

SCS ENGINEERS



Vista Landfill Technical Water Quality Monitoring Report December 2013 Through June 2015

Prepared for:

Vista Landfill, Inc.
242 West Keene Road
Apopka, Florida 32703

Prepared by:

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February 18, 2016
File No. 09207039.08

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Table of Contents

Section	Page
1 Introduction.....	1
2 Geologic and Hydrogeologic Characteristics	5
Shallow Surficial Aquifer.....	5
Intermediate Surficial Aquifer	6
Floridan Aquifer.....	7
Aquifer Hydraulic Relationships	7
3 Water Monitoring Program.....	8
Permit/Water Quality MPIS Modifications	8
Groundwater Monitoring Program.....	9
Laboratory Parameters	9
Additional Parameters.....	12
Post Permit Update Parameters.....	12
Zone of Discharge	12
Groundwater Quality	13
Metals Exceedances and Trends.....	13
Aluminum.....	15
Iron.....	15
Organic Parameters Exceedances and Trends	15
Inorganic Parameters Exceedances and Trends	15
Dissolved Oxygen Percent Saturation	16
Gross Alpha	16
Nitrate.....	16
pH	16
Total Dissolved Solids/Specific Conductance Correlation	17
Erratic and Poorly Correlated Data	17
4 Adequacy of Monitoring Program	19
Surficial Aquifer Monitoring	19
Monitoring Well Geographic Location	19
Shallow Surficial Aquifer Well Location.....	19
Intermediate Surficial Aquifer Well Location	19
Floridan Aquifer Well Location.....	20
Monitoring Frequency	20
Monitoring Parameters	20
Leachate Monitoring.....	20

CONTENTS (Continued)

List of Tables and Figures

Figure No.	Page
Figure 1-1. Site Location Map, Vista Landfill, Apopka, Florida.....	3
Figure 1-2. Site Map, Vista Landfill, Apopka, Florida.....	4

Table No.	Page
Table 2-1. Vertical Hydraulic Pairs at the Vista Landfill.....	7
Table 3-1. Active Surficial Aquifer and Floridan Aquifer Groundwater Monitoring Wells at the Vista Landfill.....	10
Table 3-2. Existing Monitoring Well Construction Details	11
Table 3-3. Locations of Monitoring Wells Relative to the Horizontal Zone of Discharge	14
Table 3-5. Total Dissolved Solids/Specific Conductivity Ratios	18

Appendices

Appendix A Water Table Maps and Hydrographs
Appendix B Tables of Exceedances And Detections
Appendix C Time Series Plots of Water Quality Trends

1 INTRODUCTION

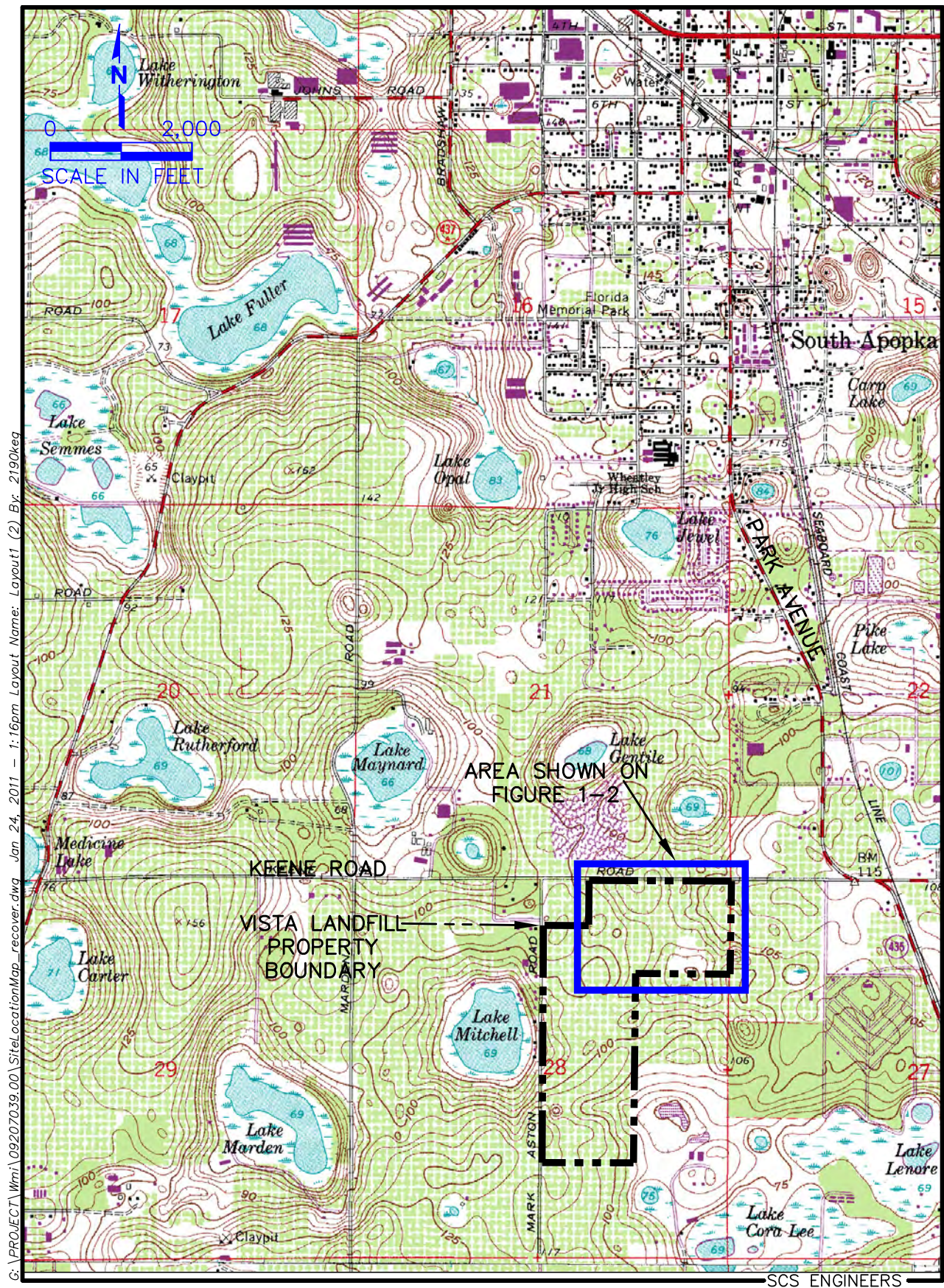
SCS Engineers (SCS) prepared this technical water quality monitoring report for the Vista Landfill (VLF) on behalf of Vista Landfill, Inc. (VLI). The VLF is located approximately two miles south of Apopka, Florida, at 242 West Keene Road. The VLF lies south of Keene Road, west of Old Apopka-Clarcona Road, and east of Lake Mitchell in Orange County, Florida (Figure 1-1). The VLF is a Class III lined landfill with a leachate collection system. The bottom-liner system consists of three layers (from top to bottom): a 2-foot thick sand liner protective layer, a double-sided geocomposite drainage layer, and a 50-mil high density polyethylene (HDPE) geomembrane layer. Waste was initially placed in the landfill on November 17, 2008.

This report was prepared in general accordance with Florida Department of Environmental Protection (FDEP) Permit/certification No. 0165969-027-SO-MM, Specific Condition 2.D, Monitoring Plan Implementation Schedule (MPIS), and Chapter 62-701.510(9)(a) Florida Administrative Code (FAC). This report includes a summary and evaluation of the groundwater analytical data from monitoring events performed at the VLF from December 2013 through the June 2015 monitoring event. Locations of monitoring sites are shown on Figure 1-2. The following lists the specific data and information included in this report.

- Tabular displays of any data which shows that a monitoring parameter has been detected, and graphical displays of any leachate key indicator parameters detected, including hydrographs for monitoring wells;
- Trend analyses of monitoring parameters exceeded;
- Comparisons among shallow, middle, and deep zone wells;
- Comparisons between the corresponding background well and the water quality in detection and compliance wells;
- Correlations between related parameters such as total dissolved solids and specific conductance;
- Discussion of erratic and/or poorly correlated data;
- An interpretation of the groundwater contour maps, including an evaluation of groundwater flow rates; and
- An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based upon site conditions.

Water quality sampling and physical readings and measurements were performed by technical staff of Pro-Tech Environmental (Pro-Tech), Atlanta, Georgia. Water quality analyses were performed by TestAmerica Laboratories, Inc. (TestAmerica Denver), Denver, Colorado. Field work, sampling methodologies, data evaluation, data Quality Assurance/Quality Control

(QA/QC) were conducted in accordance with FAC Chapter 62-160 Standard Operating Procedures (DEP-SOP-001/01), the VLF MPIS, the VLF site permit, and the Pro-Tech sample team quality manual. Laboratory analyses were performed in accordance with Chapter 62-160, FAC DEP-SOP-001/01, the VLF MPIS, and the site permits. TestAmerica-Denver is certified by the Florida Department of Health Environmental Laboratory Certification Program (DoH ELCP).



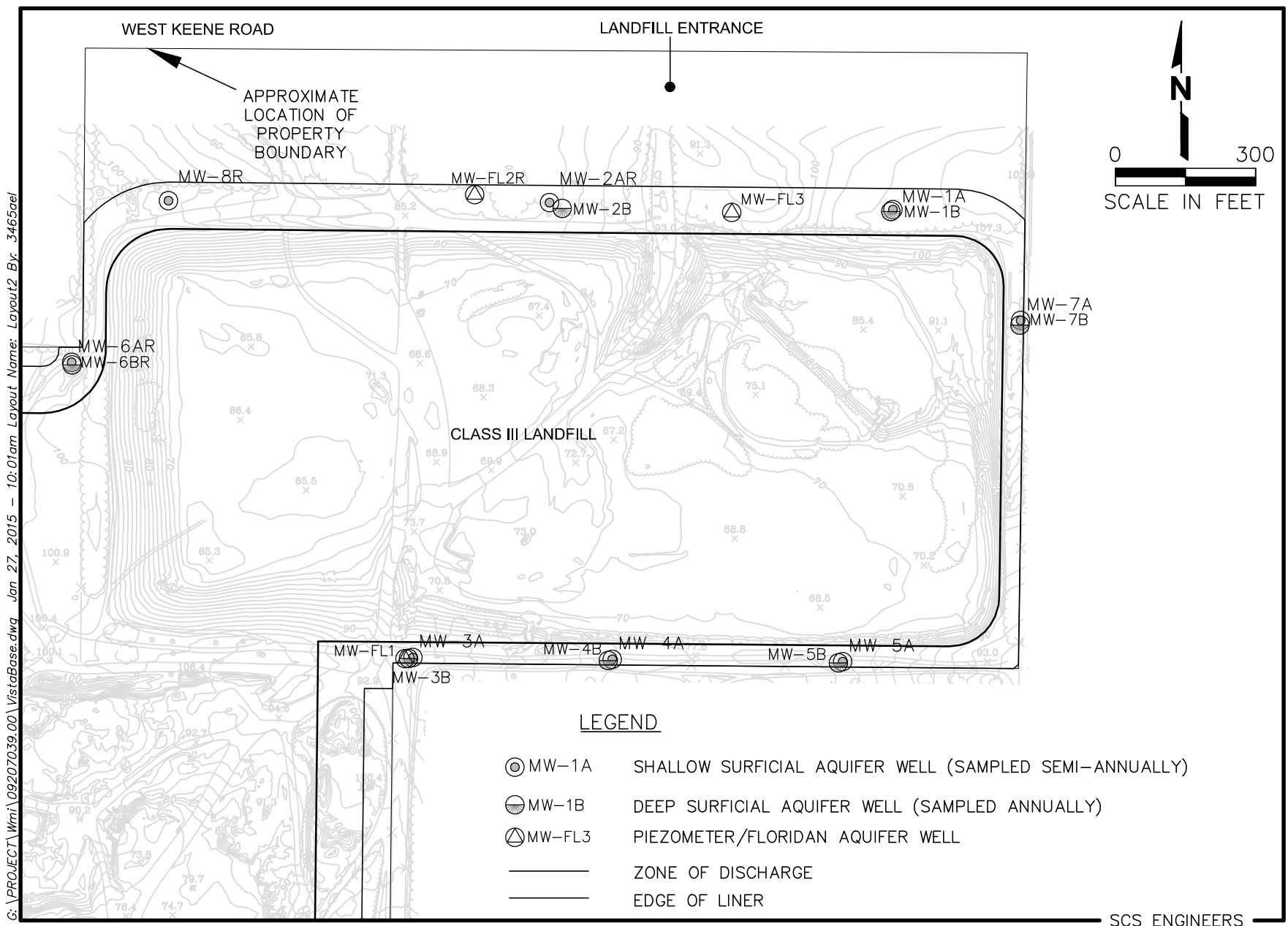


Figure 1-2. Site Map, Vista Landfill, Apopka, Florida.

2 GEOLOGIC AND HYDROGEOLOGIC CHARACTERISTICS

Figure 1-1 shows the topography of the VLF site and region prior to the site being developed as a borrow pit and then as a landfill. The topography indicates the site is located in a region that is internally drained.

Based on SCS' evaluation of the VLF hydrogeologic data, the groundwater at VLF primarily occurs in the Hawthorn Group and the underlying Floridan aquifer. The "surficial aquifer" consists of the water-bearing permeable zones of the Hawthorn Group that overlay the Floridan aquifer. The groundwater flow direction of the upper Hawthorn Group tends to mimic the pre-construction topography of the VLF.

The Floridan aquifer underlies the surficial aquifer at the VLF and is separated from it by the clay units of the Hawthorn Group.¹ Karst features (e.g., sinkholes) developed historically in the sediments overlying the upper Floridan aquifer, resulting in the internal drainage characteristics of the region. As a result, runoff and surficial aquifer groundwater flow moves toward and into these karst features, often resulting in the development of surface water bodies such as Lake Mitchell, which is located west of the VLF (Figure 1-1).

For this technical report, SCS performed groundwater flow assessment of the surficial aquifer for the period extending from December 2013 through June 2015. The activities included compiling groundwater depth measurements, calculating groundwater elevations, and plotting the data onto site figures to assess groundwater flow direction. Water level maps generated for the shallow surficial aquifer and the intermediate surficial aquifer are presented in Appendix A. These maps are generated using the Surfer[®] Version 10 groundwater contouring computer program, with the interpretation verified by an SCS hydrogeologist.

Shallow Surficial Aquifer

The shallow surficial aquifer is defined as the uppermost water-bearing zone of the undifferentiated sands and clayey sands that are part of the Hawthorn Group. Water table maps of this aquifer were prepared by SCS from shallow surficial aquifer well data for each of the technical report sampling events (Figures A-1 through A-4, Appendix A). Groundwater flow typically is perpendicular to the water level contours. Therefore, the approximate direction of groundwater flow in the shallow surficial aquifer is primarily to the southwest. A portion of the groundwater enters from the northwest section of the site and flows south. This groundwater flow configuration results from a combination of recharge from rainfall infiltration outside the bottom liner, interchange of groundwater with the underlying intermediate surficial aquifer, and lateral inflow to the shallow surficial aquifer from outside the VLF.

¹ The Rust Environment and Infrastructure (RUST) August 1996 (Revised September 1998) report entitled "Keene Road Hydrogeologic Evaluation" Prepared for Waste Management Inc.

Groundwater velocities along typical gradients within each flow regime shown on Figure A-5 (the most recent water level map) were calculated from average gradient estimated from the Figure A-4 of 0.009 feet/foot and hydraulic conductivity value reported in a 2004 permit application for VLF² of 0.03 ft/day. Based on lithology, the porosity is estimated to be approximately 0.3.

The velocity of groundwater in the surficial aquifer beneath the site was calculated using a form of Darcy's law³, $V = k(dh/dl)/\theta$, where:

- V is the average velocity of groundwater (ft/day).
- k is the aquifer horizontal hydraulic conductivity (ft/day).
- dh/dl is the aquifer hydraulic gradient (ft/ft).
- θ is the effective porosity of the aquifer (unitless).

The velocity in the surficial aquifer is approximately 11 feet/ year.

Based on the lithologic descriptions of the surficial aquifer of the VLF, the 1.03 ft/day hydraulic conductivity reported in the 2004 permit application appears to be representative of the VLF. Todd⁴ reports that a typical value for a silty aquifer is approximately 0.08 meters per day (0.02 ft/day) and clayey aquifers have even lower hydraulic conductivities. Descriptions of the surficial aquifer lithology of the VLF include silty sands and clayey sands, indicating the effective horizontal conductivity of the surficial aquifer is consistent.

