

2023 Hazardous Waste Scanning Project

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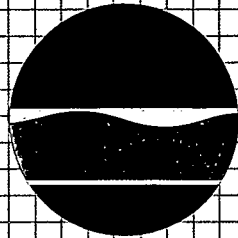
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PRE-DESIGN INVESTIGATION REPORT



AVM GOWANDA SITE OPERABLE UNIT 01

Town of Persia
Cattaraugus County, New York
(Site Registry No. 9-05-025)

WORK ASSIGNMENT NO. D003600-38

Prepared For

**New York State Department
of Environmental Conservation**

DECEMBER 2004



DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

PRE-DESIGN INVESTIGATION REPORT

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Prepared for:

**NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION**

Prepared by:

**DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
SYRACUSE, NEW YORK**

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**PRE-DESIGN INVESTIGATION REPORT
AVM GOWANDA SITE
OPERABLE UNIT 1**

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	INTRODUCTION.....	1-1
1.1	Project Objective.....	1-1
1.2	Site Location, Ownership and Access.....	1-1
1.3	Site History and Previous Investigations	1-3
2.0	PRE-DESIGN INVESTIGATION ACTIVITIES.....	2-1
2.1	Base Map Development and Surveying.....	2-1
2.2	Indoor Air and Sub-Slab Soil Vapor Sampling.....	2-2
2.3	Soil Boring and Monitoring Well Installations.....	2-7
2.4	Monitoring Well Development	2-11
2.5	Water Level Monitoring.....	2-12
2.6	In Situ Hydraulic Conductivity Testing	2-12
2.7	Pump Test.....	2-12
2.8	Groundwater Sampling	2-14
2.9	Ambient Air Monitoring	2-15
2.10	Health and Safety Program	2-16
2.11	Quality Assurance/Quality Control Program	2-16
2.12	Investigation Derived Waste Sampling and Disposal	2-16
2.13	Data Validation	2-18
3.0	PHYSICAL CHARACTERISTICS OF STUDY AREA.....	3-1
3.1	Site Geology	3-1
3.2	Site Hydrogeology.....	3-4

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
4.0	RESULTS OF ENVIRONMENTAL SAMPLING	4-1
4.1	Indoor Air and Sub-Slab Soil Vapor	4-1
4.1.1	April 2004 Samples	4-2
4.1.2	September 2004 Samples	4-4
4.2	Groundwater	4-6
4.2.1	Direct Push Groundwater Samples	4-9
4.2.2	June 2004 Permanent Well Groundwater Samples	4-9
4.2.3	Pump Test Groundwater Samples	4-10
4.2.4	Design Parameter Groundwater Samples	4-11
4.2.5	September 2004 Permanent Well Groundwater Samples	4-12
4.3	Soil	4-13
4.4	Data Validation and Usability	4-13
4.4.1	Indoor Air and Sub-Slab Soil Vapor Samples	4-13
4.4.2	Direct Push Groundwater Samples	4-14
4.4.3	June 2004 Permanent Well Groundwater Samples	4-15
4.4.4	Pump Test Groundwater Samples	4-16
4.4.5	Design Parameter Groundwater Samples	4-17
4.4.6	September 2004 Permanent Well Groundwater Samples	4-17
5.0	CONCLUSIONS AND RECOMMENDATIONS	5-1
6.0	REFERENCES	6-1

List of Appendices

Topographic Survey Map	A
Indoor Air Quality Questionnaires	B
Boring Logs	C
Well Construction Logs	D
Well Development Logs	E
SIRs/COCs/Shipping	F
Air Monitoring Data	G
Soil and Water Disposal Records	H
Groundwater Elevation Data	I
Sieve Analysis Data	J
Hydraulic Conductivity Data	K
Pump Test Data	L
Analytical Data	M

TABLE OF CONTENTS (continued)

List of Figures

1-1	Site Location Map	1-2
1-2	Site Map	1-4
2-1	Ambient Air Sample Locations.....	2-5
2-2	Groundwater Sampling and Soil Boring Locations	2-8
3-1	Location of Geologic Cross-Section	3-2
3-2	Geologic Cross-Section.....	3-3
3-3	Pump Test Water Levels	3-10
3-4	Distance Drawdown Results	3-11
4-1	SCG Exceedances in Groundwater	4-7
4-2	TCE Isopleth Map - Groundwater.....	4-8

List of Tables

2-1	Indoor Air and Sub-Slab Soil Vapor Sample Information	2-4
2-2	Summary of Well Construction Details	2-10
3-1	Water Level Measurement Summary.....	3-5
3-2	Pump Test Results Summary	3-9

Section 1



1.0 INTRODUCTION

The Automatic Voting Machine Corporation (AVM) Gowanda Site, located in the Town of Persia, Cattaraugus County, New York (Figure 1-1), is a New York State Class 2 inactive hazardous waste disposal site, registry number 9-05-025. The New York State Department of Environmental Conservation (NYSDEC) has issued a Remedial Design (RD) Work Assignment to Dvirka and Bartilucci Consulting Engineers (D&B) under the State Superfund Standby Contract for the AVM Gowanda Site. The RD for this site is being performed with funds allocated under the New York State Superfund Program, as part of New York State's program to investigate and remediate hazardous waste sites.

1.1 Project Objective

As part of New York State's program to investigate and remediate hazardous waste sites, the NYSDEC issued a work assignment to D&B for remedial design services for the AVM Gowanda Site, Operable Unit 1. The scope of work includes a pre-design investigation, preparation of an engineering design report, preparation of remedial design documents (plans and specifications) and providing pre-award services. The purpose of this report is to present a summary of the activities and findings of the pre-design investigation conducted at the site.

1.2 Site Location, Ownership and Access

The AVM Gowanda Site is located at One Industrial Place in Gowanda, New York. The property is approximately 1.75 acres in area and includes two manufacturing buildings and two small storage sheds. The site is currently owned and occupied by the Gowanda Electronics Corporation, a small manufacturer of electrical components, such as inductors.



0 1000 2000
SCALE IN FEET



SITE LOCATION MAP

FIGURE 1-1

The site property is flat and largely covered with either paved parking areas or buildings. Surface drainage is provided via storm drains that discharge to Thatcher Brook and ultimately to Cattaraugus Creek. The site is bordered by residential property to the north and east, a railroad yard to the south and commercial industrial facilities to the west. Figure 1-2 presents the site and surrounding residential properties.

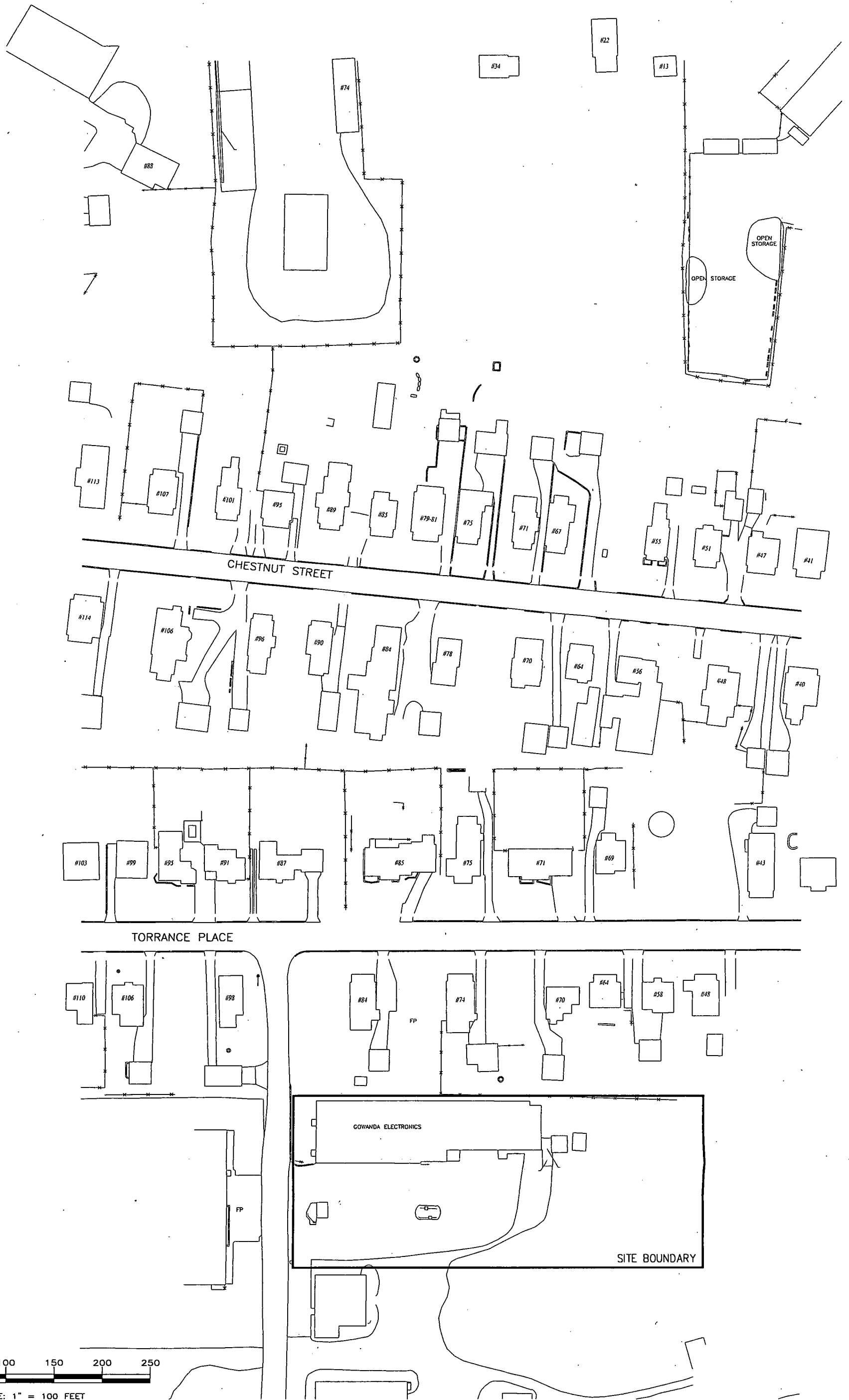
The site is located to the east of Industrial Place in a flat lying area within the Cattaraugus Creek valley. Upland areas to the east and west of the site are at elevations of approximately 1,300 and 1,600 feet above mean sea level, respectively. Topography in the area of the site generally slopes downward from south to north. Elevations in the immediate vicinity of the site range from approximately 765 to 780 feet above mean sea level.

Access to the site is obtained from Industrial Place through paved parking areas located at the south side of the Gowanda Electronics building. Access to the site is unrestricted.

1.3 Site History and Previous Investigations

The AVM Gowanda Site has been used for industrial operations since the early 1930's. From World War II until 1979 the facility was used as a metal stamping/machine shop. Gowanda Electronics Corporation purchased the facility in 1979 from AVM and has since used the facility for the manufacture of electronics components.

Malcolm Pirnie, Inc., completed a Phase I and Phase II site investigation in the spring of 1994 for Gowanda Electronics Corporation. Analysis of surface soil samples showed elevated levels of various metals, total petroleum hydrocarbons (TPH) and trace levels of volatile organic compounds (VOCs) near the east end of the main building, along the northern property boundary. The company chose to excavate the surface soil for off-site disposal. The initial surface soil excavation program continued to a depth of approximately seven feet based on visual identification of stained soil and waste metal shavings, and resulted in the removal of 568 tons of



AVM GOWANDA SITE
GOWANDA, NEW YORK

SITE MAP

FIGURE 1-2



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contaminated soil and waste. This led to the discovery of elevated levels of VOCs, which increased in concentration as the depth of the excavation increased. VOCs from this area apparently had migrated to the water table, resulting in significant groundwater contamination. The excavation was backfilled and the company installed a groundwater extraction well (RW-1) with an air stripper for treatment. This system became operational in June 1996 and continues to operate under a Voluntary Cleanup Agreement (Index No. B9-0507-96-05) between the NYSDEC and the Gowanda Electronics Corporation. Groundwater is pumped at approximately 5 gallons per minute from RW-1 and treated water is discharged to the Village of Gowanda sanitary sewer system.

A NYSDEC Immediate Investigation Work Assignment (IIWA) was undertaken in 1995 to further investigate existing subsurface soil and groundwater conditions near the source area and to identify potential migration pathways from this source area. Field activities associated with the IIWA were conducted during late 1995, with a report issued by NYSDEC in January 1996. A significant groundwater contaminant plume was identified, migrating from the source area northward to Torrance Place. The data further suggested that the plume likely extended beyond Torrance Place.

The IIWA provided the basis for the site to be listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site. A remedial investigation/feasibility study (RI/FS) was subsequently conducted to fully define the nature and extent of contamination, determine if any exposure pathways exist that pose a threat to human health or the environment, and if necessary, evaluate remedial alternatives to effectively address the contamination. The results of the RI were presented in a report prepared by NYSDEC dated July 1998 and the FS was presented in a report prepared by NYSDEC dated February 2000.

In March 2001, the NYSDEC issued a Record of Decision (ROD) for the AVM Gowanda Site. In order to eliminate or mitigate the significant threats to human health and the environment caused by the disposal of hazardous waste at the AVM Gowanda Site, the following remedy was selected:

- Undertake a remedial design program to verify the components of the conceptual design and prepare the plans and specifications necessary for the construction, operation and maintenance, and monitoring of the remedial system.
- Continue operation of the extraction well and air stripper currently in place at the Gowanda Electronics Corporation property by the volunteer.
- Installation of a groundwater extraction system consisting of pumping wells beneath Torrance Place and a collection trench midway between Torrance Place and Chestnut Street with conveyance of groundwater to the Gowanda Electronics Corporation property for treatment via an underground pipe.
- Construction of a treatment system consisting of an air stripping unit, air emissions treatment, and dense non-aqueous phase liquid (DNAPL) separator, housed in a separate sound dampened building constructed on the Gowanda Electronics Corporation property with discharge to Thatcher Creek.
- Installation of a reactive iron wall north of Chestnut Street, extending approximately 250 feet in length to intercept the leading edge of the contaminant plume.
- Implementation of a monitoring system to ensure the effectiveness of the remedy, including groundwater flow conditions, groundwater chemistry and indoor air quality.

Section 2



2.0 PRE-DESIGN INVESTIGATION ACTIVITIES

The purpose of the pre-design investigation was to evaluate existing conditions on-site and off-site and collect the information required for the design of the selected groundwater remedial alternatives. This section documents the field activities and techniques used to investigate the AVM Gowanda Site. The field investigation was conducted in accordance with the NYSDEC approved Remedial Design Project Management Work Plan (D&B, 2004).

Fieldwork was performed in five phases. The first phase was performed in April 2004 and consisted of the collection of indoor air samples and sub-slab soil vapor samples within and beneath residences, respectively, located within the limits of the groundwater contamination plume identified in the RI Report (NYSDEC, 1998). The second phase of the investigation was performed in May 2004 and consisted of advancing soil borings and the installation of groundwater monitoring wells at on-site and off-site locations. The third phase of the investigation was performed in June 2004 and consisted of the collection of ground water samples from existing wells and the new wells installed at the site during the second phase of site activities. The fourth phase of the investigation was performed in July 2004 and consisted of a groundwater pump test at an existing off-site well. The fifth phase of the investigation was performed in September 2004 and consisted of collection of a second round of groundwater samples and indoor air and sub-slab soil vapor samples within and beneath additional residences. The additional indoor air and sub-slab soil vapor samples were collected in houses which were not included in the April 2004 sampling event with the exception of two indoor air samples that were collected from houses that had been sampled in April 2004.

2.1 Base Map Development and Surveying

A base map for the site was compiled from aerial photography and an on-site ground control survey. Site features on the map include roads, utilities, monitoring wells, surface water bodies and topography. Pre-existing monitoring wells and monitoring wells constructed for this

investigation were surveyed to the nearest 0.01 feet for location and elevation. The survey was prepared in the New York State Plane (NYSP) coordinate system (NAD 1983 and NAVD 1988).

The survey map shows the location of relevant site features and adjacent areas at a scale of 1-inch equals 100 feet. Topographic contours were plotted at 1-foot intervals. The map was constructed using AutoCad®.

Surveying for the base map and identification of investigation locations was conducted in several phases. A topographic map of the site was prepared first. The topographic map was prepared from aerial photographs prepared for Popli Consulting Engineers & Surveyors by LaFave, White & McGivern, LS, PC. The aerial photographs were taken in early spring of 2004 when there was a minimum of leaf cover, in order to maximize the visibility of site features. This phase also involved the establishment of control points at the site. The control points were used to orient aerial photography activities.

The second phase was conducted following the completion of the fieldwork. During this phase of surveying, the locations and elevations of monitoring wells (including water level measurement reference points), surface water locations, and other pertinent site features were surveyed and included on the base map.

A copy of the survey map is provided in a map pocket in Appendix A.

2.2 Indoor Air and Sub-Slab Soil Vapor Sampling

Two rounds of indoor air and sub-slab soil vapor sampling were conducted during the pre-design investigation. Indoor air and sub-slab soil vapor samples were collected within and beneath houses overlying the groundwater contaminant plume identified in the RI Report (NYSDEC, 1998) in order to evaluate the need for permanent monitoring points and/or mitigation systems.

Initially a mailing was performed by the NYSDEC seeking permission from homeowners for access for the indoor air sampling and sub-slab soil vapor sampling. Only a small number of positive responses were received. Ultimately, for the first sampling round, performed in April 2004, access was obtained to a total of 12 houses. Identification numbers for the houses sampled, the dates sampling was performed and the type of samples collected in each house accessed are summarized on Table 2-1. As indicated on Table 2-1, as part of the April 2004 sampling event, an ambient air sample (outside) was collected on each day of indoor air sampling. The locations of the ambient air sample locations are shown on Figure 2-1. The locations of the houses sampled are not shown on Figure 2-1 to protect the confidentiality of the residents.

Based on the elevated levels of trichloroethene (TCE) detected in several indoor air samples collected during the first sampling round (NYSDOH suggested a preliminary screening value of 5 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]), NYSDEC proceeded with installation of mitigation systems in six houses. In addition, a second round of mailings were sent out by the NYSDEC and telephone calls were made in an attempt to obtain access to additional houses for a second sampling round.

Based on the results of the follow up mailing and telephone calls, as well as soliciting access by going door to door, access was obtained to 11 additional houses for the second sampling round performed in September 2004. Also, as part of this second sampling round, indoor air was re-tested in three houses (H-3, H-6 and H-8) included in the first sampling round. H-3 was re-sampled to confirm the absence of TCE in the indoor air, since the results of the first sampling round indicated no TCE at that location. H-6 was re-sampled to evaluate the mitigation system which had been installed in that house after the first sampling round and H-8 was re-sampled to confirm concentrations of TCE in the indoor air, since the concentration of TCE detected during the first sampling round was close to the NYSDOH preliminary screening value of $5 \mu\text{g}/\text{m}^3$.

TABLE 2-1
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
INDOOR AIR AND SUB-SLAB SOIL VAPOR SAMPLE INFORMATION

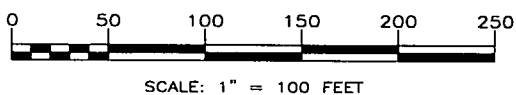
HOUSE/ LOCATION	SAMPLE DATE	SAMPLE IDENTIFICATION		
		INDOOR AIR	SUB-SLAB	AMBIENT AIR
H-1	4/5/04	A2	A1	
H-2	4/5/04	A4	A3	
H-3	4/5/04	A7	A6	
	9/22/04	A52		
H-4	4/5/04	A8		
H-5	4/6/04	A9		
H-6	4/6/04	A12	A11	
	9/22/04	A51		
H-7	4/6/04	A14	A13	
H-8	4/6/04	A15		
	9/20/04	A37		
H-9	4/6/04	A17	A16	
H-10	4/6/04	A19	A18	
H-11	4/7/04	A21		
H-12	4/7/04	A23	A22	
H-13	9/20/04	A25	A24	
H-14	9/20/04	A26		
H-15	9/20/04	A28	A27	
H-16	9/20/04	A30	A29	
H-17	9/20/04	A32	A31	
H-18	9/20/04	A39	A38	
H-19	9/22/04	A41	A40	
H-20	9/22/04	A42		
H-21	9/22/04	A44	A43	
H-22	9/22/04	A46	A45	
H-23	9/23/04	A54	A53	
AA-1	4/5/04			A5
AA-2	4/6/04			A10
AA-3	4/7/04			A20
AA-4	9/20/04			A33
AA-5	9/20/04			A34
	9/22/04			A48
AA-6	9/20/04			A35
	9/22/04			A50
AA-7	9/20/04			A36
	9/22/04			A49
AA-8	9/22/04			A47

Laboratory identifications have a prefix of AVM- and
a suffix of -B for basement, -SS for sub-slab or -AA for ambient air.



LEGEND

▲ AA-4 AMBIENT AIR SAMPLE LOCATION



AVM GOWANDA SITE
GOWANDA, NEW YORK

AMBIENT AIR SAMPLE LOCATIONS



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During two days of the second sampling round, four ambient air samples were collected (see Table 2-1 and Figure 2-1). During the first day (September 20, 2004), the sampling was performed while the groundwater extraction and treatment system at the Gowanda Electronics Corporation site was shutdown. During the second day of sampling (September 22, 2004), the groundwater extraction and treatment system was operating in order to evaluate the potential effect of the treatment system's atmospheric exhaust on ambient air conditions.

All air samples were collected with 0.4-liter Minican[®] canisters and analyzed for chlorinated VOCs, benzene, toluene, ethylbenzene and xylene (BTEX) and methyl-tert-butyl ether (MTBE) by Method TO-15 using selective ion monitoring. Sample canisters were set up to collect air samples for two hours and removed within one day of placement.

During each sampling round indoor air samples were collected from the lowest living space (i.e., basement or first floor) in each house that was sampled. Sub-slab soil vapor samples were collected in houses with a lower permeability floor (e.g., concrete slab), when permission was granted by the owner. Sub-slab soil vapor samples were not collected in houses with an unfinished floor (i.e., soil) in the lowest level.

The indoor air samples were collected by placing a sample canister 2 to 4 feet above the floor and allowing it to fill. The sub-slab soil vapor samples were collected by drilling a $\frac{9}{16}$ -inch diameter hole through the concrete basement floor to a depth of approximately 1.5 feet below grade. A Teflon[™] tube was placed in the hole, sealed with beeswax, connected to the sample canister and allowed to fill. Outside ambient air samples were collected by setting sample canisters approximately 1 foot above the ground surface and allowing them to fill.

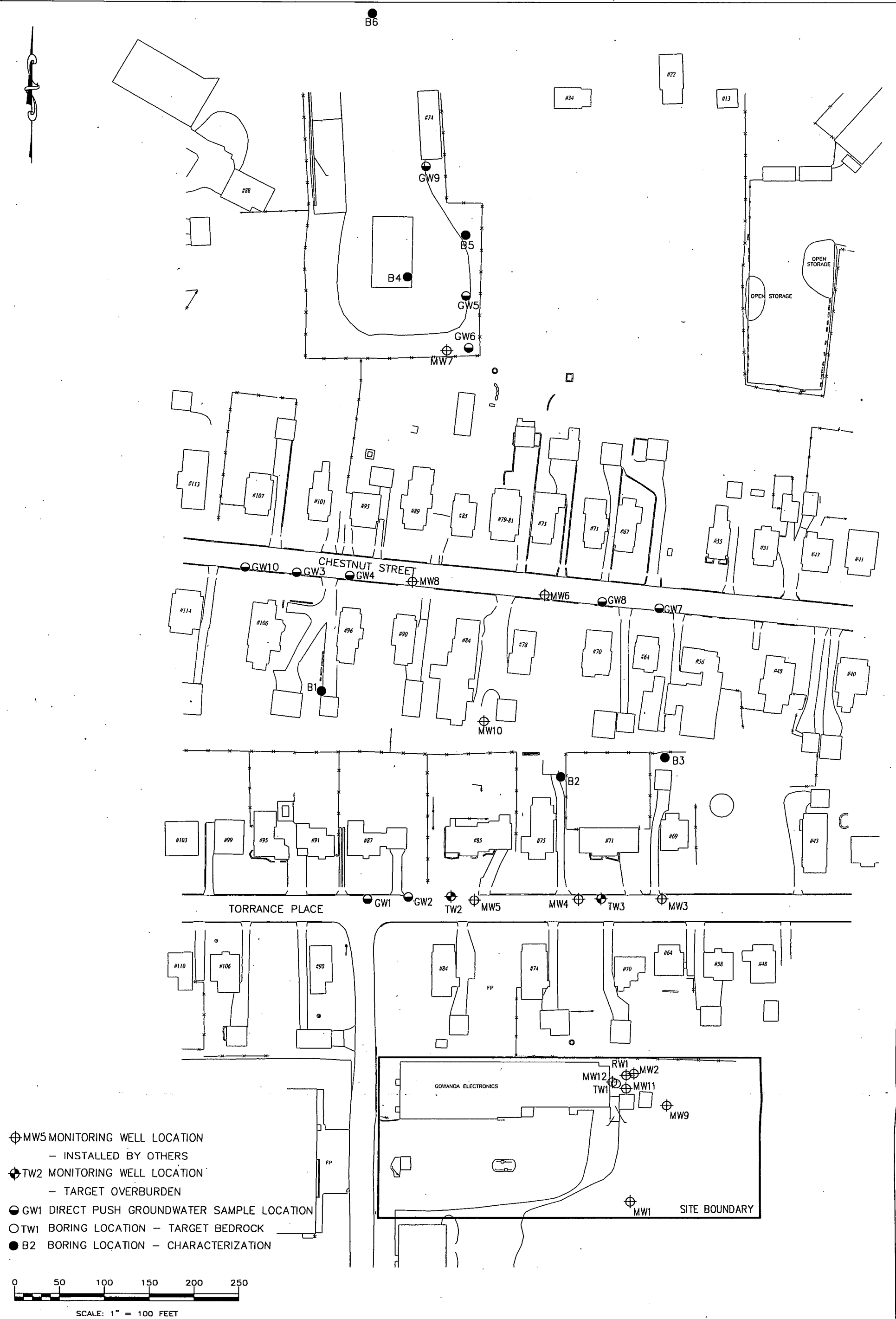
An indoor air quality questionnaire and building inventory was completed for each house prior to sampling, as required by the Division of Environmental Health Assessment Bureau of Toxic Substance Assessment Indoor Air Sampling and Analysis Guidance Protocols, dated

August 8, 2001. Copies of the completed indoor air quality questionnaires are included in Appendix B.

2.3 Soil Boring and Monitoring Well Installations

Nineteen soil borings were drilled during the pre-design investigation to evaluate hydrogeologic and groundwater quality conditions on-site and off-site and obtain information required for the design of a groundwater remediation system. Ten of the soil borings (plume confirmation borings) were advanced solely for the collection of groundwater samples to determine the limits of contamination. Six of the soil borings (characterization borings) were advanced to provide hydrogeologic data for the design of the remediation system. Two of the soil borings (target well borings) were advanced for the purpose of installing additional monitoring wells in the overburden at the site. One of the soil borings (target well boring for bedrock) was advanced for the purpose of installing a monitoring well in bedrock at the site; however, as discussed further below, a well was not installed at this boring. The locations of the borings are presented on Figure 2-2. A discussion of drilling results and observations is presented in Section 3.0. Boring logs are presented in Appendix C.

Plume confirmation borings GW-1 and GW-2 were installed near the southwest limits of the groundwater contamination plume illustrated in the ROD (NYSDEC, 2001). Plume confirmation borings GW-3, GW-4 and GW-10 were installed near the northwest limits of the groundwater contamination plume illustrated in the ROD. Plume confirmation borings GW-5, GW-6 and GW-9 were installed near the northern limits of the groundwater contamination plume illustrated in the ROD. Plume confirmation borings GW-7 and GW-8 were installed near the northeast limits of the groundwater contamination plume illustrated in the ROD. The purpose of these borings was to establish the current limits of groundwater contamination. These borings were advanced to the first occurrence of groundwater.



AVM GOWANDA SITE
GOWANDA, NEW YORK

Characterization borings B-1, B-2 and B-3 were installed in the vicinity of the planned groundwater collection trench illustrated in the ROD. Characterization borings B-4, B-5 and B-6 were installed in the vicinity of the planned permeable reactive barrier wall illustrated in the ROD. The purpose of these borings was to characterize the overburden layers and hydrogeologic properties of the overburden. These borings were drilled to the top of the clay and silt unit.

Monitoring wells TW-2 and TW-3 were installed at off-site locations to characterize the overburden layers, confirm groundwater flow information and establish current chemistry. The monitoring wells were installed at target locations identified in the geophysical study (Resolution Resources, Inc., 2000). The wells were installed and screened immediately above the clay and silt unit. Table 2-2 lists the monitoring well depths and construction specifications.

One soil boring (TW-1) was installed on-site, near the east side of the Gowanda Electronics Corporation building. This location is targeted in the geophysical study report (Resolution Resources, Inc., 2000) to investigate whether non-aqueous phase liquids is present. Additionally, the purpose of this boring was to characterize the bedrock geology and groundwater chemistry. Based on the geophysical study, the estimated depth to the top of bedrock was 75 to 95 feet below ground surface. However, bedrock was not encountered after drilling to a depth of 155 feet below grade. Therefore, after drilling to a depth of 155 feet, the borehole was abandoned and a well was not installed.

All soil borings and monitoring wells were installed by Nothnagle Drilling, Inc. using a truck-mounted CME 85 drill rig, except for soil boring B-3 which was drilled using a Geoprobe 6610 DT. Drilling equipment was steam cleaned before the start of work at a temporary decontamination area located to the southeast of the Gowanda Electronics Corporation building. Downhole drilling tools were steam cleaned after the completion of each boring and monitoring well with the exception of the split spoon samplers and MacroCores™. Split spoons and MacroCores™ were washed and rinsed at the borehole between each use. Decontamination wastewater was collected in the decontamination pad and subsequently disposed of off-site (see Section 2.8).

TABLE 2-2
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
SUMMARY OF WELL CONSTRUCTION DETAILS

Well ID	Date Installed	Well Diameter (inches)	Well Material	Total Depth (feet)	Screened Formation	Screen			Elevation (feet above mean sea level)*				LOCATION*	
						Top (feet bgs)	Bottom (feet bgs)	Length (feet)	Casing Top	Ground Surface	Screen		Northing (feet)	Easting (feet)
											Top	Bottom		
MW-1	6/9/97	2	PVC	30.0	S&G	6.0	16.0	10.0	779.74	777.10	771.10	761.10	895599.66	1053568.24
MW-2	6/10/97	2	PVC	20.5	S&G	10.0	20.0	10.0	775.15	776.00	766.00	756.00	895745.31	1053571.79
MW-3	6/11/97	2	PVC	24.0	S&G	8.0	23.0	15.0	775.48	775.95	767.95	752.95	895941.95	1053601.64
MW-4	6/12/97	2	PVC	22.5	S&G	7.0	22.0	15.0	775.24	775.67	768.67	753.67	895941.49	1053508.25
MW-5	6/12/97	2	PVC	18.5	silt & S&G	8.0	18.0	10.0	774.79	775.28	767.28	757.28	895940.39	1053391.14
MW-6	6/13/97	2	PVC	24.0	silt & S&G	5.5	10.5	5.0	770.63	771.26	765.76	760.76	896286.82	1053468.76
MW-7	6/16/97	2	PVC	16.5	S&G	11.0	16.0	5.0	766.39	764.30	753.30	748.30	896563.68	1053357.42
MW-8	6/16/97	2	PVC	12.0	silt & S&G	5.5	10.5	5.0	770.05	770.29	764.79	759.79	896302.06	1053320.17
MW-9	12/8/97	2	SS	22.0	S&G	5.0	20.0	15.0	775.55	776.00	771.00	756.00	895708.32	1053608.25
MW-10	12/9/97	2	PVC	16.0	S&G	5.0	15.0	10.0	773.67	774.20	769.20	759.20	896144.15	1053401.41
MW-11	12/10/97	2	SS	16.0	S&G	4.0	14.0	10.0	775.81	776.30	772.30	762.30	895727.99	1053562.59
MW-12	12/10/97	2	SS	16.0	S&G	4.5	14.5	10.0	775.74	776.10	771.60	761.60	895735.46	1053547.48
RW-1	unkwn	6	CS	unkwn	unkwn	unkwn	unkwn	unkwn	775.23	776.10	776.10	776.10	895743.30	1053563.03
TW-2	6/2/04	2	SS	27.0	silt & S&G	17.0	27.0	10.0	774.78	775.09	758.09	748.09	895944.74	1053364.90
TW-3	6/3/04	2	SS	21.0	silt & S&G	11.0	21.0	10.0	775.44	775.74	764.74	754.74	895942.09	1053533.56

Notes: * - Data from survey completed by Popli Consulting Engineers & Surveyors in 2004 (NAD 83/92, NAVD 88)

unkwn - unknown

PVC - poly vinyl chloride

SS - stainless steel

CS - carbon steel

S&G - sand and gravel

bgs - below ground surface

Monitoring wells TW-2 and TW-3 were completed using 4¼-inch inside diameter hollow stems augers and split spoon samples or MacroCores™ were generally collected continuously to the bottom of the borings. All borehole construction and monitoring well installations were logged and documented by a geologist. Boring logs, presented in Appendix C, include the depths of stratigraphic changes, descriptions of samples using the Modified Burmeister Classification System, details of drilling techniques and total ionizable vapor measurements obtained with a Photovac Model 2020 photoionization detector (PID).

Monitoring wells TW-2 and TW-3 were constructed using 10 foot long 2-inch inside diameter (ID) stainless steel wire wrapped 0.010-inch slot well screens and 2-inch ID stainless steel riser pipe. Well screens were installed at the bottom of the boreholes. Sand pack was placed in the annulus between the borehole wall and the well screen extending from the well bottom to at least 2 feet above the top of the screen and at least 2 feet of bentonite seal was placed above the sand pack. Lockable expansion caps were installed on the well riser pipes and flush-mount protective steel casings were installed in concrete surface pads. Well construction specifications are provided on Well Construction Logs presented in Appendix D.

2.4 Monitoring Well Development

The two new (TW-2 and TW-3) and twelve existing monitoring wells (MW-1 through MW-12) were developed by surging and evacuating groundwater using submersible pumps and dedicated tubing. Water was not removed from the new wells until at least one day after well completion to allow the grout and concrete surface seals to cure, thereby minimizing the potential for surface water cross-contamination. Well development water was monitored for field parameters (pH, temperature, specific conductance and turbidity). Well development was continued until at least 8 well volumes of groundwater were removed or the field parameters equilibrated. Well development water was pumped from the wells and containerized for off-site disposal (see Section 2.13). Details of well development are provided on the Well Development Logs presented in Appendix E.

2.5 Water Level Monitoring

Over the course of the field investigation water levels were periodically measured at the monitoring wells. Water level rounds were conducted at times of relatively stable weather conditions and within as short a period as possible in order to provide a synoptic view of groundwater conditions. In general, water level measurements were completed in less than one hour. Depth to water measurements and topographic survey data were used to calculate groundwater elevations and to prepare water table maps.

2.6 In Situ Hydraulic Conductivity Testing

Hydraulic conductivity tests were performed on each of the new monitoring wells (TW-2 and TW-3) and on six of the existing monitoring wells (MW-3, MW-4, MW-7, MW-8, MW-10 and MW-11). Slug tests were conducted by lowering a 1-inch diameter aluminum bar into each well, causing a sudden rise in water level, and recording head change over time using an In-Situ, Inc. miniTroll[®] data logger. For each monitoring well, when groundwater returned to the pre-test level, a bail test was performed by quickly removing the aluminum bar causing a sudden drop in water level. The water level recovery was then monitored using an In-Situ, Inc. miniTroll[®] data logger.

Data collected from the slug (falling head) and bail (rising head) tests were analyzed using the Bouwer and Rice (1976) technique for hydraulic conductivity determination. The results of the calculations for hydraulic conductivity are summarized in Section 3.0.

2.7 Pump Test

A pump test was performed at a selected well (MW-4) at the AVM Gowanda Site during the week of July 26, 2004. The purpose of the pump test at MW-4 was to determine the influence of pumping on the shallow groundwater aquifer and estimate aquifer hydraulic conductivity.

MW-4 was pumped at four successively higher pumping rates throughout the test. Water was pumped from MW-4 using a Grundfos Redi-Flo 2™ submersible pump to temporary polyethylene holding tanks and then transferred to a 20,000 gallon holding tank for subsequent disposal off-site (see Section 2.13).

The pump test at MW-4 was initiated on July 27, 2004 at 7:20 a.m. and the well was initially pumped at a rate of 1.4 gallons per minute for a period of 12 hours. After 12 hours of pumping the flow rate was increased to 1.9 gallons per minute for 12 hours. After 24 hours of pumping the flow rate was increased to 2.9 gallons per minute for 12 hours. After 36 hours of pumping the flow rate was increased to 3.8 gallons per minute for 12 hours. The pump was then shut off and groundwater recovery was monitored for 24 hours.

During the pump test and recovery test, water levels were monitored to the nearest 0.01 foot using dedicated pressure transducers (i.e., Mini-Troll® and Hermit 3000® data loggers) and a hand held water level measurement instrument (i.e., Solinst® water level indicator). The water level data was recorded using data loggers and field notebooks.

Two sets of groundwater samples were collected from MW-4 during the pump test. The samples were collected at different stages of the pump test in order to evaluate groundwater quality variations under different pumping conditions. The results of the sampling will be used to design the groundwater treatment system. The groundwater samples collected from the pump discharge were analyzed for Target Compound List (TCL) VOCs, TCL semivolatile organic compounds (SVOCs), TCL pesticides/PCBs, Target Analyte List (TAL) inorganics and cyanide.

Pump test data were evaluated to determine aquifer characteristics including aquifer continuity and transmissivity. Transmissivity of the hydrogeologic units were calculated using time drawdown analyses and curve matching. Pump test results are discussed in Section 3.2.

2.8 Groundwater Sampling

Five groundwater sampling events were conducted during the pre-design investigation. Fifteen samples were collected during the first sampling event in May/June 2004 from soil borings advanced during the pre-design investigation for the purpose of plume limit delineation. The second sampling round included fourteen samples collected in June 2004 from the twelve existing monitoring wells and two new monitoring wells installed during the pre-design investigation for plume characterization. The third round consisted of collection of two samples during the pump test in July 2004 to characterize groundwater for treatment system design. A fourth round included samples collected in July 2004 from seven groundwater monitoring wells for design parameters. A fifth round of samples was collected in September 2004 and included the wells that were sampled during the second round of sampling to confirm plume characterization data and identify seasonal variations, if present.

Groundwater samples were collected for chemical analysis at direct push probe locations GW-1 through GW-10 and from boreholes B-1 and B-3 through B-6, during the May/June 2004 sampling event. All of the samples were analyzed for TCL VOCs.

Samples for chemical analysis were collected from wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, TW-2 and TW-3 as part of the second and fifth groundwater sampling events in June and September 2004. Each well was purged of at least three volumes of groundwater before sample collection using a new disposable polyethylene bailer. All of the samples were analyzed for TCL VOCs and the samples collected from monitoring wells MW-4, TW-2 and TW-3 were also analyzed for TCL SVOCs, TCL pesticides/PCBs, TAL inorganics and cyanide.

Groundwater samples were collected for chemical analysis from well MW-4 during the pump test (the third sampling event). The samples were collected at various times during the pump test to detect changes in groundwater chemistry during pumping. One sample was collected on July 28, 2004 after 24 hours of pumping and one sample was collected on July 29,

2004 after 48 hours of pumping. Groundwater samples were collected directly from the pump discharge tubing and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, TAL inorganics, cyanide, cations (barium, calcium, iron, magnesium, manganese, potassium and sodium), anions (bromide, chloride, fluoride, sulfate and nitrate), dissolved organic carbon, total organic carbon, alkalinity, total dissolved solids and total suspended solids (the "design parameters").

During the fourth sampling round, in July 2004, groundwater samples were collected for chemical analysis from monitoring wells MW-7, MW-10, MW-11, TW-2 and TW-3. Each well was purged of at least three volumes of groundwater before sample collection using a new disposable polyethylene bailer. The samples were analyzed for cations (barium, calcium, iron, magnesium, manganese, potassium and sodium), anions (bromide, chloride, fluoride, sulfate and nitrate), dissolved organic carbon, total organic carbon, alkalinity, total dissolved solids and total suspended solids (the "design parameters").

In the case of groundwater samples collected from permanent monitoring wells during sampling events in June and September, field parameters, including pH, specific conductance, turbidity and temperature, were monitored during sampling using a Horiba U-10 instrument. Wells with groundwater exhibiting turbidity of greater than 50 NTUs were allowed to settle for several hours prior to collecting samples for total metals. Purge water was containerized and later disposed of off-site (see Section 2.12). Results are discussed in Section 4.0 and chain of custody forms and sample information records are presented in Appendix F.

2.9 Ambient Air Monitoring

Air monitoring for organic vapors and particulates was conducted throughout the drilling portions of the investigation in accordance with the site-specific Health and Safety Plan. Air monitoring was conducted using a Photovac 2020[®] PID and MIE personalDataRam[®]. The exclusion zone action levels of 5 ppm for the PID or 2.5 mg/m³ of particulate in the breathing zone were not exceeded during the performance of work. In addition, at no time during the

investigation were the perimeter action levels of 5 ppm for the PID or 2.5 mg/m³ for the dust meter exceeded. Air monitoring data are presented in Appendix G.

2.10 Health and Safety Program

A site-specific Health and Safety Plan (HASP) was prepared in accordance with the requirements of the Occupational Health and Safety Administration (OSHA) for the work conducted for this investigation. The HASP was prepared to provide site-specific health and safety information, and provide for worker and community protection. The Health and Safety Plan was dated May 17, 2004 and was reviewed by NYSDEC. Activities conducted as part of the field investigation were conducted in accordance with the HASP.

2.11 Quality Assurance/Quality Control Program

A site-specific Quality Assurance/Quality Control Plan (QA/QC) dated May 2004 was developed for the site. Work performed during the field investigation was performed in accordance with procedures described in the QA/QC Plan. The QA/QC Plan was designed to maximize the quality and validity of the data collected during the field investigation. The QA/QC Plan describes detailed sampling and analytical procedures, as well as necessary QA/QC sampling and analyses for each sampling matrix investigated. Adherence to QA/QC protocols allowed for data validation and usability analyses. In accordance with the QA/QC Plan, chain of custody forms and sample information records were completed for each sample collected and are presented along with shipping records in Appendix F.

2.12 Investigation Derived Waste Sampling and Disposal

Investigation derived waste generated during the pre-design investigation included soil cuttings from soil borings, water from decontamination activities and groundwater from well development, well purging and the pump test. Investigation derived waste was staged at the

Gowanda Electronics Corporation property and subsequently disposed of off-site. Disposal manifests, bills of lading, and disposal receipts are included in Appendix H.

Drill cuttings were staged on-site in 55 gallon steel drums and characterized for off-site disposal. Two soil samples (TW1DRUMS and AVM-SC) were collected during the pre-design investigation for the purpose of characterizing drill cuttings for off-site disposal. Soil sample TW1DRUMS consisted of a composite sample from drill cuttings generated during the installation of soil boring TW-1. Soil sample AVM-SC consisted of a composite sample from drill cuttings generated during the installation of soil borings TW-2 and TW-3. The soil samples were both analyzed for Toxicity Characteristic Leaching Procedure (TCLP) VOCs and TCLP metals. Soil sample TW1DRUMS was also analyzed for cyanides, reactivity, pH and ignitability. The soil was also subjected to a paint filter test to determine if it contained any free liquid. Soil sample AVM-SC was also analyzed for TCL VOCs. Results are discussed in Section 4 and chain of custody forms are presented in Appendix F. On September 7, 2004 approximately 5 tons of soil staged in 23 drums were shipped to CWM Chemical Services, LLC in Model City, New York for disposal.

Decontamination water was pumped from the decontamination pad to 55-gallon drums and subsequently transferred to a 20,000 gallon holding tank. Well development and purge water was removed from the wells, transferred to 55 gallon drums and subsequently transferred to the 20,000 gallon holding tank. Groundwater from the pump test conducted at MW-4 was pumped to temporary polyethylene holding tanks and then transferred to the 20,000 gallon holding tank. The 20,000 gallon holding tank was later evacuated with two vacuum tankers and transported for disposal off-site. On September 7, 2004, 7,193 gallons of water (including decontamination water, well development water, purge water and pump test water) was shipped to E.I. DuPont de Nemours, Company, Inc. in Deepwater, New Jersey for disposal.

2.13 Data Validation

Air and soil vapor analytical work was performed by Centek Laboratories, LLC, which is certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) for analytical testing of air samples. Soil and groundwater analytical work was performed by Mitkem Corporation Inc., a NYSDOH ELAP laboratory certified in all categories of Contract Laboratory Protocol (CLP) and Solid and Hazardous Waste analytical testing. A Data Usability Summary Report was prepared and is included in Section 4.4. Category B deliverables were provided by the laboratories and have been retained in the project files. The deliverables are available for full data validation by a qualified independent third party, if required.

Section 3

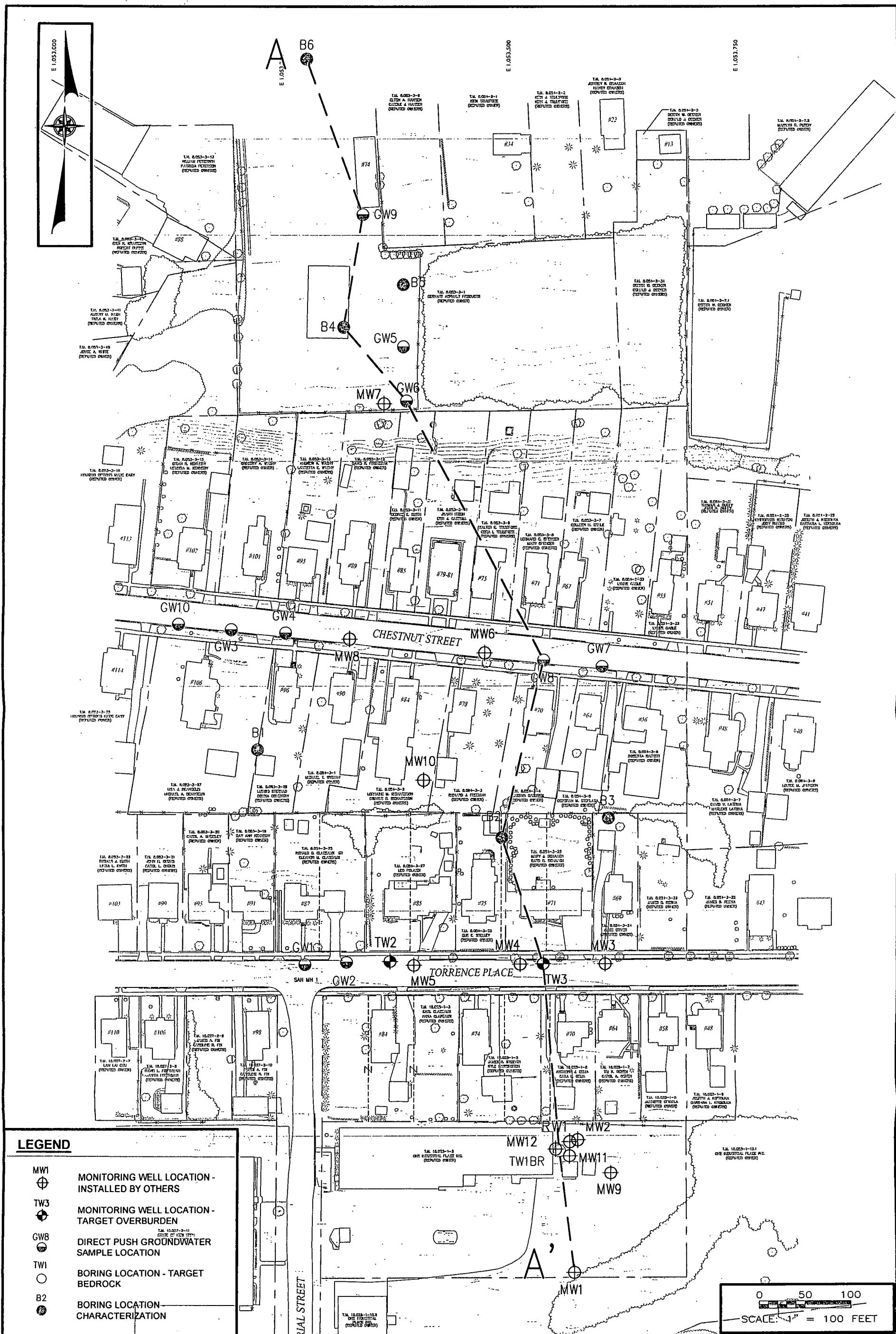
3.0 PHYSICAL CHARACTERISTICS OF STUDY AREA

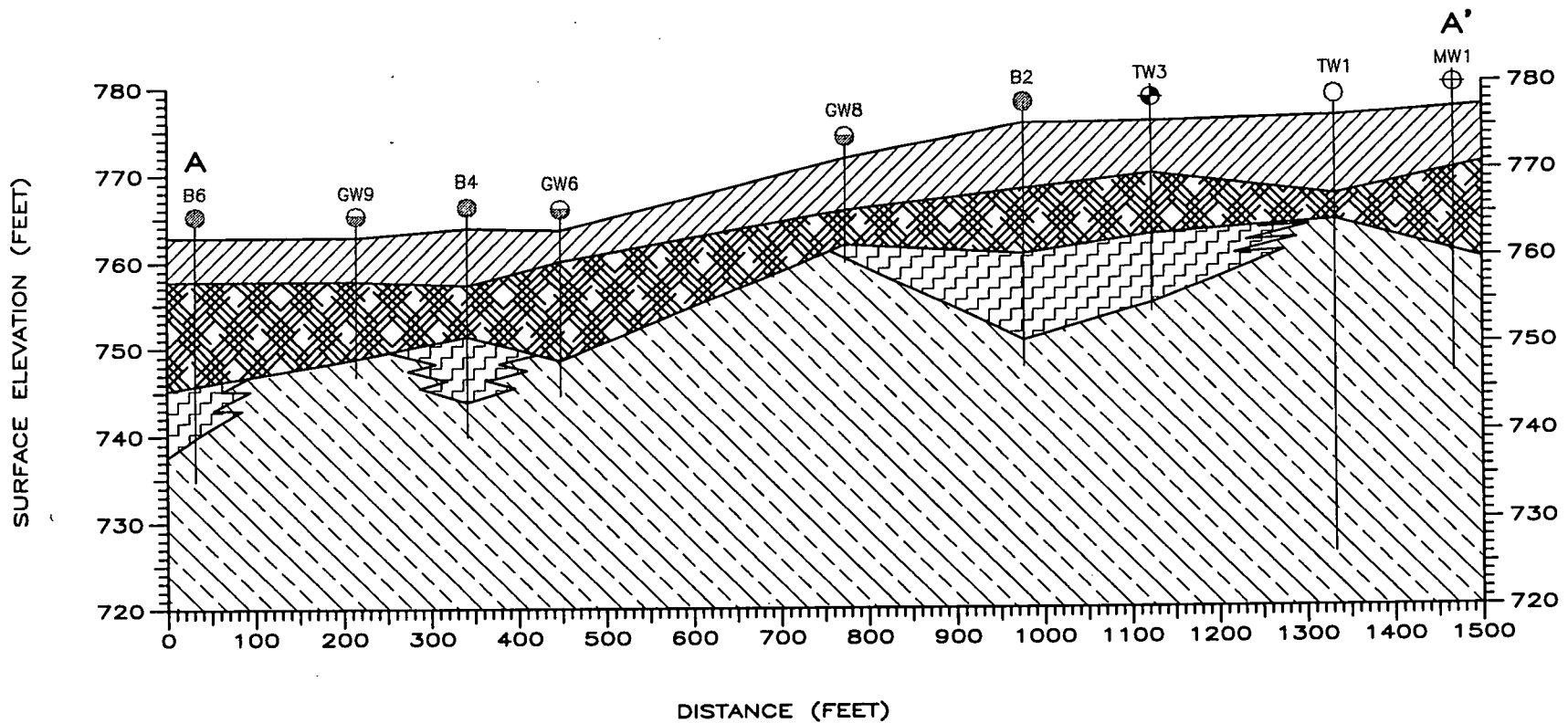
3.1 Site Geology

Unconsolidated deposits at the site have been mapped as recent deposits (Cadwell, et. al., 1988). Recent deposits consist of fine-grained sands to gravels and may be overlain by silt in larger valleys. These deposits are associated with floodplains within valleys and are subject to frequent flooding. The deposits are generally oxidized and non-calcareous and the thickness is variable (3 to 30 feet).

The description of site geology is based on observations made during advancement of 19 soil borings throughout this investigation, which ranged from 8 to 155 feet in depth. An uppermost unit consisting of medium to dark yellowish brown silts and fine- to coarse-grained sands was observed from grade (or near grade at paved areas) to depths of 4 to 9 feet below grade. This unit was underlain by a medium brown fine- to coarse-grained sand and gravel unit, which was present to depths of 11 to 17 feet below grade. The sand and gravel unit was underlain by brownish gray to olive gray fine-grained sands and silts, which extended to depths of 16 to 31 feet below grade. The lowermost unit consisted of a brownish gray to olive gray clay and silt unit, which was observed to a depth of 155 feet at the deepest boring advanced at the site (TW-1). A geologic cross-section, taken through the study area in the north-south direction (Figure 3-1), which depicts the observations recorded during the pre-design investigation, is presented in Figure 3-2.

Generally, the geology observed at the site and in the vicinity of the site during this investigation was consistent with the descriptions presented in the RI report (NYSDEC, 1998). However, findings during this investigation did not support the interpretations presented in the geophysical study (Resolution Resources, Inc., 2000). Specifically, the geophysical report indicated that bedrock was 75 to 95 feet below ground surface near the east side of the Gowanda Electronics Corporation building and boring TW-1 was advanced to 155 feet below grade without encountering bedrock. The site geology presented in the RI report describes three

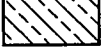




SECTION A - A'
HORIZONTAL SCALE: 1" = 200'
VERTICAL SCALE: 1" = 20'

LEGEND

-  MEDIUM TO DARK YELLOWISH BROWN SILTS AND FINE- TO COARSE-GRAINED SAND
-  MEDIUM BROWN FINE- TO COARSE-GRAINED SAND AND GRAVEL
-  BROWNISH GRAY TO OLIVE GRAY FINE-GRAINED SANDS AND SILTS

-  BROWNISH GRAY TO OLIVE GRAY CLAY AND SILT
-  MW1 MONITORING WELL LOCATION - INSTALLED BY OTHERS
-  TW3 MONITORING WELL LOCATION - TARGET OVERBURDEN

-  GW8 DIRECT PUSH GROUNDWATER SAMPLE LOCATION
-  TW1 BORING LOCATION - TARGET BEDROCK
-  B2 BORING LOCATION - CHARACTERIZATION

AVM GOWANDA SITE
GOWANDA, NEW YORK

GEOLOGIC CROSS-SECTION

Pump test data was analyzed using the Theis (1935) solution for unconfined aquifers. The data and results of the calculations for the pump test are presented in Appendix K. The transmissivity calculated for the site based on the pump test at MW-4 is $3.72 \text{ cm}^2/\text{s}$ and the storativity is 0.001. Based on an aquifer thickness of 16.6 feet, this would equate to a hydraulic conductivity of $7.37 \times 10^{-3} \text{ cm/s}$.

Section 4



4.0 RESULTS OF ENVIRONMENTAL SAMPLING

The purpose of this section is to discuss the results of the environmental sampling conducted during the pre-design investigation at the AVM Gowanda Site. The results are compared to standards, criteria and guidance (SCGs) selected for the site to determine potential impacts on human health and the environment. The nature and extent of contamination found at, and in the vicinity of the site during the investigation is described below.

The results of the environmental sampling performed at the AVM Gowanda Site are presented below for each environmental media. The discussion for each environmental media is organized by analyte group. The results of analyses for VOCs are discussed first, followed by SVOCs, pesticides, PCBs, metals and cyanide. Tabulated results are presented in Appendix M.

4.1 Indoor Air and Sub-Slab Soil Vapor

During Work Plan development, The New York State Department of Health (NYSDOH) requested that sampling and analysis of indoor air in houses adjacent to the AVM Gowanda Site be incorporated into the investigation. Accordingly, two rounds of indoor air and sub-slab soil vapor samples were collected during the pre-design investigation. The first round was conducted in April 2004 and consisted of 23 samples including 12 indoor air samples (basement) collected from 12 houses, 8 sub-slab soil vapor samples collected from beneath 8 houses and 3 ambient air samples collected outside. The second round was conducted during September 2004 and consisted of 31 samples including 14 indoor air samples (basement) collected from 14 houses, 9 sub-slab soil vapor samples collected from beneath 9 houses and 8 ambient air samples collected outside. Each round of samples was analyzed for chlorinated VOCs, BTEX and MTBE. Chemicals stored within houses, as indicated on the indoor air quality questionnaires (Appendix B), may have affected the indoor air sampling results. The results of the indoor air and sub-slab soil vapor analyses are presented in Tables 1a and 2a in Appendix M, and discussed below.

4.1.1 April 2004 Samples

VOCs detected in at least one of the 12 indoor air samples collected during the April 2004 sampling event included benzene, 1,1-dichloroethane, cis-1,2-dichloroethene, ethylbenzene, MTBE, toluene, 1,1,1-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene. Benzene was detected in 10 samples at concentrations ranging from 0.682 $\mu\text{g}/\text{m}^3$ (A4) to 5.10 $\mu\text{g}/\text{m}^3$ (A23). 1,1-Dichloroethane was detected in 1 sample at a concentration of 1.11 $\mu\text{g}/\text{m}^3$ (A12). Cis-1,2-dichloroethene was detected in 7 samples at concentrations ranging from 0.846 $\mu\text{g}/\text{m}^3$ (A2) to 11.3 $\mu\text{g}/\text{m}^3$ (A14). Ethylbenzene was detected in 4 samples at concentrations ranging from 0.883 $\mu\text{g}/\text{m}^3$ (A7) to 2.56 $\mu\text{g}/\text{m}^3$ (A14). MTBE was detected in 1 sample at a concentration of 0.916 $\mu\text{g}/\text{m}^3$ (A17). Toluene was detected in 12 samples at concentrations ranging from 0.804 $\mu\text{g}/\text{m}^3$ (A15) to 27.6 $\mu\text{g}/\text{m}^3$ (A14). 1,1,1-Trichloroethane was detected in 5 samples at concentrations ranging from 1.39 $\mu\text{g}/\text{m}^3$ (A4) to 87.6 $\mu\text{g}/\text{m}^3$ (A14). Trichloroethene was detected in 9 samples at concentrations ranging from 2.02 $\mu\text{g}/\text{m}^3$ (A15) to 149 $\mu\text{g}/\text{m}^3$ (A21). m-Xylene was detected in 11 samples at concentrations ranging from 1.02 $\mu\text{g}/\text{m}^3$ (A17) to 6.40 $\mu\text{g}/\text{m}^3$ (A14). o-Xylene was detected in 8 samples at concentrations ranging from 0.883 $\mu\text{g}/\text{m}^3$ (A9) to 2.60 $\mu\text{g}/\text{m}^3$ (A14). p-Xylene was detected in 2 samples at concentrations of 0.971 $\mu\text{g}/\text{m}^3$ (A19) and 1.90 $\mu\text{g}/\text{m}^3$ (A14). VOCs that were not detected in any of the 12 indoor air samples included 1,2-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,2-trichloroethane and vinyl chloride.

VOCs detected in at least one of the 8 sub-slab soil vapor samples collected during the April 2004 sampling event included benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, MTBE, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene. Benzene was detected in 8 samples at concentrations ranging from 5.81 $\mu\text{g}/\text{m}^3$ (A1) to 1,340 $\mu\text{g}/\text{m}^3$ (A18). 1,1-dichloroethane was detected in 5 samples at concentrations ranging from 2.35 $\mu\text{g}/\text{m}^3$ (A3) to 364 $\mu\text{g}/\text{m}^3$ (A22). 1,1-dichloroethene was detected in 3 samples at concentrations ranging from 7.34 $\mu\text{g}/\text{m}^3$ (A13) to 93.9 $\mu\text{g}/\text{m}^3$ (A22). Cis-1,2-dichloroethene was detected in 6 samples at concentrations ranging from 1.81 $\mu\text{g}/\text{m}^3$ (A3) to 1,690 $\mu\text{g}/\text{m}^3$ (A13). Trans-1,2-

dichloroethene was detected in 5 samples at concentrations ranging from 5.92 $\mu\text{g}/\text{m}^3$ (A1) to 41.1 $\mu\text{g}/\text{m}^3$ (A13). Ethylbenzene was detected in 8 samples at concentrations ranging from 1.46 $\mu\text{g}/\text{m}^3$ (A1) to 52.5 $\mu\text{g}/\text{m}^3$ (A18). MTBE was detected in 2 samples at concentrations of 1.06 $\mu\text{g}/\text{m}^3$ (A1) and 2.97 $\mu\text{g}/\text{m}^3$ (A3). Tetrachloroethene was detected in 3 samples at concentrations ranging from 3.10 $\mu\text{g}/\text{m}^3$ (A3) to 5.52 $\mu\text{g}/\text{m}^3$ (A22). Toluene was detected in 8 samples at concentrations ranging from 7.93 $\mu\text{g}/\text{m}^3$ (A18) to 215 $\mu\text{g}/\text{m}^3$ (A6). 1,1,1-Trichloroethane was detected in 7 samples at concentrations ranging from 3.94 $\mu\text{g}/\text{m}^3$ (A1) to 1,510 $\mu\text{g}/\text{m}^3$ (A11). 1,1,2-trichloroethane was detected in 2 samples at concentrations of 3.44 $\mu\text{g}/\text{m}^3$ (A22) and 4.16 $\mu\text{g}/\text{m}^3$ (A11). Trichloroethene was detected in 7 samples at concentrations ranging from 6.50 $\mu\text{g}/\text{m}^3$ (A16) to 17,100 $\mu\text{g}/\text{m}^3$ (A13). m-Xylene was detected in 8 samples at concentrations ranging from 3.09 $\mu\text{g}/\text{m}^3$ (A1) to 78.6 $\mu\text{g}/\text{m}^3$ (A6). o-Xylene was detected in 8 samples at concentrations ranging from 3.00 $\mu\text{g}/\text{m}^3$ (A11) to 30.9 $\mu\text{g}/\text{m}^3$ (A6). p-Xylene was detected in 8 samples at concentrations ranging from 1.19 $\mu\text{g}/\text{m}^3$ (A1) to 19.4 $\mu\text{g}/\text{m}^3$ (A6). VOCs that were not detected in any of the 8 sub-slab soil vapor samples included 1,2-dichloroethane, 1,1,2,2-tetrachloroethane and vinyl chloride.

VOCs detected in at least one of the 3 ambient air samples collected during the April 2004 sampling event included benzene, cis-1,2-dichloroethene, MTBE, toluene, trichloroethene and o-xylene. Benzene was detected in 2 samples at concentrations of 0.877 $\mu\text{g}/\text{m}^3$ (A10) and 0.974 $\mu\text{g}/\text{m}^3$ (A20). Cis-1,2-dichloroethene was detected in 1 sample at a concentration of 2.10 $\mu\text{g}/\text{m}^3$ (A5). MTBE was detected in 1 sample at a concentration of 0.989 $\mu\text{g}/\text{m}^3$ (A10). Toluene was detected in 3 samples at concentrations ranging from 0.843 $\mu\text{g}/\text{m}^3$ (A5) to 3.64 $\mu\text{g}/\text{m}^3$ (A10). Trichloroethene was detected in 2 samples at concentrations of 2.79 $\mu\text{g}/\text{m}^3$ (A20) and 16.4 $\mu\text{g}/\text{m}^3$ (A5). o-Xylene was detected in 1 sample at a concentration of 2.34 $\mu\text{g}/\text{m}^3$ (A10). VOCs that were not detected in any of the 3 ambient air samples included 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, vinyl chloride, m-xylene and p-xylene.

4.1.2 September 2004 Samples

VOCs detected in at least one of the 14 indoor air samples collected during the September 2004 sampling event included benzene, 1,2-dichloroethane, cis-1,2-dichloroethene, ethylbenzene, MTBE, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene. Benzene was detected in 12 samples at concentrations ranging from 0.909 $\mu\text{g}/\text{m}^3$ (A46) to 39.0 $\mu\text{g}/\text{m}^3$ (A30). 1,2-dichloroethane was detected in 1 sample at a concentration of 0.864 $\mu\text{g}/\text{m}^3$ (A25). Cis-1,2-dichloroethene was detected in 6 samples at concentrations ranging from 1.09 $\mu\text{g}/\text{m}^3$ (A25) to 10.7 $\mu\text{g}/\text{m}^3$ (A42). Ethylbenzene was detected in 11 samples at concentrations ranging from 0.971 $\mu\text{g}/\text{m}^3$ (A46) to 37.5 $\mu\text{g}/\text{m}^3$ (A30). MTBE was detected in 1 sample at a concentration of 4.07 $\mu\text{g}/\text{m}^3$ (A25). Tetrachloroethene was detected in 2 samples at concentrations of 1.38 $\mu\text{g}/\text{m}^3$ (A30) and 1.79 $\mu\text{g}/\text{m}^3$ (A54). Toluene was detected in 14 samples at concentrations ranging from 1.88 $\mu\text{g}/\text{m}^3$ (A37) to 204 $\mu\text{g}/\text{m}^3$ (A30). 1,1,1-Trichloroethane was detected in 2 samples at concentrations of 1.44 $\mu\text{g}/\text{m}^3$ (A30) and 3.94 $\mu\text{g}/\text{m}^3$ (A28). Trichloroethene was detected in 9 samples at concentrations ranging from 1.31 $\mu\text{g}/\text{m}^3$ (A32) to 25.7 $\mu\text{g}/\text{m}^3$ (A42). m-Xylene was detected in 14 samples at concentrations ranging from 1.02 $\mu\text{g}/\text{m}^3$ (A37) to 105 $\mu\text{g}/\text{m}^3$ (A30). o-Xylene was detected in 13 samples at concentrations ranging from 0.883 $\mu\text{g}/\text{m}^3$ (A28) to 48.5 $\mu\text{g}/\text{m}^3$ (A30). p-Xylene was detected in 9 samples at concentrations ranging from 1.02 $\mu\text{g}/\text{m}^3$ (A25) to 48.5 $\mu\text{g}/\text{m}^3$ (A30). VOCs that were not detected in any of the 14 indoor air samples included 1,1-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane and vinyl chloride.

VOCs detected in at least one of the 9 sub-slab soil vapor samples collected during the September 2004 sampling event included benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, m-xylene, p-xylene and o-xylene. Benzene was detected in 9 samples at concentrations ranging from 6.07 $\mu\text{g}/\text{m}^3$ (A53) to 92 $\mu\text{g}/\text{m}^3$ (A45). 1,1-dichloroethane was detected in 6 samples at concentrations ranging from 1.97 $\mu\text{g}/\text{m}^3$ (A38) to 510 $\mu\text{g}/\text{m}^3$ (A45). 1,1-dichloroethene was detected in 1 sample at a concentration of 96.7 $\mu\text{g}/\text{m}^3$ (A45). Cis-1,2-dichloroethene was detected in 6 samples at concentrations ranging

from 1.89 $\mu\text{g}/\text{m}^3$ (A38) to 3,000 $\mu\text{g}/\text{m}^3$ (A45). Trans-1,2-dichloroethene was detected in 3 samples at concentrations ranging from 27.8 $\mu\text{g}/\text{m}^3$ (A31) to 146 $\mu\text{g}/\text{m}^3$ (A53). Ethylbenzene was detected in 9 samples at concentrations ranging from 3.40 $\mu\text{g}/\text{m}^3$ (A24) to 57.8 $\mu\text{g}/\text{m}^3$ (A45). Tetrachloroethene was detected in 8 samples at concentrations ranging from 1.65 $\mu\text{g}/\text{m}^3$ (A27) to 20.0 $\mu\text{g}/\text{m}^3$ (A38). Toluene was detected in 9 samples at concentrations ranging from 17.2 $\mu\text{g}/\text{m}^3$ (A53) to 160 $\mu\text{g}/\text{m}^3$ (A45). 1,1,1-Trichloroethane was detected in 9 samples at concentrations ranging from 1.28 $\mu\text{g}/\text{m}^3$ (A27) to 380 $\mu\text{g}/\text{m}^3$ (A45). 1,1,2-trichloroethane was detected in 2 samples at concentrations of 1.16 $\mu\text{g}/\text{m}^3$ (A43) and 5.32 $\mu\text{g}/\text{m}^3$ (A45). Trichloroethene was detected in 9 samples at concentrations ranging from 53.0 $\mu\text{g}/\text{m}^3$ (A43) to 17,000 $\mu\text{g}/\text{m}^3$ (A45). m-Xylene was detected in 9 samples at concentrations ranging from 9.14 $\mu\text{g}/\text{m}^3$ (A24) to 144 $\mu\text{g}/\text{m}^3$ (A27). o-Xylene was detected in 9 samples at concentrations ranging from 4.94 $\mu\text{g}/\text{m}^3$ (A24) to 88.7 $\mu\text{g}/\text{m}^3$ (A45). p-Xylene was detected in 8 samples at concentrations ranging from 3.53 $\mu\text{g}/\text{m}^3$ (A24) to 66.6 $\mu\text{g}/\text{m}^3$ (A45). VOCs that were not detected in any of the 9 sub-slab soil vapor samples included 1,2-dichloroethane, MTBE, 1,1,2,2-tetrachloroethane and vinyl chloride.

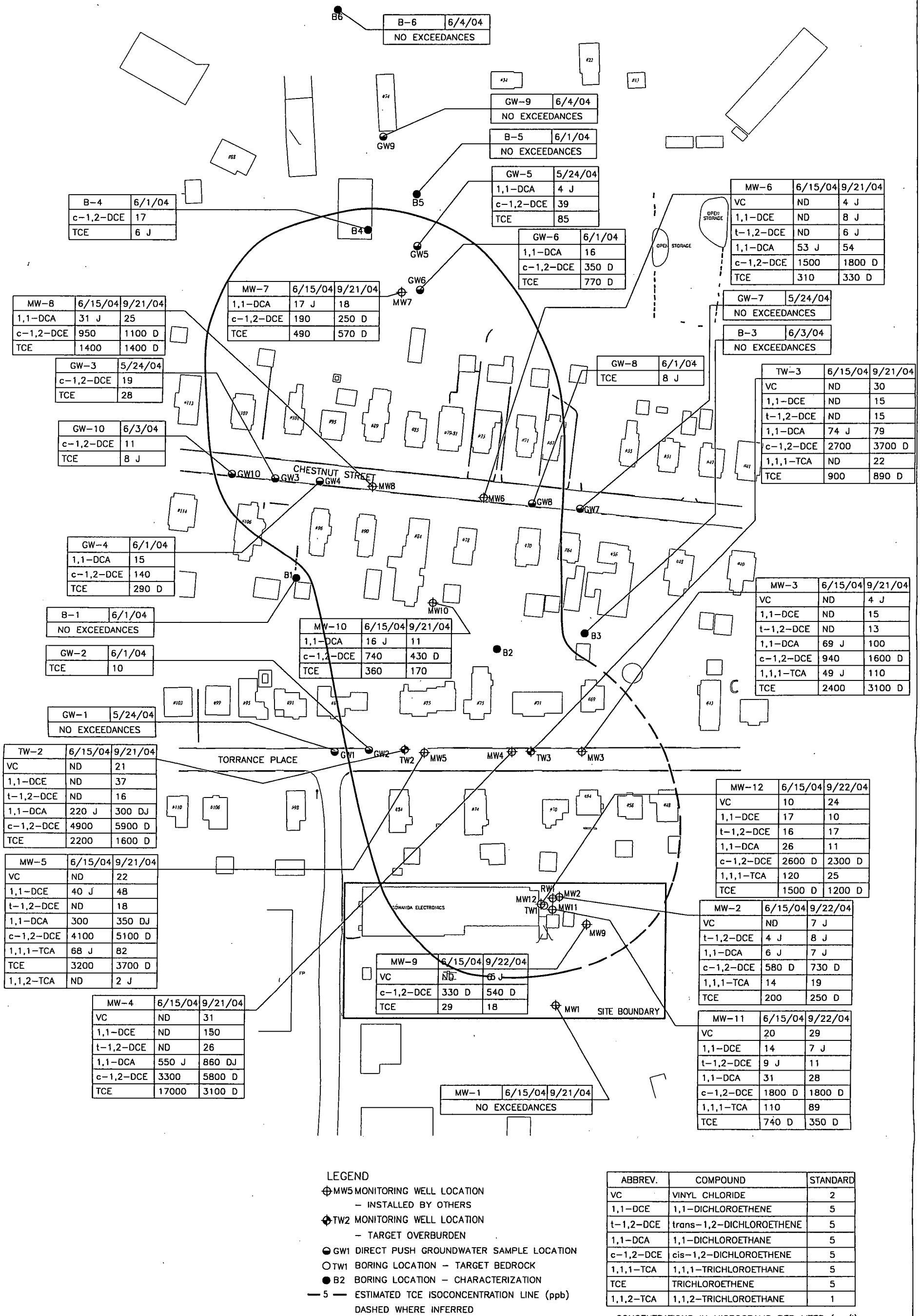
VOCs detected in at least one of the 8 ambient air samples collected during the September 2004 sampling event included benzene, ethylbenzene, toluene, trichloroethene, m-xylene, o-xylene and p-xylene. Benzene was detected in 8 samples at concentrations ranging from 0.649 $\mu\text{g}/\text{m}^3$ (A49) to 1.27 $\mu\text{g}/\text{m}^3$ (A47). Ethylbenzene was detected in 3 samples at concentrations ranging from 0.883 $\mu\text{g}/\text{m}^3$ (A48) to 1.50 $\mu\text{g}/\text{m}^3$ (A47). Toluene was detected in 8 samples at concentrations ranging from 1.76 $\mu\text{g}/\text{m}^3$ (A50) to 13.3 $\mu\text{g}/\text{m}^3$ (A33). Trichloroethene was detected in 3 samples at concentrations ranging from 3.44 $\mu\text{g}/\text{m}^3$ (A50) to 21.0 $\mu\text{g}/\text{m}^3$ (A35). m-Xylene was detected in 8 samples at concentrations ranging from 0.883 $\mu\text{g}/\text{m}^3$ (A50) to 6.62 $\mu\text{g}/\text{m}^3$ (A47). o-Xylene was detected in 7 samples at concentrations ranging from 0.883 $\mu\text{g}/\text{m}^3$ (A34) to 5.12 $\mu\text{g}/\text{m}^3$ (A47). p-Xylene was detected in 3 samples at concentrations ranging from 0.971 $\mu\text{g}/\text{m}^3$ (A49) to 2.91 $\mu\text{g}/\text{m}^3$ (A47). VOCs that were not detected in any of the 8 ambient air samples included 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, MTBE, 1,1,2,2-tetrachloroethane, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and vinyl chloride.

4.2 Groundwater

Five rounds of groundwater samples were collected during the pre-design investigation. The first round of groundwater samples were collected in May and June 2004 from direct push soil borings. The second round of groundwater samples were collected from all 16 monitoring wells in June 2004. The third round of groundwater samples were collected from monitoring well MW-4 during the pump test performed at that well in July 2004. The fourth round of groundwater samples were also collected in July 2004 from seven wells and analyzed for the design parameters. The fifth round of groundwater samples were collected in September 2004 from the 16 monitoring wells sampled during the second round of groundwater sampling.

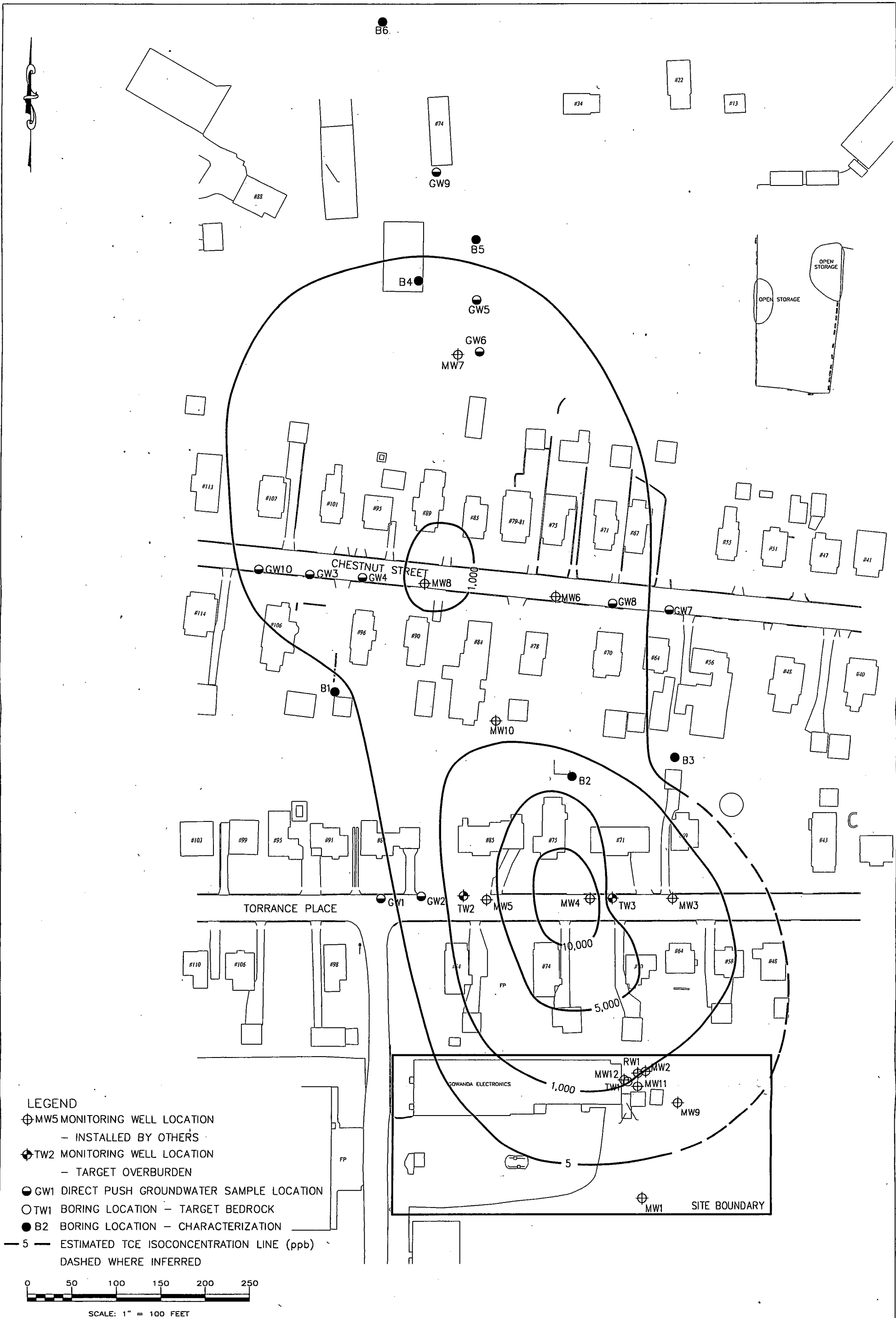
Each round of groundwater samples, except the fourth, was analyzed for TCL VOCs. Three of the second round (MW-4, TW-2 and TW-3) and two of the fifth round samples (MW-4 and TW-3) as well as both of the third round samples were also analyzed for TCL SVOCs, TCL pesticides/PCBs, TAL inorganics and cyanide. The fourth round of samples was analyzed for cations, anions, dissolved organic carbon, total organic carbon, alkalinity, total dissolved solids and total suspended solids (the "design parameters").

