gradients are upwards from Zone 3 to Zone 1

68,000 m. E

69,000 m. E

70,000 m. E

74,000 m N

73,000 m N

72,000 m N

WALMORE ROAD

FOR EXPANDED VIEW OF ON-SITE AREA, INCLUDING ON-SITE DNAPL PLUME AND ON-SITE FLOW ARROWS, SEE FIGURE 2.

APPROXIMATE LIMIT OF DISSOLVED PHASE PLUME (1 ppb TVO OCTOBER 1999 SAMPLING EVENT - SEE NOTE 7.)

FORMER TEXTRON INC. (WHEATFIELD PLANT)

NEUTRALIZATION POND

87-15(1) (578.71)
DW-9 (577.24)
89-14(1) (576.95)
87-08(2) (577.69)
87-17(1) (578.37)
87-14(1) (577.10)
DW-10 (575.95)
87-13(1) (576.71)
87-04(1)(576.87)
87-05(1)(573.44)
89-15(1)(572.91)
B-13(1)(576.00)
B-14(1) (575.67)
87-06(1) (576.14)
87-23(1) (573.44)
DW-11 (570.43)
87-10(1) (571.63)
87-02(1) (573.82)
DW-12(570.52)
89-12(1) (571.27)
87-01(1) (572.21)
89-16(1) (570.57)
EW-7 (566.56)
EW-13 (568.26)
87-22(1) (569.90)
EW-8 (566.02)
89-04(1) (570.56)
87-18(1) (568.29)
87-12(1) (569.29)
96-02(1) (568.97)
96-01(1) (568.90)
87-20(1) (569.28)
87-19(1) (568.57)
87-21(1) (568.95)
89-03(1) (565.67)
EW-2 (562.80)
89-17(1) (571.28)
92-02(1) (561.02)
EW-3 (556.16)
EW-4 (554.57)
89-05(1A) (561.67)
EW-5 (552.27)
EW-6 (561.87)
94-02(1) (565.79)
93-03(1) (559.80)
89-18(1) (563.59)
89-06(1) (565.79)
89-07(1A)(565.66)

STATE RTE. 62 (NIAGARA FALLS BLVD.)
NIAGARA ROAD
CAYUGA DR. EXT.
OLD FALLS BLVD.
NIAGARA FALLS BLVD.
BERGHOLTZ CREEK
SAWYER CREEK
DRAINAGE DITCH
JAGOW ROAD
RAILROAD
CONRAIL
ST. ROAD

LEGEND

- EXTRACTION WELL OR DNAPL WELL
- MONITORING WELL OR PIEZOMETER
- (562.16) WATER LEVEL ELEVATIONS AT MONITORING OR EXTRACTION WELL IN FEET MEAN SEA LEVEL.
- 570 POTENTIOMETRIC ELEVATION CONTOUR IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER FLOW IN ZONE 1

NOTES

1.) GRID SYSTEM SHOWN IS 1000-METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 17, 1927 NORTH AMERICAN DATUM.

2.) REFERENCE: U.S. GEOLOGICAL SURVEY, TONAWANDA WEST NEW YORK 7.5' QUADRANGLE, DATED 1980.

3.) WELL LOCATIONS SHOWN ARE APPROXIMATE.

4.) WATER LEVEL MEASURMENTS OBTAINED ON APRIL 26, 2000

5.) ONLY WELL LOCATIONS WITH AN ELEVATION LISTED ARE USED IN MAP CONTOURING.

6.) CONTOURS BETWEEN KNOWN POINTS HAVE BEEN INTERPOLATED.

7.) TOTAL VOLATILE ORGANIC (TVO) DETECTIONS/MINUS CARBON DISULFIDE.