Intermediate Surficial Aquifer

The intermediate surficial aquifer is defined as the lower water-bearing zone of the undifferentiated sands and clayey sands that are part of the Hawthorn Group. Water table maps of this aquifer were prepared by SCS from intermediate surficial well data for each of the technical report sampling events (Figures A-5 through A-8, Appendix A). Groundwater flow within the intermediate surficial aquifer beneath the VLF apparently consists of multiple flow configurations, as indicated by the groundwater flow direction arrows on Figure A-8. Groundwater entering from the site's western boundary flows east and northeast towards a slight low on the site's northern boundary. A portion of the groundwater enters near the northeast corner of the site and moves to the south and southwest. This groundwater flow configuration is a combination of interchange of groundwater with the overlying shallow surficial aquifer and lateral inflow to the intermediate surficial aquifer from outside the VLF. These flow directions are consistent with previous flow assessments at the Vista Landfill.

² Bishop & Buttrey, Inc., May 2004 report titled "Application for Keene Road Disposal Class III Landfill Expansion"

³ Lohman, S. W., "Ground-Water Hydraulics." Geological Survey Professional Paper 78, 1972, pp.10-11.

⁴ Todd, David Keith. Groundwater Hydrology. John Wiley & Sons, Inc., New York. 1980, p. 71.

Floridan Aquifer

Due to the limited number of “FL” zone wells for the site, potentiometric maps were not prepared for the Floridan aquifer. Regional potentiometric maps for the Floridan aquifer indicate that flow in the aquifer at the VLF is towards the northeast. This is confirmed by the water levels observed at the VLF at Floridan aquifer groundwater monitoring wells MW-FL1 and MW-FL3.

Aquifer Hydraulic Relationships

Updated hydrographs depicting the groundwater elevations within each well for each sampling event over the monitoring period are included in Appendix A. Hydrographs are included that show the elevations of water levels over time for:

- Clusters of monitoring wells to show vertical relationships between potentiometric head levels.
- Upper surficial aquifer and lower surficial aquifer wells.

There are seven well pairs that were used to provide data for the comparison of the upper surficial aquifer to the lower surficial aquifer on the site, and one well pair that was used to provide data for the comparison of the lower surficial aquifer to the Floridan aquifer as listed below. Hydrographs for these well pairs can be used to assess the potential for vertical flow of groundwater between the upper and lower surficial aquifers for wells located in pairs. The presence of an upward or downward gradient between well pairs does not indicate flow between the wells, but demonstrates the different potentiometric heads and the potential for flow.

**Table 2-1. Vertical Hydraulic Pairs
at the Vista Landfill**

Vertical Hydraulic Pairs			
Vertical Pair (Lower/Upper)	Location	Difference in Potentiometric Levels During June 2015	Gradient Direction
MW-1B/MW-1A	Northeast	9.88	Downward
MW-2B/MW-2AR	North Center	1.25	Downward
MW-3B/MW-3A	South Center	0.85	Upward
MW-FL1/MW-3B	South Center	0.10	Downward
MW-4B/MW-4A	South Center	0.34	Upward
MW-5B/MW-5A	Southeast	2.16	Downward
MW-6BR/MW-6AR	West	0.02	Upward
MW-7B/MW-7A	East Northeast	12.35	Downward

3 WATER MONITORING PROGRAM

PERMIT/WATER QUALITY MPIS MODIFICATIONS

On behalf of the VLF, SCS submitted a minor permit modification letter directed to Mr. F. Thomas Lubozynski, P.E., of the FDEP and dated November 19, 2014, to modify VLF's Water Quality MPIS.

In FDEP correspondence dated December 3, 2014, a new permit was issued to VLF (Permit No. 0165969-024-SO-MM) to reflect the approved changes to the site's Water Quality MPIS. The MPIS changes made are as follows:

1. Measure water levels in all wells semi-annually and provide semi-annual water level maps for the shallow and intermediate zones.
2. Sample the shallow wells semi-annually for the Rule 62-701.510(5)(c) & (7)(a), F.A.C. required parameters currently listed in the site MPIS.
3. Sample the intermediate wells annually for indicator parameters chloride, sodium, and ammonia to verify there are no leachate impacts.
4. Sample the intermediate well(s) in question for the full list of parameters if the shallow well for the well cluster(s) shows a verified landfill impact.
5. Sample the intermediate well(s) in question for the full list of parameters if the indicator data suggests an increasing trend (or verified sudden jump far above background) that there is a landfill impact to the intermediate well(s).
6. Utilize the Upper Floridan wells as piezometers with no routine sampling unless there are verified landfill impacts in the intermediate water unit.
7. Gross alpha, aluminum, and manganese were added to the MPIS after these parameters were detected in background samples. While there have been detections of these parameters, the concentrations have all been attributed to background and not from the landfill because there are no indicator trends concurrent with these detections. Therefore, the site requests to remove these parameters from the semi-annual sampling requirement.

Department Note: *In #3, the Department will add nitrate to the list of indicator parameters for the intermediate wells to watch that the exceedances do not extend beyond the shallow wells.*

In an email to FDEP dated January 9, 2015, SCS noted the previously approved annual sampling of the intermediate wells was not included in VLF's MPIS. The MPIS was revised on January 12, 2015. Notification of the corrected MPIS, part of permit 0165969-024-SO-MM, was sent to Jim Christiansen, WMI, on February 17, 2015.

On April 14, 2015, VLF was issued Permit No. 0165969-026-SO-MM to formally incorporate the MPIS revisions made on January 12, 2015 and to change submittal requirements from paper to electronic.

GROUNDWATER MONITORING PROGRAM

Monitoring wells at VLF are considered shallow or deep. There are 15 shallow wells located in the shallow (“A” wells) and intermediate (“B” wells) zones of the surficial aquifer. There are 3 deep wells, MW-FL2R located in the deep zone of the surficial aquifer and MW-FL1 and MW-FL3 located in the Floridian aquifer. Based on well logs and similar water levels to surficial aquifer intermediate zone wells, MW-FL2R appears to be installed in a deep portion of the surficial aquifer deep zone, possibly in a relict karst feature.

For the first half of the technical reporting period (December 2013 and June 2014), the VLF water monitoring program consisted of monitoring the surficial aquifer and Floridian aquifer groundwater at the eighteen locations.

Following VLF’s new permit dated December 3, 2014, reflecting changes to the site’s Water Quality MPIS, the surficial aquifer groundwater was monitored at the site’s 15 shallow wells during the December 2014 and June 2015 monitoring events. The shallow surficial aquifer is monitored semi-annually and the intermediate surficial aquifer is sampled annually, during the December sampling event. The intermediate wells were not sampled in December 2014, so they were sampled during the June 2015 monitoring event. The deep zone wells are used as piezometers with no routine sampling unless there are verified landfill impacts in the intermediate water unit. The deep zone wells were not sampled during the December 2014 and June 2015 monitoring events.

Well locations for each monitored zone are shown on Figure 1-2. The monitoring wells and respective aquifers for each monitored zone are listed in Table 3-1. The construction details for the eighteen wells comprising the technical period’s monitoring system are included in Table 3-2.

Laboratory Parameters

- Total ammonia-nitrogen
- Chlorides
- Iron
- Mercury
- Nitrate
- Sodium
- Total dissolved solids (TDS)
- Parameters listed in 40 CFR (Code of Federal Regulations) Part 258, Appendix I

**Table 3-1. Active Surficial Aquifer and Floridan Aquifer
 Groundwater Monitoring Wells at the Vista Landfill**

Surficial Aquifer Shallow Zone	Surficial Aquifer Intermediate Zone	Surficial Aquifer Deep Zone	Floridan Aquifer
Background Monitoring Wells			
MW-1A	MW-1B		
MW-2AR	MW-2B		
MW-6AR	MW-6BR		
MW-7A			
MW-8R			
Compliance Monitoring Wells			
MW-3A	MW-3B		MW-FL1
MW-4A	MW-4B		
MW-5A	MW-5B		
	MW-7B		
		MW-FL2R	
			MW-FL3

Note:

1. Wells listed in the same row are part of a cluster of wells.

WACS ID	Water Quality Monitoring Site ID	Date Installed	Date Abandoned	Well Type	Aquifer Monitored	Top of Casing Elevation (NGVD)	Total Well Depth (Feet BLS)	Outer Casing Diameter/ Depth	Well Diameter	Screen Slot Size	Screen Length (feet)	Top of Screen (Feet BLS)	Bottom of Screen (Feet BLS)	Top of Screen (Feet NGVD)	Bottom of Screen (Feet NGVD)	Northing (NAD 1983)	Easting (NAD 1983)	Latitude (NAD 1983)	Longitude (NAD 1983)
19335	MW-1A ¹	4/20/2004	NA	BG	Shallow Surficial	109.47	69	NA	2	0.006	20	49	69	57	37	1565469.28	492550.11	28° 38' 21.30"	81° 30' 36.28"
19336	MW-1B	4/20/2004	NA	BG	Intermediate Surficial	109.53	96	NA	2	0.010	10	86	96	20	10	1565465.40	492545.32	28° 38' 21.27"	81° 30' 36.33"
ND	MW-2A	ND	1/15/2007	BG	Shallow Surficial	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19337	MW-2AR	1/23/2007	NA	BG	Shallow Surficial	87.22	39.94	NA	2	0.006	10	29.44	39.44	59.91	49.91	1565481.98	491815.07	28° 38' 21.40"	81° 30' 44.53"
19338	MW-2B	4/22/2004	NA	BG	Intermediate Surficial	88.46	73	NA	2	0.006	10	63	73	20	10	1565471.82	491843.09	28° 38' 21.30"	81° 30' 44.21"
19339	MW-3A	4/13/2004	NA	CO	Shallow Surficial	92.87	56	NA	2	0.006	30	36	56	57	37	1564509.87	491522.95	28° 38' 11.76"	81° 30' 47.76"
19340	MW-3B	4/13/2004	NA	CO	Intermediate Surficial	93.06	83	NA	2	0.010	10	73	83	20	10	1564509.53	491514.75	28° 38' 11.76"	81° 30' 47.85"
19341	MW-4A	4/14/2004	NA	CO	Shallow Surficial	82.04	42	NA	2	0.006	20	22	42	57	37	1564505.59	491949.09	28° 38' 11.74"	81° 30' 42.98"
19342	MW-4B	4/14/2004	NA	CO	Intermediate Surficial	83.18	69	NA	2	0.006	10	59	69	20	10	1564505.16	491941.64	28° 38' 11.73"	81° 30' 43.06"
19343	MW-5A	4/14/2004	NA	CO	Shallow Surficial	81.86	40	NA	2	0.006	20	20	40	57	37	1564500.86	492441.55	28° 38' 11.71"	81° 30' 37.45"
19344	MW-5B	4/14/2004	NA	CO	Intermediate Surficial	81.27	67	NA	2	0.006	10	57	67	20	10	1564500.47	492433.39	28° 38' 11.71"	81° 30' 37.54"
ND	MW-6A	4/15/2004	1/12/2007	BG	Shallow Surficial	101.94	61	NA	2	0.010	20	41	61	57	37	ND	ND	ND	ND
19345	MW-6AR	1/30/2007	NA	BG	Shallow Surficial	104.11	69.37	NA	2	0.010	20	48.87	68.87	52.27	32.27	1565140.42	490793.55	28° 38' 17.97"	81° 30' 55.98"
ND	MW-6B	4/15/2004	1/12/2007	BG	Intermediate Surficial	101.98	88	NA	2	0.010	10	78	88	20	10	ND	ND	ND	ND
19346	MW-6BR	1/30/2007	NA	BG	Intermediate Surficial	103.99	88.58	NA	2	0.010	10	78.08	88.08	22.98	12.98	1565137.25	490795.56	28° 38' 17.94"	81° 30' 55.95"
19347	MW-7A	4/20/2004	NA	BG	Shallow Surficial	109.26	69	NA	2	0.006	20	49	69	57	37	1565230.04	492821.74	28° 38' 18.95"	81° 30' 33.22"
19348	MW-7B	4/19/2004	NA	CO	Intermediate Surficial	109.13	96	NA	2	0.01	10	86	96	20	10	1565222.30	492821.61	28° 38' 18.87"	81° 30' 33.22"
ND	MW-8	4/23/2004	1/12/2007	BG	Shallow Surficial	99.7	60	NA	2	0.006	10	50	60	47	37	ND	ND	ND	ND
19868	MW-8R	1/25/2007	NA	BG	Shallow Surficial	99.6	72.12	NA	2	0.006	10	61.62	71.72	35.05	25.05	1565489.06	490997.80	28° 38' 21.43"	81° 30' 53.70"
19879	MW-FL1	4/13/2004	NA	CO	Floridan	93.16	125	NA	2	0.010	10	115	125	-45	-35	1564509.43	491507.05	28° 38' 11.76"	81° 30' 47.94"
ND	MW-FL2	4/22/2004	1/15/2007	CO	Floridan	87.4	130	NA	2	0.006	10	120	130	-45	-35	ND	ND	ND	ND
19880	MW-FL2R	1/29/2007	NA	CO	Deep Surficial	86.76	129.95	6"/0' to 80'	2	0.006	10	119.45	129.45	-45.54	-35.54	1565501.29	491655.91	28° 38' 21.58"	81° 30' 46.32"
19881	MW-FL3	4/21/2004	NA	CO	Floridan	97.49	140	NA	2	0.010	10	130	140	-45	-35	1565463.35	492205.45	28° 38' 21.23"	81° 30' 40.15"
22828	L-1	NA	NA	CO	Leachate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND

Notes:

- Survey Information was obtained from the May 25, 2007 Geosyntec Consultants Environmental Monitoring Location Map.
- Well construction information obtained from the July 2004, Collinas Group, Inc., Groundwater Monitoring Well Installation Report, Buttrey Landfill Parcel.
- Well construction information obtained from the March 15, 2007, Professional Service Industries, Inc., Monitoring Well Completion and Well Abandonment Report.
- NGVD = National Geodetic Vertical Datum of 1929.
- NAD 1983 = North American Datum of 1983.
- WACS = State Water Assurance Compliance System.
- BLS = Below Landsurface.
- NA = Not Applicable.
- BG = Background.
- CO = Compliance.
- ND = Data not available.
- OT = Other.
- ID = Identification.

Additional Parameters

During the initial background monitoring event prior to the placement of waste, some parameters exceeded the Primary Drinking Water Standards (PDWS) or Secondary Drinking Water Standards (SDWS) as listed in Chapter 62-550, FAC. These included the following parameters, which were added to the semi-annual monitoring:

- Aluminum
- Gross Alpha
- Iodomethane
- Manganese
- Toluene

Post Permit Update Parameters

Following the December 2014 permit update, shallow surficial aquifer wells have been monitored semi-annually for the field and laboratory parameters listed above. Intermediate wells were switched to annual sampling for the following parameters:

- Total ammonia-nitrogen
- Chloride
- Sodium
- Nitrate

Intermediate wells should be sampled for the full list of parameters (see laboratory parameters) if:

- The shallow well for the well cluster(s) shows a verified landfill impact; or
- The indicator data suggests through an increasing trend (or verified sudden jump far above background) that there is a landfill impact to the intermediate well (s)

The intermediate wells were not sampled for the full list of parameters during the June 2015 monitoring event.

ZONE OF DISCHARGE

The zone of discharge (ZOD) for the landfill is defined in the permit as follows: “The zone of discharge for the facility shall be a three dimensional volume, defined in the horizontal plane as extending 100 feet from the edge of the solid waste deposit, or to the property boundary, whichever is less, as depicted in Attachment B of the MPIS (Exhibit I), and defined in the vertical plane as extending from the top of the ground to the bottom of the screen of the lower surficial monitoring wells.”

Table 3-3 lists monitoring wells and approximate distances to the edge of the horizontal ZOD. The table also includes each well's distance from the edge of waste.

GROUNDWATER QUALITY

Water quality data for the groundwater parameters monitored during this reporting period were evaluated in accordance with Chapter 62-701.510(9)(b), FAC. Selected data tables and graphs are presented to support the evaluation of the adequacy of the water quality monitoring frequency and sampling locations.

Appendix B includes tables listing water quality detections and exceedances. In accordance with Chapter 62-701, FAC, groundwater results were compared to primary drinking water standards (PDWSs) and secondary drinking water standards (SDWSs) listed in Chapter 62-550. For this technical report, groundwater cleanup target levels (GCTLs) in Rule 62-777, FAC, were used for constituents that do not have a PDWS or SDWS. GCTLs are used as a screening tool for potential anomalies in the concentration data that may require further consideration or review. Per Chapter 62-701.510(7)(c)2, GCTLs are only applicable to solid waste facilities outside of the zone of discharge. Exceedances of one or more parameters over the technical reporting period were evaluated in accordance with the permit.