Tabulated results of the analyses of the groundwater samples are presented in Appendix M. The first round sample results are presented in Table 3a. The second round sample results are presented in Tables 4a, 4b, 4c and 4d. The third round sample results are presented in Tables 5a, 5b, 5c and 5d. The fourth round sample results are presented in Table 6a. The fifth round sample results are presented in Tables 7a, 7b, 7c and 7d. The results of the analyses of the groundwater samples have been compared to the Class GA groundwater standards and guidance values in NYSDEC TOGS 1.1.1, "Ambient Water Quality Standards and Guidance Values". Figure 4-1 illustrates exceedances of SCGs in groundwater for VOCs and Figure 4-2 illustrates isopleth contours for TCE in groundwater.



AVM GOWANDA SITE
GOWANDA, NEW YORK

SCG EXCEEDANCES IN GROUNDWATER - VOCs



AVM GOWANDA SITE
GOWANDA, NEW YORK

TCE ISOPLETH MAP - GROUNDWATER

4.2.1 Direct Push Groundwater Samples

SCGs were exceeded for the VOCs 1,1-dichloroethane, cis-1,2-dichloroethene and trichloroethene in the samples collected from direct push soil borings in May/June 2004. 1,1-Dichloroethane was detected above its SCG of 5 micrograms per liter ($\mu\text{g/l}$) in three of the 15 samples at concentrations ranging from 4 $\mu\text{g/l}$ (GW-5) to 16 $\mu\text{g/l}$ (GW-6). Cis-1,2-dichloroethene was detected above its SCG of 5 $\mu\text{g/l}$ in six of the 15 samples at concentrations ranging from 11 $\mu\text{g/l}$ (GW-10) to 350 $\mu\text{g/l}$ (GW-6). Trichloroethene was detected above its SCG of 5 $\mu\text{g/l}$ in eight of the 15 samples at concentrations ranging from 6 $\mu\text{g/l}$ (B-4) to 770 $\mu\text{g/l}$ (GW-6).

4.2.2 June 2004 Permanent Well Groundwater Samples

SCGs were exceeded for the VOCs 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene and vinyl chloride in the samples collected from the monitoring wells during the June 2004 round of groundwater sampling. 1,1-Dichloroethane was detected above its SCG of 5 $\mu\text{g/l}$ in 12 samples at concentrations ranging from 6 $\mu\text{g/l}$ (MW-2) to 550 $\mu\text{g/l}$ (MW-4). 1,1-Dichloroethene was detected above its SCG of 5 $\mu\text{g/l}$ in three samples at concentrations ranging from 14 $\mu\text{g/l}$ (MW-11) to 40 $\mu\text{g/l}$ (MW-5). Cis-1,2-dichloroethene was detected above its SCG of 5 $\mu\text{g/l}$ in 13 samples at concentrations ranging from 190 $\mu\text{g/l}$ (MW-7) to 4,900 $\mu\text{g/l}$ (TW-2). Trans-1,2-dichloroethene was detected above its SCG of 5 $\mu\text{g/l}$ in two samples at concentrations of 9 $\mu\text{g/l}$ in MW-11 and 16 $\mu\text{g/l}$ in MW-12. 1,1,1-Trichloroethane was detected above its SCG of 5 $\mu\text{g/l}$ in five samples at concentrations ranging from 14 $\mu\text{g/l}$ (MW-2) to 120 $\mu\text{g/l}$ (MW-12). Trichloroethene was detected above its SCG of 5 $\mu\text{g/l}$ in 13 samples at concentrations ranging from 29 $\mu\text{g/l}$ (MW-9) to 17,000 $\mu\text{g/l}$ (MW-4). Vinyl chloride was detected above its SCG of 2 $\mu\text{g/l}$ in two samples at concentrations of 10 $\mu\text{g/l}$ in MW-12 and 20 $\mu\text{g/l}$ in MW-11.

SVOCs, pesticides and PCBs were not detected above SCGs in any of the three groundwater samples (MW-4, TW-2 and TW-3) collected during the June 2004 sampling event and tested for these parameters.

SCGs were exceeded for the metals antimony, iron, manganese and sodium in the samples collected during the June 2004 round of groundwater sampling. Antimony was detected above its SCG of 3 µg/l in two samples at concentrations of 3.2 µg/l in MW-4 and 4.1 µg/l in TW-2. Iron was detected above its SCG of 300 µg/l in each of the three samples at concentrations ranging from 3,170 µg/l (MW-4) to 13,300 µg/l (TW-2). Manganese was detected above its SCG of 300 µg/l in each of the three samples at concentrations ranging from 591 µg/l (MW-4) to 3,210 µg/l (TW-2). Sodium was detected above its SCG of 20,000 µg/l in each of the three samples at concentrations ranging from 35,800 µg/l (MW-4) to 70,400 µg/l (TW-2).

4.2.3 Pump Test Groundwater Samples

SCGs were exceeded for the VOCs 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene and vinyl chloride in the samples collected during the pump test. 1,1-Dichloroethane was detected above its SCG of 5 µg/l in both samples at concentrations of 720 µg/l (MW4 PT24) and 650 µg/l (MW4 PT48). 1,1-Dichloroethene was detected above its SCG of 5 µg/l in both samples at concentrations of 150 µg/l (MW4 PT24) and 130 µg/l (MW4 PT48). Cis-1,2-dichloroethene was detected above its SCG of 5 µg/l in both samples at concentrations of 4,800 µg/l (MW4 PT24) and 4,400 µg/l (MW4 PT48). Trans-1,2-dichloroethene was detected above its SCG of 5 µg/l in both samples at concentrations of 29 µg/l (MW4 PT24) and 25 µg/l (MW4 PT48). Trichloroethene was detected above its SCG of 5 µg/l in both samples at concentrations of 29,000 µg/l (MW4 PT24) and 28,000 µg/l (MW4 PT48). Vinyl chloride was detected above its SCG of 2 µg/l in both samples at concentrations of 41 µg/l (MW4 PT24) and 36 µg/l (MW4 PT48).

SVOCs, pesticides and PCBs were not detected above SCGs in either of the two groundwater samples collected during the July 2004 pump test sampling event.

SCGs were exceeded for the metals iron, manganese and sodium in the samples collected during the pump test. Iron was detected above its SCG of 300 µg/l in both samples at concentrations of 9,100 µg/l (MW4 PT24) and 8,850 µg/l (MW4 PT48). Manganese was detected above its SCG of 300 µg/l in both samples at concentrations of 623 µg/l (MW4 PT24) and 591 µg/l (MW4 PT48). Sodium was detected above its SCG of 20,000 µg/l in both samples at concentrations of 36,800 µg/l (MW4 PT24) and 37,900 µg/l (MW4 PT48).

4.2.4 Design Parameter Groundwater Samples

SCGs were exceeded for the metals iron, manganese and sodium in the samples collected during the pump test and from monitoring wells MW-7, MW-10, MW-11, TW-2 and TW-3 in July 2004. Iron was detected above its SCG of 300 µg/l in each of the seven samples at concentrations ranging from 1,680 µg/l (TW-3) to 139,000 µg/l (MW-10). Manganese was detected above its SCG of 300 µg/l in each of the seven samples at concentrations ranging from 591 µg/l (MW4 PT48) to 3,600 µg/l (MW-10). Sodium was detected above its SCG of 20,000 µg/l in six of the seven samples at concentrations ranging from 33,200 µg/l (MW-11) to 78,000 µg/l (TW-2).

Bromide was detected in two of the samples at concentrations of 0.13 mg/l in MW-11 and 0.27 mg/l in TW-2. Chloride was detected in each of the seven samples at concentrations ranging from 16 mg/l (MW-11) to 66 mg/l (TW-2). Fluoride was detected in one sample, TW-2, at a concentration of 0.26 mg/l. Sulfate was detected in each of the seven samples at concentrations ranging from 19 mg/l (MW-10) to 86 mg/l (TW-2). Nitrate was detected in four samples at concentrations ranging from 0.069 mg/l (TW-2) to 2.7 mg/l (MW-10). Dissolved organic carbon was not detected in any of the seven samples. Total organic carbon was detected in one sample, TW-2, at a concentration of 11 mg/l. Alkalinity was detected in each of the seven samples at concentrations ranging from 140 mg/l (MW-10) to 320 mg/l (TW-2). Total dissolved

solids were detected in each of the seven samples at concentrations ranging from 230 mg/l (MW-10) to 560 mg/l (TW-2). Total suspended solids were detected in each of the seven samples at concentrations ranging from 11 mg/l (TW-3) to 1,600 mg/l (MW-10).

4.2.5 September 2004 Permanent Well Groundwater Samples

SCGs were exceeded for the VOCs 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene and vinyl chloride in the samples collected from the monitoring wells during the September 2004 round of groundwater sampling. 1,1-Dichloroethane was detected above its SCG of 5 µg/l in 12 samples at concentrations ranging from 7 µg/l (MW-2) to 860 µg/l (MW-4). 1,1-Dichloroethene was detected above its SCG of 5 µg/l in eight samples at concentrations ranging from 7 µg/l (MW-11) to 150 µg/l (MW-4). Cis-1,2-dichloroethene was detected above its SCG of 5 µg/l in 13 samples at concentrations ranging from 250 µg/l (MW-7) to 5,900 µg/l (TW-2). Trans-1,2-dichloroethene was detected above its SCG of 5 µg/l in nine samples at concentrations ranging from 6 µg/l in MW-6 to 26 µg/l in MW-4. 1,1,1-Trichloroethane was detected above its SCG of 5 µg/l in seven samples at concentrations ranging from 19 µg/l (MW-2) to 110 µg/l (MW-3). 1,1,2-Trichloroethane was detected above its SCG of 1 µg/l in one sample at a concentration of 2 µg/l (MW-5). Trichloroethene was detected above its SCG of 5 µg/l in 13 samples at concentrations ranging from 18 µg/l (MW-9) to 31,000 µg/l (MW-4). Vinyl chloride was detected above its SCG of 2 µg/l in ten samples at concentrations ranging from 4 µg/l in MW-3 to 31 µg/l in MW-4.

SVOCs, pesticides and PCBs were not detected above SCGs in any of the two groundwater samples (MW-4 and TW-3) collected during the September 2004 sampling event and tested for these parameters.

SCGs were exceeded for the metals antimony, iron, manganese and sodium in the samples collected during the September 2004 round of groundwater sampling. Antimony was detected above its SCG of 3 µg/l in one sample at a concentration of 3.3 µg/l in MW-4. Iron was

detected above its SCG of 300 µg/l in each of the two samples at concentration of 6,130 µg/l (MW-4) and 9,450 µg/l (TW-3). Manganese was detected above its SCG of 300 µg/l in each of the two samples at concentrations of 664 µg/l (MW-4) and 1,250 µg/l (TW-3). Sodium was detected above its SCG of 20,000 µg/l in each of the two samples at concentrations of 36,500 µg/l (MW-4) and 39,500 µg/l (TW-3).

4.3 Soil

Two soil samples (TW1DRUMS and AVM-SC) were collected during the pre-design investigation for the purpose of characterizing investigation derived waste for off-site disposal. The soil samples were both analyzed for TCLP VOCs and TCLP metals. Soil sample TW1DRUMS was also analyzed for cyanides, reactivity, pH and ignitability. In addition, the soil was subjected to a paint filter test. Soil sample AVM-SC was also analyzed for TCL VOCs. Tabulated results of the soil analyses are presented in Appendix M on Tables 8a, 8b, 8c and 8d.

VOCs, metals, flashpoint, cyanides, sulfides and pH were not detected above regulatory limits in the soil samples.

4.4 Data Validation and Usability

4.4.1 Indoor Air and Sub-Slab Soil Vapor Samples

Twenty-three indoor air and sub-slab soil vapor samples were collected in basements and beneath the sub-slabs of residences, respectively, on April 5, 6 and 7, 2004. One ambient air sample was collected each day to establish background conditions. The samples were analyzed for chlorinated VOCs, BTEX and MTBE. Sample analysis was performed by Centek Laboratories, LLC (Centek).

Category B deliverable data packages submitted by Centek have been reviewed for completeness and compliance with the analytical method stipulated on the chain of custody. The findings of the review process are summarized below:

- All samples were analyzed within 7-days of collection.
- All surrogate recoveries were within QC limits.
- All tunes and instrument calibrations met QC requirements.
- No compounds were found in any of the method blanks associated with the samples.
- Several samples had area counts outside QC limits, however the samples were reanalyzed at secondary dilutions and all area counts were within limits. Qualification of the data was not required.
- Several compound results exceeded the instrument calibration range and the samples were reanalyzed at secondary dilutions. The results taken from the diluted analysis have been qualified with a 'D' on the data summary tables.
- Several sample results have been qualified as estimated, possibly biased high based on the results of the ambient (background) air samples. The results that have been qualified are those concentrations that were equal to or less than the concentration detected in the ambient sample and have been flagged 'J*' on the data summary tables.

There were no other problems found with the sample results and all data is deemed valid and usable for environmental assessment purposes.

4.4.2 Direct Push Groundwater Samples

Fifteen direct push probe and soil boring groundwater samples were collected on May 24, 2004, June 1, 2004, June 3, 2004 and June 4, 2004 and submitted for analyses with three trip blanks. Samples were collected from probe locations in the vicinity of the AVM Gowanda Site. All of the samples were analyzed for TCL VOCs. Sample analysis was performed by Mitkem Corporation.

Category B deliverable data packages submitted by Mitkem Corporation have been reviewed for completeness and compliance with the analytical methods stipulated in the project work plan. The findings of the review process are summarized below:

- All samples were analyzed within the method specified holding times.
- All surrogate recoveries were within QC limits.
- All tunes and instrument calibrations met QC requirements.
- All blanks (trip and method) were clean; therefore qualification of the sample results was not required.
- Several compound results exceeded the instrument calibration range in samples GW-4 and GW-6. These samples were reanalyzed at secondary dilutions. The results for the affected compounds have been taken from the diluted analysis and are qualified with a 'D' on the data summary tables.

There were no other problems found with the sample results and all data is deemed valid and usable for environmental assessment purposes.

4.4.3 June 2004 Permanent Well Groundwater Samples

Fourteen groundwater samples were collected on June 15, 2004 and June 16, 2004 and submitted for analysis with one trip blank. Samples were collected from the permanent wells comprising the AVM Gowanda sampling network. All of the samples were analyzed for TCL VOCs, and three of the samples were also analyzed for TCL SVOCs, TCL pesticides/PCBs, TAL inorganics and cyanide. Sample analysis was performed by Mitkem Corporation.

Category B deliverable data packages submitted by Mitkem Corporation have been reviewed for completeness and compliance with the analytical methods stipulated in the project work plan. The findings of the review process are summarized below:

- All samples were analyzed within the method specified holding times.
- All surrogate recoveries were within QC limits.
- All tunes and instrument calibrations met QC requirements.
- The trip blank (TB040615) contained cis-1,2-dichloroethene and trichloroethene at concentrations of 3 µg/l and 2 µg/l, respectively. These compounds were qualified in sample AVM-MW-1 due to blank contamination since the sample concentrations were the same as that in the blank. The concentrations of these compounds in the other

samples were greater than 5 times that of the blank. Therefore, qualification of the data was not required.

- Several compound results exceeded the instrument calibration range and the samples were reanalyzed at secondary dilutions. The results taken from the diluted analysis have been qualified with a 'D' on the data summary tables.

There were no other problems found with the sample results and all data is deemed valid and usable for environmental assessment purposes.

4.4.4 Pump Test Groundwater Samples

Two groundwater samples and one trip blank were collected on July 28 and July 29, 2004. Samples were collected from MW-4 during the pump test and analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, TAL inorganics, cyanide and select general chemistry parameters. Sample analysis was performed by Mitkem Corporation.

Category B deliverable data packages submitted by Mitkem Corporation have been reviewed for completeness and compliance with the analytical methods stipulated in the project work plan. The findings of the review process are summarized below:

- All samples were analyzed within the method specified holding times.
- All surrogate recoveries were within QC limits.
- All tunes and instrument calibrations met QC requirements.
- Bis-(2-ethylhexyl)phthalate has been qualified as non-detect in samples MW4PT24 and MW4PT48 due to blank contamination. That is the method blank associated with the samples also contained bis(2-ethylhexyl)phthalate and the sample concentrations were less than 5 times that found in the blank.
- Several VOC results exceeded the instrument calibration range in samples MW4PT24 and MW4PT48. These samples were reanalyzed at 1:200 dilutions. The results for the affected compounds have been taken from the diluted analysis and are qualified with a 'D' on the data summary tables.

There were no other problems found with the sample results and all data is deemed valid and usable for environmental assessment purposes.

4.4.5 Design Parameter Groundwater Samples

Five groundwater samples were collected on July 29, 2004 and analyzed for select metals and general chemistry parameters. Sample analysis was performed by Mitkem Corporation.

Category B deliverable data packages submitted by Mitkem Corporation have been reviewed for completeness and compliance with the analytical methods stipulated in the project work plan. The findings of the review process are summarized below:

- All samples were analyzed within the method specified holding times.
- All surrogate recoveries were within QC limits.
- All tunes and instrument calibrations met QC requirements.

There were no other problems found with the sample results and all data is deemed valid and usable for environmental assessment purposes.

4.4.6 September 2004 Permanent Well Groundwater Samples

Fourteen groundwater samples were collected on September 21 and 22, 2004 and submitted for analysis with one trip blank. Samples were collected from the permanent wells comprising the AVM Gowanda sampling network. All of the samples were analyzed for TCL VOCs, and two of the samples (MW-4 and TW-3) were also analyzed for TCL SVOCs, TCL Pesticides/PCBs, TAL inorganics and cyanide. Sample analysis was performed by Mitkem Corporation.

Category B deliverable data packages submitted by Mitkem Corporation have been reviewed for completeness and compliance with the analytical methods stipulated in the project work plan. The findings of the review process are summarized below:

- All samples were analyzed within the method specified holding times.
- All surrogate recoveries were within QC limits.
- All tunes and instrument calibrations met QC requirements.
- Several volatile compound results exceeded the instrument calibration range in all samples with the exception of AVM-MW1. All of the other samples required reanalysis at secondary dilutions. The results for the affected compounds have been taken from the diluted analysis and are qualified with a 'D' on the data summary tables.

There were no other problems found with the sample results and all data is deemed valid and usable for environmental assessment purposes.

Section 5



5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the AVM Gowanda site pre-design investigation, the following conclusions have been established.

Geology/Hydrogeology:

- Soil encountered in the study area can be described as follows:

Depth	Description
Ground surface to 4 to 9 feet	Medium to dark yellowish brown silts and fine- to coarse-grained sands
Bottom of overlying unit to 11 to 17 feet	Medium brown fine- to coarse-grained sand and gravel
Bottom of overlying unit to 16 to 31 feet	Brownish gray to olive gray fine-grained sands and silts
Bottom of fine-grained sand and silt unit to 155 feet	Brownish gray to olive gray clay and silt

- Vertical migration of groundwater contamination below the sand and silt unit (i.e., below approximately 31 feet) is expected to be minimal because of the presence of the underlying clay and silt unit encountered throughout the study area. Additionally, it is anticipated that the clay and silt unit will serve as an adequate confining unit to key the proposed permeable reactive barrier wall into, as described in the Record of Decision.
- Although top of bedrock was anticipated at a depth of 75 to 95 feet based on previous reports, bedrock was not encountered in a boring advanced to 155 feet below ground surface on the east side of the Gowanda Electronics Corporation building.
- Based on water table elevation measurements, depth to groundwater was observed to average approximately 7 feet below ground surface, the pre-dominant direction of groundwater flow in the study area was determined to be to the north-northwest, and the hydraulic gradient was calculated to range from 0.011 to 0.035, with the steepest apparent gradient found in the

northern part of the study area near monitoring wells MW-7 and MW-8 (consistent with steep ground surface topography in this area).

- Based on the results of slug tests performed in eight monitoring wells in the study area, the average hydraulic conductivity was calculated to be 3.4×10^{-3} centimeters per second (cm/s).
- An average hydraulic conductivity of 7.37×10^{-3} cm/sec was calculated based on the results of the aquifer pump test. During the last step of the pump test, groundwater was extracted at a rate of 3.8 gallons per minute from MW-4 (a 2-inch diameter well screened from 7 to 22 feet below ground surface) and a maximum drawdown of 3.28 feet was recorded in MW-4. At the groundwater extraction rate of 3.8 gpm, the influence of pumping was observed up to 144 feet from MW-4 in monitoring well TW-1, where a maximum drawdown of 0.06 feet was recorded.
- Based on the lack of significant variability in geology observed across the study area during the pre-design investigation, it is anticipated that the characteristics of the aquifer would be reasonably consistent.

Indoor Air and Soil Vapor

- The following VOCs were detected in soil vapor samples collected from beneath houses which are within the estimated limits of the groundwater contamination plume: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, MTBE, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene. Of these compounds, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1-trichloroethane and trichloroethene were also detected in groundwater above Class GA standards. The highest concentrations of volatile organic compounds were found in soil vapor samples collected from a house located on Chestnut Street. Estimated depth to groundwater below the basement floor slab at this location is approximately 2 feet.
- The following VOCs were detected in soil vapor samples collected from houses which are located outside of the estimated limits of the groundwater contamination plume: benzene,

1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, MTBE, tetrachloroethene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene.

- The following VOCs were detected in indoor air samples collected from houses which are located within the estimated limits of the groundwater contamination plume: benzene, 1,1-dichloroethane, 1,2-dichloroethane, cis-1,2-dichloroethene, ethylbenzene, MTBE, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene. Of these compounds, 1,1-dichloroethane, cis-1,2-dichloroethene, 1,1,1-trichloroethane and trichloroethene were also detected in groundwater above Class GA standards. The highest concentrations of volatile organic compounds were found in indoor air samples collected from a house located on Torrance Place and, as a result, a mitigation system has been installed in the house. This house also overlies the highest concentrations of groundwater contamination detected. Estimated depth to groundwater below the basement floor slab at this location is approximately 2 feet.
- The following VOCs were detected in indoor air samples collected from houses which are located outside of the estimated limits of the groundwater contamination plume: benzene, cis-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, m-xylene, o-xylene and p-xylene.
- Background ambient air sampling (outside) indicated potential upwind sources of the compounds detected in indoor air samples.
- Inventories of materials present in houses investigated in the study area did not reveal any sources which would be expected to contribute to the trichloroethene encountered in indoor air and soil vapor samples.
- Based on inspection of accessible areas of the houses tested, there were several potential vapor intrusion pathways (e.g., severe cracks in foundation walls or floors, active sumps, basement flooding, etc.) observed as indicated in the questionnaires in Appendix B.

Groundwater Quality:

- In general, groundwater contaminant concentrations were found to be lower than reported in the July 1998 RI Report. Presented below is a comparison of the results:

Volatile Organic Compound ¹	Pre-Design Investigation (2004)		Remedial Investigation (1998)	
	Highest Concentration Detected (ug/l)	Location of Highest Detected Concentration	Highest Concentration Detected (ug/l)	Location of Highest Detected Concentration
cis-1,2-Dichloroethene	4,900	TW-2	5,400	GW-29B
1,1-Dichloroethane	550	MW-4	8,100	MW-4
1,1-Dichloroethene	40	MW-5	1,600	MW-4
trans-1,2-Dichloroethene	16	MW-12	45,000	MW-4
Trichloroethene	17,000	MW-4	170,000	MW-4
Vinyl chloride	20	MW-11	130	MW-4

- Elevated levels of site contaminants were detected in the discharge from MW-4 during the pump test as follows: cis-1,2-dichloroethene at 4,800 µg/l, 1,1-dichloroethane at 720 µg/l, 1,1-dichloroethene at 150 µg/l, trans-1,2-dichloroethene at 29 µg/l, trichloroethene at 29,000 µg/l and vinyl chloride at 41 µg/l. These results will be considered in design of the groundwater treatment system.
- The estimated limits of the groundwater contaminant plume, based on the results of the pre-design investigation, are approximately consistent with the limits shown in the RI Report, and although using the data from the pre-design investigation certain portions of the plume limits are inferred (as shown on Figure 4-1), the plume has been adequately delineated to advance the design of the selected groundwater remediation technologies. The plume was

¹ Table includes compounds detected above Class GA groundwater standards during the pre-design investigation. The results of the samples collected during the aquifer pump test are not included.

found to be oriented consistent with the direction of groundwater flow (north-northwest), and based upon the estimated limits of 5 ppb of trichloroethene, the plume is approximately 1,100 feet long, and approximately 500 feet across (at its widest).

- Free phase liquid (light and dense non-aqueous phase) was not encountered during the pre-design investigation.
- The results of the pre-design investigation do not indicate any specific limitations to the technologies identified in the Record of Decision for remediation of the groundwater contamination encountered. However, iron and manganese were detected in groundwater samples at concentrations of up to 9.1 mg/l and 0.6 mg/l in the pump test discharge and 139 mg/l and 3.6 mg/l in other groundwater samples, respectively and, therefore, consistent with previous reports, removal of iron and manganese will be required prior to treatment of extracted groundwater for volatile organic compounds via air stripping.

Recommendations

The pre-design investigation has provided the information required to proceed with the engineering design studies and remedial design tasks identified in the April 2004 Remedial Design Project Management Work Plan for the AVM Gowanda Site. Accordingly, there are no additional pre-design investigation activities recommended at this time with respect to remediation of groundwater contamination. Additional air sampling investigation activities may be warranted to identify potential upwind sources of compounds detected in ambient air samples.

Section 6

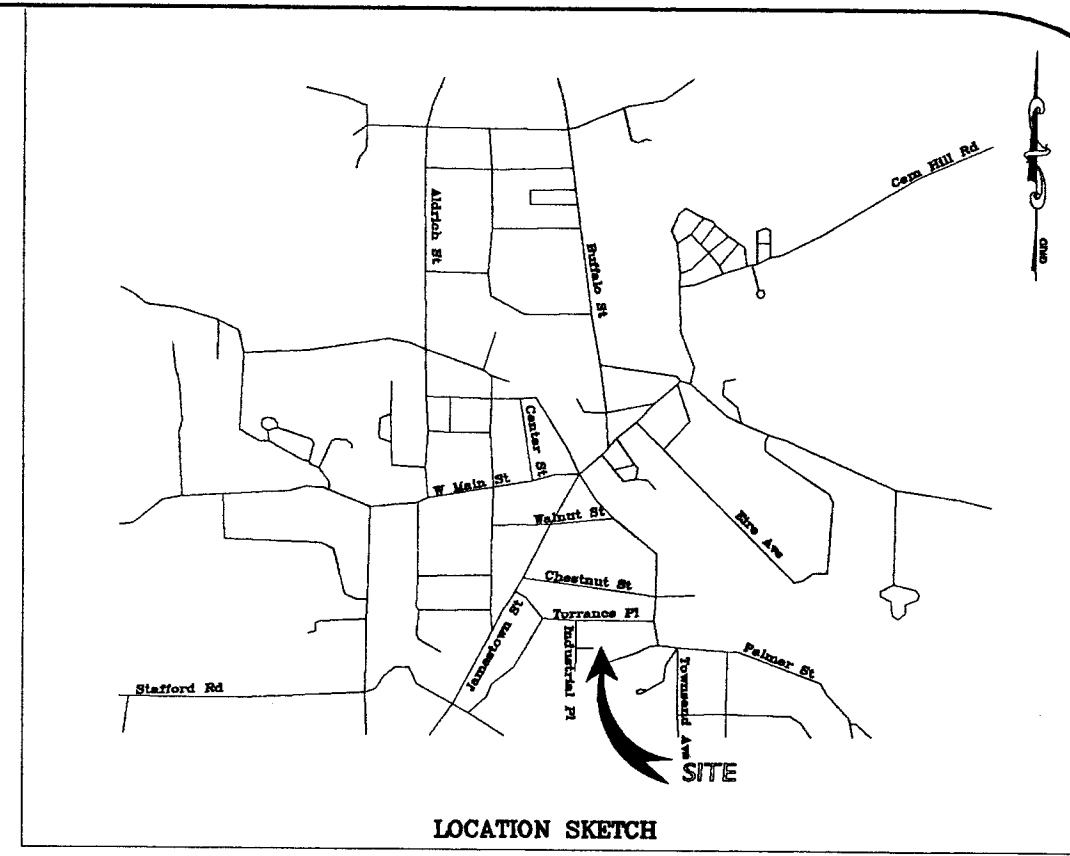


6.0 REFERENCES

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- United States Environmental Protection Agency, 1981. Remedial Actions at Hazardous Waste Sites: Survey and Case Studies, Section 4, Site C: Anonymous Waste Disposal Company Dumpsite East-Central New York. EPA 430/9-81-05 SW-910, Solid and Hazardous Waste Research Division MERI, Cincinnati, Ohio, p. 65-94.

APPENDIX A

TOPOGRAPHIC SURVEY MAP



SAMPLE TABLE				
DESC.	NORTHING	EASTING	ELEVATIONS	
			GROUND	CASE RISER
MW-1	895599.658	1053569.242	777.1	779.64
MW-2	895745.312	1053571.733	776.0	775.74
MW-3	895941.951	1053601.636	775.95	775.89
MW-4	895941.488	1053508.253	775.67	775.65
MW-5	895940.386	1053391.143	775.28	775.28
MW-6	896286.824	1053468.758	771.26	771.25
MW-7	896563.680	1053357.417	764.3	766.19
MW-8	896302.057	1053320.171	770.29	770.33
MW-9	895708.321	1053608.254	776.0	776.01
MW-10	896144.151	1053401.405	774.2	774.13
MW-11	895727.986	1053562.591	776.3	776.46
MW-12	895735.455	1053547.481	776.1	776.13
RW-1	895743.300	1053563.031	776.1	776.09
TW-1	895733.618	1053551.496	776.2	N/A
TW-2	895944.744	1053364.897	775.09	775.09
TW-3	895942.091	1053533.564	775.74	775.73
GW-1	895941.610	1053271.178	774.64	N/A
GW-2	895944.149	1053316.931	774.30	N/A
GW-3	896312.598	1053190.120	770.08	N/A
GW-4	896308.934	1053249.690	769.97	N/A
GW-5	896625.749	1053378.364	764.2	N/A
GW-6	896566.945	1053382.080	763.5	N/A
GW-7	896271.885	1053597.539	772.11	N/A
GW-8	896278.988	1053533.413	771.70	N/A
GW-9	895712.664	1053333.213	762.8	N/A
GW-10	896318.542	1053132.293	770.2	N/A
B-1	896178.412	1053218.675	773.8	N/A
B-2	896071.281	1053477.352	775.6	N/A
B-3	896102.631	1053604.364	776.2	N/A
B-4	896647.361	1053312.416	763.79	N/A
B-5	896694.845	1053377.799	764.7	N/A
B-6	896945.260	1053271.668	762.80	N/A
TOP OF SHEET WALL	777.89	N/A		
TOP OF DAM	778.35	N/A		
SAN MH 1				
RIM ELEV.			774.71	
N. INV. 10"CLAY			771.66	
E. INV. 12"CLAY			767.71	
S. INV. 12"CLAY			767.61	
W. INV. 12"CLAY			767.55	

SURVEY NOTES:

1. THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (NAD 83) TRANSVERSE MERCATOR PROJECTION (WESTERN ZONE), AND NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) THROUGH THIS TO THE FOLLOWING CONTROL MONUMENTS SET AND COORDINATED BY MCINTOSH & MCINTOSH, P.C.

2. CONTOUR INTERVAL IS 1 FOOT.

REFERENCES:

1. TOPOGRAPHY IS BASED ON AERIAL MAPPING PROVIDED BY LAPAVE, WHITE MCGIVERN, L.S., P.C. IN THE SPRING OF 2004.

2. THE PROPERTY/STREET LINES SHOWN ARE APPROXIMATE BASED ON CATTARAUGUS COUNTY TAX MAPS FOR THE VILLAGE OF GOWANDA.

CERTIFICATION:

WE, OM P. POPLI, L.S., P.E., P.C. HEREBY CERTIFY THAT THIS MAP WAS PREPARED FROM THE NOTES OF A SURVEY COMPLETED ON JULY 13, 2004 AND FROM THE REFERENCES LISTED HEREON. THIS SURVEY IS SUBJECT TO ANY EASEMENTS AND OR ENCUMBRANCES NOT SHOWN OR DISCLOSED IN THE REFERENCES LISTED ABOVE.

BY: DATE: 9/8/04

MICHAEL A. VENTURO, N.Y.S. P.L.S. NO. 50079

MAP OF
TOPOGRAPHIC SURVEY

AVM GOWANDA SITE

CLIENT: DVIRKA AND BARTILUCCI

LOCATION: VILLAGE OF GOWANDA, CATTARAUGUS COUNTY, STATE OF NEW YORK

POPLI CONSULTING ENGINEERS & SURVEYORS

555 PENNBRIDGE DRIVE, PENFIELD, N.Y. 14526, (516) 388-2080

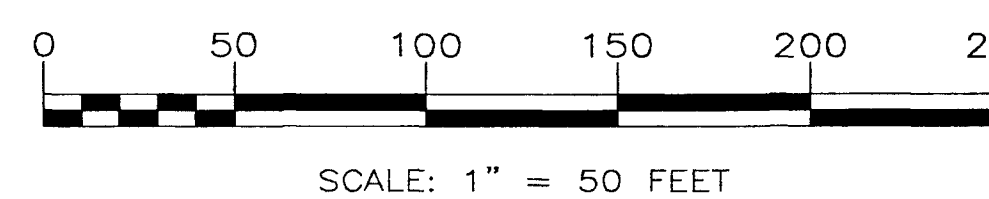
DATE: 9/2004

SCALE: 1"=50'

KEY: KEC

GOVTOPO

ANY UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED SURVEYOR'S SEAL IS A VIOLATION OF SECTION 2209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.



LEGEND

MW MONITORING WELL / RECOVERY WELL /

B4 BUREAU OF WATER / BUREAU OF WATER

APPROXIMATE PROPERTY/STREET LINE

FENCE

MANHOLE

DRAINAGE STRUCTURE

FIRE HYDRANT

UTILITY LIGHT POLE

UTILITY POLE

SIGN

SPOT ELEVATION

BUILDING & STREET NUMBER

Appendix B



Appendix B



APPENDIX B

INDOOR AIR QUALITY QUESTIONNAIRES

Project Name AVM Gowanda Project Number 2184

Preparer's Name _____ Date Prepared _____

Preparer's Affiliation Dvirka & Bartilucci Consulting Engineers Phone Number 315-437-1142

I. **OCCUPANT NAME:** _____

Address: _____

County: _____

Home Phone Number _____ Office Phone Number _____

II. **OWNER OR LANDLORD NAME:** _____

(If different from occupant)

Address: _____

Phone Number: _____

A. Building Construction Characteristics

Type (circle appropriate responses): Single-Family Multiple-Dwelling Commercial

Ranch

2-Family

Raised-Ranch

Duplex

Split-Level

Apartment House ____ Units

Colonial: Number of Floors _____

Mobile Home

Other: specify _____

Residence Age _____

General Description of Building Construction Materials _____

Is the building insulated? YES / NO How air tight is the building _____

B. Basement construction characteristics (circle all that apply)

1. Full Basement, crawlspace, slab on grade, other _____

2. Basement floor: concrete, dirt, other _____

3. Concrete floor: unsealed, painted, covered with _____

4. Foundation walls: poured concrete, block, laid up stone, other _____

5. The basement is: wet, damp, dry _____ Sump present? Y / N Water in sump? Y / N

6. The basement is: finished, unfinished _____

7. Identify potential soil vapor entry points (e.g. cracks, utility ports, etc.) _____

8. Describe how air tight the basement is _____

C. HVAC (circle all that apply)

1. The type of heating system(s) used in this residence is/are:

Hot Air Circulation	Heat Pump	Hot Water Radiation
Unvented Kerosene Heater	Steam Radiation	Wood Stove
Electric Baseboard	Other _____	
2. The type(s) of fuel(s) used is/are:

Natural Gas	Fuel Oil	Electric
Wood	Coal	Solar
Other _____		
3. Is the heating system's power plant located in the basement or another area: _____
4. Is there air-conditioning? Y / N Central Air or Window Units
Specify the location _____
5. Are there air distribution ducts present? Y / N
6. Describe the supply and cold air return duct work in the basement including whether there is a cold air return and the tightness of duct joints _____

D. Potential Indoor Sources of Pollution

1. Has the house ever had a fire? Y / N
2. Is there an attached garage? Y / N
3. Is a vehicle normally parked in the garage? Y / N
4. Is there a kerosene heater present? Y / N
5. Is there a workshop, hobby or craft area in the residence? Y / N
6. An inventory of all products used or stored in the home should be performed. Any products that contain volatile organic compounds or chemicals similar to the target compounds should be listed. The attached product inventory form should be used for this purpose.
7. Is there a kitchen exhaust fan? Y / N
8. Has the house ever been fumigated? If yes, describe date, type and location of treatment.

E. Water and Sewage (Circle the appropriate response)

Source of Water

Public Drilled Well Driven Well Dug Well Other _____

Water Well Specifications

Well Diameter _____ Grouted or Ungouted _____
Well Depth _____ Type of Storage Tank _____
Depth to Bedrock _____ Size of Storage Tank _____
Feet of Casing _____ Water Treatment _____

Water Quality

Taste and/or odor problems? Y / N Describe _____
How long has the taste and/or odor been present? _____

Sewage Disposal Public Septic Tank Leach Field Other _____
Distance from well to septic system _____ Type of septic tank additive _____

F. Plan View

Draw a plan view sketch for each floor of the residence and if applicable, indicate air sampling locations, possible indoor air pollution sources and PID meter readings.

G. Potential Outdoor Sources of Pollution

Draw a sketch of the area surrounding the residence being sampled. If applicable, provide information on the spill location (if known), potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings. Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system if applicable, and a qualifying statement to help locate the site on a topographical map.

H. Household Products Inventory

Product Description
(dispenser, size, manufacturer...)

VOC ingredients

PID Reading
(ppm)

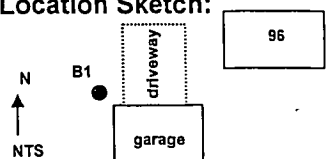
Occupant / residence: _____
Investigator: _____ Date: _____

Appendix C



APPENDIX C
BORING LOGS

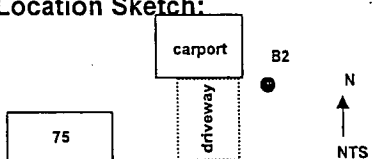
Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>27'</u>	Boring ID : <u>B-1</u> Sheet <u>1</u> of <u>2</u> Location: <u>SW side 96</u> <u>chestnut, NW garage</u>
--	---	---

Date _____ Time _____ DTW _____ Casing/Total Depth _____	Groundwater Observations _____ _____ _____	Start (Date & Time): <u>6/1/04 - 1237</u> Finish (Date & Time): <u>6/1/04 - 1505</u> Weather: <u>Partly cloudy, warm upper 60s F,</u> <u>wind 2-5 mph from SW</u> Elevation of Ground Surface: _____	Location Sketch: 
---	---	--	--

Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0-4	1238	1	0.0	Moderate yellowish brown (10 YR 5/4) SILT and f-SAND, trace f-m gravel (subrnd) (damp) (loose)		
	2.6'	1				
		1				
		3				
		2				
		4		becomes f-m SAND, some Silt (damp) (loose)		
		11				
		9		becomes f-c SAND, little f-m gravel, little silt (damp)		
4-8	1250	17	0.0	Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (damp-moist) (loose)		
	2.8'	12				
		9				
		14				
		11				
		17				
		12				
		11				
8-12	1310	7	0.0	same (wet)		Wet at 8' bg
	2.6'	10				
		9				
		8				
		7				
		16				
		27		Brownish gray (5 YR 4/1) f-SAND, some Silt (damp) (compact)		
		61				
12-16	1318	15	0.0	same		
	2.9'	22		Brownish gray (5 YR 4/1) f-SAND, little silt (wet) (compact)		
		23				
		16				
		18				
		24				
		42				
		36				
16-20	1330	14	0.0	same		
	4.0'	15				
		17				
		31				
		31				
		33				
		51				
		70				

Soil Stratigraphy Summary _____

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>28'</u>	Boring ID : <u>B-2</u> Sheet <u>1</u> of <u>2</u> Location: <u>NE corner</u> <u>75 Torrance Place</u>
--	---	--

Date Time DTW Casing/Total Depth	Groundwater Observations	Start (Date & Time): <u>5/25/04 - 1230</u> Finish (Date & Time): <u>5/25/04 - 1530</u> Weather: <u>Overcast, warm lower 60s F,</u> <u>wind calm</u> Elevation of Ground Surface: _____	Location Sketch: 
---	--------------------------	--	--

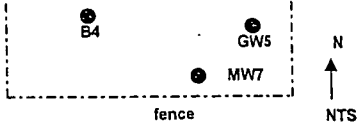
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0-4	1232	12/4'	0.0	Dusky brown (5 YR 2/2) SILT, some f-Sand, trace f- gravel (damp) (firm)		
	3.2'			Moderate yellowish brown (10 YR 5/4) f-SAND, some Silt (moist) (loose)		
4-8	1235	21/4'	0.0	same		
	3.4'					
8-12	1256	79/4'	0.0	Moderate yellowish brown (10 YR 5/4) f-c SAND, some f-m Gravel (subrmd), some silt (wet) (loose)		
	1.7'					
12-16	1256	89/4'	0.0	same		
	3.0'					
16-20	1330	>200/4'	0.0	Olive gray (5 Y 4/1) f-SAND, little silt, trace f-gravel (wet) (loose)		
	3.8'			Olive gray (5 Y 4/1) f-SAND, little-some silt (wet) (loose)		

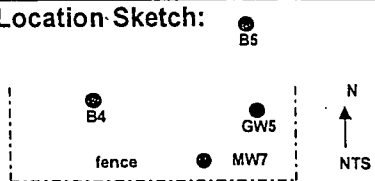
Wet at 5.5' bg.

Install temporary 1-inch PVC well, 10 ft screen after sampling to 16 ft bg hole collapsed to 10 ft bg 1320 - collect groundwater sample AVM-B2 for TCL VOCs Sample not submitted

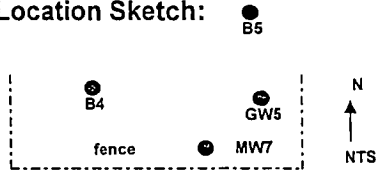
Soil Stratigraphy Summary _____

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>Geoprobe 6610 DT</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>				Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>36'</u>		Boring ID : <u>B-3</u> Sheet <u>1</u> of <u>2</u> Location: <u>NW corner</u> <u>69 Torrance Place</u>	
Date _____ Time _____ DTW _____ Casing/Total Depth _____		Groundwater Observations		Start (Date & Time): <u>6/3/04 - 0950</u> Finish (Date & Time): <u>6/3/04 - 1450</u> Weather: <u>Partly cloudy, warm lower 60s F</u> Elevation of Ground Surface: _____		Location Sketch: 69 driveway garage ↓ N NTS B3 ●	
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description		Well Schematic	Comments
0-4	0953	NR	0.0	Dusky brown (5 YR 2/2) SILT , some f-m Sand, (damp) (loose) Moderate yellowish brown (10 YR 5/4) SILT , little f-sand (damp) (firm) Moderate yellowish brown (10 YR 5/4) f-m SAND , little silt (damp) (loose) Moderate yellowish brown (10 YR 5/4) f- SAND , some Silt (moist-wet) (loose)			
	2.9'						
4-8	0956	NR	0.0	same Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subang), little-some silt (wet) (loose)			Wet at 4.9' bg
	3.6'						
8-10.5	0959	NR	0.0	same becomes Dark yellowish brown (10 YR 4/2)			
	1.6'						
10.5-13	1002	NR	0.0	same Olive gray (5 Y 4/1) f-SAND , little silt (wet) (compact)			
	1.4'						
13-16	1010	NR	0.0	Olive gray (5 Y 4/1) CLAY and SILT , trace f-gravel (subang) (damp) (stiff)			
	2.6'						
14-17	1040	NR	0.0	Olive gray (5 Y 4/1) f-SAND , little silt (moist) (compact)			sampled to 16 ft bg, then spun casing to 14 ft bg
	3.1'						
17-19	1050	NR	0.0	same			
	2.1'						
19-22	1107	NR	0.0	same			
	3.2'						
Soil Stratigraphy Summary _____							

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>				Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>24'</u>		Boring ID : <u>B-4</u> Sheet <u>1</u> of <u>2</u> Location: <u>south center</u> <u>former lumber yard</u>		
Date _____ Time _____ DTW _____ Casing/Total Depth _____		Groundwater Observations _____ _____ _____		Start (Date & Time): <u>5/28/04 - 1250</u> Finish (Date & Time): <u>5/28/04 - 1420</u> Weather: <u>Overcast, cool lower 60s F.</u> wind <u>2-10 mph from SE</u> Elevation of Ground Surface: _____		Location Sketch: 		
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments		
0-4	1252	2	0.0	Moderate brown (5 YR 3/4) SILT, some f-m Sand, trace f-m gravel (damp) (soft)		Wet at 10.5' bg Macro cored to 20 ft, then 3 1/4 HSA to 20 ft, then 2-in split spoon to 24 ft		
	2.3'	2						
		4		Moderate yellowish brown (10 YR 5/4) f-c SAND, some Silt, trace f-m gravel (damp) (loose)				
		6						
	4-8	1300	10	0.0				Moderate yellowish brown (10 YR 5/4) f- SAND, little silt (moist) (loose)
		2.8'	6					Dusky brown (5 YR 2/2) f-c SAND, some f-m Gravel (subang), little silt (damp) (loose)
		3						
		3						
		4						
		6		Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (damp) (loose)				
	10							
	19							
8-12	1306	27	0.0	same				
	2.5'	16						
		25						
		22						
		17						
		17						
	11							
	10							
12-16	1312	8	0.0	same				
	2.5'	14		Olive gray (5 Y 4/1) f-SAND and SILT (wet) (stiff)				
		6						
		7						
		12						
		10						
	12							
	20							
16-20	1320	13	0.0	same				
	2.0'	22						
		22						
		41						
		54						
		30						
	36							
	30							
Soil Stratigraphy Summary _____								

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>				Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>24'</u>		Boring ID : <u>B-5</u> Sheet <u>1</u> of <u>2</u> Location: <u>east side</u> <u>former lumber yard</u>		
Date _____ Time _____ DTW _____ Casing/Total Depth _____		Groundwater Observations		Start (Date & Time): <u>5/28/04 - 1428</u> Finish (Date & Time): <u>5/28/04 - 1530</u> Weather: <u>Mostly cloudy, cool lower 60s F,</u> <u>wind 2-5 mph from SW</u> Elevation of Ground Surface: _____		Location Sketch: 		
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description		Well Schematic	Comments	
0-4	1430	1	0.0	Grayish brown (5 YR 3/2) SILT and f- SAND (damp-moist) (firm)				
	2.7'	1						
		1						
		5						
		7						
		6		Dark yellowish brown (10 YR 4/2) f-c SAND, some f-c Gravel, little silt (damp) (loose)				
		7						
		5						
	4-8	1435	1	0.0	Dusky brown (5 YR 2/2) f- SAND, some Silt (damp) (loose)			
		2.5'	2					
		2		Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (damp) (loose)				
		4						
		8						
		8						
		9						
		10						
8-12	1445	10	0.0	same				
	2.4'	21						
		20						
		14						
		16						
		23						
		16						
		14						
12-16	1453	4	0.0	same (becomes wet)				
	2.6'	13						
		22						
		18						
		24						
		14		Olive gray (5 Y 4/1) f-SAND and SILT (wet) (stiff)				
		9						
		10						
16-20	1509	13	0.0	same				
	2.4'	11		Brownish gray (5 YR 4/1) CLAY and SILT, trace f- gravel (subang) (damp) (hard)				
		12						
		14						
		11						
		12						
		23						
		35						
Soil Stratigraphy Summary _____								

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>24'</u>	Boring ID : <u>B-5</u> Sheet <u>2</u> of <u>2</u> Location: <u>east side</u> <u>former lumber yard</u>
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Date Time DTW Casing/Total Depth	Groundwater Observations	Start (Date & Time): <u>5/28/04 - 1428</u>	Location Sketch: 
		Finish (Date & Time): <u>5/28/04 - 1530</u>	
		Weather: <u>Mostly cloudy, cool lower 60s F,</u>	
		wind <u>2-5 mph from SW</u>	
		Elevation of Ground Surface: _____	

Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20-24	1515	10	0.0	Brownish gray (5 YR 4/1) CLAY and SILT, trace f- gravel (subang) (moist) (stiff) 0.01' thick f-SAND layer at 21.5'		
	3.0'	13				
		16				
		14				
		16				
		21				
		24				
		28				
				EOB at 24 ft bg		Install temporary 1-inch PVC well, 10 ft screen 10 ft riser 6/1/04 0808 - collect groundwater sample AVM-B5 for TCL VOCs

Soil Stratigraphy Summary _____

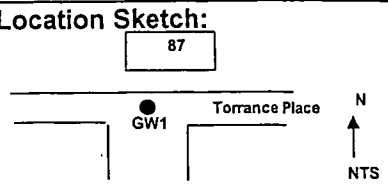
Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>28'</u>	Boring ID : <u>B-6</u> Sheet <u>1</u> of <u>2</u> Location: <u>NE corner</u> <u>former lumber yard</u>
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Date Time DTW Casing/Total Depth	Groundwater Observations	Start (Date & Time): <u>6/4/04 - 0904</u>	Location Sketch:
		Finish (Date & Time): <u>6/4/04 - 1144</u>	
		Weather: <u>Mostly sunny, cool lower 50s F,</u>	
		wind calm	
		Elevation of Ground Surface: _____	

Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0-4	0906	NR	0.0	Moderate brown (5 YR 3/4) SILT, some f-m Sand, trace f-m gravel (damp) (soft)		
	3.2'			Moderate yellowish brown (10 YR 5/4) f- SAND and SILT (damp) (firm)		
				Moderate yellowish brown (10 YR 5/4) f-c SAND, some Silt, trace f-m gravel (damp) (loose)		
				becomes f-c SAND, little silt (damp) (loose)		
4-8	0908	NR	0.0	Moderate yellowish brown (10 YR 5/4) f- SAND and SILT, trace f-m gravel (damp) (firm)		
	2.8'			Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (damp) (loose)		
8-12	0925	NR	0.0	same		
	2.2'					
12-16	0930	NR	0.0	same		
	1.7'			becomes wet		
				becomes Olive gray (5 Y 4/1)		
16-20	0942	NR	0.0	same		
	3.3'			Olive gray (5 Y 4/1) f-SAND, some Silt (moist) (compact)		

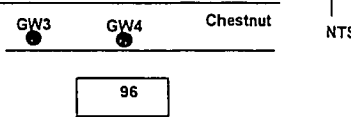
Wet at 12.5' bg

Soil Stratigraphy Summary _____

Driller: <u>Nothinagle</u>				Dvirka and Bartilucci Boring Log				Boring ID : <u>GW-1</u>			
Inspector: <u>S. Pepling</u>				Project Name: <u>AVM Gowanda</u>				Sheet <u>1</u> of <u>1</u>			
Rig Type: <u>CME-85</u>				Project #: <u>2184</u>				Location: <u>N side of</u>			
Drilling Method: <u>Macro Core</u>				Boring Depth: <u>8'</u>				Torrance, <u>S of 87</u>			
Date Time DTW Casing/Total Depth		Groundwater Observations			Start (Date & Time): <u>5/24/04 - 1515</u>			Location Sketch: 			
					Finish (Date & Time): <u>5/24/04 - 1547</u>						
					Weather: <u>see logbook</u>						
					Elevation of Ground Surface: _____						
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description				Well Schematic		Comments	
0-4	1517	NR	0.0	Asphalt and subbase							
	2.2'			Moderate yellowish brown (10 YR 5/4) f-m SAND, some Silt, trace f-m gravel (damp) (loose).							
				Moderate yellowish brown (10 YR 5/4) f-c SAND, some Silt, trace f-m gravel (damp) (loose)							
4-8	1525	NR	0.0	same						Wet at 5.5' bg	
	2.7'			becomes f-c SAND, some f-c Gravel, some Silt (moist-wet) (loose)							
				EOB at 8 ft bg						Install temporary 1-inch PVC well, 10 ft screen 1545 - collect groundwater sample AVM-GW1 for TCLVOCs	
Soil Stratigraphy Summary _____											

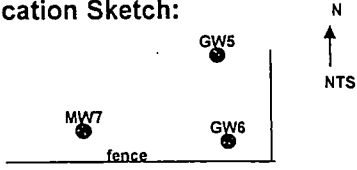
[illegible]

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>Macro Core</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>12'</u>	Boring ID : <u>GW-4</u> Sheet <u>1</u> of <u>1</u> Location: <u>N of 96</u> Chestnut, E of GW-3
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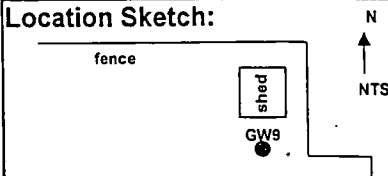
Date Time DTW Casing/Total Depth	Groundwater Observations	Start (Date & Time): <u>6/1/04 - 0935</u>	Location Sketch: 
		Finish (Date & Time): <u>6/1/04 - 1012</u>	
		Weather: <u>Partly cloudy, low 60s F</u>	
		wind <u>2-5 mph from SW</u>	
		Elevation of Ground Surface: _____	

Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0-4	0943	NR	0.0	Asphalt and gravel subbase		
	2.6'			Brick		
				Medium light gray (N 6) f-c GRAVEL (subang) and f-c SAND (dry) (loose)		
				Moderate yellowish brown (10 YR 5/4) f- SAND and SILT, little clay (damp) (loose)		
4-8	0947	NR	0.0	same		
	2.2					
				Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (moist-wet) (loose)		Wet at 6.5' bg
8-12	0955	NR	0.0	same		
	4.0'					
				Brownish gray (5 YR 4/1) CLAY and SILT, trace f-gravel (subang) (dry-damp) (hard)		
				EOB at 12 ft bg		Install temporary 1-inch PVC well, 10 ft screen
						1010 - collect groundwater sample
						AVM-GW4 for TCLVOCs

Soil Stratigraphy Summary _____

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>3 1/4-in HSA, Macro Core</u>				Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>19'</u>		Boring ID : <u>GW-6</u> Sheet <u>1</u> of <u>1</u> Location: <u>E of MW7, SE corner fmr lmb r yrd</u>																	
Date _____ Time _____ DTW _____ Casing/Total Depth _____		Groundwater Observations <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td style="width:25%; height: 20px;"></td><td style="width:25%; height: 20px;"></td><td style="width:25%; height: 20px;"></td><td style="width:25%; height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> </table>																		Start (Date & Time): <u>6/1/04 - 0818</u> Finish (Date & Time): <u>6/1/04 - 0920</u> Weather: <u>Partly cloudy, cool low 50s F</u> Elevation of Ground Surface: _____		Location Sketch: 	
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments																	
0-4	0819	1	0.0	Moderate brown (5 YR 3/4) SILT and f-m GRAVEL,																			
	3.1'	1		little f-c sand (damp) (loose)																			
		2		Moderate yellowish brown (10 YR 5/4) f- SAND, little																			
		3		silt (moist) (loose)																			
		2																					
		3																					
	5																						
	6																						
4-8	0825	4	0.0	Moderate yellowish brown (10 YR 5/4) f-c SAND and																			
	2.6'	2		f-c GRAVEL (subrnd), little silt (damp) (loose)																			
		2																					
		4																					
		5																					
		14																					
		12																					
		12																					
8-12	0833	11	0.0	same																			
	2.2'	19																					
		13																					
		14																					
		10																					
		6																					
		5																					
		5																					
12-16	0845	7	0.0	same																			
	1.9'	9																					
		21																					
		12																					
		56																					
		22																					
		21		Brownish gray (5 YR 4/1) CLAY and SILT,																			
		23		trace f-m gravel (subang) (damp) (hard)																			
16-20	0852	14	0.0	same																			
	0.5'	14																					
		28																					
		32																					
		58																					
		86																					
				EOB at 19 ft bg																			
Soil Stratigraphy Summary _____																							

Driller: <u>Nothnagle</u>		Dvirka and Bartilucci Boring Log		Boring ID : <u>GW-8</u>				
Inspector: <u>S. Pepling</u>		Project Name: <u>AVM Gowanda</u>		Sheet <u>1</u> of <u>1</u>				
Rig Type: <u>CME-85</u>		Project #: <u>2184</u>		Location: <u>N of 70</u>				
Drilling Method: <u>Macro Core</u>		Boring Depth: <u>12'</u>		Chestnut, W of GW-7				
Date Time DTW Casing/Total Depth		Groundwater Observations		Start (Date & Time): <u>6/1/04 - 1026</u>		Location Sketch: 70		
				Finish (Date & Time): <u>6/1/04 - 1105</u>				
				Weather: <u>Mostly sunny, upper 60s F</u>				
				wind <u>2-5 mph from SW</u>				
				Elevation of Ground Surface: _____				
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments		
0-4	1035	NR	0.0	Asphalt and gravel subbase		Wet at 7' bg		
	2.2'			Brick				
				Medium light gray (N 6) f-c GRAVEL (subang) and f-c SAND (dry) (loose)				
				Moderate yellowish brown (10 YR 5/4) f-m SAND, some Silt, little clay (moist) (loose)				
4-8	1039	NR	0.0	same				
	2.1							
				Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (moist-wet) (loose)				
8-12	1048	NR	0.0	same				
	4.0'							
				Brownish gray (5 YR 4/1) f- SAND, some Silt, (damp) (compact)				
				Brownish gray (5 YR 4/1) CLAY and SILT, trace f-gravel (subang) (dry-damp) (hard)				
				EOB at 12 ft bg		Install temporary 1-inch PVC well, 10 ft screen		
						1105 - collect groundwater sample AVM-GW8 for TCLVOC		
Soil Stratigraphy Summary _____								

Driller: <u>Nothnagle</u>				Dvirka and Bartilucci Boring Log				Boring ID : <u>GW-9</u>			
Inspector: <u>S. Pepling</u>				Project Name: <u>AVM Gowanda</u>				Sheet <u>1</u> of <u>1</u>			
Rig Type: <u>CME-85</u>				Project #: <u>2184</u>				Location: <u>east side</u>			
Drilling Method: <u>Macro Core</u>				Boring Depth: <u>16'</u>				<u>former lumber yard</u>			
Date Time DTW Casing/Total Depth		Groundwater Observations			Start (Date & Time): <u>6/4/04 - 0828</u>			Location Sketch: 			
					Finish (Date & Time): <u>6/4/04 - 0910</u>						
					Weather: <u>Mostly sunny, cool low 50s F</u>						
					<u>calm</u>						
					Elevation of Ground Surface: _____						
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description				Well Schematic		Comments	
0-4	0830	NR	0.0	Moderate brown (5 YR 3/4) SILT , some f-m Sand, trace f-m gravel (damp) (soft)							
	3.6'			Moderate yellowish brown (10 YR 5/4) f- SAND , some Silt (damp) (loose)							
4-8	0835	NR	0.0	same							
	3.1'			Moderate yellowish brown (10 YR 5/4) f- c SAND , some Silt, trace f-m gravel (damp) (loose)							
				Moderate yellowish brown (10 YR 5/4) f- c SAND and f- c GRAVEL (subrnd), little silt (damp) (firm)							
8-12	0840	NR	0.0	same							
	1.0'										
12-16	0850	NR	0.0	same							
	2.0'										
				becomes Olive gray (5 Y 4/1)						Wet at 12' bg	
				EOB at 16 ft bg						Install temporary 1-inch PVC well, 10 ft screen, 10 ft riser 0907 - collect groundwater sample AVM-GW9 for TCLVOC	
Soil Stratigraphy Summary _____											

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>Macro Core</u>				Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>12'</u>		Boring ID : <u>GW-10</u> Sheet <u>1</u> of <u>1</u> Location: <u>S side of Chestnut, W of GW-3</u>	
Date Time DTW Casing/Total Depth		Groundwater Observations		Start (Date & Time): <u>6/3/04 - 0840</u> Finish (Date & Time): <u>6/3/04 - 0930</u> Weather: <u>Mostly cloudy, upper 50s F</u> Elevation of Ground Surface: _____		Location Sketch: 	
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments	
0-4	0845	NR	0.0	Asphalt and gravel subbase		Wet at 7' bg	
	3.0'			Brick			
				Dark gray (N 3) m-c GRAVEL, some f-c Sand (dry)			
				Moderate yellowish brown (10 YR 5/4) SILT and f- SAND (damp) (loose)			
				Moderate yellowish brown (10 YR 5/4) f-c SAND, some f-c Gravel (subang), little silt (damp) (loose)			
4-8	0851	NR	0.0	same			
	2.5						
				Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subrnd), little silt (moist-wet) (loose)			
8-12	0856	NR	0.0	same			
	3.2'						
				Moderate yellowish brown (10 YR 5/4) f- SAND, little silt (wet) (loose)			
				Olive gray (5 Y 4/1) f-SAND, little silt (wet) (loose)			
				EOB at 12 ft bg		Install temporary 1-inch PVC well, 10 ft screen 0920 - collect groundwater sample AVM-GW10 for TCLVOC	
Soil Stratigraphy Summary _____							

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>10¹/₄-in HSA & 4-in mud</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>155'</u>	Boring ID : <u>TW-1</u> Sheet <u>1</u> of <u>8</u> Location: <u>east side</u> <u>Gowanda Electronics</u>
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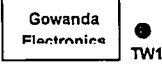
Date Time DTW Casing/Total Depth	Groundwater Observations	Start (Date & Time): <u>5/25/04 - 0819</u>	Location Sketch: N ↑ NTS 
		Finish (Date & Time): <u>6/2/04 - 1454</u>	
		Weather: <u>see logbook</u>	
		Elevation of Ground Surface: _____	

Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0-4	0821	NR	0.0	Moderate brown (5 YR 4/4) f-c SAND, little silt trace f- gravel (damp) (losse)		borehole abandoned by tremie grouting on 6/2/04
	2.2'					
4-8	0825	NR	0.0	same		
	1.9'					
				Moderate yellowish brown (10 YR 5/4) f-c SAND and SILT, some f-m Gravel (subrnd) (wet) (loose)		wet at 6 ft bg
8-12	0830	NR	0.0	same		macro cored to 12 ft, then 4 ¹ / ₄ HSA to 12 ft, macro cored 12-16 ft, then 4 ¹ / ₄ HSA to 16 ft, then 10 ¹ / ₄ HSA to 16 ft
	1.8'			becomes Olive gray (5 Y 4/1) f-c GRAVEL (subrnd) and SILT, some f-c Sand (wet) (loose)		
12-16	0850	NR	0.0	Olive gray (5 Y 4/1) CLAY and SILT, trace f- gravel (subrnd) (damp) (compact)		set 8-in steel casing to 15.5 ft bg and grouted in place moved off hole 5/25/04 to let grout set Resumed drilling on 5/26/04 with 4-in mud
	0.7'					
16-18	0847	22	0.0	Brownish gray (5 YR 4/1) CLAY and SILT, trace f-m gravel (subang) (striated) (damp) (hard)		
	1.8'	24		vertical cylindrical parting of sample 17-18' (0.07' diam)		
		36				
		24				

Soil Stratigraphy Summary _____

[illegible]

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>10 1/4-in HSA & 4-in mud</u>	Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>155'</u>	Boring ID : <u>TW-1</u> Sheet <u>5</u> of <u>8</u> Location: <u>east side</u> <u>Gowanda Electronics</u>
--	--	---

Date Time DTW Casing/Total Depth	Groundwater Observations	Start (Date & Time): <u>5/25/04 - 0819</u>	Location Sketch: N ↑ NTS 
		Finish (Date & Time): <u>6/2/04 - 1454</u>	
		Weather: <u>see logbook</u>	
		Elevation of Ground Surface: _____	

Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments	
80-82	1425	8	0.0	Brownish gray (5 YR 4/1) CLAY and SILT , (moist) (stiff)		borehole abandoned by tremie grouting on 6/2/04 some silt partings varved	
	2.0'	10					
		13					
		20					
90-92	1530	6	0.0	Brownish gray (5 YR 4/1) CLAY and SILT , (moist) (stiff)		varved stopped drilling at 90 ft bg w/ 4-in mud on 5/26/04 after collecting 90-92' sample, resumed drilling at 90 ft on 5/27/04	
	1.9'	7					
		11					
		13					

Soil Stratigraphy Summary _____

[illegible]

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>4 1/4-in HSA, Macro Core</u>			Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>28'</u>			Boring ID : <u>TW-2</u> Sheet <u>1</u> of <u>2</u> Location: <u>SW of 85</u> <u>Torrance, N side st.</u>	
Date Time DTW Casing/Total Depth		Groundwater Observations		Start (Date & Time): <u>6/2/04 - 0819</u> Finish (Date & Time): <u>6/2/04 - 1235</u> Weather: <u>Mostly cloudy, upper 50s F</u> Elevation of Ground Surface: _____		Location Sketch: 	
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments	
0-4	0821	24	0.0	Asphalt and gravel subbase			
	1.3'	5		Moderate yellowish brown (10 YR 5/4) f- SAND and SILT (moist) (loose)			
		3					
		3					
		3					
		2					
		2					
		2					
4-8	0824	4	0.0	same			
	3.5'	3					
		10					
		12		becomes f- SAND, little silt			
		13					
		10		Moderate yellowish brown (10 YR 5/4) f-c SAND, some			
		13		f-c Gravel (subang) (damp) (loose)			
		16					
8-12	0850	4	0.0	same (becomes wet at 8.5')			
	1.9'	2					
		1					
		8					
		7					
		6					
		4					
		4					
12-16	0910	4	0.0	same			
	1.7'	3					
		2					
		2					
		2					
		8					
		44					
16-20	0929	4	0.0	same			
	2.0'	13					
		16		Brownish gray (5 YR 4/1) f-SAND, little silt			
		37		(wet) (compact)			
		55					
		84					

Soil Stratigraphy Summary _____

Boring ID : TW-2
Sheet 2 of 2
Location: SW of 85
Torrance, N side st.

Location Sketch:

87 85

Torrance Plaza

N
↑
NTS

TW2 MW5

[illegible]

Soil Stratigraphy Summary _____

Driller: <u>Nothnagle</u> Inspector: <u>S. Pepling</u> Rig Type: <u>CME-85</u> Drilling Method: <u>4 1/4-in HSA, Macro Core</u>		Dvirka and Bartilucci Boring Log Project Name: <u>AVM Gowanda</u> Project #: <u>2184</u> Boring Depth: <u>22'</u>		Boring ID : <u>TW-3</u> Sheet <u>1</u> of <u>2</u> Location: <u>S of 71</u> <u>Torrance, N side st.</u>																			
Date Time DTW Casing/Total Depth		Groundwater Observations <table border="1" style="width:100%; border-collapse: collapse;"> <tr><td style="width:25%; height: 20px;"></td><td style="width:25%; height: 20px;"></td><td style="width:25%; height: 20px;"></td><td style="width:25%; height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> <tr><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td><td style="height: 20px;"></td></tr> </table>																		Start (Date & Time): <u>6/3/04 - 0955</u> Finish (Date & Time): <u>6/3/04 - 1300</u> Weather: <u>Partly cloudy, warm low 60s F</u> wind <u>2-5 mph from SW</u> Elevation of Ground Surface: _____		Location Sketch: 	
Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments																	
0-4	1015 2.4'	NR	0.0	Asphalt and gravel subbase																			
				Moderate brown (5 YR 4/4) f-c SAND, some f-c Gravel, some Silt (damp) (loose)																			
				Moderate yellowish brown (10 YR 5/4) f- SAND, little silt (damp) (loose)																			
4-8	1020 2.6'	NR	0.0	same																			
				Moderate yellowish brown (10 YR 5/4) f-c SAND and f-c GRAVEL (subang), little silt (damp-moist) (loose)																			
8-12	1030 2.3'	NR	0.0	same (becomes wet at 8.5')																			
12-16	1040 2.8'	NR	0.0	same																			
				Dark yellowish brown (10 YR 4/2) f- SAND, some Silt, little f-m gravel (wet) (compact)																			
				Dark yellowish brown (10 YR 4/2) f-c SAND and f-c GRAVEL (subrnd) (wet) (compact)																			
16-18	1102 0.6'	NR	0.0	same																			
18-22	1118 2.4'	NR	0.0	same																			
				Dark yellowish brown (10 YR 4/2) CLAY and SILT, some f-c Sand, little f-m gravel (moist) (hard)																			
Soil Stratigraphy Summary _____																							

TW-3.xls

Appendix D

1

APPENDIX D

WELL CONSTRUCTION LOGS

Well Construction Log

Site AVM Gowanda Job No. 2184 Well No. TLW2

Total Depth 28' Surface Elevation _____ Top Riser Elevation _____

Water Levels (Depth, Date, Time) _____ Date Installed 6/2/64

Riser Dia. 2-1/2" Material SS Length 17'
Screen Dia. 2-1/2" Material SS Length 10' Slot Size 10

SCHEMATIC

Surface Seal Type

Quickrete

Ground Surface

Riser Elevation

2.0'

Bottom Surface Seal

Grout Type 15 gal water, 1/4 pail bentonite
powder, 2 bags Portland

Seal Type CETCO Voldclay/Puregold
3/8-in tablets
1/2 pail (sol/s/pail)

Sand Pack Type Ricci Bros. Sand Co.
Port Morris, NJ
Size ØØ
3 bags (100 lb/bag)

12' Top Seal

15' Top Sand Pack

17' Top Screen

27' Bottom Screen

28' Total Depth of Boring

Well Construction Log

Site AVM Gowanda

Job No. 2184

Well No. TW3

Total Depth 22'

Surface Elevation _____

Top Riser Elevation _____

Water Levels (Depth, Date, Time) _____

Date Installed 6/3/04

Riser Dia. 2-in

Material SS-304

Length 10.5'

Screen Dia. 2-in

Material SS-304

Length 10'

Slot Size 10 slot

SCHEMATIC

Surface Seal Type

Delcrete

Ground Surface

Riser Elevation

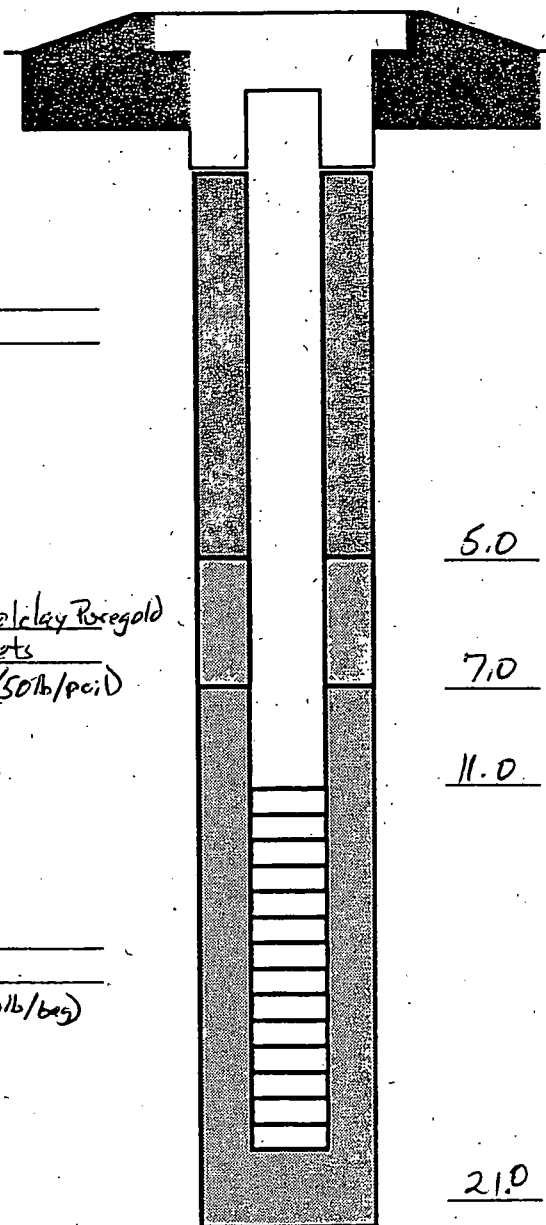
Bottom Surface Seal

Grout Type _____

Seal Type CETCO Velclay Reseal
3/8" pellets
1/2 pail (50lb/pail)

Sand Pack Type

Size ØØ
4 bags (100lb/bag)



5.0 Top Seal

7.0 Top Sand Pack

11.0 Top Screen

21.0 Bottom Screen

22.0 Total Depth of Boring
Sampled to 22'
Augered to 21'

Appendix E



APPENDIX E
WELL DEVELOPMENT LOGS

Well Development Data Sheet

Page 1 of 1

Site Name: AVM Job Number: 2184 Date: 6/2/04 Well ID: KW-1

On Site Personnel: Sean Pepling

Weather Conditions: Sealbook

Static water level before development: 5.44

Bottom of well: 18.35

2.1 gal/vol

Development Technique

bailing

peristaltic pump

air lift

other _____

12 volt submersible

surge block

trash pump w/foot valve

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/2/04	1500				0	6.99	0.456	582	12.4	Initial, then surge
	1512				2.5	6.54	0.471	7999	10.5	
	1515				5.0	6.41	0.449	7999	10.1	
	1520				7.5	6.40	0.454	444	9.9	
	1525				10.0	6.41	0.452	7999	9.9	
	1535				12.5	6.34	0.452	382	10.3	
	1541				15.0	6.35	0.451	328	9.9	
	1550				17.5	6.35	0.450	297	9.8	
	1600				20.0	6.35	0.452	170	9.9	

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/14/04 Well ID: mw-02On Site Personnel: Sean Pepling / Mark ArrigoWeather Conditions: see logbook

$$\begin{array}{r}
 18.97 \\
 6.12 \\
 \hline
 12.85 \\
 .16 \\
 \hline
 12.99 \\
 77.10 \\
 \hline
 12.85 \\
 2,056.0
 \end{array}$$
Static water level before development: 6.12
Bottom of well: 18.97

Development Technique

bailing

peristaltic pump

air lift

other _____

12 volt submersiblesurge block

trash pump w/foot valve

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/14/04	1456	1456	—	—	—	6.45	0.526	792	14.2	Initiated, then surge
	1502	1504			2.5	6.63	0.536	7999	13.4	
	1504	1506			5.0	6.66	0.533	7999	13.5	
	1506	1510			7.5	6.66	0.539	7999	12.3	
	1510	1513			10.0	6.64	0.542	921	12.5	
	1513	1517			12.5	6.65	0.544	796	12.2	
	1517	1520			15.0	6.64	0.545	571	12.1	
	1520	1523			17.5	6.61	0.537	468	12.1	
	1523	1526			20.0	6.58	0.544	323	12.2	
	1526	1529			22.5	6.60	0.533	356	12.1	
	1529	1532			25.0	6.56	0.544	266	12.1	
	1532	1536			27.5	6.59	0.527	233	12.2	
	1536	1539			30.0	6.59	0.542	228	11.8	

6/11/04

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/15/04 Well ID: MW3On Site Personnel: Sean Pepling/Mark ArriagaWeather Conditions: see logbook

Development Technique

bailing

peristaltic pump

air lift

other

12 volt submersible

surge block

trash pump w/foot valve

Static water level before development: 6.22Bottom of well: 21.60

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/15/04	1028	1028			—	6.90	0.619	421	14.2	Initial, then surge
	1033	1035			2.5	6.84	0.625	7999	12.8	
	1035	1037			5.0	6.78	0.613	>999	13.4	DTW = 7.2
	1037	1042			7.5	6.81	.635	>999	12.8	DTW = 7.2
	1042	1045			10.0	6.72	.633	>999	12.1	DTW = 7.4
	1045	1048			12.5	6.67	.627	>999	12.1	DTW = 7.4
	1048	1052			15.0	6.65	.625	7999	11.9	DTW = 7.4
	1052	1054			17.5	6.65	.626	7999	12.2	DTW = 7.4
	1054	1057			20.0	6.64	.626	7999	11.9	DTW = 7.4
	1057	1059			22.5	6.61	0.634	851	12.2	DTW = 7.4
	1059	1101			25.0	6.61	0.633	763	12.0	DTW = 7.4
	1101	1104			27.5	6.59	0.633	706	11.7	DTW = 7.4
	1104	1106			30.0	1 of 6.61	0.633	555	11.9	DTW = 7.4

6/11/04

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/15/04 Well ID: MW4On Site Personnel: Sean Pepling / Mark ArrigoWeather Conditions: see logbook

Development Technique

bailing

peristaltic pump

air lift

other

12 volt submersible

surge block

trash pump w/foot valve

Static water level before development: 6.08Bottom of well: 21.60

21.60

6.08

15.52

1.6

93.12

15.52

24832

2.5 gal/val

Water Removal

Elapsed

Flow

Approx Vol.