300 0 300 600
scale feet

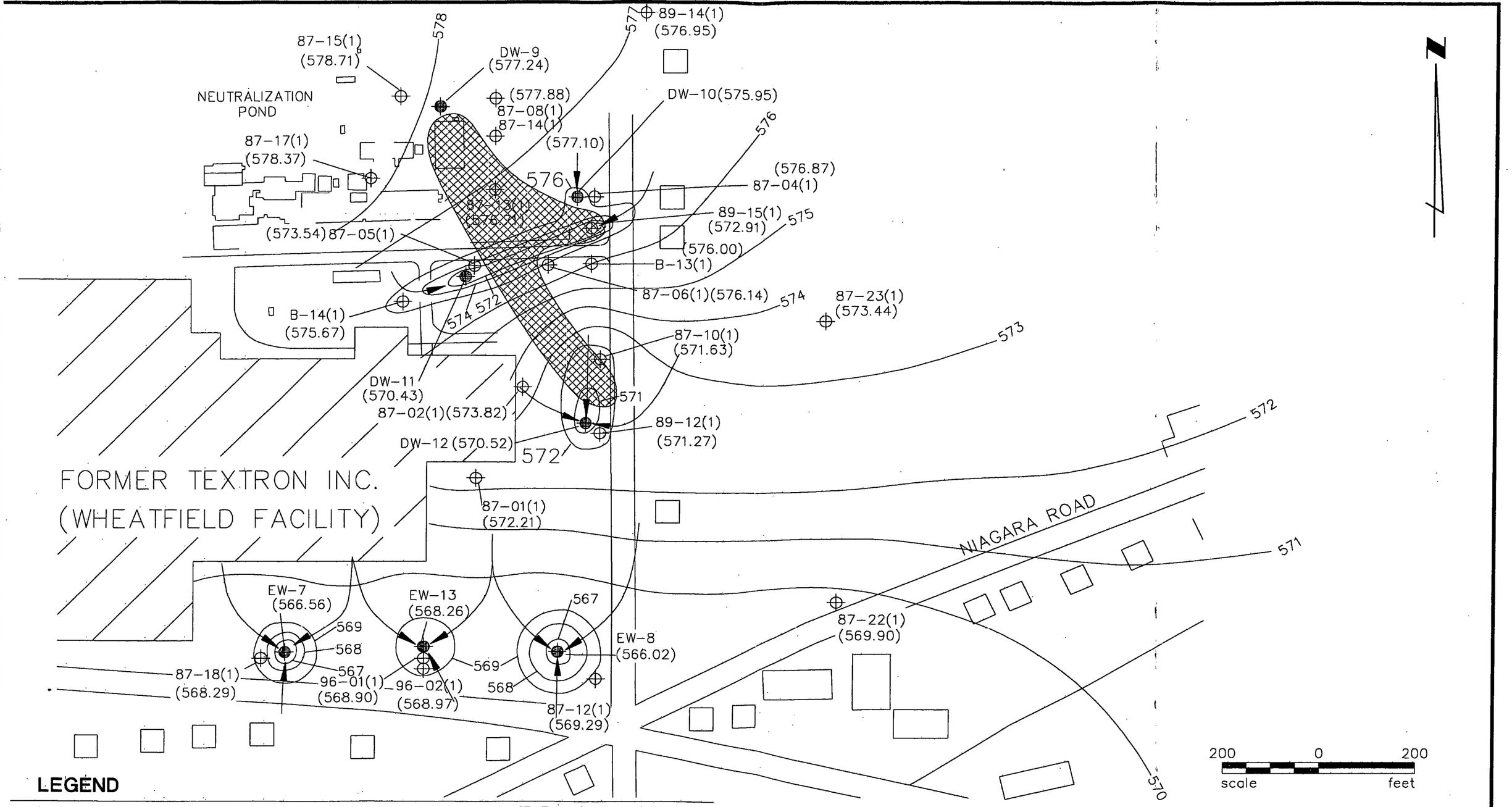
REV.	DATE	DESCRIPTION	DR. BY	APP. BY

CLIENT/PROJECT: TEXTRON, NIAGARA FALLS, NEW YORK

TITLE: GROUNDWATER ELEVATION CONTOUR MAP ZONE 1 BEDROCK - APRIL 2000

Golder Associates, Buffalo, New York

DRAWN	CDS	DATE	05/19/00
CHECKED	DCW	SCALE	1"=300'
REVIEWED	DCW	JOB NO.	973-9158
APPROVED	ALG	DWG. NO.	BELL165
FILE NO.	973-9158	FIGURE	1



LEGEND

- EXTRACTION WELL OR DNAPL WELL
- MONITORING WELL
- (566.63) WATER LEVEL ELEVATIONS AT MONITORING OR EXTRACTION WELL IN FEET MEAN SEA LEVEL.
- DIRECTION OF GROUND WATER FLOW IN ZONE 1
- —569— POTENTIOMETRIC ELEVATION CONTOUR IN FEET MEAN SEA LEVEL
- DNAPL PLUME

Golder Associates Buffalo, New York

CLIENT/PROJECT
TEXTRON
NIAGARA FALLS, NEW YORK

TITLE
ON-SITE GROUNDWATER ELEVATION CONTOUR MAP, ZONE 1 BEDROCK APRIL 2000

DRAWN	CDS	DATE	05/19/00	JOB NO.	973-9158
CHECKED	DCW	SCALE	AS SHOWN	DWG. NO.	BELL166
REVIEWED	ALG	FILE NO.	973-9158	FIGURE NO.	2