Graphs of water quality data and water quality trends for selected detected constituents are included in Appendix C. Graphs are provided for constituents that frequently exceeded their respective drinking water standard and/or exhibited significant trends (by visual review of the graphs, not statistical analysis) in their concentrations over time. Laboratory analytical data from the January 2010 to the June 2015 semi-annual events, were used in the graphs of water quality data. The following section discusses exceedances and includes related trends, where appropriate. The relationship between total dissolved solids and specific conductance is presented following the exceedances discussion.

Metals Exceedances and Trends

Metals with concentrations in excess of applicable PDWS, SDWS, and/or GCTLs for at least one sampling event during the technical reporting period include:

- Aluminum
- Iron

These exceedances are discussed below and are based on the exceedance tables included in Appendix B. Applicable trends are discussed based on the time series plots in Appendix C.

Table 3-3. Locations of Monitoring Wells Relative to the Horizontal Zone of Discharge

Well No.	Purpose	ZOD Description Width, Feet	Monitoring Well Distance to ZOD (Feet)	Monitoring Well Distance to Edge of Waste (Feet)
MW-1A	Background	100	45	55
MW-1B	Background	100	49	51
MW-2AR	Background	100	37	63
MW-2B	Background	100	49	51
MW-3A	Compliance	PB	12	33
MW-3B	Compliance	PB	10	35
MW-4A	Compliance	PB	12	34
MW-4B	Compliance	PB	9	37
MW-5A	Compliance	PB	11	35
MW-5B	Compliance	PB	9	37
MW-6AR	Background	100	37	67
MW-6BR	Background	100	36	64
MW-7A	Background	PB	6	37
MW-7B	Compliance	PB	7	36
MW-8R	Background	100	40	60
MW-FL1	Compliance	100	10	36
MW-FL2R	Compliance	100	21	79
MW-FL3	Compliance	100	54	46

Notes:

1. Distances are measured to within +/- 10 feet and are based on the survey maps.
2. The 100 ft value in the "ZOD Description" indicates the ZOD is 100 feet from the edge of waste and lies within the property boundary (PB).
3. The PB value in the "ZOD Description" indicates the ZOD is less than 100 feet from the edge of waste and lies at the property boundary.

Aluminum

The FDEP SDWS of 200 micrograms per liter ($\mu\text{g/L}$) for aluminum was exceeded at background well MW-6BR and compliance wells MW-3A and MW-FL2R during the December 2013 sampling event. Aluminum was also exceeded during the June 2014 sampling event in background wells MW-1A, MW-2AR, and MW-8R and in compliance wells MW-3A, MW-5B, and MW-FL2R. Following the June 2014 monitoring event, aluminum was removed from routine monitoring.

The background exceedances indicate that aluminum concentrations are likely naturally elevated in this area and do not appear to be related to landfill operations. Trend charts for aluminum groundwater concentrations are shown on Figures C-1 through C-3, Appendix C. In each aquifer, aluminum results generally have either remained the same or decreased during recent sampling event, with the exception of background well MW-2AR which has been elevated recently. VLF does not appear to be adversely impacting the aluminum concentration in the local groundwater.

Iron

The concentration of iron in the groundwater ranged from undetected to 620 $\mu\text{g/L}$ in the surficial aquifer and undetected to 340 $\mu\text{g/L}$ in the Floridan aquifer. The SDWS of 300 $\mu\text{g/l}$ for iron was exceeded at background wells MW-2AR and MW-6BR and compliance well MW-3A, for at least one sampling event during this reporting period. Concentrations ranges for these wells are consistent with site data for iron. Trend charts are shown on Figures C-4 through C-6, Appendix C show iron concentrations decreasing or generally staying constant. Based on the background levels of iron, the iron exceedances are associated with naturally occurring iron and do not appear to be a concern at this time.

Organic Parameters Exceedances and Trends

Organic parameters were not detected above their respective PDWS, SDWS, and GCTLs.

Inorganic Parameters Exceedances and Trends

Inorganic analytes with concentrations in excess of applicable PDWS, SDWS, and/or GCTLs for at least one sampling event during the technical reporting period include:

- Dissolved Oxygen Percent Saturation
- Gross Alpha
- Nitrate
- pH

These parameters are discussed below.

Dissolved Oxygen Percent Saturation

The Dissolved Oxygen Percent Saturation exceeded the recommended guidelines at background wells MW-2AR, MW-6AR, and MW-8R and compliance wells MW-3A, MW-3B, and MW-5A, for at least one sampling event during this reporting period. The dissolved oxygen concentrations are thought to be related to natural background conditions (e.g., relatively high rainfall infiltration rates) since low flow sampling techniques are utilized at the site and the elevated oxygen saturations were present prior to waste placement.

Gross Alpha

The PDWS of 15 picocuries per liter (pCi/L) for Gross Alpha was exceeded in compliance monitoring well MW-3A (16.4 pCi/L) during the December 2013 monitoring event. The MW-3A, December 2013 Gross Alpha concentration was elevated above recent sampling events. A trend chart is shown on Figure C-20, Appendix C, indicating the recent outlying exceedance. Elevated concentrations of Gross Alpha at MW-3A is consistent with historical data that was collected prior to the placement of waste. During the May 2004 background monitoring event, Gross Alpha was detected in monitoring well MW-3A (17 pCi/L) at a concentration above the PDWS.

Following the June 2014 monitoring event, Gross Alpha was removed from routine monitoring.

Nitrate

The FDEP PDWS of 10 mg/L for nitrate was exceeded at background monitoring wells MW-1A, MW-6AR, and MW-7A. Trend charts are shown on Figures C-7 through C-9, Appendix C, for nitrate groundwater concentrations. These are background monitoring wells and indicate that exceedances are not due to landfill operations. Nitrate exceedances are believed to be related to RIB Facilities, which have been previously documented as potential sources for nitrates: Special Publication SJ2006-SP3, *Estimates Of Upper Floridan Aquifer Recharge Augmentation Based On Hydraulic And Water-Quality Data (1986-2002) From The Water Conserv II RIB Systems, Orange County, Florida* (<http://sjr.state.fl.us/programs/outreach/pubs/techpubs/pdfs/SP/SJ2006-SP3.pdf>).

pH

The majority of the background and detection groundwater monitoring wells had pH concentrations below the FDEP SDWS range of 6.5 to 8.5 units for at least one sampling event. Trend analyses for pH measurements (Figures C-10 through C-12, Appendix C) indicate relatively stable pH concentrations. Low groundwater pH in this region is the result of low pH in precipitation, rapid recharge, and little buffering capacity of the surficial sands. The pH levels observed at VLF are characteristic of the ground water in this region of Florida.

The SDWS range was exceeded at MW-FL2R. This compliance monitoring well showed elevated pH values during the technical reporting period, with the highest result of 10.05 units in the December 2013 sampling event. The high pH indicates that grout is in the sand pack and may be due to improper well construction or the abandonment of MW-FL2; however, the groundwater analytical data show that the problem only affects the pH, and that the overall

geochemistry is similar to the other wells. Therefore, this well is suitable as a compliance well with the understanding that the pH may be elevated and is considered an artifact of well construction. Beginning with the December 2014 sampling event, MW-FL2R has been used as a piezometer and will only be sampled if landfill impacts are detected in the intermediate surficial aquifer.

Total Dissolved Solids/Specific Conductance Correlation

A simple ratio was calculated to evaluate the correlation between TDS and specific conductance (SCond) data. The ratio between TDS and SCond may be evaluated using standard water/wastewater analysis methods to assess the accuracy of the laboratory methods. A generally acceptable correlation is a TDS to SCond ratio of 0.55 to 0.70. Ratios significantly outside this range may indicate that one or both measurements are suspect.

A summary of the TDS/SCond ratios for the reporting period is presented in Table 3-4. The ratios are generally within the acceptable range or are slightly outside the range. Overall, there are relatively few significant deviations. These deviations are most likely due to differences in field sampling techniques and/or calibration errors and do not affect the quality of the reported data.

ERRATIC AND POORLY CORRELATED DATA

No other erratic or poorly correlated data were observed in the water quality substantive analyses.

Table 3-5. Total Dissolved Solids/Specific Conductivity Ratios

Well ID	December 2013	June 2014	December 2014	June 2015
MW-1A	0.59	0.68	0.59	0.64
MW-1B	0.43	0.55	---	---
MW-2AR	---	0.79	0.62	1.09
MW-2B	0.41	0.57	---	---
MW-3A	0.56	0.73	0.56	0.79
MW-3B	0.45	0.55	---	---
MW-4A	0.47	0.65	0.60	0.70
MW-4B	---	0.78	---	---
MW-5A	0.46	0.78	0.64	0.71
MW-5B	0.46	0.60	---	---
MW-6AR	0.67	0.65	0.61	0.69
MW-6BR	0.55	0.60	---	---
MW-7A	0.61	0.65	0.63	0.70
MW-7B	0.44	0.56	---	---
MW-8R	0.70	0.47	0.53	0.54
MW-FL1	0.47	0.55	---	---
MW-FL2R	0.70	0.82	---	---
MW-FL3	0.53	0.60		---

Notes:

1. --- = Monitoring well not sampled due to low water level conditions.
2. Green highlight indicates data significantly outside the typical range (i.e., arbitrarily set at less than half the lower value or more than twice the upper value of the range).

4 ADEQUACY OF MONITORING PROGRAM

This section assesses the adequacy of the monitoring program in observing the potential effects of the VLF operations on groundwater.

SURFICIAL AQUIFER MONITORING

The existing monitoring well locations were selected based on groundwater flow direction. Locations were selected to monitor hydraulically up-gradient groundwater and groundwater that potentially could be affected by landfill operations.

Table 3-2 lists monitoring wells and piezometers at the VLF and the aquifers the wells monitor. Monitoring wells listed under the “Type” column as “DE”, “CO”, and “BG” are included during the routine semi-annual monitoring events. This section discusses the adequacy of well location for horizontal and vertical monitoring and the adequacy of the semi-annual sampling frequency.

Monitoring Well Geographic Location

Geographic location is guided by the direction of lateral groundwater flow in the aquifers beneath the VLF. Figures A-1 through A-4 and A-5 through A-8 are thought to be representative of the shallow surficial and intermediate surficial aquifer flow, respectively, as represented by the flow arrows. Typically, background wells would be located at the hydraulically up gradient end of the flow arrows with compliance wells located at the down gradient end within or at the edge of the ZOD. The following discusses the locations of monitoring wells in each aquifer.

Shallow Surficial Aquifer Well Location

Currently, there are five shallow surficial aquifer background monitoring wells at the VLF (MW-1A, MW-2AR, MW-6AR, MW-7A, and MW-8R). These monitoring wells are located hydraulically up gradient from the landfill and appear to provide sufficient upper surficial aquifer background data for the VLF.

The geographic location of the detection wells appears to be adequate and effective in monitoring groundwater quality variations. The screen locations at each of the upper surficial aquifer locations appear to adequately monitor the upper surficial aquifer for water quality purposes.

Intermediate Surficial Aquifer Well Location

Currently, there are three lower surficial aquifer background monitoring wells at the PRL (MW-1B, MW-2B, and MW-6BR). These monitoring wells are located up-gradient from the landfill and appear to provide sufficient intermediate surficial aquifer background data for the VLF.

It is SCS’ understanding that the vertical ZOD is defined as extending from the top of the ground to the bottom of the screen of the lower surficial monitoring wells. The screen locations at each

of the locations appear to adequately monitor the middle and lower zones of the surficial aquifer for water quality purposes.

Floridan Aquifer Well Location

Currently, there are no regulatory-designated Floridan aquifer background monitoring wells at the VLF. Based on well logs and similar water levels to surficial aquifer intermediate zone wells MW-FL2R appears to be installed in a deep portion of the surficial aquifer intermediate zone, possibly in a relic karst feature. The screen locations at monitoring wells MW-FL1 and MW-FL3 appear to adequately monitor the upper Floridan aquifer for water quality purposes. MW-FL1 through MW-FL3 are currently used as piezometers and will be monitored if landfill impacts are verified in the intermediate surficial aquifer.

Monitoring Frequency

Groundwater monitoring frequency for the VLF is semi-annual and appears to provide sufficient data to evaluate trends in concentrations and plan appropriate evaluation monitoring where necessary. There have been no findings that indicate a need to modify the routine sampling frequency. The average groundwater velocity was calculated to be approximately 11 feet/year. Consequently, VLF will maintain the current groundwater quality monitoring frequency.

Monitoring Parameters

Current routine monitoring parameters include various volatile organic, metals, and inorganic constituents required by Chapter 62-550 and 62-701 and expected waste characteristics. There have been no findings or observations that indicate a need to modify the routine parameter list. Consequently, the VLF will maintain the current groundwater quality monitoring parameters.

LEACHATE MONITORING

E-mail correspondence dated September 25, 2012, from Kim Rush, FDEP, granted approval to remove annual leachate sampling and analysis from the site requirements per the Chapter 62-701, FAC, rule change. Leachate sampling was terminated accordingly.