Date

Start

Stop

Time (min)

Rate

Removed

pH

Cond.

Turb

Temp

Observations/Comments

6/15/04	0926	0926	—	—	0	6.78	0.622	>999	14.9	Initial, then purge
	0933	0935			2.5	6.68	0.620	>999	12.3	
	0936	0939			5.0	6.69	0.620	>999	11.6	
	0940	0941	—	—	7.5	6.66	0.608	>999	11.8	
	0941	0944	—	—	10.0	6.66	0.607	>999	11.6	
	0944	0946	—	—	12.5	6.64	0.609	>999	11.6	
	0946	0948			15.0	6.63	0.613	935	11.5	
	0948	0950			17.5	6.64	0.617	659	11.4	
	0950	0952			20.0	6.64	0.619	498	11.3	
	0952	0954			22.5	6.65	0.621	405	11.5	
	0958	0958			25.0	6.69	0.618	438	12.2	

0100/1000 1002

27.5 6.64 0.618 417 11.6

30.0 1 of 16.65 0.611 310 11.8

well development data sheet.xls 1003

6/11/04

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/15/04 Well ID: MW5On Site Personnel: Sean Perkins / Mark ArrigoWeather Conditions: 300 logbook

Development Technique

bailing

peristaltic pump

air lift

other

12 volt submersiblesurge block

trash pump w/foot valve

Static water level before development: 8.84
Bottom of well: 17.45

$$\begin{array}{r}
 17.45 \\
 8.84 \\
 \hline
 8.61 \\
 .16 \\
 \hline
 51.66 \\
 8.61 \\
 \hline
 137.76
 \end{array}$$

1.4 gal/vol

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/15/04	0759	0759	-	-	-	6.65	0.849	560	14.4	Initialized pump
	0806	0811	-	-	2.5	6.61	0.93	7999	13.1	
	0811	0814	-	-	5.0	6.50	0.92	7999	12.8	
	0814	0819			7.5	6.49	0.94	7999	12.5	
	0821	0823			10.0	6.48	0.94	7999	12.4	
	0824	0827			12.5	6.42	0.95	758	12.3	
	0839	0842			15.0	6.47	0.96	558	12.4	
	0843	0845			17.5	6.47	0.95	398	12.6	
	0846	0849			20.0	6.49	0.901	415	12.4	
	0849	0851			22.5	6.44	0.914	139	12.6	
	0852	0854			25.0	6.45	0.904	226	12.6	
	0855	0858			27.5	6.47	0.893	224	12.5	

Well Development Data Sheet

Page 1 of 1Site Name: Avvy Job Number: 2184 Date: 6/14/04 Well ID: MW-6On Site Personnel: Sean Pepling / Mark ArrigoWeather Conditions: Seelookook

$$\begin{array}{r}
 9.65 \\
 6.08 \\
 \hline
 3.57 \\
 .16 \\
 \hline
 21.43 \\
 3.57 \\
 \hline
 5.713
 \end{array}$$
Static water level before development: 6.08Bottom of well: 9.650.5782 / gal

Development Technique

bailing

peristaltic pump

air lift

other

12 volt submersiblesurge block

trash pump w/foot valve

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/14/04	1658				—	6.50	0.448	>999	14.2	Initial, then surge
	1719				2.5	6.28	0.438	>999	13.8	
	1726				5.0	6.30	0.439	>999	14.1	
	1734				7.5	6.22	0.433	>999	14.2	Stop to empty poly containers to drums
	1802				10.0	6.65	0.436	>999	14.0	
	1807				12.5	6.49	0.437	>999	13.1	
	1809				15.0	6.44	.439	>999	12.9	
	1817				17.5	6.42	0.438	528	13.0	
	1823				20.0	6.40	0.434	142	13.4	

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/14/04 Well ID: MW-07On Site Personnel: Sean Pepling / Mark ArrigoWeather Conditions: see log book

Development Technique

bailing

peristaltic pump

air lift

other _____

12 volt submersiblesurge block

trash pump w/foot valve

Static water level before development: 11.96Bottom of well: 18.55

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/14/04	1538	1538	—	—	—	6.80 7.1	0.624	792	12.5	
	1604	1607			2.5	6.39	0.638	7999	11.7	
	1607	1610			5.0	6.29	0.650	7999	11.3	
	1610	1612			7.5	6.23	0.650	7999	11.1	
	1612	1614			10.0	6.27	0.649	7999	11.1	
	1614	1618			12.5	6.28	0.653	7999	10.9	
	1618	1620			15.0	6.27	0.652	7999	11.6	
	1620	1624			17.5	6.34	0.654	774	11.1	
	1624	1627			20.00	6.47	0.654	431	11.5	
	1627	1632			22.5	6.36	0.652	328	11.2	
	1632	1635			25.0	6.30	0.652	274	10.7	
	1635	1638			27.5	6.17	0.654	310	10.6	
	1638	1640			30.0	6.20	0.654	580	10.7	

6/11/04

Well Development Data Sheet

Page 1 of 1

Site Name: AVM Job Number: 2184 Date: 6/14/04 Well ID: MW8

On Site Personnel: Sean Papp / Mark Arango

Weather Conditions: see logbook

Development Technique

bailing

peristaltic pump

air lift

other _____

12 volt submersiblesurge block

trash pump w/foot valve

Static water level before development: 5.61

Bottom of well: 10.05

10.05
5.61
4.44
0.16
2.66
4.44
7.10 0.713/101

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/14/02	1707	1707	—	—	—	6.66	0.415	399	14.7	Initial, then surge
	1709	1711			2.5	6.44	0.409	7999	15.1	
	1711	1715			5.0	6.38	0.416	7999	14.2	
	1716	1719			7.5	6.34	0.419	7999	14.3	
	1720	1723			10.0	6.40	0.423	7999	14.0	
	1725	1728			12.5	6.40	0.421	7999	15.4	
	1728	1731			15.0	6.35	0.423	904	14.4	
	1732	1737			17.5	6.39	0.421	824	14.9	
	1738	1741			20.0	6.61	0.424	504	15.2	
	1741	1743			22.5	6.38	0.423	320	14.2	
	1743	1745			25.0	6.32	0.422	208	13.9	
	1745	1748			27.5	6.34	0.423	193	14.1	

Well Development Data Sheet

Page 1 of 1

Site Name: AVM Job Number: 2184 Date: 6/3/04 Well ID: MW9

On Site Personnel: Sean Pepling

Weather Conditions: see logbook

Static water level before development: 4.27
 Bottom of well: 1808

18.80
 4.27
 14.53
 0.16
 87.18
 14.53
 292.48
 2.3 gal/vol

Development Technique

bailing
 peristaltic pump
 air lift
 other _____

12 volt submersible
surge block
 trash pump w/foot valve

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/3/04	1535				0	7.04	0.391	159	11.3	Initial, then surged
	1544				2.5	6.08	0.434	7999	12.9	
	1548				5.0	6.08	0.442	7999	12.5	
	1554				7.5	6.06	0.453	7999	12.5	
	1558				10.0	6.09	0.453	7999	12.3	
	1602				12.5	6.09	0.454	7999	12.3	
	1604				15.0	6.11	0.453	7999	12.3	
	1611				17.5	6.11	0.455	7999	12.1	
	1615				20.0	6.10	0.459	7999	12.1	
	1620				22.5	6.11	0.458	7999	12.2	
	1624				25.0	6.11	0.459	7999	11.9	

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/15/04 Well ID: KW10On Site Personnel: Sean Pepling / Mark ArrigoWeather Conditions: see logbook

$$\begin{array}{r}
 13.80 \\
 8.36 \\
 \hline
 5.44 \\
 1.16 \\
 \hline
 32.64 \\
 54.4 \\
 \hline
 8.704
 \end{array}$$
Static water level before development: 8.36Bottom of well: 13.80

Development Technique

bailing

peristaltic pump

air lift

other _____

12 volt submersiblesurge block

trash pump w/foot valve

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6-15-04	1128	1128	—	—	0	7.05	0.257	395	12.8	Initial, then surge
	1133	1135	—	—	2.5	6.23	0.278	>999	11.7	DTW = 8.50
	1135	1138	—	—	5.0	6.30	0.271	>999	11.3	DTW = 8.5
	1138	1141			7.5	6.29	0.268	>999	11.1	DTW = 8.6
	1141	1143			10.0	6.23	0.268	>999	11.0	DTW = 8.6, valve open more
	1143	1145			12.5	6.21	0.266	>999	10.9	DTW = 8.6, valve wide open
	1145	1146 ³⁰			15.0	6.23	0.267	>999	11.1	DTW = 8.6
	1146 ³⁰	1148			17.5	6.14	0.267	>999	10.8	DTW = 8.7
	1148	1149 ³⁰			20.0	6.20	0.266	>999	11.1	DTW = 8.8
	1149 ³⁰	1151			22.5	6.14	0.267	>999	10.9	DTW = 8.9

0.87 gal/vol

Well Development Data Sheet

Page 1 of 1Site Name: AVMJob Number: 2184Date: 6/14/04Well ID: MW-11On Site Personnel: Sean Pepling/Hack ArrigoWeather Conditions: See logbook

Development Technique

bailing

peristaltic pump

air lift

other _____

12 volt submersiblesurge block

trash pump w/foot valve

Static water level before development: 6.57Bottom of well: 14.25

$$\begin{array}{r}
 14.25 \\
 6.57 \\
 \hline
 7.68 \\
 .16 \\
 \hline
 4708 \\
 768 \\
 \hline
 12388
 \end{array}$$

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/14/04	1407	1407	—	—	—	6.51	0.519	7999	14.3	Initial, then surge
	1415	1419			2.5	6.53	0.500	7999	13.7	
	1419	1422			5.0	6.49	0.502	7999	13.2	
	1422	1427			7.5	6.46	0.507	7999	13.3	
	1427	1429			10.0	6.42	0.505	859	13.3	
	1429	1433			12.5	6.41	0.505	7999	13.8	
	1433	1436			15.0	6.37	0.508	773	13.6	
	1436	1439			17.5	6.41	0.507	655	13.1	
	1442	1445			20.0	6.39	0.508	330	13.4	
	1445	1446			21.0	6.40	0.505	322	12.6	

Well Development Data Sheet

Page 1 of 1Site Name: AVM Job Number: 2184 Date: 6/14/04 Well ID: MW12On Site Personnel: Sean Popling / Mark ArriagaWeather Conditions: see logbook

Development Technique

bailing

peristaltic pump

air lift

other

12 volt submersiblesurge block

trash pump w/foot valve

Static water level before development: 6.28Bottom of well: 11.47 / 14.55

$$\begin{array}{r}
 11.47 \\
 6.28 \\
 \hline
 5.19 \\
 .16 \text{ gpl} \\
 \hline
 3114 \\
 519 \\
 \hline
 8304
 \end{array}$$

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond. $\mu\text{S/cm}$	Turb NTU	Temp $^{\circ}\text{C}$	Observations/Comments
6/14/04	1328	1328	0	0	0	5.62	0.625	715	12.8	Initial
	1334	1336			1 gal	5.86	0.524	>999	16.0	
	1336	1338			2.5	6.03	0.545	>999	15.4	
	1338	1340			3.5	6.11	0.515	>999	14.6	
	1340	1342			5.0	6.34	0.515	>999	15.5	
	1342	1346			7.5	6.54	0.528	7999	15.0	
	1346	1349			10.0	6.44	0.520	777	14.3	
	1349	1354			12.5	6.44	0.537	7999	13.8	
	1354	1357			14.5	6.45	0.530	425	14.5	
	1357	1400			17.5	6.48	0.531	540	13.9	
	1400	1403			20.0	6.47	0.535	121	13.8	

Well Development Data Sheet

Page 1 of 1Site Name: AUMJob Number: 2184Date: 6/15/04Well ID: TW2On Site Personnel: Sean Pepling / Mark ArrigoWeather Conditions: See logbook

Development Technique

bailing

12 volt submersible

peristaltic pump

surge block

air lift

trash pump w/foot valve

other _____

Static water level before development: 9.04Bottom of well: 25.95

$$\begin{array}{r}
 25.95 \\
 9.04 \\
 \hline
 16.91 \\
 .16 \\
 \hline
 101.46 \\
 16.91 \\
 \hline
 270.56
 \end{array}$$

2.75 gal/min

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/15/04	0759	0759	—	—	—	6.53	1.12	106	14.5	Final sample good
	0806	0813			2.5	6.51	1.02	7999	12.2	DTW = 16.2
		0816			5.0	6.53	1.04	7999	12.4	DTW = 17.4
		0821			7.5	6.50	1.01	7999	12.3	DTW = 18.4
		0825			10.0	6.51	0.97	7999	12.5	DTW = 18.9
		0831			12.5	6.51	0.97	7999	11.8	DTW = 20.1
		0836			15.0	6.47	0.94	7999	12.1	DTW = 20.5
		0842			17.5	6.52	0.81	7999	12.6	DTW = 20.55
		0847			20.0	6.53	0.852	7999	12.8	DTW = 20.45 12v battery getting weak or pump
		0854			22.5	6.49	0.854	7999	12.5	DTW = 18.55
		0900			25.0	6.43	0.858	661	12.5	DTW = 18.5 Switched battery, still slow

Well Development Data Sheet

Page 1 of 1Site Name: AUM Job Number: 2184Date: 6/15/04Well ID: TW3On Site Personnel: Sean Pepling/Mark ArrigoWeather Conditions: see logbook

Development Technique

bailing

peristaltic pump

air lift

other

12 volt submersible

surge block

trash pump w/foot valve

Static water level before development: 6.25Bottom of well: 20.75

$$\begin{array}{r}
 20.75 \\
 6.25 \\
 \hline
 14.50 \\
 .16 \\
 \hline
 87.00 \\
 145.0 \\
 \hline
 2,320.0
 \end{array}$$

2.3 gal/w

Date	Water Removal Start	Water Removal Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
6/15/04	0933	0933	—	—	0	6.69	0.588	331	14.6	Initial, then surge
	0936	0938	—	—	2.5	6.65	0.627	7999	12.8	DTW = 6.9
	0938	0941	—	—	5.0	6.63	0.645	7999	12.7	DTW = 7.0
	0941	0944	—	—	7.5	6.62	0.640	7999	12.6	DTW = 7.8
	0944	0946	—	—	10.0	6.61	0.643	7999	12.6	DTW = 7.8, stop to transfer water
	0957	1000	—	—	12.5	6.64	0.636	7999	12.7	DTW = 7.6
	1000	1002	—	—	15.0	6.61	0.646	7999	12.9	DTW = 7.65
	1002	1004	—	—	17.5	6.61	0.644	7999	12.4	DTW = 7.65
	1004	1006	—	—	20.0	6.59	0.641	7999	12.2	DTW = 7.60
	1006	1008	—	—	22.5	6.59	0.647	7999	12.4	DTW = 7.50
	1008	1011	—	—	25.0	6.59	0.649	7999	12.2	DTW = 7.50
	1011	1013	—	—	27.5	6.59	0.643	7999	12.0	DTW = 7.60

Appendix F



APPENDIX F

**SAMPLE INFORMATION RECORDS,
CHAIN OF CUSTODY AND SHIPPING
RECORDS**

Page 1 of 1

WHITE: LABORATORY COPY

YELLOW: REPORT COPY

PINK: CLIENT'S COPY

REPORT TO								INVOICE TO										LAB PROJECT #:					
COMPANY Dunlap Bartilucci						PHONE 315 437 1142		COMPANY						PHONE				TURNAROUND TIME: Standard					
NAME Sean Pepling						FAX 315 437 1282		NAME						FAX									
ADDRESS PO Box 56 5879 Fisher Road								ADDRESS SALTE															
CITY/ST/ZIP East Syracuse, NY 13057								CITY/ST/ZIP															
CLIENT PROJECT NAME: AUM Gowanda				CLIENT PROJECT #: 2184				CLIENT P.O.#: 2184-25				REQUESTED ANALYSES										COMMENTS	
SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	TCL VOCs	TCL SVOCs	TCL PAHs/Bz	PAT Metals	Cyanide	Alkalinity	Amines/Nitrates/Sulfides	Heavy Metals (Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn)	Total Organic Carbon	Dissolved Organic Carbon	Total Dissolved Solids	Total Suspended Solids			
MW4 PT24	7/25/04 1070L		X	X				10	X	X	X	X	X	X	X	X	X	X	X	X			
MW4 PT48	7/29/04 10720		X	X				10	X	X	X	X	X	X	X	X	X	X	X	X			
TB04C729	7/29/04 NA		X	X				2	X														
MW11	7/29/04 10925		X	X				5					X	X	X	X	X	X	X	X			
MW7	7/29/04 11015		X	X				5					X	X	X	X	X	X	X	X			
MW10	7/29/04 1120		X	X				5					X	X	X	X	X	X	X	X			
TW2	7/29/04 1224		X	X				5					X	X	X	X	X	X	X	X			
TW3	7/29/04 1240		X	X				5					X	X	X	X	X	X	X	X			
/	/																						
/	/																						
/	/																						
/	/																						
TSF#	RELINQUISHED BY	DATE/TIME		ACCEPTED BY		DATE/TIME		ADDITIONAL REMARKS:										COOLER TEMP:					
	Sean P. C.	7/29/04 11800		FDF E X		7/29/04 11800		NYSDEC 6100 ASP															
		/				/																	
		/				/																	

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Warwick, Rhode Island 02886-1755
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email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

REPORT TO							INVOICE TO:														
COMPANY Dvirka & Raciocci						PHONE 904-427-1142		COMPANY					PHONE		LAB PROJECT #:						
NAME Sean Repling						FAX 315-437-1282		NAME					FAX								
ADDRESS PO Box 56, 5879 Filer Rd							ADDRESS SAME								TURNAROUND TIME						
CITY/ST/ZIP East Syracuse, NY 13057							CITY/ST/ZIP														
CLIENT PROJECT NAME:				CLIENT PROJECT #:				CLIENT P.O.#:				REQUESTED ANALYSES									
SAMPLE IDENTIFICATION		DATE/TIME SAMPLED		COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	TCAP VOC's TCIP Metals										COMMENTS
AMM-SC		6/16/04 / 1030		X			X			4	X	X						- SP to BD 6/21/04, 1553 to add TCL VOC'S			
		/																			
		/																			
		/																			
		/																			
		/																			
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		/																			
		/																			
		/																			
		/																			
		/																			
TSP#	RELINQUISHED BY				DATE/TIME		ACCEPTED BY				DATE/TIME		ADDITIONAL REMARKS:					Cooler Temp:			
	[Signature]				6/16/04 / 1600		FedEx				6/16/04 / 1600										
					/						/										
					/						/										

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9/1/07 - 745

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email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

REPORT TO							INVOICE TO								LAB PROJECT #:					
COMPANY Duirka + Bartilucci						PHONE 315-437-1143		COMPANY						PHONE						
NAME Sean Pepling						FAX 315-437-1282		NAME						FAX						
ADDRESS 5879 Eagle Rd, PO Box 56						ADDRESS SAME														
CITY/ST/ZIP East Syracuse, NY 13057						CITY/ST/ZIP								TURNAROUND TIME: Standard						
CLIENT PROJECT NAME: AVM Gowanda				CLIENT PROJECT #: 2184			CLIENT P.O.#: 2184-2S			REQUESTED ANALYSES										
SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	TCL VOCs	TCL SVOCs	TCL PAHs / PCBs	TAL Metals	Cyanide							COMMENTS
AVM-MW#7	6-15-04/1325		X	X				2	X											
AVM-MW#8	11400		X	X				2	X											
AVM-MW#10	11425		X	X				2	X											
AVM-MW#6	11445		X	X				2	X											
AVM-MW#3	11510		X	X				2	X											
AVM-TW#3	11530		X	X				6	X	X	X		X							
AVM-MW#4	11600		X	X				6	X	X	X		X							
AVM-TW#2	11630		X	X				6	X	X	X		X							
TW2-MS	11630		X	X				6	X	X	X		X							Matrix Spike
TW2-MSD	11630		X	X				6	X	X	X		X							Matrix Spike Duplicate
AVM-MW#5	11655		X	X				2	X											
AVM-MW#1	11715		X	X				2	X											
TSF#	RELINQUISHED BY	DATE/TIME		ACCEPTED BY		DATE/TIME		ADDITIONAL REMARKS:		COOLER TEMP:										
	Sean Pepling	6/16/04/1800		Fed Ex		6/16/04/1800		6/00 NYSDEC ASP												
		/				/														
		/				/														

C0575 INV 04C0575 - \$3,415 WHITE: LABORATORY COPY

YELLOW: REPORT COPY

PINK: CLIENT'S COPY

REPORT TO										INVOICE TO										LAB PROJECT #:									
COMPANY					PHONE					COMPANY					PHONE														
NAME					FAX					NAME					FAX														
ADDRESS										ADDRESS										TURNAROUND TIME:									
CITY/ST/ZIP										CITY/ST/ZIP																			
CLIENT PROJECT NAME:					CLIENT PROJECT #:					CLIENT P.O.#:					REQUESTED ANALYSES														
SAMPLE IDENTIFICATION		DATE/TIME SAMPLED		COMPOSITE		GRAB		WATER		SOIL		OTHER		LAB ID		# OF CONTAINERS		COMMENTS											
AUM-MW9		6/15/04 1735				X		X								2		TCL VOCs											
AUM-MW2		11750				X		X								2		TCL SVOCs											
AUM-MW12		11800				X		X								2		TCL Pest/PCBS											
AUM-MW11		11815				X		X								2		TAL Metals											
TB040615		1 NA				X		X								1		Cyanide											
AUM-TW3		6/16/04 0750				X		X								1													
AUM-MW4		10800				X		V								1													
AUM-TW2		10805				V		V								1													
TW2-M5		10805				V		V								1													
TW2-M5D		10805				V		V								1													
		1																											
		1																											
TSF#		RELINQUISHED BY				DATE/TIME				ACCEPTED BY				DATE/TIME				ADDITIONAL REMARKS:										COOLER TEMP:	
		Sean Pepling				6/16/04 1800				Fed Ev				6/16/04 1800				6/00 NMSDEC ASP											
						1								1															
						1								1															

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email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

REPORT TO						INVOICE TO						LAB PROJECT #:												
COMPANY Duick & Bartucci				PHONE 515 437 1142		COMPANY				PHONE		TURNAROUND TIME: Standard												
NAME Sean Pepling				FAX 315 437 1282		NAME				FAX														
ADDRESS PO Box 56, 5879 Fisher Rd						ADDRESS SAME																		
CITY/ST/ZIP East Syracuse, NY 13057						CITY/ST/ZIP																		
CLIENT PROJECT NAME: AUM Gowanda				CLIENT PROJECT #: 2184		CLIENT P.O.#: 2184-25		REQUESTED ANALYSES																
SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	TCLUOCs															COMMENTS
AUM-GW10	6-3-04 / 0920		V	X				2	X															
AUM-B3	6-3-04 / 1430		X	X				2	X															
AUM-GW9	6-4-04 / 0907		V	X				2	X															
AUM-B6	6-4-04 / 1125		X	X				2	X															
AUM-TB3	6/4/04 / NA		X	X				2	X															
TWIDRUMS	6/4/04 / 1330				X			4																HOLD
	/																							
	/																							
	/																							
	/																							
	/																							
	/																							
	/																							
TSF#	RELINQUISHED BY	DATE/TIME		ACCEPTED BY		DATE/TIME		ADDITIONAL REMARKS:				COOLER TEMP:												
	Shane G. 215	6/4/04 / 1800		E. J. E v		6/4/04 / 1800		6/10 NITRIC ASP																
		/				/																		
		/				/																		

C0525-Inv 04C0525-\$425.00

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REPORT TO										INVOICE TO										LAB PROJECT #:						
COMPANY <i>Dvirka + Bartilucci</i>					PHONE <i>315-437-1142</i>					COMPANY					PHONE											
NAME <i>Sean Repling</i>					FAX <i>315-437-1282</i>					NAME					FAX											
ADDRESS <i>5879 Fisher Road, PO Box 56</i>										ADDRESS <i>SAME</i>										TURNAROUND TIME <i>Verbals 45hr</i>						
CITY/ST/ZIP <i>East Syracuse, NY 13057</i>										CITY/ST/ZIP																
CLIENT PROJECT NAME: <i>AVM Gowanda</i>					CLIENT PROJECT #: <i>2184</i>					CLIENT P.O.#: <i>2184-2S</i>					REQUESTED ANALYSES										COMMENTS	
SAMPLE IDENTIFICATION		DATE/TIME SAMPLED		COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID		# OF CONTAINERS															
<i>AVM-GW5</i>		<i>5/24/04 1145</i>			<i>X</i>	<i>X</i>					<i>2 X</i>		<i>TCL VOCs 01M4.2</i>													
<i>AVM-GW3</i>		<i>11330</i>			<i>X</i>	<i>X</i>					<i>2 X</i>															
<i>AVM-GW7</i>		<i>11415</i>			<i>X</i>	<i>X</i>					<i>2 X</i>															
<i>AVM-GW1</i>		<i>11545</i>			<i>X</i>	<i>X</i>					<i>2 X</i>															
<i>AVM-TBI</i>		<i>1 NA</i>			<i>X</i>	<i>X</i>					<i>2 X</i>															
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
		<i>/</i>																								
TSF#	RELINQUISHED BY			DATE/TIME			ACCEPTED BY			DATE/TIME			ADDITIONAL REMARKS:										COOLER TEMP:			
	<i>[Signature]</i>			<i>5/24/04 1800</i>			<i>[Signature]</i>			<i>5/24/04 1800</i>			<i>NYSDEC ASP</i>													
				<i>/</i>						<i>/</i>			<i>Verbals needed 48hr TAT</i>													
				<i>/</i>						<i>/</i>																

INV 04C0469-8743.75

WHITE: LABORATORY COPY

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CEN TEK LABORATORIES, LLC143 Midler Park Drive * Syracuse, New York 13206
Phone (315) 431-9730 * Fax (315) 431-9731**Chain of Custody**

NELAC No. 11830

Company Name: <u>Dvicka + Bartilucci</u>		Site Name: <u>AVM Goleandor</u>	
Client Contact: <u>Sean Pepling</u>		Phone #: <u>315-437-1142</u>	Project #: <u>2184</u>
Send Report To:		Send Invoice To:	
Name:	<u>Sean Pepling</u>	<u>Ben Dodge</u>	
Company:	<u>Dvicka + Bartilucci Consulting Engineers</u>	<u>Mitkem</u>	
Address:	<u>5379 Fisher Road, PO Box 56</u> <u>East Syracuse, NY 13057</u>	<u>175 Metro Center Blvd.</u> <u>Warwick, RI 02886-1755</u>	
Phone:	<u>315-437-1142</u>	<u>401-732-3400</u>	
Fax:	<u>315-437-1232</u>	<u>401-732-3499</u>	
e-mail:	<u>spepling@db-syracuse.com</u>	<u>mitkem@mitkem.com</u>	

Payment Choice:

Purchase order # <u>2184-25</u>	Credit Card (type)
Authorization:	Card #
	Date exp:

Turnaround Time Requested:

Same Day:	Next Day (24hr)	Normal (5 business days) <u>X</u>	Other (specify)
Reporting units: Please circle choice/s	<u>ppbV</u>	<u>ug/m3</u>	mg/m3

Sample Identification	Date Sampled	Canister Number	Regulator Number	Analysis Requested	Comments
AVM-A9-B	4/6/04	23	111	TO-15 SIM 17	
AVM-A10-AA		14	110		
AVM-A11-SS		31	113		
AVM-A12-B		24	109		
AVM-A13-SS		32	116		
AVM-A14-B		19	114		
AVM-A15-B		21	111		
AVM-A16-SS		8	110		
AVM-A17-B		1	109		
AVM-A18-SS		34	113		
AVM-A19-B	4/20	18	114	4/20	

Sampled By: <u>Sean Pepling</u>		Name of Courier	
Company: <u>D+B</u>			
Relinquished by: (sign) <u>Sean Pepling</u>	Date: <u>4/7/04</u>	Time: <u>1547</u>	Received by: (sign) <u>M. Tal 347 4/7/04</u>
Relinquished by: (sign)	Date	Time	Received by: (sign)
Relinquished by: (sign)	Date	Time	Received for lab by: (sign)

Chain of Custody

143 Midler Park Drive * Syracuse, New York 13206
Phone (315) 431-9730 * Fax (315) 431-9731

NELAC No. 11830

Company Name: Durkin + Bartilucci		Site Name AVM Gowanda	
Client Contact: Sean Pepling		Phone # 315-437-1142	Project #: 2184
	Send Report To:	Send Invoice To:	
Name	Sean Pepling	Ben Dodge	
Company	Durkin + Bartilucci Consulting Engineers	Mitkem	
Address	5879 Fisher Road, PO Box 56 East Syracuse, NY 13057	175 METRO CENTER BLVD. WARWICK, RI 02886-1755	
Phone	315-437-1142	401-732-3400	
Fax	315-437-1282	401-732-3499	
e-mail	spepling@dlb-syracuse.com	mitkem@mitkem.com	

Payment Choice:

Purchase order #	2184-25	Credit Card (type)	
Authorization:		Card #	Date exp:

Turnaround Time Requested:

Same Day:	Next Day (24hr)	Normal (5 business days)	Other (specify)
Reporting units: Please circle choice/s	ppbV	ug/m3	mg/m3

Sample Identification	Date Sampled	Canister Number	Regulator Number	Analysis Requested	Comments
AVM-A1-SS	4/5/04	10	110	TC-15 SIM 17	
AVM-A2-B	4/5/04	39	109		
AVM-A3-SS	4/5/04	5	116		
AVM-A4-B	4/5/04	16	114		
AVM-A5-A	4/5/04	76	110		
AVM-A6-SS	4/5/04	40	113		
AVM-A7-B	4/5/04	27	111		
AVM-A8-B	4/5/04	74	109		
Level 2 - Package					
Sampled By: <i>[Signature]</i>			Name of Courier		
Company: <i>D+B</i>					
Relinquished by: (sign) <i>[Signature]</i>		Date <i>4/7/04</i>	Time <i>1547</i>	Received by: (sign) <i>M. Pal</i> <i>5:42pm</i> <i>4/7/04</i>	
Relinquished by: (sign)		Date	Time	Received by: (sign)	
Relinquished by: (sign)		Date	Time	Received for lab by: (sign)	

FedEx USA Airbill
Express

FedEx
Tracking
Number

8306 0648 8075

Form
ID No.

0215

Sender's Copy

1 From Please print and press hard.
Date 7/29/04 Sender's FedEx Account Number 1245-6133-7

Sender's Name Sean Pepling Phone 315 4371142

Company DVIRKA AND BARTILUCCI

Address 5879 FISHER RD

City EAST SYRACUSE State NY ZIP 13057

2 Your Internal Billing Reference Bill Project OPTIONAL
First 24 characters will appear on invoice.

3 To Recipient's Name Sample Custodian Phone 401 732 3400

Company Mitkem Corporation

Address 175 Metro Center Blvd

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Warwick State RI ZIP 02886

By online shipping at fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

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or call 1.800.Go.FedEx® 800.463.3339.

0196578206

4a Express Package Service

☐ FedEx Priority Overnight Next business morning ☒ FedEx Standard Overnight Next business afternoon ☐ FedEx First Overnight Earliest next business morning delivery to select locations

☐ FedEx 2Day Second business day FedEx Envelope rate not available. Minimum charge: One-pound rate ☐ FedEx Express Saver Third business day ☐ NEW FedEx Extra Hours Later drop-off with next business afternoon delivery for select locations

4b Express Freight Service

☐ FedEx 1Day Freight* Next business day ☐ FedEx 2Day Freight Second business day ☐ FedEx 3Day Freight Third business day

* Call for Confirmation:

5 Packaging

☐ FedEx Envelope* ☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak ☒ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

☐ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes ☐ HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight ☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.
☒ No ☐ Yes As per attached Shipper's Declaration ☐ Yes Shipper's Declaration not required ☐ Dry Ice Dry Ice, 3, UN 1845 x _____ kg
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service. ☐ Cargo Aircraft Only

7 Payment Bill to:

☐ Sender Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

FedEx Acct. No. 1779-3983-8 Exp. Date _____
Total Packages 3 Total Weight 16.2 Total Declared Value* \$ _____ .00
FedEx Use Only

*Our liability is limited to \$100 unless you declare a higher value. See back for details.

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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Number

8306 0648 8010

Form
ID No.

0215

Sender's Copy

1 From Please print and press hard.
Date 6/16/04 Sender's FedEx Account Number 1245-6133-7

Sender's Name Sean Pepling Phone 315 437 1142

Company DVIRKA AND BARTILUCCI

Address 5879 FISHER RD

City EAST SYRACUSE State NY ZIP 13057

2 Your Internal Billing Reference Bill Project OPTIONAL
First 24 characters will appear on invoice.

3 To Recipient's Name Sample Custodian Phone 401 732-3400

Company Mitkem Corp

Address 175 Metro Center Blvd

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Warwick State RI ZIP 02886

By online shipping at fedex.com

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or call 1.800.Go.FedEx® 800.463.3339.

0196578206

4a Express Package Service

☐ FedEx Priority Overnight Next business morning ☒ FedEx Standard Overnight Next business afternoon ☐ FedEx First Overnight Earliest next business morning delivery to select locations

☐ FedEx 2Day Second business day FedEx Envelope rate not available. Minimum charge: One-pound rate ☐ FedEx Express Saver Third business day ☐ NEW FedEx Extra Hours Later drop-off with next business afternoon delivery for select locations

4b Express Freight Service

☐ FedEx 1Day Freight* Next business day ☐ FedEx 2Day Freight Second business day ☐ FedEx 3Day Freight Third business day

* Call for Confirmation:

5 Packaging

☐ FedEx Envelope* ☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak ☒ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

☐ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes ☐ HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight ☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.
☒ No ☐ Yes As per attached Shipper's Declaration ☐ Yes Shipper's Declaration not required ☐ Dry Ice Dry Ice, 3, UN 1845 x _____ kg
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service. ☐ Cargo Aircraft Only

7 Payment Bill to:

☐ Sender Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

FedEx Acct. No. 1779-3983-8 Exp. Date _____
Total Packages 1 Total Weight 29 Total Declared Value* \$ _____ .00
FedEx Use Only

*Our liability is limited to \$100 unless you declare a higher value. See back for details.

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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Number

8306 0648 8178

1 From Please print and press hard.
Date 6/16/04 Sender's FedEx Account Number 1245-6133-7

Sender's Name Sean Pepling Phone 315 437-1142

Company DVIRKA AND BARTILUCCI

Address 5879 FISHER RD

City EAST SYRACUSE State NY ZIP 13057

2 Your Internal Billing Reference Bill Project OPTIONAL

3 To Recipient's Name Sample Custodian Phone (401) 732-3400

Company KitKern Corp

Address 175 Metro Center Blvd
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Warwick State RI ZIP 02886

For online shipping at fedex.com

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Form ID No. **0215** Sender's Copy

4a Express Package Service Packages up to 150 lbs.

☐ FedEx Priority Overnight Next business morning
☒ FedEx Standard Overnight Next business afternoon
☐ FedEx First Overnight Earliest next business morning delivery to select locations
☐ FedEx 2Day Second business day
☐ FedEx Express Saver Third business day
☐ NEW FedEx Extra Hours Later drop-off with next business afternoon delivery to select locations

4b Express Freight Service Packages over 150 lbs.

☐ FedEx 1Day Freight* Next business day
☐ FedEx 2Day Freight Second business day
☐ FedEx 3Day Freight Third business day

* Call for Confirmation. * Declared value limit \$500

5 Packaging

☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
☒ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling Include FedEx address in Section 3.

☐ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight
☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?
One box must be checked.
☒ No
☐ Yes As per attached Shipper's Declaration
☐ Yes Shipper's Declaration not required
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.
☐ Dry Ice Dry Ice, 9 UN 1845 x _____ kg
☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.

☐ Sender Acct. No. in Section 1 will be billed.
☒ Recipient
☐ Third Party
☐ Credit Card
☐ Cash/Check

FedEx Acct. No. 1779-3983-8 Exp. Date _____

Total Packages 7 Total Weight 110 Total Declared Value* \$ 00

* Our liability is limited to \$100 unless you declare a higher value. See back for details. FedEx Use Only

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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FedEx USA Airbill
Express

FedEx
Tracking
Number

8306 0648 8042

1 From Please print and press hard.
Date 6/16/04 Sender's FedEx Account Number 1245-6133-7

Sender's Name Sean Pepling Phone 315 437 1142

Company DVIRKA AND BARTILUCCI

Address 5879 FISHER RD

City EAST SYRACUSE State NY ZIP 13057

2 Your Internal Billing Reference 2184-2X OPTIONAL

3 To Recipient's Name Sample Custodian Phone (401) 732-3400

Company KitKern Corporation

Address 175 Metro Center Blvd
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Warwick State RI ZIP 02886

For online shipping at fedex.com

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Form ID No. **0215** Sender's Copy

4a Express Package Service Packages up to 150 lbs.

☒ FedEx Priority Overnight Next business morning
☐ FedEx Standard Overnight Next business afternoon
☐ FedEx First Overnight Earliest next business morning delivery to select locations
☐ FedEx 2Day Second business day
☐ FedEx Express Saver Third business day
☐ NEW FedEx Extra Hours Later drop-off with next business afternoon delivery to select locations

4b Express Freight Service Packages over 150 lbs.

☐ FedEx 1Day Freight* Next business day
☐ FedEx 2Day Freight Second business day
☐ FedEx 3Day Freight Third business day

* Call for Confirmation. * Declared value limit \$500

5 Packaging

☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
☐ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling Include FedEx address in Section 3.

☒ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight
☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?
One box must be checked.
☒ No
☐ Yes As per attached Shipper's Declaration
☐ Yes Shipper's Declaration not required
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service.
☐ Dry Ice Dry Ice, 9 UN 1845 x _____ kg
☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.

☒ Sender Acct. No. in Section 1 will be billed.
☐ Recipient
☐ Third Party
☐ Credit Card
☐ Cash/Check

FedEx Acct. No. _____ Exp. Date _____

Total Packages 1 Total Weight 34 Total Declared Value* \$ 00

* Our liability is limited to \$100 unless you declare a higher value. See back for details. FedEx Use Only

8 Release Signature Sign to authorize delivery without obtaining signature.

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Express

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Number

8306 0648 8031

1 From Please print and press hard.
Date 6/1/04 Sender's FedEx Account Number 1245-6133-7

Sender's Name Sean Pepling Phone (315) 1437-1142

Company DVIRKA AND BARTILUCCI

Address 5879 FISHER RD Dept./Floor/Suite/Room

City EAST SYRACUSE State NY ZIP 13057

2 Your Internal Billing Reference OPTIONAL
First 24 characters will appear on invoice.

3 To Recipient's Name Sample Custodian Phone (401) 732-3400

Company Mitkem Corporation

Address 175 Metro Center Blvd
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Warwick State RI ZIP 02886

Invo 1-999-83475
378.41

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FedEx USA Airbill
Express

FedEx
Tracking
Number

8306 0648 8190

1 From Please print and press hard.
Date 5/24/04 Sender's FedEx Account Number 1245-6133-7

Sender's Name Sean Pepling Phone (315) 1437-1142

Company DVIRKA AND BARTILUCCI

Address 5879 FISHER RD Dept./Floor/Suite/Room

City EAST SYRACUSE State NY ZIP 13057

2 Your Internal Billing Reference 2184-2X
First 24 characters will appear on invoice.

3 To Recipient's Name Sample Custodian Phone (401) 732-3400

Company Mitkem Corp

Address 175 Metro Center Blvd
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Warwick State RI ZIP 02886

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Form 0215 Senders Copy

4a Express Package Service
☒ FedEx Priority Overnight Next business morning
☐ FedEx Standard Overnight Next business afternoon
☐ FedEx First Overnight Earliest next business morning delivery to select locations

☐ FedEx 2Day Second business day
☐ FedEx Express Saver Third business day
☐ NEW FedEx Extra Hours Later drop-off with next business morning delivery to select locations

4b Express Freight Service
☐ FedEx 1Day Freight* Next business day
☐ FedEx 2Day Freight Second business day
☐ FedEx 3Day Freight Third business day

* Call for Confirmation: * Declared value limit \$500

5 Packaging
☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Saver Pak
☒ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling
☐ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight
☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?
☒ No ☐ Yes As per attached Shipper's Declaration
☐ Yes Shipper's Declaration not required
☐ Dry Ice Dry Ice, 9, UN 1845 x kg
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service. ☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.
☒ Sender Acct. No. in Section 1 will be billed. ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

FedEx Acct. No. Credit Card No. Exp. Date
Total Packages 1 Total Weight 22 Total Declared Value† \$.00
† Our liability is limited to \$100 unless you declare a higher value. See back for details. FedEx Use Only

8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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4a Express Package Service
☒ FedEx Priority Overnight Next business morning
☐ FedEx Standard Overnight Next business afternoon
☐ FedEx First Overnight Earliest next business morning delivery to select locations

☐ FedEx 2Day Second business day
☐ FedEx Express Saver Third business day
☐ NEW FedEx Extra Hours Later drop-off with next business morning delivery to select locations

4b Express Freight Service
☐ FedEx 1Day Freight* Next business day
☐ FedEx 2Day Freight Second business day
☐ FedEx 3Day Freight Third business day

* Call for Confirmation: * Declared value limit \$500

5 Packaging
☐ FedEx Envelope*
☐ FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Saver Pak
☒ Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling
☐ SATURDAY Delivery Available ONLY for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight
☐ HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods?
☒ No ☐ Yes As per attached Shipper's Declaration
☐ Yes Shipper's Declaration not required
☐ Dry Ice Dry Ice, 9, UN 1845 x kg
Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with FedEx Extra Hours service. ☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.
☒ Sender Acct. No. in Section 1 will be billed. ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

FedEx Acct. No. Credit Card No. Exp. Date
Total Packages 1 Total Weight 14 Total Declared Value† \$.00
† Our liability is limited to \$100 unless you declare a higher value. See back for details. FedEx Use Only

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By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

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Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling/M. Arrigo

Sample Location/Well No. MW4

Field Sample I.D. Number AVM-MW4 Time 1600

Weather partly cloudy Temperature upper 70°F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.23 Measurement Method 6.23' WWT

Depth of Well 21.60 Measurement Method Records

Volume Removed 7.5 gal Removal Method disposable poly bucket

Field Test Results

pH 7.18 Spec Cond (mS/cm) 0.605 Turbidity (NTUs) 7999

Diss. Oxygen (mg/l) 1.2M Temperature °C 14.2 Salinity (%) 0.02

PID (ppm) 141 - well casing Color turbid brown Odor Moderate organic-like
131 - pump water

Other: _____

Laboratory Analyses Requested

TCL VOCs TCL SVOCs TCL Pestic/PCP TAL Metals
Cyanide _____

Remarks:

6/16/04 0800 Collect metals fraction of AVM-MW4, Turbidity = 35 NTU

21.60
6.23
15.37
1.16
14.22
15.37
2.4592
D&B_SIRa/gg

GAL/FT

1 1/4" = 0.077

1 1/2" = 0.10

Well Casing Volumes

2" = 0.16

2 1/2" = 0.24

3" = 0.37

3 1/2" = 0.50

4" = 0.65

6" = 1.46

2.5 gal/vol

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AUM Gowanda Sample Crew: S. Pepling/M. Arrigo

Sample Location/Well No. TW3

Field Sample I.D. Number AUM-TW3 Time 1530

Weather Partly cloudy Temperature Upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.34 Measurement Method WLT

Depth of Well 20.75 Measurement Method Records

Volume Removed 8 gal Removal Method disposable bailer

Field Test Results

pH 7.13 Spec Cond (mS/cm) 0.747 Turbidity (NTUs) >999

Diss. Oxygen (mg/l) NM Temperature °C 14.2 Salinity (%) 0.03

PID (ppm) 13.4 - well casing Color turbid brown Odor slight/moderate organic-like
0 - pure water

Other: _____

Laboratory Analyses Requested

TCL VOCs 2 TCL SVOCs 2 TCL Pest/PCB1 TAL Metals

Cyanide 1 _____

Remarks:

Metals collected 6/16/04 at 0750, turbidity 9 NTUs

20.75
6.34
14.41
1.6
86.46
14.41
2.3056
D&B_SIRa/gg

GAL/FT

2.3 gal/vol

Well Casing Volumes

1 1/4" = 0.077

1 1/2" = 0.10

2" = 0.16

2 1/2" = 0.24

3" = 0.37

3 1/2" = 0.50

4" = 0.65

6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AUM Gowanda Sample Crew: S. Pepling / M. Arriaga

Sample Location/Well No. TW2

Field Sample I.D. Number AUM-TW2 Time 1630

Weather Partly cloudy Temperature Upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 9.11 Measurement Method WLI

Depth of Well 25.95 Measurement Method Records

Volume Removed 9 Removal Method disposable poly bottle

Field Test Results

pH 7.21 Spec Cond (mS/cm) 0.92 Turbidity (NTUs) >999
Diss. Oxygen (mg/l) NH Temperature °C 14.0 Salinity (%) 0.04
PID (ppm) 40.4 - well casing Color slightly turbid brown Odor moderate organic like
0 - pure water

Other: _____

Laboratory Analyses Requested

TCL VOCs TCL SVOCs TCL Pest/PCB TAL Metals
Cyanide

Remarks:

collected MS (TW2MS) and MSD (TW2MSD)
6/16/04 - 0805 collect metals fraction, turbidity = 20 NTUs

25.95
9.11
16.84
0.16
101.04
16.84
2.6944

D&B_SIRa/gg

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AUM Gowanda Sample Crew: S. Depling / Mark Arrigo

Sample Location/Well No. MW-17

Field Sample I.D. Number AUM-MW17 Time 1325

Weather Partly cloudy, warm upper 70's F Temperature upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 12.05 Measurement Method WLI

Depth of Well 18.55 Measurement Method Records

Volume Removed 3 gal Removal Method disposable poly bailer

Field Test Results

pH 6.66 Spec Cond (mS/cm) 0.625 Turbidity (NTUs) 457

Diss. Oxygen (mg/l) NM Temperature °C 14.0° Salinity (%) 0.02

PID (ppm) _____ Color turbid brown Odor None

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

18.55

12.05

6.50

1.16

38.60

65.00

104.00

1.04 gal/vol

GAL/FT

1 1/4" = 0.077

1 1/2" = 0.10

Well Casing Volumes

2" = 0.16

2 1/2" = 0.24

3" = 0.37

3 1/2" = 0.50

4" = 0.65

6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / M. Arrigo

Sample Location/Well No. MW-8

Field Sample I.D. Number AVM-MW8 Time 1400

Weather Partly cloudy Temperature upper 70's F

Sample Type:

Groundwater α Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. _____
water, septage, etc.)

Well Information (fill out for groundwater samples)

Depth to Water 5.60 Measurement Method WLI

Depth of Well 10.05 Measurement Method Records

Volume Removed 3 gal Removal Method disposable poly bail

Field Test Results

pH 6.81 Spec Cond (mS/cm) 0.412 Turbidity (NTUs) 7999

Diss. Oxygen (mg/l) NA Temperature °C 15.8 Salinity (%) 0.01

PID (ppm) 17.7 Color turbid Brown Odor None

Other: (well casing)
0 from groundwater

Laboratory Analyses Requested.

TCL VOCs VOC

Remarks:

10.05
5.60
4.45
0.16
2630
443
712
D&B - SIRa/gg
0.718/gal

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Depling / M. Arigo

Sample Location/Well No. RW10

Field Sample I.D. Number AVM-RW10 Time 1425

Weather Partly Cloudy Temperature upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 8.40 Measurement Method WHI

Depth of Well 13.80 Measurement Method Records

Volume Removed 3 gal Removal Method disposable poly bucket

Field Test Results

pH 6.85 Spec Cond (mS/cm) 0.276 Turbidity (NTUs) > 999

Diss. Oxygen (mg/l) UM Temperature °C 13.8 Salinity (%) 0.01

PID (ppm) well casing + purge water Color turbid brown Odor none

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

13.80
8.40
5.40
0.16
3240
548
8640
0.86 gal/vol
D&B-SIRa/gg

Well Casing Volumes

1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / M. Arigo

Sample Location/Well No. HW-6

Field Sample I.D. Number AVM-HW06 Time 1248 1445

Weather Partly Cloudy Temperature Upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.11 Measurement Method WLI

Depth of Well 9.65 Measurement Method Records

Volume Removed _____ Removal Method Disposable poly bag

Field Test Results

pH 6.64 Spec Cond (mS/cm) 0.427 Turbidity (NTUs) 7999

Diss. Oxygen (mg/l) NM Temperature °C 15.4 Salinity (%) 0.01

PID (ppm) 6.9 ppb - well casing Color turbid brown Odor None
0 - purge water

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

9.65
6.11
3.54
1.16
2.124
3.54
5.664
0.579 gal/ft
DB-SIRa/gg

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gauranda Sample Crew: S. Pepling / M. Arrigo

Sample Location/Well No. MW-3

Field Sample I.D. Number AVM-MW3 Time 1510

Weather Partly cloudy Temperature Upper 70's F

Sample Type:

Groundwater α Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. _____
water, septage, etc.)

Well Information (fill out for groundwater samples)

Depth to Water 6.37 Measurement Method WLT

Depth of Well 23.50 Measurement Method Records

Volume Removed 9 gal Removal Method disposable poly bailer

Field Test Results

pH 6.95 Spec Cond (mS/cm) 0.625 Turbidity (NTUs) >999

Diss. Oxygen (mg/l) NM Temperature °C 14.2 Salinity (%) 0.02

PID (ppm) 14.9 - well casing Color Turbid Brown Odor strong moderate organic-like
2.5 - pipe water

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

23.50
6.37
17.13 GAL/FT
0.16
10378 2.7 gal/vol
1713
27508
D&B_SIRa/gg

Well Casing Volumes

1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / K. Arriaga

Sample Location/Well No. MW5

Field Sample I.D. Number AVM MW5 Time 1655

Weather Partly Cloudy Temperature Upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 8.91 Measurement Method WLT

Depth of Well 17.45 Measurement Method records

Volume Removed 6 Removal Method disposable poly bottle

Field Test Results

pH 7.12 Spec Cond (mS/cm) 0.892 Turbidity (NTUs) > 999

Diss. Oxygen (mg/l) DM Temperature °C 14.7 Salinity (%) 0.03

PID (ppm) 27.4 well casing Color turbid Brown Odor None
0-purge water

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

17.45			Well Casing Volumes			
8.91						
8.54	GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65	
0.16		1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46	
51.24	1.37 gal/ft					
8.54						
13.68	SIRa/gg					

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / M. Arango

Sample Location/Well No. MW-1

Field Sample I.D. Number AVM-MW1 Time 1715

Weather Partly cloudy Temperature upper 70°F

Sample Type:

Groundwater K Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 4.08 Measurement Method CELI

Depth of Well 18.60 Measurement Method Records

Volume Removed 7 gal Removal Method disposable poly bag

Field Test Results

pH 7.30 Spec Cond (mS/cm) 0.452 Turbidity (NTUs) 473

Diss. Oxygen (mg/l) NH Temperature °C 12.0 Salinity (%) 0.01

PID (ppm) 0 Color cloudy Odor none

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

Well Casing Volumes

18.60				
4.08	GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37
23		1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50
14.52				4" = 0.65
.16				6" = 1.46
87.2	2.3 gal/vol			
14.38				
2.323	8.1 Ra/gg			

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Papling / M. Arreaga

Sample Location/Well No. KW9

Field Sample I.D. Number AVM-KW9 Time 1735

Weather partly cloudy Temperature Upper 70's

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.27 Measurement Method WLI

Depth of Well 18.95 Measurement Method Records

Volume Removed 6 gal Removal Method disposable poly bailer

Field Test Results

pH 6.67 Spec Cond (mS/cm) 0.507 Turbidity (NTUs) >999

Diss. Oxygen (mg/l) NM Temperature °C 14.7° Salinity (%) 0.01

PID (ppm) 0 Color Turbid brown Odor None

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

2 gal/vol

D&B_SIRa/gg

Rev. 04/06/00

18.95
6.27
12.68
11.6
12.68
12.68
20.288

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / M. Arrigo

Sample Location/Well No. MW-2

Field Sample I.D. Number AVM-MW2 Time 1750

Weather partly cloudy Temperature Upper 70°F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.23 Measurement Method WLI

Depth of Well 18.97 Measurement Method records

Volume Removed 6 gal Removal Method disposable poly bottle

Field Test Results 6.51

pH 6.32 Spec Cond (mS/cm) 0.526 Turbidity (NTUs) 2999

Diss. Oxygen (mg/l) NH Temperature °C 14.1 Salinity (%) 0.02

PID (ppm) 0 Color Turbid orange/brown Odor none

Other: _____

Laboratory Analyses Requested

TCL VOCs

Remarks:

18.97
6.23
12.74
12.74
7.64
12.74
2.03
2 gal/vol
SIRA/gg

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / M. Arroyo

Sample Location/Well No. MW12

Field Sample I.D. Number AVM-MW12 Time 1800

Weather Partly Cloudy Temperature Upper 70°F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.59 Measurement Method WLI

Depth of Well 14.55 Measurement Method records

Volume Removed 4 gal Removal Method disposable poly bailer

Field Test Results

pH 6.57 Spec Cond (mS/cm) 0.518 Turbidity (NTUs) >999

Diss. Oxygen (mg/l) NM Temperature °C 14.3 Salinity (%) 0.02

PID (ppm) 5.1-well casing 0-purge water Color turbid orange brown Odor slight organic-like

Other: _____

Laboratory Analyses Requested

TCL VOCs

Remarks:

14.55
6.59
7.66
1.6
46.96
76.6
123.56
1.2 gal/vol
SIRa/gg

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 6/15/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling / M. Arrigo

Sample Location/Well No. MW-11

Field Sample I.D. Number AVM-MW11 Time 1815

Weather partly cloudy Temperature Upper 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 6.66 Measurement Method WLI

Depth of Well 14.25 Measurement Method Records

Volume Removed 4 gal Removal Method disposable poly bottle

Field Test Results

pH 6.54 Spec Cond (mS/cm) 0.509 Turbidity (NTUs) >999

Diss. Oxygen (mg/l) NM Temperature °C 13.3 Salinity (%) 0.02

PID (ppm) 9.5 - well casing Color turbid brown Odor slight organic-like
12.3 purge water

Other: _____

Laboratory Analyses Requested

TCL VOCs

Remarks:

14.25
6.66
7.59
0.16
48.54
73.88
124.44

GAL/FT

1 1/4" = 0.077

1 1/2" = 0.10

Well Casing Volumes

2" = 0.16

2 1/2" = 0.24

3" = 0.37

3 1/2" = 0.50

4" = 0.65

6" = 1.46

SIRa/gg

Date: 5/24/04

SAMPLE INFORMATION RECORD

Site: AVM Gourenda Sample Crew: S. Pepling

Sample Location/Well No. GW-5

Field Sample I.D. Number AVM-GW5 Time 1145

Weather partly cloudy Temperature Upper 60's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 9.8 ft (bg) Measurement Method WLI

Depth of Well 10.6 ft (bg) Measurement Method WLI

Volume Removed NM Removal Method peristaltic pump

Field Test Results

pH / Spec Cond (mS/cm) / Turbidity (NTUs) /
Diss. Oxygen (mg/l) / Temperature °C / Salinity (%) /
PID (ppm) / Color / Odor /

Other: _____

Laboratory Analyses Requested

TCL VOCs

Remarks:

turbid brown

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½" = 0.10	2½" = 0.24	3½" = 0.50	6" = 1.46

Date: 5/24/04

SAMPLE INFORMATION RECORD

Site: AUM Gowanda Sample Crew: S. Pepling

Sample Location/Well No. GW-3

Field Sample I.D. Number AUM-GW3 Time 1330

Weather partly cloudy Temperature low 70's F

Sample Type:

Groundwater X Sediment _____

Surface Water/Stream _____ Air _____

Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 5.5 ft bg Measurement Method WLI

Depth of Well 10.4 ft bg Measurement Method WLI

Volume Removed 2.5 gallons Removal Method peristaltic pump

Field Test Results

pH / Spec Cond (mS/cm) / Turbidity (NTUs) /
Diss. Oxygen (mg/l) / Temperature °C / Salinity (%) /
PID (ppm) / Color / Odor /

Other: _____

Laboratory Analyses Requested

TCL VOCs _____

Remarks:

slightly turbid brown

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½" = 0.10	2½" = 0.24	3½" = 0.50	6" = 1.46

Date: 5/24/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling
 Sample Location/Well No. GW-7
 Field Sample I.D. Number AVM-GW7 Time 1415
 Weather partly cloudy Temperature low 70°F
 Sample Type:
 Groundwater X Sediment _____
 Surface Water/Stream _____ Air _____
 Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 5.3 ft bg Measurement Method WLI
 Depth of Well 7.8 ft bg Measurement Method WLI
 Volume Removed 2.5 gallons Removal Method peristaltic pump

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____
 Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____
 PID (ppm) _____ Color _____ Odor _____
 Other: _____

Laboratory Analyses Requested

TCLVOCs _____

Remarks:

slightly turbid

Well Casing Volumes

GAL/FT	1 1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6" = 1.46

Date: 5/24/04

SAMPLE INFORMATION RECORD

Site: AVM Gowanda Sample Crew: S. Pepling
 Sample Location/Well No. GW-1
 Field Sample I.D. Number AVM-GW1 Time 1545
 Weather partly cloudy Temperature low 70's F
 Sample Type:
 Groundwater X Sediment _____
 Surface Water/Stream _____ Air _____
 Soil _____ Other (describe, i.e. water, septage, etc.) _____

Well Information (fill out for groundwater samples)

Depth to Water 7.05 ft bg Measurement Method WLI
 Depth of Well 7.60 ft bg Measurement Method WLI
 Volume Removed 2.5 gallons Removal Method peristaltic pump

Field Test Results

pH / Spec Cond (mS/cm) / Turbidity (NTUs) /
 Diss. Oxygen (mg/l) / Temperature °C / Salinity (%) /
 PID (ppm) / Color / Odor /
 Other: _____

Laboratory Analyses Requested

TCL VOCs

Remarks:

slightly turbid

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½" = 0.10	2½" = 0.24	3½" = 0.50	6" = 1.46

Appendix G



APPENDIX G
AIR MONITORING DATA

pDR-1000

Tag Number: 01

Number of logged points: 23

Start time and date: 10:41:44 24-May

Elapsed time: 05:45:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.106 mg/m³

Time at maximum: 12:26:49 May 24

Max STEL Concentration: 0.036 mg/m³

Time at max STEL: 12:36:44 May 24

Overall Avg Conc: 0.020 mg/m³

Logged Data:

Point	Date	Time	Avg. (mg/m ³)
1	24 May	10:56:44	0.022
2	24 May	11:11:44	0.021
3	24 May	11:26:44	0.020
4	24 May	11:41:44	0.022
5	24 May	11:56:44	0.025
6	24 May	12:11:44	0.023
7	24 May	12:26:44	0.030
8	24 May	12:41:44	0.033
9	24 May	12:56:44	0.024
10	24 May	13:11:44	0.023
11	24 May	13:26:44	0.021
12	24 May	13:41:44	0.019
13	24 May	13:56:44	0.020
14	24 May	14:11:44	0.021
15	24 May	14:26:44	0.020
16	24 May	14:41:44	0.021
17	24 May	14:56:44	0.016
18	24 May	15:11:44	0.016
19	24 May	15:26:44	0.017
20	24 May	15:41:44	0.015
21	24 May	15:56:44	0.017
22	24 May	16:11:44	0.015
23	24 May	16:26:44	0.014

pDR-1000

Tag Number: 02

Number of logged points: 28

Start time and date: 07:56:16 25-May

Elapsed time: 07:00:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.991 mg/m³

Time at maximum: 10:51:49 May 25

Max STEL Concentration: 0.098 mg/m³

Time at max STEL: 10:54:47 May 25

Overall Avg Conc: 0.018 mg/m³

Logged Data:

Point	Date	Time	Avg. (mg/m ³)
1	25 May	08:11:16	0.014
2	25 May	08:26:16	0.013
3	25 May	08:41:16	0.012
4	25 May	08:56:16	0.013
5	25 May	09:11:16	0.012
6	25 May	09:26:16	0.011
7	25 May	09:41:16	0.006
8	25 May	09:56:16	0.004
9	25 May	10:11:16	0.002
10	25 May	10:26:16	0.042
11	25 May	10:41:16	0.004
12	25 May	10:56:16	0.098
13	25 May	11:11:16	0.012
14	25 May	11:26:16	0.014
15	25 May	11:41:16	0.019
16	25 May	11:56:16	0.016
17	25 May	12:11:16	0.012
18	25 May	12:26:16	0.013
19	25 May	12:41:16	0.018
20	25 May	12:56:16	0.019
21	25 May	13:11:16	0.014
22	25 May	13:26:16	0.017
23	25 May	13:41:16	0.014
24	25 May	13:56:16	0.019
25	25 May	14:11:16	0.021
26	25 May	14:26:16	0.022
27	25 May	14:41:16	0.019
28	25 May	14:56:16	0.016

pDR-1000

Tag Number: 03

Number of logged points: 11

Start time and date: 12:38:10 28-May

Elapsed time: 02:45:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.110 mg/m³

Time at maximum: 14:28:06 May 28

Max STEL Concentration: 0.028 mg/m³

Time at max STEL: 14:29:40 May 28

Overall Avg Conc: 0.018 mg/m³

Logged Data:

Point	Date	Time	Avg. (mg/m ³)
1	28 May	12:53:10	0.018
2	28 May	13:08:10	0.017
3	28 May	13:23:10	0.016
4	28 May	13:38:10	0.021
5	28 May	13:53:10	0.020
6	28 May	14:08:10	0.025
7	28 May	14:23:10	0.019
8	28 May	14:38:10	0.024
9	28 May	14:53:10	0.015
10	28 May	15:08:10	0.012
11	28 May	15:23:10	0.014

pDR-1000

Tag Number: 01

Number of logged points: 26

Start time and date: 08:13:06 01-Jun

Elapsed time: 06:30:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.050 mg/m³

Time at maximum: 14:37:00 Jun 01

Max STEL Concentration: 0.013 mg/m³

Time at max STEL: 14:43:36 Jun 01

Overall Avg Conc: 0.005 mg/m³

Logged Data:

Point	Date	Time	Avg. (mg/m ³)
1,	01 Jun,	08:28:06,	0.003
2,	01 Jun,	08:43:06,	0.004
3,	01 Jun,	08:58:06,	0.004
4,	01 Jun,	09:13:06,	0.002
5,	01 Jun,	09:28:06,	0.002
6,	01 Jun,	09:43:06,	0.005
7,	01 Jun,	09:58:06,	0.006
8,	01 Jun,	10:13:06,	0.006
9,	01 Jun,	10:28:06,	0.006
10,	01 Jun,	10:43:06,	0.006
11,	01 Jun,	10:58:06,	0.006
12,	01 Jun,	11:13:06,	0.006
13,	01 Jun,	11:28:06,	0.003
14,	01 Jun,	11:43:06,	0.008
15,	01 Jun,	11:58:06,	0.009
16,	01 Jun,	12:13:06,	0.006
17,	01 Jun,	12:28:06,	0.004
18,	01 Jun,	12:43:06,	0.007
19,	01 Jun,	12:58:06,	0.006
20,	01 Jun,	13:13:06,	0.005
21,	01 Jun,	13:28:06,	0.005
22,	01 Jun,	13:43:06,	0.005
23,	01 Jun,	13:58:06,	0.004
24,	01 Jun,	14:13:06,	0.004
25,	01 Jun,	14:28:06,	0.005
26,	01 Jun,	14:43:06,	0.012

pDR-1000

Tag Number: 02

Number of logged points: 12

Start time and date: 08:07:10 02-Jun

Elapsed time: 03:00:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.200 mg/m³

Time at maximum: 08:49:57 Jun 02

Max STEL Concentration: 0.023 mg/m³

Time at max STEL: 08:58:11 Jun 02

Overall Avg Conc: 0.009 mg/m³

Logged Data:

Point	Date	Time	Avg. (mg/m ³)
1	02 Jun	08:22:10	0.009
2	02 Jun	08:37:10	0.009
3	02 Jun	08:52:10	0.021
4	02 Jun	09:07:10	0.007
5	02 Jun	09:22:10	0.007
6	02 Jun	09:37:10	0.013
7	02 Jun	09:52:10	0.005
8	02 Jun	10:07:10	0.009
9	02 Jun	10:22:10	0.007
10	02 Jun	10:37:10	0.006
11	02 Jun	10:52:10	0.007
12	02 Jun	11:07:10	0.006

pDR-1000

Tag Number: 03

Number of logged points: 12

Start time and date: 08:30:58 03-Jun

Elapsed time: 03:00:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.155 mg/m³

Time at maximum: 08:38:52 Jun 03

Max STEL Concentration: 0.040 mg/m³

Time at max STEL: 08:50:58 Jun 03

Overall Avg Conc: 0.012 mg/m³

Logged Data:

Point,	Date	Time	Avg. (mg/m ³)
1,	03 Jun,	08:45:58,	0.039
2,	03 Jun,	09:00:58,	0.028
3,	03 Jun,	09:15:58,	0.017
4,	03 Jun,	09:30:58,	0.013
5,	03 Jun,	09:45:58,	0.017
6,	03 Jun,	10:00:58,	0.016
7,	03 Jun,	10:15:58,	0.006
8,	03 Jun,	10:30:58,	0.005
9,	03 Jun,	10:45:58,	0.005
10,	03 Jun,	11:00:58,	0.004
11,	03 Jun,	11:15:58,	0.003
12,	03 Jun,	11:30:58,	0.003

pDR-1000

Tag Number: 04

Number of logged points: 7

Start time and date: 08:22:31 04-Jun

Elapsed time: 01:45:00

Logging period (sec): 900

Calibration Factor (%): 100

Max Display Concentration: 0.148 mg/m³

Time at maximum: 09:32:50 Jun 04

Max STEL Concentration: 0.035 mg/m³

Time at max STEL: 09:03:01 Jun 04

Overall Avg Conc: 0.022 mg/m³

Logged Data:

Point	Date	Time	Avg. (mg/m ³)
1	04 Jun	08:37:31	0.020
2	04 Jun	08:52:31	0.018
3	04 Jun	09:07:31	0.033
4	04 Jun	09:22:31	0.017
5	04 Jun	09:37:31	0.028
6	04 Jun	09:52:31	0.018
7	04 Jun	10:07:31	0.019



PROJECT NAME: AVM Gowanda DATE: 6/3/04
PROJECT NUMBER 2184 INSTRUMENT: PhotoVue Model 2020 RD
RECORDED BY: S. Pepling CALIBRATION DATE: _____
WEATHER CONDITIONS: Mostly cloudy upper 50's F

[illegible]

RECORDING PROCEDURES/REMARKS:



PROJECT NAME: AVM Gowanda DATE: 6/2/04
PROJECT NUMBER 2184 INSTRUMENT: Photovac Model 2020 PED
RECORDED BY: S. Pepling CALIBRATION DATE: _____
WEATHER CONDITIONS: Mostly Cloudy, upper 50°F

[illegible]

RECORDING PROCEDURES/REMARKS: _____



PROJECT NAME: AUM Gowanda DATE: 6/1/04

PROJECT NUMBER 2184 INSTRUMENT: Photovue Model 2020 P10
Thermal HIE PIR1000

RECORDED BY: S. Pepling CALIBRATION DATE: _____

WEATHER CONDITIONS: Partly cloudy, cool upper 50°F

[illegible]

RECORDING PROCEDURES/REMARKS:



AIR MONITORING FORM

PROJECT NAME: AVM Gauranda DATE: 5/28/04

PROJECT NUMBER 2184 INSTRUMENT: Photovac Model 2020 PIN

RECORDED BY: S. Pexling CALIBRATION DATE: _____

WEATHER CONDITIONS: overcast, cool low 50°F

[illegible]

RECORDING PROCEDURES/REMARKS:

PID readings in ppm:
No dust measurements, site is wet and too muddy to drill, at TW1
Start PDR measurements at B4



WEATHER CONDITIONS: Partly cloudy, low 60°sF

[illegible]

RECORDING PROCEDURES/REMARKS:



PROJECT NAME: AUM Gowanda DATE: 5/26/04
PROJECT NUMBER 2184 INSTRUMENT: Photovac Model 20
RECORDED BY: S. Pepling CALIBRATION DATE: _____
WEATHER CONDITIONS: overcast, drizzle

RECORDING PROCEDURES/REMARKS: _____

* PID readings in ppm

PDR readings not taken ^{due} to rain at arrival and drilling with mud

AIR MONITORING FORM

PROJECT NAME: AVM Gonzalez DATE: 5/25/04
PROJECT NUMBER 2184 INSTRUMENT: Photovac Model 2020 FTD
RECORDED BY: S. Pepling CALIBRATION DATE: _____
WEATHER CONDITIONS: overcast, low 60's F, damp

[illegible]

RECORDING PROCEDURES/REMARKS:

PID = PDM

$$PDR = m_0 / m^3$$



PROJECT NAME: AVM Gowanda DATE: 5/24/04
PROJECT NUMBER 2184 INSTRUMENT: ThermoIE personal data logger
RECORDED BY: S. Pepling CALIBRATION DATE: _____
WEATHER CONDITIONS: partly cloudy, warm low 70°SE

RECORDING PROCEDURES/REMARKS: _____

Appendix H



APPENDIX H
SOIL AND WATER DISPOSAL RECORDS

SEP. 16. 2004 2:44PM DUPONT

DuPont Environmental Treatment NO. 3540 P. 2
Barley Mill Plaza
P.O. Box 80023
Wilmington, DE 19880-0023
September 16, 2004

Environmental Waste Minimization, Inc.
14 Brick Kiln Court
Northampton, PA 18067

ATTN: Deidre Fox

RE: Certificate/s of Disposal
Waste accepted from: Environmental Waste Minimization, Inc.
Contract Number: OW11920

Release No.	Unloaded	LBS/GALS	Manifest/Bill of Lading
0002	09/08/04	5516 GALS	NJA4069933
0003	09/08/04	1677 GALS	NJA4069934

Dear Deidre:

This letter is verification that the above mentioned waste streams were sent to us for disposal. Our EPA Identification Number is NJD002385730. We have accepted the above mentioned materials which have met the permit requirements established by the NJDEP. The method of waste treatment used was chemical precipitation and/or biological treatment.

These materials were handled in accordance with all Federal, State and local rules and regulations governing the treatment and/or disposal of such materials. Our receiving policy requires that all incoming loads be scheduled prior to delivery, which gives us control over unexpected and unacceptable waste.

If you have any questions regarding this matter, please do not hesitate to contact me at 8-992-6938.

Sincerely,

LOTTIE RILEY
Marketing Associate

**THE FOLLOWING IMAGE(S) ARE THE
BEST COPY AVAILABLE**

**THE FOLLOWING IMAGE(S) ARE THE
BEST COPY AVAILABLE**

**THE FOLLOWING IMAGE(S) ARE THE
BEST COPY AVAILABLE**

**THE FOLLOWING IMAGE(S) ARE THE
BEST COPY AVAILABLE**

**THE FOLLOWING IMAGE(S) ARE THE
BEST COPY AVAILABLE**

InStream, LLC



State of New Jersey
Department of Environmental Protection
Hazardous Waste Regulation Program
Manifest Section
P.O. Box 414, Trenton, NJ 08625-0414

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved.

OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NJ0000000000		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address ATLANTA 1 INDUSTRIAL PARK COLUMBIA, MD 21046				A. State Manifest Document Number NJA 4069934			
4. Generator's Phone () 301 497-1102				B. State Generator's ID (City, State Address) NJ0000000000			
5. Transporter 1 Company Name S - J Transportation Co.		6. US EPA ID Number NJ0000000000		C. State Trans. ID-NJDEP Decal No. -			
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone () 301 497-1102			
9. Designated Facility Name and Site Address E.I. DuPont de Nemours, Co. Inc. Chambers Works - Route 130 Beverly, NJ 08005		10. US EPA ID Number NJ0000000000		E. State Trans. ID-NJDEP Decal No. -			
				F. Transporter's Phone ()			
				G. State Facility ID			
				H. Facility's Phone () 609 275-2700			
11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group) HM				12. Containers No. Type		13. Total Quantity	
a. 2 25 HAZARDOUS WASTE, LIQ, 2.0, 3.0, 100% TRICHLOROETHYLENE AND WATER, 9 HAZARDOUS, PG-III (3040)				14. Unit 1677		15. Waste No. 1140	
b.							
c.							
d.							
J. Additional Descriptions for Materials Listed Above a. 25 HAZARDOUS WASTE, LIQ, 2.0, 3.0, 100% TRICHLOROETHYLENE AND WATER, 9 HAZARDOUS, PG-III (3040) b. 25 HAZARDOUS WASTE, LIQ, 2.0, 3.0, 100% TRICHLOROETHYLENE AND WATER, 9 HAZARDOUS, PG-III (3040)				K. Handling Codes for Wastes Listed Above a. T01 b. 1 c. 1 d. 1			
15. Special Handling Instructions and Additional Information EMERGENCY PHONE: 484-275-6900							
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. Printed/Typed Name: Steve Popling Signature: [Signature] Month: 09 Day: 07 Year: 2004							
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name: Mike Lawson Signature: [Signature] Month: 09 Day: 07 Year: 2004							
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name: [Signature] Signature: [Signature] Month: 09 Day: 07 Year: 2004							
19. Discrepancy Indication Space ITEM C STATE TRANS. ID-NJDEP AND DECAL NUMBERS MISSING ITEM IS SHOULD INCLUDE EFG #171 (3217 & 07415)							
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Printed/Typed Name: FRED ADAMS Signature: Fred Adams Month: 09 Day: 07 Year: 2004							

In case of an emergency or spill immediately call the state the emergency occurred in and the N.J. Dept. of Environmental Protection. (609) 292-7172

SIGNATURE AND INFORMATION MUST BE LEGIBLE ON ALL COPIES

NYH1430928

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID & HAZARDOUS MATERIALSHAZARDOUS WASTE MANIFEST
P.O. Box 12820, Albany, New York 12212

CWM

Please type or print. Do not staple.

(Hazardous Waste Manifest 500)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA No. N Y D 9 6 6 9 4 5 7 5 6		Manifest Doc. No. 8720P		2. Page 1 of 1		Information within heavy bold line is not required by Federal Law.			
3. Generator's Name and Mailing Address NEW YORK DEPT ENVIRON CONSERVE 1 INDUSTRIAL PL GOWANDA NY 14070-1408						A. NYH1430928					
4. Generator's Telephone Number (716 633-7074						B. Generator's ID SAME					
5. Transporter 1 (Company Name) Franks Vacuum Truck Service Inc						C. State Transporter's ID 46077A NJ					
6. US EPA ID Number 180982792418						D. Transporter's Telephone (716 884-2132					
7. Transporter 2 (Company Name)						E. State Transporter's ID					
8. US EPA ID Number						F. Transporter's Telephone ()					
9. Designated Facility Name and Site Address CWM CHEMICAL SERVICES, L.L.C. 1550 BALMER RD. MODEL CITY NY 14107						G. State Facility ID					
10. US EPA ID Number N Y D 0 4 9 8 3 6 6 7 9						H. Facility Telephone (716 754-8231					
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) a. HAZARDOUS WASTE, SOLID, N.O.S., NA3077, III, (F002)						12. Containers Number Type 023 DM 9200		13. Total Quantity P		14. Unit Wt/Vol P	
b.										I. Waste No. EPA F002 STATE	
c.										EPA STATE	
d.										EPA STATE	
J. Additional Descriptions for Materials listed Above a. CW5824 Trickle down + 9761y						K. Handling Codes for Wastes Listed Above a. L c. ☐					
b.						b. ☐ d. ☐					
15. Special Handling Instructions and Additional Information CHEMTREC Emergency Response Number (800)424-8300 WMI Contract SR# 81588190											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a smaller generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.											
Printed/Typed Name Sean Pepling authorized representative						Signature [Signature] Mo. Day Year 090704					
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Robert W. Pelicciolo Jr.						Signature [Signature] Mo. Day Year 090704					
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name						Signature [Signature] Mo. Day Year					
19. Discrepancy Indication Space											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 18. Printed/Typed Name Richard LaBeno						Signature [Signature] Mo. Day Year 09102004					

COPY 1-DISPOSER STATE - MAILED BY TSD FACILITY

In case of emergency or spill immediately call the National Response Center (800) 424-8802 and the NYS Department of Environmental Conservation (518) 457-7362

TRACTOR # 1108TRAILER # 246

DRIVER

Fred

SJ TRANSPORTATION CO., INC.

1176 U.S. ROUTE 40

P.O. BOX 169

WOODSTOWN, NJ 08098

(856) 769-2741

WWW.SJTRANSPORTATION.COM

BL # 73407

CODE # 5284 - 1

DATE 09/07/04

MANIFEST # _____

SHIPPER:

CONSIGNEE:

NYSDEC

DUPONT

1 INDUSTRIAL STREET

CHAMBERWORKS, ROUTE 130

GOWANDA

NY

14070

DEEPWATER

NJ

08023

SEAN PEPLING

(315) 437-1142

TRAILER TYPE TVAC

PICKUP DATE 09/07/04

DELIVER DATE 09/07/04

GROSS WT

UNIT:

TIME 9 AM

TIME ASAP

TARE WT

IN # 246 OUT # 246

IN _____ OUT _____

IN _____ OUT _____

NET WT

COMMENTS (EXPLAIN DELAY AND DISCREPANCIES):

COMMENTS (EXPLAIN DELAY AND DISCREPANCIES):

DESCRIPTION:

SEE MANIFEST FOR SHIPPING INFORMATION.