APPENDIX A

WATER TABLE MAPS AND HYDROGRAPHS

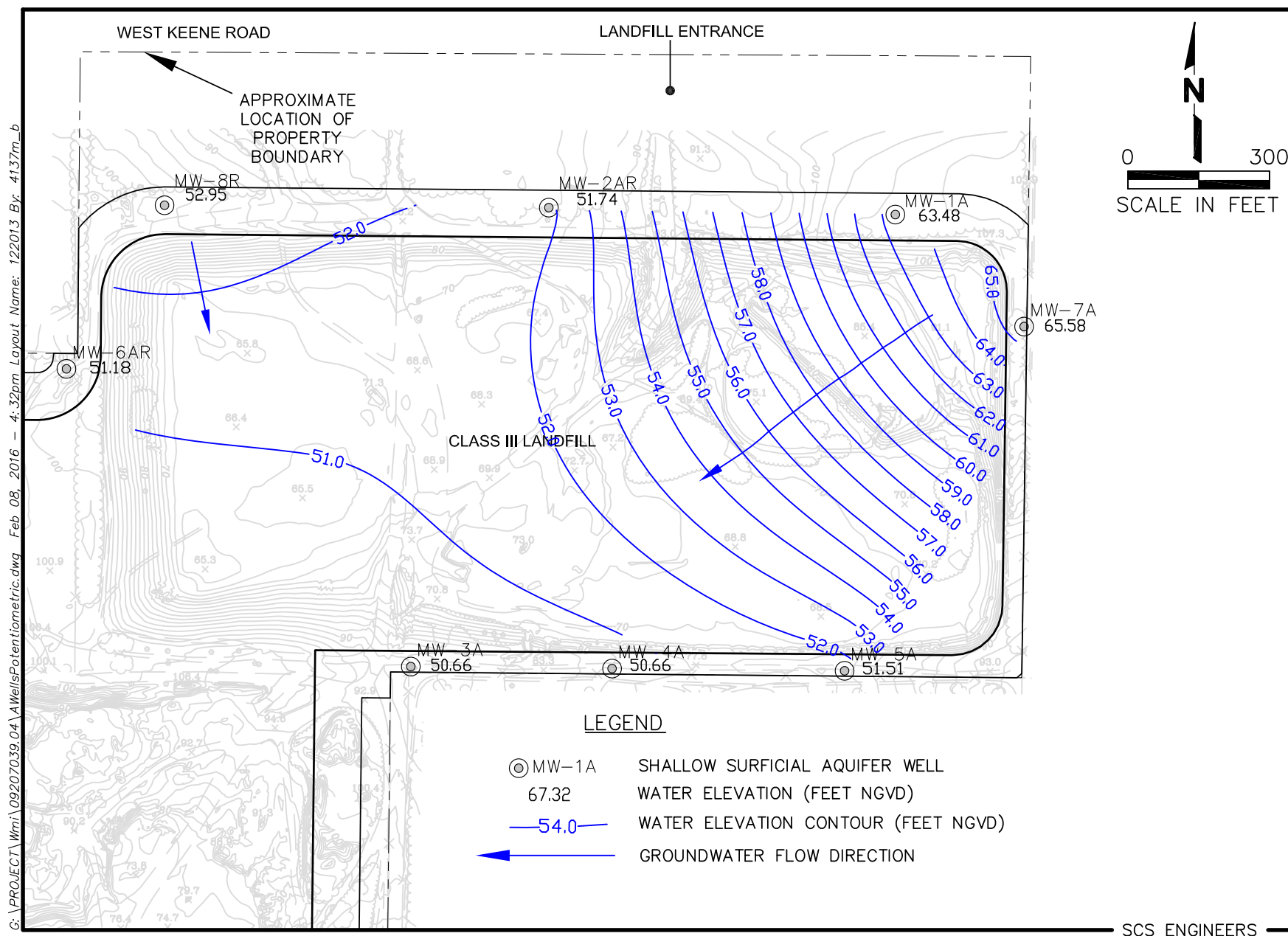
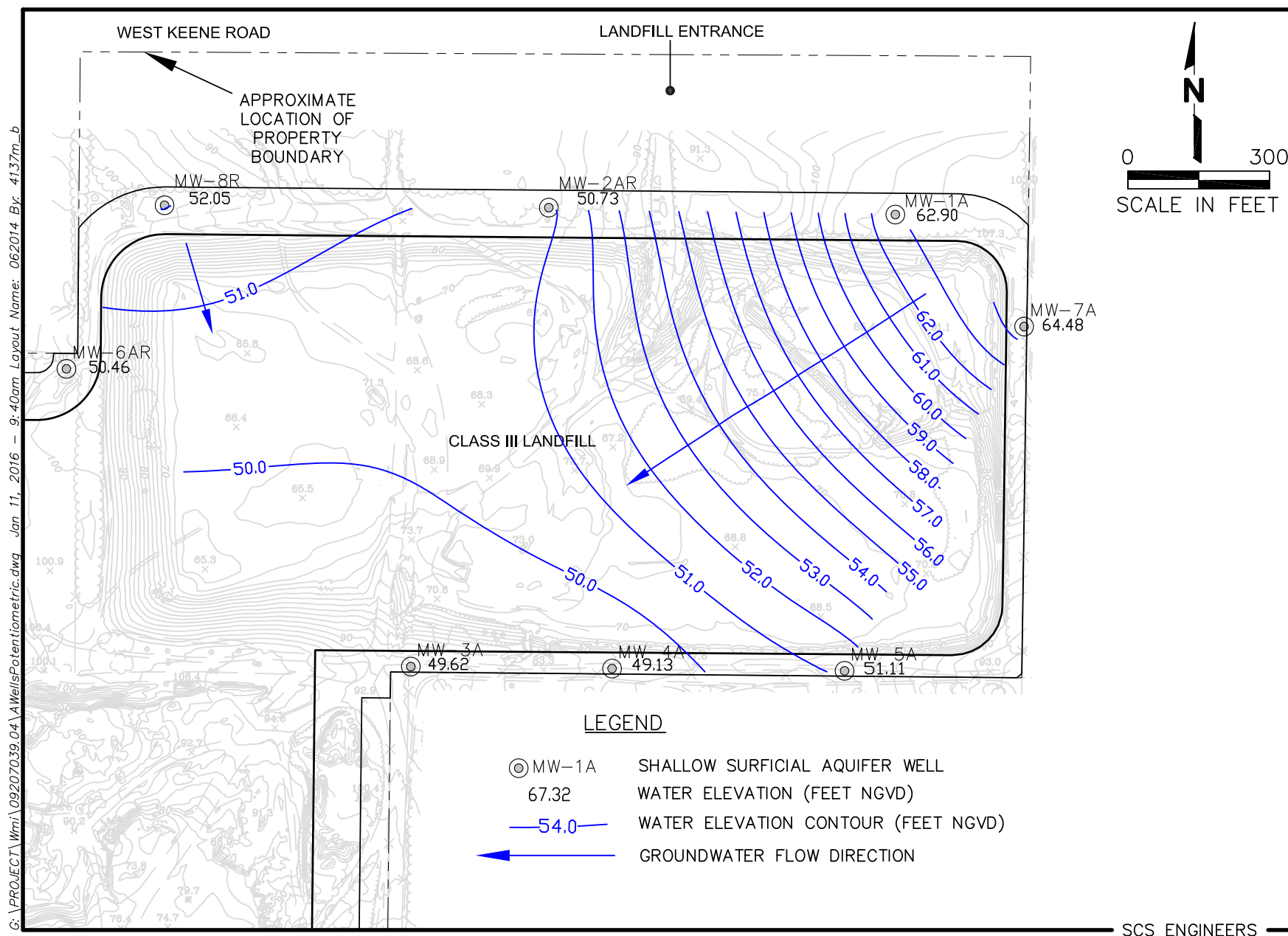
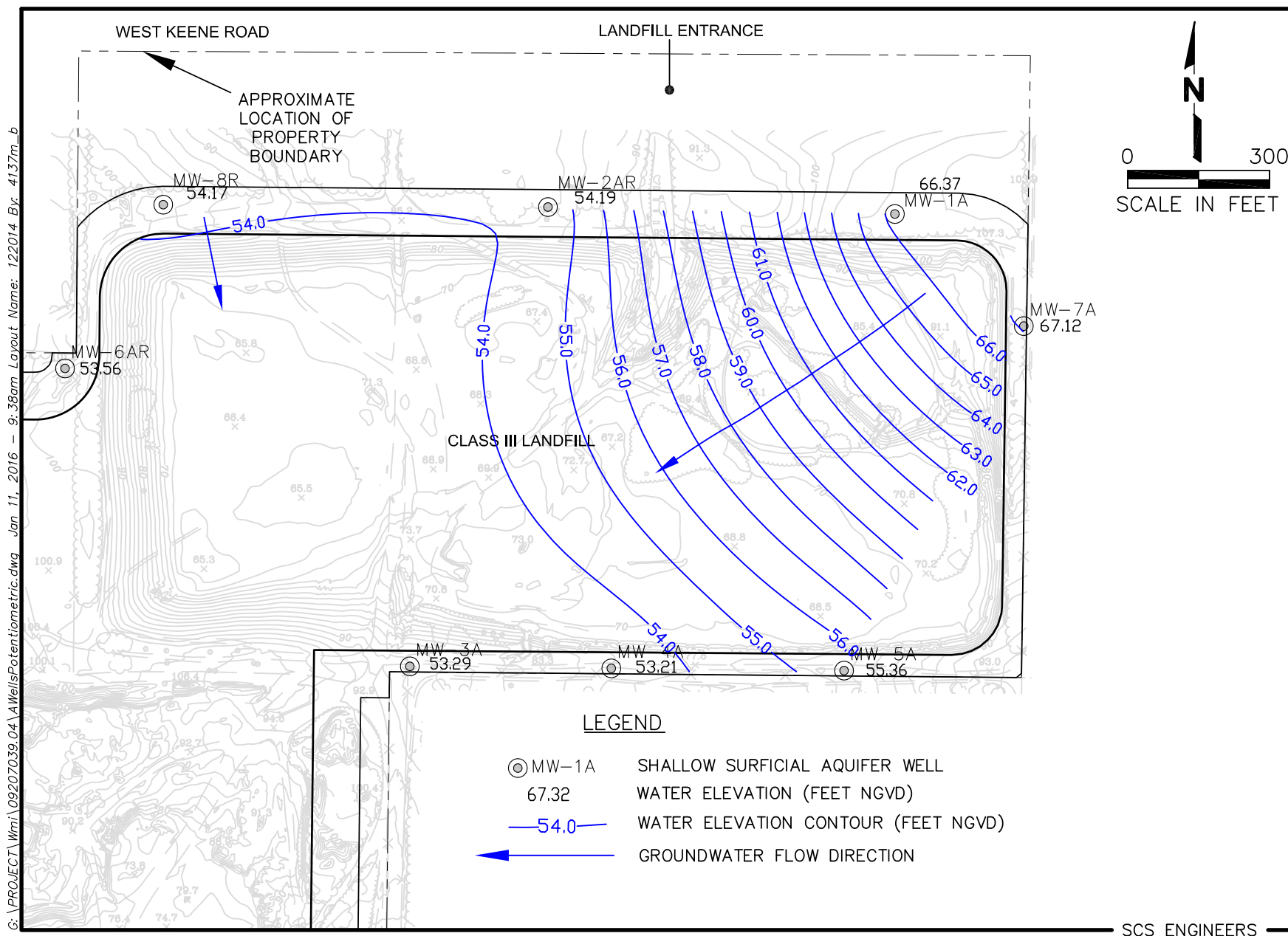


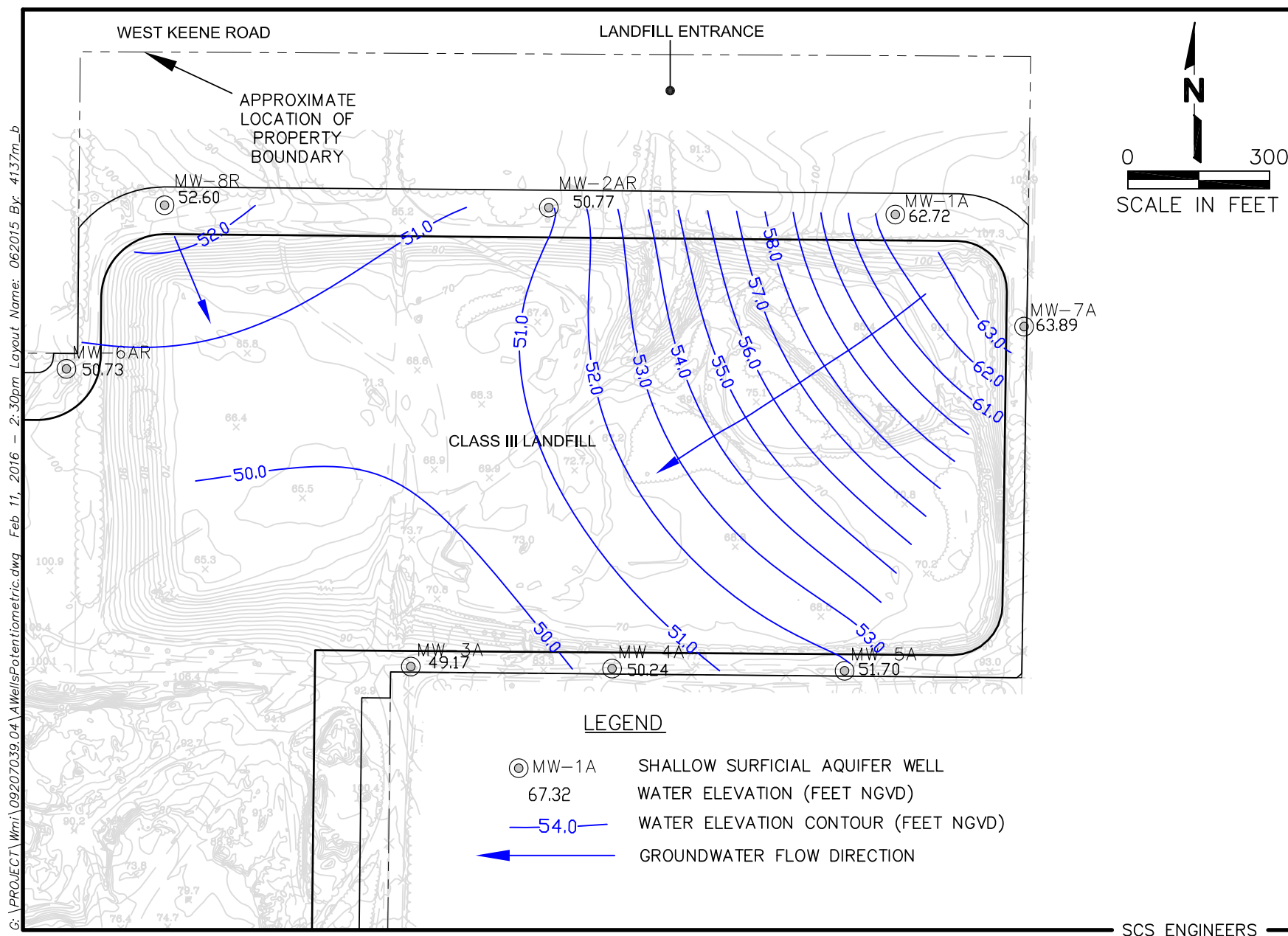
Figure 2-1. December 2013 Shallow Surficial Aquifer Water Level Map, Vista Landfill, Apopka, Florida.



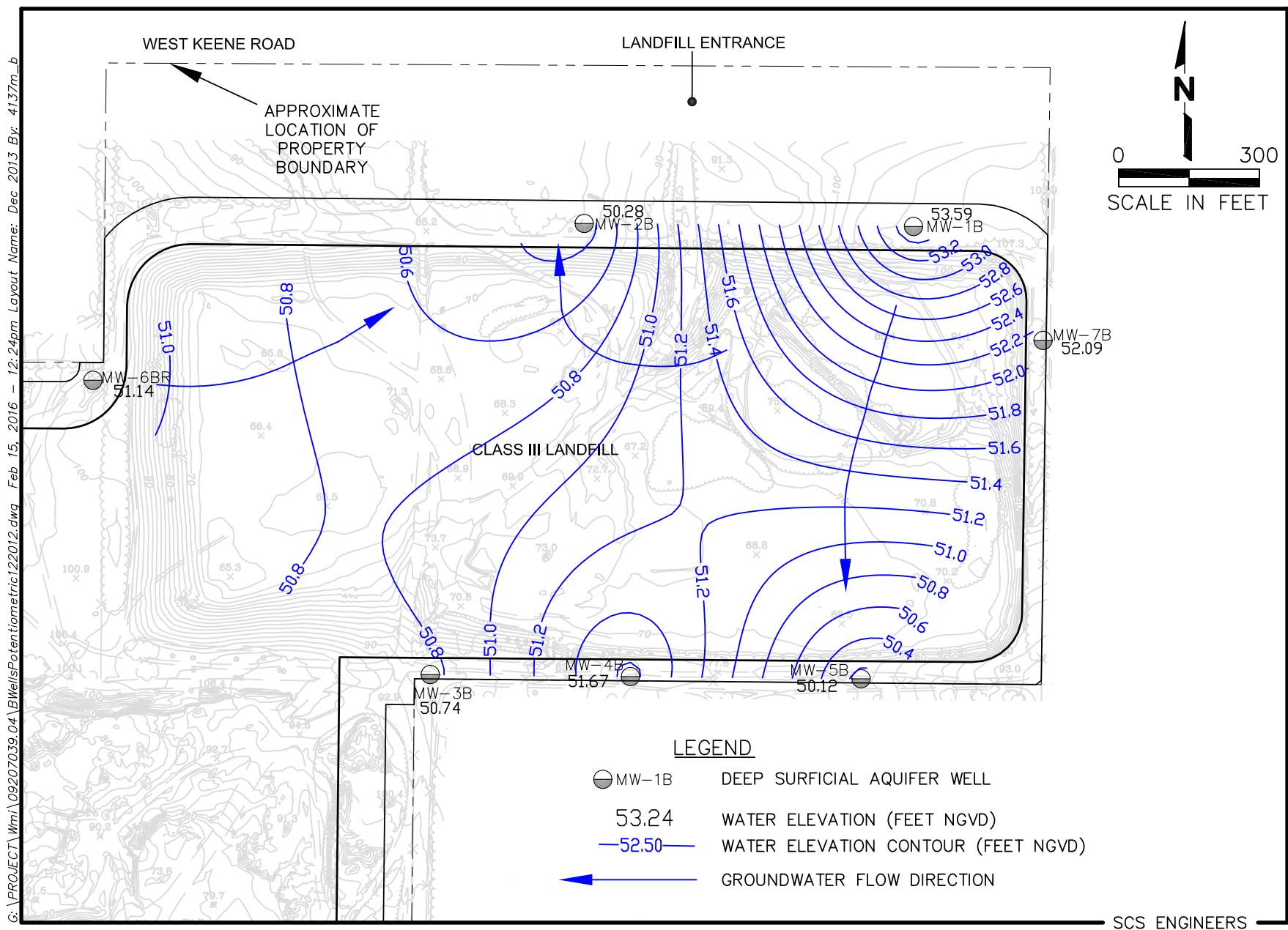
A-2. June 2014 Shallow Surficial Aquifer Water Level Map, Vista Landfill, Apopka, Florida.

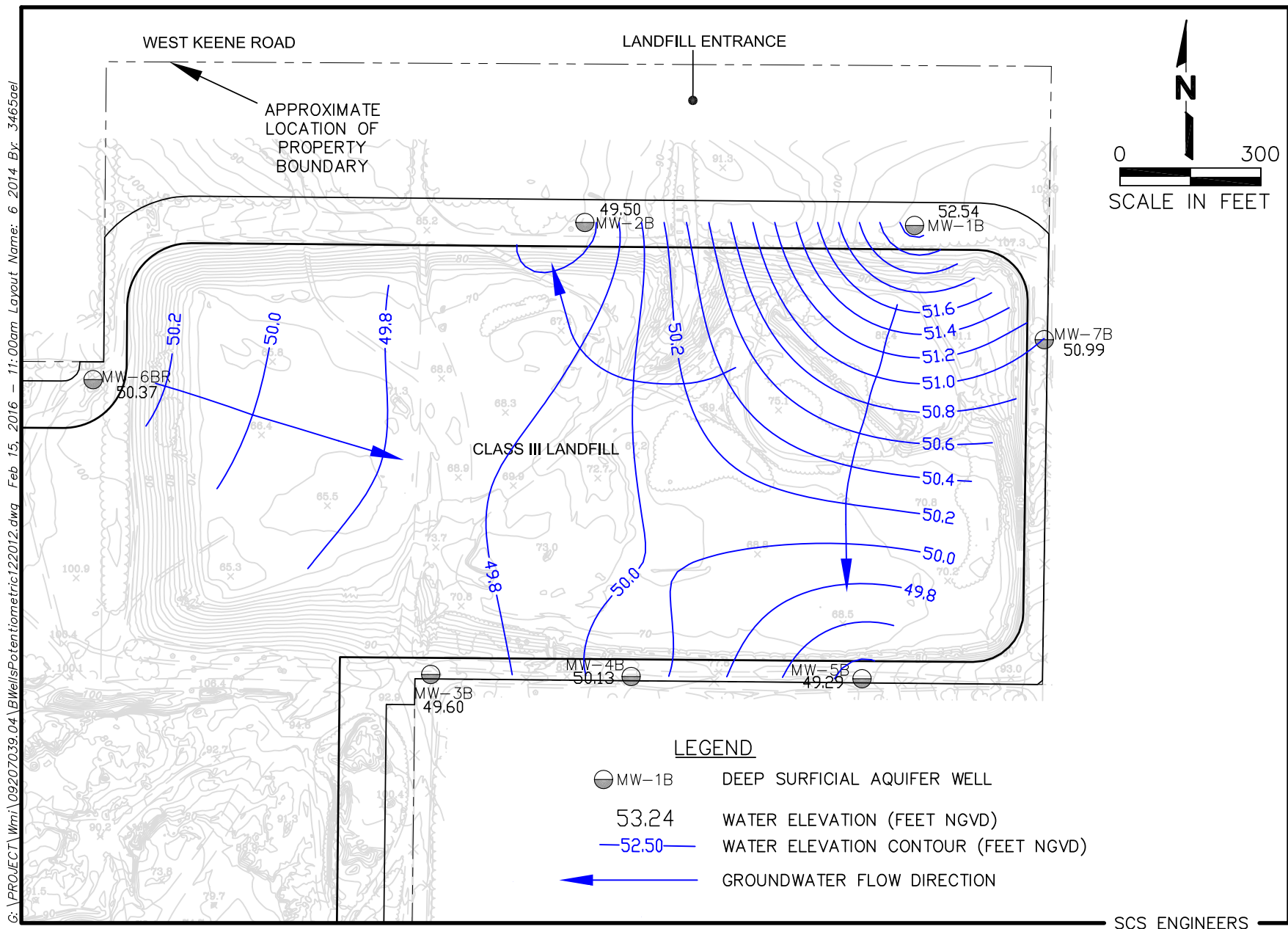


A-3. December 2014 Shallow Surficial Aquifer Water Level Map, Vista Landfill, Apopka, Florida.

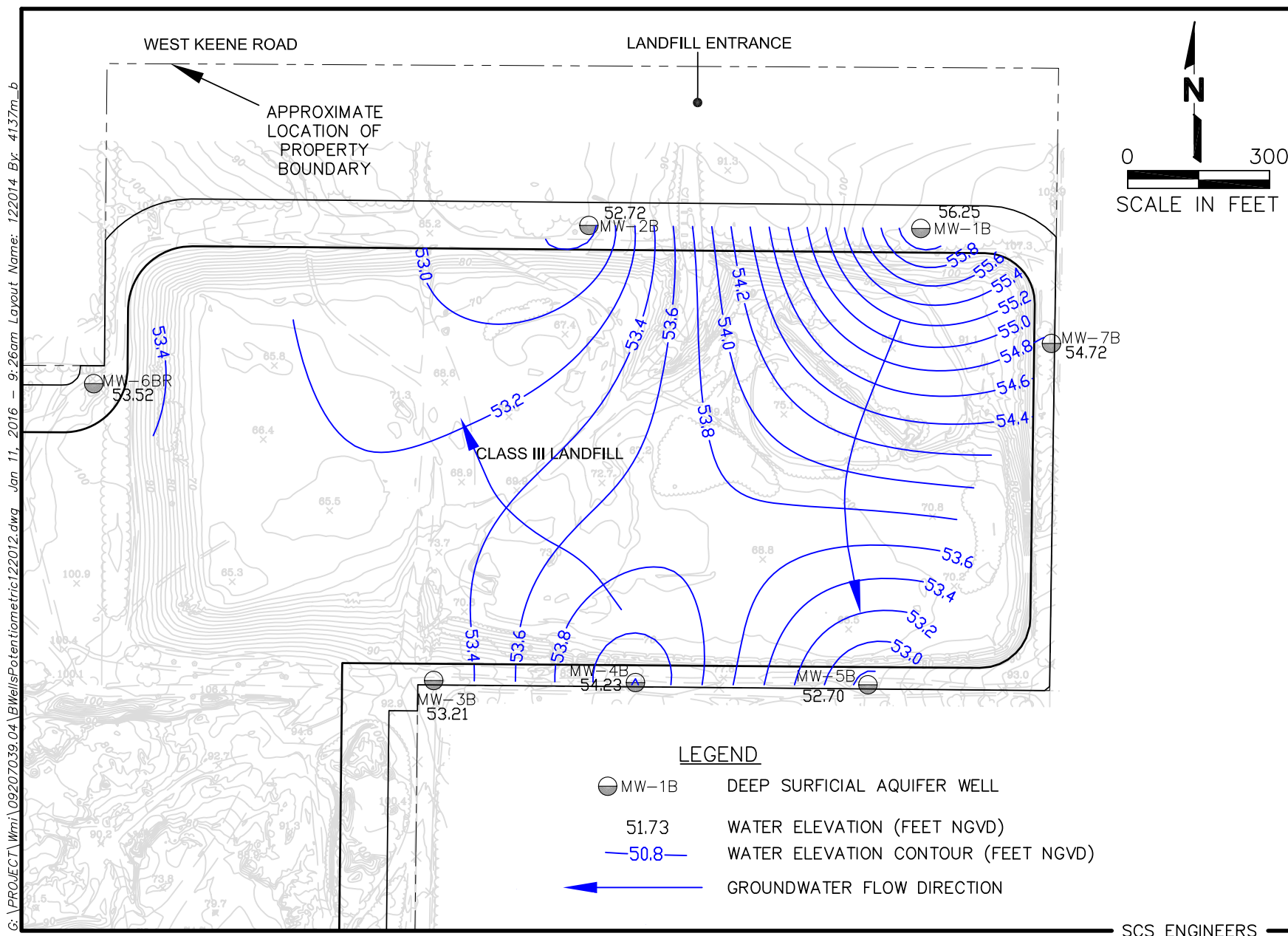


A-4. June 2015 Shallow Surficial Aquifer Water Level Map, Vista Landfill, Apopka, Florida.

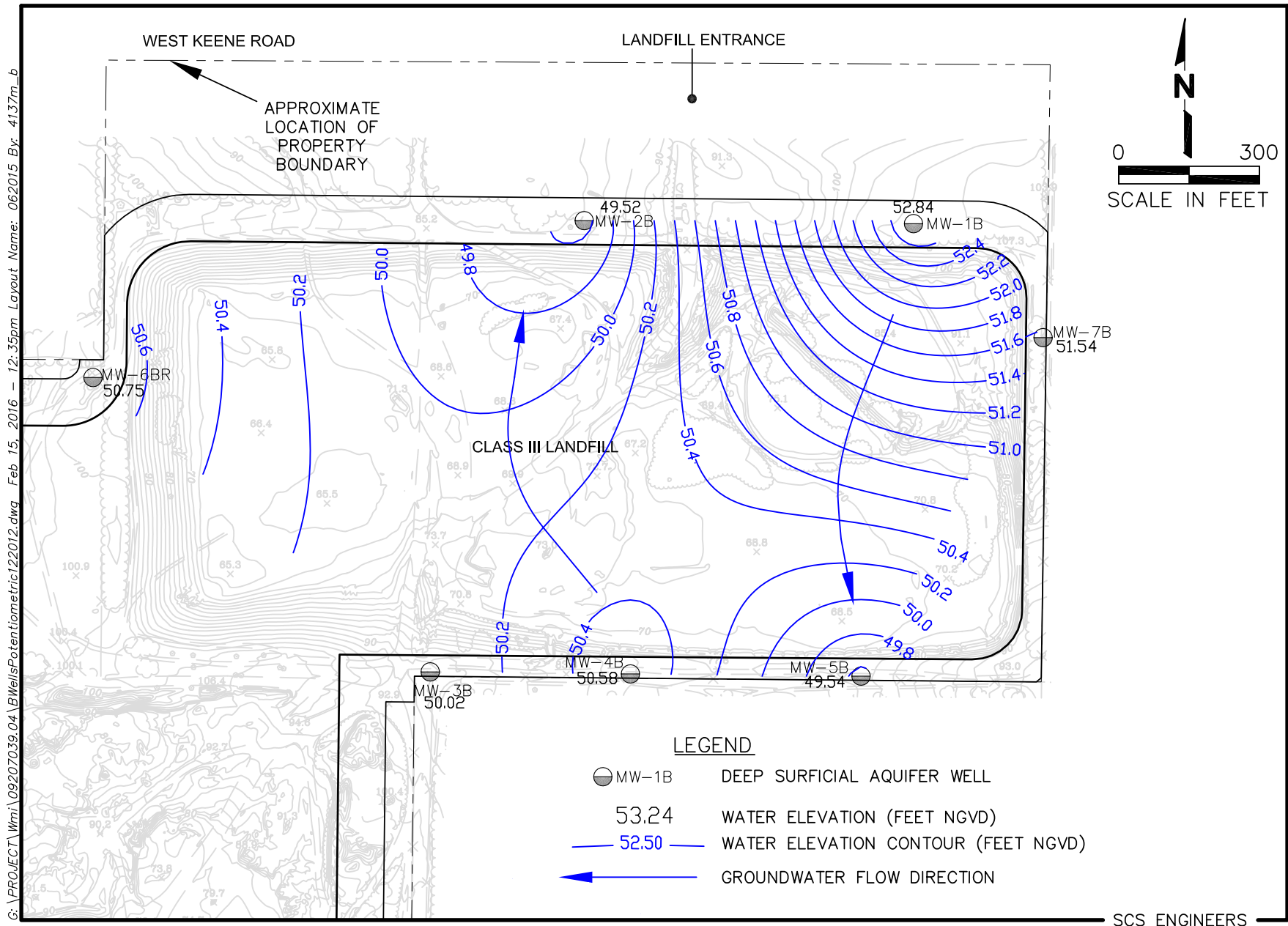




A-6. June 2014 Intermediate Surficial Aquifer Potentiometric Surface Map, Vista Landfill, Apopka, Florida.

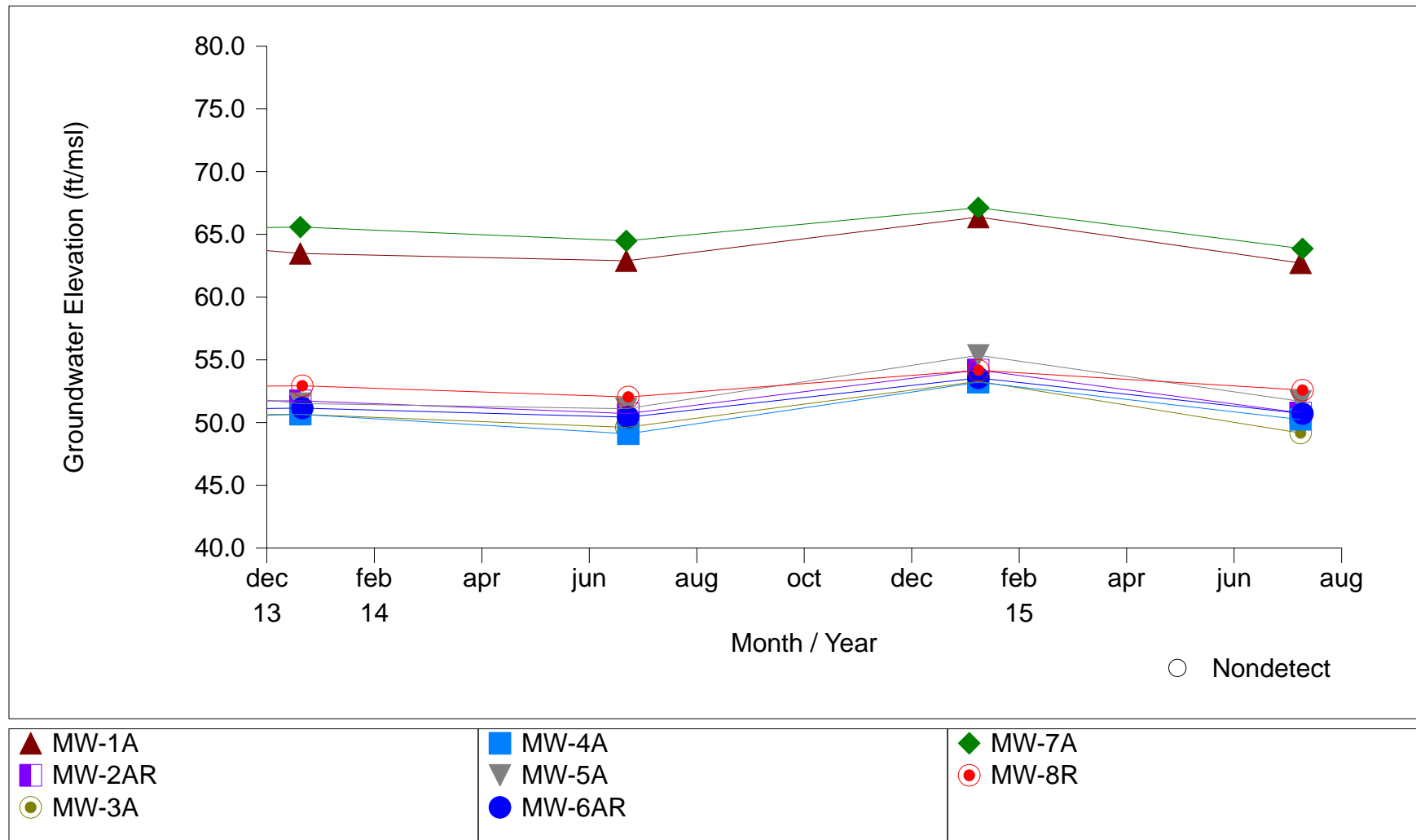


A-7. December 2014 Intermediate Surficial Aquifer Potentiometric Surface Map, Vista Landfill, Apopka, Florida.