RQ HAZARDOUS WASTE, LIQUID 59" WCT GAL LOAD 5516
N.O.S. (contains Trichloroethylene
AND WATER) 9 NA 3082 PG III

OW-11920 RE- 02

SPECIAL INSTRUCTIONS:

BILL TO:

PO #

DRIVER: CALL OPS WHEN LOADED OR IF DELAYED 2 HRS OR MORE
VAC FROM R4R FRAC TANK11391
ENV. WASTE MINIMIZATION INC.
114 BRICK KILN COURT

ACCT: SEE TVAC RATE

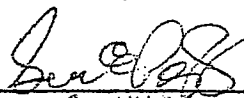
ORDERED BY: DIEDRE PH404-275-6903

NORTHAMPTON PA 18057

(484) 275-6900

I, THE UNDERSIGNED, CERTIFY THE LISTED INFORMATION AND DEMURRAGE TIME IS TRUE AND COMPLETE.

SHIPPER

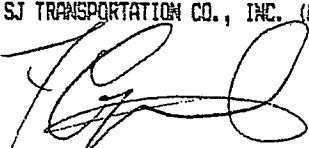

for NYSDEC

DATE

9/7/04

CONSIGNEE

DATE

PERSONNEL ARE AVAILABLE 24 HOURS/DAY WITH KNOWLEDGE OF THE HAZARDS OF THE CARRIER: SJ TRANSPORTATION CO., INC. (800) 524-2552
MATERIAL AND EMERGENCY RESPONSE INFORMATION OR WHO HAS ACCESS TO A PERSON PER: 
WITH THAT KNOWLEDGE. DATE:

WHITE COPY - S-J, YELLOW COPY - DRIVER, PINK COPY - TSDF, GOLD COPY - CUSTOMER

TRACTOR # 1100TRAILER # 251

DRIVER

LAWSON

SJ TRANSPORTATION CO., INC.

1176 U.S. ROUTE 40

P.O. BOX 169

WOODSTOWN, NJ 08698

(856) 769-2741

WWW.SJTRANSPORTATION.COM

BL # 74878

CODE # 5284 - 1

DATE 09/07/04

MANIFEST # 4019934

SHIPPER:

CONSIGNEE:

NYSDEC

DUPONT

1 INDUSTRIAL STREET

GOWANDA

NY

14870

CHAMBERWORKS, ROUTE 130

DEEPWATER

NJ

09023

SEAN PEPLING

(315) 437-1142

TRAILER TYPE TVAC

PICKUP DATE 09/07/04

DELIVER DATE 09/07/04

GROSS WT

UNIT:

TIME 930 AM

TIME ASAP

TARE WT

IN #

OUT #

251

IN

OUT

12:30

IN

OUT

NET WT

COMMENTS (EXPLAIN DELAY AND DISCREPANCIES):

LATE Due to TRUCK NEEDED
to be Fixed.
VAC FROM TANK

COMMENTS (EXPLAIN DELAY AND DISCREPANCIES):

DESCRIPTION: No HAZARDOUS WASTE liquid N.O.S. 20 INCHES

GAL LOAD

116.17

SEE MANIFEST FOR SHIPPING INFORMATION

CONTAINS Trichloroethylene & WATER, 9, NA3082, PGIII

DN-11920 RE-2

Done 03217 NJ044 TAG T24U8KNS

SPECIAL INSTRUCTIONS:

BILL TO:

PO #

DRIVER: CALL OPS WHEN LOADED OR IF DELAYED 2 HRS OR MORE

VAC FROM R&R FRAC TANK

11391

IENV. WASTE MINIMIZATION INC.

114 BRICK KILN COURT

NORTHAMPTON PA 18057

(484) 275-6900

VAC time START 12:40 FINISH 1:05

ACCT: SEE TVAC RATE

ORDERED BY: DIEDRE PE484-275-6903

I, THE UNDERSIGNED, CERTIFY THE LISTED INFORMATION AND DEMURRAGE TIME IS TRUE AND COMPLETE.

SHIPPER

Sean Pepling
AS agent for NYSDECDATE 9/7/04

CONSIGNEE

DATE

PERSONNEL ARE AVAILABLE 24 HOURS/DAY WITH KNOWLEDGE OF THE HAZARDS OF THE MATERIAL AND EMERGENCY RESPONSE INFORMATION OR WHO HAS ACCESS TO A PERSON WITH THAT KNOWLEDGE.

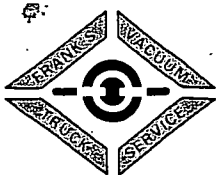
CARRIER: SJ TRANSPORTATION CO., INC. (800) 524-2552

PER:

DATE:

9/7/04

WHITE COPY - S-J, YELLOW COPY - DRIVER, PINK COPY - TSBF, GOLD COPY - CUSTOMER



FRANK'S VACUUM TRUCK SERVICE, INC.
4500 Royal Avenue • Niagara Falls, New York 14303
(716) 284-2132

87200

DATE 09/07/2004

NYDEC #9A-332
EPA ID # NYD982792814

PICK UP				DELIVERY				
SHIPPER	NAME	NYS DEC			NAME	CHEMICAL WASTE		
	STREET	1 INDUSTRIAL PL			STREET	1550 BALMER ROAD		
	CITY	GOWANDA, NY	STATE	ZIP CODE	CITY	MODEL CITY, NY	STATE	ZIP CODE
	CONTACT NAME	DEIDRE FOX		814-775-0503	CONTACT NAME	LANCE SACER		716-784-3305
	SCHEDULED TIME	09/07/2004		08:00	SCHEDULED TIME	09/07/2004		12:30

ADDITIONAL INFORMATION

CUSTOMER P.O. NO.	WORK ORDER NUMBER	MANIFEST NUMBER	BILLING REFERENCE
LOAD NUMBER 6574	TRACTOR NUMBER 410	TRAILER NUMBER 123-B	DRIVER'S NAME

NUMBER & TYPES	WEIGHT OR VOLUME	HAZ. MAT.	DESCRIPTION OF WASTE(S) (PER 49 CFR)	CUSTOMER CODE
			As per manifest # NHA 1430928	

TYPE (CIRCLE ONE)	PLACARDS PROVIDED OR AFFIXED	WHEN "RQ" QUANTITY RELEASED INTO ENVIRONMENT, IMMEDIATELY NOTIFY NAT. RESPONSE CENTER - 800-424-8802 AND 911 EMERGENCY SYSTEM OR LOCAL OPERATOR	EMERGENCY RESPONSE PHONE NUMBER:
TANK (S/S) (R/L) VAC DUMP VAN ROLL-OFF FLATBED	SHIPPER'S CHECK LIST DOT LABELS APPLIED AND SECURE DOT AUTHORIZED CONTAINERS PROPER DOT NAME ON ALL PACKAGES CHECKED FOR PROPER SEALING		

PICK UP	DELIVERY
ARRIVAL DATE 9-7-04	DRIVER _____ DATE _____
ARRIVAL TIME 8:00 AM	ARRIVAL TIME _____ AM _____ PM
RELEASE TIME 10:00 AM	RELEASE TIME _____ AM _____ PM
TRAILER EMPTY UPON ARRIVAL ☐ YES ☐ NO	TRAILER EMPTY UPON DEPARTURE ☐ YES ☐ NO
(If not, explain below)	(If not, explain below)
DIP MEASUREMENT (Tankers Only) _____ INCHES	COMMENTS: (EXPLAIN ALL DELAYS)
COMMENTS: (EXPLAIN ALL DELAYS) Loading	
SHIPPER'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.	
X [Signature] TITLE Driver	X [Signature]
SHIPPER'S SIGNATURE	CONSIGNEE'S SIGNATURE

Appendix I



APPENDIX I

GROUNDWATER ELEVATION DATA

TABLE I-1
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER ELEVATION STATISTICS

WELL	GROUND ELEVATION (ft MSL)	REFERENCE ELEVATION (ft MSL)	TOP OF SCREEN (ft BG)	BOTTOM SCREEN (ft BG)	MINIMUM DTW (feet BG)	MAXIMUM DTW (feet BG)	MINIMUM ELEVATION (ft MSL)	MAXIMUM ELEVATION (ft MSL)	RANGE (feet)
MW-1	777.1	779.74	6.0	16.0	3.72	7.34	772.40	776.02	3.62
MW-2	776	775.15	10.0	20.0	3.41	10.75	764.4	771.74	7.34
MW-3	775.95	775.48	8.0	23.0	4.38	7.73	767.75	771.10	3.35
MW-4	775.67	775.24	7.0	22.0	4.22	7.65	767.59	771.02	3.43
MW-5	775.28	774.79	8.0	18.0	6.96	9.33	765.46	767.83	2.37
MW-6	771.26	770.63	5.5	10.5	4.83	6.38	764.25	765.8	1.55
MW-7	764.3	766.39	11.0	16.0	9.24	12.62	753.77	757.15	3.38
MW-8	770.29	770.05	5.5	10.5	4.96	6.58	763.47	765.09	1.62
MW-9	776	775.55	5.0	20.0	3.17	9.35	766.2	772.38	6.18
MW-10	774.2	773.67	5.0	15.0	6.35	8.76	764.91	767.32	2.41
MW-11	776.3	775.81	4.0	14.0	3.82	10.50	765.31	771.99	6.68
MW-12	776.1	775.74	4.5	14.5	3.14	10.27	765.47	772.6	7.13
RW-1	776.1	775.23	NM	NM	3.42	10.66	764.57	771.81	7.24
TW-2	775.09	774.78	17.0	27.0	9.04	9.32	765.46	765.74	0.28
TW-3	775.74	775.44	11.0	21.0	5.64	7.09	768.35	769.8	1.45
TB-dam	NM	778.35	NA	NA	0.66	1.08	777.27	777.69	0.42
TB-cnr	NM	777.93	NA	NA	11.87	12.80	765.13	766.06	0.93

NOTES:

ft MSL - feet above mean sea level.

ft BG - feet below ground.

DTW - depth to water in feet relative to top of well casing.

FIGURE I-1
GROUNDWATER CONTOUR MAP
APRIL 7, 2004

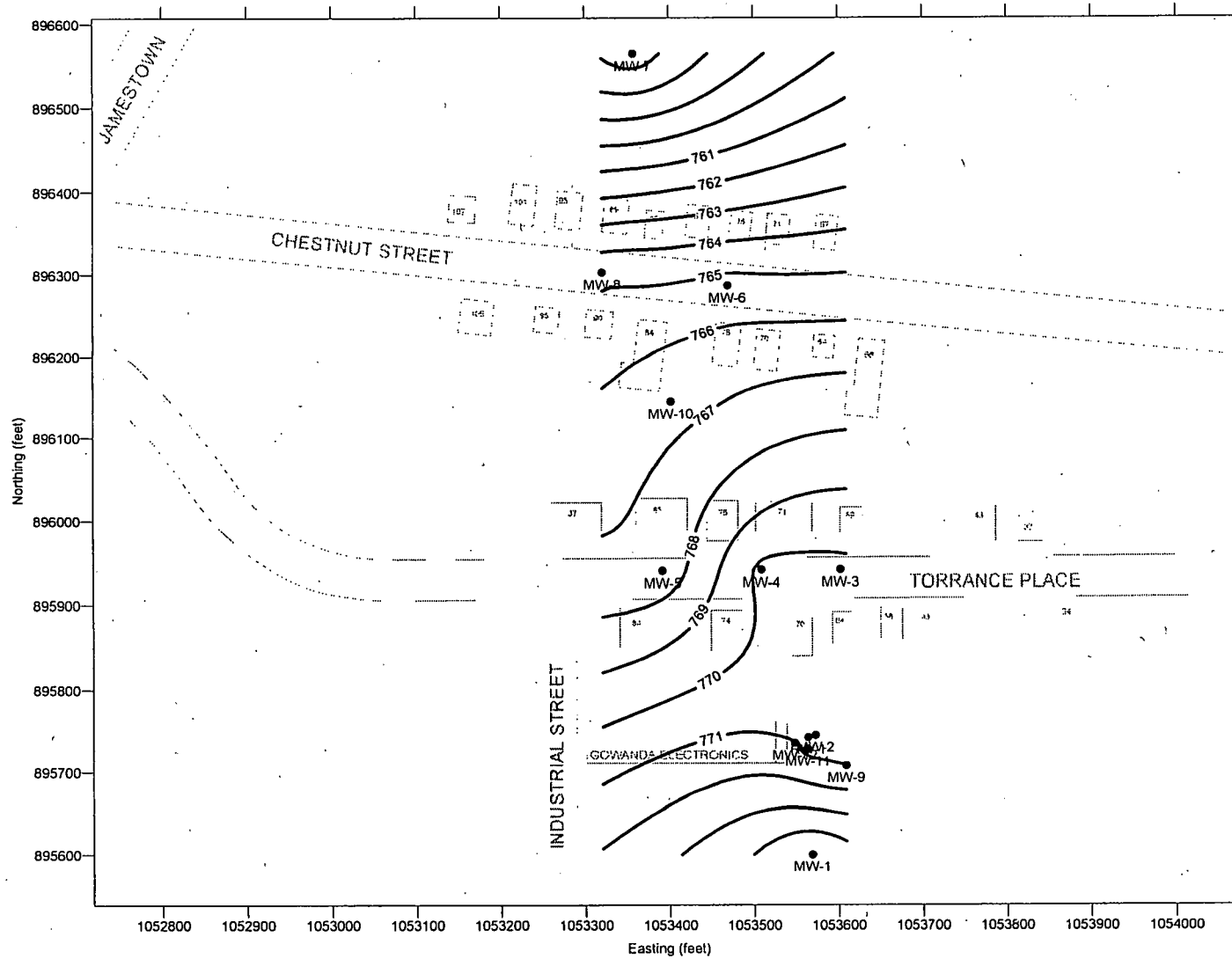


FIGURE I-2
GROUNDWATER CONTOUR MAP
MAY 24, 2004

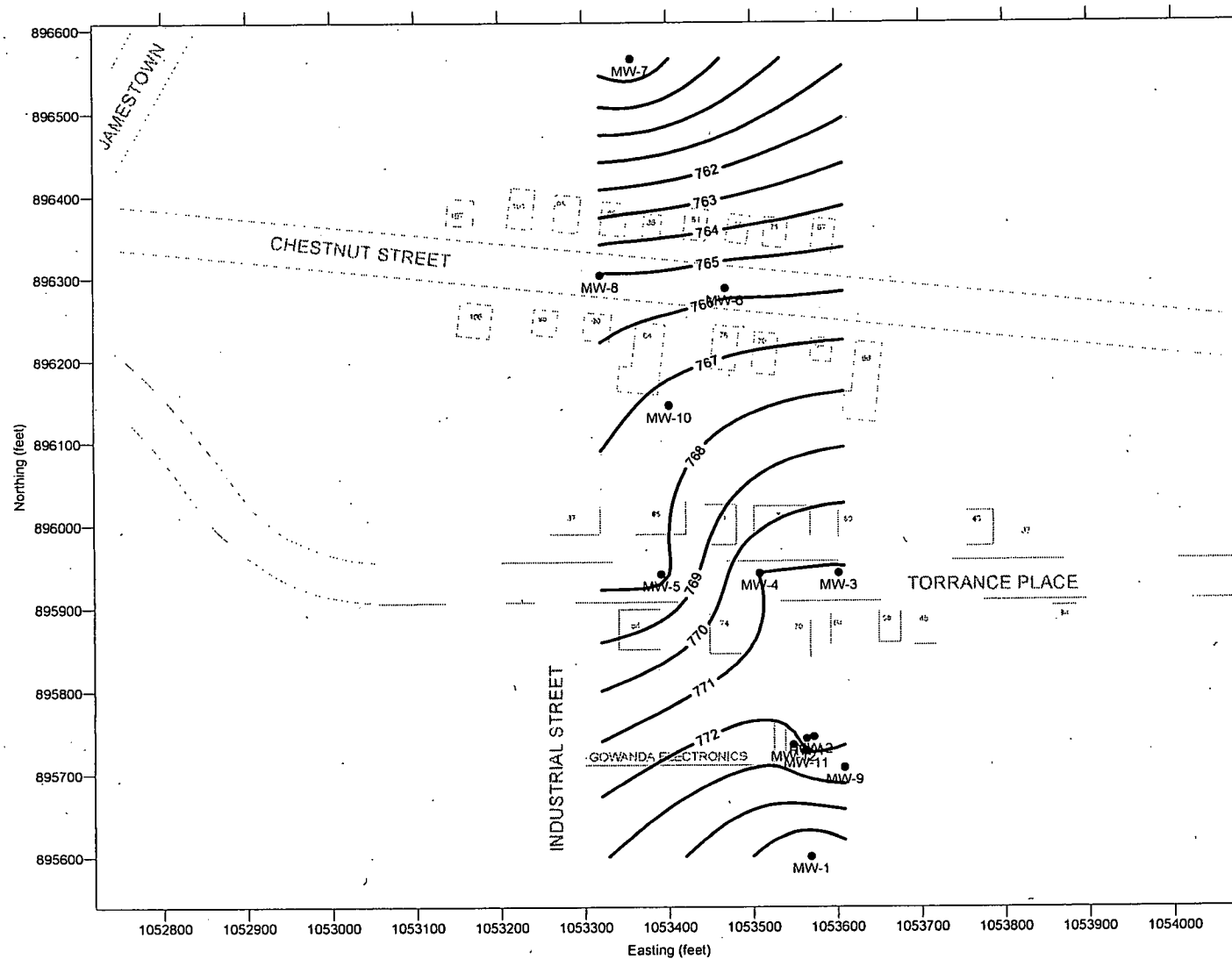


FIGURE I-3
GROUNDWATER CONTOUR MAP
MAY 26, 2004

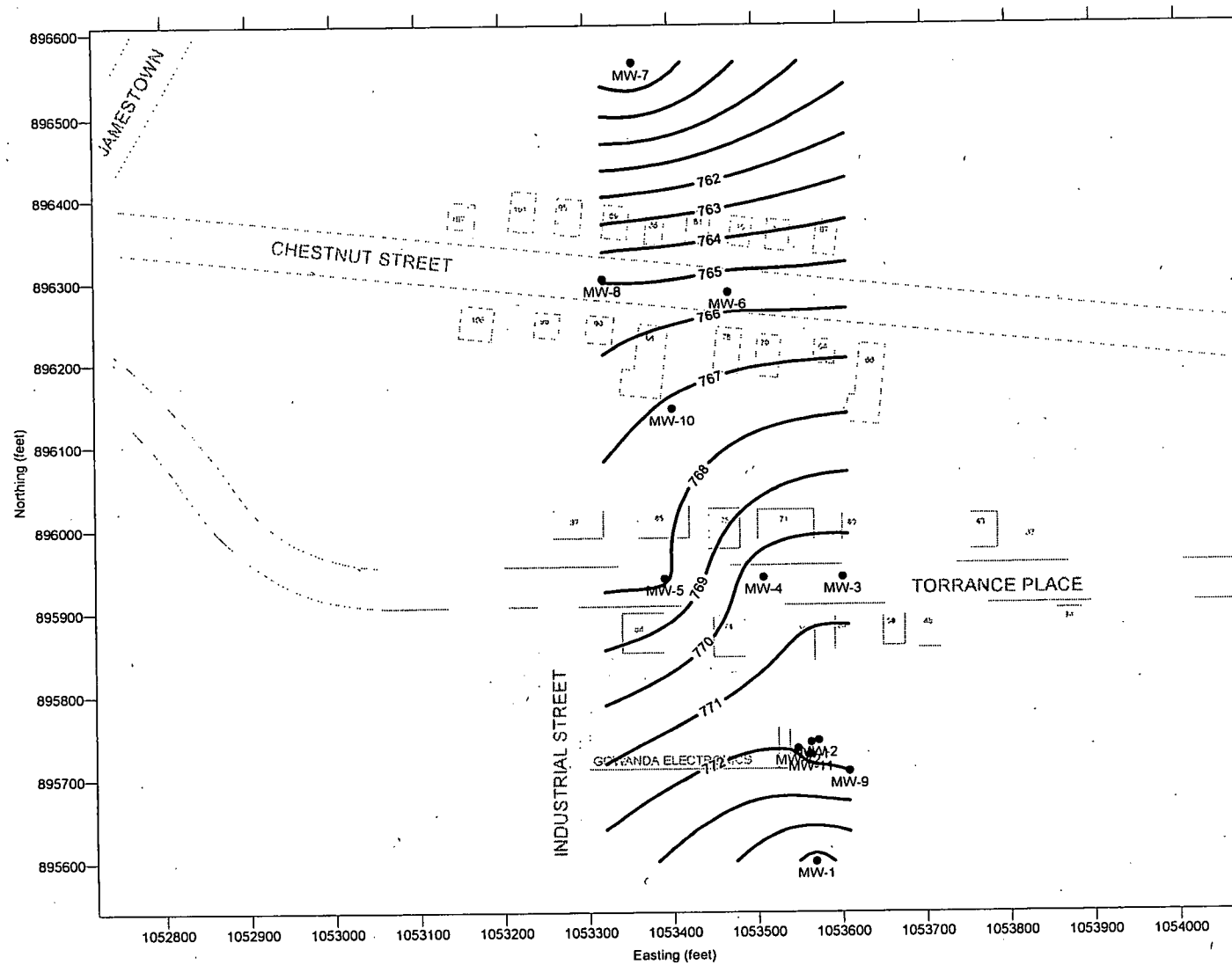


FIGURE I-4
GROUNDWATER CONTOUR MAP
JUNE 2, 2004

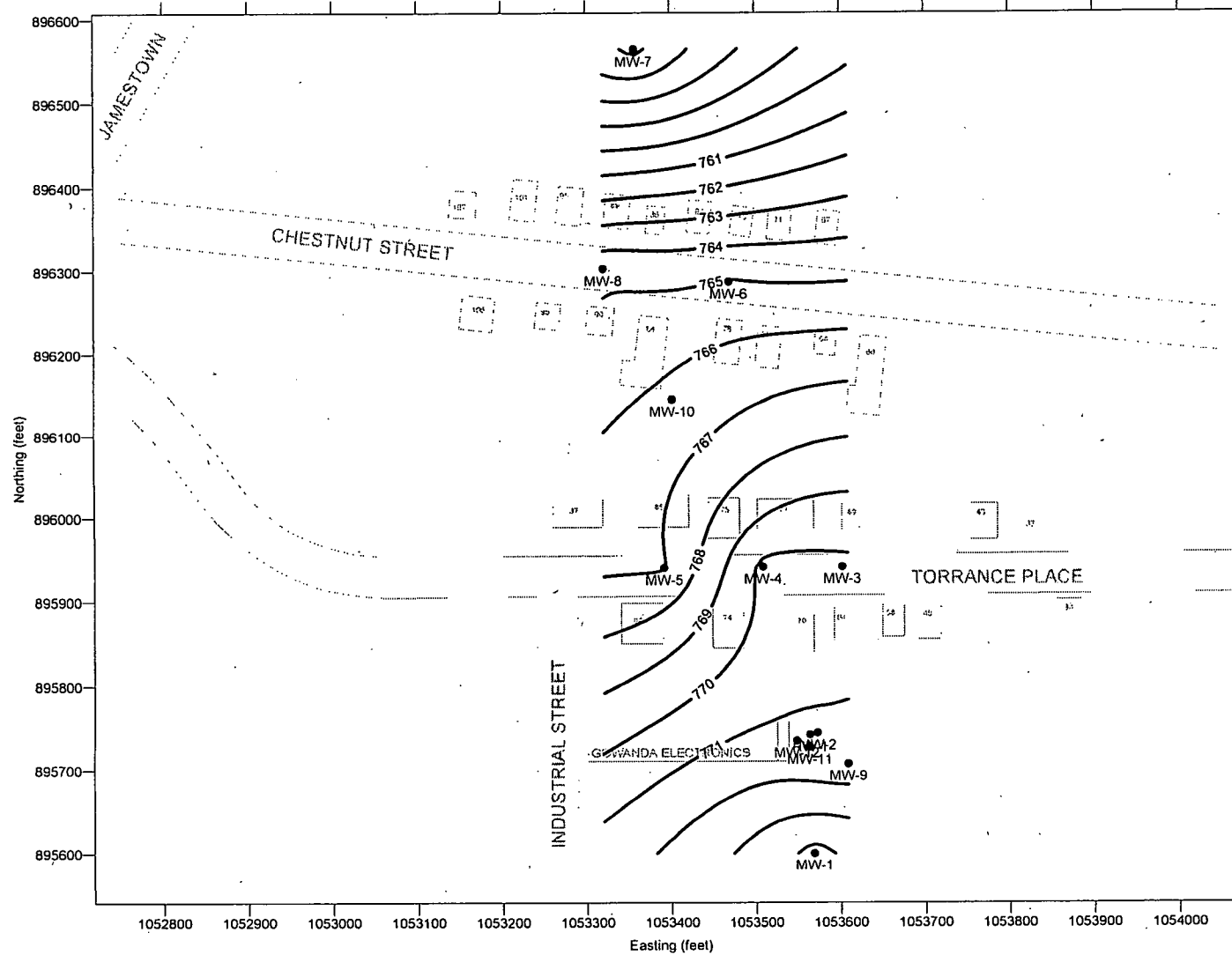


FIGURE I-5
GROUNDWATER CONTOUR MAP
JUNE 14, 2004

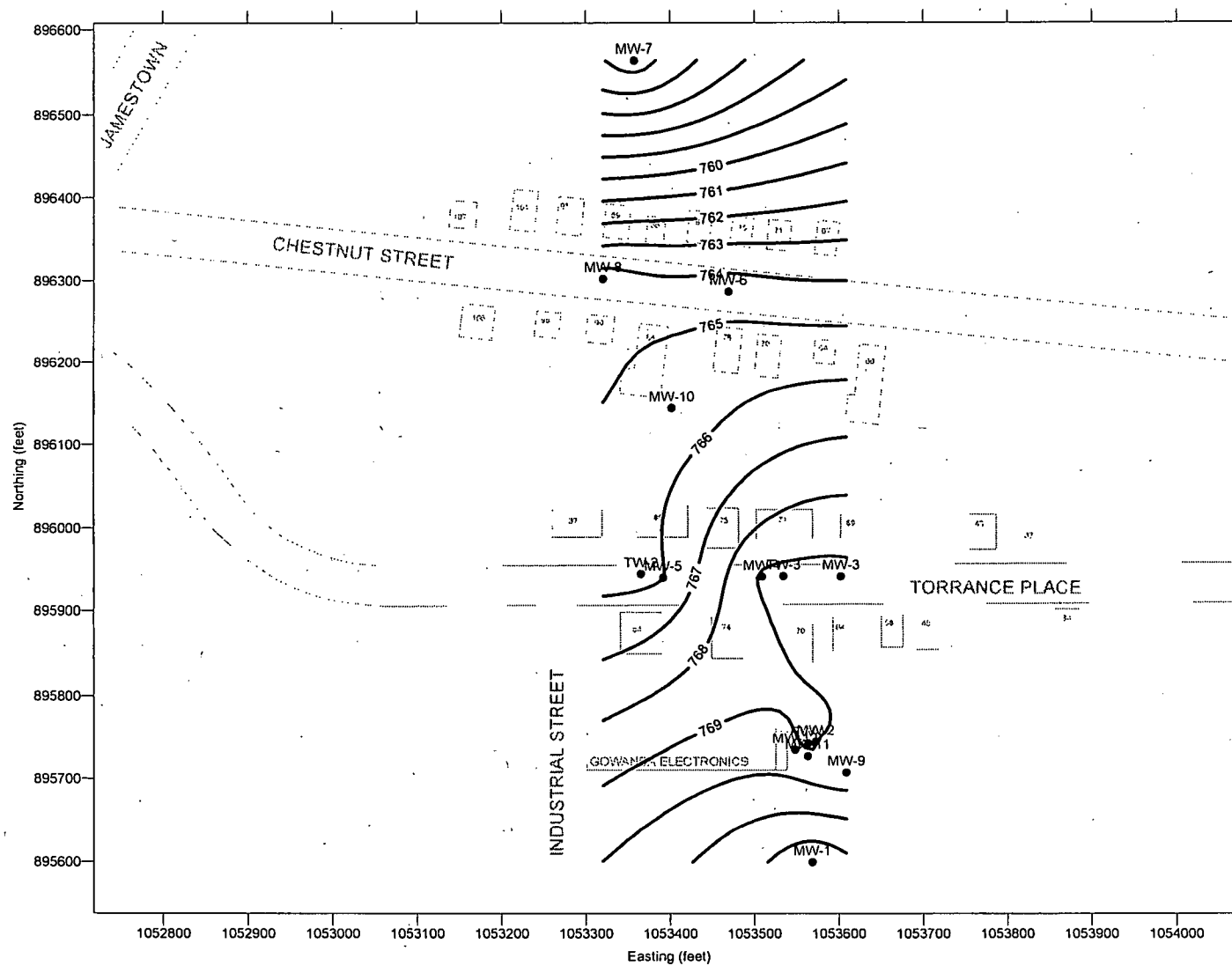


FIGURE I-6
GROUNDWATER CONTOUR MAP
JULY 26, 2004

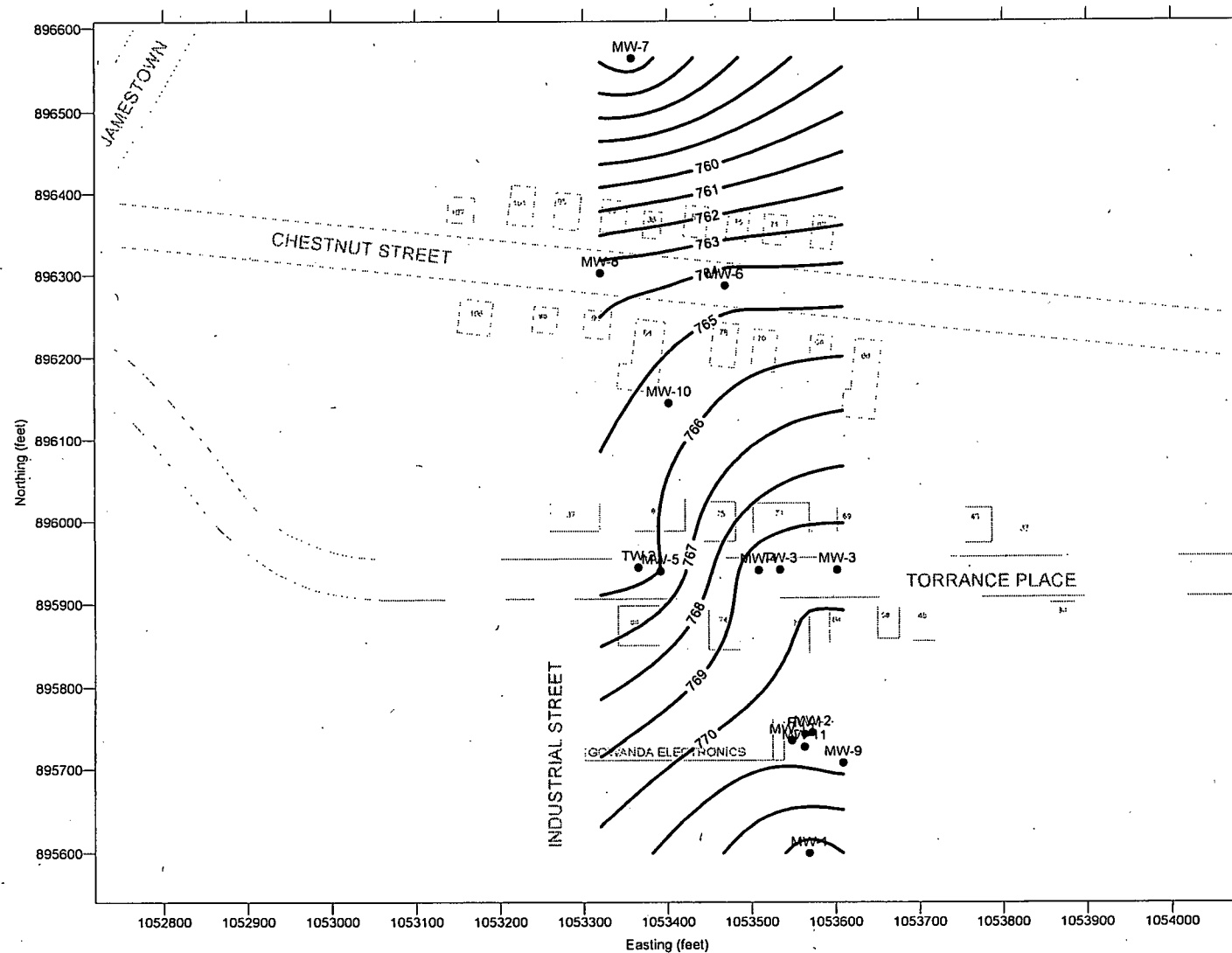


FIGURE I-7
GROUNDWATER CONTOUR MAP
JULY 30, 2004

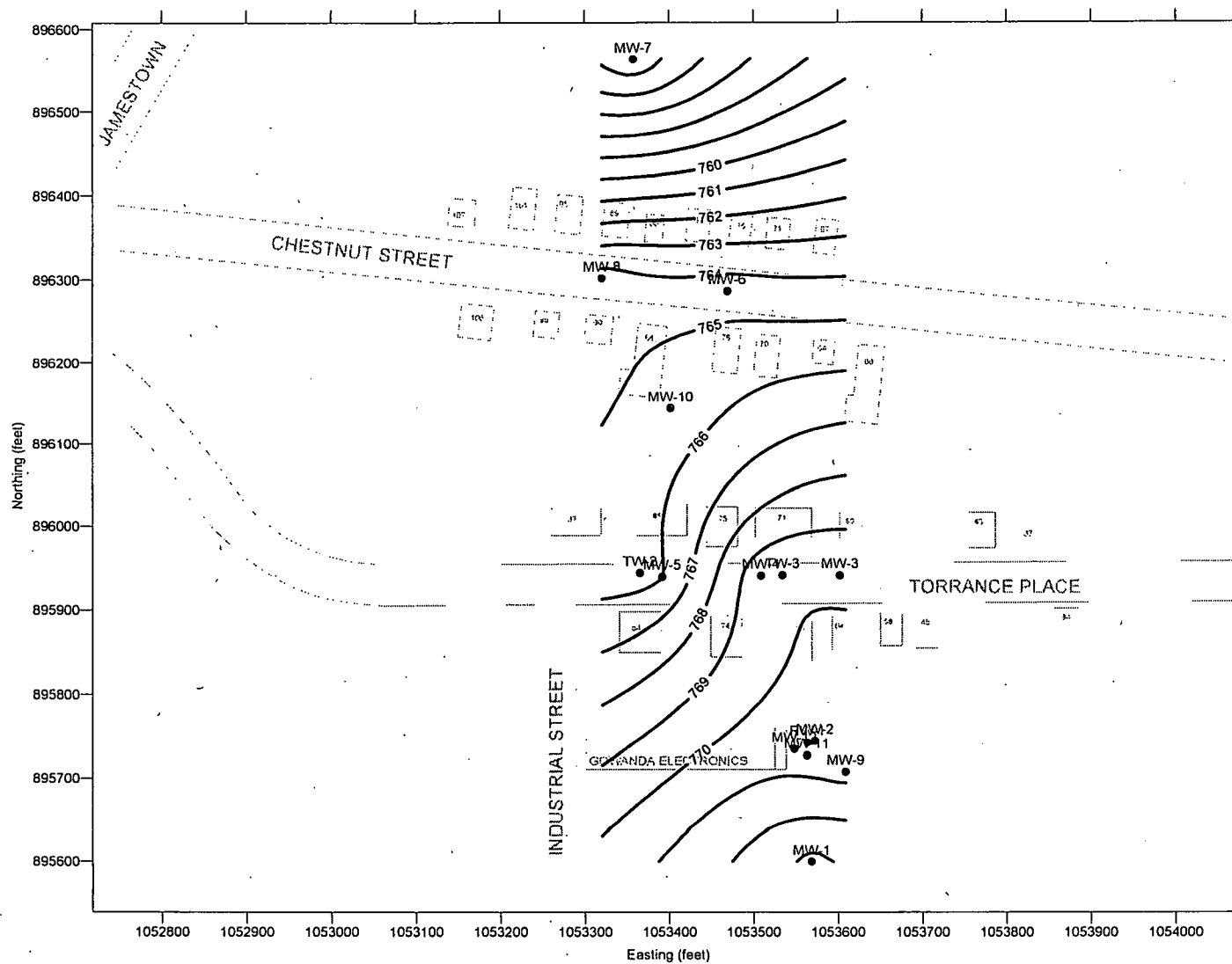
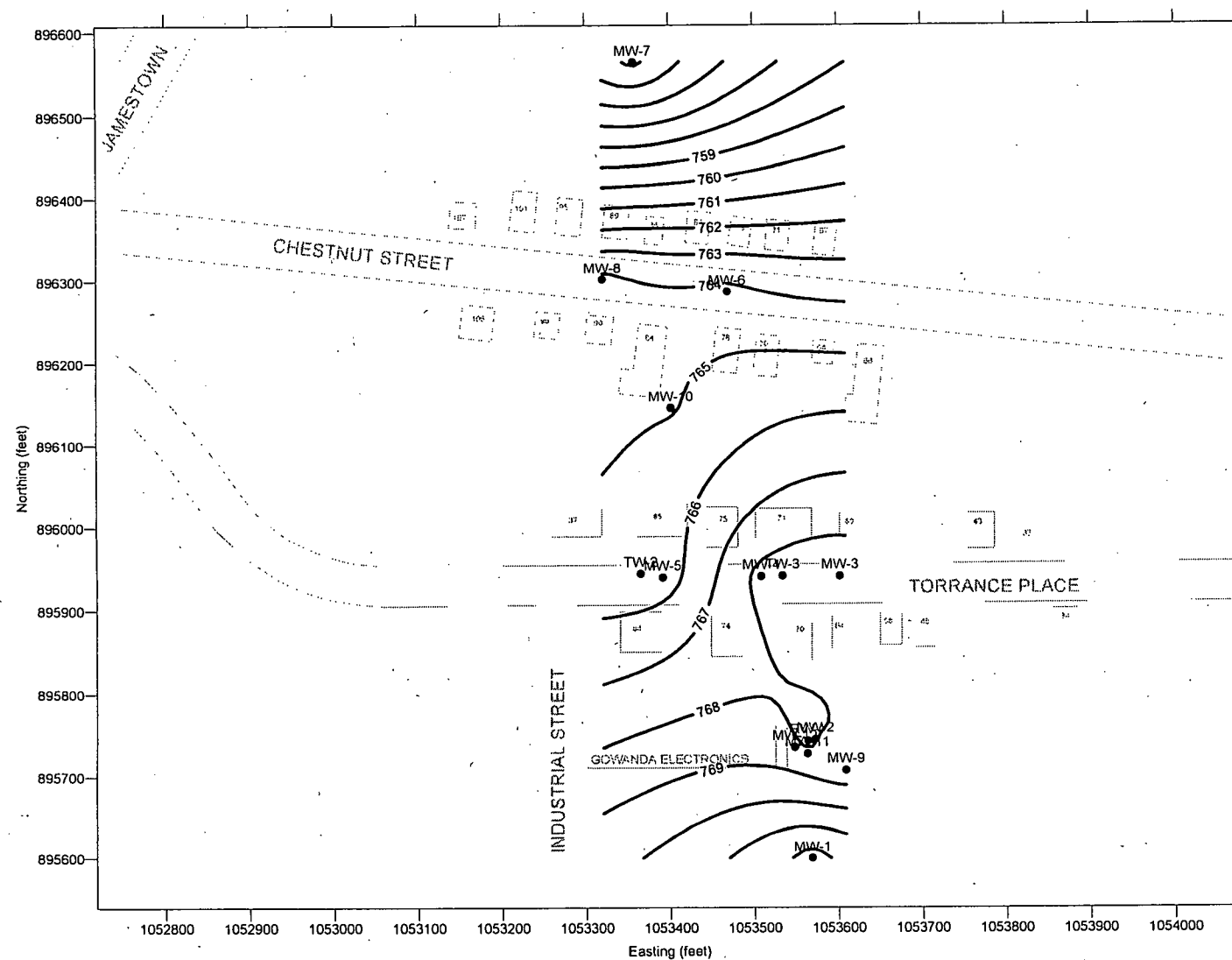


FIGURE I-8
GROUNDWATER CONTOUR MAP
SEPTEMBER 7, 2004



Appendix J

APPENDIX J
SIEVE ANALYSIS DATA

TABLE J-1
AVM GOWANDA SITE
PRE-DESIGN STUDY
SEIVE ANALYSIS OF SOIL SAMPLES
PERCENT PASSING

SIEVE SIZE (mm)	LOCATION and DEPTH (feet)							
	B-1	B-2	B-3	B-3	B-4	B-4	B-5	B-5
	24.0-28.0	8.0-16.0	17.0-22.0	29.0-36.0	12.0-20.0	20.0-24.0	12.0-16.0	20.0-24.0
38.10		100			100		100	100
25.40		84.7			98.2		87.2	94.7
19.05	100	72.3			96.9		83.1	94.7
12.70	99.6	63.8			94.9		76.6	94.7
9.53	99.6	60.1			94.2	100	72.4	94.6
6.35	99.5	51.5			92.3	99.7	66.7	93.7
4.75	99.1	47.0			91.2	99.6	63.5	93.0
2.00	98.4	37.8	100		90.4	99.5	57.3	92.4
0.60	96.3	26.8	99.9		88.1	98.7	48.7	90.3
0.425	95.8	24.7	99.8		87.6	98.5	47.3	89.9
0.250	94.6	20.8	99.4	100	86.9	98.3	45.2	89.4
0.150	91.2	17.4	90.2	99.9	86.2	97.8	43.0	86.3
0.075	87.7	14.0	69.8	96.3	85.5	97.3	40.0	81.6



PW LABORATORIES INC.
P.O. BOX 54, 5479 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • (800) 77PW-LABS • FAX 315-437-1752

SIEVE ANALYSIS OF SOIL / AGGREGATE

PROJECT TITLE Laboratory Testing - AVM - Gowanda
Project # 2184

PROJECT # L-04152

TEST METHOD ASTM D422 & D1140

REPORT # 1

REPORT DATE: September 7, 2004

		Sieve Size - Percent Passing Sieve														
Lab I.D. #	Sample	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
18135	B-1	24.0 - 38.0	--	--	100	99.6	99.6	99.5	99.1	98.4	96.3	95.8	94.6	91.2	87.7	
18136	B-2	8.0 - 16.0	100	84.7	72.3	63.8	60.1	51.5	47.0	37.8	26.8	24.7	20.8	17.4	14.0	
18137	B-3	17.0 - 22.0	--	--	--	--	--	--	--	100	99.9	99.8	99.4	90.2	69.8	
18138	B-3	29.0 - 36.0	--	--	--	--	--	--	--	--	--	--	100	99.9	96.3	
18139	B-4	12.0 - 20.0	100	98.2	96.9	94.9	94.2	92.3	91.2	90.4	88.1	87.6	86.9	86.2	85.5	
18140	B-4	20.0 - 24.0	--	--	--	--	100	99.7	99.6	99.5	98.7	98.5	98.3	97.8	97.3	
18141	B-5	12.0 - 16.0	100	87.2	83.1	76.6	72.4	66.7	63.5	57.3	48.7	47.3	45.2	43.0	40.0	
18142	B-5	20.0 - 24.0	100	94.7	94.7	94.7	94.6	93.7	93.0	92.4	90.3	89.9	89.4	86.3	81.6	

Sample mass, as received, meets minimum mass requirements of test method: Yes _____ No X

Remarks: _____

Prewashed: Yes X No _____

Performed By: MM, JM, KW

Checked By: V.J. Thoma

FIGURE J-1
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS

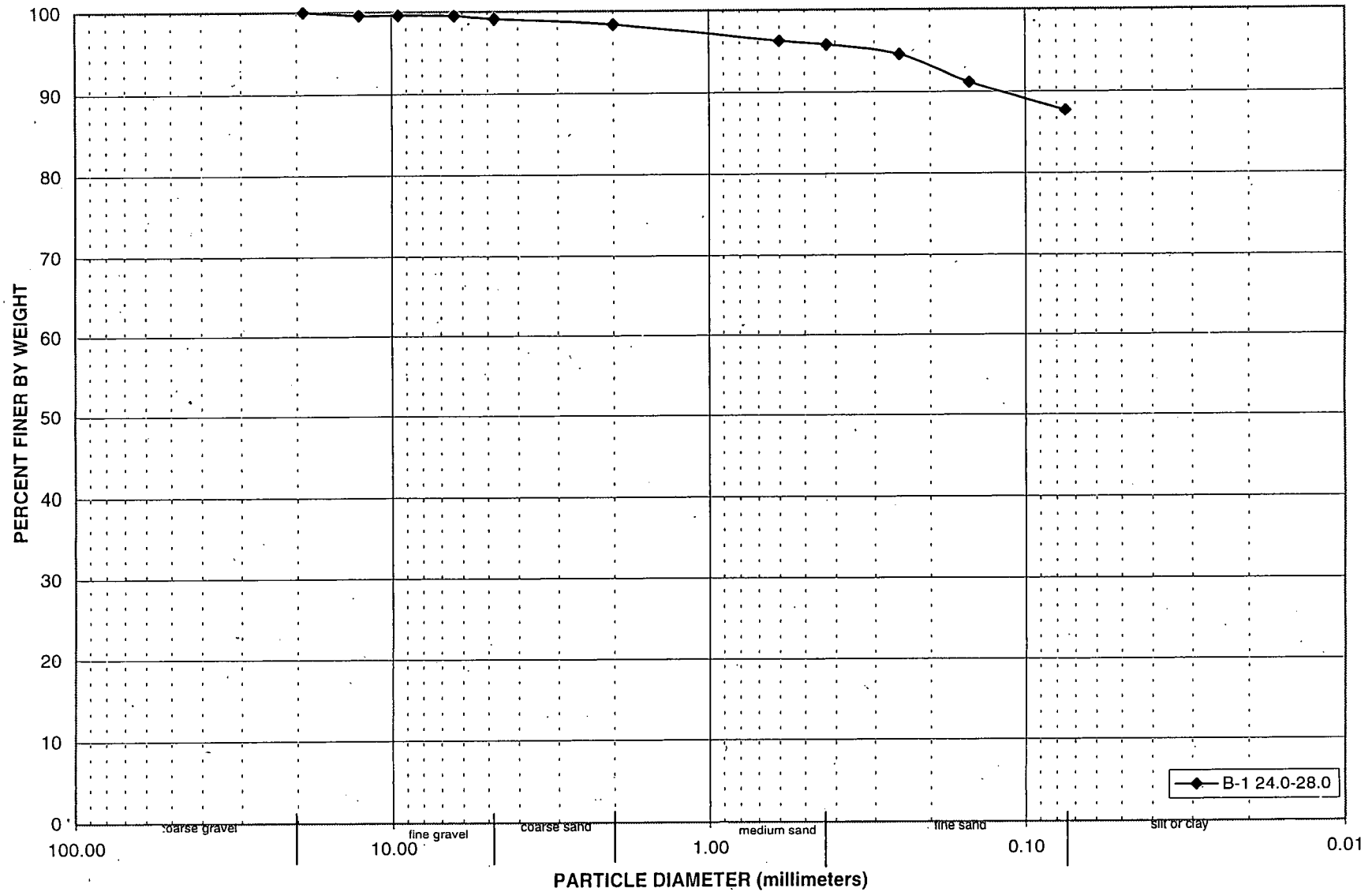


FIGURE J-2
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS

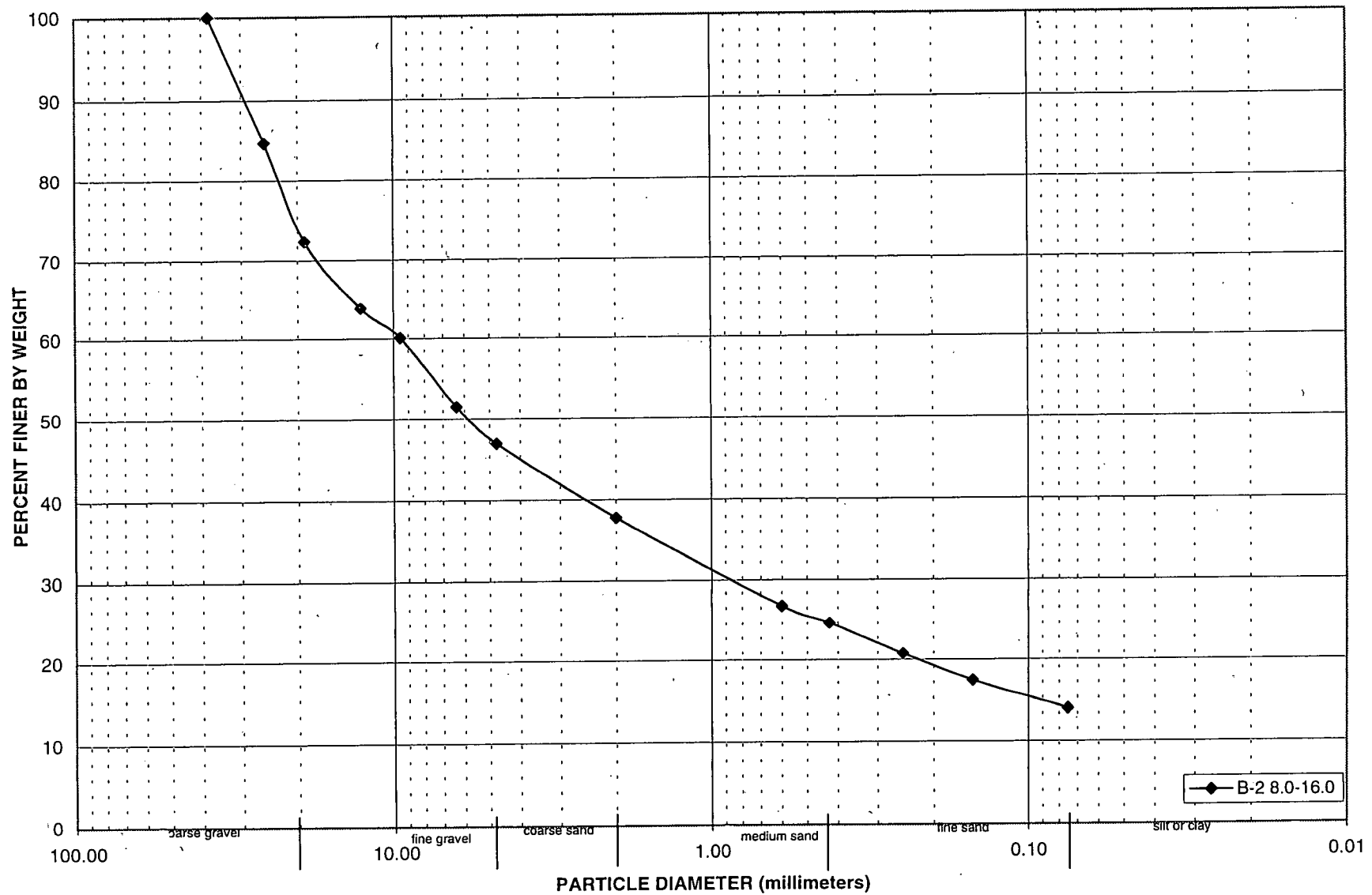
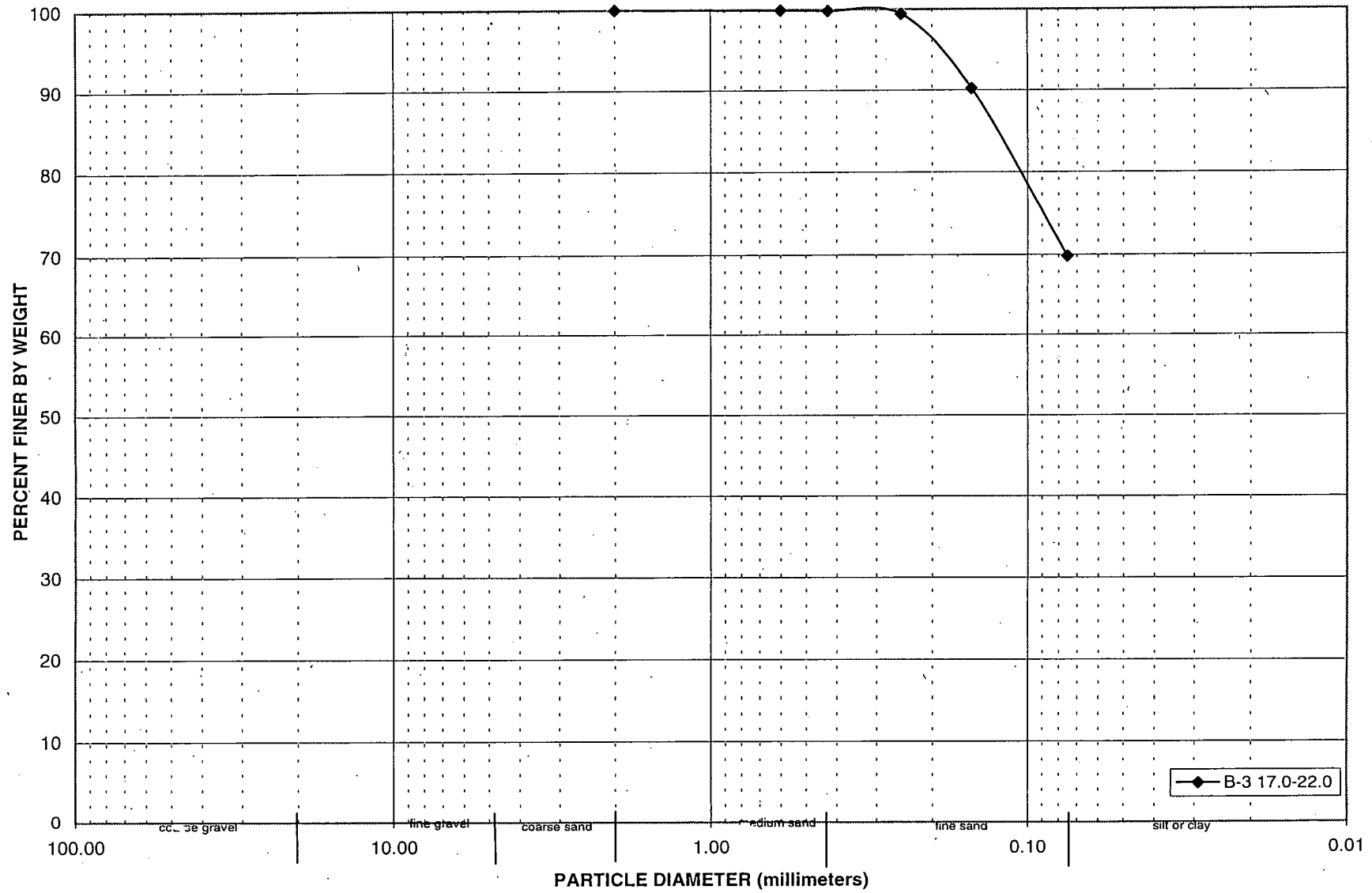


FIGURE J-3
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS



**FIGURE J-4
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS**

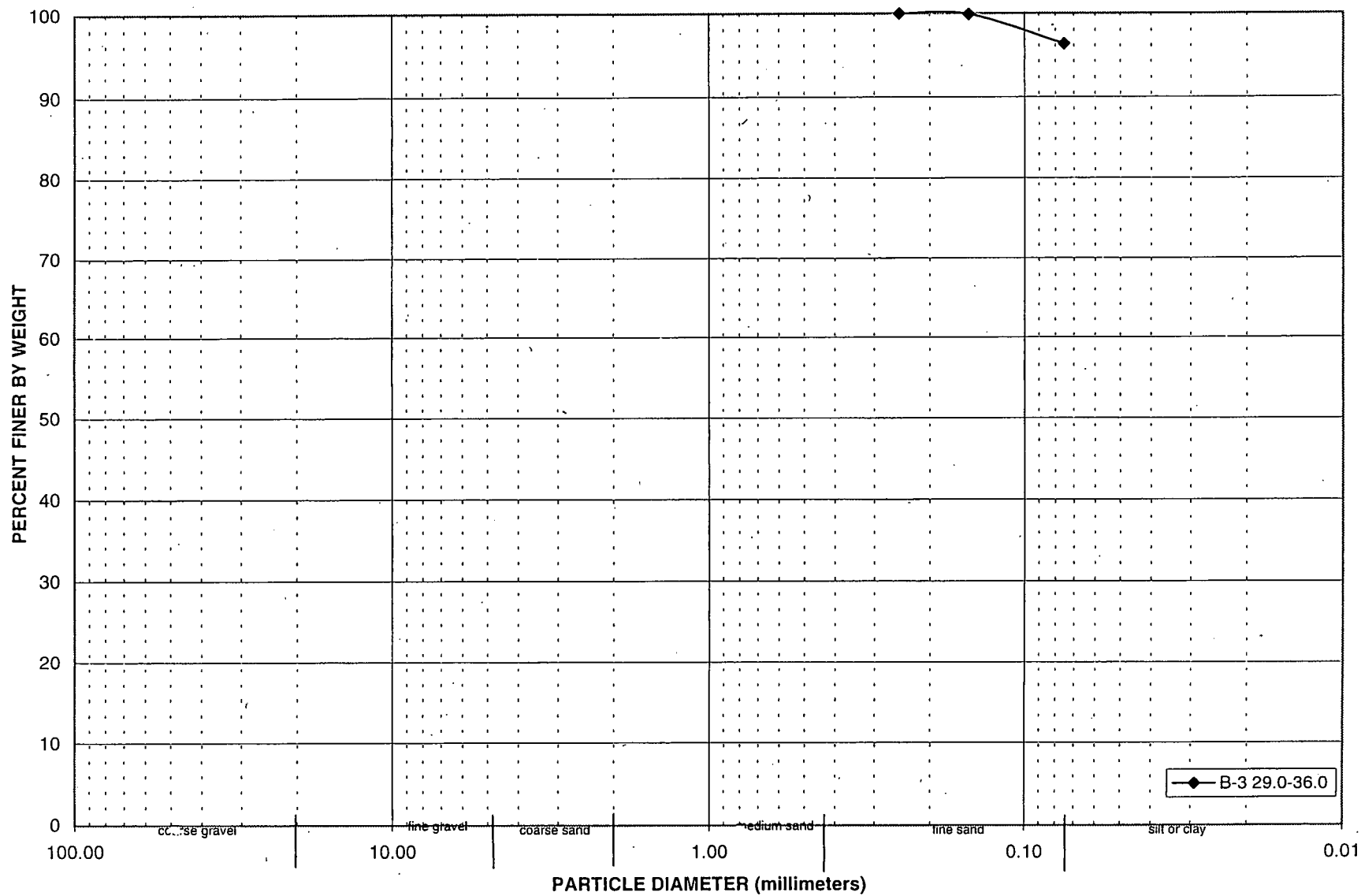


FIGURE J-5
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS

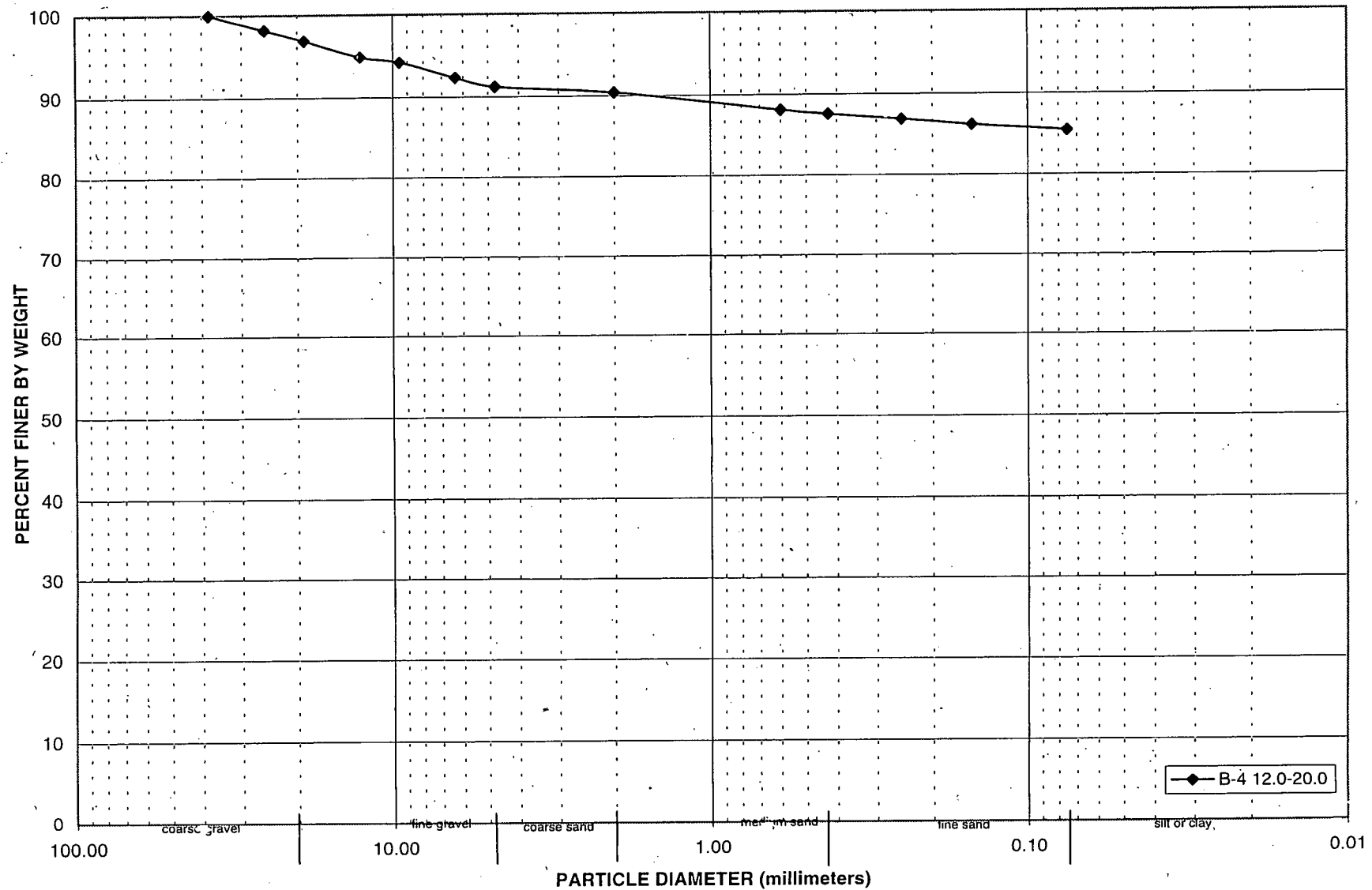


FIGURE J-6
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS

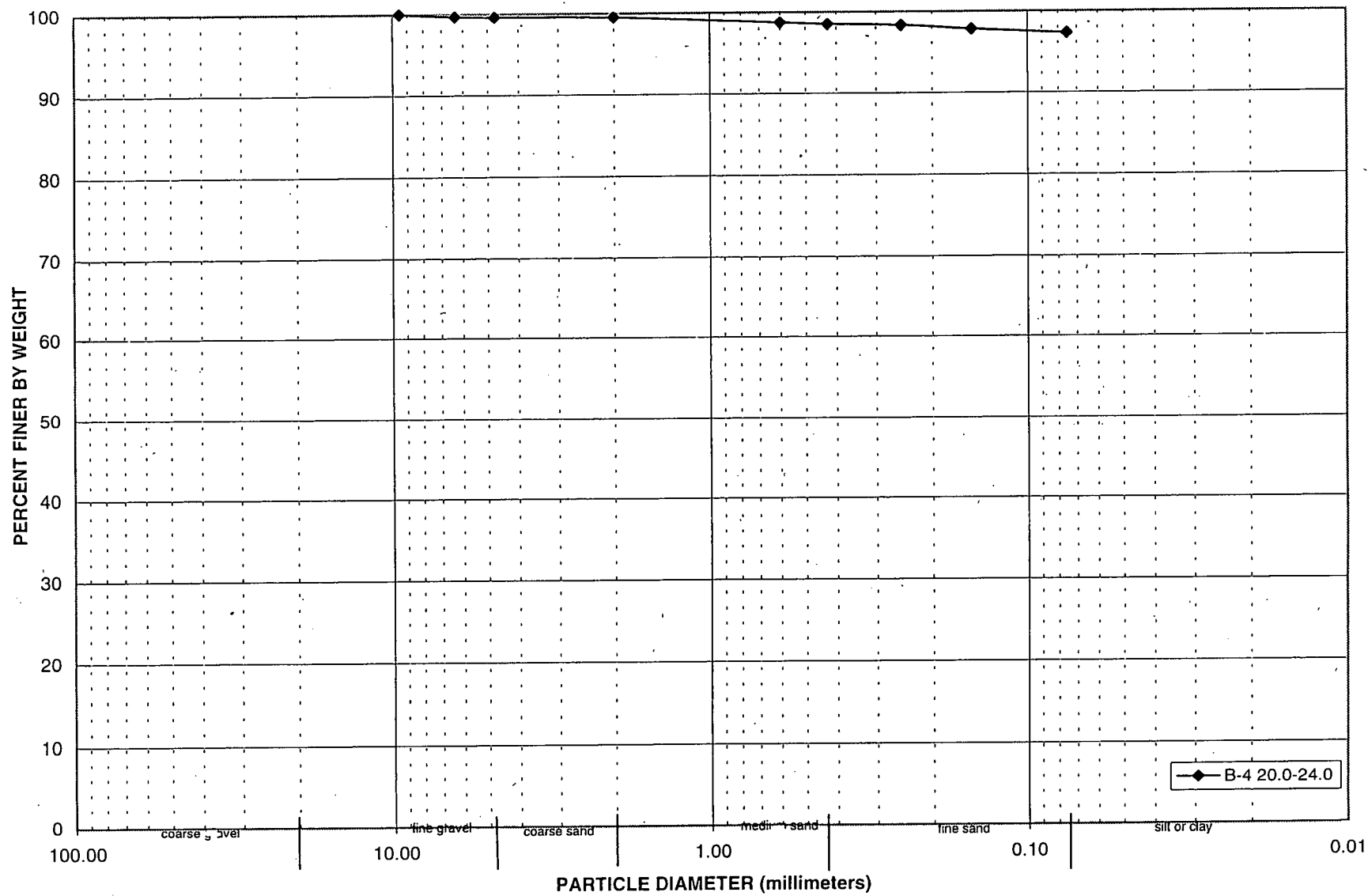


FIGURE J-7
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS

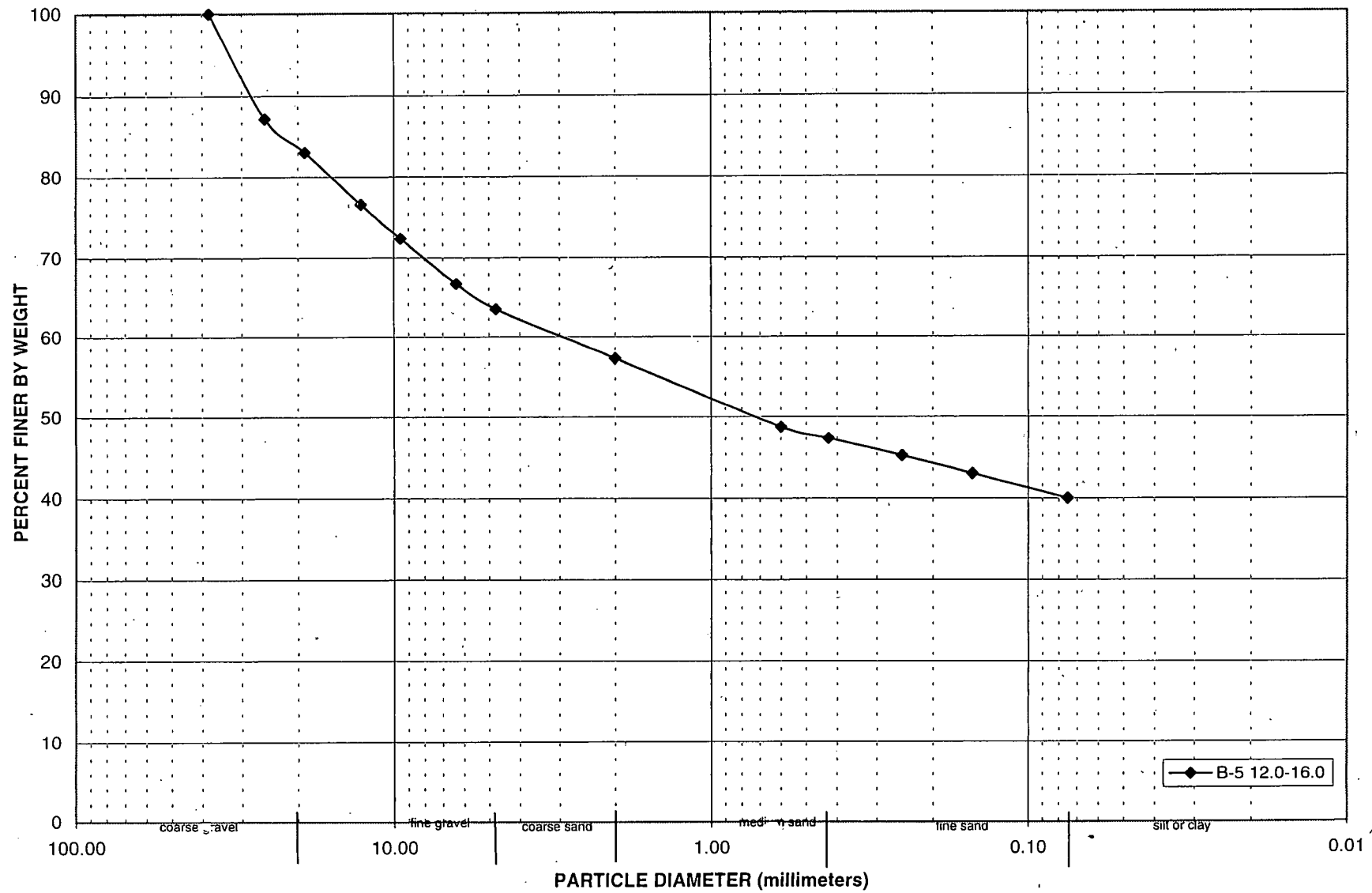
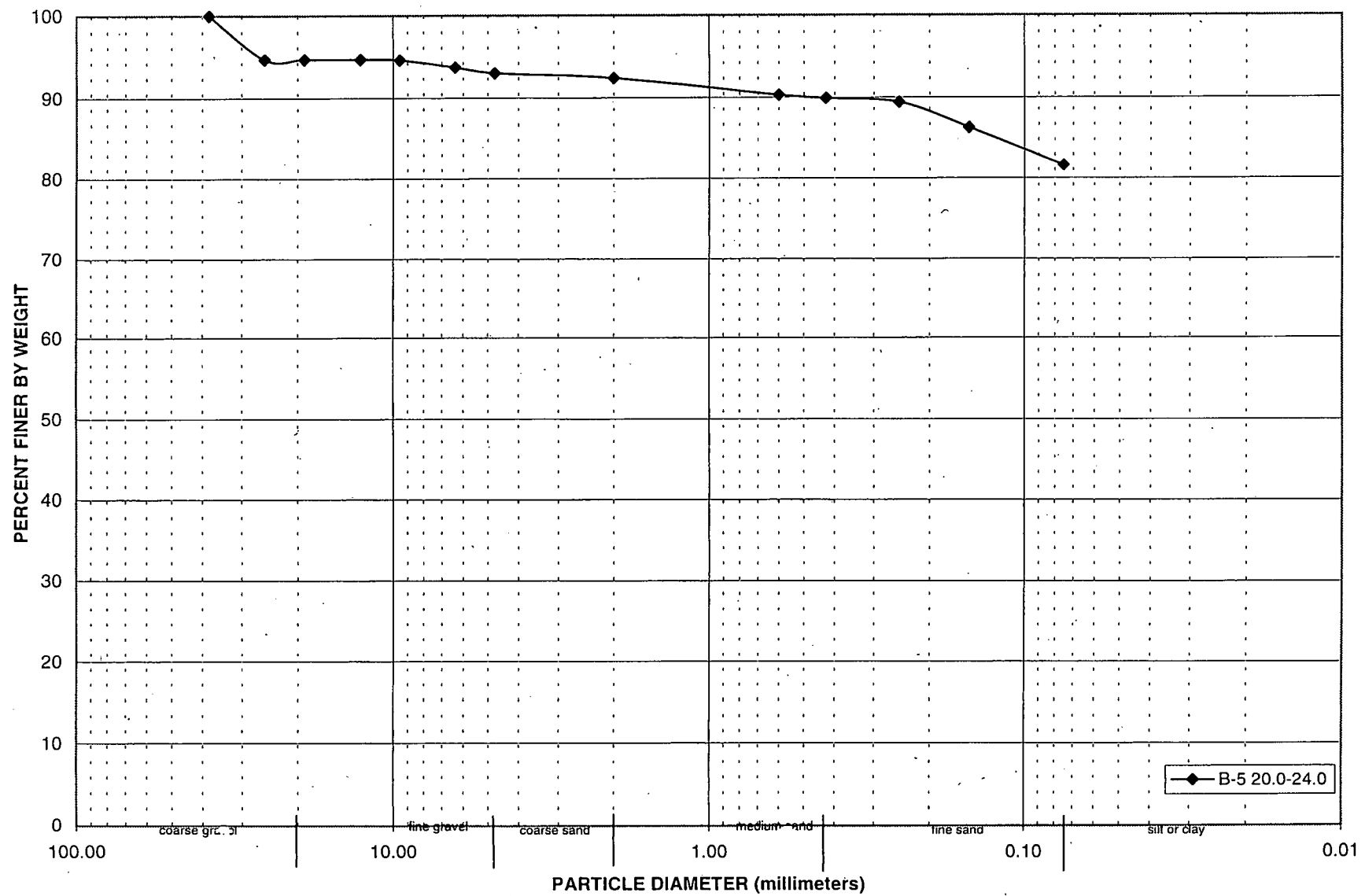


FIGURE J-8
AVM GOWANDA PRE-DESIGN STUDY
PARTICLE SIZE ANALYSIS



Appendix K



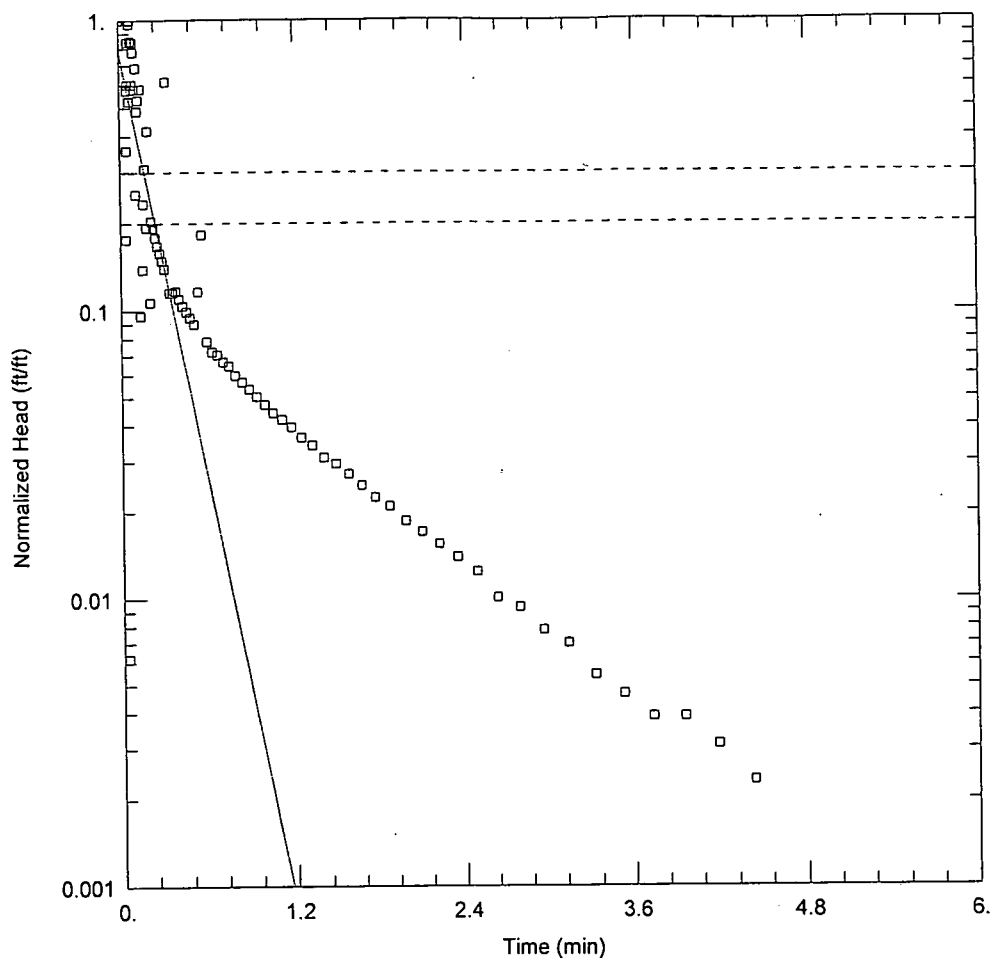
APPENDIX K
HYDRAULIC CONDUCTIVITY DATA

**AVM GOWANDA
PRE-DESIGN STUDY
HYDRAULIC CONDUCTIVITY TESTING RESULTS**

(results presented in cm/s)

Well	Slug	Bail	Geometric Mean
MW-3	2.02E-03	2.70E-03	2.25E-03
	1.92E-03	2.45E-03	
MW-4	2.67E-03	2.18E-03	2.26E-03
	2.18E-03	2.08E-03	
MW-7	5.47E-03	1.09E-02	7.09E-03
	3.72E-03	1.15E-02	
MW-8	9.51E-03	1.42E-02	1.39E-02
	3.86E-03	7.12E-02	
MW-10	4.09E-03	1.95E-02	1.04E-02
	7.40E-03	1.97E-02	
MW-11	3.88E-03	3.48E-03	3.05E-03
	2.35E-03	2.72E-03	
TW-2	2.86E-04	3.66E-04	3.57E-04
	4.28E-04	3.64E-04	
TW-3	2.64E-03	3.63E-03	2.97E-03
	2.62E-03	3.11E-03	

Geometric mean - overburden wells 3.37E-03



MW3 SLUG IN 1

Data Set: C:\...MW3 Slug In 1.aqt

Date: 08/24/04

Time: 15:24:30

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW3

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 17.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW3)