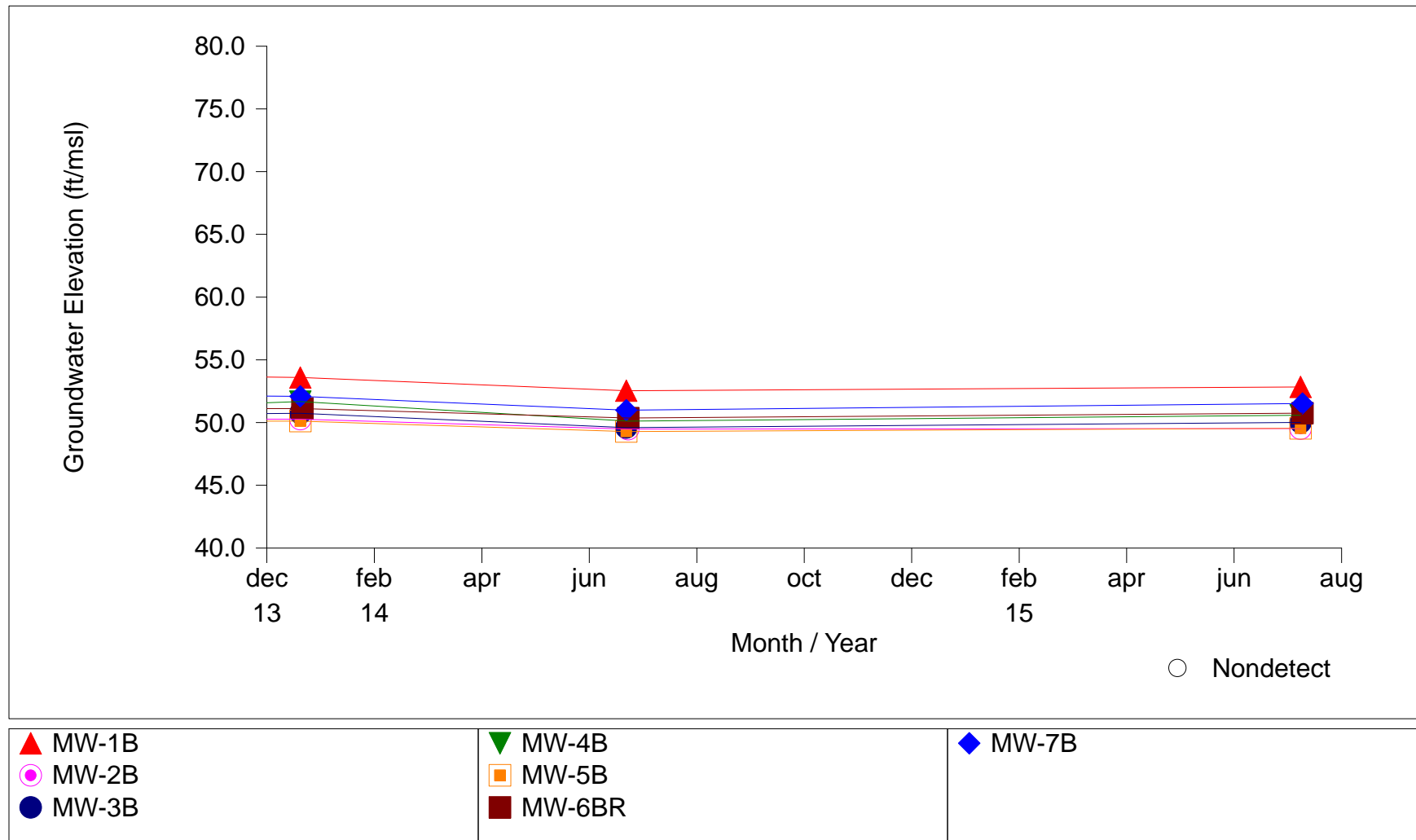
Vista Landfill

Figure A-9. Upper Surficial Time Series Plot for Groundwater Elevation



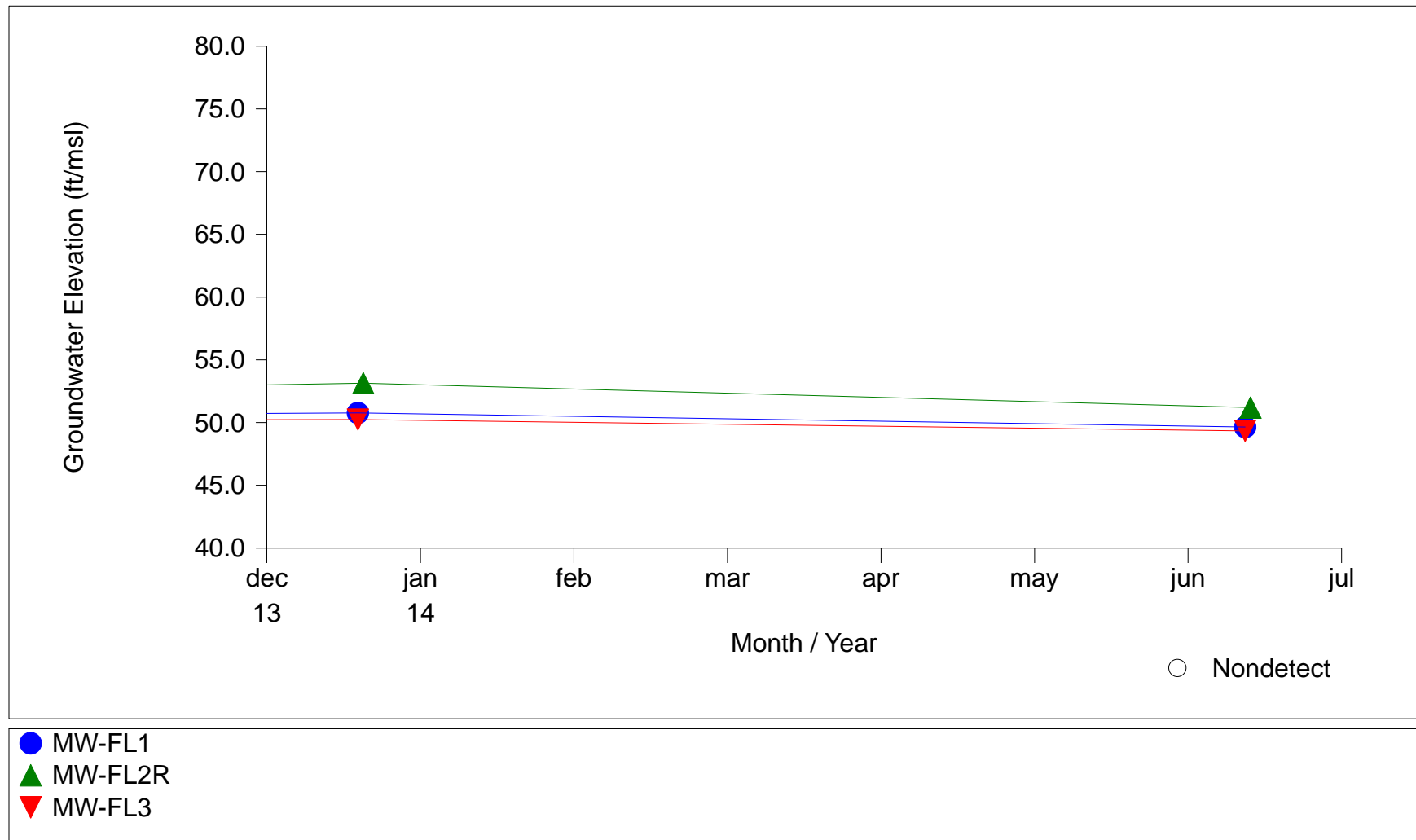
Vista Landfill

Figure A-10. Lower Surficial Time Series Plot for Groundwater Elevation



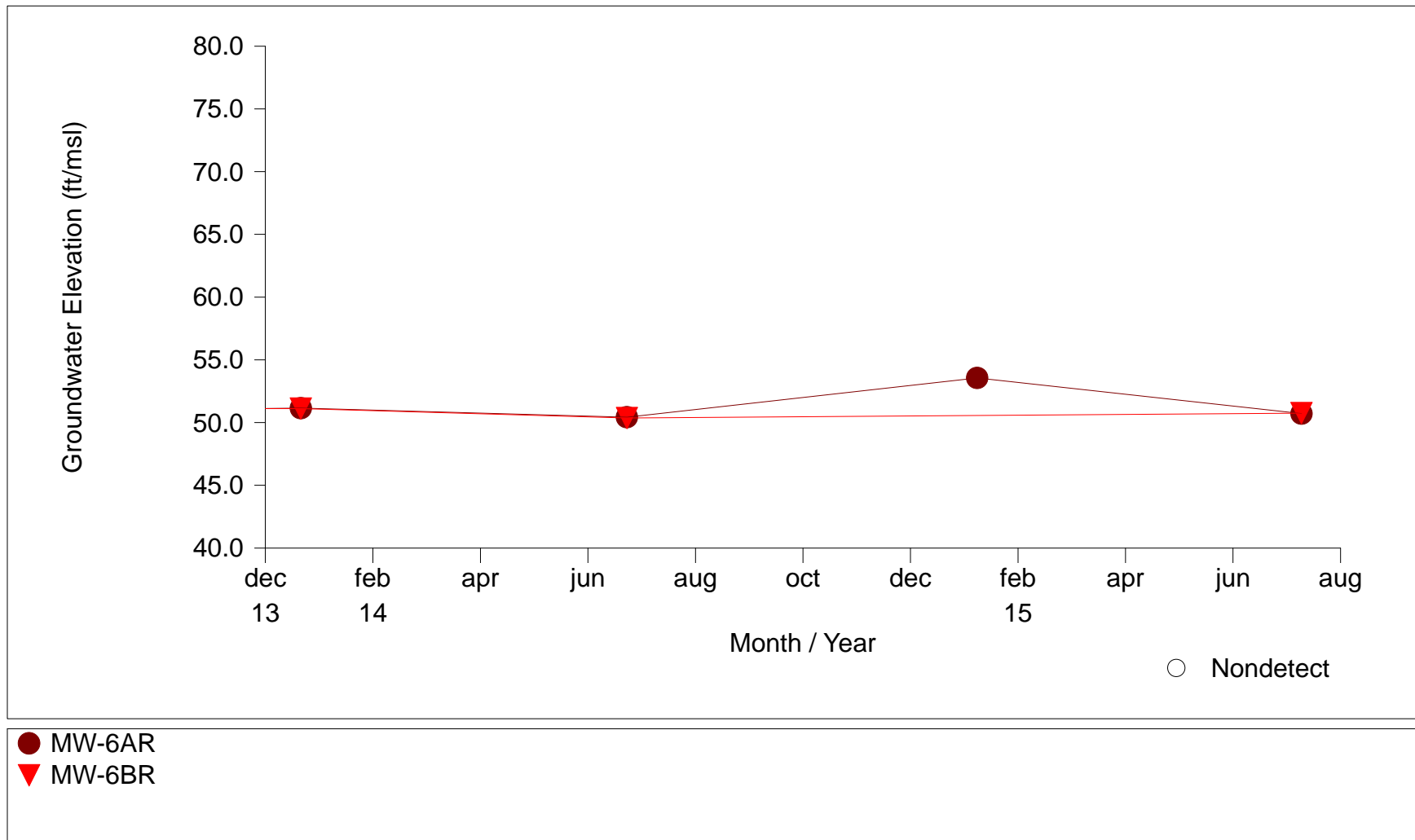
Vista Landfill

Figure A-11. Floridan Time Series Plot for Groundwater Elevation



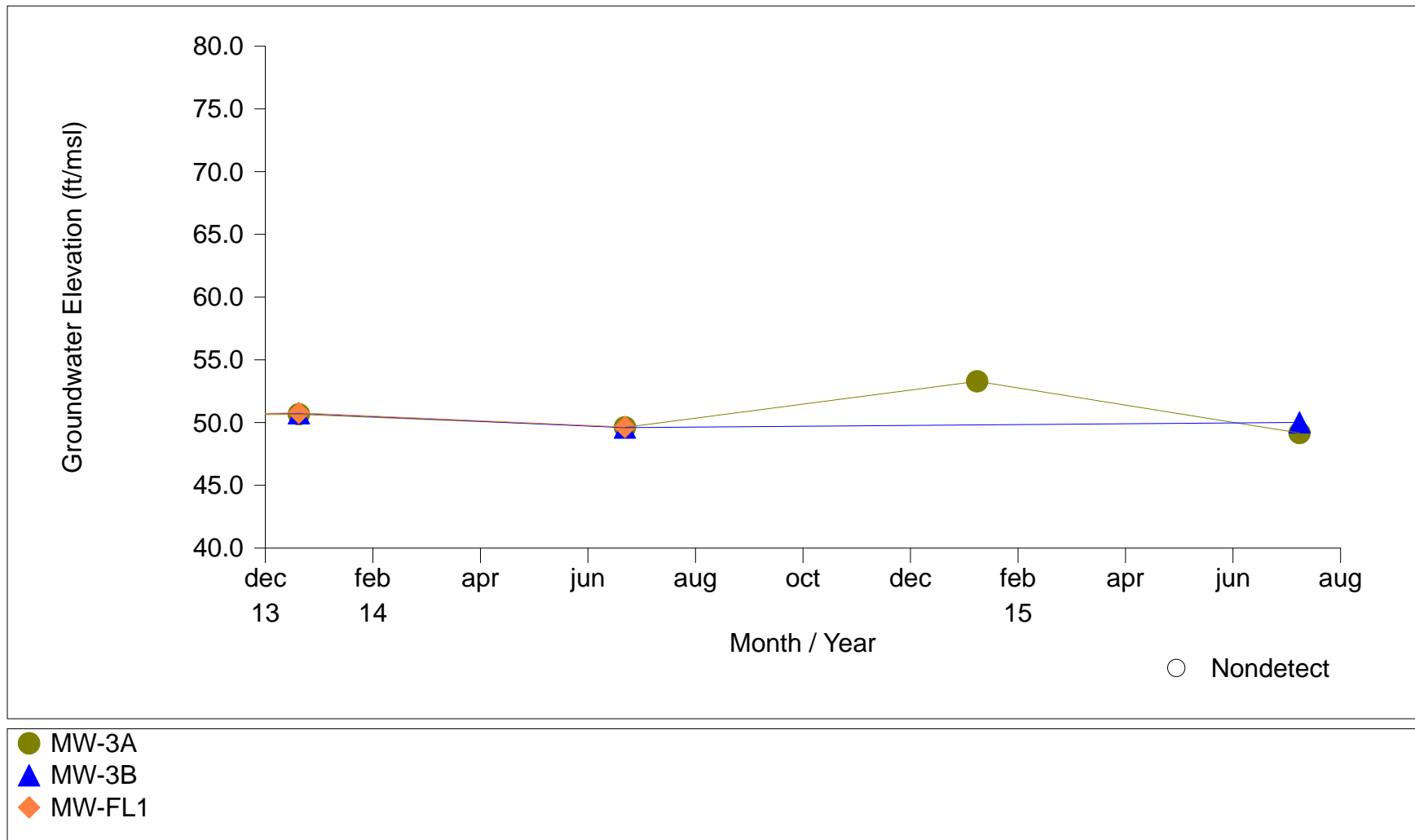
Vista Landfill

Figure A-12. MW-6AR and MW-6BR Time Series Plot for Groundwater Elevation



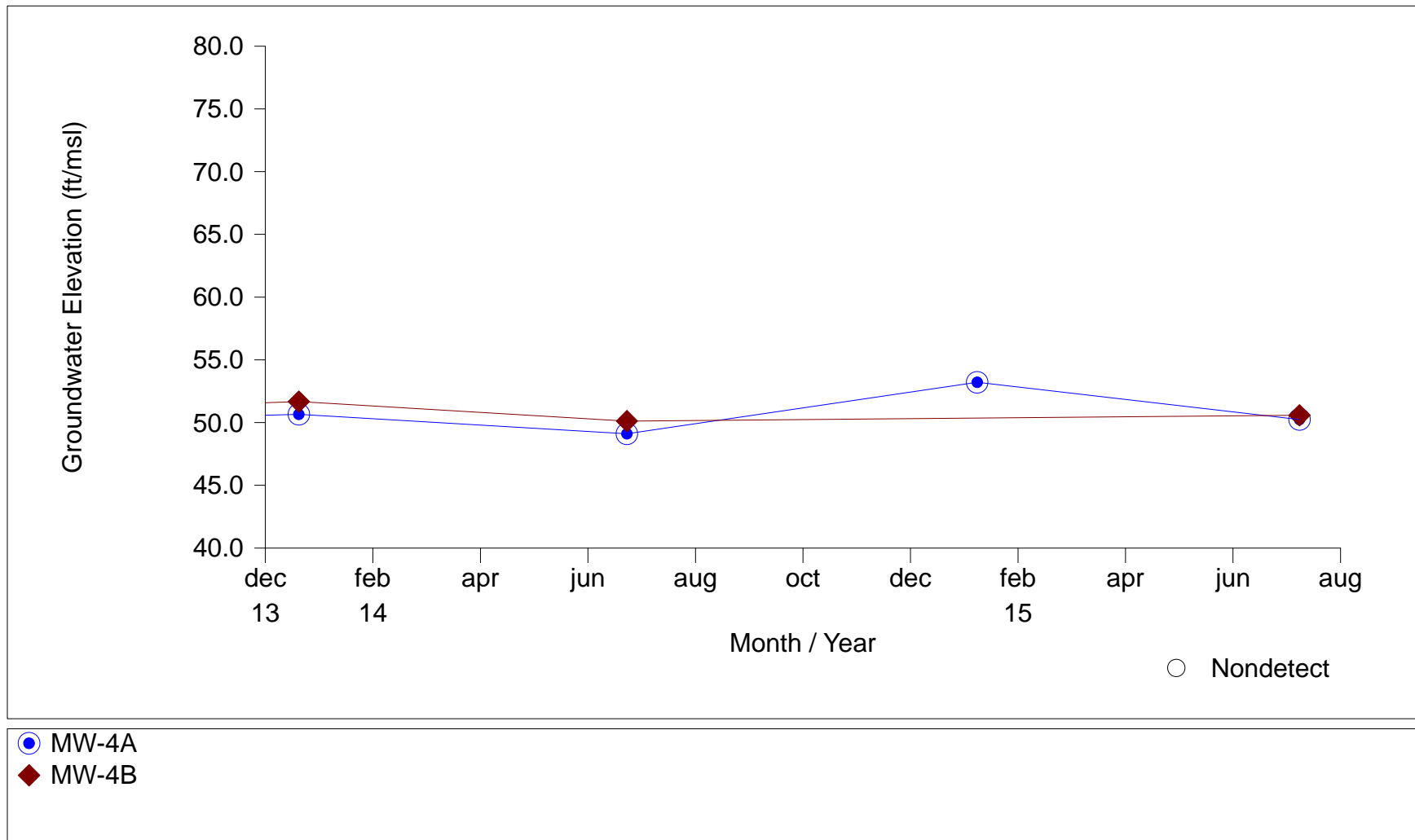
Vista Landfill

Figure A-13. MW-3A, MW-3B, and MW-FL1 Time Series Plot for Groundwater Elevation



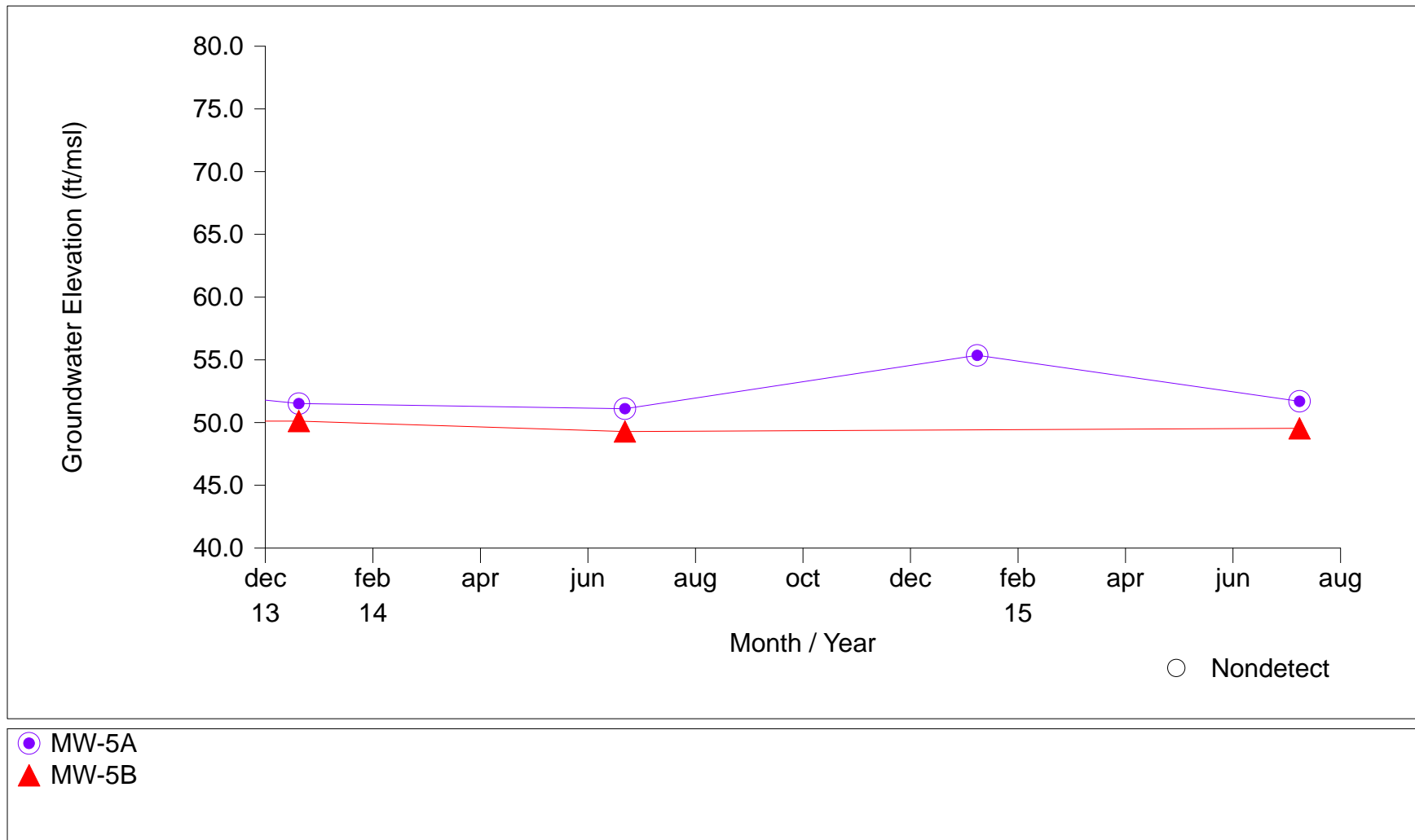
Vista Landfill

Figure A-14. MW-4A and MW-4B Time Series Plot for Groundwater Elevation



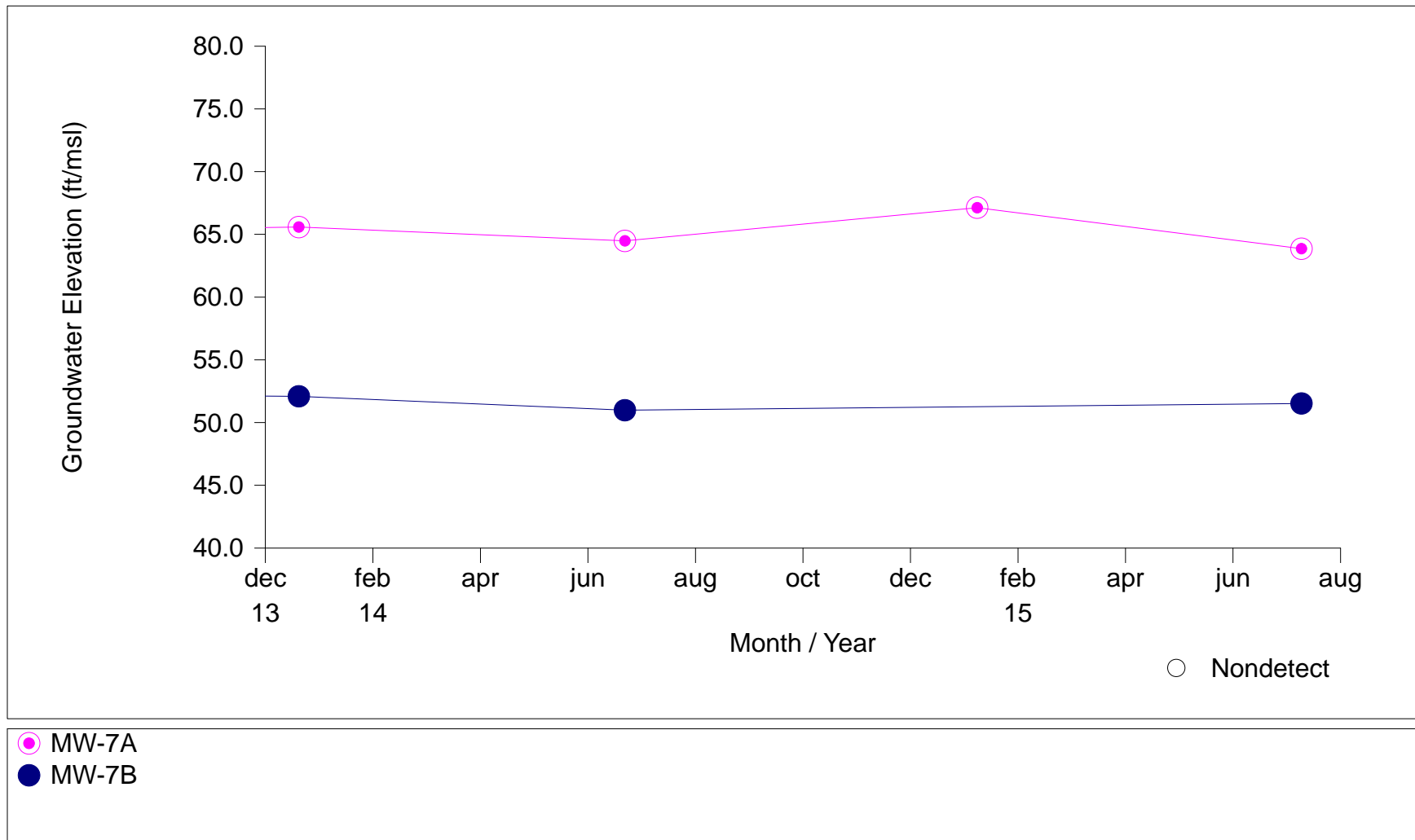
Vista Landfill

Figure A-15. MW-5A and MW-5B Time Series Plot for Groundwater Elevation



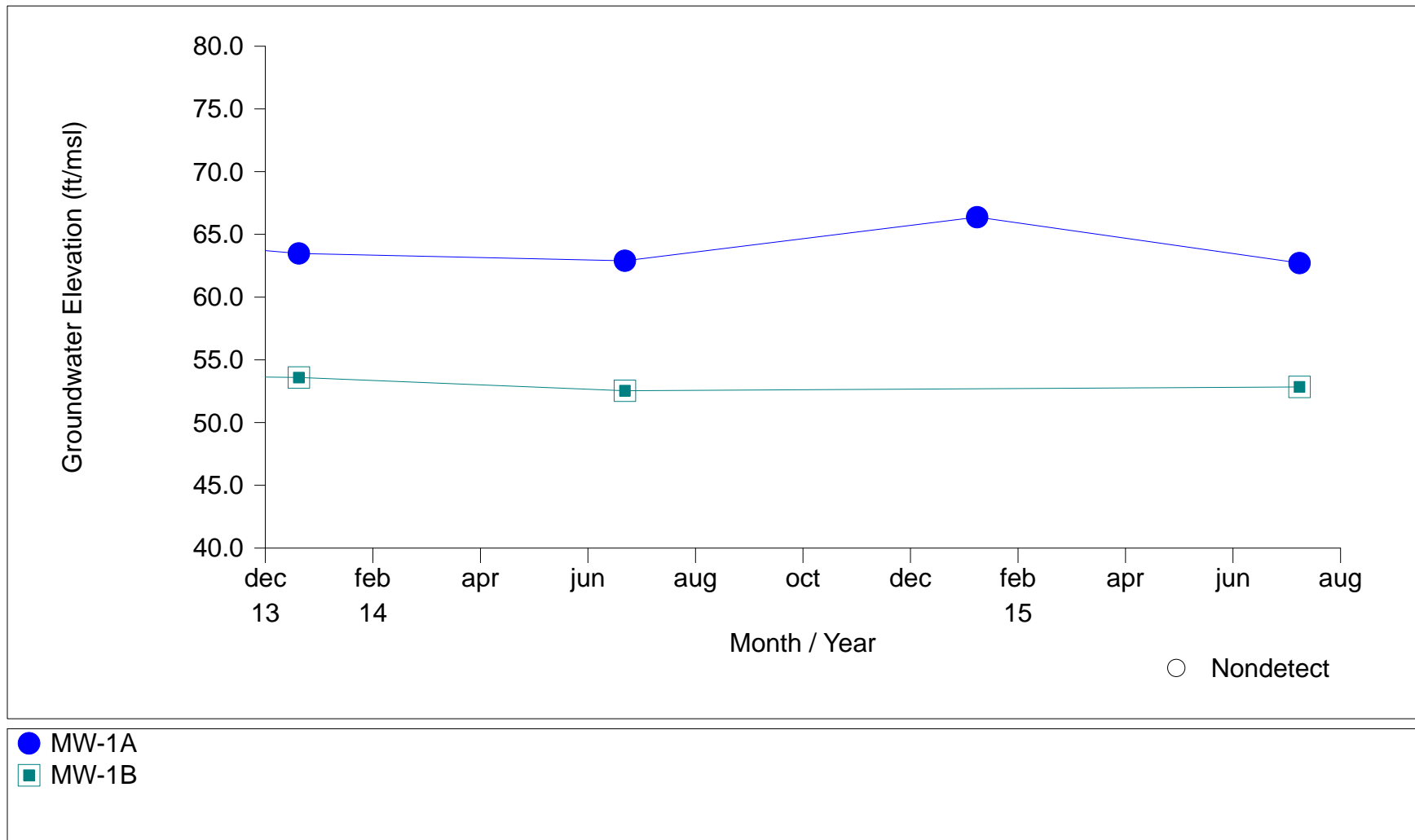
Vista Landfill

Figure A-16. MW-7A and MW-7B Time Series Plot for Groundwater Elevation



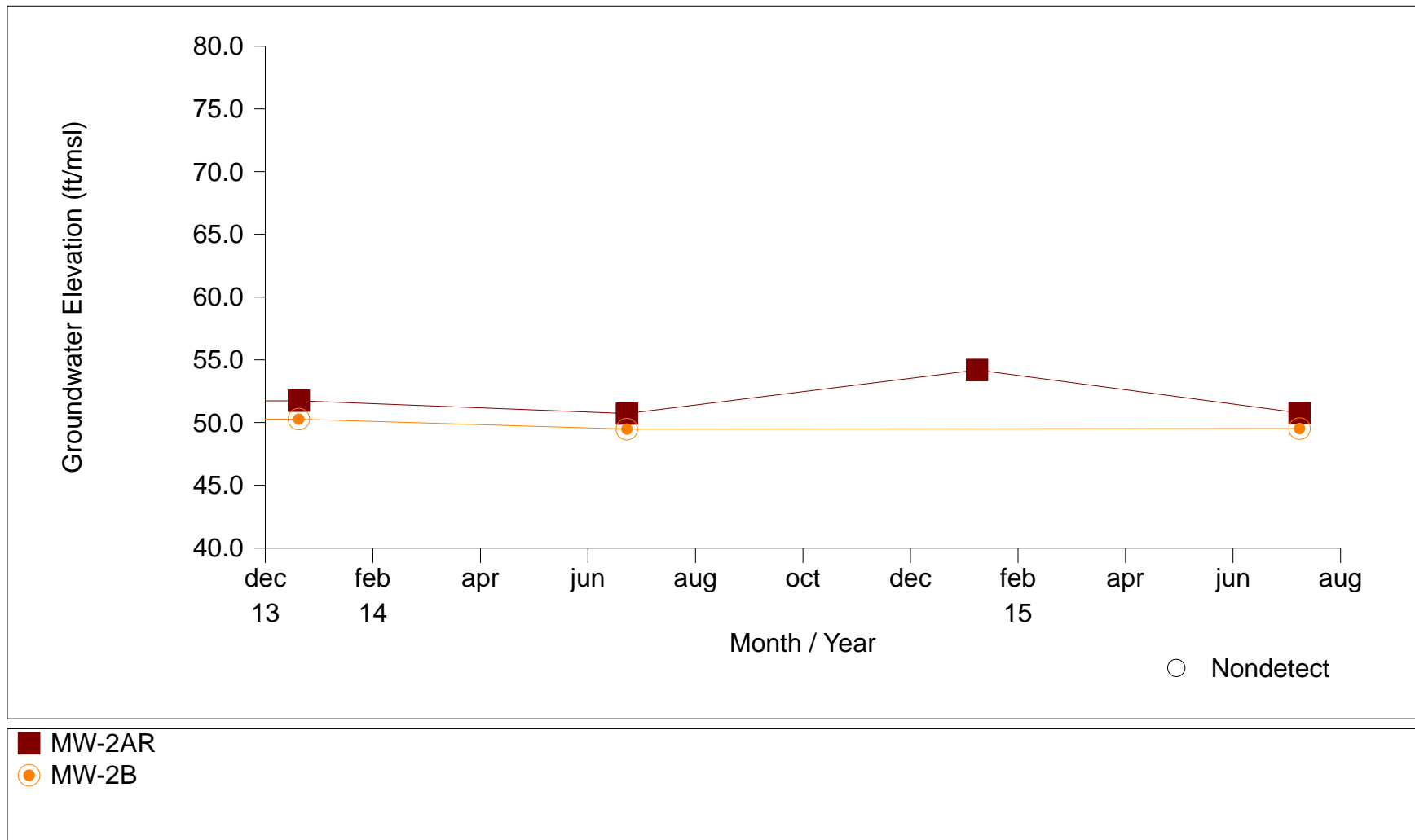
Vista Landfill

Figure A-17. MW-1A and MW-1B Time Series Plot for Groundwater Elevation



Vista Landfill

Figure A-18. MW-2AR and MW-2B Time Series Plot for Groundwater Elevation



APPENDIX B

TABLES OF EXCEEDANCES AND DETECTIONS

Summary of Detected Parameters, MW-1A

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	12/18/2014	6/9/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	1.9 U	4.3 I	1.9 U	1.9 I
Chloroform	GCTL	70	ug/L	0.16 U	0.17 I	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.36 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	38 I	240	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	22	26	24	23
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.5 U	0.71 I	0.54 I
Chromium	PDWS	100	ug/L	0.88 I	1.7 I	1.3 I	1.3 I
Cobalt	GCTL	140	ug/L	1.2 I	2.4 I	1.4 I	1.2 I
Copper	SDWS	1000	ug/L	1.7 IV	2.8 I	3.7 I	2.4 I
Iron	SDWS	300	ug/L	29 I	150	73 I	76 I
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	1.1 I	14	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	4.9 I	4.5 I	5.3 I	5 I
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	4.9 U	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.93 U	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	7.3	7.9	7.6	8
Thallium	PDWS	2	ug/L	0.054 I	0.055 IV	0.05 U	0.05 U
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	1.1 I	1.1 U
Zinc	SDWS	5000	ug/L	4.5 U	4.5 U	5.5 I	4.5 U
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	2.28 U	3.21	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U	0.022 U
Chloride	SDWS	250	mg/L	14	13	11	15
Nitrate (as N)	PDWS	10	mg/L	12	14	13 Q	13
Total Alkalinity	NS	NS	mg/L	110	---	99	100
Total Dissolved Solids	SDWS	500	mg/L	220	280	240	270
Field Parameters							
Conductivity	NS	NS	umhos/cm	376	412	410	421
Dissolved Oxygen	NS	NS	mg/L	0.7	0.7	0.7	0.6
Dissolved Oxygen	MPIS	20	% Sat.	8.16	8.16	8.16	7.13
Field pH	SDWS	6.5-8.5	SU	7.07	7.09	7.28	7.35
Field Temperature	NS	NS	Degrees C	23.4	23.4	23.1	23.5
Turbidity	NS	NS	NTU	3.45	2.85	2.29	3.04