Initial Displacement: 1.29 ft

Static Water Column Height: 17.75 ft

Total Well Penetration Depth: 17.75 ft

Screen Length: 15. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.00202$ cm/sec

$v_0 = 1.014$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW3 Slug In 1.aqt
Title: MW3 SLUG IN 1
Date: 08/24/04
Time: 15:24:37

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW3

AQUIFER DATA

Saturated Thickness: 17.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.29 ft
Static Water Column Height: 17.75 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 17.75 ft

No. of Observations: 85

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.035	0.008	0.5547	0.236
0.04	0.228	0.5863	0.101
0.045	0.461	0.6213	0.093
0.05	0.741	0.6578	0.091
0.055	0.777	0.6963	0.086
0.06	1.082	0.738	0.083
0.065	0.68	0.7813	0.077
0.07	1.254	0.828	0.073
0.075	1.29	0.8763	0.069
0.08	1.095	0.928	0.065
0.0848	0.777	0.983	0.061
0.09	1.082	1.041	0.057
0.095	1.003	1.103	0.054
0.1	0.746	1.168	0.051
0.1058	0.325	1.238	0.047
0.112	0.885	1.311	0.044
0.1185	0.629	1.39	0.04
0.1255	0.686	1.473	0.038

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1328	0.124	1.561	0.035
0.1407	0.749	1.655	0.032
0.149	0.179	1.753	0.029
0.1578	0.302	1.858	0.027
0.167	0.398	1.968	0.024
0.177	0.25	2.085	0.022
0.1875	0.538	2.21	0.02
0.1985	0.138	2.341	0.018
0.2102	0.263	2.481	0.016
0.2227	0.249	2.63	0.013
0.2358	0.231	2.786	0.012
0.2498	0.216	2.953	0.01
0.2647	0.204	3.13	0.009
0.2803	0.192	3.316	0.007
0.297	0.18	3.515	0.006
0.3147	0.792	3.725	0.005
0.3333	0.149	3.946	0.005
0.3532	0.149	4.181	0.004
0.3742	0.151	4.43	0.003
0.3963	0.142	4.693	0.
0.4198	0.134	4.973	0.
0.4447	0.128	5.27	0.
0.4697	0.122	5.583	-0.001
0.4963	0.116	5.915	0.
0.5247	0.15		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 3.017

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.00202	cm/sec
y0	1.014	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.001438	0.0002663	cm/sec
y0	0.935	0.09576	ft

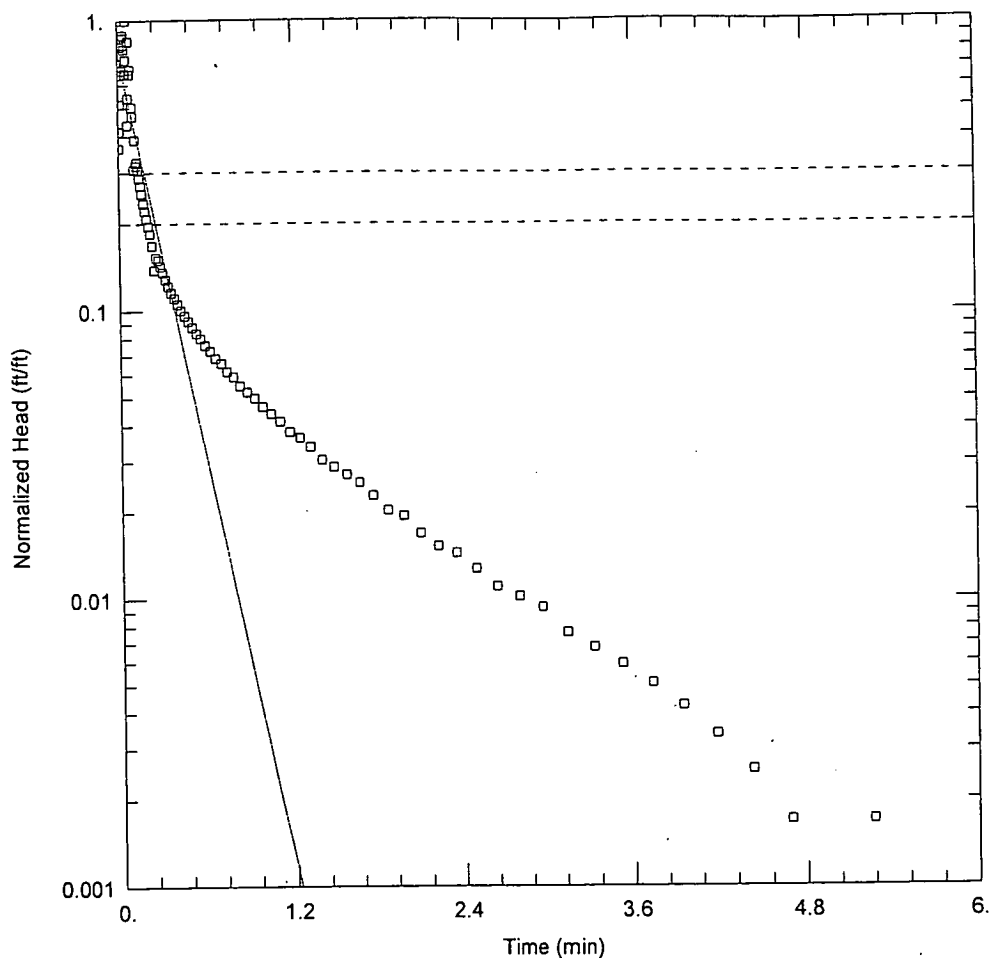
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.81
y0	0.81	1.00

Residual Statistics

for weighted residuals

Sum of Squares	3.53 ft ²
Variance	0.04253 ft ²
Std. Deviation	0.2062 ft
Mean	0.008746 ft
No. of Residuals	85
No. of Estimates	2



MW3 SLUG IN 2

Data Set: C:\...MW3 Slug In 2.aqt
Date: 08/24/04

Time: 15:27:45

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Well: MW3
Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 17.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW3)

Initial Displacement: 1.183 ft
Total Well Penetration Depth: 17.75 ft
Casing Radius: 0.083 ft

Static Water Column Height: 17.75 ft
Screen Length: 15. ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 0.001915 \text{ cm/sec}$

Solution Method: Bouwer-Rice
 $v_0 = 0.9304 \text{ ft}$

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW3 Slug In 2.aqt
Title: MW3 SLUG IN 2
Date: 08/24/04
Time: 15:27:50

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW3

AQUIFER DATA

Saturated Thickness: 17.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.183 ft
Static Water Column Height: 17.75 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 17.75 ft

No. of Observations: 89

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.431	0.4697	0.109
0.01	0.492	0.4963	0.104
0.015	0.611	0.5247	0.099
0.02	0.961	0.5547	0.095
0.025	0.77	0.5863	0.09
0.03	0.797	0.6213	0.086
0.035	0.972	0.6578	0.081
0.04	1.053	0.6963	0.078
0.045	0.944	0.738	0.073
0.05	0.777	0.7813	0.07
0.055	0.867	0.828	0.065
0.06	1.183	0.8763	0.062
0.065	0.518	0.928	0.059
0.07	0.641	0.983	0.055
0.075	1.003	1.041	0.052
0.08	0.773	1.103	0.049
0.0848	0.803	1.168	0.045
0.095	0.596	1.238	0.043

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1	0.555	1.311	0.04
0.1058	0.364	1.39	0.036
0.112	0.461	1.473	0.034
0.1185	0.375	1.561	0.032
0.1255	0.385	1.655	0.03
0.1328	0.362	1.753	0.027
0.1407	0.34	1.858	0.024
0.149	0.32	1.968	0.023
0.1578	0.301	2.085	0.02
0.167	0.278	2.21	0.018
0.177	0.262	2.341	0.017
0.1875	0.247	2.481	0.015
0.1985	0.232	2.63	0.013
0.2102	0.219	2.786	0.012
0.2227	0.199	2.953	0.011
0.2358	0.164	3.13	0.009
0.2498	0.181	3.316	0.008
0.2647	0.178	3.515	0.007
0.2803	0.169	3.725	0.006
0.297	0.161	3.946	0.005
0.3147	0.152	4.181	0.004
0.3333	0.144	4.43	0.003
0.3532	0.137	4.693	0.002
0.3742	0.131	4.973	0.
0.3963	0.125	5.27	0.002
0.4198	0.119	5.583	0.
0.4447	0.114		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 3.017

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.00202	cm/sec
y0	1.014	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.001915	0.0001934	cm/sec
y0	0.9304	0.04808	ft

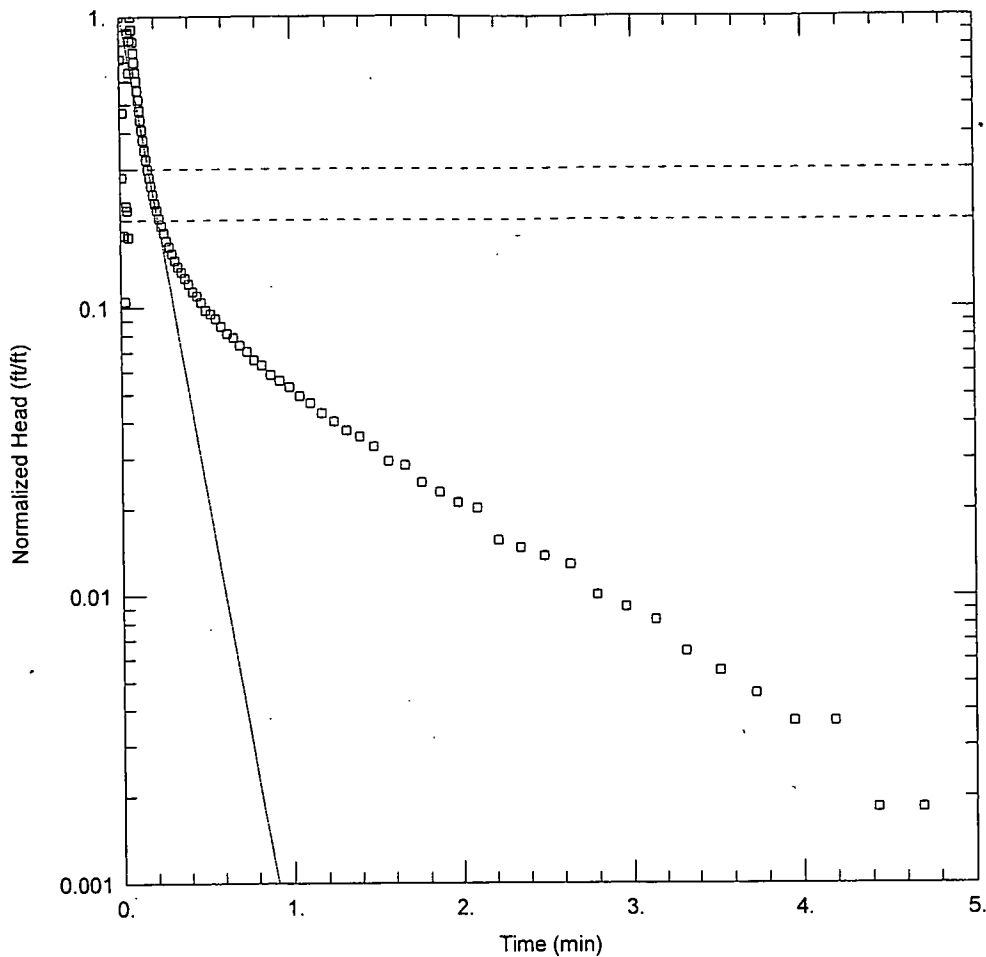
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.73
y0	0.73	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.377 ft ²
Variance	0.01583 ft ²
Std. Deviation	0.1258 ft
Mean	0.01092 ft
No. of Residuals	89
No. of Estimates	2



MW3 SLUG OUT 1

Data Set: C:\...MW3 Slug Out 1.aqt
 Date: 08/24/04

Time: 15:31:15

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW3
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 17.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW3)

Initial Displacement: 1.094 ft
 Total Well Penetration Depth: 17.75 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 17.75 ft
 Screen Length: 15 ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 0.002695 \text{ cm/sec}$

Solution Method: Bouwer-Rice
 $v_0 = 1.149 \text{ ft}$

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW3 Slug Out 1.aqt
Title: MW3 SLUG OUT 1
Date: 08/24/04
Time: 15:31:22

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW3

AQUIFER DATA

Saturated Thickness: 17.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.094 ft
Static Water Column Height: 17.75 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 17.75 ft

No. of Observations: 87

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.781	0.4447	0.12
0.01	0.307	0.4697	0.114
0.015	0.513	0.4963	0.107
0.02	0.194	0.5247	0.104
0.025	0.115	0.5547	0.1
0.035	0.245	0.5863	0.094
0.04	0.237	0.6213	0.089
0.045	0.191	0.6578	0.086
0.05	0.963	0.6963	0.081
0.055	0.704	0.738	0.077
0.06	0.911	0.7813	0.072
0.065	1.094	0.828	0.069
0.07	0.988	0.8763	0.064
0.075	0.898	0.928	0.061
0.08	0.825	0.983	0.058
0.0848	0.764	1.041	0.054
0.09	0.706	1.103	0.051
0.095	0.658	1.168	0.047

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1	0.611	1.238	0.044
0.1058	0.567	1.311	0.041
0.112	0.523	1.39	0.039
0.1185	0.484	1.473	0.036
0.1255	0.447	1.561	0.032
0.1328	0.413	1.655	0.031
0.1407	0.382	1.753	0.027
0.149	0.353	1.858	0.025
0.1578	0.327	1.968	0.023
0.167	0.307	2.085	0.022
0.177	0.287	2.21	0.017
0.1875	0.268	2.341	0.016
0.1985	0.25	2.481	0.015
0.2102	0.237	2.63	0.014
0.2227	0.222	2.786	0.011
0.2358	0.209	2.953	0.01
0.2498	0.198	3.13	0.009
0.2647	0.186	3.316	0.007
0.2803	0.177	3.515	0.006
0.297	0.168	3.725	0.005
0.3147	0.159	3.946	0.004
0.3333	0.151	4.181	0.004
0.3532	0.145	4.43	0.002
0.3742	0.138	4.693	0.002
0.3963	0.132	4.973	0.
0.4198	0.124		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 3.017

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.002695	cm/sec
y0	1.149	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.001191	0.0002078	cm/sec
y0	0.6717	0.05323	ft

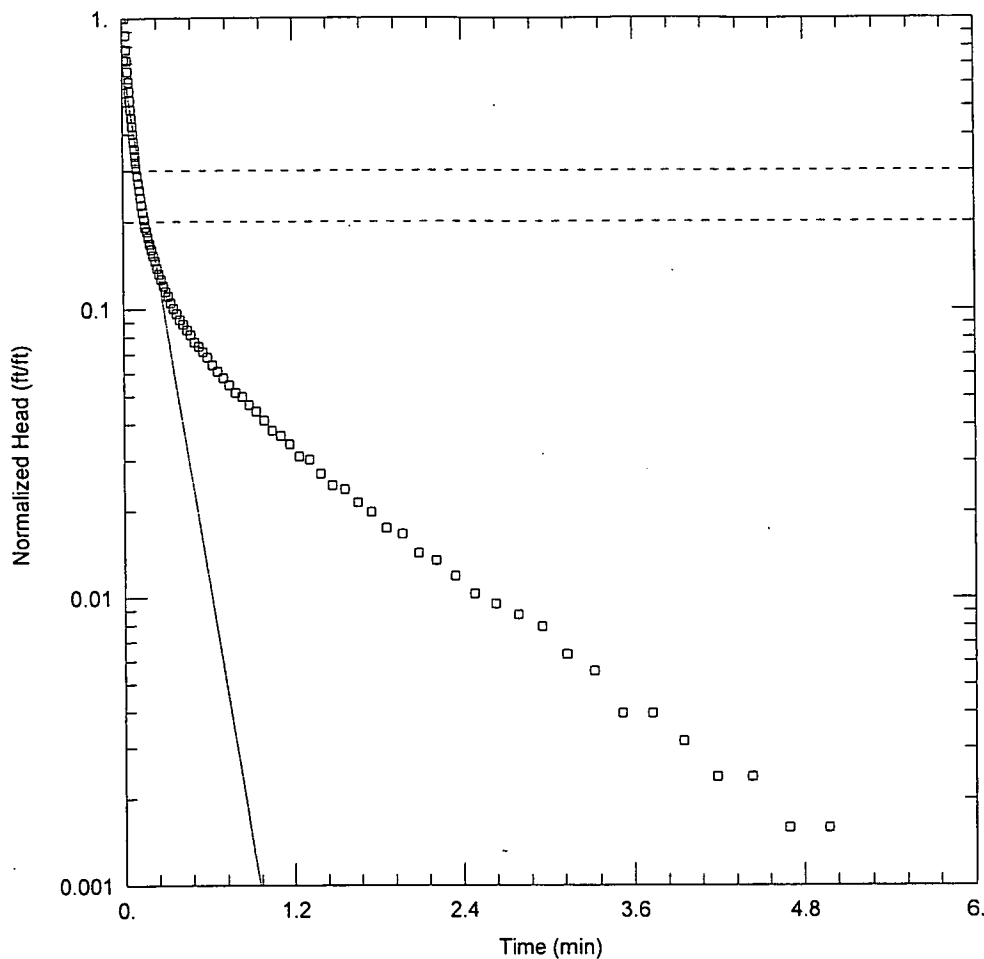
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.72
y0	0.72	1.00

Residual Statistics

for weighted residuals

Sum of Squares	2.355 ft ²
Variance	0.02771 ft ²
Std. Deviation	0.1665 ft
Mean	0.004445 ft
No. of Residuals	87
No. of Estimates	2



MW3 SLUG OUT 2

Data Set: C:\...MW3 Slug Out 2.aqt

Date: 08/24/04

Time: 15:35:20

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW3

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 17.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW3)

Initial Displacement: 1.263 ft

Static Water Column Height: 17.75 ft

Total Well Penetration Depth: 17.75 ft

Screen Length: 15. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.002448$ cm/sec

$v_0 = 0.9076$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW3 Slug Out 2.aqt
Title: MW3 SLUG OUT 2
Date: 08/24/04
Time: 15:35:27

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW3

AQUIFER DATA

Saturated Thickness: 17.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.263 ft
Static Water Column Height: 17.75 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 17.75 ft

No. of Observations: 89

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	-0.005	0.4447	0.107
0.01	0.702	0.4697	0.103
0.015	0.911	0.4963	0.097
0.02	1.263	0.5247	0.094
0.025	1.105	0.5547	0.09
0.03	0.987	0.5863	0.086
0.035	0.901	0.6213	0.081
0.04	0.829	0.6578	0.077
0.045	0.764	0.6963	0.073
0.05	0.709	0.738	0.069
0.055	0.659	0.7813	0.065
0.06	0.614	0.828	0.063
0.065	0.573	0.8763	0.059
0.07	0.538	0.928	0.056
0.075	0.506	0.983	0.052
0.08	0.476	1.041	0.048
0.0848	0.45	1.103	0.046
0.09	0.425	1.168	0.043

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.404	1.238	0.039
0.1	0.385	1.311	0.038
0.1058	0.364	1.39	0.034
0.112	0.343	1.473	0.031
0.1185	0.324	1.561	0.03
0.1255	0.306	1.655	0.027
0.1328	0.288	1.753	0.025
0.1407	0.272	1.858	0.022
0.149	0.257	1.968	0.021
0.1578	0.242	2.085	0.018
0.167	0.234	2.21	0.017
0.177	0.223	2.341	0.015
0.1875	0.212	2.481	0.013
0.1985	0.203	2.63	0.012
0.2102	0.193	2.786	0.011
0.2227	0.185	2.953	0.01
0.2358	0.175	3.13	0.008
0.2498	0.167	3.316	0.007
0.2647	0.16	3.515	0.005
0.2803	0.152	3.725	0.005
0.297	0.145	3.946	0.004
0.3147	0.14	4.181	0.003
0.3333	0.133	4.43	0.003
0.3532	0.127	4.693	0.002
0.3742	0.122	4.973	0.002
0.3963	0.116	5.27	0.
0.4198	0.112		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 3.017

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.002695	cm/sec
y0	1.149	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.002448	0.0002696	cm/sec
y0	0.9076	0.05492	ft

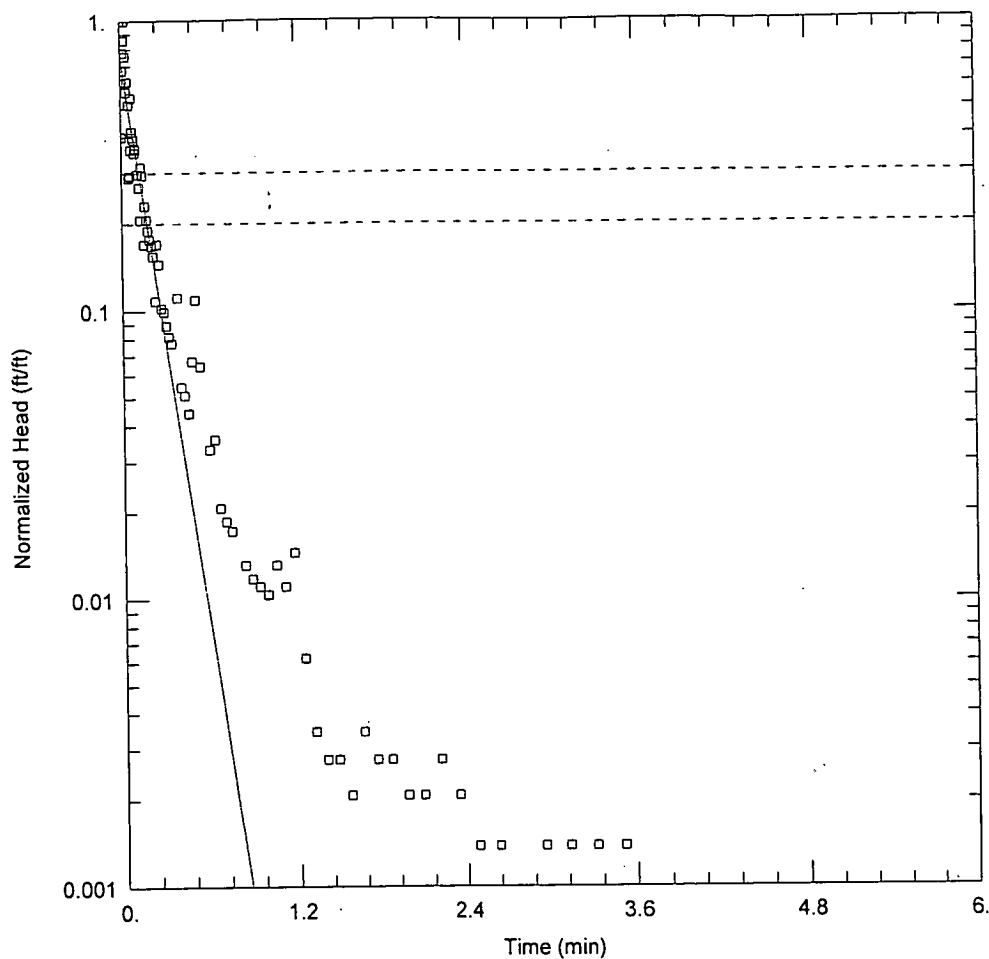
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.75
y0	0.75	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.444 ft ²
Variance	0.0166 ft ²
Std. Deviation	0.1288 ft
Mean	0.01676 ft
No. of Residuals	.89
No. of Estimates	.2



MW4 SLUG IN 1

Data Set: C:\...\MW4 Slug In 1.aqt

Date: 08/24/04

Time: 16:00:10

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW4

Test Date: 7/30/04

AQUIFER DATA

Saturated Thickness: 16.05 ft

Anisotropy Ratio (K_z/K_r): 1

WELL DATA (MW4)

Initial Displacement: 1.449 ft

Static Water Column Height: 16.05 ft

Total Well Penetration Depth: 16.05 ft

Screen Length: 15 ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.002668 \text{ cm/sec}$

$v_0 = 1.113 \text{ ft}$

Data Set: C:\files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW4 Slug In 1.aqt
Title: MW4 SLUG IN 1
Date: 08/24/04
Time: 16:00:17

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/30/04
Test Well: MW4

AQUIFER DATA

Saturated Thickness: 16.05 ft
Anisotropy Ratio (K_z/K_r): 1.

SLUG TEST WELL DATA

Test Well: : MW4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.449 ft
Static Water Column Height: 16.05 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 16.05 ft

No. of Observations: 90

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.579	0.4447	0.064
0.01	0.888	0.4697	0.097
0.015	0.979	0.4963	0.158
0.02	1.127	0.5247	0.093
0.025	1.24	0.5547	-0.249
0.03	1.449	0.5863	0.048
0.035	1.094	0.6213	0.052
0.04	0.826	0.6578	0.03
0.045	0.894	0.6963	0.027
0.05	0.418	0.738	0.025
0.055	0.746	0.7813	-0.027
0.06	0.425	0.828	0.019
0.065	0.522	0.8763	0.017
0.07	0.789	0.928	0.016
0.075	0.604	0.983	0.015
0.08	0.578	1.041	0.019
0.0848	0.568	1.103	0.016
0.09	0.511	1.168	0.021

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.529	1.238	0.009
0.1	0.524	1.311	0.005
0.1058	0.43	1.39	0.004
0.112	0.431	1.473	0.004
0.1185	0.387	1.561	0.003
0.1255	0.299	1.655	0.005
0.1328	0.455	1.753	0.004
0.1407	0.427	1.858	0.004
0.149	0.246	1.968	0.003
0.1578	0.335	2.085	0.003
0.167	0.3	2.21	0.004
0.177	0.275	2.341	0.003
0.1875	0.256	2.481	0.002
0.1985	0.243	2.63	0.002
0.2102	0.224	2.786	0.001
0.2227	0.157	2.953	0.002
0.2358	0.246	3.13	0.002
0.2498	0.21	3.316	0.002
0.2647	0.148	3.515	0.002
0.2803	0.144	3.725	0.001
0.297	0.129	3.946	0.001
0.3147	0.118	4.181	0.
0.3333	0.112	4.43	0.001
0.3532	-0.025	4.693	0.001
0.3742	0.161	4.973	0.001
0.3963	0.079	5.27	0.001
0.4198	0.074	5.583	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.953

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003107	cm/sec
y0	0.9601	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.002668	0.0002216	cm/sec
y0	1.113	0.0524	ft

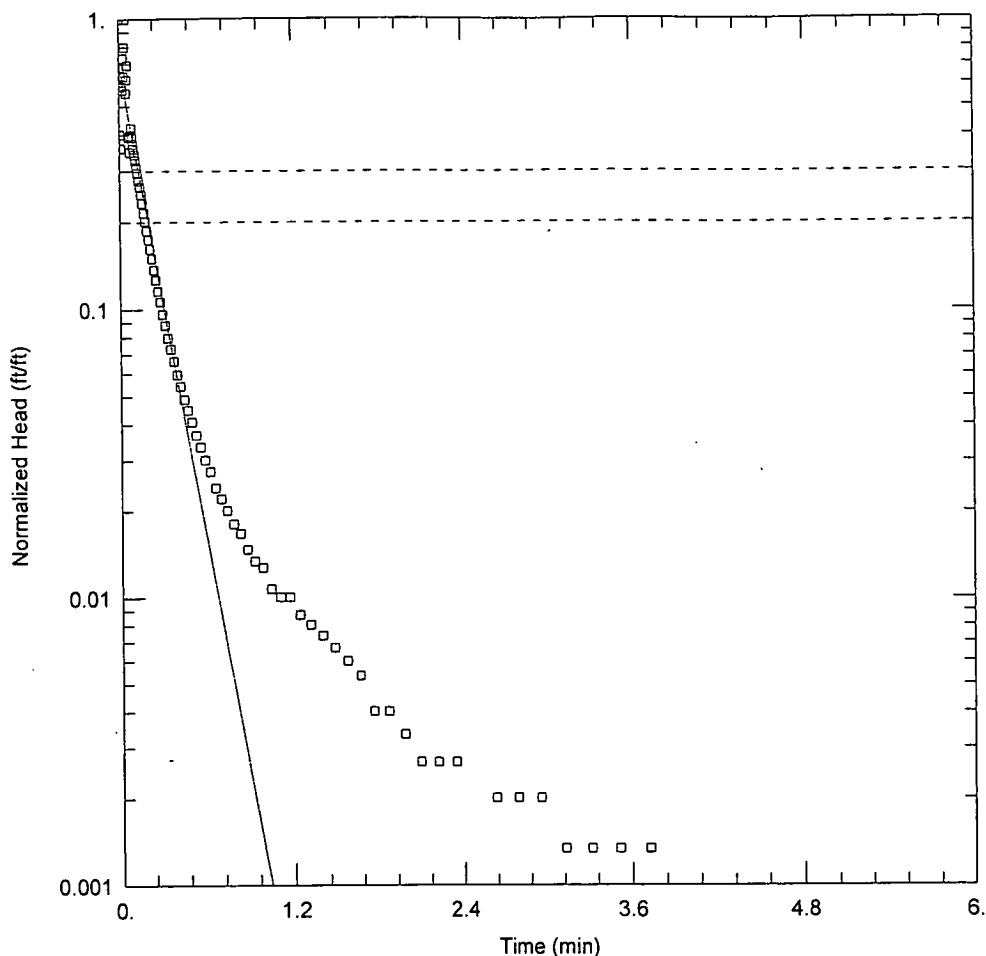
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.75
y0	0.75	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.204 ft ²
Variance	0.01368 ft ²
Std. Deviation	0.1169 ft
Mean	0.004411 ft
No. of Residuals	90
No. of Estimates	2



MW4 SLUG IN 2

Data Set: C:\...MW4 Slug In 2.aqt
Date: 08/24/04

Time: 16:02:51

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Well: MW4
Test Date: 7/30/04

AQUIFER DATA

Saturated Thickness: 16.05 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW4)

Initial Displacement: 1.494 ft
Total Well Penetration Depth: 16.05 ft
Casing Radius: 0.083 ft

Static Water Column Height: 16.05 ft
Screen Length: 15. ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.002175 cm/sec

v0 = 1.058 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW4 Slug In 2.aqt
Title: MW4 SLUG IN 2
Date: 08/24/04
Time: 16:02:57

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/30/04
Test Well: MW4

AQUIFER DATA

Saturated Thickness: 16.05 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.494 ft
Static Water Column Height: 16.05 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 16.05 ft

No. of Observations: 90

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.598	0.4447	0.073
0.01	0.536	0.4697	0.067
0.015	0.953	0.4963	0.061
0.02	0.877	0.5247	0.055
0.025	0.85	0.5547	0.05
0.03	1.096	0.5863	0.045
0.035	0.946	0.6213	0.041
0.04	1.194	0.6578	0.036
0.045	1.494	0.6963	0.033
0.05	0.83	0.738	0.03
0.055	0.923	0.7813	0.027
0.06	1.035	0.828	0.025
0.065	0.584	0.8763	0.022
0.07	0.589	0.928	0.02
0.075	0.52	0.983	0.019
0.08	0.595	1.041	0.016
0.0848	0.63	1.103	0.015
0.09	0.586	1.168	0.015

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.556	1.238	0.013
0.1	0.534	1.311	0.012
0.1058	0.511	1.39	0.011
0.112	0.488	1.473	0.01
0.1185	0.462	1.561	0.009
0.1255	0.44	1.655	0.008
0.1328	0.416	1.753	0.006
0.1407	0.395	1.858	0.006
0.149	0.373	1.968	0.005
0.1578	0.348	2.085	0.004
0.167	0.322	2.21	0.004
0.177	0.301	2.341	0.004
0.1875	0.28	2.481	-0.003
0.1985	0.261	2.63	0.003
0.2102	0.242	2.786	0.003
0.2227	0.224	2.953	0.003
0.2358	0.205	3.13	0.002
0.2498	0.189	3.316	0.002
0.2647	0.173	3.515	0.002
0.2803	0.159	3.725	0.002
0.297	0.144	3.946	0.001
0.3147	0.132	4.181	0.001
0.3333	0.119	4.43	0.001
0.3532	0.109	4.693	0.001
0.3742	0.099	4.973	0.
0.3963	0.089	5.27	0.
0.4198	0.081	5.583	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.953

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.002668	cm/sec
y0	1.113	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.002175	0.00019	cm/sec
y0	1.058	0.04936	ft

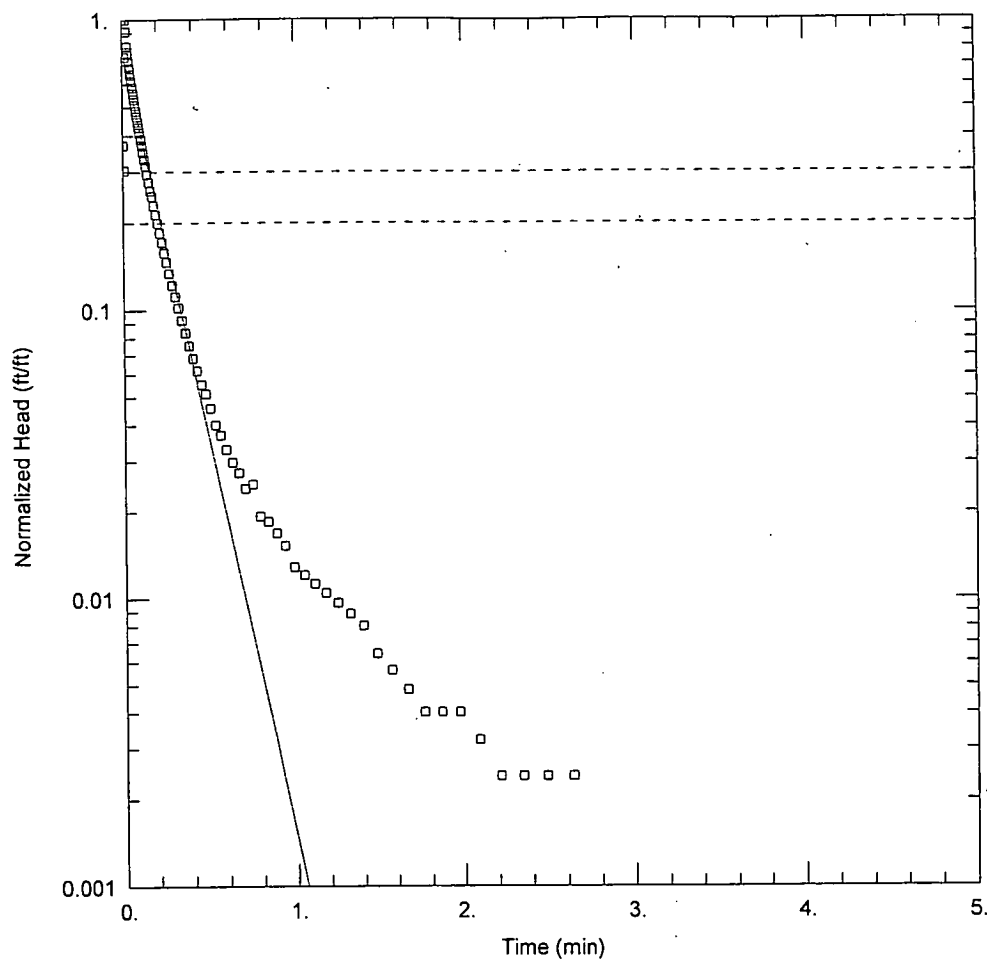
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.74
y0	0.74	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.289 ft ²
Variance	0.01465 ft ²
Std. Deviation	0.121 ft
Mean	0.002164 ft
No. of Residuals	90
No. of Estimates	2



MW4 SLUG OUT 1

Data Set: C:\...MW4 Slug Out 1.aqt

Date: 08/24/04

Time: 16:05:53

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW4

Test Date: 7/30/04

AQUIFER DATA

Saturated Thickness: 16.05 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW4)

Initial Displacement: 1.245 ft

Static Water Column Height: 16.05 ft

Total Well Penetration Depth: 16.05 ft

Screen Length: 15. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.002177$ cm/sec

$v_0 = 0.9937$ ft

Data Set: C:\files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW4 Slug Out 1.aqt
Title: MW4 SLUG OUT 1
Date: 08/24/04
Time: 16:05:59

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/30/04
Test Well: MW4

AQUIFER DATA

Saturated Thickness: 16.05 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.245 ft
Static Water Column Height: 16.05 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 16.05 ft

No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.461	0.4198	0.077
0.01	0.378	0.4447	0.069
0.015	0.926	0.4697	0.064
0.02	1.245	0.4963	0.057
0.025	1.135	0.5247	0.05
0.03	1.005	0.5547	0.046
0.035	0.947	0.5863	0.041
0.04	0.896	0.6213	0.037
0.045	0.849	0.6578	0.034
0.05	0.806	0.6963	0.03
0.055	0.766	0.738	0.031
0.06	0.731	0.7813	0.024
0.065	0.696	0.828	0.023
0.07	0.665	0.8763	0.021
0.075	0.635	0.928	0.019
0.08	0.606	0.983	0.016
0.0848	0.58	1.041	0.015
0.09	0.556	1.103	0.014

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.533	1.168	0.013
0.1	0.511	1.238	0.012
0.1058	0.485	1.311	0.011
0.112	0.461	1.39	0.01
0.1185	0.437	1.473	0.008
0.1255	0.413	1.561	0.007
0.1328	0.391	1.655	0.006
0.1407	0.367	1.753	0.005
0.149	0.345	1.858	0.005
0.1578	0.322	1.968	0.005
0.167	0.308	2.085	0.004
0.177	0.286	2.21	0.003
0.1875	0.267	2.341	0.003
0.1985	0.249	2.481	0.003
0.2102	0.231	2.63	0.003
0.2227	0.214	2.786	0.001
0.2358	0.197	2.953	0.001
0.2498	0.183	3.13	0.001
0.2647	0.167	3.316	0.
0.2803	0.152	3.515	0.
0.297	0.139	3.725	0.
0.3147	0.127	3.946	0.
0.3333	0.115	4.181	-0.001
0.3532	0.104	4.43	0.
0.3742	0.094	4.693	0.
0.3963	0.085	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.953

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.002175	cm/sec
y0	1.058	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.002177	0.0001714	cm/sec
y0	0.9937	0.04179	ft

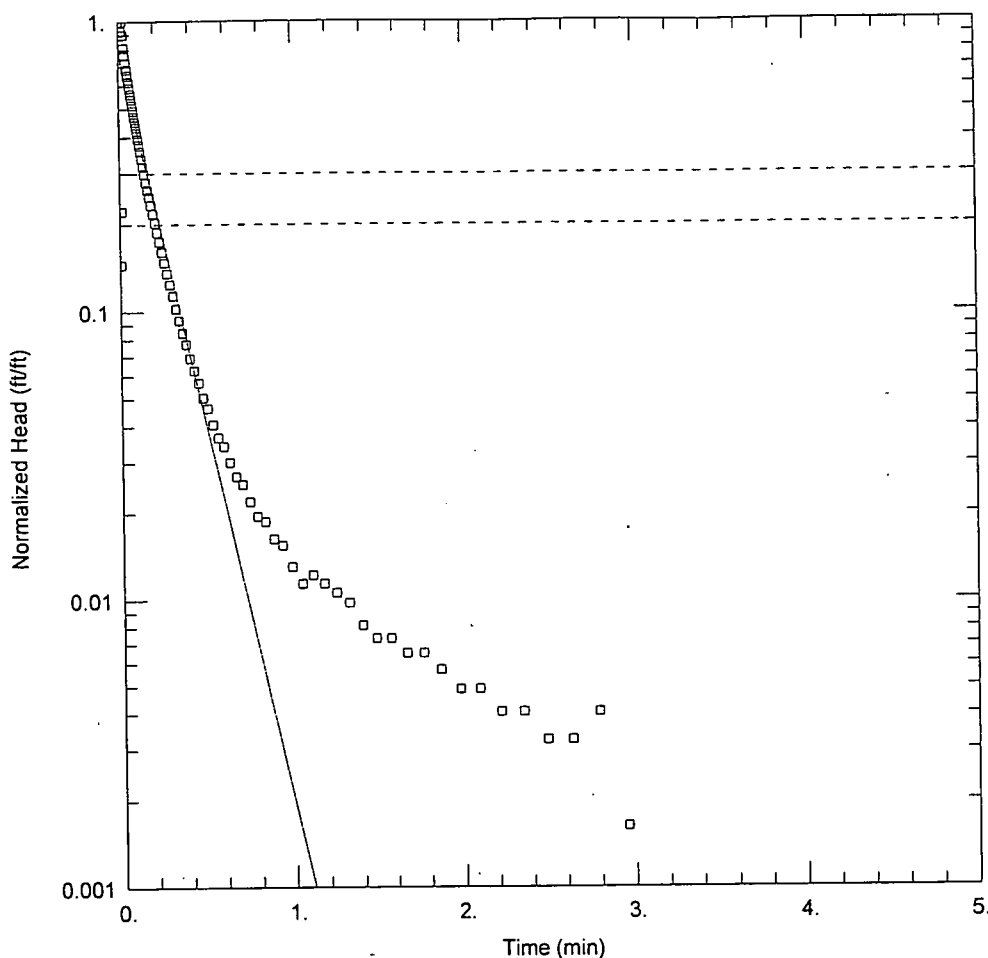
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.74
y0	0.74	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.9021 ft ²
Variance	0.01049 ft ²
Std. Deviation	0.1024 ft
Mean	0.002154 ft
No. of Residuals	88
No. of Estimates	2



MW4 SLUG OUT 2

Data Set: C:\...MW4 Slug Out 2.aqt
Date: 08/24/04

Time: 16:08:31

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Well: MW4
Test Date: 7/30/04

AQUIFER DATA

Saturated Thickness: 16.05 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW4)

Initial Displacement: 1.231 ft
Total Well Penetration Depth: 16.05 ft
Casing Radius: 0.083 ft

Static Water Column Height: 16.05 ft
Screen Length: 15. ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.002075 cm/sec

v0 = 0.957 ft

Data Set: C:\files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW4 Slug Out 2.aqt
Title: MW4 SLUG OUT 2
Date: 08/24/04
Time: 16:08:38

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/30/04
Test Well: MW4

AQUIFER DATA

Saturated Thickness: 16.05 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.231 ft
Static Water Column Height: 16.05 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 15. ft
Total Well Penetration Depth: 16.05 ft

No. of Observations: 87

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.179	0.4198	0.077
0.01	0.274	0.4447	0.07
0.015	1.139	0.4697	0.062
0.02	1.231	0.4963	0.057
0.025	1.106	0.5247	0.05
0.03	0.997	0.5547	0.045
0.035	0.942	0.5863	0.042
0.04	0.888	0.6213	0.037
0.045	0.842	0.6578	0.033
0.05	0.801	0.6963	0.031
0.055	0.762	0.738	0.027
0.06	0.726	0.7813	0.024
0.065	0.692	0.828	0.023
0.07	0.663	0.8763	0.02
0.075	0.634	0.928	0.019
0.08	0.606	0.983	0.016
0.0848	0.579	1.041	0.014
0.09	0.554	1.103	0.015

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.532	1.168	0.014
0.1	0.51	1.238	0.013
0.1058	0.486	1.311	0.012
0.112	0.462	1.39	0.01
0.1185	0.439	1.473	0.009
0.1255	0.415	1.561	0.009
0.1328	0.391	1.655	0.008
0.1407	0.368	1.753	0.008
0.149	0.345	1.858	0.007
0.1578	0.324	1.968	0.006
0.167	0.307	2.085	0.006
0.177	0.288	2.21	0.005
0.1875	0.269	2.341	0.005
0.1985	0.25	2.481	0.004
0.2102	0.232	2.63	0.004
0.2227	0.215	2.786	0.005
0.2358	0.198	2.953	0.002
0.2498	0.182	3.13	0.001
0.2647	0.167	3.316	0.001
0.2803	0.153	3.515	0.001
0.297	0.14	3.725	0.001
0.3147	0.126	3.946	0.
0.3333	0.115	4.181	0.
0.3532	0.104	4.43	-0.001
0.3742	0.095	4.693	0.
0.3963	0.085		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.953

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.002177	cm/sec
y0	0.9937	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.002075	0.0002109	cm/sec
y0	0.957	0.05123	ft

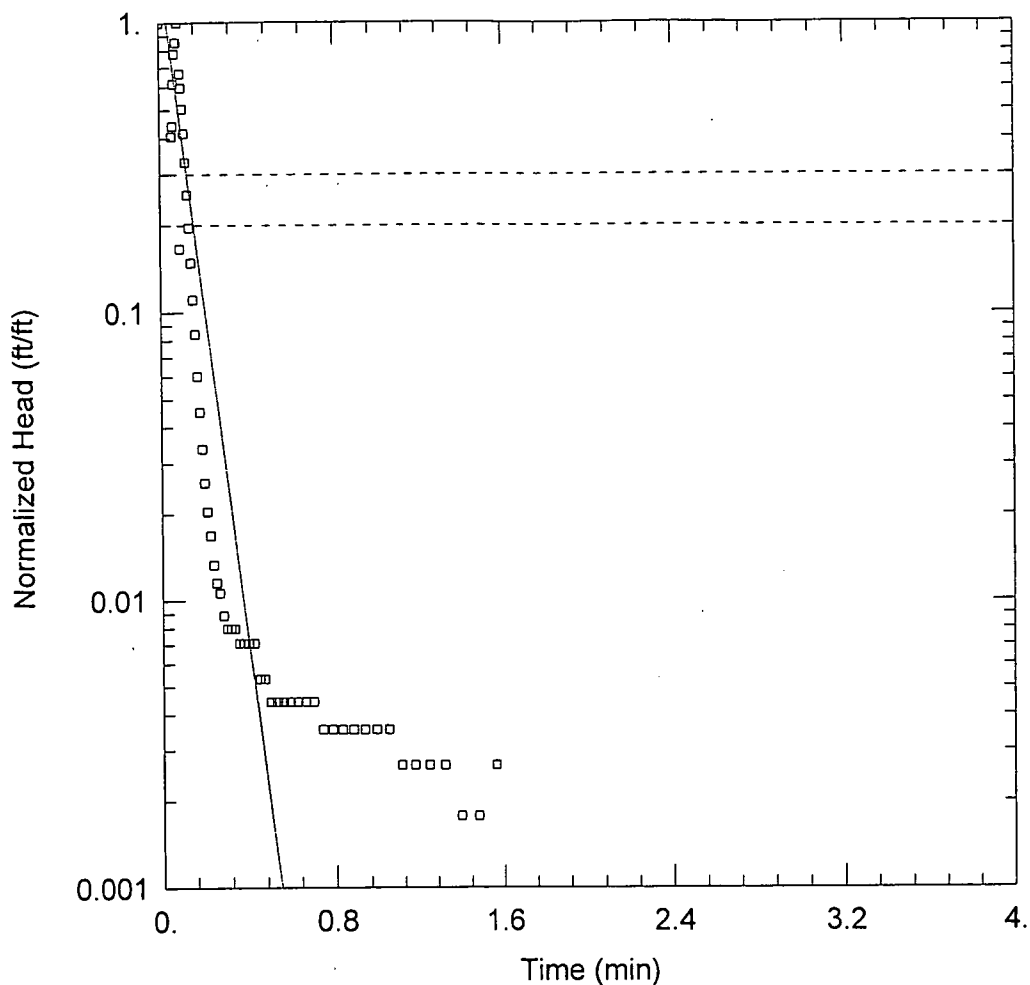
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.74
y0	0.74	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.4 ft ²
Variance	0.01647 ft ²
Std. Deviation	0.1284 ft
Mean	0.001555 ft
No. of Residuals	87
No. of Estimates	2



MW7 SLUG IN 1

Data Set: C:\...MW7 Slug In 1.agt

Date: 08/24/04

Time: 12:38:17

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW7

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 6.45 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW7)

Initial Displacement: 1.128 ft

Static Water Column Height: 6.45 ft

Total Well Penetration Depth: 6.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.005471$ cm/sec

$v_0 = 1.878$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW7 Slug In 1.aqt
Title: MW7 SLUG IN 1
Date: 08/24/04
Time: 12:38:50

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW7

AQUIFER DATA

Saturated Thickness: 6.45 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW7

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.128 ft
Static Water Column Height: 6.45 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 6.45 ft

No. of Observations: 72

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.055	0.458	0.4697	0.006
0.06	0.497	0.4963	0.005
0.065	0.695	0.5247	0.005
0.07	0.882	0.5547	0.005
0.075	0.964	0.5863	0.005
0.08	0.964	0.6213	0.005
0.0848	1.128	0.6578	0.005
0.09	0.188	0.6963	0.005
0.095	0.754	0.738	0.004
0.1	0.673	0.7813	0.004
0.1058	0.57	0.828	0.004
0.112	0.47	0.8763	0.004
0.1185	0.373	0.928	0.004
0.1255	0.288	0.983	0.004
0.1328	0.222	1.041	0.004
0.1407	0.168	1.103	0.003
0.149	0.125	1.168	0.003
0.1578	0.095	1.238	0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.167	0.068	1.311	0.003
0.177	0.051	1.39	0.002
0.1875	0.038	1.473	0.002
0.1985	0.029	1.561	0.003
0.2102	0.023	1.655	0.001
0.2227	0.019	1.753	0.001
0.2358	0.015	1.858	0.001
0.2498	0.013	1.968	0.001
0.2647	0.012	2.085	0.001
0.2803	0.01	2.21	0.001
0.297	0.009	2.341	0.001
0.3147	0.009	2.481	0.
0.3333	0.009	2.63	0.
0.3532	0.008	2.786	0.
0.3742	0.008	2.953	0.
0.3963	0.008	3.13	0.
0.4198	0.008	3.316	0.
0.4447	0.006	3.515	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.29

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003883	cm/sec
y0	0.8797	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.005471	0.0007561	cm/sec
y0	1.878	0.3102	ft

Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.94
y0	0.94	1.00

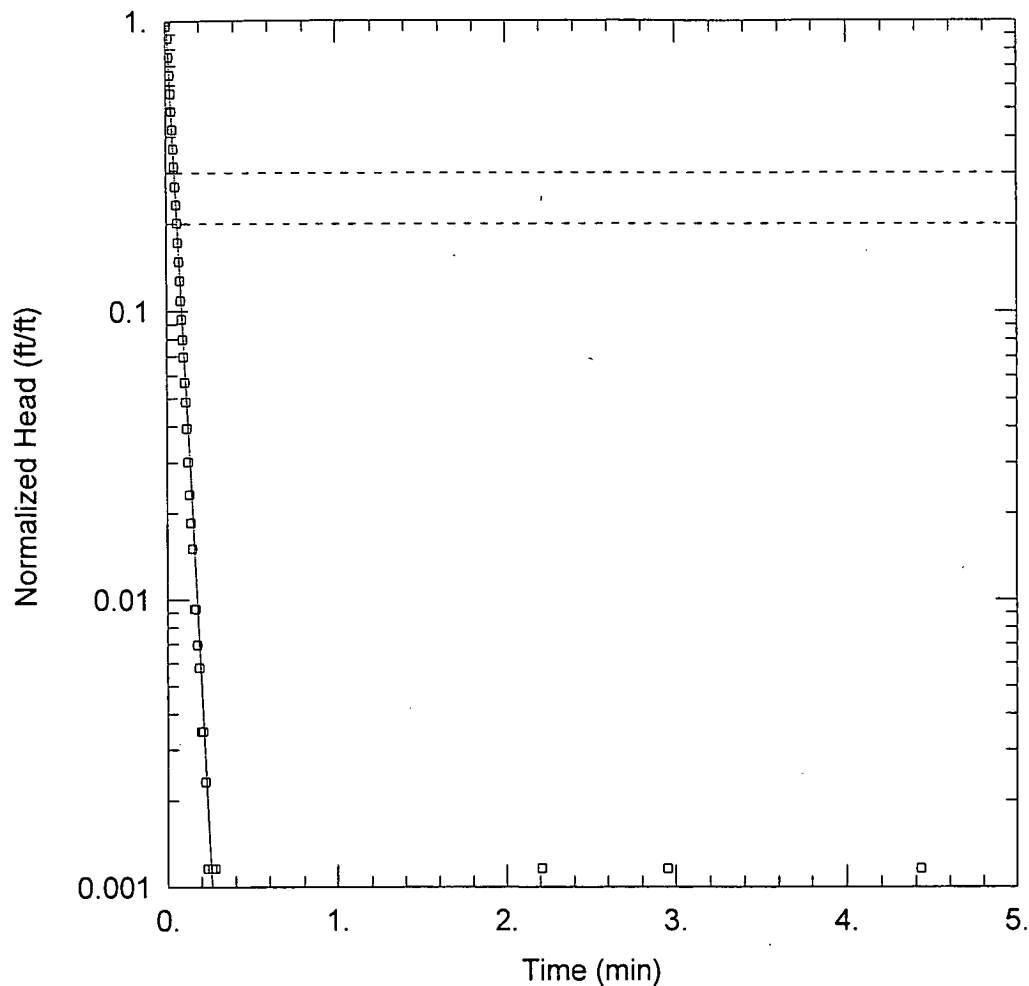
Residual Statistics

for weighted residuals

Sum of Squares 1.178 ft²
 Variance 0.01682 ft²
 Std. Deviation 0.1297 ft
 Mean -0.006702 ft

No. of Residuals 72

No. of Estimates 2



MW7 SLUG OUT 1

Data Set: C:\...MW7 Slug Out 1.aqt
 Date: 08/24/04

Time: 12:44:12

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW7
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 6.45 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW7)

Initial Displacement: 0.863 ft

Static Water Column Height: 6.45 ft

Total Well Penetration Depth: 6.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.01085 cm/sec

v0 = 1.063 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW7 Slug Out 1.aqt

Title: MW7 SLUG OUT 1

Date: 08/24/04

Time: 12:44:18

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Date: 7/29/04

Test Well: MW7

AQUIFER DATA

Saturated Thickness: 6.45 ft

Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATAI
Test Well: : MW7

X Location: 0. ft

Y Location: 0. ft

Initial Displacement: 0.863 ft

Static Water Column Height: 6.45 ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

Well Skin Radius: 0.333 ft

Screen Length: 10. ft

Total Well Penetration Depth: 6.45 ft

No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.827	0.4198	0.
0.01	0.863	0.4447	0.
0.015	0.75	0.4697	0.
0.02	0.647	0.4963	-0.001
0.025	0.561	0.5247	0.
0.03	0.485	0.5547	0.
0.035	0.422	0.5863	0.
0.04	0.365	0.6213	0.
0.045	0.313	0.6578	0.
0.05	0.272	0.6963	-0.001
0.055	0.232	0.738	0.
0.06	0.201	0.7813	0.
0.065	0.174	0.828	0.
0.07	0.149	0.8763	0.
0.075	0.128	0.928	0.
0.08	0.11	0.983	0.
0.0848	0.094	1.041	0.
0.09	0.081	1.103	0.

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.069	1.168	0.
0.1	0.06	1.238	0.
0.1058	0.049	1.311	0.
0.112	0.042	1.39	0.
0.1185	0.034	1.473	0.
0.1255	0.026	1.561	0.
0.1328	0.02	1.655	0.
0.1407	0.016	1.753	0.
0.149	0.013	1.858	0.
0.1578	0.008	1.968	0.
0.167	0.008	2.085	0.
0.177	0.006	2.21	0.001
0.1875	0.005	2.341	0.
0.1985	0.003	2.481	0.
0.2102	0.003	2.63	0.
0.2227	0.002	2.786	0.
0.2358	0.001	2.953	0.001
0.2498	0.	3.13	0.
0.2647	0.001	3.316	0.
0.2803	0.001	3.515	0.
0.297	0.	3.725	0.
0.3147	0.	3.946	0.
0.3333	0.	4.181	0.
0.3532	0.	4.43	0.001
0.3742	0.	4.693	0.
0.3963	0.	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.29

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.005471	cm/sec
y0	1.878	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.01085	0.0001711	cm/sec
y0	1.063	0.01246	ft

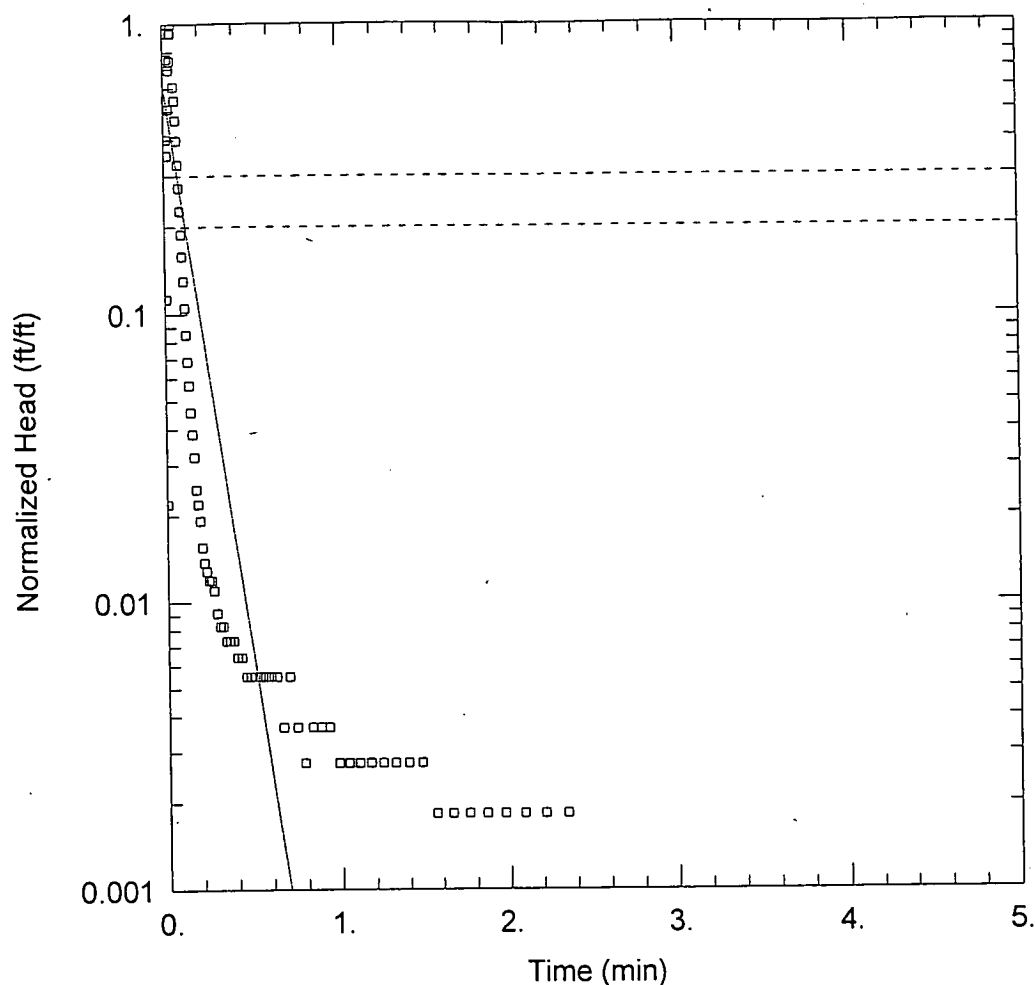
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.76
y0	0.76	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.01813 ft ²
Variance	0.0002108 ft ²
Std. Deviation	0.01452 ft
Mean	-0.001394 ft
No. of Residuals	88
No. of Estimates	2



MW7 SLUG IN 2

Data Set: C:\...MW7 Slug In 2.aqt
 Date: 08/24/04

Time: 12:48:57

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW7
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 6.45 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW7)

Initial Displacement: 1.091 ft
 Total Well Penetration Depth: 6.45 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 6.45 ft
 Screen Length: 10. ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
 K = 0.003717 cm/sec

Solution Method: Bouwer-Rice
 v0 = 0.6838 ft

Data Set: C:\files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW7 Slug In 2.aqt
Title: MW7 SLUG IN 2
Date: 08/24/04
Time: 12:49:16

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW7

AQUIFER DATA

Saturated Thickness: 6.45 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW7

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.091 ft
Static Water Column Height: 6.45 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 6.45 ft

No. of Observations: 86

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.024	0.4198	0.007
0.01	0.123	0.4447	0.006
0.015	0.437	0.4697	0.006
0.02	0.384	0.4963	0.006
0.025	0.827	0.5247	0.006
0.03	0.556	0.5547	0.006
0.035	0.757	0.5863	0.006
0.04	0.813	0.6213	0.006
0.045	1.011	0.6578	0.004
0.05	1.091	0.6963	0.006
0.06	0.663	0.738	0.004
0.065	0.596	0.7813	0.003
0.07	0.509	0.828	0.004
0.075	0.434	0.8763	0.004
0.08	0.358	0.928	0.004
0.0848	0.298	0.983	0.003
0.09	0.248	1.041	0.003
0.095	0.206	1.103	0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1	0.173	1.168	0.003
0.1058	0.142	1.238	0.003
0.112	0.115	1.311	0.003
0.1185	0.093	1.39	0.003
0.1255	0.075	1.473	0.003
0.1328	0.062	1.561	0.002
0.1407	0.05	1.655	0.002
0.149	0.042	1.753	0.002
0.1578	0.035	1.858	0.002
0.167	0.027	1.968	0.002
0.177	0.024	2.085	0.002
0.1875	0.021	2.21	0.002
0.1985	0.017	2.341	0.002
0.2102	0.015	2.481	0.001
0.2227	0.014	2.63	0.001
0.2358	0.013	2.786	0.001
0.2498	0.013	2.953	0.001
0.2647	0.012	3.13	0.001
0.2803	0.01	3.316	0.001
0.297	0.009	3.515	0.001
0.3147	0.009	3.725	0.001
0.3333	0.008	3.946	0.001
0.3532	0.008	4.181	0.
0.3742	0.008	4.43	0.001
0.3963	0.007	4.693	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.29

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.005471	cm/sec
y0	1.878	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.003717	0.0007027	cm/sec
y0	0.6838	0.07762	ft

Parameter Correlations

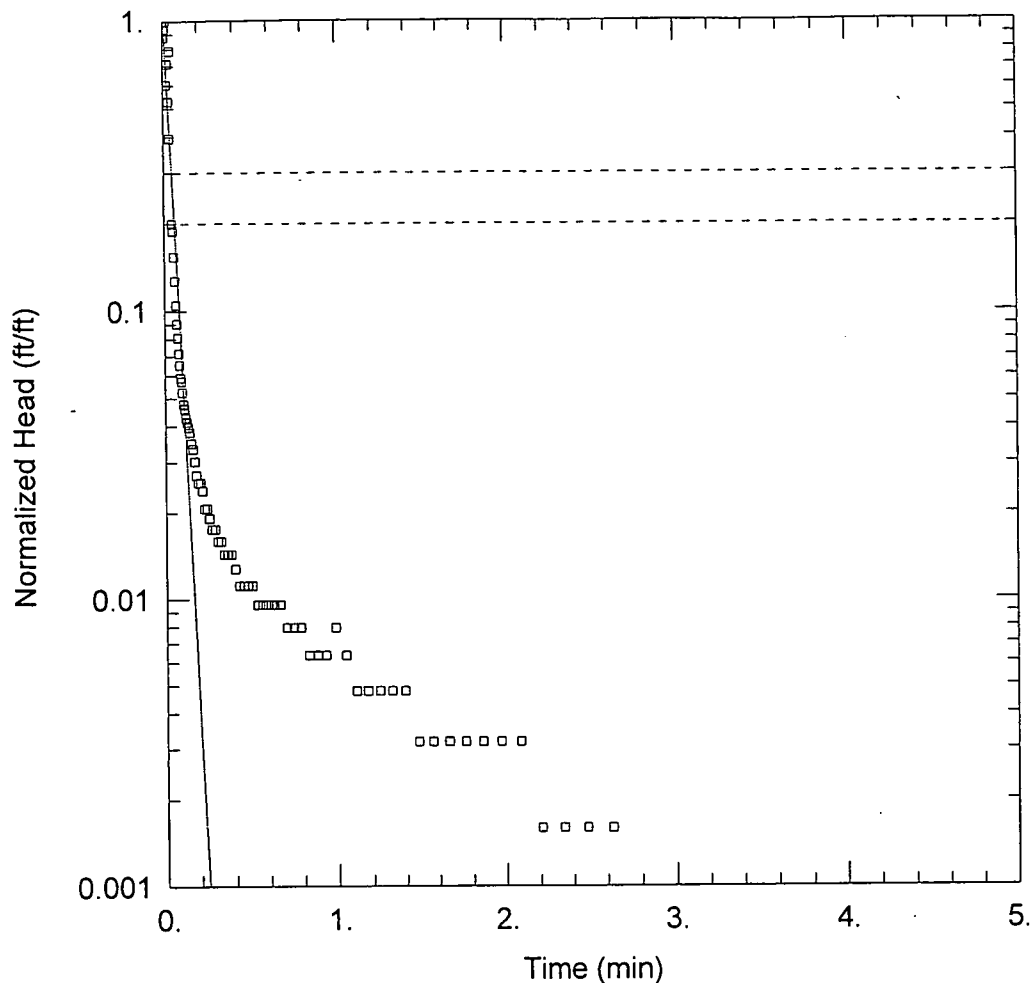
	<u>K</u>	<u>y0</u>
K	1.00	0.74
y0	0.74	1.00

Residual Statistics

Residual Statistics

for weighted residuals

Sum of Squares	0.002333 ft ²
Variance	2.712E-5 ft ²
Std. Deviation	0.005208 ft
Mean	-0.0008314 ft
No. of Residuals	88
No. of Estimates	2



MW8 SLUG IN 1

Data Set: C:\...MW8 Slug In 1.aqt

Date: 08/24/04

Time: 13:58:57

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW8

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.5 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW8)

Initial Displacement: 0.629 ft

Static Water Column Height: 10.5 ft

Total Well Penetration Depth: 4.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.009506$ cm/sec

$v_0 = 0.7752$ ft

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.036	1.168	0.003
0.1	0.033	1.238	0.003
0.1058	0.03	1.311	0.003
0.112	0.029	1.39	0.003
0.1185	0.027	1.473	0.002
0.1255	0.026	1.561	0.002
0.1328	0.025	1.655	0.002
0.1407	0.024	1.753	0.002
0.149	0.022	1.858	0.002
0.1578	0.021	1.968	0.002
0.167	0.019	2.085	0.002
0.177	0.017	2.21	0.001
0.1875	0.016	2.341	0.001
0.1985	0.016	2.481	0.001
0.2102	0.015	2.63	0.001
0.2227	0.013	2.786	0.
0.2358	0.013	2.953	0.
0.2498	0.012	3.13	0.
0.2647	0.011	3.316	0.
0.2803	0.011	3.515	0.
0.297	0.01	3.725	0.
0.3147	0.01	3.946	0.
0.3333	0.009	4.181	0.
0.3532	0.009	4.43	0.
0.3742	0.009	4.693	0.
0.3963	0.008	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 1.838

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.005471	cm/sec
y0	1.878	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.009506	0.000582	cm/sec
y0	0.7752	0.03564	ft

Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.76
y0	0.76	1.00

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW8 Slug In 1.aqt
Title: MW8 SLUG IN 1
Date: 08/24/04
Time: 13:59:18

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW8

AQUIFER DATA

Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW8

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.629 ft
Static Water Column Height: 10.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 4.45 ft

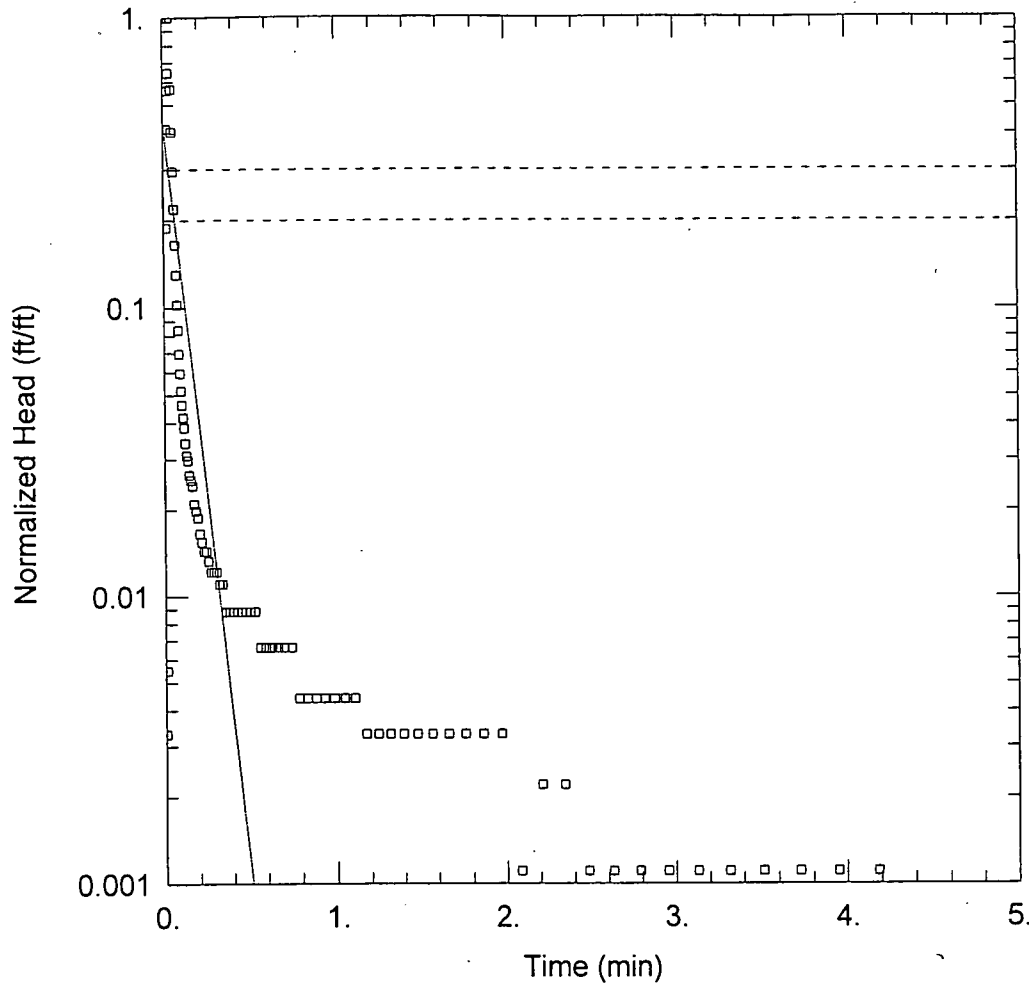
No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.553	0.4198	0.007
0.01	0.585	0.4447	0.007
0.015	0.629	0.4697	0.007
0.02	0.379	0.4963	0.007
0.025	0.448	0.5247	0.006
0.03	0.332	0.5547	0.006
0.035	0.248	0.5863	0.006
0.04	0.497	0.6213	0.006
0.045	0.126	0.6578	0.006
0.05	0.119	0.6963	0.005
0.055	0.097	0.738	0.005
0.06	0.08	0.7813	0.005
0.065	0.066	0.828	0.004
0.07	0.057	0.8763	0.004
0.075	0.051	0.928	0.004
0.08	0.045	0.983	0.005
0.0848	0.041	1.041	0.004
0.09	0.037	1.103	0.003

Residual Statistics

for weighted residuals

Sum of Squares	0.1329 ft ²
Variance	0.001545 ft ²
Std. Deviation	0.03931 ft
Mean	0.002339 ft
No. of Residuals	88
No. of Estimates	2



MW8 SLUG IN 2

Data Set: C:\...MW8 Slug In 2.aqt

Date: 08/24/04

Time: 14:03:41

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW8

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.5 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW8)

Initial Displacement: 0.907 ft

Static Water Column Height: 10.5 ft

Total Well Penetration Depth: 4.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.003861 cm/sec

v0 = 0.4002 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW8 Slug In 2.aqt
Title: MW8 SLUG IN 2
Date: 08/24/04
Time: 14:03:53

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW8

AQUIFER DATA

Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW8

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.907 ft
Static Water Column Height: 10.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 4.45 ft

No. of Observations: 87

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.003	0.4447	0.008
0.01	0.005	0.4697	0.008
0.015	0.171	0.4963	0.008
0.02	0.376	0.5247	0.008
0.025	0.509	0.5547	0.006
0.03	0.585	0.5863	0.006
0.035	0.907	0.6213	0.006
0.045	0.514	0.6578	0.006
0.05	0.367	0.6963	0.006
0.055	0.268	0.738	0.006
0.06	0.199	0.7813	0.004
0.065	0.15	0.828	0.004
0.07	0.118	0.8763	0.004
0.075	0.093	0.928	0.004
0.08	0.076	0.983	0.004
0.0848	0.063	1.041	0.004
0.09	0.054	1.103	0.004
0.095	0.047	1.168	0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1	0.042	1.238	0.003
0.1058	0.038	1.311	0.003
0.112	0.035	1.39	0.003
0.1185	0.031	1.473	0.003
0.1255	0.028	1.561	0.003
0.1328	0.027	1.655	0.003
0.1407	0.024	1.753	0.003
0.149	0.023	1.858	0.003
0.1578	0.022	1.968	0.003
0.167	0.019	2.085	0.001
0.177	0.018	2.21	0.002
0.1875	0.017	2.341	0.002
0.1985	0.015	2.481	0.001
0.2102	0.014	2.63	0.001
0.2227	0.013	2.786	0.001
0.2358	0.013	2.953	0.001
0.2498	0.012	3.13	0.001
0.2647	0.011	3.316	0.001
0.2803	0.011	3.515	0.001
0.297	0.011	3.725	0.001
0.3147	0.01	3.946	0.001
0.3333	0.01	4.181	0.001
0.3532	0.008	4.43	0.
0.3742	0.008	4.693	0.
0.3963	0.008	4.973	0.
0.4198	0.008		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 1.838

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.009506	cm/sec
y0	0.7752	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.003861	0.0009138	cm/sec
y0	0.4002	0.06129	ft

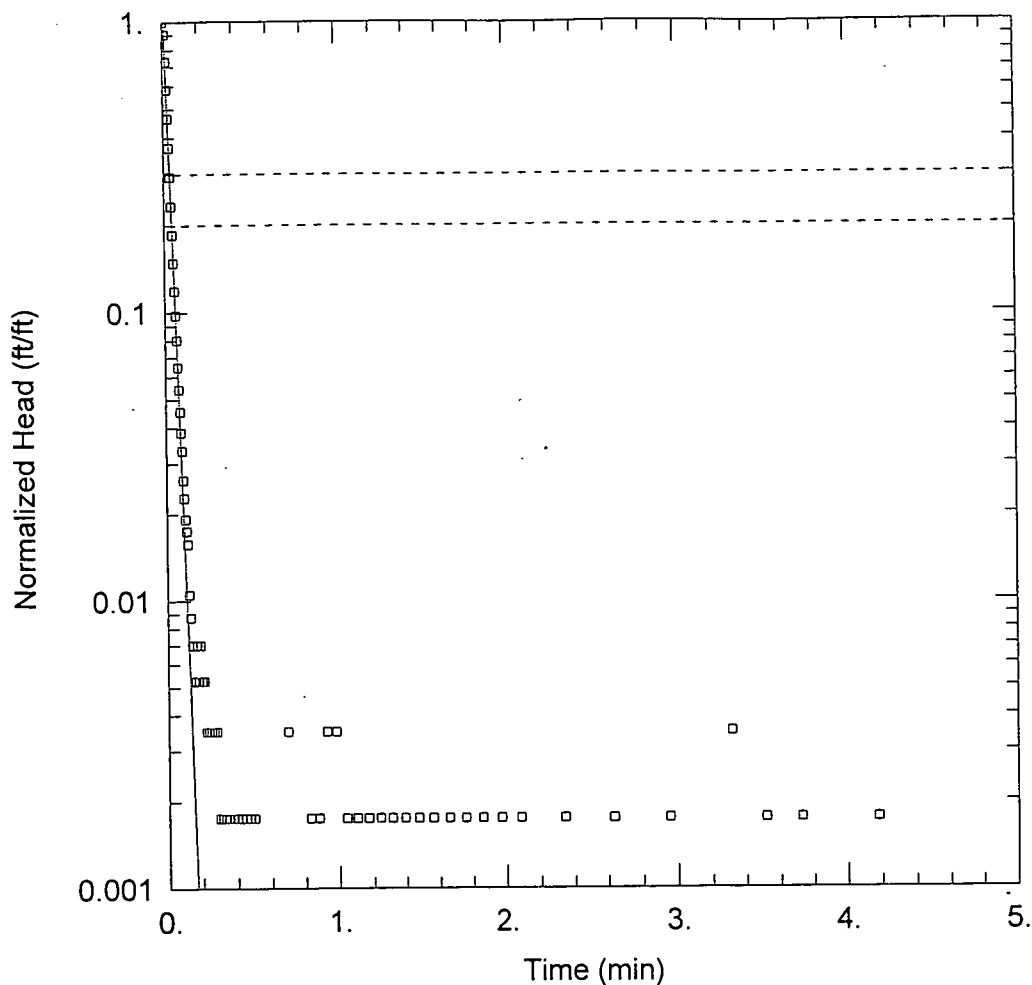
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.75
y0	0.75	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.023 ft ²
Variance	0.01204 ft ²
Std. Deviation	0.1097 ft
Mean	-0.002319 ft
No. of Residuals	87
No. of Estimates	2



MW8 SLUG OUT 1

Data Set: C:\...MW8 Slug Out 1.aqt

Date: 08/24/04

Time: 14:06:51

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW8

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.5 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW8)

Initial Displacement: 0.571 ft

Static Water Column Height: 10.5 ft

Total Well Penetration Depth: 4.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.01422$ cm/sec

$v_0 = 0.802$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW8 Slug Out 1.aqt
Title: MW8 SLUG OUT 1
Date: 08/24/04
Time: 14:06:59

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW8

AQUIFER DATA

Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW8

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.571 ft
Static Water Column Height: 10.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 4.45 ft

No. of Observations: 86

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.64	0.3963	- 0.001
0.01	0.517	0.4198	0.001
0.015	0.417	0.4447	0.
0.02	0.334	0.4697	0.001
0.025	0.266	0.4963	0.001
0.03	0.211	0.5247	0.
0.035	0.168	0.5547	0.
0.04	0.133	0.5863	0.
0.045	0.106	0.6213	0.
0.05	0.085	0.6578	0.
0.055	0.068	0.6963	0.002
0.06	0.056	0.738	0.
0.065	0.046	0.7813	0.
0.07	0.037	0.828	0.001
0.075	0.031	0.8763	0.001
0.08	0.026	0.928	0.002
0.0848	0.022	0.983	0.002
0.09	0.019	1.041	0.001

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.015	1.103	0.001
0.1	0.013	1.168	0.001
0.1058	0.011	1.238	0.001
0.112	0.01	1.311	0.001
0.1185	0.009	1.39	0.001
0.1255	0.006	1.473	0.001
0.1328	0.005	1.561	0.001
0.1407	0.004	1.655	0.001
0.149	0.003	1.753	0.001
0.1578	0.003	1.858	0.001
0.167	0.004	1.968	0.001
0.177	0.003	2.085	0.001
0.1875	0.004	2.21	0.
0.1985	0.003	2.341	0.001
0.2102	0.003	2.481	0.
0.2227	0.002	2.63	0.001
0.2358	0.002	2.786	0.
0.2498	0.002	2.953	0.001
0.2647	0.002	3.13	0.
0.2803	0.002	3.316	0.002
0.297	0.001	3.515	0.001
0.3147	0.001	3.725	0.001
0.3333	0.001	3.946	0.
0.3532	0.001	4.181	0.001
0.3742	0.001	4.43	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 1.838

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003861	cm/sec
y0	0.4002	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.01422	5.473E-5	cm/sec
y0	0.802	0.002427	ft

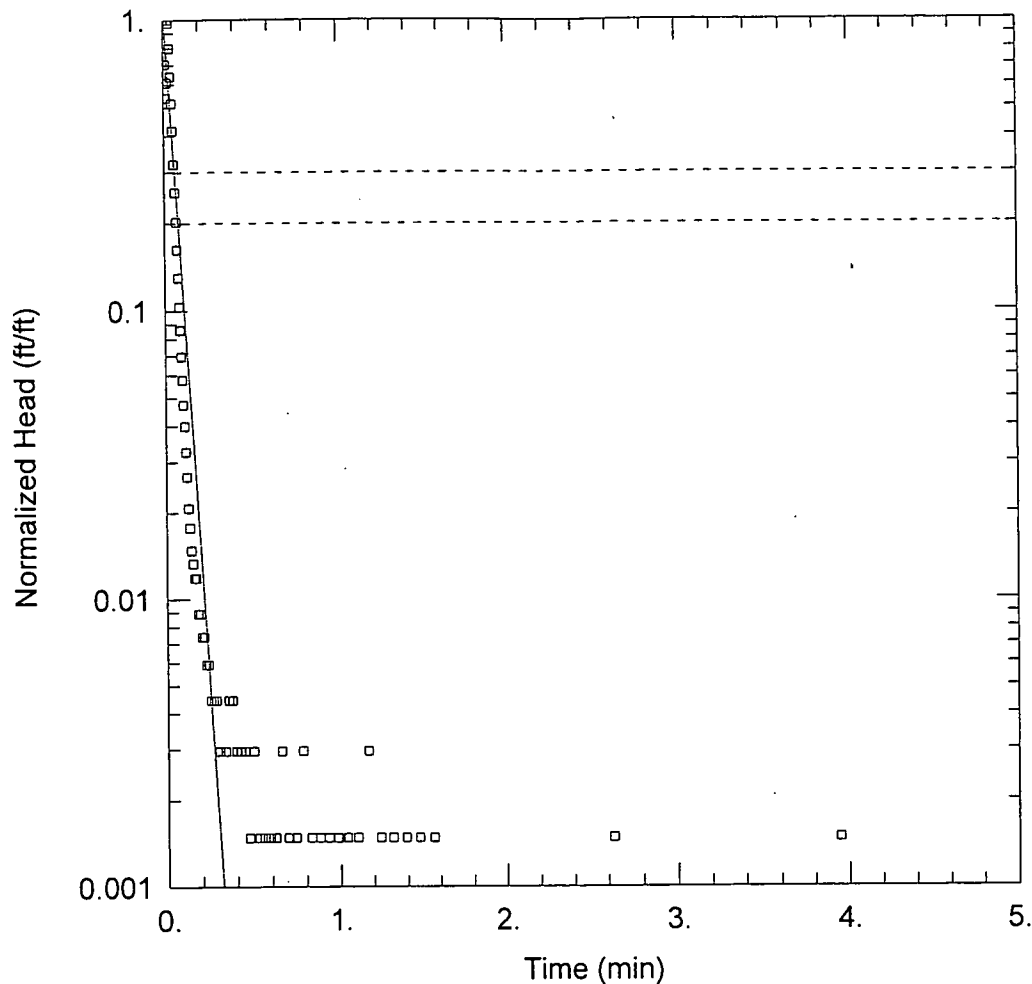
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.78
y0	0.78	1.00

Residual Statistics

for weighted residuals

Sum of Squares 0.0003449 ft²
Variance 4.106E-6 ft²
Std. Deviation 0.002026 ft
Mean 0.001127 ft
No. of Residuals 86
No. of Estimates 2



MW8 SLUG OUT 2

Data Set: C:\...MW8 Slug Out 2.aqt

Date: 08/24/04

Time: 14:09:58

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW8

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.5 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW8)

Initial Displacement: 0.676 ft

Static Water Column Height: 10.5 ft

Total Well Penetration Depth: 4.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.007118 cm/sec

v0 = 0.7805 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW8 Slug Out 2.aqt
Title: MW8 SLUG OUT 2
Date: 08/24/04
Time: 14:10:04

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW8

AQUIFER DATA

Saturated Thickness: 10.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW8

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.676 ft
Static Water Column Height: 10.5 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 4.45 ft

No. of Observations: 84

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.01	0.477	0.3963	0.002
0.015	0.365	0.4198	0.002
0.02	0.412	0.4447	0.002
0.025	0.676	0.4697	0.001
0.03	0.659	0.4963	0.002
0.035	0.541	0.5247	0.001
0.04	0.433	0.5547	0.001
0.045	0.35	0.5863	0.001
0.05	0.282	0.6213	0.001
0.055	0.216	0.6578	0.002
0.06	0.173	0.6963	0.001
0.065	0.137	0.738	0.001
0.07	0.11	0.7813	0.002
0.075	0.088	0.828	0.001
0.08	0.07	0.8763	0.001
0.0848	0.058	0.928	0.001
0.09	0.047	0.983	0.001
0.095	0.039	1.041	0.001

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1	0.032	1.103	0.001
0.1058	0.027	1.168	0.002
0.112	0.022	1.238	0.001
0.1185	0.018	1.311	0.001
0.1255	0.014	1.39	0.001
0.1328	0.012	1.473	0.001
0.1407	0.01	1.561	0.001
0.149	0.009	1.655	-0.001
0.1578	0.008	1.753	0.
0.167	0.008	1.858	0.
0.177	0.006	1.968	0.
0.1875	0.006	2.085	0.
0.1985	0.005	2.21	0.
0.2102	0.005	2.341	0.
0.2227	0.004	2.481	0.
0.2358	0.004	2.63	0.001
0.2498	0.003	2.786	0.
0.2647	0.003	2.953	0.
0.2803	0.003	3.13	0.
0.297	0.002	3.316	0.
0.3147	-0.002	3.515	0.
0.3333	0.002	3.725	0.
0.3532	0.003	3.946	0.001
0.3742	0.003	4.181	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 1.838

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.01422	cm/sec
y0	0.802	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.007118	0.0006229	cm/sec
y0	0.7805	0.05507	ft

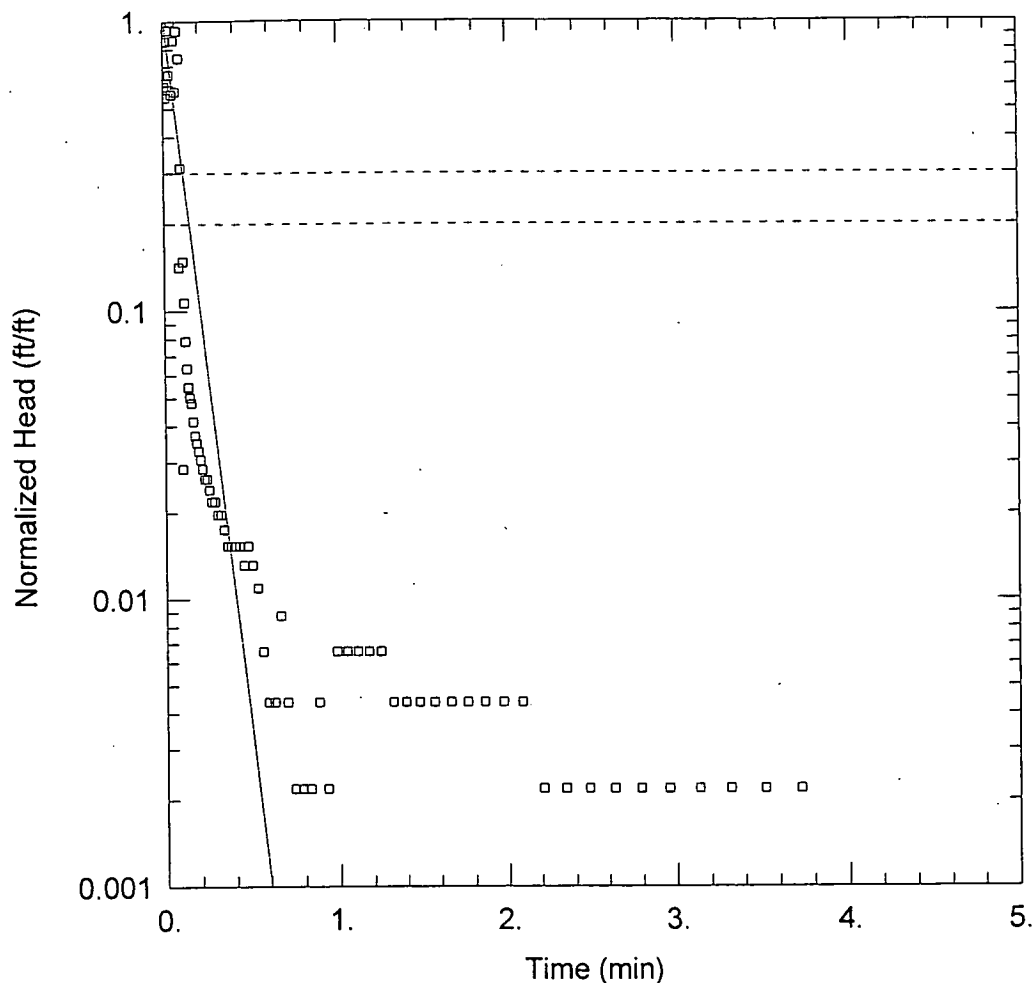
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.81
y0	0.81	1.00

Residual Statistics

for weighted residuals

Sum of Squares 0.2725 ft²
Variance 0.003323 ft²
Std. Deviation 0.05765 ft
Mean -0.003897 ft
No. of Residuals 84
No. of Estimates 2



MW10 SLUG IN 1

Data Set: C:\...MW10 Slug In 1.aqt

Date: 08/24/04

Time: 14:16:40

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW10

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 7.65 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW10)

Initial Displacement: 0.457 ft

Static Water Column Height: 7.65 ft

Total Well Penetration Depth: 5.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.004094 cm/sec

v0 = 0.5049 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW10 Slug In 1.aqt
Title: MW10 SLUG IN 1
Date: 08/24/04
Time: 14:16:49

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW10

AQUIFER DATA

Saturated Thickness: 7.65 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW10

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.457 ft
Static Water Column Height: 7.65 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 5.45 ft

No. of Observations: 83

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.01	0.273	0.4697	0.007
0.015	0.25	0.4963	0.006
0.02	0.39	0.5247	0.005
0.025	0.426	0.5547	0.003
0.035	0.299	0.5863	0.002
0.045	0.457	0.6213	0.002
0.05	0.256	0.6578	0.004
0.055	0.53	0.6963	0.002
0.06	0.392	0.738	0.001
0.065	0.48	0.7813	0.001
0.07	0.262	0.828	0.001
0.08	0.424	0.8763	0.002
0.0848	0.065	0.928	0.001
0.09	0.341	0.983	0.003
0.095	0.143	1.041	0.003
0.1	0.013	1.103	0.003
0.1058	0.068	1.168	0.003
0.112	0.049	1.238	0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1185	0.036	1.311	0.002
0.1255	0.029	1.39	0.002
0.1328	0.025	1.473	0.002
0.1407	0.023	1.561	0.002
0.149	0.022	1.655	0.002
0.1578	0.019	1.753	0.002
0.167	0.017	1.858	0.002
0.177	0.016	1.968	0.002
0.1875	0.015	2.085	0.002
0.1985	0.014	2.21	0.001
0.2102	0.013	2.341	0.001
0.2227	0.012	2.481	0.001
0.2358	0.012	2.63	0.001
0.2498	0.011	2.786	0.001
0.2647	0.01	2.953	0.001
0.2803	0.01	3.13	0.001
0.297	0.009	3.316	0.001
0.3147	0.009	3.515	0.001
0.3333	0.008	3.725	0.001
0.3532	0.007	3.946	0.
0.3742	0.007	4.181	0.
0.3963	0.007	4.43	0.
0.4198	0.007	4.693	0.
0.4447	0.006		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.008512	cm/sec
y0	0.5061	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.004094	0.0005444	cm/sec
y0	0.5049	0.04704	ft

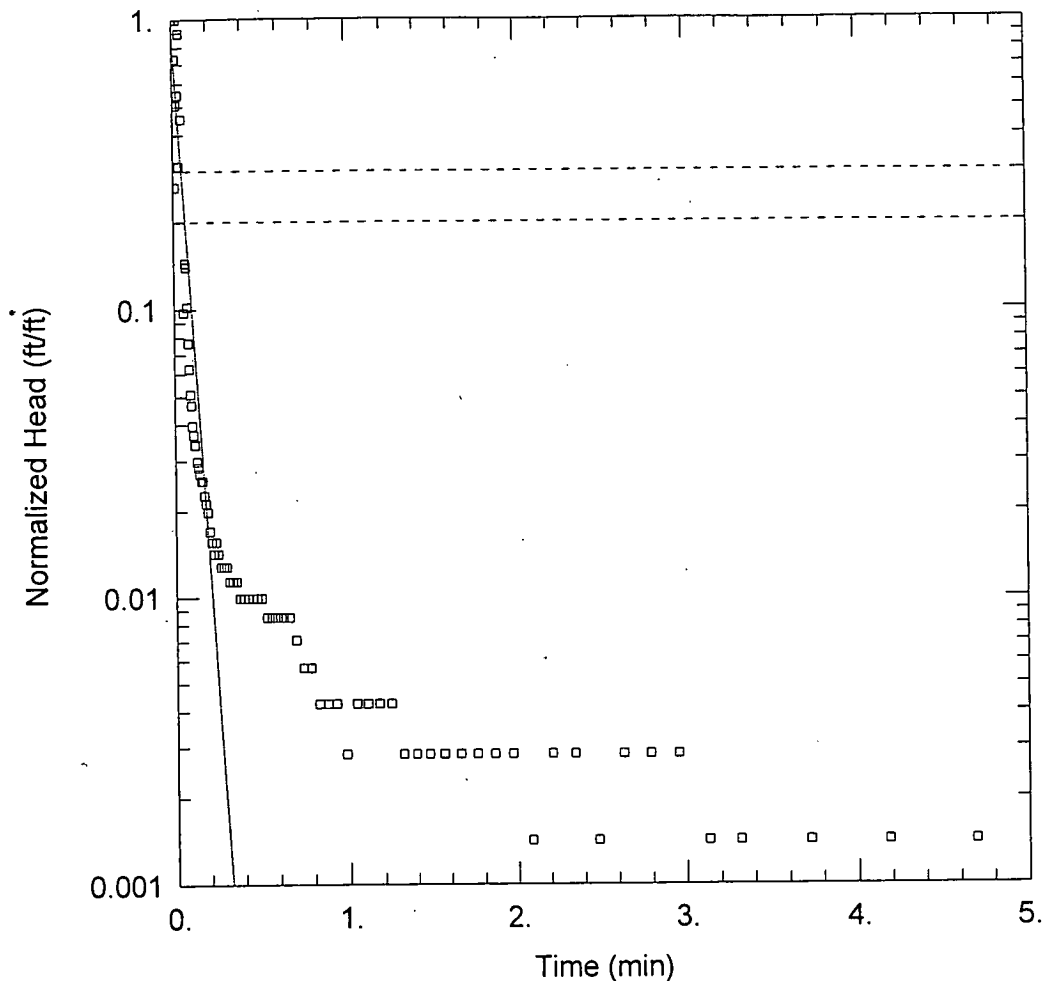
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.77
y0	0.77	1.00

Residual Statistics

for weighted residuals

Sum of Squares 0.4172 ft²
Variance 0.005151 ft²
Std. Deviation 0.07177 ft
Mean -0.003288 ft
No. of Residuals 83
No. of Estimates 2



MW10 SLUG IN 2

Data Set: C:\...\MW10 Slug In 2.aqt

Date: 08/24/04

Time: 14:20:08

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW10

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 7.65 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW10)

Initial Displacement: 0.705 ft

Static Water Column Height: 7.65 ft

Total Well Penetration Depth: 5.45 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.007404 cm/sec

v0 = 0.6255 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW10 Slug In 2.aqt
Title: MW10 SLUG IN 2
Date: 08/24/04
Time: 14:20:16

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW10

AQUIFER DATA

Saturated Thickness: 7.65 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW10

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.705 ft
Static Water Column Height: 7.65 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 5.45 ft

No. of Observations: 85

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.01	0.186	0.4697	0.007
0.015	0.515	0.4963	0.007
0.02	0.357	0.5247	0.006
0.025	0.705	0.5547	0.006
0.03	0.387	0.5863	0.006
0.035	0.22	0.6213	0.006
0.04	0.63	0.6578	0.006
0.05	0.32	0.6963	0.005
0.055	0.069	0.738	0.004
0.065	0.102	0.7813	0.004
0.07	0.099	0.828	0.003
0.075	0.072	0.8763	0.003
0.08	0.054	0.928	0.003
0.0848	0.044	0.983	0.002
0.09	0.036	1.041	0.003
0.095	0.033	1.103	0.003
0.1	0.028	1.168	0.003
0.1058	0.026	1.238	0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.112	0.024	1.311	0.002
0.1185	0.024	1.39	0.002
0.1255	0.021	1.473	0.002
0.1328	0.02	1.561	0.002
0.1407	0.019	1.655	0.002
0.149	0.018	1.753	0.002
0.1578	0.018	1.858	0.002
0.167	0.016	1.968	0.002
0.177	0.015	2.085	0.001
0.1875	0.014	2.21	0.002
0.1985	0.012	2.341	0.002
0.2102	0.011	2.481	0.001
0.2227	0.01	2.63	0.002
0.2358	0.011	2.786	0.002
0.2498	0.01	2.953	0.002
0.2647	0.009	3.13	0.001
0.2803	0.009	3.316	0.001
0.297	0.009	3.515	0.
0.3147	0.008	3.725	0.001
0.3333	0.008	3.946	0.
0.3532	0.008	4.181	0.001
0.3742	0.007	4.43	0.
0.3963	0.007	4.693	0.001
0.4198	0.007	4.973	0.
0.4447	0.007		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.004094	cm/sec
y0	0.5049	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.007404	0.001004	cm/sec
y0	0.6255	0.06566	ft

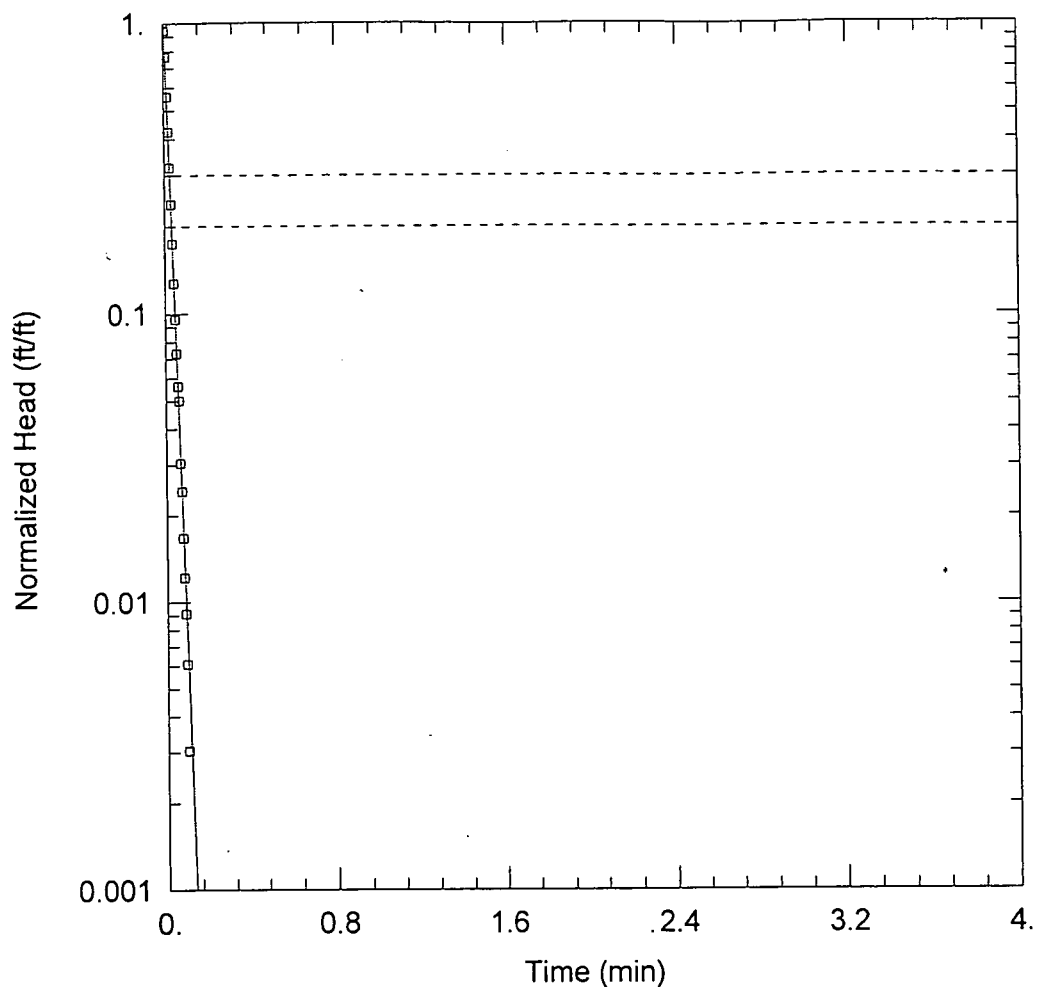
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.80
y0	0.80	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.418 ft ²
Variance	0.005036 ft ²
Std. Deviation	0.07096 ft
Mean	-0.0006365 ft
No. of Residuals	85
No. of Estimates	2



MW10 SLUG OUT 1

Data Set: C:\...MW10 Slug Out 1.aqt
 Date: 08/24/04

Time: 14:23:16

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW10
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 7.65 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW10)

Initial Displacement: 0.658 ft
 Total Well Penetration Depth: 5.45 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 7.65 ft
 Screen Length: 10. ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 0.01951 \text{ cm/sec}$

Solution Method: Bouwer-Rice
 $v_0 = 0.8422 \text{ ft}$

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW10 Slug Out 1.aqt
Title: MW10 SLUG OUT 1
Date: 08/24/04
Time: 14:23:24

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW10

AQUIFER DATA

Saturated Thickness: 7.65 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW10

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.658 ft
Static Water Column Height: 7.65 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 5.45 ft

No. of Observations: 84

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.621	0.3742	-0.004
0.01	0.504	0.3963	-0.005
0.015	0.368	0.4198	-0.004
0.02	0.279	0.4447	-0.004
0.025	0.21	0.4697	-0.004
0.03	0.157	0.4963	-0.004
0.035	0.115	0.5247	-0.003
0.04	0.084	0.5547	-0.003
0.045	0.063	0.5863	-0.003
0.05	0.048	0.6213	-0.004
0.055	0.037	0.6578	-0.004
0.06	0.033	0.6963	-0.003
0.065	0.02	0.738	-0.004
0.07	0.016	0.7813	-0.002
0.075	0.011	0.828	-0.002
0.08	0.008	0.8763	-0.003
0.0848	0.006	0.928	-0.003
0.09	0.004	0.983	-0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.002	1.041	-0.003
0.1	0.	1.103	-0.002
0.1058	-0.001	1.168	-0.002
0.112	-0.001	1.238	-0.003
0.1185	-0.003	1.311	-0.002
0.1255	-0.003	1.39	-0.002
0.1328	-0.004	1.473	-0.002
0.1407	-0.004	1.561	-0.001
0.149	-0.005	1.655	-0.001
0.1578	-0.005	1.753	-0.001
0.167	-0.004	1.858	-0.002
0.177	-0.004	1.968	-0.001
0.1875	-0.004	2.085	-0.001
0.1985	-0.004	2.21	-0.001
0.2102	-0.004	2.341	0.
0.2227	-0.004	2.481	0.
0.2358	-0.005	2.63	0.
0.2498	-0.005	2.786	-0.001
0.2647	-0.004	2.953	0.
0.2803	-0.005	3.13	0.
0.297	-0.005	3.316	0.
0.3147	-0.004	3.515	0.
0.3333	-0.004	3.725	-0.001
0.3532	-0.004	3.946	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.007404	cm/sec
y0	0.6255	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.01951	0.0001809	cm/sec
y0	0.8422	0.006339	ft

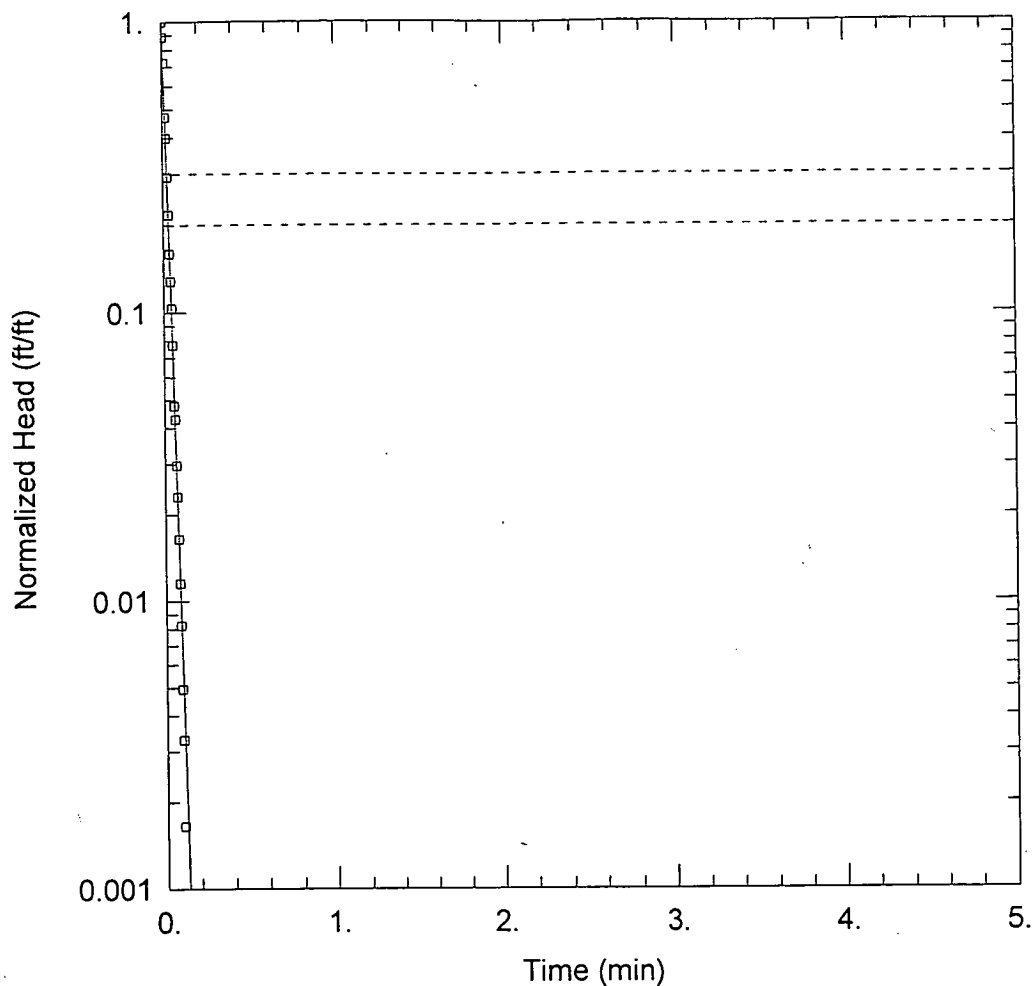
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.80
y0	0.80	1.00

Residual Statistics

for weighted residuals

Sum of Squares 0.001595 ft²
Variance 1.945E-5 ft²
Std. Deviation 0.00441 ft
Mean -0.002447 ft
No. of Residuals 84
No. of Estimates 2



MW10 SLUG OUT 2

Data Set: C:\...MW10 Slug Out 2.aqt
 Date: 08/24/04

Time: 14:25:47

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW10
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 7.65 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW10)

Initial Displacement: 0.607 ft
 Total Well Penetration Depth: 5.45 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 7.65 ft
 Screen Length: 10. ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
 K = 0.01968 cm/sec

Solution Method: Bouwer-Rice
 v0 = 0.7231 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW10 Slug Out 2.aqt
Title: MW10 SLUG OUT 2
Date: 08/24/04
Time: 14:25:53

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW10

AQUIFER DATA

Saturated Thickness: 7.65 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW10

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.607 ft
Static Water Column Height: 7.65 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 5.45 ft

No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.537	0.4198	-0.004
0.01	0.439	0.4447	-0.003
0.015	0.286	0.4697	-0.003
0.02	0.242	0.4963	-0.003
0.025	0.178	0.5247	-0.003
0.03	0.132	0.5547	-0.004
0.035	0.097	0.5863	-0.003
0.04	0.078	0.6213	-0.003
0.045	0.063	0.6578	-0.003
0.05	0.047	0.6963	-0.003
0.055	0.029	0.738	-0.003
0.06	0.026	0.7813	-0.003
0.065	0.018	0.828	-0.003
0.07	0.014	0.8763	-0.003
0.075	0.01	0.928	-0.003
0.08	0.007	0.983	-0.002
0.0848	0.005	1.041	-0.003
0.09	0.003	1.103	-0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.002	1.168	-0.002
0.1	0.001	1.238	-0.002
0.1058	0.	1.311	-0.002
0.112	-0.001	1.39	-0.002
0.1185	-0.002	1.473	-0.001
0.1255	-0.003	1.561	-0.002
0.1328	-0.004	1.655	-0.002
0.1407	-0.003	1.753	-0.002
0.149	-0.004	1.858	-0.001
0.1578	-0.006	1.968	-0.002
0.167	-0.003	2.085	-0.001
0.177	-0.003	2.21	-0.001
0.1875	-0.003	2.341	-0.001
0.1985	-0.003	2.481	-0.001
0.2102	-0.004	2.63	-0.001
0.2227	-0.004	2.786	-0.001
0.2358	-0.004	2.953	0.
0.2498	-0.003	3.13	0.
0.2647	-0.004	3.316	-0.002
0.2803	-0.004	3.515	-0.002
0.297	-0.004	3.725	0.
0.3147	-0.004	3.946	-0.001
0.3333	-0.004	4.181	-0.001
0.3532	-0.004	4.43	-0.001
0.3742	-0.004	4.693	0.
0.3963	-0.004	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.01951	cm/sec
y0	0.8422	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.01968	0.0002415	cm/sec
y0	0.7231	0.007214	ft

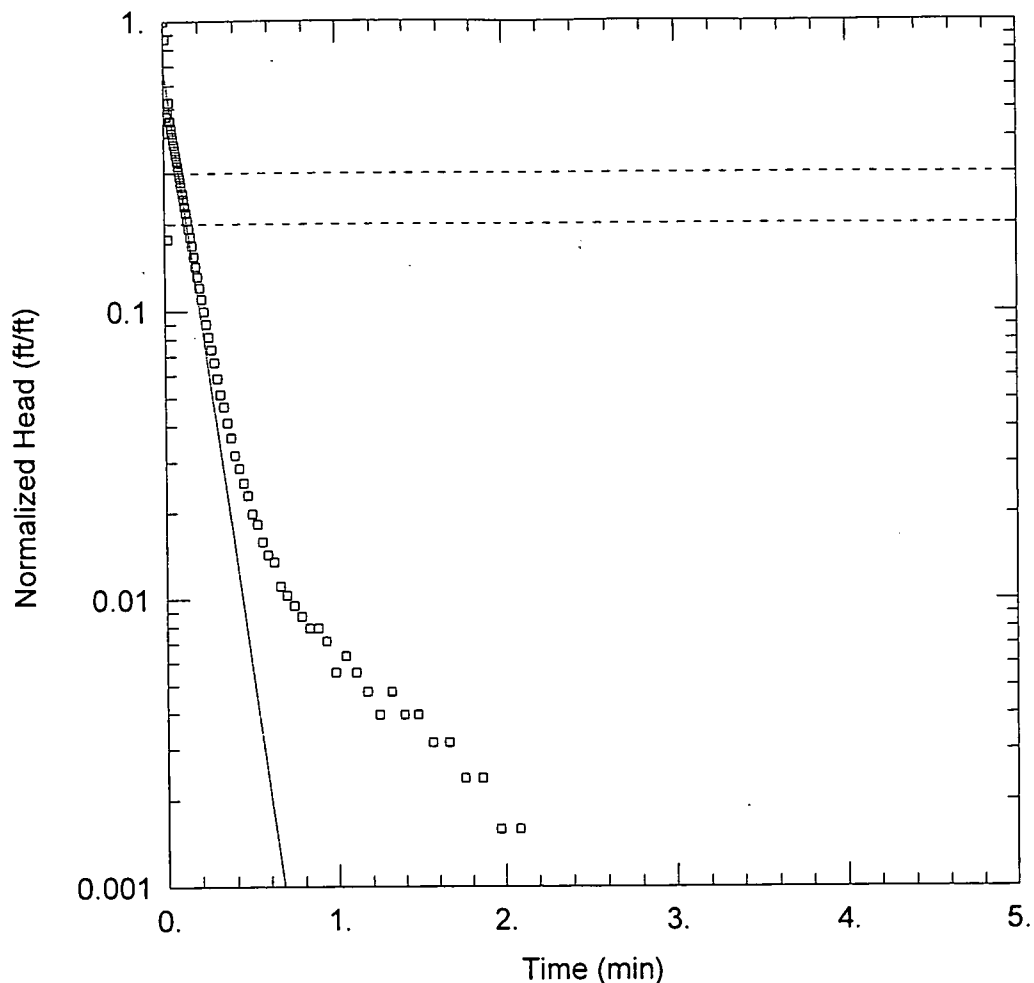
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.80
y0	0.80	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.002135 ft ²
Variance	2.482E-5 ft ²
Std. Deviation	0.004982 ft
Mean	-0.002037 ft
No. of Residuals	88
No. of Estimates	2



MW11 SLUG IN 1

Data Set:

Date: 08/24/04

Time: 11:07:13

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW11

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.75 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW11)

Initial Displacement: 1.262 ft

Static Water Column Height: 9. ft

Total Well Penetration Depth: 9. ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.003883 cm/sec

ν_0 = 0.8797 ft

Data Set: C:\ files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW11
Title: MW11 SLUG IN 1
Date: 08/24/04
Time: 11:07:32

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW11

AQUIFER DATA

Saturated Thickness: 10.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW11

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.262 ft
Static Water Column Height: 9. ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 9. ft

No. of Observations: 88

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.005	1.262	0.4198	0.036
0.01	1.096	0.4447	0.032
0.015	0.594	0.4697	0.029
0.02	0.224	0.4963	0.025
0.025	0.606	0.5247	0.023
0.03	0.663	0.5547	0.02
0.035	0.572	0.5863	0.018
0.04	0.572	0.6213	0.017
0.045	0.54	0.6578	0.014
0.05	0.518	0.6963	0.013
0.055	0.496	0.738	0.012
0.06	0.474	0.7813	0.011
0.065	0.454	0.828	0.01
0.07	0.436	0.8763	0.01
0.075	0.417	0.928	0.009
0.08	0.4	0.983	0.007
0.0848	0.385	1.041	0.008
0.09	0.369	1.103	0.007

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.353	1.168	0.006
0.1	0.34	1.238	0.005
0.1058	0.323	1.311	0.006
0.112	0.307	1.39	0.005
0.1185	0.291	1.473	0.005
0.1255	0.276	1.561	0.004
0.1328	0.26	1.655	0.004
0.1407	0.244	1.753	0.003
0.149	0.228	1.858	0.003
0.1578	0.213	1.968	0.002
0.167	0.195	2.085	0.002
0.177	0.18	2.21	0.001
0.1875	0.166	2.341	0.001
0.1985	0.152	2.481	0.001
0.2102	0.139	2.63	0.001
0.2227	0.126	2.786	0.001
0.2358	0.114	2.953	0.001
0.2498	0.103	3.13	0.001
0.2647	0.093	3.316	0.001
0.2803	0.084	3.515	0.001
0.297	0.074	3.725	0.001
0.3147	0.065	3.946	0.001
0.3333	0.059	4.181	0.001
0.3532	0.052	4.43	0.001
0.3742	0.046	4.693	0.
0.3963	0.04	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.288

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003883	cm/sec
y0	0.8797	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.003883	0.0002973	cm/sec
y0	0.8797	0.04073	ft

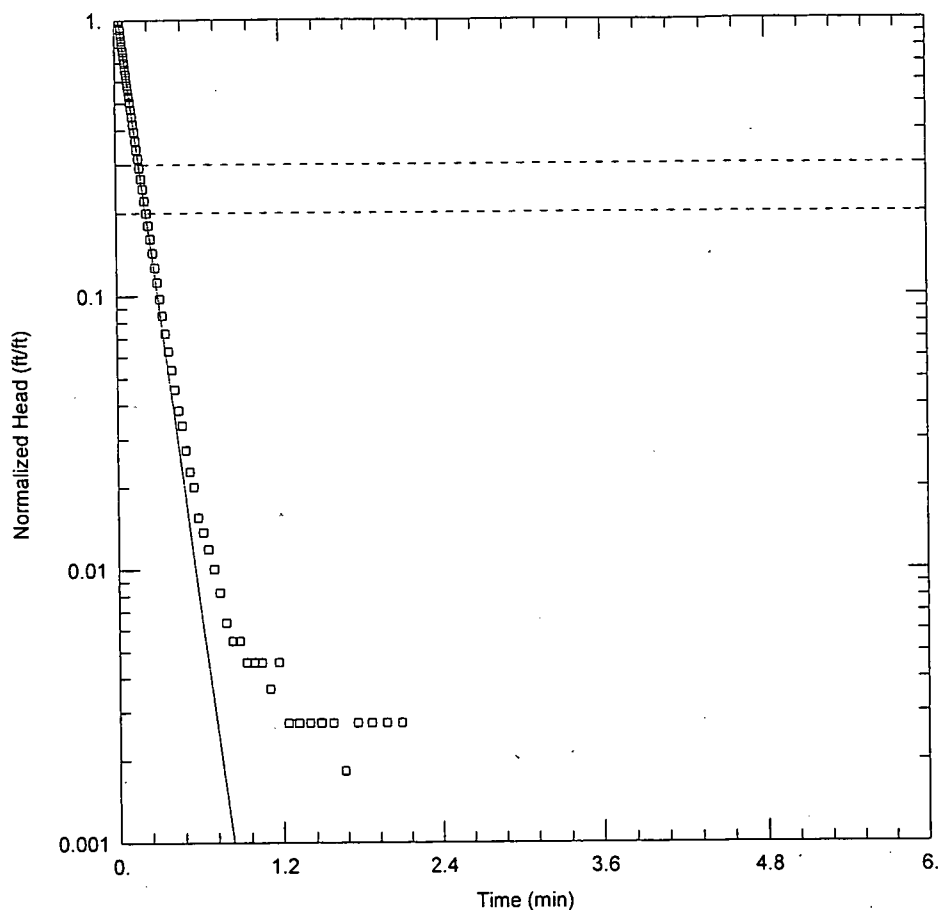
Parameter Correlations

	K	y0
K	1.00	0.75
y0	0.75	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.5749 ft ²
Variance	0.006684 ft ²
Std. Deviation	0.08176 ft
Mean	0.006587 ft
No. of Residuals	88
No. of Estimates	2



MW11 SLUG OUT 1

Data Set:

Date: 08/24/04

Time: 11:28:46

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW-11

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW11)

Initial Displacement: 1.095 ft

Static Water Column Height: 9. ft

Total Well Penetration Depth: 9. ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.003483 \text{ cm/sec}$

$v_0 = 1.483 \text{ ft}$

Data Set:
Title: MW11 SLUG OUT 1
Date: 08/24/04
Time: 11:28:55

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW-11

AQUIFER DATA

Saturated Thickness: 10.75 ft
Anisotropy Ratio (K_z/K_r): 1.

SLUG TEST WELL DATA

Test Well: : MW11

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.095 ft
Static Water Column Height: 9. ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 9. ft

No. of Observations: 83

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.035	1.095	0.5247	0.025
0.04	1.077	0.5547	0.022
0.045	1.015	0.5863	0.017
0.05	0.966	0.6213	0.015
0.055	0.922	0.6578	0.013
0.06	0.882	0.6963	0.011
0.065	0.844	0.738	0.009
0.07	0.807	0.7813	0.007
0.075	0.766	0.828	0.006
0.08	0.728	0.8763	0.006
0.0848	0.697	0.928	0.005
0.09	0.667	0.983	0.005
0.095	0.638	1.041	0.005
0.1	0.611	1.103	0.004
0.1058	0.581	1.168	0.005
0.112	0.552	1.238	0.003
0.1185	0.521	1.311	0.003
0.1255	0.491	1.39	0.003

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1328	0.461	1.473	0.003
0.1407	0.432	1.561	0.003
0.149	0.401	1.655	0.002
0.1578	0.372	1.753	0.003
0.167	0.346	1.858	0.003
0.177	0.319	1.968	0.003
0.1875	0.292	2.085	0.003
0.1985	0.268	2.21	0.001
0.2102	0.243	2.341	0.001
0.2227	0.219	2.481	0.001
0.2358	0.198	2.63	0.001
0.2498	0.177	2.786	0.001
0.2647	0.157	2.953	0.001
0.2803	0.139	3.13	0.
0.297	0.123	3.316	0.
0.3147	0.107	3.515	0.001
0.3333	0.093	3.725	0.
0.3532	0.08	3.946	0.
0.3742	0.069	4.181	0.
0.3963	0.059	4.43	0.
0.4198	0.05	4.693	0.
0.4447	0.042	4.973	0.
0.4697	0.037	5.583	0.
0.4963	0.03		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.288

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.001017	cm/sec
y0	0.3015	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.003483	1.962E-5	cm/sec
y0	1.483	0.006429	ft

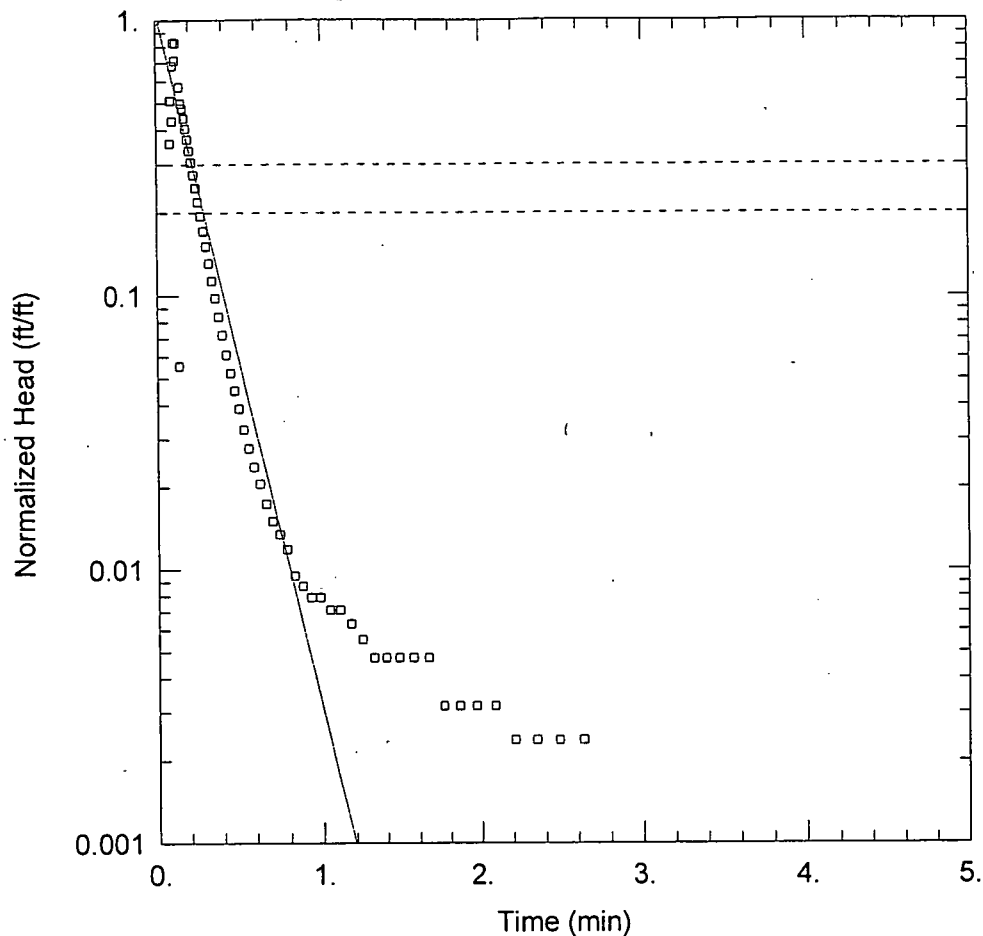
Parameter Correlations

	K	y0
K	1.00	0.87
y0	0.87	1.00

Residual Statistics

for weighted residuals

Sum of Squares.....	0.004531 ft ²
Variance	5.593E-5 ft ²
Std. Deviation	0.007479 ft
Mean.....	0.002796 ft
No. of Residuals.....	83
No. of Estimates.....	2



MW11 SLUG IN 2

Data Set: C:\...MW11_Slug In 2.aqt

Date: 08/24/04

Time: 11:57:24

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: MW11

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW11)

Initial Displacement: 1.262 ft

Static Water Column Height: 9. ft

Total Well Penetration Depth: 9. ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.002345$ cm/sec

$v_0 = 1.363$ ft

Data Set: C:\ files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW11
Title: MW11 SLUG IN 2
Date: 08/24/04
Time: 11:57:30

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW11

AQUIFER DATA

Saturated Thickness: 10.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW11

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.262 ft
Static Water Column Height: 9. ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 9. ft

No. of Observations: 72

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.08	0.452	0.6213	0.026
0.0848	0.646	0.6578	0.022
0.09	0.646	0.6963	0.019
0.095	0.545	0.738	0.017
0.1	0.864	0.7813	0.015
0.1058	1.047	0.828	0.012
0.112	0.901	0.8763	0.011
0.1185	1.042	0.928	0.01
0.1255	1.277	0.983	0.01
0.1328	0.07	1.041	0.009
0.1407	0.724	1.103	0.009
0.149	0.631	1.168	0.008
0.1578	0.604	1.238	0.007
0.167	0.557	1.311	0.006
0.177	0.511	1.39	0.006
0.1875	0.467	1.473	0.006
0.1985	0.425	1.561	0.006
0.2102	0.385	1.655	0.006

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2227	0.347	1.753	0.004
0.2358	0.312	1.858	0.004
0.2498	0.277	1.968	0.004
0.2647	0.246	2.085	0.004
0.2803	0.217	2.21	0.003
0.297	0.191	2.341	0.003
0.3147	0.166	2.481	0.003
0.3333	0.143	2.63	0.003
0.3532	0.124	2.786	0.001
0.3742	0.106	2.953	0.001
0.3963	0.091	3.13	0.001
0.4198	0.077	3.316	0.001
0.4447	0.066	3.515	0.001
0.4697	0.057	3.725	0.001
0.4963	0.049	3.946	0.001
0.5247	0.041	4.181	0.
0.5547	0.035	4.43	0.001
0.5863	0.03	4.693	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.288

VISUAL ESTIMATION RESULTSEstimated Parameters

Parameter	Estimate	
K	0.003883	cm/sec
y0	0.8797	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

Parameter	Estimate	Std. Error	
K	0.002345	0.0003094	cm/sec
y0	1.363	0.1546	ft

Parameter Correlations

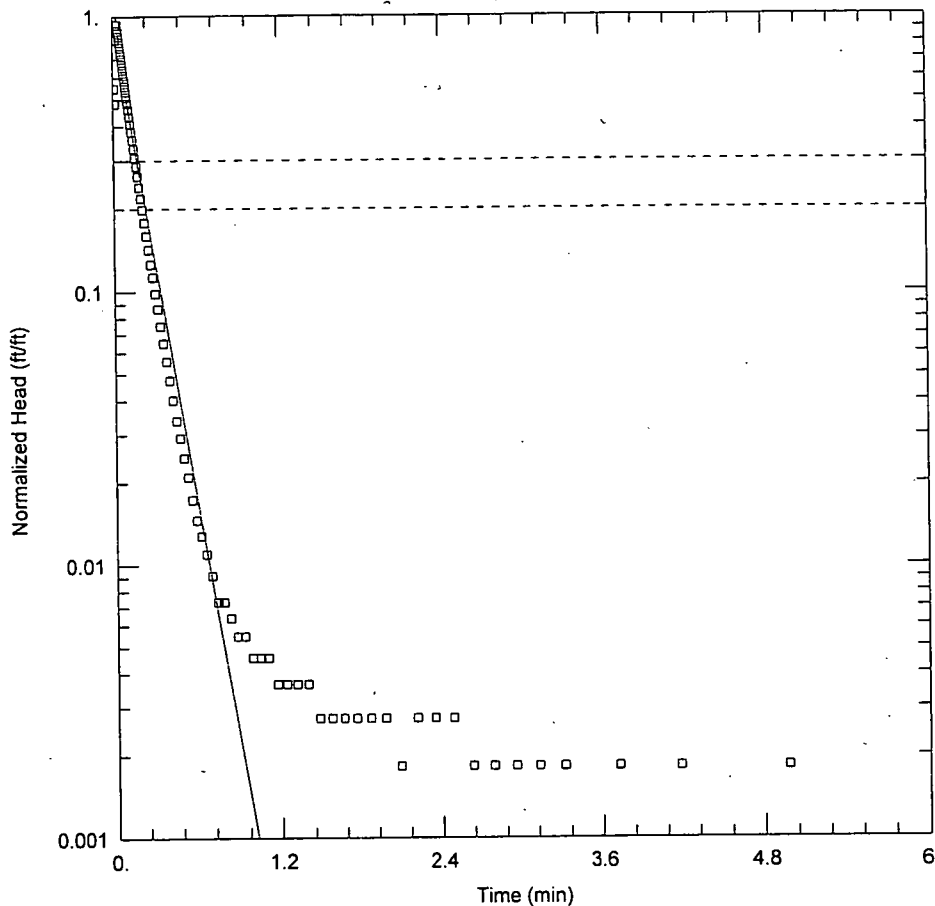
	K	y0
K	1.00	0.91
y0	0.91	1.00

Residual Statistics

for weighted residuals

Sum of Squares 1.304 ft²
 Variance 0.01863 ft²
 Std. Deviation 0.1365 ft
 Mean -0.002603 ft

No. of Residuals.72
No. of Estimates.2



MW11 SLUG OUT 2

Data Set: C:\...MW11 Slug Out 2.aqt
 Date: 08/24/04

Time: 12:01:10

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW-11
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 10.75 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW11)

Initial Displacement: 1.095 ft
 Total Well Penetration Depth: 9. ft
 Casing Radius: 0.083 ft

Static Water Column Height: 9. ft
 Screen Length: 10. ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
 $K = 0.002716 \text{ cm/sec}$

Solution Method: Bouwer-Rice
 $v_0 = 1.084 \text{ ft}$

Data Set: C:\files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\MW11
Title: MW11 SLUG OUT 2
Date: 08/24/04
Time: 12:01:20

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: MW-11

AQUIFER DATA

Saturated Thickness: 10.75 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : MW11

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.095 ft
Static Water Column Height: 9. ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 9. ft

No. of Observations: 88

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01	0.601	0.4447	0.037
0.015	0.529	0.4697	0.032
0.02	0.898	0.4963	0.027
0.025	1.022	0.5247	0.023
0.03	1.13	0.5547	0.019
0.035	1.022	0.5863	0.016
0.04	0.973	0.6213	0.014
0.045	0.925	0.6578	0.012
0.05	0.884	0.6963	0.01
0.055	0.844	0.738	0.008
0.06	0.804	0.7813	0.008
0.065	0.768	0.828	0.007
0.07	0.734	0.8763	0.006
0.075	0.701	0.928	0.006
0.08	0.671	0.983	0.005
0.0848	0.64	1.041	0.005
0.09	0.612	1.103	0.005
0.095	0.585	1.168	0.004

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1	0.56	1.238	0.004
0.1058	0.532	1.311	0.004
0.112	0.503	1.39	0.004
0.1185	0.475	1.473	0.003
0.1255	0.446	1.561	0.003
0.1328	0.419	1.655	0.003
0.1407	0.391	1.753	0.003
0.149	0.363	1.858	0.003
0.1578	0.337	1.968	0.003
0.167	0.313	2.085	0.002
0.177	0.288	2.21	0.003
0.1875	0.263	2.341	0.003
0.1985	0.24	2.481	0.003
0.2102	0.218	2.63	0.002
0.2227	0.196	2.786	0.002
0.2358	0.175	2.953	0.002
0.2498	0.156	3.13	0.002
0.2647	0.138	3.316	0.002
0.2803	0.124	3.515	0.001
0.297	0.108	3.725	0.002
0.3147	0.095	3.946	0.001
0.3333	0.082	4.181	0.002
0.3532	0.071	4.43	0.001
0.3742	0.061	4.693	0.001
0.3963	0.052	4.973	0.002
0.4198	0.044	5.27	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.288

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003483	cm/sec
y0	1.483	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.002716	0.0001663	cm/sec
y0	1.084	0.03763	ft

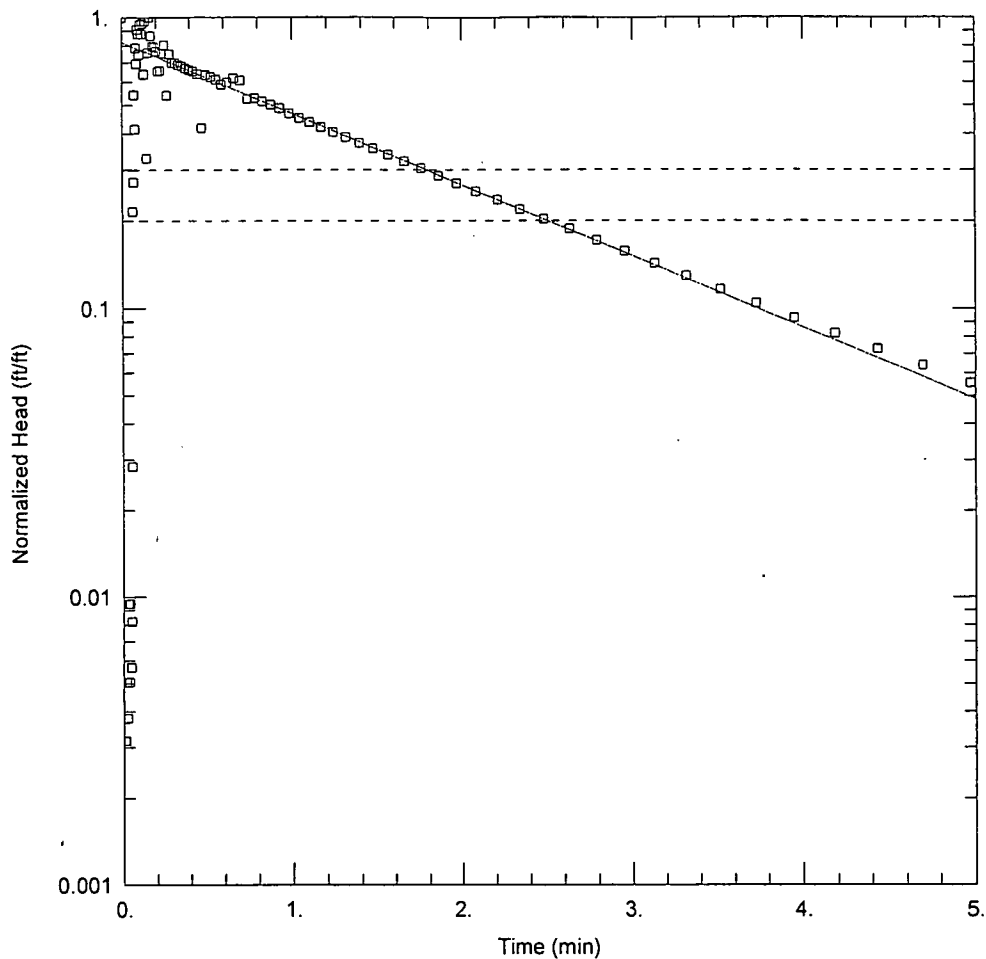
Parameter Correlations

	K	y0
K	1.00	0.77
y0	0.77	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.5822 ft ²
Variance	0.006769 ft ²
Std. Deviation	0.08228 ft
Mean	-0.002832 ft
No. of Residuals	88
No. of Estimates	2



TW2 SLUG IN 1

Data Set: C:\...\TW2 Slug In 1.aqt

Date: 08/24/04

Time: 14:55:28

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: TW2

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 16.99 ft

Anisotropy Ratio (K_z/K_r): 1

WELL DATA (TW2)

Initial Displacement: 1.583 ft

Total Well Penetration Depth: 16.99 ft

Casing Radius: 0.083 ft

Static Water Column Height: 16.99 ft

Screen Length: 10 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.0002859$ cm/sec

$\nu = 1.302$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW2 Slug In 1.aqt
Title: TW2 SLUG IN 1
Date: 08/24/04
Time: 14:55:36

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: TW2

AQUIFER DATA

Saturated Thickness: 16.99 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : TW2

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.583 ft
Static Water Column Height: 16.99 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16.99 ft

No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.	0.4198	1.033
0.01	0.005	0.4447	1.012
0.015	0.005	0.4697	0.662
0.02	0.008	0.4963	1.006
0.025	0.006	0.5247	0.989
0.03	0.015	0.5547	0.97
0.035	0.008	0.5863	0.93
0.04	0.015	0.6213	0.947
0.045	0.009	0.6578	0.979
0.05	0.013	0.6963	0.962
0.055	0.045	0.738	0.831
0.06	0.341	0.7813	0.837
0.065	0.431	0.828	0.816
0.07	0.859	0.8763	0.795
0.075	0.655	0.928	0.772
0.08	1.242	0.983	0.741
0.0848	1.097	1.041	0.715
0.09	1.437	1.103	0.691

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	1.389	1.168	0.666
0.1	1.181	1.238	0.641
0.1058	1.496	1.311	0.615
0.112	1.386	1.39	0.587
0.1185	1.51	1.473	0.562
0.1255	1.011	1.561	0.535
0.1328	1.538	1.655	0.508
0.1407	0.521	1.753	0.481
0.149	1.196	1.858	0.454
0.1578	1.583	1.968	0.426
0.167	1.368	2.085	0.4
0.177	1.26	2.21	0.374
0.1875	1.25	2.341	0.347
0.1985	1.209	2.481	0.322
0.2102	1.035	2.63	0.298
0.2227	1.039	2.786	0.272
0.2358	1.191	2.953	0.249
0.2498	1.271	3.13	0.226
0.2647	0.855	3.316	0.205
0.2803	1.183	3.515	0.184
0.297	1.105	3.725	0.165
0.3147	1.104	3.946	0.147
0.3333	1.088	4.181	0.13
0.3532	1.076	4.43	0.115
0.3742	1.061	4.693	0.101
0.3963	1.048	4.973	0.088

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.896

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.0002859	cm/sec
y0	1.302	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.0001481	4.443E-5	cm/sec
y0	0.8983	0.06488	ft

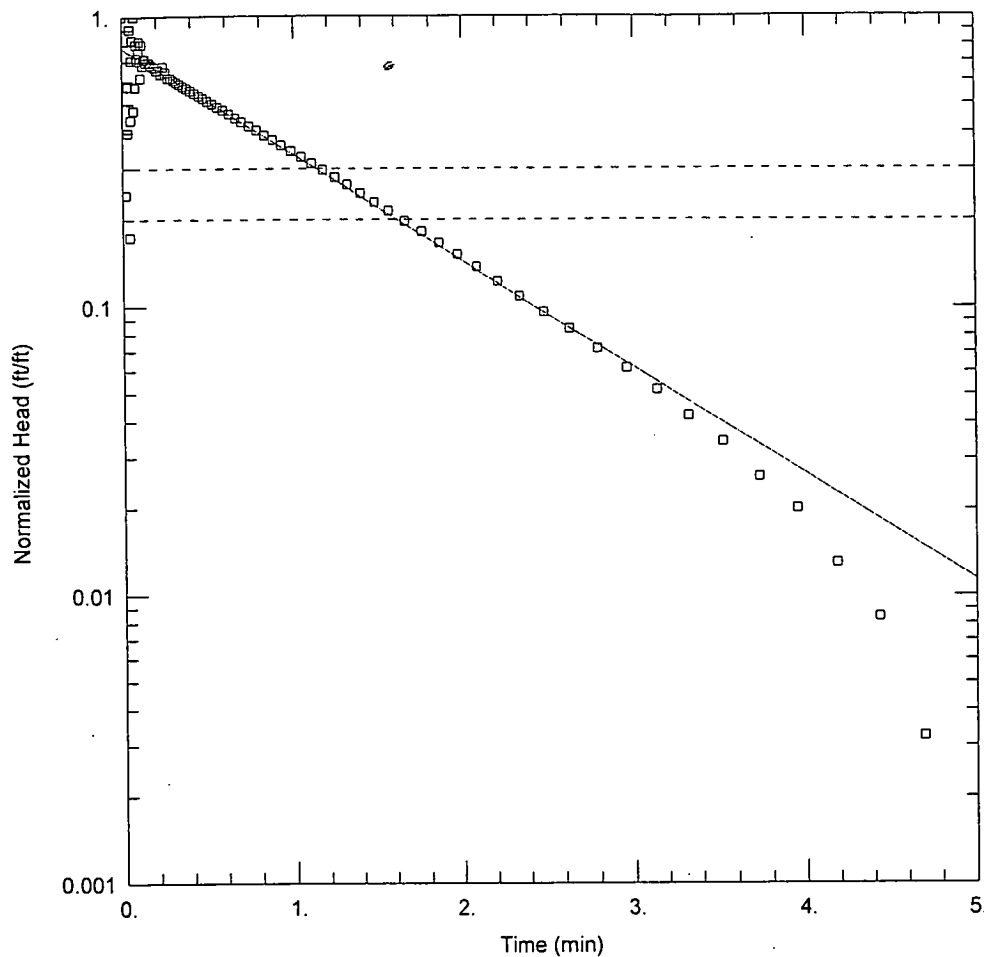
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.56
y0	0.56	1.00

Residual Statistics

for weighted residuals

Sum of Squares	14.64 ft ²
Variance	0.1703 ft ²
Std. Deviation	0.4126 ft
Mean	-0.005575 ft
No. of Residuals	88
No. of Estimates	2



TW2 SLUG IN 2

Data Set: C:\...\TW2 Slug In 2.aqt
Date: 08/24/04

Time: 15:01:10

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Well: TW2
Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 16.99 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TW2)

Initial Displacement: 1.543 ft
Total Well Penetration Depth: 16.99 ft
Casing Radius: 0.083 ft

Static Water Column Height: 16.99 ft
Screen Length: 10. ft
Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.0004279 cm/sec

v0 = 1.201 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW2 Slug In 2.aqt
Title: TW2 SLUG IN 2
Date: 08/24/04
Time: 15:01:17

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: TW2

AQUIFER DATA

Saturated Thickness: 16.99 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : TW2

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.543 ft
Static Water Column Height: 16.99 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16.99 ft

No. of Observations: 84

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.02	0.375	0.4697	0.808
0.03	0.615	0.4963	0.79
0.035	0.886	0.5247	0.772
0.04	0.268	0.5547	0.753
0.045	1.399	0.5863	0.735
0.05	0.682	0.6213	0.713
0.055	1.091	0.6578	0.692
0.06	1.282	0.6963	0.671
0.065	0.734	0.738	0.649
0.07	1.543	0.7813	0.627
0.075	0.883	0.828	0.602
0.08	1.237	0.8763	0.581
0.0848	1.111	0.928	0.556
0.09	1.089	0.983	0.532
0.095	1.163	1.041	0.507
0.1	1.265	1.103	0.482
0.1058	0.95	1.168	0.458
0.112	1.239	1.238	0.432

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1185	1.048	1.311	0.407
0.1255	1.099	1.39	0.381
0.1328	1.103	1.473	0.355
0.1407	1.07	1.561	0.331
0.149	1.073	1.655	0.305
0.1578	1.068	1.753	0.281
0.167	1.052	1.858	0.257
0.177	1.038	1.968	0.234
0.1875	1.028	2.085	0.212
0.1985	1.008	2.21	0.189
0.2102	1.011	2.341	0.168
0.2227	0.976	2.481	0.148
0.2358	1.037	2.63	0.13
0.2498	0.991	2.786	0.111
0.2647	0.947	2.953	0.095
0.2803	0.944	3.13	0.08
0.297	0.931	3.316	0.065
0.3147	0.916	3.515	0.053
0.3333	0.903	3.725	0.04
0.3532	0.887	3.946	0.031
0.3742	0.873	4.181	0.02
0.3963	0.857	4.43	0.013
0.4198	0.84	4.693	0.005
0.4447	0.823	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.896

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.0004279	cm/sec
y0	1.201	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.0003659	3.49E-5	cm/sec
y0	1.101	0.03416	ft

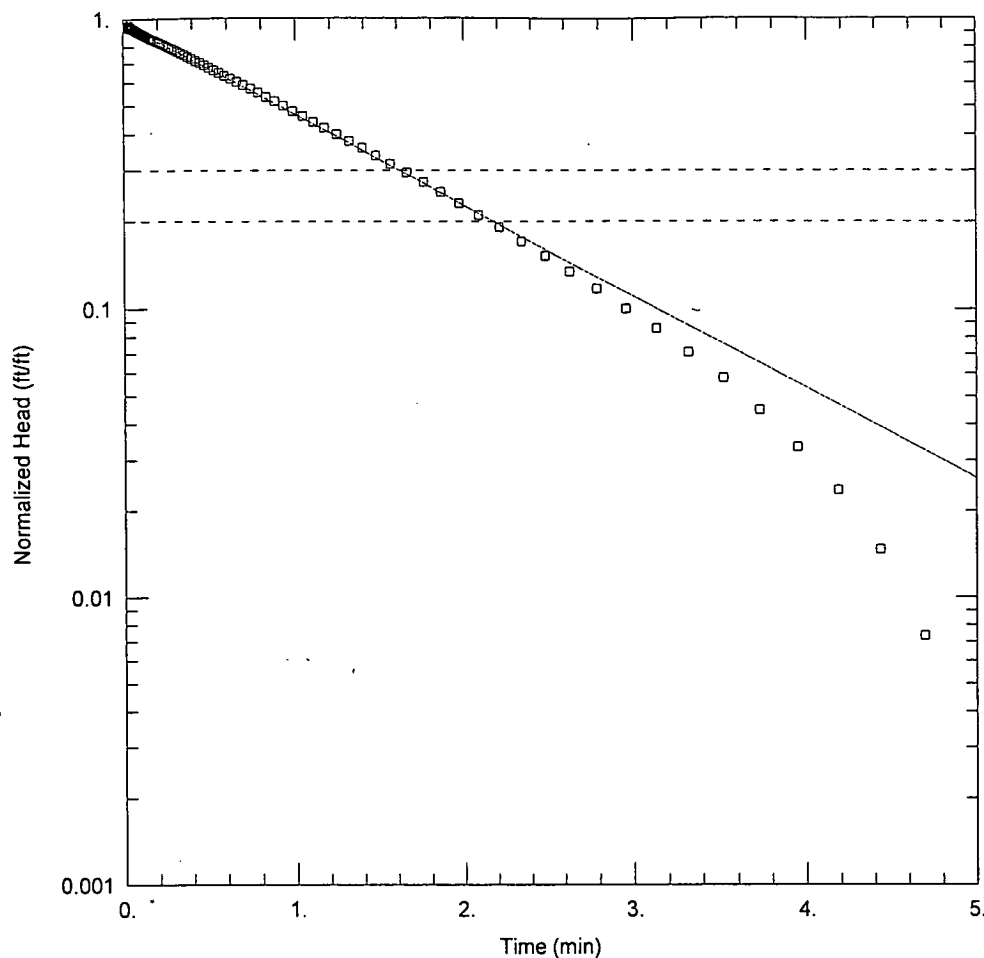
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.62
y0	0.62	1.00

Residual Statistics

for weighted residuals

Sum of Squares	2.377 ft ²
Variance	0.02898 ft ²
Std. Deviation	0.1702 ft
Mean	-0.005062 ft
No. of Residuals	84
No. of Estimates	2



TW2 SLUG OUT 1

Data Set: C:\...\TW2 Slug Out 1.aqt

Date: 08/24/04

Time: 15:04:44

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: TW2

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 16.99 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TW2)

Initial Displacement: 1.228 ft

Static Water Column Height: 16.99 ft

Total Well Penetration Depth: 16.99 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.0003659 cm/sec

v0 = 1.181 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW2 Slug Out 1.aqt
Title: TW2 SLUG OUT 1
Date: 08/24/04
Time: 15:04:50

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: TW2

AQUIFER DATA

Saturated Thickness: 16.99 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : TW2

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.228 ft
Static Water Column Height: 16.99 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16.99 ft

No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	1.228	0.4198	0.878
0.01	1.149	0.4447	0.864
0.015	1.204	0.4697	0.848
0.02	1.141	0.4963	0.832
0.025	1.181	0.5247	0.815
0.03	1.14	0.5547	0.798
0.035	1.161	0.5863	0.78
0.04	1.137	0.6213	0.762
0.045	1.147	0.6578	0.743
0.05	1.13	0.6963	0.723
0.055	1.134	0.738	0.703
0.06	1.124	0.7813	0.682
0.065	1.123	0.828	0.659
0.07	1.116	0.8763	0.637
0.075	1.112	0.928	0.614
0.08	1.108	0.983	0.589
0.0848	1.104	1.041	0.566
0.09	1.099	1.103	0.541

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	1.095	1.168	0.517
0.1	1.09	1.238	0.491
0.1058	1.086	1.311	0.465
0.112	1.082	1.39	0.441
0.1185	1.076	1.473	0.414
0.1255	1.07	1.561	0.388
0.1328	1.065	1.655	0.362
0.1407	1.058	1.753	0.336
0.149	1.051	1.858	0.31
0.1578	1.045	1.968	0.284
0.167	1.042	2.085	0.259
0.177	1.035	2.21	0.235
0.1875	1.029	2.341	0.21
0.1985	1.021	2.481	0.187
0.2102	1.013	2.63	0.165
0.2227	1.005	2.786	0.144
0.2358	0.996	2.953	0.123
0.2498	0.987	3.13	0.105
0.2647	0.977	3.316	0.087
0.2803	0.967	3.515	0.071
0.297	0.957	3.725	0.055
0.3147	0.944	3.946	0.041
0.3333	0.933	4.181	0.029
0.3532	0.921	4.43	0.018
0.3742	0.906	4.693	0.009
0.3963	0.893	4.973	0.

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.896

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.0004279	cm/sec
y0	1.201	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.0003659	2.542E-6	cm/sec
y0	1.181	0.002547	ft

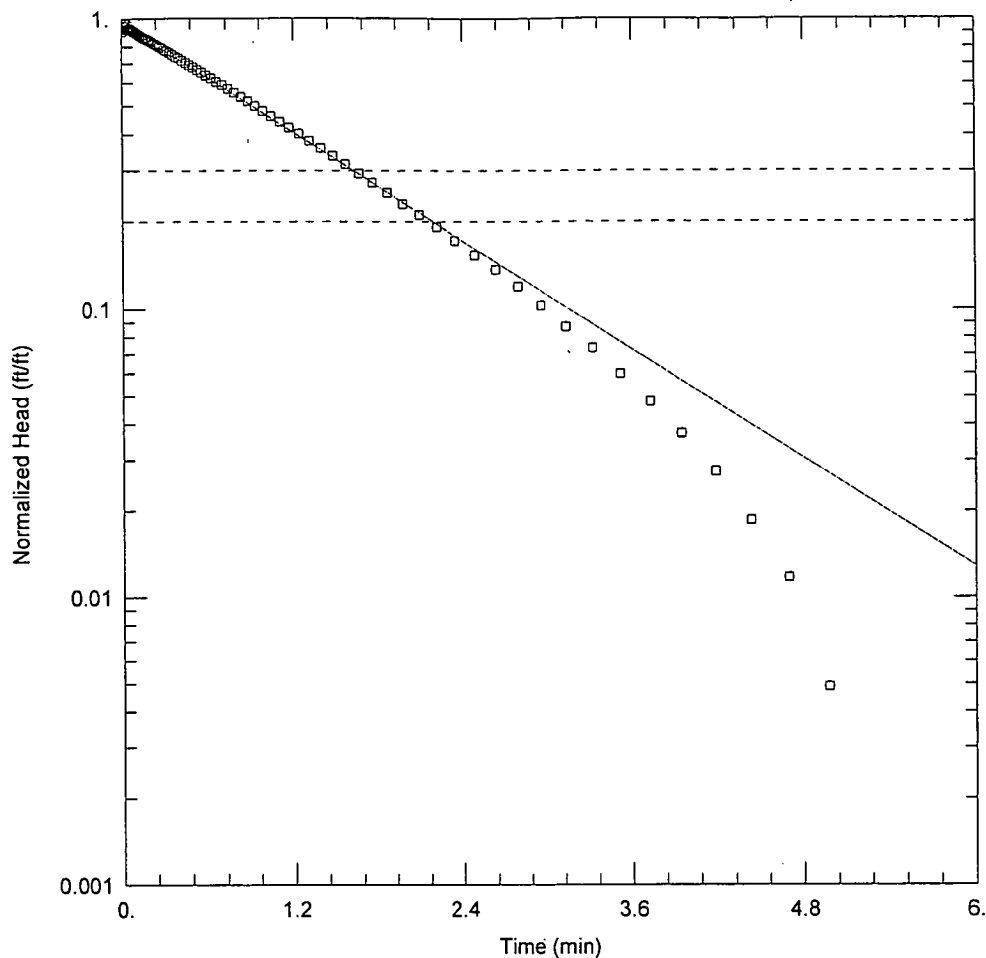
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.59
y0	0.59	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.01597 ft ²
Variance	0.0001857 ft ²
Std. Deviation	0.01363 ft
Mean	-0.002225 ft
No. of Residuals	88
No. of Estimates	2



TW2 SLUG OUT 2

Data Set: C:\...TW2 Slug Out 2.aqt
 Date: 08/24/04

Time: 15:08:50

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: TW2
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 16.99 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TW2)

Initial Displacement: 1.023 ft
 Total Well Penetration Depth: 16.99 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 16.99 ft
 Screen Length: 10. ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.0003642 cm/sec

ν = 0.984 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW2 Slug Out 2.aqt

Title: TW2 SLUG OUT 2

Date: 08/24/04

Time: 15:08:57

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Date: 7/29/04

Test Well: TW2

AQUIFER DATA

Saturated Thickness: 16.99 ft

Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : TW2

X Location: 0. ft

Y Location: 0. ft

Initial Displacement: 1.023 ft

Static Water Column Height: 16.99 ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

Well Skin Radius: 0.333 ft

Screen Length: 10. ft

Total Well Penetration Depth: 16.99 ft

No. of Observations: 89

Observation Data

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.922	0.4447	0.719
0.01	1.027	0.4697	0.707
0.015	0.961	0.4963	0.695
0.02	0.964	0.5247	0.68
0.025	0.981	0.5547	0.667
0.03	0.938	0.5863	0.652
0.035	0.979	0.6213	0.636
0.04	0.933	0.6578	0.619
0.045	0.966	0.6963	0.604
0.05	0.939	0.738	0.586
0.055	0.947	0.7813	0.569
0.06	0.943	0.828	0.55
0.065	0.937	0.8763	0.532
0.07	0.934	0.928	0.512
0.075	0.931	0.983	0.492
0.08	0.925	1.041	0.472
0.0848	0.925	1.103	0.452
0.09	0.918	1.168	0.431

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.917	1.238	0.411
0.1	0.912	1.311	0.388
0.1058	0.909	1.39	0.367
0.112	0.904	1.473	0.345
0.1185	0.899	1.561	0.323
0.1255	0.895	1.655	0.301
0.1328	0.89	1.753	0.279
0.1407	0.885	1.858	0.258
0.149	0.879	1.968	0.236
0.1578	0.873	2.085	0.216
0.167	0.871	2.21	0.196
0.177	0.865	2.341	0.176
0.1875	0.86	2.481	0.157
0.1985	0.854	2.63	0.14
0.2102	0.847	2.786	0.122
0.2227	0.839	2.953	0.105
0.2358	0.833	3.13	0.089
0.2498	0.824	3.316	0.075
0.2647	0.816	3.515	0.061
0.2803	0.807	3.725	0.049
0.297	0.798	3.946	0.038
0.3147	0.788	4.181	0.028
0.3333	0.778	4.43	0.019
0.3532	0.768	4.693	0.012
0.3742	0.756	4.973	0.005
0.3963	0.745	5.27	0.
0.4198	0.733		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.896

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.0003659	cm/sec
y0	1.181	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.0003642	2.804E-6	cm/sec
y0	0.984	0.002352	ft

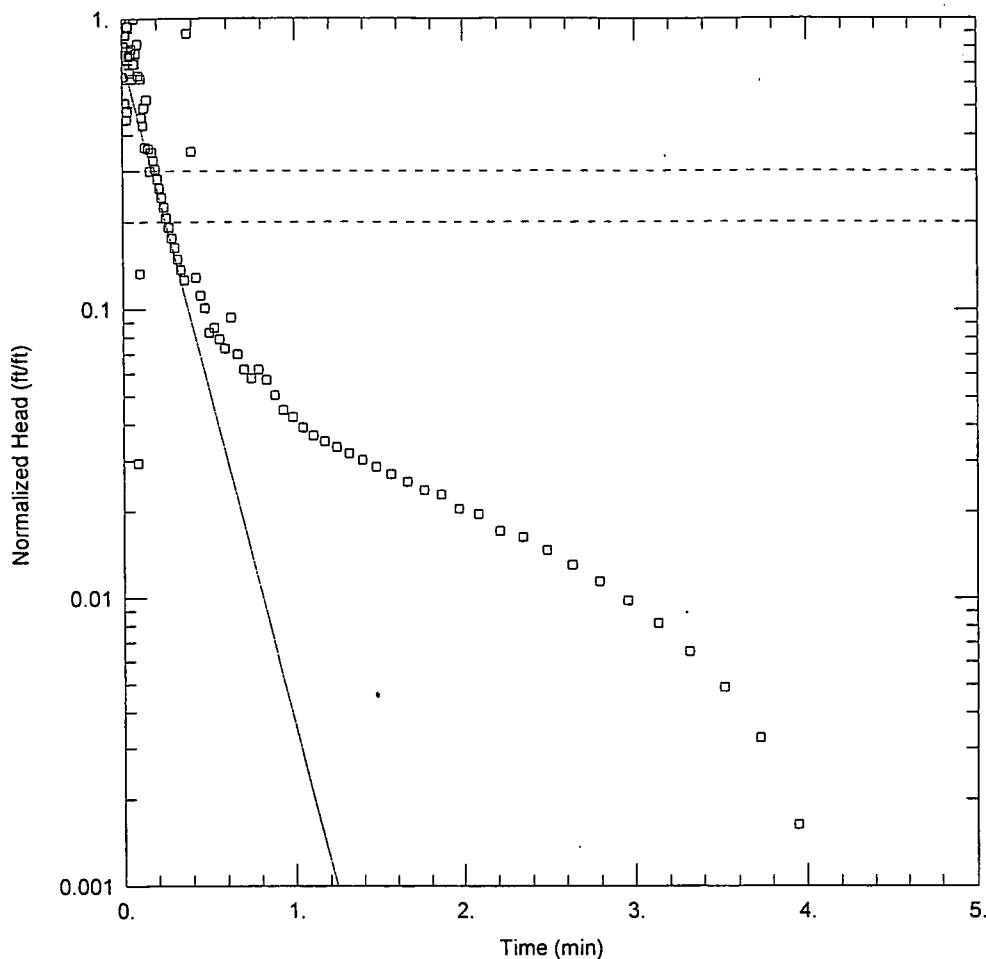
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.59
y0	0.59	1.00

Residual Statistics

for weighted residuals

Sum of Squares	0.01381 ft ²
Variance	0.0001588 ft ²
Std. Deviation	0.0126 ft
Mean	-0.001898 ft
No. of Residuals	89
No. of Estimates	2



TW3 SLUG IN 1

Data Set: C:\...TW3 Slug In 1.aqt

Date: 08/24/04

Time: 15:44:38

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: TW3

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 15.06 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TW3)

Initial Displacement: 1.226 ft

Static Water Column Height: 15.06 ft

Total Well Penetration Depth: 15.06 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.00264 cm/sec

v0 = 0.9125 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW3 Slug In 1.aqt
Title: TW3 SLUG IN 1
Date: 08/24/04
Time: 15:44:46

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: TW3

AQUIFER DATA

Saturated Thickness: 15.06 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : TW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.226 ft
Static Water Column Height: 15.06 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 15.06 ft

No. of Observations: 85

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.775	0.3963	0.429
0.01	0.984	0.4198	0.158
0.015	0.629	0.4447	0.137
0.02	1.077	0.4697	0.124
0.025	0.553	0.4963	0.102
0.03	0.587	0.5247	0.106
0.035	1.153	0.5547	0.097
0.04	0.91	0.5863	0.09
0.045	0.799	0.6213	0.115
0.05	0.92	0.6578	0.086
0.055	0.962	0.6963	0.076
0.06	0.762	0.738	0.071
0.065	0.858	0.7813	0.076
0.07	1.226	0.828	0.07
0.075	0.857	0.8763	0.062
0.08	0.93	0.928	0.055
0.0848	0.036	0.983	0.052
0.09	1.004	1.041	0.048

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.78	1.103	0.045
0.1	0.163	1.168	0.043
0.1058	0.763	1.238	0.041
0.112	0.561	1.311	0.039
0.1185	0.528	1.39	0.037
0.1255	0.606	1.473	0.035
0.1328	0.443	1.561	0.033
0.1407	0.646	1.655	0.031
0.149	0.438	1.753	0.029
0.1578	0.367	1.858	0.028
0.167	0.427	1.968	0.025
0.177	0.399	2.085	0.024
0.1875	0.372	2.21	0.021
0.1985	0.345	2.341	0.02
0.2102	0.32	2.481	0.018
0.2227	0.298	2.63	0.016
0.2358	0.276	2.786	0.014
0.2498	0.254	2.953	0.012
0.2647	0.235	3.13	0.01
0.2803	0.216	3.316	0.008
0.297	0.2	3.515	0.006
0.3147	0.183	3.725	0.004
0.3333	0.168	3.946	0.002
0.3532	0.155	4.181	0.
0.3742	1.089		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.823

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.00264	cm/sec
y0	0.9125	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.001972	0.0002629	cm/sec
y0	0.9516	0.05924	ft

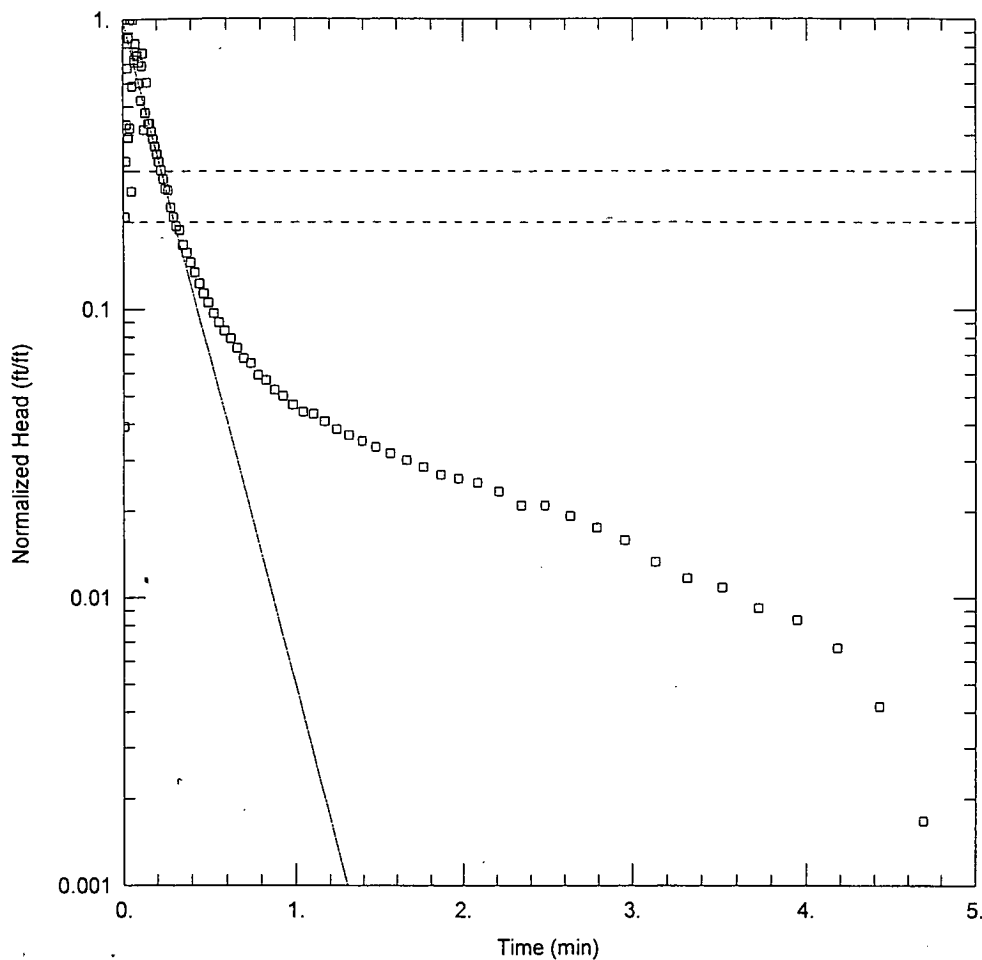
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.72
y0	0.72	1.00

Residual Statistics

for weighted residuals

Sum of Squares	2.627 ft ²
Variance	0.03165 ft ²
Std. Deviation	0.1779 ft
Mean	0.009683 ft
No. of Residuals	85
No. of Estimates	2



TW3 SLUG IN 2

Data Set: C:\...\TW3 Slug In 2.aqt

Date: 08/24/04

Time: 15:47:48

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: TW3

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 15.06 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (TW3)

Initial Displacement: 1.195 ft

Static Water Column Height: 15.06 ft

Total Well Penetration Depth: 15.06 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.002617$ cm/sec

$v_0 = 1.189$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW3 Slug In 2.aqt
Title: TW3 SLUG IN 2
Date: 08/24/04
Time: 15:48:51

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: TW3

AQUIFER DATA

Saturated Thickness: 15.06 ft
Anisotropy Ratio (K_z/K_r): 1.

SLUG TEST WELL DATA

Test Well: : TW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.195 ft
Static Water Column Height: 15.06 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 15.06 ft

No. of Observations: 88

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.047	0.4198	0.161
0.01	0.249	0.4447	0.147
0.015	0.387	0.4697	0.136
0.02	0.518	0.4963	0.126
0.025	0.811	0.5247	0.116
0.03	0.468	0.5547	0.108
0.035	1.03	0.5863	0.101
0.04	0.505	0.6213	0.095
0.045	1.195	0.6578	0.088
0.05	0.305	0.6963	0.081
0.055	0.702	0.738	0.078
0.06	1.188	0.7813	0.071
0.065	0.866	0.828	0.068
0.07	0.849	0.8763	0.063
0.075	0.986	0.928	0.06
0.08	0.921	0.983	0.056
0.0848	0.893	1.041	0.053
0.09	0.896	1.103	0.052

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.85	1.168	0.049
0.1	0.721	1.238	0.046
0.1058	0.627	1.311	0.044
0.112	0.826	1.39	0.042
0.1185	0.912	1.473	0.04
0.1255	0.498	1.561	0.038
0.1328	0.57	1.655	0.036
0.1407	0.724	1.753	0.034
0.149	0.524	1.858	0.032
0.1578	0.523	1.968	0.031
0.167	0.491	2.085	0.03
0.177	0.464	2.21	0.028
0.1875	0.437	2.341	0.025
0.1985	0.411	2.481	0.025
0.2102	0.387	2.63	0.023
0.2227	0.361	2.786	0.021
0.2358	0.337	2.953	0.019
0.2498	0.311	3.13	0.016
0.2647	0.308	3.316	0.014
0.2803	0.269	3.515	0.013
0.297	0.249	3.725	0.011
0.3147	0.232	3.946	0.01
0.3333	0.225	4.181	0.008
0.3532	0.2	4.43	0.005
0.3742	0.188	4.693	0.002
0.3963	0.174	4.973	0.0

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.823

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.002617	cm/sec
y0	1.189	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.001419	0.0002147	cm/sec
y0	0.8057	0.05194	ft

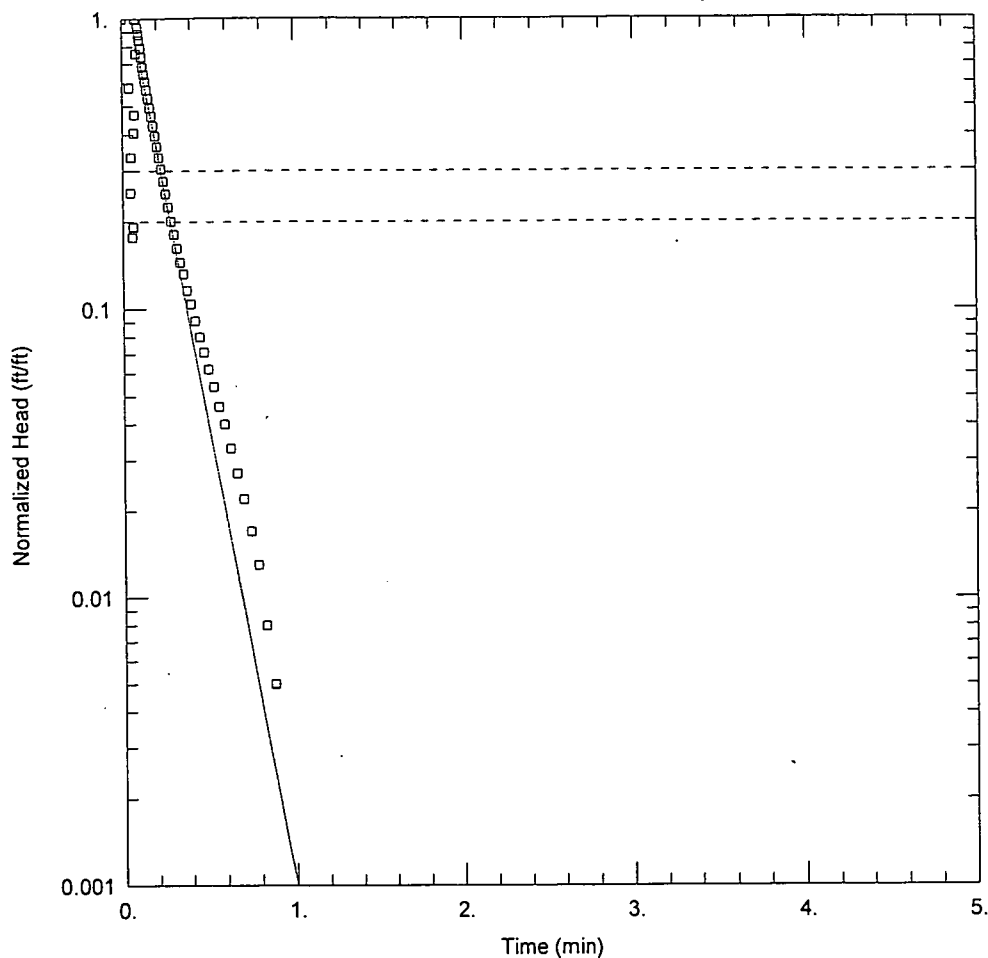
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.70
y0	0.70	1.00

Residual Statistics

for weighted residuals

Sum of Squares	2.741 ft ²
Variance	0.03188 ft ²
Std. Deviation	0.1785 ft
Mean	0.001337 ft
No. of Residuals	88
No. of Estimates	2



TW3 SLUG OUT 1

Data Set: C:\...\TW3 Slug Out 1.aqt
 Date: 08/24/04

Time: 15:52:13

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: TW3
 Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 15.06 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TW3)

Initial Displacement: 0.999 ft
 Total Well Penetration Depth: 15.06 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 15.06 ft
 Screen Length: 10. ft
 Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

K = 0.003629 cm/sec

v0 = 1.532 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW3 Slug Out 1.aqt
Title: TW3 SLUG OUT 1
Date: 08/24/04
Time: 15:52:20

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
Client: NYSDEC
Project: 2184
Location: AVM GOWANDA
Test Date: 7/29/04
Test Well: TW3

AQUIFER DATA

Saturated Thickness: 15.06 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : TW3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.999 ft
Static Water Column Height: 15.06 ft
Casing Radius: 0.083 ft
Wellbore Radius: 0.333 ft
Well Skin Radius: 0.333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 15.06 ft

No. of Observations: 81

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.04	0.579	0.5247	0.054
0.045	0.252	0.5547	0.046
0.05	0.334	0.5863	0.04
0.055	0.177	0.6213	0.033
0.06	0.192	0.6578	0.027
0.065	0.405	0.6963	0.022
0.07	0.468	0.738	0.017
0.075	0.999	0.7813	0.013
0.08	0.756	0.828	0.008
0.0848	0.995	0.8763	0.005
0.09	0.929	0.928	0.
0.095	0.882	0.983	-0.003
0.1	0.841	1.041	-0.005
0.1058	0.793	1.103	-0.008
0.112	0.738	1.168	-0.01
0.1185	0.682	1.238	-0.012
0.1255	0.644	1.311	-0.013
0.1328	0.607	1.39	-0.015

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1407	0.569	1.473	-0.015
0.149	0.531	1.561	-0.016
0.1578	0.494	1.655	-0.017
0.167	0.462	1.753	-0.017
0.177	0.428	1.858	-0.017
0.1875	0.395	1.968	-0.016
0.1985	0.363	2.085	-0.016
0.2102	0.333	2.21	-0.016
0.2227	0.304	2.341	-0.015
0.2358	0.276	2.481	-0.015
0.2498	0.25	2.63	-0.014
0.2647	0.225	2.786	-0.013
0.2803	0.201	2.953	-0.013
0.297	0.181	3.13	-0.011
0.3147	0.162	3.316	-0.011
0.3333	0.145	3.515	-0.008
0.3532	0.132	3.725	-0.007
0.3742	0.116	3.946	-0.006
0.3963	0.104	4.181	-0.004
0.4198	0.091	4.43	-0.003
0.4447	0.08	4.693	-0.001
0.4697	0.071	4.973	0.
0.4963	0.062		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.823

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003629	cm/sec
y0	1.532	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.001914	0.0002982	cm/sec
y0	0.813	0.07047	ft

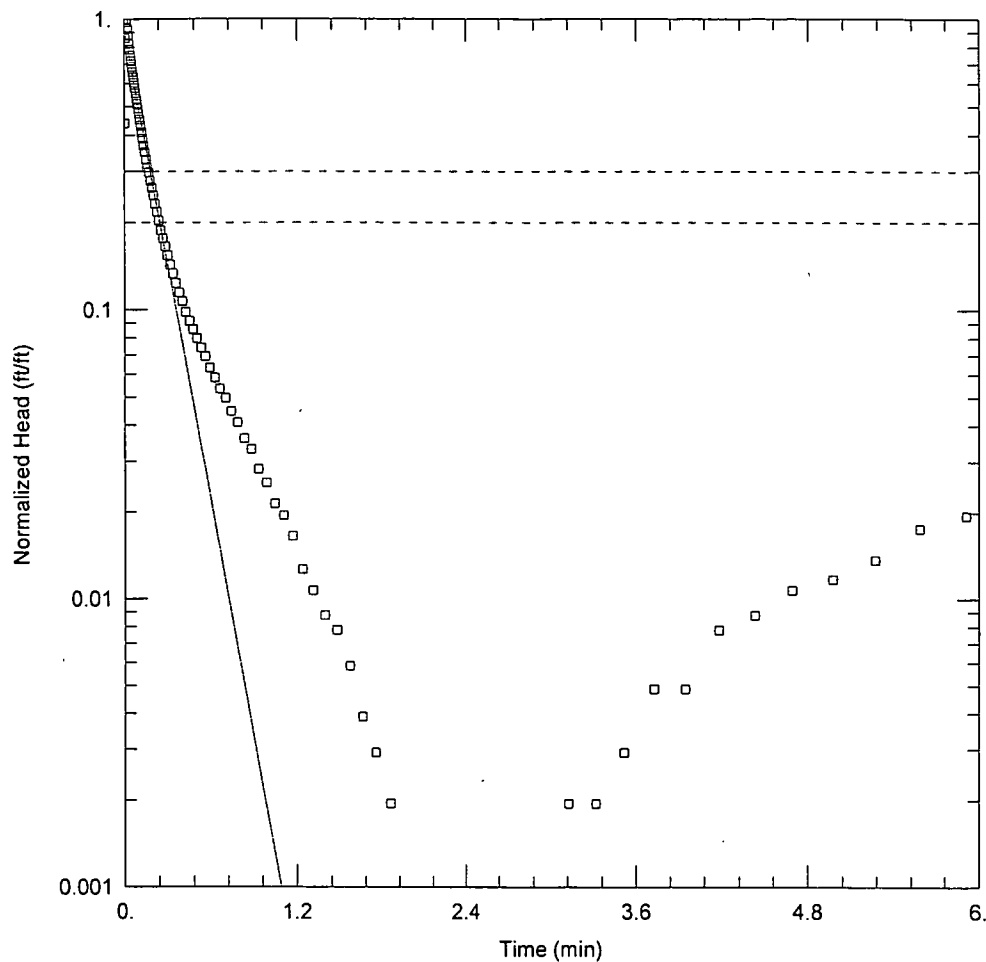
Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.81
y0	0.81	1.00

Residual Statistics

for weighted residuals

Sum of Squares	1.761 ft ²
Variance	0.02229 ft ²
Std. Deviation	0.1493 ft
Mean	-0.01111 ft
No. of Residuals	81
No. of Estimates	2



TW3 SLUG OUT 2

Data Set: C:\...\TW3 Slug Out 2.aqt

Date: 08/24/04

Time: 15:55:07

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Well: TW3

Test Date: 7/29/04

AQUIFER DATA

Saturated Thickness: 15.06 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (TW3)

Initial Displacement: 1.026 ft

Static Water Column Height: 15.06 ft

Total Well Penetration Depth: 15.06 ft

Screen Length: 10. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.003107$ cm/sec

$v_0 = 0.9601$ ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Slug Tests\TW3 Slug Out 2.aqt

Title: TW3 SLUG OUT 2

Date: 08/24/04

Time: 15:55:16

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Date: 7/29/04

Test Well: TW3

AQUIFER DATA

Saturated Thickness: 15.06 ft

Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATATest Well: : TW3

X Location: 0. ft

Y Location: 0. ft

Initial Displacement: 1.026 ft

Static Water Column Height: 15.06 ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.333 ft

Well Skin Radius: 0.333 ft

Screen Length: 10. ft

Total Well Penetration Depth: 15.06 ft

No. of Observations: 91

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.005	0.451	0.4697	0.088
0.01	0.882	0.4963	0.082
0.015	1.026	0.5247	0.076
0.02	1.002	0.5547	0.071
0.025	0.95	0.5863	0.065
0.03	0.9	0.6213	0.06
0.035	0.845	0.6578	0.055
0.04	0.805	0.6963	0.051
0.045	0.767	0.738	0.046
0.05	0.735	0.7813	0.042
0.055	0.704	0.828	0.037
0.06	0.675	0.8763	0.034
0.065	0.648	0.928	0.029
0.07	0.621	0.983	0.026
0.075	0.596	1.041	0.022
0.08	0.572	1.103	0.02
0.0848	0.548	1.168	0.017
0.09	0.527	1.238	0.013

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.095	0.507	1.311	0.011
0.1	0.488	1.39	0.009
0.1058	0.465	1.473	0.008
0.112	0.443	1.561	0.006
0.1185	0.421	1.655	0.004
0.1255	0.4	1.753	0.003
0.1328	0.379	1.858	0.002
0.1407	0.359	1.968	0.001
0.149	0.338	2.085	0.001
0.1578	0.318	2.21	0.
0.167	0.305	2.341	0.001
0.177	0.286	2.481	0.
0.1875	0.271	2.63	0.
0.1985	0.255	2.786	0.001
0.2102	0.238	2.953	0.001
0.2227	0.224	3.13	0.002
0.2358	0.209	3.316	0.002
0.2498	0.193	3.515	0.003
0.2647	0.181	3.725	0.005
0.2803	0.17	3.946	0.005
0.297	0.158	4.181	0.008
0.3147	0.147	4.43	0.009
0.3333	0.137	4.693	0.011
0.3532	0.127	4.973	0.012
0.3742	0.118	5.27	0.014
0.3963	0.11	5.583	0.018
0.4198	0.101	5.915	0.02
0.4447	0.094		

SOLUTION

Aquifer Model: Unconfined
 Solution Method: Bouwer-Rice
 Shape Factor: 2.823

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
K	0.003629	cm/sec
y0	1.532	ft

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
K	0.003107	0.0001571	cm/sec
y0	0.9601	0.02589	ft

Parameter Correlations

	<u>K</u>	<u>y0</u>
K	1.00	0.74

y0 0.74 1.00

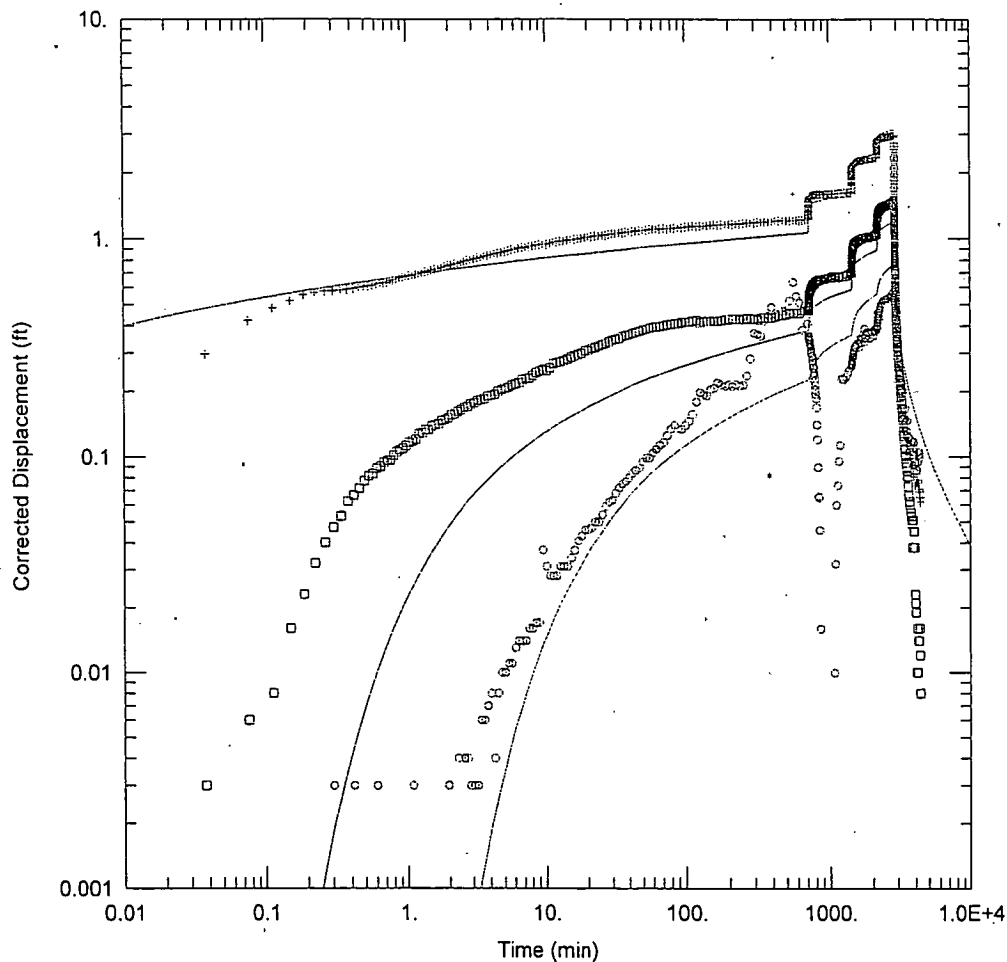
Residual Statistics

for weighted residuals

Sum of Squares	0.3602 ft ²
Variance	0.004047 ft ²
Std. Deviation	0.06361 ft
Mean	0.007791 ft
No. of Residuals	91
No. of Estimates	2

Appendix L

APPENDIX L
PUMP TEST DATA



MW-4 PUMPING TEST

Data Set: C:\ files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Pumping Test\Gowanda steps1-5.aqt
 Date: 08/25/04 Time: 13:04:39

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI
 Client: NYSDEC
 Project: 2184
 Location: AVM GOWANDA
 Test Well: MW-4
 Test Date: 7/27/04

WELL DATA

Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
MW-4	0	0	□ TW-3	25.6	0
			+ MW4	0	0
			○ MW-3	93.6	0

SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis

T = 3.72 cm²/sec

S = 0.001032

Kz/Kr = 1

b = 16.57 ft

Data Set: C:_files\2184 AVM Gowanda\Pre-design Field Work\Data Logger Data\Aqtesolv files\Pumping Test\Gowanda steps1-5.aqt

Title: MW-4 PUMPING TEST

Date: 08/25/04

Time: 13:04:46

PROJECT INFORMATION

Company: DVIRKA & BARTILUCCI

Client: NYSDEC

Project: 2184

Location: AVM GOWANDA

Test Date: 7/27/04

Test Well: MW-4

AQUIFER DATA

Saturated Thickness: 16.57 ft

Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: MW-4

X Location: 0. ft

Y Location: 0. ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.083 ft

Fully Penetrating Well

No. of pumping periods: 5

Pumping Period Data

<u>Time (min)</u>	<u>Rate (gal/min)</u>	<u>Time (min)</u>	<u>Rate (gal/min)</u>
0.	1.36	2160.	3.8
720.	1.94	2880.	0.
1440.	2.86		

OBSERVATION WELL DATA

No. of observation wells: 3

Observation Well No. 1: TW-3

X Location: 25.6 ft

Y Location: 0. ft

Radial distance from MW-4: 25.6 ft

Fully Penetrating Well

No. of Observations: 739

Observation Data			
Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0378	0.003	1468.3	0.93
0.0757	0.006	1469.9	0.937
0.1135	0.008	1471.7	0.939
0.1513	0.016	1473.6	0.945
0.1892	0.023	1475.6	0.95
0.227	0.032	1477.7	0.95
0.2648	0.04	1479.9	0.954
0.3027	0.047	1482.3	0.956
0.3405	0.053	1484.8	0.963
0.3783	0.062	1487.4	0.965
0.4162	0.066	1490.2	0.967
0.454	0.071	1493.2	0.971
0.4918	0.077	1496.3	0.973
0.5297	0.081	1499.6	0.976
0.5675	0.083	1503.2	0.98
0.6053	0.088	1506.9	0.98
0.6432	0.09	1510.9	0.982
0.681	0.094	1515.1	0.986
0.7188	0.096	1519.5	0.989
0.7567	0.096	1524.2	0.991
0.7962	0.101	1529.2	0.993
0.838	0.105	1534.5	0.993
0.8823	0.107	1540.1	0.995
0.9293	0.109	1546.	0.997
0.9792	0.112	1552.3	0.995
1.032	0.116	1558.9	0.999
1.088	0.118	1566.	1.002
1.147	0.12	1573.4	1.006
1.21	0.127	1581.3	1.006
1.276	0.129	1589.7	1.008
1.346	0.133	1598.6	1.012
1.421	0.133	1608.	1.017
1.5	0.138	1617.9	1.023
1.583	0.14	1628.4	1.019
1.672	0.142	1639.6	1.023
1.766	0.146	1651.4	1.025
1.865	0.148	1664.	1.028
1.97	0.151	1677.2	1.034
2.082	0.155	1691.3	1.036
2.2	0.157	1706.2	1.036
2.325	0.161	1721.9	1.041
2.458	0.164	1738.6	1.043
2.598	0.168	1756.3	1.043
2.747	0.17	1775.	1.047
2.905	0.174	1794.9	1.049
3.071	0.177	1815.9	1.051
3.248	0.181	1838.2	1.051
3.436	0.183	1861.8	1.043
3.634	0.185	1886.8	1.054
3.844	0.19	1913.2	1.06
4.067	0.192	1941.3	1.06
4.303	0.194	1971.	1.064
4.552	0.2	2001.	1.062
4.817	0.203	2031.	1.058

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
5.097	0.207	2061.	1.071
5.394	0.209	2091.	1.08
5.709	0.213	2121.	1.08
6.042	0.216	2151.	1.086
6.395	0.22	2160.	1.086
6.769	0.226	2160.	1.084
7.165	0.229	2160.1	1.086
7.584	0.231	2160.1	1.086
8.028	0.237	2160.2	1.088
8.499	0.244	2160.2	1.09
8.997	0.248	2160.2	1.09
9.525	0.252	2160.3	1.093
10.08	0.25	2160.3	1.093
10.68	0.257	2160.3	1.095
11.3	0.268	2160.4	1.097
11.97	0.272	2160.4	1.099
12.67	0.274	2160.4	1.101
13.42	0.278	2160.5	1.101
14.21	0.283	2160.5	1.103
15.05	0.289	2160.6	1.108
15.93	0.294	2160.6	1.106
16.87	0.298	2160.6	1.108
17.87	0.302	2160.7	1.11
18.92	0.309	2160.7	1.11
20.04	0.311	2160.8	1.114
21.22	0.317	2160.8	1.114
22.47	0.32	2160.8	1.116
23.8	0.326	2160.9	1.116
25.2	0.33	2160.9	1.123
26.69	0.335	2161.	1.125
28.27	0.341	2161.	1.125
29.94	0.346	2161.1	1.127
31.71	0.35	2161.2	1.132
33.58	0.354	2161.2	1.132
35.56	0.361	2161.3	1.134
37.67	0.365	2161.3	1.138
39.89	0.367	2161.4	1.138
42.25	0.372	2161.5	1.14
44.75	0.376	2161.6	1.145
47.4	0.38	2161.7	1.147
50.2	0.385	2161.8	1.151
53.17	0.389	2161.9	1.151
56.32	0.393	2162.	1.155
59.65	0.398	2162.1	1.16
63.18	0.4	2162.2	1.16
66.92	0.402	2162.3	1.164
70.88	0.406	2162.5	1.166
75.07	0.41	2162.6	1.168
79.51	0.413	2162.8	1.173
84.22	0.415	2162.9	1.175
89.21	0.415	2163.1	1.177
94.49	0.421	2163.3	1.183
100.1	0.423	2163.4	1.19
106.	0.423	2163.6	1.19
112.3	0.428	2163.8	1.194

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
118.9	0.43	2164.1	1.201
126.	0.421	2164.3	1.203
133.4	0.426	2164.6	1.207
141.3	0.426	2164.8	1.212
149.7	0.426	2165.1	1.216
158.6	0.428	2165.4	1.218
168.	0.428	2165.7	1.222
177.9	0.43	2166.	1.225
188.4	0.434	2166.4	1.229
199.6	0.434	2166.8	1.235
211.4	0.436	2167.2	1.238
224.	0.436	2167.6	1.242
237.2	0.434	2168.	1.244
251.3	0.436	2168.5	1.246
266.2	0.439	2169.	1.248
281.9	0.436	2169.5	1.255
298.6	0.439	2170.1	1.259
316.3	0.434	2170.7	1.264
335.	0.443	2171.3	1.264
354.9	0.443	2172.	1.266
375.9	0.441	2172.7	1.274
398.2	0.443	2173.4	1.279
421.8	0.447	2174.2	1.281
446.8	0.454	2175.1	1.285
473.2	0.454	2175.9	1.29
501.3	0.458	2176.9	1.294
531.	0.465	2177.9	1.296
561.	0.465	2178.9	1.296
591.	0.465	2180.	1.316
621.	0.467	2181.2	1.311
651.	0.48	2182.5	1.316
681.	0.478	2183.8	1.318
711.	0.48	2185.2	1.322
720.	0.48	2186.7	1.326
720.	0.482	2188.3	1.329
720.1	0.48	2189.9	1.335
720.1	0.482	2191.7	1.337
720.2	0.482	2193.6	1.344
720.2	0.482	2195.6	1.348
720.2	0.482	2197.7	1.357
720.3	0.486	2199.9	1.357
720.3	0.484	2202.3	1.361
720.3	0.486	2204.8	1.365
720.4	0.486	2207.4	1.368
720.4	0.488	2210.2	1.372
720.5	0.488	2213.2	1.372
720.5	0.493	2216.3	1.376
720.5	0.493	2219.7	1.383
720.6	0.495	2223.2	1.387
720.6	0.497	2226.9	1.387
720.6	0.497	2230.9	1.391
720.7	0.499	2235.1	1.396
720.7	0.499	2239.5	1.396
720.8	0.497	2244.2	1.4
720.8	0.499	2249.2	1.404

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
720.8	0.499	2254.5	1.404
720.9	0.499	2260.1	1.411
720.9	0.501	2266.	1.411
721.	0.501	2272.3	1.417
721.	0.504	2278.9	1.424
721.1	0.506	2286.	1.426
721.1	0.506	2293.4	1.432
721.2	0.506	2301.3	1.437
721.3	0.506	2309.7	1.443
721.4	0.508	2318.6	1.448
721.4	0.508	2328.	1.454
721.5	0.51	2337.9	1.456
721.6	0.512	2348.4	1.456
721.7	0.517	2359.6	1.458
721.8	0.517	2371.4	1.463
721.9	0.519	2383.9	1.467
722.	0.519	2397.2	1.469
722.1	0.521	2411.3	1.471
722.2	0.521	2426.2	1.469
722.3	0.523	2441.9	1.474
722.5	0.523	2458.6	1.476
722.6	0.527	2476.3	1.487
722.8	0.527	2495.	1.489
722.9	0.532	2514.9	1.487
723.1	0.534	2535.9	1.489
723.3	0.538	2558.2	1.491
723.4	0.538	2581.8	1.491
723.6	0.54	2606.8	1.495
723.8	0.543	2633.2	1.5
724.1	0.545	2661.3	1.504
724.3	0.545	2691.	1.508
724.6	0.547	2721.	1.523
724.8	0.551	2751.	1.526
725.1	0.553	2781.	1.534
725.4	0.558	2811.	1.547
725.7	0.556	2841.	1.558
726.	0.558	2871.	1.558
726.4	0.558	2880.	1.562
726.8	0.562	2880.	1.562
727.2	0.56	2880.1	1.565
727.6	0.564	2880.1	1.558
728.	0.566	2880.2	1.552
728.5	0.566	2880.2	1.547
729.	0.569	2880.2	1.539
729.5	0.573	2880.3	1.528
730.1	0.573	2880.3	1.515
730.7	0.575	2880.3	1.506
731.3	0.577	2880.4	1.497
732.	0.579	2880.4	1.484
732.7	0.577	2880.4	1.474
733.4	0.582	2880.5	1.463
734.2	0.582	2880.5	1.452
735.	0.584	2880.6	1.441
735.9	0.588	2880.6	1.428
736.9	0.592	2880.6	1.422

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
737.9	0.592	2880.7	1.413
738.9	0.59	2880.7	1.404
740.	0.595	2880.8	1.396
741.2	0.595	2880.8	1.383
742.5	0.599	2880.8	1.374
743.8	0.599	2880.9	1.365
745.2	0.601	2880.9	1.357
746.7	0.601	2881.	1.348
748.3	0.603	2881.	1.337
749.9	0.608	2881.1	1.326
751.7	0.61	2881.1	1.313
753.6	0.612	2881.2	1.303
755.6	0.612	2881.3	1.29
757.7	0.618	2881.3	1.281
759.9	0.618	2881.4	1.268
762.3	0.623	2881.5	1.255
764.8	0.625	2881.6	1.244
767.4	0.627	2881.7	1.233
770.2	0.631	2881.8	1.222
773.2	0.636	2881.9	1.207
776.3	0.636	2882.	1.199
779.7	0.638	2882.1	1.188
783.2	0.638	2882.2	1.175
786.9	0.636	2882.3	1.16
790.9	0.638	2882.4	1.149
795.1	0.642	2882.6	1.138
799.5	0.649	2882.7	1.125
804.2	0.653	2882.9	1.116
809.2	0.653	2883.1	1.106
814.5	0.653	2883.2	1.09
820.1	0.657	2883.4	1.082
826.	0.657	2883.6	1.069
832.3	0.657	2883.8	1.056
838.9	0.66	2884.1	1.045
846.	0.664	2884.3	1.034
853.4	0.662	2884.6	1.019
861.3	0.668	2884.8	1.008
869.7	0.668	2885.1	0.997
878.6	0.666	2885.4	0.986
888.	0.668	2885.7	0.976
897.9	0.666	2886.	0.963
908.4	0.668	2886.4	0.952
919.6	0.67	2886.8	0.939
931.4	0.673	2887.2	0.93
944.	0.673	2887.6	0.917
957.2	0.673	2888.	0.906
971.3	0.673	2888.5	0.893
986.2	0.675	2889.	0.885
1001.9	0.679	2889.5	0.872
1018.6	0.677	2890.1	0.861
1036.3	0.683	2890.7	0.848
1055.1	0.69	2891.3	0.837
1074.9	0.683	2892.	0.82
1095.9	0.681	2892.7	0.809
1118.2	0.681	2893.4	0.794

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
1141.8	0.681	2894.2	0.785
1166.8	0.685	2895.	0.772
1193.2	0.69	2895.9	0.755
1221.3	0.688	2896.9	0.744
1251.	0.69	2897.9	0.729
1281.	0.69	2898.9	0.718
1311.	0.692	2900.	0.705
1341.	0.694	2901.2	0.69
1371.	0.707	2902.5	0.677
1401.	0.714	2903.8	0.664
1431.	0.714	2905.2	0.655
1440.	0.714	2906.7	0.64
1440.	0.716	2908.3	0.625
1440.1	0.716	2909.9	0.614
1440.1	0.716	2911.7	0.601
1440.2	0.716	2913.6	0.588
1440.2	0.72	2915.6	0.573
1440.2	0.72	2917.7	0.562
1440.3	0.722	2919.9	0.549
1440.3	0.724	2922.3	0.536
1440.3	0.729	2924.7	0.525
1440.4	0.729	2927.4	0.51
1440.4	0.729	2930.2	0.501
1440.5	0.733	2933.2	0.491
1440.5	0.733	2936.3	0.475
1440.5	0.735	2939.6	0.467
1440.6	0.737	2943.2	0.458
1440.6	0.74	2946.9	0.445
1440.6	0.742	2950.9	0.434
1440.7	0.742	2955.1	0.421
1440.7	0.742	2959.5	0.415
1440.8	0.744	2964.2	0.402
1440.8	0.748	2969.2	0.393
1440.8	0.746	2974.5	0.378
1440.9	0.75	2980.1	0.374
1440.9	0.753	2986.	0.363
1441.	0.755	2992.3	0.35
1441.	0.757	2998.9	0.343
1441.1	0.761	3006.	0.333
1441.1	0.763	3013.4	0.322
1441.2	0.766	3021.3	0.309
1441.3	0.768	3029.7	0.298
1441.3	0.774	3038.6	0.291
1441.4	0.776	3047.9	0.281
1441.5	0.779	3057.9	0.272
1441.6	0.781	3068.4	0.268
1441.7	0.785	3079.6	0.261
1441.8	0.787	3091.4	0.252
1441.9	0.789	3103.9	0.242
1442.	0.792	3117.2	0.237
1442.1	0.798	3131.3	0.226
1442.2	0.802	3146.2	0.22
1442.3	0.805	3161.9	0.209
1442.5	0.809	3178.6	0.198
1442.6	0.811	3196.3	0.181

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
1442.7	0.813	3215.	0.177
1442.9	0.818	3234.9	0.168
1443.1	0.82	3255.9	0.153
1443.2	0.824	3278.2	0.148
1443.4	0.826	3301.8	0.133
1443.6	0.828	3326.8	0.125
1443.8	0.833	3353.2	0.118
1444.1	0.835	3381.3	0.109
1444.3	0.839	3411.	0.101
1444.6	0.841	3441.	0.094
1444.8	0.846	3471.	0.09
1445.1	0.846	3501.	0.086
1445.4	0.848	3531.	0.081
1445.7	0.852	3561.	0.073
1446.	0.854	3591.	0.066
1446.4	0.857	3621.	0.062
1446.8	0.861	3651.	0.06
1447.2	0.861	3681.	0.062
1447.6	0.865	3711.	0.055
1448.	0.867	3741.	0.053
1448.5	0.87	3771.	0.049
1449.	0.876	3801.	0.051
1449.5	0.874	3831.	0.038
1450.1	0.878	3861.	0.051
1450.7	0.88	3891.	0.045
1451.3	0.883	3921.	0.045
1452.	0.887	3951.	0.038
1452.7	0.891	3981.	0.023
1453.4	0.893	4011.	0.021
1454.2	0.896	4041.	0.019
1455.	0.9	4071.	0.01
1455.9	0.9	4101.	0.01
1456.9	0.904	4131.	0.016
1457.9	0.906	4161.	0.01
1458.9	0.913	4191.	0.014
1460.	0.915	4221.	0.014
1461.2	0.919	4251.	0.014
1462.5	0.922	4281.	0.016
1463.8	0.926	4311.	0.012
1465.2	0.928	4341.	0.008
1466.7	0.93		

Observation Well No. 2: MW4

X Location: 0. ft

Y Location: 0. ft

Radial distance from MW-4: 0. ft

Fully Penetrating Well

No. of Observations: 739

Observation Data

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
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0.0378	0.299	1468.3	2.353
0.0757	0.427	1469.9	2.358
0.1135	0.489	1471.7	2.36
0.1513	0.528	1473.6	2.362
0.1892	0.563	1475.6	2.367
0.227	0.577	1477.7	2.369
0.2648	0.586	1479.9	2.371
0.3027	0.588	1482.3	2.374
0.3405	0.59	1484.8	2.378
0.3783	0.597	1487.4	2.381
0.4162	0.602	1490.2	2.383
0.454	0.609	1493.2	2.383
0.4918	0.613	1496.3	2.39
0.5297	0.62	1499.6	2.392
0.5675	0.622	1503.2	2.397
0.6053	0.632	1506.9	2.401
0.6432	0.636	1510.9	2.403
0.681	0.641	1515.1	2.41
0.7188	0.645	1519.5	2.408
0.7567	0.657	1524.2	2.41
0.7962	0.659	1529.2	2.413
0.838	0.664	1534.5	2.415
0.8823	0.673	1540.1	2.415
0.9293	0.675	1546.	2.42
0.9792	0.68	1552.3	2.422
1.032	0.687	1558.9	2.42
1.088	0.691	1566.	2.426
1.147	0.698	1573.4	2.431
1.21	0.703	1581.3	2.433
1.276	0.712	1589.7	2.438
1.346	0.721	1598.6	2.44
1.421	0.726	1608.	2.445
1.5	0.733	1617.9	2.447
1.583	0.737	1628.4	2.454
1.672	0.744	1639.6	2.459
1.766	0.751	1651.4	2.456
1.865	0.758	1664.	2.459
1.97	0.767	1677.2	2.463
2.082	0.772	1691.3	2.465
2.2	0.779	1706.2	2.47
2.325	0.785	1721.9	2.47
2.458	0.797	1738.6	2.47
2.598	0.804	1756.3	2.477
2.747	0.811	1775.	2.484
2.905	0.818	1794.9	2.486
3.071	0.824	1815.9	2.493
3.248	0.834	1838.2	2.5
3.436	0.841	1861.8	2.502
3.634	0.85	1886.8	2.509
3.844	0.857	1913.2	2.514
4.067	0.866	1941.3	2.514
4.303	0.873	1971.	2.521
4.552	0.882	2001.	2.525
4.817	0.889	2031.	2.527
5.097	0.896	2061.	2.534
5.394	0.903	2091.	2.539

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
5.709	0.909	2121.	2.534
6.042	0.916	2151.	2.539
6.395	0.925	2160.	2.546
6.769	0.932	2160.	2.573
7.165	0.939	2160.1	2.619
7.584	0.948	2160.1	2.642
8.028	0.953	2160.2	2.663
8.499	0.962	2160.2	2.672
8.997	0.967	2160.2	2.679
9.525	0.971	2160.3	2.688
10.08	0.971	2160.3	2.695
10.68	0.983	2160.3	2.704
11.3	0.994	2160.4	2.711
11.97	0.999	2160.4	2.718
12.67	1.004	2160.4	2.722
13.42	1.006	2160.5	2.732
14.21	1.015	2160.5	2.738
15.05	1.02	2160.6	2.745
15.93	1.026	2160.6	2.75
16.87	1.031	2160.6	2.757
17.87	1.04	2160.7	2.771
18.92	1.047	2160.7	2.782
20.04	1.052	2160.8	2.789
21.22	1.056	2160.8	2.794
22.47	1.063	2160.8	2.803
23.8	1.068	2160.9	2.812
25.2	1.075	2160.9	2.819
26.69	1.075	2161.	2.828
28.27	1.084	2161.	2.837
29.94	1.091	2161.1	2.842
31.71	1.095	2161.2	2.849
33.58	1.1	2161.2	2.858
35.56	1.102	2161.3	2.865
37.67	1.107	2161.3	2.876
39.89	1.111	2161.4	2.881
42.25	1.116	2161.5	2.888
44.75	1.121	2161.6	2.901
47.4	1.123	2161.7	2.908
50.2	1.13	2161.8	2.915
53.17	1.137	2161.9	2.922
56.32	1.141	2162.	2.927
59.65	1.144	2162.1	2.933
63.18	1.146	2162.2	2.94
66.92	1.153	2162.3	2.945
70.88	1.157	2162.5	2.947
75.07	1.155	2162.6	2.954
79.51	1.16	2162.8	2.956
84.22	1.162	2162.9	2.963
89.21	1.164	2163.1	2.977
94.49	1.173	2163.3	3.002
100.1	1.178	2163.4	3.014
106.	1.183	2163.6	3.014
112.3	1.185	2163.8	3.021
118.9	1.189	2164.1	3.028
126.	1.192	2164.3	3.034

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
133.4	1.196	2164.6	3.037
141.3	1.196	2164.8	3.039
149.7	1.203	2165.1	3.044
158.6	1.203	2165.4	3.046
168.	1.206	2165.7	3.046
177.9	1.212	2166.	3.05
188.4	1.21	2166.4	3.05
199.6	1.212	2166.8	3.053
211.4	1.215	2167.2	3.06
224.	1.219	2167.6	3.062
237.2	1.222	2168.	3.064
251.3	1.226	2168.5	3.071
266.2	1.231	2169.	3.076
281.9	1.233	2169.5	3.078
298.6	1.238	2170.1	3.083
316.3	1.242	2170.7	3.087
335.	1.245	2171.3	3.087
354.9	1.247	2172.	3.092
375.9	1.247	2172.7	3.099
398.2	1.251	2173.4	3.101
421.8	1.261	2174.2	3.108
446.8	1.263	2175.1	3.108
473.2	1.263	2175.9	3.112
501.3	1.263	2176.9	3.112
531.	1.261	2177.9	3.117
561.	1.265	2178.9	3.117
591.	1.27	2180.	3.124
621.	1.274	2181.2	3.124
651.	1.277	2182.5	3.126
681.	1.279	2183.8	3.131
711.	1.281	2185.2	3.133
720.	1.284	2186.7	3.135
720.	1.297	2188.3	3.135
720.1	1.309	2189.9	3.145
720.1	1.327	2191.7	3.147
720.2	1.346	2193.6	3.147
720.2	1.359	2195.6	3.151
720.2	1.371	2197.7	3.154
720.3	1.373	2199.9	3.156
720.3	1.385	2202.3	3.163
720.3	1.387	2204.8	3.165
720.4	1.389	2207.4	3.165
720.4	1.396	2210.2	3.167
720.5	1.401	2213.2	3.17
720.5	1.401	2216.3	3.172
720.5	1.405	2219.7	3.174
720.6	1.408	2223.2	3.174
720.6	1.408	2226.9	3.177
720.6	1.41	2230.9	3.177
720.7	1.414	2235.1	3.179
720.7	1.412	2239.5	3.181
720.8	1.414	2244.2	3.184
720.8	1.414	2249.2	3.186
720.8	1.419	2254.5	3.186
720.9	1.419	2260.1	3.186

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
720.9	1.419	2266.	3.186
721.	1.419	2272.3	3.186
721.	1.421	2278.9	3.188
721.1	1.424	2286.	3.19
721.1	1.424	2293.4	3.19
721.2	1.437	2301.3	3.19
721.3	1.453	2309.7	3.195
721.4	1.465	2318.6	3.195
721.4	1.469	2328.	3.197
721.5	1.476	2337.9	3.197
721.6	1.481	2348.4	3.2
721.7	1.488	2359.6	3.202
721.8	1.49	2371.4	3.202
721.9	1.495	2383.9	3.204
722.	1.497	2397.2	3.209
722.1	1.499	2411.3	3.211
722.2	1.504	2426.2	3.209
722.3	1.504	2441.9	3.211
722.5	1.508	2458.6	3.216
722.6	1.511	2476.3	3.218
722.8	1.545	2495.	3.22
722.9	1.554	2514.9	3.22
723.1	1.564	2535.9	3.227
723.3	1.568	2558.2	3.229
723.4	1.573	2581.8	3.236
723.6	1.577	2606.8	3.241
723.8	1.58	2633.2	3.243
724.1	1.584	2661.3	3.25
724.3	1.589	2691.	3.255
724.6	1.593	2721.	3.259
724.8	1.593	2751.	3.264
725.1	1.598	2781.	3.271
725.4	1.6	2811.	3.273
725.7	1.603	2841.	3.278
726.	1.607	2871.	3.28
726.4	1.607	2880.	3.282
726.8	1.609	2880.	3.223
727.2	1.612	2880.1	3.
727.6	1.614	2880.1	2.888
728.	1.616	2880.2	2.791
728.5	1.616	2880.2	2.702
729.	1.619	2880.2	2.624
729.5	1.621	2880.3	2.562
730.1	1.623	2880.3	2.502
730.7	1.626	2880.3	2.442
731.3	1.628	2880.4	2.381
732.	1.632	2880.4	2.33
732.7	1.63	2880.4	2.277
733.4	1.632	2880.5	2.225
734.2	1.635	2880.5	2.176
735.	1.637	2880.6	2.133
735.9	1.639	2880.6	2.089
736.9	1.642	2880.6	2.048
737.9	1.644	2880.7	2.011
738.9	1.642	2880.7	1.97

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
740.	1.651	2880.8	1.938
741.2	1.648	2880.8	1.903
742.5	1.651	2880.8	1.873
743.8	1.653	2880.9	1.841
745.2	1.658	2880.9	1.811
746.7	1.658	2881.	1.779
748.3	1.658	2881.	1.747
749.9	1.66	2881.1	1.727
751.7	1.66	2881.1	1.685
753.6	1.662	2881.2	1.66
755.6	1.662	2881.3	1.637
757.7	1.665	2881.3	1.614
759.9	1.667	2881.4	1.587
762.3	1.669	2881.5	1.566
764.8	1.669	2881.6	1.548
767.4	1.671	2881.7	1.531
770.2	1.671	2881.8	1.511
773.2	1.671	2881.9	1.497
776.3	1.674	2882.	1.465
779.7	1.676	2882.1	1.444
783.2	1.678	2882.2	1.43
786.9	1.681	2882.3	1.419
790.9	1.681	2882.4	1.417
795.1	1.681	2882.6	1.408
799.5	1.688	2882.7	1.398
804.2	1.685	2882.9	1.385
809.2	1.685	2883.1	1.373
814.5	1.688	2883.2	1.355
820.1	1.688	2883.4	1.339
826.	1.69	2883.6	1.318
832.3	1.69	2883.8	1.307
838.9	1.69	2884.1	1.295
846.	1.688	2884.3	1.286
853.4	1.69	2884.6	1.272
861.3	1.69	2884.8	1.258
869.7	1.692	2885.1	1.249
878.6	1.685	2885.4	1.238
888.	1.685	2885.7	1.224
897.9	1.688	2886.	1.206
908.4	1.685	2886.4	1.189
919.6	1.685	2886.8	1.18
931.4	1.685	2887.2	1.169
944.	1.688	2887.6	1.155
957.2	1.688	2888.	1.132
971.3	1.69	2888.5	1.116
986.2	1.692	2889.	1.095
1001.9	1.69	2889.5	1.079
1018.6	1.692	2890.1	1.063
1036.3	1.694	2890.7	1.043
1055.1	1.697	2891.3	1.026
1074.9	1.697	2892.	1.006
1095.9	1.699	2892.7	0.969
1118.2	1.699	2893.4	0.944
1141.8	1.704	2894.2	0.923
1166.8	1.704	2895.	0.903

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
1193.2	1.706	2895.9	0.882
1221.3	1.71	2896.9	0.861
1251.	1.713	2897.9	0.838
1281.	1.715	2898.9	0.818
1311.	1.717	2900.	0.795
1341.	1.717	2901.2	0.769
1371.	1.717	2902.5	0.746
1401.	1.713	2903.8	0.723
1431.	1.71	2905.2	0.705
1440.	1.71	2906.7	0.68
1440.	1.727	2908.3	0.659
1440.1	1.754	2909.9	0.643
1440.1	1.782	2911.7	0.62
1440.2	1.811	2913.6	0.6
1440.2	1.837	2915.6	0.577
1440.2	1.853	2917.7	0.558
1440.3	1.862	2919.9	0.542
1440.3	1.871	2922.3	0.524
1440.3	1.88	2924.7	0.503
1440.4	1.892	2927.4	0.485
1440.4	1.901	2930.2	0.469
1440.5	1.908	2933.2	0.453
1440.5	1.915	2936.3	0.439
1440.5	1.922	2939.6	0.418
1440.6	1.928	2943.2	0.409
1440.6	1.935	2946.9	0.395
1440.6	1.938	2950.9	0.379
1440.7	1.947	2955.1	0.368
1440.7	1.977	2959.5	0.358
1440.8	1.99	2964.2	0.338
1440.8	2.009	2969.2	0.329
1440.8	2.023	2974.5	0.31
1440.9	2.036	2980.1	0.306
1440.9	2.046	2986.	0.294
1441.	2.057	2992.3	0.28
1441.	2.066	2998.9	0.274
1441.1	2.075	3006.	0.262
1441.1	2.087	3013.4	0.255
1441.2	2.101	3021.3	0.248
1441.3	2.11	3029.7	0.237
1441.3	2.119	3038.6	0.23
1441.4	2.128	3047.9	0.223
1441.5	2.135	3057.9	0.216
1441.6	2.146	3068.4	0.212
1441.7	2.153	3079.6	0.2
1441.8	2.165	3091.4	0.195
1441.9	2.172	3103.9	0.191
1442.	2.181	3117.2	0.182
1442.1	2.188	3131.3	0.175
1442.2	2.195	3146.2	0.168
1442.3	2.202	3161.9	0.163
1442.5	2.208	3178.6	0.159
1442.6	2.213	3196.3	0.152
1442.7	2.218	3215.	0.152
1442.9	2.225	3234.9	0.143

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
1443.1	2.229	3255.9	0.131
1443.2	2.236	3278.2	0.136
1443.4	2.238	3301.8	0.133
1443.6	2.243	3326.8	0.127
1443.8	2.247	3353.2	0.131
1444.1	2.252	3381.3	0.127
1444.3	2.254	3411.	0.124
1444.6	2.257	3441.	0.122
1444.8	2.261	3471.	0.12
1445.1	2.261	3501.	0.117
1445.4	2.266	3531.	0.115
1445.7	2.27	3561.	0.113
1446.	2.27	3591.	0.113
1446.4	2.27	3621.	0.108
1446.8	2.27	3651.	0.106
1447.2	2.275	3681.	0.104
1447.6	2.282	3711.	0.099
1448.	2.284	3741.	0.099
1448.5	2.284	3771.	0.094
1449.	2.289	3801.	0.092
1449.5	2.289	3831.	0.088
1450.1	2.293	3861.	0.083
1450.7	2.298	3891.	0.081
1451.3	2.303	3921.	0.076
1452.	2.307	3951.	0.074
1452.7	2.309	3981.	0.074
1453.4	2.314	4011.	0.074
1454.2	2.316	4041.	0.076
1455.	2.321	4071.	0.078
1455.9	2.323	4101.	0.076
1456.9	2.328	4131.	0.076
1457.9	2.328	4161.	0.078
1458.9	2.332	4191.	0.076
1460.	2.332	4221.	0.076
1461.2	2.337	4251.	0.071
1462.5	2.342	4281.	0.069
1463.8	2.344	4311.	0.065
1465.2	2.348	4341.	0.062
1466.7	2.351		

Observation Well No. 3: MW-3

X Location: 93.6 ft

Y Location: 0. ft

Radial distance from MW-4: 93.6 ft

Fully Penetrating Well

No. of Observations: 739

<u>Observation Data</u>			
<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.0378	0.001	1468.3	0.293
0.0757	0.001	1469.9	0.295

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
0.1135	-0.005	1471.7	0.298
0.1513	-0.012	1473.6	0.301
0.1892	-0.003	1475.6	0.304
0.227	0.	1477.7	0.302
0.2648	0.001	1479.9	0.304
0.3027	0.003	1482.3	0.307
0.3405	0.001	1484.8	0.308
0.3783	0.001	1487.4	0.31
0.4162	0.003	1490.2	0.313
0.454	0.001	1493.2	0.314
0.4918	0.001	1496.3	0.317
0.5297	0.001	1499.6	0.319
0.5675	0.001	1503.2	0.319
0.6053	0.003	1506.9	0.323
0.6432	0.001	1510.9	0.323
0.681	0.001	1515.1	0.323
0.7188	0.001	1519.5	0.325
0.7567	0.001	1524.2	0.328
0.7962	0.001	1529.2	0.328
0.838	0.001	1534.5	0.331
0.8823	0.001	1540.1	0.329
0.9293	0.001	1546.	0.332
0.9792	0.001	1552.3	0.331
1.032	-0.002	1558.9	0.328
1.088	0.003	1566.	0.328
1.147	0.001	1573.4	0.338
1.21	0.001	1581.3	0.333
1.276	0.001	1589.7	0.338
1.346	0.	1598.6	0.336
1.421	0.	1608.	0.338
1.5	0.	1617.9	0.354
1.583	0.	1628.4	0.326
1.672	0.	1639.6	0.348
1.766	0.	1651.4	0.348
1.865	0.	1664.	0.354
1.97	0.003	1677.2	0.338
2.082	0.	1691.3	0.357
2.2	0.001	1706.2	0.362
2.325	0.004	1721.9	0.354
2.458	0.001	1738.6	0.374
2.598	0.004	1756.3	0.344
2.747	0.004	1775.	0.394
2.905	0.003	1794.9	0.359
3.071	0.003	1815.9	0.366
3.248	0.003	1838.2	0.382
3.436	0.006	1861.8	0.379
3.634	0.006	1886.8	0.376
3.844	0.007	1913.2	0.375
4.067	0.008	1941.3	0.359
4.303	0.004	1971.	0.372
4.552	0.008	2001.	0.381
4.817	0.01	2031.	0.363
5.097	0.01	2061.	0.379
5.394	0.011	2091.	0.394
5.709	0.011	2121.	0.387

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
6.042	0.013	2151.	0.396
6.395	0.014	2160.	0.397
6.769	0.014	2160.	0.396
7.165	0.014	2160.1	0.396
7.584	0.016	2160.1	0.397
8.028	0.016	2160.2	0.397
8.499	0.017	2160.2	0.397
8.997	0.017	2160.2	0.397
9.525	0.037	2160.3	0.396
10.08	0.031	2160.3	0.397
10.68	0.028	2160.3	0.397
11.3	0.028	2160.4	0.397
11.97	0.028	2160.4	0.397
12.67	0.031	2160.4	0.397
13.42	0.031	2160.5	0.396
14.21	0.031	2160.5	0.397
15.05	0.034	2160.6	0.397
15.93	0.037	2160.6	0.396
16.87	0.041	2160.6	0.396
17.87	0.043	2160.7	0.396
18.92	0.046	2160.7	0.396
20.04	0.046	2160.8	0.396
21.22	0.047	2160.8	0.396
22.47	0.05	2160.8	0.394
23.8	0.05	2160.9	0.394
25.2	0.054	2160.9	0.394
26.69	0.059	2161.	0.394
28.27	0.062	2161.	0.393
29.94	0.063	2161.1	0.396
31.71	0.068	2161.2	0.393
33.58	0.072	2161.2	0.393
35.56	0.075	2161.3	0.394
37.67	0.077	2161.3	0.393
39.89	0.08	2161.4	0.391
42.25	0.084	2161.5	0.394
44.75	0.087	2161.6	0.394
47.4	0.089	2161.7	0.394
50.2	0.095	2161.8	0.394
53.17	0.099	2161.9	0.394
56.32	0.099	2162.	0.396
59.65	0.105	2162.1	0.396
63.18	0.109	2162.2	0.396
66.92	0.114	2162.3	0.396
70.88	0.117	2162.5	0.396
75.07	0.126	2162.6	0.396
79.51	0.135	2162.8	0.396
84.22	0.141	2162.9	0.396
89.21	0.136	2163.1	0.396
94.49	0.135	2163.3	0.396
100.1	0.141	2163.4	0.397
106.	0.147	2163.6	0.396
112.3	0.158	2163.8	0.396
118.9	0.181	2164.1	0.397
126.	0.2	2164.3	0.396
133.4	0.195	2164.6	0.397

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
141.3	0.193	2164.8	0.397
149.7	0.207	2165.1	0.397
158.6	0.21	2165.4	0.399
168.	0.222	2165.7	0.399
177.9	0.218	2166.	0.4
188.4	0.215	2166.4	0.403
199.6	0.218	2166.8	0.402
211.4	0.213	2167.2	0.403
224.	0.218	2167.6	0.405
237.2	0.215	2168.	0.405
251.3	0.216	2168.5	0.406
266.2	0.239	2169.	0.408
281.9	0.287	2169.5	0.408
298.6	0.378	2170.1	0.408
316.3	0.372	2170.7	0.408
335.	0.365	2171.3	0.409
354.9	0.431	2172.	0.411
375.9	0.454	2172.7	0.412
398.2	0.498	2173.4	0.417
421.8	0.464	2174.2	0.418
446.8	0.452	2175.1	0.42
473.2	0.477	2175.9	0.418
501.3	0.482	2176.9	0.421
531.	0.532	2177.9	0.422
561.	0.651	2178.9	0.424
591.	0.56	2180.	0.397
621.	0.522	2181.2	0.431
651.	0.39	2182.5	0.433
681.	0.508	2183.8	0.436
711.	0.418	2185.2	0.439
720.	0.366	2186.7	0.436
720.	0.363	2188.3	0.436
720.1	0.363	2189.9	0.439
720.1	0.363	2191.7	0.44
720.2	0.363	2193.6	0.443
720.2	0.362	2195.6	0.446
720.2	0.362	2197.7	0.47
720.3	0.363	2199.9	0.455
720.3	0.362	2202.3	0.455
720.3	0.362	2204.8	0.455
720.4	0.363	2207.4	0.454
720.4	0.362	2210.2	0.457
720.5	0.362	2213.2	0.458
720.5	0.362	2216.3	0.464
720.5	0.362	2219.7	0.465
720.6	0.362	2223.2	0.468
720.6	0.36	2226.9	0.468
720.6	0.362	2230.9	0.471
720.7	0.36	2235.1	0.442
720.7	0.356	2239.5	0.476
720.8	0.356	2244.2	0.476
720.8	0.359	2249.2	0.477
720.8	0.36	2254.5	0.479
720.9	0.359	2260.1	0.483
720.9	0.36	2266.	0.488

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
721.	0.359	2272.3	0.491
721.	0.359	2278.9	0.494
721.1	0.36	2286.	0.497
721.1	0.359	2293.4	0.503
721.2	0.359	2301.3	0.507
721.3	0.359	2309.7	0.511
721.4	0.359	2318.6	0.513
721.4	0.357	2328.	0.52
721.5	0.357	2337.9	0.523
721.6	0.356	2348.4	0.523
721.7	0.356	2359.6	0.525
721.8	0.354	2371.4	0.528
721.9	0.354	2383.9	0.529
722.	0.354	2397.2	0.532
722.1	0.354	2411.3	0.532
722.2	0.354	2426.2	0.534
722.3	0.353	2441.9	0.537
722.5	0.354	2458.6	0.535
722.6	0.354	2476.3	0.544
722.8	0.354	2495.	0.544
722.9	0.354	2514.9	0.543
723.1	0.354	2535.9	0.543
723.3	0.354	2558.2	0.543
723.4	0.354	2581.8	0.544
723.6	0.354	2606.8	0.544
723.8	0.353	2633.2	0.547
724.1	0.353	2661.3	0.551
724.3	0.356	2691.	0.554
724.6	0.351	2721.	0.565
724.8	0.351	2751.	0.566
725.1	0.35	2781.	0.575
725.4	0.35	2811.	0.587
725.7	0.35	2841.	0.594
726.	0.35	2871.	0.597
726.4	0.35	2880.	0.62
726.8	0.35	2880.	0.618
727.2	0.35	2880.1	0.617
727.6	0.348	2880.1	0.608
728.	0.366	2880.2	0.614
728.5	0.363	2880.2	0.617
729.	0.36	2880.2	0.617
729.5	0.359	2880.3	0.617
730.1	0.356	2880.3	0.617
730.7	0.353	2880.3	0.617
731.3	0.35	2880.4	0.617
732.	0.35	2880.4	0.615
732.7	0.35	2880.4	0.615
733.4	0.35	2880.5	0.606
734.2	0.347	2880.5	0.596
735.	0.345	2880.6	0.6
735.9	0.333	2880.6	0.606
736.9	0.338	2880.6	0.611
737.9	0.336	2880.7	0.615
738.9	0.331	2880.7	0.615
740.	0.335	2880.8	0.615

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
741.2	0.332	2880.8	0.612
742.5	0.331	2880.8	0.612
743.8	0.329	2880.9	0.609
745.2	0.325	2880.9	0.611
746.7	0.319	2881.	0.611
748.3	0.314	2881.	0.609
749.9	0.308	2881.1	0.611
751.7	0.305	2881.1	0.606
753.6	0.304	2881.2	0.608
755.6	0.302	2881.3	0.608
757.7	0.302	2881.3	0.608
759.9	0.298	2881.4	0.608
762.3	0.295	2881.5	0.606
764.8	0.289	2881.6	0.606
767.4	0.282	2881.7	0.606
770.2	0.274	2881.8	0.605
773.2	0.268	2881.9	0.605
776.3	0.262	2882.	0.603
779.7	0.259	2882.1	0.602
783.2	0.246	2882.2	0.602
786.9	0.239	2882.3	0.597
790.9	0.225	2882.4	0.6
795.1	0.216	2882.6	0.597
799.5	0.206	2882.7	0.599
804.2	0.197	2882.9	0.597
809.2	0.188	2883.1	0.596
814.5	0.17	2883.2	0.593
820.1	0.142	2883.4	0.593
826.	0.121	2883.6	0.589
832.3	0.09	2883.8	0.589
838.9	0.066	2884.1	0.586
846.	0.065	2884.3	0.586
853.4	0.046	2884.6	0.581
861.3	0.016	2884.8	0.58
869.7	-0.006	2885.1	0.578
878.6	-0.029	2885.4	0.575
888.	-0.046	2885.7	0.572
897.9	-0.063	2886.	0.569
908.4	-0.075	2886.4	0.569
919.6	-0.085	2886.8	0.565
931.4	-0.097	2887.2	0.563
944.	-0.097	2887.6	0.559
957.2	-0.063	2888.	0.556
971.3	-0.066	2888.5	0.553
986.2	-0.072	2889.	0.55
1001.9	-0.058	2889.5	0.546
1018.6	-0.069	2890.1	0.544
1036.3	-0.06	2890.7	0.54
1055.1	-0.021	2891.3	0.535
1074.9	0.01	2892.	0.522
1095.9	0.032	2892.7	0.526
1118.2	0.06	2893.4	0.522
1141.8	0.074	2894.2	0.519
1166.8	0.096	2895.	0.513
1193.2	0.114	2895.9	0.508

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
1221.3	0.231	2896.9	0.504
1251.	0.231	2897.9	0.5
1281.	0.23	2898.9	0.495
1311.	0.236	2900.	0.489
1341.	0.241	2901.2	0.483
1371.	0.25	2902.5	0.479
1401.	0.259	2903.8	0.473
1431.	0.271	2905.2	0.468
1440.	0.27	2906.7	0.463
1440.	0.267	2908.3	0.457
1440.1	0.262	2909.9	0.434
1440.1	0.267	2911.7	0.449
1440.2	0.268	2913.6	0.442
1440.2	0.27	2915.6	0.428
1440.2	0.271	2917.7	0.421
1440.3	0.271	2919.9	0.418
1440.3	0.271	2922.3	0.415
1440.3	0.271	2924.7	0.411
1440.4	0.271	2927.4	0.397
1440.4	0.271	2930.2	0.396
1440.5	0.271	2933.2	0.39
1440.5	0.271	2936.3	0.379
1440.5	0.271	2939.6	0.378
1440.6	0.271	2943.2	0.372
1440.6	0.271	2946.9	0.372
1440.6	0.271	2950.9	0.36
1440.7	0.271	2955.1	0.348
1440.7	0.271	2959.5	0.344
1440.8	0.271	2964.2	0.344
1440.8	0.271	2969.2	0.336
1440.8	0.271	2974.5	0.323
1440.9	0.271	2980.1	0.319
1440.9	0.271	2986.	0.314
1441.	0.271	2992.3	0.305
1441.	0.271	2998.9	0.31
1441.1	0.273	3006.	0.302
1441.1	0.27	3013.4	0.287
1441.2	0.271	3021.3	0.277
1441.3	0.271	3029.7	0.276
1441.3	0.271	3038.6	0.267
1441.4	0.271	3047.9	0.262
1441.5	0.271	3057.9	0.261
1441.6	0.271	3068.4	0.255
1441.7	0.271	3079.6	0.256
1441.8	0.271	3091.4	0.241
1441.9	0.271	3103.9	0.231
1442.	0.271	3117.2	0.249
1442.1	0.271	3131.3	0.236
1442.2	0.271	3146.2	0.219
1442.3	0.271	3161.9	0.221
1442.5	0.271	3178.6	0.203
1442.6	0.27	3196.3	0.207
1442.7	0.27	3215.	0.218
1442.9	0.271	3234.9	0.206
1443.1	0.27	3255.9	0.221

<u>Time (min)</u>	<u>Displacement (ft)</u>	<u>Time (min)</u>	<u>Displacement (ft)</u>
1443.2	0.271	3278.2	0.201
1443.4	0.271	3301.8	0.157
1443.6	0.271	3326.8	0.141
1443.8	0.273	3353.2	0.163
1444.1	0.271	3381.3	0.152
1444.3	0.271	3411.	0.169
1444.6	0.271	3441.	0.144
1444.8	0.271	3471.	0.147
1445.1	0.271	3501.	0.132
1445.4	0.271	3531.	0.148
1445.7	0.271	3561.	0.123
1446.	0.271	3591.	0.124
1446.4	0.271	3621.	0.105
1446.8	0.271	3651.	0.106
1447.2	0.273	3681.	0.112
1447.6	0.273	3711.	0.115
1448.	0.271	3741.	0.112
1448.5	0.274	3771.	0.12
1449.	0.276	3801.	0.114
1449.5	0.276	3831.	0.111
1450.1	0.276	3861.	0.117
1450.7	0.276	3891.	0.111
1451.3	0.277	3921.	0.118
1452.	0.277	3951.	0.106
1452.7	0.279	3981.	0.095
1453.4	0.279	4011.	0.093
1454.2	0.28	4041.	0.096
1455.	0.28	4071.	0.087
1455.9	0.28	4101.	0.084
1456.9	0.282	4131.	0.087
1457.9	0.283	4161.	0.095
1458.9	0.285	4191.	0.095
1460.	0.285	4221.	0.101
1461.2	0.286	4251.	0.106
1462.5	0.289	4281.	0.099
1463.8	0.29	4311.	0.103
1465.2	0.292	4341.	0.105
1466.7	0.293		

SOLUTION

Aquifer Model: Unconfined

Solution Method: Theis

VISUAL ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	
T	3.583	cm ² /sec
S	0.0002315	
Kz/Kr	1.	
b	16.57	ft

K = T/b = 0.007095 cm/sec

AUTOMATIC ESTIMATION RESULTSEstimated Parameters

<u>Parameter</u>	<u>Estimate</u>	<u>Std. Error</u>	
T	3.72	0.02014	cm ² /sec
S	0.001032	6.204E-5	
Kz/Kr	1.	not estimated	
b	16.57	not estimated	ft

$$K = T/b = 0.007365 \text{ cm/sec}$$

Parameter Correlations

	<u>T</u>	<u>S</u>
T	1.00	-0.82
S	-0.82	1.00

Residual Statistics

for weighted residuals

Sum of Squares 72.96 ft²
Variance 0.03294 ft²
Std. Deviation 0.1815 ft
Mean 0.02144 ft
No. of Residuals 2217
No. of Estimates 2



APPENDIX M
ANALYTICAL RESULTS

Appendix M
Analytical Results
List of Tables

- 1a. Air Sample Results - April 2004, Volatile Organic Compounds
- 2a. Air Sample Results - September 2004, Volatile Organic Compounds
- 3a. Groundwater Sample Results - May/June 2004, Volatile Organic Compounds
- 4a. Groundwater Sample Results - Permanent Wells June 2004, Volatile Organic Compounds
- 4b. Groundwater Sample Results - Permanent Wells June 2004, Semivolatile Organic Compounds
- 4c. Groundwater Sample Results - Permanent Wells June 2004, Pesticide/PCBs
- 4d. Groundwater Sample Results - Permanent Wells June 2004, Inorganic Parameters-Unfiltered
- 5a. Groundwater Sample Results - Pump Test July 2004, Volatile Organic Compounds
- 5b. Groundwater Sample Results - Pump Test July 2004, Semivolatile Organic Compounds
- 5c. Groundwater Sample Results - Pump Test July 2004, Pesticide/PCBs
- 5d. Groundwater Sample Results - Pump Test July 2004, Inorganic Parameters-Unfiltered
- 6a. Groundwater Sample Results - July 2004, Inorganic Parameters-Unfiltered
- 7a. Groundwater Sample Results - Permanent Wells September 2004, Volatile Organic Compounds
- 7b. Groundwater Sample Results - Permanent Wells September 2004, Semivolatile Organic Compounds
- 7c. Groundwater Sample Results - Permanent Wells September 2004, Pesticide/PCBs
- 7d. Groundwater Sample Results - Permanent Wells September 2004, Inorganic Parameters-Unfiltered
- 8a. Soil Sample Results - June 2004, Volatile Organic Compounds
- 8b. Soil Sample Results - June 2004, Toxicity Characteristic Leaching Procedure Volatile Organic Compounds
- 8c. Soil Sample Results - June 2004, Toxicity Characteristic Leaching Procedure Inorganic Parameters
- 8d. Soil Sample Results - June 2004, Ignitability, Reactivity, pH, Paint Filter

TABLE 1a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
AIR SAMPLE RESULTS - APRIL 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Sample Type	subslab	basement	subslab	basement	ambient	subslab	basement	basement	basement	ambient	subslab	basement
Date Collected	4/5/04	4/5/04	4/5/04	4/5/04	4/5/04	4/5/04	4/5/04	4/5/04	4/6/04	4/6/04	4/6/04	4/6/04
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
1,1,1-trichloroethane	3.94	u	44.9 D	1.39	u	u	u	u	u	u	1510 D	8.87
1,1,2,2-tetrachloroethane	u	u	u	u	u	u	u	u	u	u	u	u
1,1,2-trichloroethane	u	u	u	u	u	u	u	u	u	u	4.16	u
1,1-dichloroethane	15.8 D	u	2.35	u	u	u	u	u	u	u	175	1.11
1,1-dichloroethene	u	u	u	u	u	u	u	u	u	u	9.55	u
1,2-dichloroethane	u	u	u	u	u	u	u	u	u	u	u	u
benzene	5.81	0.974	8.77	0.682	u	110 D	0.714	0.747	0.877 J*	0.877	53.0	1.75
cis-1,2-dichloroethene	309 D	0.846 J*	1.81 J*	u	2.10	u	u	1.33 J*	u	u	1440 D	8.50
ethylbenzene	1.46	u	2.87	u	u	23.8 D	0.883	0.927	u	u	1.46	u
m-xylene	3.09	1.32	30.0 D	1.28	u	78.6 D	1.81	1.81	1.72	u	4.50	1.50
methyl tert-butyl ether	1.06	u	2.97	u	u	u	u	u	u	0.989	u	u
o-xylene	3.75	1.24	21.2 D	0.927	u	30.9 D	u	1.06	0.883 J*	2.34	3.00	u
p-xylene	1.19	u	9.05	u	u	19.4 D	u	u	u	u	1.24	u
tetrachloroethylene	u	u	3.10	u	u	u	u	u	u	u	5.24	u
toluene	13.4 D	9.04	43.3 D	3.64	0.843	215 D	5.29	11.0 D	4.83	3.64	10.7	3.10 J*
trans-1,2-dichloroethene	5.92	u	u	u	u	u	u	u	u	u	21.5	u
trichloroethene	1650 D	5.57 J*	166 D	14.4 J*	16.4	u	u	8.85 J*	u	u	13000 D	113 D
vinyl chloride	u	u	u	u	u	u	u	u	u	u	u	u

QUALIFIERS:

u: Compound analyzed for but not detected

J*: Result qualified as estimated, possibly biased high based on ambient conditions

D: Result taken from reanalysis at a secondary dilution

Table reflects data qualifiers identified in data usability study report completed by D&B, May 11, 2004

TABLE 1a. (continued)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
AIR SAMPLE RESULTS - APRIL 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23
Sample Type	subslab	basement	basement	subslab	basement	subslab	basement	ambient	basement	subslab	basement
Date Collected	4/6/04	4/6/04	4/6/04	4/6/04	4/6/04	4/6/04	4/6/04	4/7/04	4/7/04	4/7/04	4/7/04
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
1,1,1-trichloroethane	186	87.6 D	u	4.60	u	91.5 D	2.88	u	1.39	310 D	u
1,1,2,2-tetrachloroethane	u	u	u	u	u	u	u	u	u	u	u
1,1,2-trichloroethane	u	u	u	u	u	u	u	u	u	3.44	u
1,1-dichloroethane	110 D	u	u	u	u	u	u	u	u	364 D	u
1,1-dichloroethene	7.34	u	u	u	u	u	u	u	u	93.9 D	u
1,2-dichloroethane	u	u	u	u	u	u	u	u	u	u	u
benzene	26.6 D	2.24	u	33.1 D	u	1340 D	0.942	0.974	1.07 J*	34.1 D	5.10
cis-1,2-dichloroethene	1690 D	11.3 D	u	u	u	165	1.41	u	9.43	1370 D	1.57
ethylbenzene	6.66	2.56	u	6.49	u	52.5 D	u	u	u	11.6	1.41
m-xylene	52.1 D	6.40	u	13.7 D	1.02	24.3 D	2.07	u	1.50	32.2 D	2.82
methyl tert-butyl ether	u	u	u	u	0.916 J*	u	u	u	u	u	u
o-xylene	29.6 D	2.60	u	8.74	1.41 J*	5.96	1.90 J*	u	u	14.6 D	1.37
p-xylene	7.90	1.90	u	4.59	u	3.53	0.971	u	u	8.39	u
tetrachloroethylene	u	u	u	u	u	u	u	u	u	5.52	u
toluene	86.6 D	27.6 D	0.804 J*	26.0 D	2.18 J*	7.93	4.10	1.69	2.30	75.8 D	5.17
trans-1,2-dichloroethene	41.1 D	u	u	u	u	7.46	u	u	u	11.1	u
trichloroethene	17100 D	113 D	2.02	6.50	u	3130 D	9.23	2.79	149 D	15600 D	36.9 D
vinyl chloride	u	u	u	u	u	u	u	u	u	u	u

QUALIFIERS:

u: Compound analyzed for but not detected

J*: Result qualified as estimated, possibly biased high based on ambient conditions

D: Result taken from reanalysis at a secondary dilution

Table reflects data qualifiers identified in data usability study report completed by D&B, May 11, 2004

TABLE 2a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
AIR SAMPLE RESULTS - SEPTEMBER 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33	A34	A35	A36
Sample Type	subslab	basement	basement	subslab	basement	subslab	basement	subslab	basement	ambient	ambient	ambient	ambient
Date Collected	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04	9/20/04
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
1,1,1-trichloroethane	8.93	u	u	1.28	3.94	30.0 D	1.44	19.4 D	u	u	u	u	u
1,1,2,2-tetrachloroethane	u	u	u	u	u	u	u	u	u	u	u	u	u
1,1,2-trichloroethane	u	u	u	u	u	u	u	u	u	u	u	u	u
1,1-dichloroethane	6.25	u	u	u	u	u	u	5.51	u	u	u	u	u
1,1-dichloroethene	u	u	u	u	u	u	u	u	u	u	u	u	u
1,2-dichloroethane	u	0.864	u	u	u	u	u	u	u	u	u	u	u
benzene	54 D	1.30	1.98	66.9 D	u	17.9 D	39.0 D	40.9 D	3.99	0.779	0.747	1.07	0.714
cis-1,2-dichloroethene	69.3 D	1.09	1.21	u	u	u	2.90	470 D	u	u	u	u	u
ethylbenzene	3.40	1.32	2.21	27.4 D	1.10	7.46	37.5 D	23.4 D	3.18	u	u	u	u
m-xylene	9.14	2.87	6.84	144 D	2.60 J*	40.6 D	105 D	70.6 D	7.59 DJ*	2.34	1.63	2.30	1.72
methyl tert-butyl ether	u	4.07	u	u	u	u	u	u	u	u	u	u	u
o-xylene	4.94	2.47	3.53	59.1 D	0.883 J*	17.2 D	48.5 D	31.3 D	4.55	1.24	0.883	1.32	1.19
p-xylene	3.53	1.02	2.43	48.5 D	u	14.1 D	48.5 D	18.5 D	3.31	u	u	u	u
tetrachloroethylene	7.38	u	u	1.65	u	2.07	1.38	6.89	u	u	u	u	u
toluene	41.4 D	8.12 DJ*	10.9 DJ*	152 D	7.28 DJ*	45.6 D	204 D	80 D	13.3 DJ*	13.3 D	2.03	2.53	2.03
trans-1,2-dichloroethene	u	u	u	u	u	u	u	27.8 D	u	u	u	u	u
trichloroethene	1600 D	2.24	4.32	121 D	u	92.3 D	6.23	920 D	1.31	u	u	21.0 D	u
vinyl chloride	u	u	u	u	u	u	u	u	u	u	u	u	u

QUALIFIERS:

u: Compound analyzed for but not detected

J*: Result qualified as estimated, possibly biased high based on ambient conditions

D: Result taken from reanalysis at a secondary dilution

Table reflects data qualifiers identified in data usability study report completed by D&B, October 27, 2004

TABLE 2a. (continued)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
AIR SAMPLE RESULTS - SEPTEMBER 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	A37	A38	A39	A40	A41	A42	A43	A44	A45	A46	A47	A48
Sample Type	basement	subslab	basement	subslab	basement	basement	subslab	basement	subslab	basement	ambient	ambient
Date Collected	9/20/04	9/20/04	9/20/04	9/22/04	9/22/04	9/22/04	9/22/04	9/22/04	9/22/04	9/22/04	9/22/04	9/22/04
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
1,1,1-trichloroethane	u	39.9 D	u	1.39	u	u	39.4 D	u	380 D	u	u	u
1,1,2,2-tetrachloroethane	u	u	u	u	u	u	u	u	u	u	u	u
1,1,2-trichloroethane	u	u	u	u	u	u	1.16	u	5.32	u	u	u
1,1-dichloroethane	u	1.97	u	3.33	u	u	u	u	510 D	u	u	u
1,1-dichloroethene	u	u	u	u	u	u	u	u	96.7 D	u	u	u
1,2-dichloroethane	u	u	u	u	u	u	u	u	u	u	u	u
benzene	u	13.0 D	6.07	6.62	1.66	1.04 J*	12.3 D	2.27	92 D	0.909 J*	1.27	0.877
cis-1,2-dichloroethene	u	1.89	u	11.3 D	u	10.7 D	u	u	3000 D	1.53	u	u
ethylbenzene	u	6.62	2.82	3.66	u	u	8.30	2.16	57.8 D	0.971	1.50	0.883
m-xylene	1.02 J*	19.4 D	6.31	17.7 D	2.56	2.07 J*	24.7 D	5.30	88 D	2.52 J*	6.62	3.09
methyl tert-butyl ether	u	u	u	u	u	u	u	u	u	u	u	u
o-xylene	u	10.6 D	3.66	5.91	1.37	1.15 J*	10.6 D	2.91	88.7 D	1.19 J*	5.12	1.63
p-xylene	u	u	2.34	4.37	1.02	u	8.83	1.94	66.6 D	u	2.91	1.02
tetrachloroethylene	u	20.0 D	u	u	u	u	4.48	u	2.96	u	u	u
toluene	1.88 J*	28.3 D	15.3 D	20.3 D	4.75	11.5 D	35.6 D	15.5 D	160 D	2.68 J*	7.97 D	3.52
trans-1,2-dichloroethene	u	u	u	u	u	u	u	u	28.2 D	u	u	u
trichloroethene	2.13	122 D	2.95	290 D	u	25.7 D	53.0 D	u	17000 D	11.1 D	u	4.64
vinyl chloride	u	u	u	u	u	u	u	u	u	u	u	u

QUALIFIERS:

u: Compound analyzed for but not detected

J*: Result qualified as estimated, possibly biased high based on ambient conditions

D: Result taken from reanalysis at a secondary dilution

Table reflects data qualifiers identified in data usability study report completed by D&B, October 27, 2004

TABLE 2a. (continued)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
AIR SAMPLE RESULTS - SEPTEMBER 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	A49	A50	A51	A52	A53	A54
Sample Type	ambient	ambient	basement	basement	subslab	basement
Date Collected	9/22/04	9/22/04	9/22/04	9/22/04	9/23/04	9/23/04
Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
1,1,1-trichloroethane	u	u	u	u	8.71	u
1,1,2,2-tetrachloroethane	u	u	u	u	u	u
1,1,2-trichloroethane	u	u	u	u	u	u
1,1-dichloroethane	u	u	u	u	2.02	u
1,1-dichloroethene	u	u	u	u	u	u
1,2-dichloroethane	u	u	u	u	u	u
benzene	0.649	0.714	3.83	1.14	6.07	4.64
cis-1,2-dichloroethene	u	u	u	u	2700 D	5.28
ethylbenzene	1.41	u	0.971 J*	4.46	3.66	2.74
m-xylene	2.56	0.883	1.94 J*	5.08 D	12.8 D	8.03
methyl tert-butyl ether	u	u	u	u	u	u
o-xylene	1.81	u	1.37 J*	3.09	5.56	3.71
p-xylene	0.971	u	u	5.34	5.03	3.09
tetrachloroethylene	u	u	u	u	10.1	1.79
toluene	3.03	1.76	7.66 D	9.77 D	17.2 D	32.6 D
trans-1,2-dichloroethene	u	u	u	u	146 D	u
trichloroethene	u	3.44	u	u	4600 D	20.2 D
vinyl chloride	u	u	u	u	u	u

QUALIFIERS:

u: Compound analyzed for but not detected

J*: Result qualified as estimated, possibly biased high based on ambient conditions

D: Result taken from reanalysis at a secondary dilution

Table reflects data qualifiers identified in data usability study report completed by D&B, October 27, 2004

TABLE 3a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - MAY/JUNE 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8	GW-9	GW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	05/24/04	06/01/04	05/24/04	06/01/04	05/24/04	06/01/04	05/24/04	06/01/04	06/04/04	06/03/04		
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Vinyl Chloride	U	U	U	U	U	U	U	U	U	U	10	2 ST
Bromomethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1,2-trichloro-1,2,2-trifluoroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Acetone	U	U	U	U	U	U	U	U	U	U	10	----
Carbon Disulfide	U	U	U	U	U	U	U	U	U	U	10	50GV
Methyl Acetate	U	U	U	U	U	U	U	U	U	U	10	60GV
Methylene Chloride	U	U	U	U	U	U	U	U	U	U	10	----
trans-1,2-dichloroethene	U	U	U	U	U	2 J	U	U	U	U	10	5 ST
Methyl tert-Butyl Ether	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1-Dichloroethane	U	U	2 J	15	4 J	16	U	U	U	U	10	10GV
cis-1,2-Dichloroethene	U	1 J	19	140	39	350 D	U	5 J	U	11	10	5 ST
2-Butanone	U	U	U	U	U	U	U	U	U	U	10	50GV
Chloroform	U	U	U	U	U	U	U	U	U	U	10	7 ST
1,1,1-Trichloroethane	U	U	2 J	3 J	1 J	4 J	U	U	U	U	10	5 ST
Cyclohexane	U	U	U	U	U	U	U	U	U	U	10	----
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	U	10	5 ST
Benzene	U	U	U	U	U	U	U	U	U	U	10	1 ST
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	U	10	0.6 ST
Trichloroethene	1 J	10	28	290 D	85	770 D	U	8 J	U	8 J	10	5 ST
Methylcyclohexane	U	U	U	U	U	U	U	U	U	U	10	----
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	U	10	1 ST
Bromodichloromethane	U	U	U	U	U	U	U	U	U	U	10	50GV
cis-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	0.4 ST
4-Methyl-2-Pentanoine	U	U	U	U	U	U	U	U	U	U	10	----
Toluene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	0.4 ST
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	U	10	1 ST
Tetrachloroethene	U	U	U	U	U	U	U	U	U	U	10	5 ST
2-Hexanone	U	U	U	U	U	U	U	U	U	U	10	50GV
Dibromochloromethane	U	U	U	U	U	U	U	U	U	U	10	50GV
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	U	10	----
Chlorobenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Ethylbenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Total Xylenes	U	U	U	U	U	U	U	U	U	U	10	5 ST
Styrene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Bromoform	U	U	U	U	U	U	U	U	U	U	10	50GV
Isopropylbenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	U	10	0.04 ST
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Total VOCs	1	11	51	448	129	1,142	0	13	0	19		----
Total VOC TICs	0	0	0	0	0	0	0	0	0	0		----

QUALIFIERS:

U: Compound analyzed for but not detected
 B: Compound found in the blank as well as the sample
 J: Compound found at a concentration below the CRDL, value estimated
 D: Result is taken from reanalysis at a secondary dilution
 E: Compound exceeds linear range of instrument, value estimated
 U*: Result qualified as non-detect based on validation criteria

NOTES:

*: Value pertains to the sum of the isomers
 GV: Guidance Value
 ST: Standard
 ----: Not established
 [Shaded Box] Indicates value exceeds standard or guidance value.

10/18/04

TABLE 4a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	06/15/04	06/15/04	06/15/04	06/15/04	06/15/04	06/15/04	06/15/04	06/15/04	06/15/04	06/15/04		
Dilution Factor	1.0	1.0	20.0	100.0	30.0	10.0	2.5	10.0	1.0	4.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Vinyl Chloride	U	U	U	U	U	U	U	U	U	U	10	2 ST
Bromomethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1-Dichloroethene	U	U	U	U	40 J	U	U	U	U	U	10	5 ST
1,1,2-trichloro-1,2,2-trifluoroethane	U	U	U	U	U	U	U	U	U	U	10	----
Acetone	U	U	U	U	U	U	U	U	U	U	10	50GV
Carbon Disulfide	U	U	U	U	U	U	U	U	U	U	10	60GV
Methyl Acetate	U	U	U	U	U	U	U	U	U	U	10	----
Methylene Chloride	U	U	U	U	U	U	U	U	U	U	10	5 ST
trans-1,2-dichloroethene	U	4 J	U	U	U	U	U	U	3 J	U	10	5 ST
Methyl tert-Butyl Ether	U	U	U	U	U	U	U	U	U	U	10	10GV
1,1-Dichloroethane	2 J	6 J	69 J	550 J	300	53 J	17 J	31 J	3 J	16 J	10	5 ST
cis-1,2-Dichloroethene	U*	580 D	940	3300	4100	1500	190	950	330 D	740	10	5 ST
2-Butanone	U	U	U	U	U	U	U	U	U	U	10	50GV
Chloroform	U	U	U	U	U	U	U	U	U	U	10	7 ST
1,1,1-Trichloroethane	U	14	49 J	U	68 J	U	4 J	U	1 J	U	10	5 ST
Cyclohexane	U	U	U	U	U	U	U	U	U	U	10	----
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	U	10	5 ST
Benzene	U	U	U	U	U	U	U	U	U	U	10	1 ST
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	U	10	0.6 ST
Trichloroethene	U*	200	2400	17000	3200	310	490	1400	29	360	10	5 ST
Methylcyclohexane	U	U	U	U	U	U	U	U	U	U	10	----
1,2-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	1 ST
Bromodichloromethane	U	U	U	U	U	U	U	U	U	U	10	50GV
cis-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	0.4 ST*
4-Methyl-2-Pentanone	U	U	U	U	U	U	U	U	U	U	10	----
Toluene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	0.4 ST*
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	U	10	1 ST
Tetrachloroethene	U	U	U	U	U	U	U	U	U	U	10	5 ST
2-Hexanone	U	U	U	U	U	U	U	U	U	U	10	50GV
Dibromochloromethane	U	U	U	U	U	U	U	U	U	U	10	50GV
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	U	10	----
Chlorobenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Ethylbenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Total Xylenes	U	U	U	U	U	U	U	U	U	U	10	5 ST
Styrene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Bromoform	U	U	U	U	U	U	U	U	U	U	10	50GV
Isopropylbenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	U	10	0.04 ST
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Total VOCs	2	804	3,458	20,850	7,708	1,863	701	2,381	366	1,116		----
Total VOC TICs	0	0	0	0	0	0	0	0	0	0		----

QUALIFIERS:

U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
D: Result is taken from reanalysis at a secondary dilution
U*: Result qualified as non-detect based on validation criteria

NOTES:

*: Value pertains to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established
 Indicates value exceeds standard or guidance value.

TABLE 4a. (continued)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - MAY/JUNE 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	06/15/04	06/15/04	06/15/04	06/15/04		
Dilution Factor	1.0	1.0	40.0	20.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	10	5 ST
Chloromethane	U	U	U	U	10	5 ST
Vinyl Chloride	20	10	U	U	10	2 ST
Bromomethane	U	U	U	U	10	5 ST
Chloroethane	U	U	U	U	10	5 ST
Trichlorofluoromethane	U	U	U	U	10	5 ST
1,1-Dichloroethene	14	17	U	U	10	5 ST
1,1,2-trichloro-1,2,2-trifluoroethane	U	U	U	U	10	----
Acetone	U	U	U	U	10	50GV
Carbon Disulfide	U	U	U	U	10	60GV
Methyl Acetate	U	U	U	U	10	----
Methylene Chloride	U	U	U	U	10	5 ST
trans-1,2-dichloroethene	9 J	16	U	U	10	5 ST
Methyl tert-Butyl Ether	U	U	U	U	10	10GV
1,1-Dichloroethane	31	26	220 J	74 J	10	5 ST
cis-1,2-Dichloroethene	1800 D	2600 D	4900	2700	10	5 ST
2-Butanone	U	U	U	U	10	50GV
Chloroform	U	U	U	U	10	7 ST
1,1,1-Trichloroethane	110	120	U	U	10	5 ST
Cyclohexane	U	U	U	U	10	----
Carbon Tetrachloride	U	U	U	U	10	5 ST
Benzene	U	U	U	U	10	1 ST
1,2-Dichloroethane	U	U	U	U	10	0.6 ST
Trichloroethene	740 D	1500 D	2200	900	10	5 ST
Methylcyclohexane	U	U	U	U	10	----
1,2-Dichloropropane	U	U	U	U	10	1 ST
Bromodichloromethane	U	U	U	U	10	50GV
cis-1,3-Dichloropropene	U	U	U	U	10	0.4 ST *
4-Methyl-2-Pentanone	U	U	U	U	10	----
Toluene	U	U	U	U	10	5 ST
Trans-1,3-Dichloropropene	U	U	U	U	10	0.4 ST *
1,1,2-Trichloroethane	U	1 J	U	U	10	1 ST
Tetrachloroethene	U	U	U	U	10	5 ST
2-Hexanone	U	U	U	U	10	50GV
Dibromochloromethane	U	U	U	U	10	50GV
1,2-Dibromoethane	U	U	U	U	10	----
Chlorobenzene	U	U	U	U	10	5 ST
Ethylbenzene	U	U	U	U	10	5 ST
Total Xylenes	U	U	U	U	10	5 ST
Styrene	U	U	U	U	10	5 ST
Bromoform	U	U	U	U	10	50GV
Isopropylbenzene	U	U	U	U	10	5 ST
1,1,2,2-Tetrachloroethane	U	U	U	U	10	5 ST
1,3-Dichlorobenzene	U	U	U	U	10	3 ST
1,4-Dichlorobenzene	U	U	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	U	U	10	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	10	0.04 ST
1,2,4-Trichlorobenzene	U	U	U	U	10	5 ST
Total VOCs	2,724	4,290	7,320	3,674		----
Total VOC TICs	0	0	0	0		----

QUALIFIERS:

U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
D: Result is taken from reanalysis at a secondary dilution
U*: Result qualified as non-detect based on validation criteria

NOTES:

*: Value pertains to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established
 Indicates value exceeds standard or guidance value.

TABLE 4b.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	06/15/04	NS	NS	NS	NS	NS	NS		
Dilution Factor				1.0								
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Benzaldehyde	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Phenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
bis(2-Chloroethyl)ether	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
2-Chlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
2-Methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
2,2-Oxybis (1-Chloropropane)	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Acetophenone	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
4-Methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
N-Nitroso-di-n-propylamine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Hexachloroethane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Nitrobenzene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.4 ST
Isophorone	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
2-Nitrophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
2,4-Dimethylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
bis(2-Chloroethoxy)methane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
2,4-Dichlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
Naphthalene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	10 GV
4-Chloroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Hexachlorobutadiene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.5 ST
Caprolactum	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
4-Chloro-3-methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
2-Methylnaphthalene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Hexachlorocyclopentadiene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
2,4,6-Trichlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
2,4,5-Trichlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	----
1-1'-Biphenyl	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
2-Chloronaphthalene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
2-Nitroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	5 ST
Dimethylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
2,6-Dinitrotoluene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Acenaphthylene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
3-Nitroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	5 ST
Acenaphthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	20 GV
2,4-Dinitrophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	1 ST *
4-Nitrophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	----
Dibenzofuran	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----

TABLE 4b. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	6/15/04	NS	NS	NS	NS	NS	NS		
Dilution Factor	0.0	0.0	0.0	1.0		0.0	0.0	0.0	0.0	0.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Diethylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Fluorene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
4-Chlorophenyl-phenylether	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
4-Nitroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	5 ST
4,6-Dinitro-2-methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	----
N-Nitrosodiphenylamine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
4-Bromophenyl-phenylether	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Hexachlorobenzene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.04 ST
Atrazine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	7.5 ST
Pentachlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	1 ST *
Phenanthrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Anthracene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Carbazole	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Di-n-butylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 ST
Fluoranthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Pyrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Butylbenzylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
3,3'-Dichlorobenzidine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Benzo (a) anthracene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Chrysene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
bis(2-Ethylhexyl)phthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Di-octylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Benzo(b)fluoranthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Benzo(k)fluoranthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Benzo(a)pyrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	ND ST
Indeno(1,2,3-cd)pyrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Dibenzo(a,h)anthracene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Benzo(g,h,i)perylene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Total PAHs	0	0	0	0	0	0	0	0	0	0		
Total Carcinogen PAHs	0	0	0	0	0	0	0	0	0	0		
Total SVOCs	0	0	0	0	0	0	0	0	0	0		
Total SVOC TICs	0	0	0	0	0	0	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound found in the method blank as well as the sample

J: Compound found at a concentration below the CRDL, value estimated

NOTES:

* : Applies to Total Phenols

** : Applies to the sum of Unchlorinated Phenols

**** : Applies to the sum of Chlorinated Phenols

Indicates value exceeds standard or guidance value.

NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 4b. (CONTINUED)
 AVM GOWANDA SITE
 PRE-DESIGN INVESTIGATION
 GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
 SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	06/15/04	06/15/04		
Dilution Factor			1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Benzaldehyde	NS	NS	U	U	10	----
Phenol	NS	NS	U	U	10	1 ST *
bis(2-Chloroethyl)ether	NS	NS	U	U	10	1 ST
2-Chlorophenol	NS	NS	U	U	10	1 ST *
2-Methylphenol	NS	NS	U	U	10	1 ST *
2,2-Oxybis (1-Chloropropane)	NS	NS	U	U	10	----
Acetophenone	NS	NS	U	U	10	----
4-Methylphenol	NS	NS	U	U	10	1 ST *
N-Nitroso-di-n-propylamine	NS	NS	U	U	10	----
Hexachloroethane	NS	NS	U	U	10	5 ST
Nitrobenzene	NS	NS	U	U	10	0.4 ST
Isophorone	NS	NS	U	U	10	50 GV
2-Nitrophenol	NS	NS	U	U	10	----
2,4-Dimethylphenol	NS	NS	U	U	10	1 ST *
bis(2-Chloroethoxy)methane	NS	NS	U	U	10	5 ST
2,4-Dichlorophenol	NS	NS	U	U	10	1 ST *
Naphthalene	NS	NS	U	U	10	10 GV
4-Chloroaniline	NS	NS	U	U	10	5 ST
Hexachlorobutadiene	NS	NS	U	U	10	0.5 ST
Caprolactum	NS	NS	U	U	10	----
4-Chloro-3-methylphenol	NS	NS	U	U	10	----
2-Methylnaphthalene	NS	NS	U	U	10	----
Hexachlorocyclopentadiene	NS	NS	U	U	10	5 ST
2,4,6-Trichlorophenol	NS	NS	U	U	10	----
2,4,5-Trichlorophenol	NS	NS	U	U	25	----
1-1'-Biphenyl	NS	NS	U	U	10	5 ST
2-Chloronaphthalene	NS	NS	U	U	10	5 ST
2-Nitroaniline	NS	NS	U	U	25	5 ST
Dimethylphthalate	NS	NS	U	U	10	50 GV
2,6-Dinitrotoluene	NS	NS	U	U	10	5 ST
Acenaphthylene	NS	NS	U	U	10	----
3-Nitroaniline	NS	NS	U	U	25	5 ST
Acenaphthene	NS	NS	U	U	10	20 GV
2,4-Dinitrophenol	NS	NS	U	U	25	1 ST *
4-Nitrophenol	NS	NS	U	U	25	----
Dibenzofuran	NS	NS	U	U	10	----

TABLE 4b. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	6/15/04	6/15/04		
Dilution Factor	0.0	0.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	NS	NS	U	U	10	5 ST
Diethylphthalate	NS	NS	U	U	10	50 GV
Fluorene	NS	NS	U	U	10	50 GV
4-Chlorophenyl-phenylether	NS	NS	U	U	10	----
4-Nitroaniline	NS	NS	U	U	25	5 ST
4,6-Dinitro-2-methylphenol	NS	NS	U	U	25	----
N-Nitrosodiphenylamine	NS	NS	U	U	10	50 GV
4-Bromophenyl-phenylether	NS	NS	U	U	10	----
Hexachlorobenzene	NS	NS	U	U	10	0.04 ST
Atrazine	NS	NS	U	U	10	7.5 ST
Pentachlorophenol	NS	NS	U	U	25	1 ST *
Phenanthrene	NS	NS	U	U	10	50 GV
Anthracene	NS	NS	U	U	10	50 GV
Carbazole	NS	NS	U	U	10	----
Di-n-butylphthalate	NS	NS	U	U	10	50 ST
Fluoranthene	NS	NS	U	U	10	50 GV
Pyrene	NS	NS	U	U	10	50 GV
Butylbenzylphthalate	NS	NS	U	U	10	50 GV
3,3'-Dichlorobenzidine	NS	NS	U	U	10	5 ST
Benzo (a) anthracene	NS	NS	U	U	10	0.002 GV
Chrysene	NS	NS	U	U	10	0.002 GV
bis(2-Ethylhexyl)phthalate	NS	NS	1 J	U	10	5 ST
Di-octylphthalate	NS	NS	U	U	10	50 GV
Benzo(b)fluoranthene	NS	NS	U	U	10	0.002 GV
Benzo(k)fluoranthene	NS	NS	U	U	10	0.002 GV
Benzo(a)pyrene	NS	NS	U	U	10	ND ST
Indeno(1,2,3-cd)pyrene	NS	NS	U	U	10	0.002 GV
Dibenzo(a,h)anthracene	NS	NS	U	U	10	----
Benzo(g,h,i)perylene	NS	NS	U	U	10	----
Total PAHs	0	0	0	0		
Total Carcinogen PAHs	0	0	0	0		
Total SVOCs	0	0	1	0		
Total SVOC TICs	0	0	7	0		

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated

NOTES:

* : Applies to Total Phenols
** : Applies to the sum of Unchlorinated Phenols
**** : Applies to the sum of Chlorinated Phenols
Indicates value exceeds standard or guidance value.
NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 4c.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
PESTICIDE/PCBs

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	06/16/04	NS	NS	NS	NS	NS	NS		
Dilution Factor				1.0								
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
alpha-BHC	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.01 ST
beta-BHC	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.04 ST
delta-BHC	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.04 ST
gamma-BHC (Lindane)	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.05 ST
Heptachlor	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.04 ST
Aldrin	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	ND ST
Heptachlor Epoxide	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.03 ST
Endosulfan I	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	----
Dieldrin	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.004 ST
4,4'-DDE	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.2 ST
Endrin	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	ND ST
Endosulfan II	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	----
4,4'-DDD	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.3 ST
Endosulfan Sulfate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	----
4,4'-DDT	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.2 ST
Methoxychlor	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.50	35 ST
Endrin Ketone	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	5 ST
Endrin Aldehyde	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	5 ST
alpha-Chlordane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.05 ST
gamma-Chlordane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.05 ST
Toxaphene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	5.0	0.06 ST
Aroclor-1016	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1221	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	2.0	0.09 ST *
Aroclor-1232	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1242	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1248	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1254	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1260	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Total Pesticides	0	0	0	0	0	0	0	0	0	0		
Total PCBs	0	0	0	0	0	0	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected
 B: Compound found in the method blank as well as the sample
 J: Compound found at a concentration below the CRDL, value estimated
 P: Greater than 25% difference for detected concentrations between
 the two GC columns
 D: Result is taken from reanalysis at a secondary dilution

NOTES:

*: Applies to the sum of the isomers
 GV: Guidance Value
 ST: Standard
 ---: Not established
 Indicates value exceeds standard or guidance value.
 NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 4c. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
PESTICIDE/PCBs

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC, Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	06/15/04	06/15/04		
Dilution Factor			1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
alpha-BHC	NS	NS	U	U	0.05	0.01 ST
beta-BHC	NS	NS	U	U	0.05	0.04 ST
delta-BHC	NS	NS	U	U	0.05	0.04 ST
gamma-BHC (Lindane)	NS	NS	U	U	0.05	0.05 ST
Heptachlor	NS	NS	U	U	0.05	0.04 ST
Aldrin	NS	NS	U	U	0.05	ND ST
Heptachlor Epoxide	NS	NS	U	U	0.05	0.03 ST
Endosulfan I	NS	NS	U	U	0.05	----
Dieldrin	NS	NS	U	U	0.10	0.004 ST
4,4'-DDE	NS	NS	U	U	0.10	0.2 ST
Endrin	NS	NS	U	U	0.10	ND ST
Endosulfan II	NS	NS	U	U	0.10	----
4,4'-DDD	NS	NS	U	U	0.10	0.3 ST
Endosulfan Sulfate	NS	NS	U	U	0.10	----
4,4'-DDT	NS	NS	U	U	0.10	0.2 ST
Methoxychlor	NS	NS	U	U	0.50	35 ST
Endrin Ketone	NS	NS	U	U	0.10	5 ST
Endrin Aldehyde	NS	NS	U	U	0.10	5 ST
alpha-Chlordane	NS	NS	U	U	0.05	0.05 ST
gamma-Chlordane	NS	NS	U	U	0.05	0.05 ST
Toxaphene	NS	NS	U	U	5.0	0.06 ST
Aroclor-1016	NS	NS	U	U	1.0	0.09 ST *
Aroclor-1221	NS	NS	U	U	2.0	0.09 ST *
Aroclor-1232	NS	NS	U	U	1.0	0.09 ST *
Aroclor-1242	NS	NS	U	U	1.0	0.09 ST *
Aroclor-1248	NS	NS	U	U	1.0	0.09 ST *
Aroclor-1254	NS	NS	U	U	1.0	0.09 ST *
Aroclor-1260	NS	NS	U	U	1.0	0.09 ST *
Total Pesticides	0	0	0	0		
Total PCBs	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound found in the method blank as well as the sample

J: Compound found at a concentration below the CRDL, value estimated

P: Greater than 25% difference for detected concentrations between
the two GC columns

D: Result is taken from reanalysis at a secondary dilution

NOTES:

*: Applies to the sum of the isomers

GV: Guidance Value

ST: Standard

----: Not established

Indicates value exceeds standard or guidance value.

NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 4d.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
INORGANIC PARAMETERS - UNFILTERED

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Instrument Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	06/16/04	NS	NS	NS	NS	NS	NS		
Dilution Factor				1.0								
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aluminum	NS	NS	NS	697	NS	NS	NS	NS	NS	NS	6	----
Antimony	NS	NS	NS	3.2 B	NS	NS	NS	NS	NS	NS	3	3 ST
Arsenic	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	3	25 ST
Barium	NS	NS	NS	211	NS	NS	NS	NS	NS	NS	0.3	1,000 ST
Beryllium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.3	3 GV
Cadmium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.2	5 ST
Calcium	NS	NS	NS	100,000	NS	NS	NS	NS	NS	NS	74	----
Chromium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.4	50 ST
Cobalt	NS	NS	NS	0.42 B	NS	NS	NS	NS	NS	NS	0.3	----
Copper	NS	NS	NS	17.3 B	NS	NS	NS	NS	NS	NS	0.9	200 ST
Iron	NS	NS	NS	3,170	NS	NS	NS	NS	NS	NS	3	300 ST ^
Lead	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	2	25 ST
Magnesium	NS	NS	NS	15,100	NS	NS	NS	NS	NS	NS	6	35,000 GV
Manganese	NS	NS	NS	591	NS	NS	NS	NS	NS	NS	0.5	300 ST ^
Mercury	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.1	0.7 ST
Nickel	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.5	100 ST
Potassium	NS	NS	NS	1,110 B	NS	NS	NS	NS	NS	NS	58	----
Selenium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	4	10 ST
Silver	NS	NS	NS	4.6 B	NS	NS	NS	NS	NS	NS	2	50 ST
Sodium	NS	NS	NS	35,800	NS	NS	NS	NS	NS	NS	45	20,000 ST
Thallium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	3	0.5 GV
Vanadium	NS	NS	NS	1.3 B	NS	NS	NS	NS	NS	NS	0.7	----
Zinc	NS	NS	NS	9.7 B	NS	NS	NS	NS	NS	NS	2	2,000 GV
Cyanide	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	3	200 ST

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:

^: The combined standard for iron and manganese is 500 ug/l
[] Indicates value exceeds NYSDEC Class GA groundwater standard
or guidance value
NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 4d.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS JUNE 2004
INORGANIC PARAMETERS - UNFILTERED

Sample Identification	MW-11	MW-12	TW-2	TW-3	Instrument	NYSDEC Class GA
Date of Collection	NS	NS	06/16/04	06/16/04	Detection	Groundwater
Dilution Factor			1.0	1.0	Limit	Standard or Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aluminum	NS	NS	829	96.3 B	6	----
Antimony	NS	NS	4.1 B	U	3	3 ST
Arsenic	NS	NS	4.7 B	U	3	25 ST
Barium	NS	NS	222	228	0.3	1,000 ST
Beryllium	NS	NS	U	U	0.3	3 GV
Cadmium	NS	NS	0.24 B	U	0.2	5 ST
Calcium	NS	NS	136,000	101,000	74	----
Chromium	NS	NS	U	U	0.4	50 ST
Cobalt	NS	NS	0.88 B	U	0.3	----
Copper	NS	NS	3.5 B	8.5 B	0.9	200 ST
Iron	NS	NS	13,300	9,770	3	300 ST ^
Lead	NS	NS	U	U	2	25 ST
Magnesium	NS	NS	19,600	12,400	6	35,000 GV
Manganese	NS	NS	3,210	1,390	0.5	300 ST ^
Mercury	NS	NS	U	U	0.1	0.7 ST
Nickel	NS	NS	4.7 B	U	0.5	100 ST
Potassium	NS	NS	2,190 B	1,820 B	58	----
Selenium	NS	NS	U	U	4	10 ST
Silver	NS	NS	8.5 B	5.1 B	2	50 ST
Sodium	NS	NS	70,400	50,800	45	20,000 ST
Thallium	NS	NS	U	U	3	0.5 GV
Vanadium	NS	NS	1.5 B	U	0.7	----
Zinc	NS	NS	19.1 B	11.3 B	2	2,000 GV
Cyanide	NS	NS	U	U	3	200 ST

QUALIFIERS:

U: Compound analyzed for but not detected
 B: Compound concentration is less than the CRDL but greater than the IDL.

NOTES:

^: The combined standard for iron and manganese is 500 ug/l
 [] Indicates value exceeds NYSDEC Class GA groundwater standard or guidance value
 NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 5a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PUMP TEST JULY 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW4 PT24	MW4 PT48	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	07/28/04	07/29/04		
Dilution Factor	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	10	5 ST
Chloromethane	U	U	10	5 ST
Vinyl Chloride	41	36	10	2 ST
Bromomethane	U	U	10	5 ST
Chloroethane	3 J	3 J	10	5 ST
Trichlorofluoromethane	U	U	10	5 ST
1,1-Dichloroethene	150	130	10	5 ST
1,1,2-trichloro-1,2,2-trifluoroethane	U	U	10	----
Acetone	4 J	U	10	50GV
Carbon Disulfide	U	U	10	60GV
Methyl Acetate	U	U	10	----
Methylene Chloride	2 J	U	10	5 ST
trans-1,2-dichloroethene	29	25	10	5 ST
Methyl tert-Butyl Ether	U	U	10	10GV
1,1-Dichloroethane	720 DJ	650 DJ	10	5 ST
cis-1,2-Dichloroethene	4800 D	4400 D	10	5 ST
2-Butanone	U	U	10	50GV
Chloroform	U	U	10	7 ST
1,1,1-Trichloroethane	4 J	2 J	10	5 ST
Cyclohexane	U	U	10	----
Carbon Tetrachloride	U	U	10	5 ST
Benzene	U	U	10	1 ST
1,2-Dichloroethane	U	U	10	0.6 ST
Trichloroethene	29000 DB	28000 DB	10	5 ST
Methylcyclohexane	U	U	10	----
1,2-Dichloropropane	U	U	10	1 ST
Bromodichloromethane	U	U	10	50GV
cis-1,3-Dichloropropene	U	U	10	0.4 ST *
4-Methyl-2-Pentanone	U	U	10	----
Toluene	U	U	10	5 ST
Trans-1,3-Dichloropropene	U	U	10	0.4 ST *
1,1,2-Trichloroethane	U	U	10	1 ST
Tetrachloroethene	U	U	10	5 ST
2-Hexanone	U	U	10	50GV
Dibromochloromethane	U	U	10	50GV
1,2-Dibromoethane	U	U	10	----
Chlorobenzene	U	U	10	5 ST
Ethylbenzene	U	U	10	5 ST
Total Xylenes	U	U	10	5 ST
Styrene	U	U	10	5 ST
Bromoform	U	U	10	50GV
Isopropylbenzene	U	U	10	5 ST
1,1,2,2-Tetrachloroethane	U	U	10	5 ST
1,3-Dichlorobenzene	U	U	10	3 ST
1,4-Dichlorobenzene	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	10	3 ST
1,2-Dibromo-3-chloropropane	U	U	10	0.04 ST
1,2,4-Trichlorobenzene	U	U	10	5 ST
Total VOCs	34,753	33,246		----
Total VOC TICs	0	0		----

QUALIFIERS:

U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
D: Result is taken from reanalysis at a secondary dilution
B: Compound detected in the method blank

NOTES:

*: Value pertains to the sum of the isomers

GV: Guidance Value

ST: Standard

----: Not established

Indicates value exceeds standard or guidance value.

TABLE 5b.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PUMP TEST JULY 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW4 PT24	MW4 PT48	Contract Required	NYSDEC Class GA Groundwater
Date of Collection	07/28/04	07/29/04	Detection	Standard or
Dilution Factor	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Benzaldehyde	U	U	10	----
Phenol	U	U	10	1 ST *
bis(2-Chloroethyl)ether	U	U	10	1 ST
2-Chlorophenol	U	U	10	1 ST *
2-Methylphenol	U	U	10	1 ST *
2,2-Oxybis (1-Chloropropane)	U	U	10	----
Acetophenone	U	U	10	----
4-Methylphenol	U	U	10	1 ST *
N-Nitroso-di-n-propylamine	U	U	10	----
Hexachloroethane	U	U	10	5 ST
Nitrobenzene	U	U	10	0.4 ST
Isophorone	U	U	10	50 GV
2-Nitrophenol	U	U	10	----
2,4-Dimethylphenol	U	U	10	1 ST *
bis(2-Chloroethoxy)methane	U	U	10	5 ST
2,4-Dichlorophenol	U	U	10	1 ST *
Naphthalene	U	U	10	10 GV
4-Chloroaniline	U	U	10	5 ST
Hexachlorobutadiene	U	U	10	0.5 ST
Caprolactum	U	U	10	----
4-Chloro-3-methylphenol	U	U	10	----
2-Methylnaphthalene	U	U	10	----
Hexachlorocyclopentadiene	U	U	10	5 ST
2,4,6-Trichlorophenol	U	U	10	----
2,4,5-Trichlorophenol	U	U	25	----
1-1'-Biphenyl	U	U	10	5 ST
2-Chloronaphthalene	U	U	10	5 ST
2-Nitroaniline	U	U	25	5 ST
Dimethylphthalate	U	U	10	50 GV
2,6-Dinitrotoluene	U	U	10	5 ST
Acenaphthylene	U	U	10	----
3-Nitroaniline	U	U	25	5 ST
Acenaphthene	U	U	10	20 GV
2,4-Dinitrophenol	U	U	25	1 ST *
4-Nitrophenol	U	U	25	----
Dibenzofuran	U	U	10	----

TABLE 5b. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PUMP TEST JULY 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW4 PT24	MW4 PT48	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	7/28/04	7/29/04		
Dilution Factor	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	U	U	10	5 ST
Diethylphthalate	U	U	10	50 GV
Fluorene	U	U	10	50 GV
4-Chlorophenyl-phenylether	U	U	10	----
4-Nitroaniline	U	U	25	5 ST
4,6-Dinitro-2-methylphenol	U	U	25	----
N-Nitrosodiphenylamine	U	U	10	50 GV
4-Bromophenyl-phenylether	U	U	10	----
Hexachlorobenzene	U	U	10	0.04 ST
Atrazine	U	U	10	7.5 ST
Pentachlorophenol	U	U	25	1 ST *
Phenanthrene	U	U	10	50 GV
Anthracene	U	U	10	50 GV
Carbazole	U	U	10	----
Di-n-butylphthalate	U	U	10	50 ST
Fluoranthene	U	U	10	50 GV
Pyrene	U	U	10	50 GV
Butylbenzylphthalate	U	U	10	50 GV
3,3'-Dichlorobenzidine	U	U	10	5 ST
Benzo (a) anthracene	U	U	10	0.002 GV
Chrysene	U	U	10	0.002 GV
bis(2-Ethylhexyl)phthalate	U*	U*	10	5 ST
Di-octylphthalate	U	U	10	50 GV
Benzo(b)fluoranthene	U	U	10	0.002 GV
Benzo(k)fluoranthene	U	U	10	0.002 GV
Benzo(a)pyrene	U	U	10	ND ST
Indeno(1,2,3-cd)pyrene	U	U	10	0.002 GV
Dibenzo(a,h)anthracene	U	U	10	----
Benzo(g,h,i)perylene	U	U	10	----
Total PAHs	0	0		
Total Carcinogen PAHs	0	0		
Total SVOCs	0	0		
Total SVOC TICs	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected

U*: Result qualified as estimated based on validation criteria

NOTES:

* : Applies to Total Phenols

** : Applies to the sum of Unchlorinated Phenols

**** : Applies to the sum of Chlorinated Phenols

Indicates value exceeds standard or guidance value.

GV: Guidance Value

ST: Standard

TABLE 5c.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PUMP TEST JULY 2004
PESTICIDE/PCBs

Sample Identification	MW4 PT24	MW4 PT48	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	07/28/04	07/29/04		
Dilution Factor	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)
alpha-BHC	U	U	0.05	0.01 ST
beta-BHC	U	U	0.05	0.04 ST
delta-BHC	U	U	0.05	0.04 ST
gamma-BHC (Lindane)	U	U	0.05	0.05 ST
Heptachlor	U	U	0.05	0.04 ST
Aldrin	U	U	0.05	ND ST
Heptachlor Epoxide	U	U	0.05	0.03 ST
Endosulfan I	U	U	0.05	----
Dieldrin	U	U	0.10	0.004 ST
4,4'-DDE	U	U	0.10	0.2 ST
Endrin	U	U	0.10	ND ST
Endosulfan II	U	U	0.10	----
4,4'-DDD	U	U	0.10	0.3 ST
Endosulfan Sulfate	U	U	0.10	----
4,4'-DDT	U	U	0.10	0.2 ST
Methoxychlor	U	U	0.50	35 ST
Endrin Ketone	U	U	0.10	5 ST
Endrin Aldehyde	U	U	0.10	5 ST
alpha-Chlordane	U	U	0.05	0.05 ST
gamma-Chlordane	U	U	0.05	0.05 ST
Toxaphene	U	U	5.0	0.06 ST
Aroclor-1016	U	U	1.0	0.09 ST *
Aroclor-1221	U	U	2.0	0.09 ST *
Aroclor-1232	U	U	1.0	0.09 ST *
Aroclor-1242	U	U	1.0	0.09 ST *
Aroclor-1248	U	U	1.0	0.09 ST *
Aroclor-1254	U	U	1.0	0.09 ST *
Aroclor-1260	U	U	1.0	0.09 ST *
Total Pesticides	0	0		
Total PCBs	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound found in the method blank as well as the sample

NOTES:

*: Applies to the sum of the isomers

ST: Standard

----: Not established

Indicates value exceeds standard or guidance value.

TABLE 5d.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PUMP TEST JULY 2004
INORGANIC PARAMETERS - UNFILTERED

Sample Identification	MW4 PT24	MW4 PT48	Instrument	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	07/28/04	07/29/04	Detection	
Dilution Factor	1.0	1.0	Limit	
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aluminum	U	U	6	----
Antimony	U	U	3	3 ST
Arsenic	2.1 B	U	3	25 ST
Barium	223	231	0.3	1,000 ST
Beryllium	U	U	0.3	3 GV
Cadmium	U	U	0.2	5 ST
Calcium	100,000	99,400	74	----
Chromium	U	U	0.4	50 ST
Cobalt	U	U	0.3	----
Copper	4.6 B	1.2 B	0.9	200 ST
Iron	9,100	8,850	3	300 ST ^
Lead	U	U	2	25 ST
Magnesium	15,500	15,400	6	35,000 GV
Manganese	623	591	0.5	300 ST ^
Mercury	U	U	0.1	0.7 ST
Nickel	U	U	0.5	100 ST
Potassium	1,190 B	1,220 B	58	----
Selenium	U	U	4	10 ST
Silver	3.8 B	3.9 B	2	50 ST
Sodium	36,800	37,900	45	20,000 ST
Thallium	U	U	3	0.5 GV
Vanadium	U	U	0.7	----
Zinc	7.7 B	2.8 B	2	2,000 GV
Cyanide	U	U	3	200 ST

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:

^: The combined standard for iron and manganese is 500 ug/l

Indicates value exceeds NYSDEC Class GA groundwater standard
or guidance value

TABLE 6a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - JULY 2004
INORGANIC PARAMETERS - UNFILTERED

								NYSDEC Class GA	
Sample Identification	MW4 PT24	MW4 PT48	MW-7	MW-10	MW-11	TW-2	TW-3	Instrument	Groundwater
Date of Collection	07/28/04	07/29/04	07/29/04	07/29/04	07/29/04	07/29/04	07/29/04	Detection	Standard or
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Barium	223	231	139 B	694	275	158 B	225	0.3	1,000 ST
Calcium	100,000	99,400	99,900	51,200	91,700	97,100	69,600	74	----
Iron	9,100	8,850	8,990	139,000	30,200	7,290	1,680	3	300 ST ^
Magnesium	15,500	15,400	19,100	33,100	14,700	20,000	7,900	6	35,000 GV
Manganese	623	591	1,110	3,600	2,100	2,730	810	0.5	300 ST ^
Potassium	1,190 B	1,220 B	3,280 B	9,920	3,480 B	6,530	2,450 B	58	----
Sodium	36,800	37,900	37,800	U	33,200	78,000	74,500	45	20,000 ST
Sample Identification	MW4 PT24	MW4 PT48	MW-7	MW-10	MW-11	TW-2	TW-3		
Date of Collection	07/28/04	07/29/04	07/29/04	07/29/04	07/29/04	07/29/04	07/29/04		
Units	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
Bromide	U	U	U	U	0.13	0.27	U	0.10	2
Chloride	42	39	56	17	16	66	51	2.0	250
Fluoride	U	U	U	U	U	0.26	U	0.25	1.5
Sulfate	36	33	41	19	29	86	38	5.0	250
Nitrate	U	U	1.9	2.7	0.14	0.069	U	1.0	10
Dissolved Organic Carbon	U	U	U	U	U	U	U	10	----
Total Organic Carbon	U	U	U	U	U	11	U	10	----
Alkalinity (CaCO3)	270	310	270	140	290	320	220	20	----
Total Dissolved Solids	430	430	440	230	360	560	380	10	----
Total Suspended Solids	19	21	240	1,600	130	150	11	10	----

QUALIFIERS:

U: Compound analyzed for but not detected
 B: Compound concentration is less than the CRDL
 but greater than the IDL.

NOTES:

---: Not established
 ^: The combined standard for iron and manganese is 500 ug/l
 [] Indicates value exceeds NYSDEC Class GA groundwater standard
 or guidance value

TABLE 7a.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	09/21/04	09/22/04	09/21/04	09/21/04	09/21/04	09/21/04	09/21/04	09/21/04	09/22/04	09/21/04		
Dilution Factor (initial/dilution)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Vinyl Chloride	U	7 J	4 J	31	22	4 J	U	U	6 J	U	10	2 ST
Bromomethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloroethane	U	U	U	3 J	U	U	U	U	U	U	10	5 ST
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1-Dichloroethene	U	4 J	15	150	48	8 J	U	U	U	U	10	5 ST
1,1,2-trichloro-1,2,2-trifluoroethane	U	U	U	U	U	U	U	4 J	2 J	1 J	10	5 ST
Acetone	U	U	U	U	U	U	U	U	U	U	10	----
Carbon Disulfide	U	U	U	U	U	U	U	U	U	U	10	50GV
Methyl Acetate	U	U	U	U	U	U	U	U	U	U	10	60GV
Methylene Chloride	U	U	U	U	U	U	U	U	U	U	10	----
trans-1,2-dichloroethene	U	8 J	13	26	18	6 J	2 J	3 J	5 J	2 J	10	5 ST
Methyl tert-Butyl Ether	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1-Dichloroethane	3 J	7 J	100	860 DJ	350 DJ	54	18	25	3 J	11	10	10GV
cis-1,2-Dichloroethene	3 J	730 D	1600 D	5800 D	5100 D	1800 D	250 D	1100 D	540 D	430 D	10	5 ST
2-Butanone	U	U	U	U	U	U	U	U	U	U	10	5 ST
Chloroform	U	U	U	U	U	U	U	U	U	U	10	50GV
1,1,1-Trichloroethane	U	19	110	2 J	82	U	4 J	4 J	U	U	10	7 ST
Cyclohexane	U	U	U	U	U	U	U	U	U	U	10	5 ST
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	U	10	----
Benzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	U	10	1 ST
Trichloroethene	1 J	250 D	3100 D	31000 D	3700 D	330 D	570 D	1400 D	18	170	10	0.6 ST
Methylcyclohexane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	U	10	----
Bromodichloromethane	U	U	U	U	U	U	U	U	U	U	10	1 ST
cis-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	50GV
4-Methyl-2-Pentanone	U	U	U	U	U	U	U	U	U	U	10	0.4 ST
Toluene	U	U	U	U	U	U	U	U	U	U	10	----
Trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,1,2-Trichloroethane	U	U	U	U	2 J	U	U	U	U	U	10	0.4 ST
Tetrachloroethene	U	U	U	U	U	U	U	U	U	U	10	1 ST
2-Hexanone	U	U	U	U	U	U	U	U	U	U	10	5 ST
Dibromochloromethane	U	U	U	U	U	U	U	U	U	U	10	50GV
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	U	10	50GV
Chlorobenzene	U	U	U	U	U	U	U	U	U	U	10	----
Ethylbenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Total Xylenes	U	U	U	U	U	U	U	U	U	U	10	5 ST
Styrene	U	U	U	U	U	U	U	U	U	U	10	5 ST
Bromoforn	U	U	U	U	U	U	U	U	U	U	10	5 ST
Isopropylbenzene	U	U	U	U	U	U	U	U	U	U	10	50GV
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	5 ST
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	U	10	3 ST
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	U	10	0.04 ST
Total VOCs	7	1,025	4,942	37,872	9,322	2,202	844	2,536	574	614	10	5 ST
Total VOC TICs	0	0	0	0	0	0	0	0	0	0		----

QUALIFIERS:

U: Compound analyzed for but not detected
J: Compound found at a concentration below the CRDL, value estimated
D: Result is taken from reanalysis at a secondary dilution

NOTES:

*: Value pertains to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established

Indicates value exceeds standard or guidance value.

TABLE 7a. (continued)

NOTES:

- Value pertains to the sum of the isomers
- GV: Guidance Value
- ST: Standard
- : Not established
- Indicates value exceeds standard or guidance value.

TABLE 7b.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	09/21/04	NS	NS	NS	NS	NS	NS		
Dilution Factor	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Benzaldehyde	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Phenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
bis(2-Chloroethyl)ether	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST
2-Chlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
2-Methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
2,2-Oxybis (1-Chloropropane)	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Acetophenone	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
4-Methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
N-Nitroso-di-n-propylamine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
Hexachloroethane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Nitrobenzene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Isophorone	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.4 ST
2-Nitrophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
2,4-Dimethylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
bis(2-Chloroethoxy)methane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
2,4-Dichlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Naphthalene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	1 ST *
4-Chloroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	10 GV
Hexachlorobutadiene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Caprolactum	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.5 ST
4-Chloro-3-methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
2-Methylnaphthalene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Hexachlorocyclopentadiene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
2,4,6-Trichlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
2,4,5-Trichlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
1-1'-Biphenyl	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	----
2-Chloronaphthalene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
2-Nitroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Dimethylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	5 ST
2,6-Dinitrotoluene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Acenaphthylene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
3-Nitroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Acenaphthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	5 ST
2,4-Dinitrophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	20 GV
4-Nitrophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	1 ST *
Dibenzofuran	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	----
											10	----

TABLE 7b. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	9/21/04	NS	NS	NS	NS	NS	NS		
Dilution Factor	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Diethylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Fluorene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
4-Chlorophenyl-phenylether	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
4-Nitroaniline	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	5 ST
4,6-Dinitro-2-methylphenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	----
N-Nitrosodiphenylamine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
4-Bromophenyl-phenylether	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Hexachlorobenzene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.04 ST
Atrazine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	7.5 ST
Pentachlorophenol	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	25	1 ST *
Phenanthrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Anthracene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Carbazole	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Di-n-butylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 ST
Fluoranthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Pyrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Butylbenzylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
3,3'-Dichlorobenzidine	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Benzo (a) anthracene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Chrysene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
bis(2-Ethylhexyl)phthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	5 ST
Di-n-octylphthalate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	50 GV
Benzo(b)fluoranthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Benzo(k)fluoranthene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Benzo(a)pyrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	ND ST
Indeno(1,2,3-cd)pyrene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	0.002 GV
Dibenzo(a,h)anthracene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Benzo(g,h,i)perylene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	10	----
Total PAHs	0	0	0	0	0	0	0	0	0	0		
Total Carcinogen PAHs	0	0	0	0	0	0	0	0	0	0		
Total SVOCs	0	0	0	0	0	0	0	0	0	0		
Total SVOC TICs	0	0	0	11	0	0	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated

NOTES:

* : Applies to Total Phenols
** : Applies to the sum of Unchlorinated Phenols
*** : Applies to the sum of Chlorinated Phenols
[] Indicates value exceeds standard or guidance value.
NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 7b. (CONTINUED)
 AVM GOWANDA SITE
 PRE-DESIGN INVESTIGATION
 GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
 SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	09/21/04		
Dilution Factor	0.0	0.0	0.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Benzaldehyde	NS	NS	NS	U	10	----
Phenol	NS	NS	NS	U	10	1 ST *
bis(2-Chloroethyl)ether	NS	NS	NS	U	10	1 ST
2-Chlorophenol	NS	NS	NS	U	10	1 ST *
2-Methylphenol	NS	NS	NS	U	10	1 ST *
2,2-Oxybis (1-Chloropropane)	NS	NS	NS	U	10	----
Acetophenone	NS	NS	NS	U	10	----
4-Methylphenol	NS	NS	NS	U	10	1 ST *
N-Nitroso-di-n-propylamine	NS	NS	NS	U	10	----
Hexachloroethane	NS	NS	NS	U	10	5 ST
Nitrobenzene	NS	NS	NS	U	10	0.4 ST
Isophorone	NS	NS	NS	U	10	50 GV
2-Nitrophenol	NS	NS	NS	U	10	----
2,4-Dimethylphenol	NS	NS	NS	U	10	1 ST *
bis(2-Chloroethoxy)methane	NS	NS	NS	U	10	5 ST
2,4-Dichlorophenol	NS	NS	NS	U	10	1 ST *
Naphthalene	NS	NS	NS	U	10	10 GV
4-Chloroaniline	NS	NS	NS	U	10	5 ST
Hexachlorobutadiene	NS	NS	NS	U	10	0.5 ST
Caprolactum	NS	NS	NS	U	10	----
4-Chloro-3-methylphenol	NS	NS	NS	U	10	----
2-Methylnaphthalene	NS	NS	NS	U	10	----
Hexachlorocyclopentadiene	NS	NS	NS	U	10	5 ST
2,4,6-Trichlorophenol	NS	NS	NS	U	10	----
2,4,5-Trichlorophenol	NS	NS	NS	U	25	----
1-1'-Biphenyl	NS	NS	NS	U	10	5 ST
2-Chloronaphthalene	NS	NS	NS	U	10	5 ST
2-Nitroaniline	NS	NS	NS	U	25	5 ST
Dimethylphthalate	NS	NS	NS	U	10	50 GV
2,6-Dinitrotoluene	NS	NS	NS	U	10	5 ST
Acenaphthylene	NS	NS	NS	U	10	----
3-Nitroaniline	NS	NS	NS	U	25	5 ST
Acenaphthene	NS	NS	NS	U	10	20 GV
2,4-Dinitrophenol	NS	NS	NS	U	25	1 ST *
4-Nitrophenol	NS	NS	NS	U	25	----
Dibenzofuran	NS	NS	NS	U	10	----

TABLE 7b. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	9/21/04		
Dilution Factor	0.0	0.0	0.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	NS	NS	NS	U	10	5 ST
Diethylphthalate	NS	NS	NS	U	10	50 GV
Fluorene	NS	NS	NS	U	10	50 GV
4-Chlorophenyl-phenylether	NS	NS	NS	U	10	----
4-Nitroaniline	NS	NS	NS	U	25	5 ST
4,6-Dinitro-2-methylphenol	NS	NS	NS	U	25	----
N-Nitrosodiphenylamine	NS	NS	NS	U	10	50 GV
4-Bromophenyl-phenylether	NS	NS	NS	U	10	----
Hexachlorobenzene	NS	NS	NS	U	10	0.04 ST
Atrazine	NS	NS	NS	U	10	7.5 ST
Pentachlorophenol	NS	NS	NS	U	25	1 ST *
Phenanthrene	NS	NS	NS	U	10	50 GV
Anthracene	NS	NS	NS	U	10	50 GV
Carbazole	NS	NS	NS	U	10	----
Di-n-butylphthalate	NS	NS	NS	U	10	50 ST
Fluoranthene	NS	NS	NS	U	10	50 GV
Pyrene	NS	NS	NS	U	10	50 GV
Butylbenzylphthalate	NS	NS	NS	U	10	50 GV
3,3'-Dichlorobenzidine	NS	NS	NS	U	10	5 ST
Benzo (a) anthracene	NS	NS	NS	U	10	0.002 GV
Chrysene	NS	NS	NS	U	10	0.002 GV
bis(2-Ethylhexyl)phthalate	NS	NS	NS	U	10	5 ST
Di-n-octylphthalate	NS	NS	NS	U	10	50 GV
Benzo(b)fluoranthene	NS	NS	NS	U	10	0.002 GV
Benzo(k)fluoranthene	NS	NS	NS	U	10	0.002 GV
Benzo(a)pyrene	NS	NS	NS	U	10	ND ST
Indeno(1,2,3-cd)pyrene	NS	NS	NS	U	10	0.002 GV
Dibenzo(a,h)anthracene	NS	NS	NS	U	10	----
Benzo(g,h,i)perylene	NS	NS	NS	U	10	----
Total PAHs	0	0	0	0		
Total Carcinogen PAHs	0	0	0	0		
Total SVOCs	0	0	0	0		
Total SVOC TICs	0	0	0	12		

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRD! value estimated

NOTES:

*: Applies to Total Phenols
*: Applies to the sum of Unchlorinated Phenols
***: Applies to the sum of Chlorinated Phenols
Indicates value exceeds standard or guidance value.
NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 7c.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
PESTICIDE/PCBs

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	09/21/04	NS	NS	NS	NS	NS	NS		
Dilution Factor	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
alpha-BHC	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.01 ST
beta-BHC	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.04 ST
delta-BHC	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.04 ST
gamma-BHC (Lindane)	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.05 ST
Heptachlor	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.04 ST
Aldrin	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	ND ST
Heptachlor Epoxide	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.03 ST
Endosulfan I	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	----
Dieldrin	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.004 ST
4,4'-DDE	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.2 ST
Endrin	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	ND ST
Endosulfan II	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	----
4,4'-DDD	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.3 ST
Endosulfan Sulfate	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	----
4,4'-DDT	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	0.2 ST
Methoxychlor	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.50	35 ST
Endrin Ketone	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	5 ST
Endrin Aldehyde	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.10	5 ST
alpha-Chlordane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.05 ST
gamma-Chlordane	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.05	0.05 ST
Toxaphene	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	5.0	0.06 ST
Aroclor-1016	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1221	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	2.0	0.09 ST *
Aroclor-1232	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1242	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1248	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1254	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Aroclor-1260	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	1.0	0.09 ST *
Total Pesticides	0	0	0	0	0	0	0	0	0	0		
Total PCBs	0	0	0	0	0	0	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected
 B: Compound found in the method blank as well as the sample
 J: Compound found at a concentration below the CRDL, value estimated
 P: Greater than 25% difference for detected concentrations between
 the two GC columns
 D: Result is taken from reanalysis at a secondary dilution

NOTES:

*: Applies to the sum of the isomers
 GV: Guidance Value
 ST: Standard
 ---: Not established
 Indicates value exceeds standard or guidance value.
 NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 7c. (CONTINUED)
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
PESTICIDE/PCBs

Sample Identification	MW-11	MW-12	TW-2	TW-3	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	NS	NS	NS	09/21/04		
Dilution Factor	0.0	0.0	0.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
alpha-BHC	NS	NS	NS	U	0.05	0.01 ST
beta-BHC	NS	NS	NS	U	0.05	0.04 ST
delta-BHC	NS	NS	NS	U	0.05	0.04 ST
gamma-BHC (Lindane)	NS	NS	NS	U	0.05	0.05 ST
Heptachlor	NS	NS	NS	U	0.05	0.04 ST
Aldrin	NS	NS	NS	U	0.05	ND ST
Heptachlor Epoxide	NS	NS	NS	U	0.05	0.03 ST
Endosulfan I	NS	NS	NS	U	0.05	----
Dieldrin	NS	NS	NS	U	0.10	0.004 ST
4,4'-DDE	NS	NS	NS	U	0.10	0.2 ST
Endrin	NS	NS	NS	U	0.10	ND ST
Endosulfan II	NS	NS	NS	U	0.10	----
4,4'-DDD	NS	NS	NS	U	0.10	0.3 ST
Endosulfan Sulfate	NS	NS	NS	U	0.10	----
4,4'-DDT	NS	NS	NS	U	0.10	0.2 ST
Methoxychlor	NS	NS	NS	U	0.50	35 ST
Endrin Ketone	NS	NS	NS	U	0.10	5 ST
Endrin Aldehyde	NS	NS	NS	U	0.10	5 ST
alpha-Chlordane	NS	NS	NS	U	0.05	0.05 ST
gamma-Chlordane	NS	NS	NS	U	0.05	0.05 ST
Toxaphene	NS	NS	NS	U	5.0	0.06 ST
Aroclor-1016	NS	NS	NS	U	1.0	0.09 ST *
Aroclor-1221	NS	NS	NS	U	2.0	0.09 ST *
Aroclor-1232	NS	NS	NS	U	1.0	0.09 ST *
Aroclor-1242	NS	NS	NS	U	1.0	0.09 ST *
Aroclor-1248	NS	NS	NS	U	1.0	0.09 ST *
Aroclor-1254	NS	NS	NS	U	1.0	0.09 ST *
Aroclor-1260	NS	NS	NS	U	1.0	0.09 ST *
Total Pesticides	0	0	0	0		
Total PCBs	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
P: Greater than 25% difference for detected concentrations between
the two GC columns
D: Result is taken from reanalysis at a secondary dilution

NOTES:

*: Applies to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established
[] Indicates value exceeds standard or guidance value.
NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 7d.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
INORGANIC PARAMETERS - UNFILTERED

Sample Identification	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Instrument	NYSDEC Class GA
Date of Collection	NS	NS	NS	09/22/04	NS	NS	NS	NS	NS	NS	Detection	Groundwater
Dilution Factor	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	Limit	Standard or
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	Guidance Value
Aluminum	NS	NS	NS	208	NS	NS	NS	NS	NS	NS	6	----
Antimony	NS	NS	NS	3.3 B	NS	NS	NS	NS	NS	NS	3	3 ST
Arsenic	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	3	25 ST
Barium	NS	NS	NS	214	NS	NS	NS	NS	NS	NS	0.3	1,000 ST
Beryllium	NS	NS	NS	0.27 B	NS	NS	NS	NS	NS	NS	0.3	3 GV
Cadmium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.2	5 ST
Calcium	NS	NS	NS	98,200	NS	NS	NS	NS	NS	NS	74	----
Chromium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.4	50 ST
Cobalt	NS	NS	NS	0.32 B	NS	NS	NS	NS	NS	NS	0.3	----
Copper	NS	NS	NS	6.7 B	NS	NS	NS	NS	NS	NS	0.9	200 ST
Iron	NS	NS	NS	6,130	NS	NS	NS	NS	NS	NS	3	300 ST ^
Lead	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	2	25 ST
Magnesium	NS	NS	NS	16,600	NS	NS	NS	NS	NS	NS	6	35,000 GV
Manganese	NS	NS	NS	664	NS	NS	NS	NS	NS	NS	0.5	300 ST ^
Mercury	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.1	0.7 ST
Nickel	NS	NS	NS	0.98 B	NS	NS	NS	NS	NS	NS	0.5	100 ST
Potassium	NS	NS	NS	1,280 B	NS	NS	NS	NS	NS	NS	58	----
Selenium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	4	10 ST
Silver	NS	NS	NS	3.6 B	NS	NS	NS	NS	NS	NS	2	50 ST
Sodium	NS	NS	NS	36,500	NS	NS	NS	NS	NS	NS	45	20,000 ST
Thallium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	3	0.5 GV
Vanadium	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	0.7	----
Zinc	NS	NS	NS	24.2	NS	NS	NS	NS	NS	NS	2	2,000 GV
Cyanide	NS	NS	NS	U	NS	NS	NS	NS	NS	NS	3	200 ST

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:

^: The combined standard for iron and manganese is 500 ug/l
 Indicates value exceeds NYSDEC Class GA groundwater standard
or guidance value
 NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 7d.
AVM GOWANDA SITE
PRE-DESIGN INVESTIGATION
GROUNDWATER SAMPLE RESULTS - PERMANENT WELLS SEPTEMBER 2004
INORGANIC PARAMETERS - UNFILTERED

Sample Identification	MW-11	MW-12	TW-2	TW-3	Instrument Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
						(ug/l)
Date of Collection	NS	NS	NS	09/22/04		
Dilution Factor	0.0	0.0	0.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aluminum	NS	NS	NS	U	6	----
Antimony	NS	NS	NS	U	3	3 ST
Arsenic	NS	NS	NS	2.4 B	3	25 ST
Barium	NS	NS	NS	222	0.3	1,000 ST
Beryllium	NS	NS	NS	U	0.3	3 GV
Cadmium	NS	NS	NS	U	0.2	5 ST
Calcium	NS	NS	NS	92,200	74	----
Chromium	NS	NS	NS	U	0.4	50 ST
Cobalt	NS	NS	NS	U	0.3	----
Copper	NS	NS	NS	5.4 B	0.9	200 ST
Iron	NS	NS	NS	9,450	3	300 ST ^
Lead	NS	NS	NS	U	2	25 ST
Magnesium	NS	NS	NS	12,600	6	35,000 GV
Manganese	NS	NS	NS	1,250	0.5	300 ST ^
Mercury	NS	NS	NS	U	0.1	0.7 ST
Nickel	NS	NS	NS	0.54 B	0.5	100 ST
Potassium	NS	NS	NS	1,380 B	58	----
Selenium	NS	NS	NS	U	4	10 ST
Silver	NS	NS	NS	4.4 B	2	50 ST
Sodium	NS	NS	NS	39,500	45	20,000 ST
Thallium	NS	NS	NS	U	3	0.5 GV
Vanadium	NS	NS	NS	U	0.7	----
Zinc	NS	NS	NS	16.3 B	2	2,000 GV
Cyanide	NS	NS	NS	3.1 B	3	200 ST

QUALIFIERS:

U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:

^: The combined standard for iron and manganese is 500 ug/l
 Indicates value exceeds NYSDEC Class GA groundwater standard
or guidance value
NS: Not sampled, VOCs are contaminants of concerns at site.

TABLE 8a.
AVM GOWANDA
SOIL SAMPLE RESULTS - JUNE 2004
VOLATILE ORGANIC COMPOUNDS
USEPA METHOD 8260

Sample Identification	TW1DRUMS	AVM-SC	Contract	NYSDEC
Date of Collection	06/04/04	06/16/04	Required	Recommended
Dilution Factor		1.0	Detection	Soil Clean-Up
Percent Moisture		18	Limit	Objective*
Units		(ug/kg)	(ug/kg)	(ug/kg)
Dichlorodifluoromethane	NA	U	10	----
Chloromethane	NA	U	10	----
Vinyl Chloride	NA	U	10	200
Bromomethane	NA	U	10	----
Chloroethane	NA	U	10	1,900
Trichlorofluoromethane	NA	U	10	----
1,1-Dichloroethene	NA	U	10	400
1,1,2-trichloro-1,2,2-trifluoroethane	NA	U	10	6,000
Acetone	NA	13	10	200
Carbon Disulfide	NA	2 J	10	2,700
Methyl Acetate	NA	U	10	----
Methylene Chloride	NA	4 BJ	10	100
trans-1,2-Dichloroethene	NA	U	10	----
Methyl tert-Butyl Ether	NA	U	10	----
1,1-Dichloroethane	NA	U	10	200
cis-1,2-Dichloroethene	NA	26	10	----
2-Butanone	NA	U	10	300
Chloroform	NA	U	10	300
1,1,1-Trichloroethane	NA	U	10	800
Cyclohexane	NA	8 J	10	----
Carbon Tetrachloride	NA	U	10	600
Benzene	NA	4 J	10	60
1,2-Dichloroethane	NA	U	10	100
Trichloroethene	NA	110	10	700
Methylcyclohexane	NA	9 J	10	----
1,2-Dichloropropane	NA	U	10	----
Bromodichloromethane	NA	U	10	----
cis-1,3-Dichloropropene	NA	U	10	----
4-Methyl-2-Pentanone	NA	U	10	1,000
Toluene	NA	15	10	1,500
Trans-1,3-Dichloropropene	NA	U	10	----
1,1,2-Trichloroethane	NA	U	10	----
Tetrachloroethene	NA	1 J	10	1,400
2-Hexanone	NA	U	10	----
Dibromochloromethane	NA	U	10	----
1,2-Dibromoethane	NA	U	10	----
Chlorobenzene	NA	U	10	1,700
Ethylbenzene	NA	2 J	10	5,500
Total Xylenes	NA	8 J	10	1,200
Styrene	NA	U	10	----
Bromoform	NA	5 J	10	----
Isopropylbenzene	NA	U	10	----
1,1,2,2-Tetrachloroethane	NA	U	10	600
1,3-Dichlorobenzene	NA	U	10	1,600
1,4-Dichlorobenzene	NA	U	10	8,500
1,2-Dichlorobenzene	NA	U	10	7,900
1,2-Dibromo-3-chloropropane	NA	U	10	----
1,2,4-Trichlorobenzene	NA	U	10	3,400
Total VOCs	NA	207		10,000
Total VOC TICs	NA	195		

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound found in the method blank as well as the sample

J: Compound found at a concentration below the CRDL, value estimated

NOTES:

*: NYSDEC TAGM 4046

NA: Not analyzed.

TABLE 8b.
AVM GOWANDA
SOIL SAMPLE RESULTS - JUNE 2004
VOLATILE ORGANIC COMPOUNDS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

Sample Identification	TW1DRUMS	AVM-SC	Contract Required Detection Limit	Toxicity Characteristic Regulatory Level*
Date of Collection	06/04/04	06/16/04		
Dilution Factor	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Vinyl Chloride	U	U	5	200
1,1-Dichloroethene	U	U	5	700
2-Butanone	U	U	5	200,000
Chloroform	U	U	5	6,000
Carbon Tetrachloride	U	U	5	500
1,2-Dichloroethane	U	U	5	500
Benzene	U	U	5	500
Trichloroethene	U	9	5	500
Tetrachloroethene	1 BJ	U	5	700
Chlorobenzene	U	U	5	100,000
Total VOCs	1	9		

QUALIFIERS:

U: Compound analyzed for but not detected
 B: Compound found in the method blank as well as the sample
 J: Compound found at a concentration below the CRDL, value estimated

NOTES:

*: 40 CFR Part 261

TABLE 8c.
AVM GOWANDA
SOIL SAMPLE RESULTS - JUNE 2004
INORGANIC PARAMETERS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

Sample Identification	TW1DRUMS	AVM-SC	Instrument	Toxicity Characteristic Regulatory Level*
Date of Collection	06/04/04	06/16/04	Detection	
Dilution Factor	1.0	1.0	Limit	
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Arsenic	4.4 B	U	3	5,000
Barium	727	1,870 B	1	100,000
Cadmium	U	U	1	1,000
Chromium	72.1	U	1	5,000
Lead	U	45.6 B	2	5,000
Mercury	U	U	0.2	200
Selenium	U	U	4	1,000
Silver	82.5	137 B	1	5,000

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound concentration is less than the CRDL but greater than the IDL.

NOTES:

*: 40 CFR Part 261

TABLE 8d.
AVM GOWANDA
SOIL SAMPLE RESULTS - JUNE 2004
IGNITABILITY/REACTIVITY/PH/PAINT FILTER

Sample Identification	TW1DRUMS	AVM-SC	Instrument	Hazardous Characteristic Regulatory Level*
			Detection Limit	
Date of Collection	06/04/04	06/16/04		
Cyanide, reactive (mg/kg)	U	NA	3.5	
Flashpoint (deg F)	U	NA	200	<140 F
pH (SU)	12	NA	1	<2 or >12.5
Sulfides, reactive (mg/kg)	U	NA	3.5	
Free liquid (ml/100g)	14	NA	1	

QUALIFIERS:

U: Compound analyzed for but not detected

NOTES:

*: 40 CFR Part 261

NA: Not analyzed.