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-1B

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	6/9/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	1.9 U	3.5 I	---
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	21 I	30 I	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	---
Arsenic	PDWS	10	ug/L	3.3 I	3.1 I	---
Barium	PDWS	2000	ug/L	8.2 IV	8.4 I	---
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	---
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	---
Chromium	PDWS	100	ug/L	0.66 U	0.66 U	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.4 U	1.6 I	---
Iron	SDWS	300	ug/L	22 U	22 U	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	1.7 I	0.64 I	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	2 I	1.4 I	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	0.95 I	---
Sodium	PDWS	160	mg/L	4.9	5.3	5.1
Thallium	PDWS	2	ug/L	0.05 U	0.05 U	---
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	---
Zinc	SDWS	5000	ug/L	9.6 I	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	6.55	3.09	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	0.11 I	0.19 I	0.19 I
Total Dissolved Solids	SDWS	500	mg/L	81	96	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	190	174	178
Dissolved Oxygen	NS	NS	mg/L	0	0	0
Dissolved Oxygen	MPIS	20	% Sat.	0	0	0
Field pH	SDWS	6.5-8.5	SU	7.6	7.63	7.68
Field Temperature	NS	NS	Degrees C	23.3	23.1	24
Turbidity	NS	NS	NTU	3.81	2.06	1.87

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-2AR

Parameter	Standard	MCL	Units	12/19/2013	6/13/2014	12/18/2014	6/9/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	1.9 I	1.9 U	1.9 U	1.9 U
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.3 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	200	1600	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.45 I	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	9.4 I	22	15	11 V
Beryllium	PDWS	4	ug/L	0.08 U	0.13 I	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	0.45 U	0.45 U
Chromium	PDWS	100	ug/L	0.72 I	5.4 I	3.2 I	1.1 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	2.1 I	1.4 U	1.4 U
Iron	SDWS	300	ug/L	63 I	550	350	130
Lead	PDWS	15	ug/L	2.6 U	2.6 I	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	2.9 I	23	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	1.3 U	1.3 U
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	6.9 I	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.93 U	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	2.3	2.2	1.6	2.1 V
Thallium	PDWS	2	ug/L	0.05 U	0.05 U	0.05 U	0.05 U
Vanadium	GCTL	49	ug/L	1.1 U	2.1 I	1.5 I	1.6 I
Zinc	SDWS	5000	ug/L	6.9 I	4.5 U	4.5 U	4.5 U
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	1.54	2.1	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 UJ	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	0.7	0.49 I	0.52	0.47 I
Total Dissolved Solids	SDWS	500	mg/L	5 I	22	18	24
Field Parameters							
Conductivity	NS	NS	umhos/cm	26	28	29	22
Dissolved Oxygen	NS	NS	mg/L	4.4	4.6	4.3	4.3
Dissolved Oxygen	MPIS	20	% Sat.	52.27	55.67	52.04	52.04
Field pH	SDWS	6.5-8.5	SU	5.27	5.23	5.1	5.14
Field Temperature	NS	NS	Degrees C	24.5	24.9	25.1	25
Turbidity	NS	NS	NTU	12.04	12.14	8.39	4.15

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-2B

Parameter	Standard	MCL	Units	12/19/2013	6/13/2014	6/9/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	1.9 U	6.5 I	---
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	120	130	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	---
Arsenic	PDWS	10	ug/L	0.33 U	0.34 I	---
Barium	PDWS	2000	ug/L	6.9 IV	6.5 IV	---
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	---
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	---
Chromium	PDWS	100	ug/L	1.2 I	1.3 I	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	---
Iron	SDWS	300	ug/L	57 I	46 I	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	0.68 I	0.84 IV	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	0.93 U	---
Sodium	PDWS	160	mg/L	4.7	4.9	4.5
Thallium	PDWS	2	ug/L	0.05 U	0.05 U	---
Vanadium	GCTL	49	ug/L	2.4 I	1.5 I	---
Zinc	SDWS	5000	ug/L	4.9 I	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	2.56	3.73	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 UJ	0.022 U
Nitrate (as N)	PDWS	10	mg/L	0.72	0.59	0.65
Total Dissolved Solids	SDWS	500	mg/L	56	78	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	137	138	143
Dissolved Oxygen	NS	NS	mg/L	0	0	0
Dissolved Oxygen	MPIS	20	% Sat.	0	0	0
Field pH	SDWS	6.5-8.5	SU	7.89	7.9	7.98
Field Temperature	NS	NS	Degrees C	24.3	24.7	24.8
Turbidity	NS	NS	NTU	4.85	2.8	3.56

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-3A

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	12/18/2014	6/9/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	1.9 U	1.9 U	1.9 U	3.5 I
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.44 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	600	460	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	59	49	55	51
Beryllium	PDWS	4	ug/L	0.13 I	0.08 U	0.15 I	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	0.45 U	0.5 I
Chromium	PDWS	100	ug/L	2.9 I	2.4 I	1.5 I	2 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	1.4 U	1.4 U
Iron	SDWS	300	ug/L	620	230	270	130
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	4.6 I	2.4 I	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	1.3 U	1.3 U
Selenium	PDWS	50	ug/L	4.9 I	4.9 U	4.9 U	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.99 I	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	2.6	3.3	2.2	3.1
Thallium	PDWS	2	ug/L	0.083 I	0.071 IV	0.065 I	0.052 I
Vanadium	GCTL	49	ug/L	2.5 I	1.4 I	2 I	2.3 I
Zinc	SDWS	5000	ug/L	8.3 I	4.5 U	13 I	4.5 U
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	16.4	6.95	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	2.9	2.5	2.6	2.6
Total Dissolved Solids	SDWS	500	mg/L	53	72	57	81
Field Parameters							
Conductivity	NS	NS	umhos/cm	94	98	102	103
Dissolved Oxygen	NS	NS	mg/L	4.2	4.1	3.9	3.9
Dissolved Oxygen	MPIS	20	% Sat.	48.03	49.62	46.33	47.2
Field pH	SDWS	6.5-8.5	SU	5.66	6.71	6.04	6.04
Field Temperature	NS	NS	Degrees C	22.3	24.7	24.2	24.7
Turbidity	NS	NS	NTU	3.61	3.44	3.06	3.19

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-3B

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	6/9/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	2.3 I	4.1 I	---
Chloroform	GCTL	70	ug/L	0.31 I	0.16 U	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	190	180	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	---
Arsenic	PDWS	10	ug/L	0.36 I	0.34 I	---
Barium	PDWS	2000	ug/L	74	66	---
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	---
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	---
Chromium	PDWS	100	ug/L	1.8 I	1.5 I	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.9 IV	1.4 U	---
Iron	SDWS	300	ug/L	92 I	97 I	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	3.9 I	6.6 I	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	1.2 I	---
Sodium	PDWS	160	mg/L	3.2	3.4	3.7
Thallium	PDWS	2	ug/L	0.097 I	0.1 IV	---
Vanadium	GCTL	49	ug/L	3 I	2.3 I	---
Zinc	SDWS	5000	ug/L	6.1 I	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	3.86	4.23	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 I
Nitrate (as N)	PDWS	10	mg/L	2.9	2.6	2.2
Total Dissolved Solids	SDWS	500	mg/L	87	100	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	195	183	207
Dissolved Oxygen	NS	NS	mg/L	2.4	2.5	2.5
Dissolved Oxygen	MPIS	20	% Sat.	27.44	29.7	29.7
Field pH	SDWS	6.5-8.5	SU	6.57	6.69	6.73
Field Temperature	NS	NS	Degrees C	22.3	24.2	24.3
Turbidity	NS	NS	NTU	3.6	3.5	4.16

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-4A

Parameter	Standard	MCL	Units	12/19/2013	6/13/2014	12/18/2014	6/9/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	2.4 I	3.5 I	1.9 U	1.9 U
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.47 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	52 I	48 I	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	22	21	20	21
Beryllium	PDWS	4	ug/L	0.11 I	0.14 I	0.12 I	0.18 I
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	0.45 U	0.49 I
Chromium	PDWS	100	ug/L	0.84 I	0.66 U	0.66 I	0.78 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	1.4 U	1.4 U
Iron	SDWS	300	ug/L	22 U	22 U	29 I	39 I
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	35	34	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	3.7 I	3.3 I	3.5 I	4 I
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	4.9 U	4.9 U
Silver	SDWS	100	ug/L	1.3 I	0.93 U	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	1.2	1.2	1.2	1.5 V
Thallium	PDWS	2	ug/L	0.05 U	0.05 U	0.05 U	0.05 U
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	1.1 U	1.1 U
Zinc	SDWS	5000	ug/L	360	270	340	310
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	0.377 U	1.04 U	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	0.72	0.81	0.83	1.4
Total Dissolved Solids	SDWS	500	mg/L	29	43	38	46
Field Parameters							
Conductivity	NS	NS	umhos/cm	62	66	63	66
Dissolved Oxygen	NS	NS	mg/L	0.6	0.4	0.4	0.4
Dissolved Oxygen	MPIS	20	% Sat.	7.26	4.84	4.84	4.75
Field pH	SDWS	6.5-8.5	SU	4.67	4.79	4.75	4.97
Field Temperature	NS	NS	Degrees C	24.8	24.9	24.8	24.5
Turbidity	NS	NS	NTU	3.91	2.92	2.05	1.73

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-4B

Parameter	Standard	MCL	Units	12/19/2013	6/13/2014	6/9/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	1.9 U	7.2 I	---
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	19 I	24 I	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	---
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	---
Barium	PDWS	2000	ug/L	9.8 I	9 IV	---
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	---
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	---
Chromium	PDWS	100	ug/L	0.66 U	0.66 U	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	---
Iron	SDWS	300	ug/L	22 U	22 U	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	7.9 I	8 I	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	2.3 I	1.5 I	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	1 IV	---
Sodium	PDWS	160	mg/L	1.2	1.4	1.5 V
Thallium	PDWS	2	ug/L	0.05 U	0.05 U	---
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	---
Zinc	SDWS	5000	ug/L	7.2 I	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	0.27 U	0.438 U	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 UJ	0.022 U
Nitrate (as N)	PDWS	10	mg/L	1.3	1	1
Total Dissolved Solids	SDWS	500	mg/L	9 I	25	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	32	32	32
Dissolved Oxygen	NS	NS	mg/L	0.5	0.6	0.6
Dissolved Oxygen	MPIS	20	% Sat.	6.05	7.26	7.26
Field pH	SDWS	6.5-8.5	SU	5.42	5.37	5.45
Field Temperature	NS	NS	Degrees C	24.6	24.8	25
Turbidity	NS	NS	NTU	3.62	2.71	3.48

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-5A

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	12/18/2014	6/9/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	4.2 I	4.9 I	1.9 U	1.9 I
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.43 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	97 I	60 I	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	38	46	36	39
Beryllium	PDWS	4	ug/L	0.088 I	0.08 U	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	0.45 U	0.45 U
Chromium	PDWS	100	ug/L	0.91 I	1.1 I	0.83 I	1.2 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	1.4 U	1.4 I
Iron	SDWS	300	ug/L	23 I	22 U	25 I	22 U
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	10	4.2 I	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	1.3 U	1.3 U
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	4.9 U	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.93 U	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	2	2.4	1.7	2.3 V
Thallium	PDWS	2	ug/L	0.05 U	0.11 IV	0.08 I	0.05 U
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	1.1 U	1.1 U
Zinc	SDWS	5000	ug/L	31	6.3 I	180	38
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	3.13	5.42	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	3.1	2.5	5.9	2.2
Total Dissolved Solids	SDWS	500	mg/L	26	46	54	40
Field Parameters							
Conductivity	NS	NS	umhos/cm	56	59	85	56
Dissolved Oxygen	NS	NS	mg/L	4	3.8	3.7	3.6
Dissolved Oxygen	MPIS	20	% Sat.	48.41	45.99	44.78	42.77
Field pH	SDWS	6.5-8.5	SU	4.56	4.59	4.62	4.66
Field Temperature	NS	NS	Degrees C	24.9	24.7	24.6	24.3
Turbidity	NS	NS	NTU	3.62	3.87	3.92	2.22

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-5B

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	6/9/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	1.9 U	1.9 U	---
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	77 I	280	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	---
Arsenic	PDWS	10	ug/L	5.3	6	---
Barium	PDWS	2000	ug/L	10	12	---
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	---
Cadmium	PDWS	5	ug/L	0.45 U	0.45 U	---
Chromium	PDWS	100	ug/L	0.66 U	0.72 I	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	---
Iron	SDWS	300	ug/L	26 I	110	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	1.7 I	3.9 I	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	0.93 I	---
Sodium	PDWS	160	mg/L	4.3	4.4	4
Thallium	PDWS	2	ug/L	0.12 I	0.12 IV	---
Vanadium	GCTL	49	ug/L	1.4 I	1.1 U	---
Zinc	SDWS	5000	ug/L	5 I	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	5.23	14.1	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	0.82	0.56	0.42 I
Total Dissolved Solids	SDWS	500	mg/L	100	130	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	217	215	221
Dissolved Oxygen	NS	NS	mg/L	0	0	0
Dissolved Oxygen	MPIS	20	% Sat.	0	0	0
Field pH	SDWS	6.5-8.5	SU	7.36	7.57	7.71
Field Temperature	NS	NS	Degrees C	24.5	24.7	24.6
Turbidity	NS	NS	NTU	4.41	4.55	4.9

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-6AR

Parameter	Standard	MCL	Units	12/20/2013	6/13/2014	12/18/2014	6/10/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	1.9 U	5.6 I	1.9 U	1.9 U
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.42 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	150	120	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	25	25	24	25
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	1.9 IV	0.45 UJ	0.61 I	0.45 U
Chromium	PDWS	100	ug/L	1.4 I	1.1 I	1.1 I	0.77 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	2.8 I	2.2 I	1.4 U
Iron	SDWS	300	ug/L	73 I	55 I	22 U	22 U
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	6.6 I	7.2 I	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.039 I	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	1.6 I	1.3 U	1.3 U
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	4.9 U	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.93 U	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	12	12	11	10
Thallium	PDWS	2	ug/L	0.05 U	0.052 I	0.063 I	0.05 U
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	1.1 U	1.1 U
Zinc	SDWS	5000	ug/L	7.1 IV	4.5 U	4.5 I	4.5 U
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	6.09	3.73	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.023 I	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	12 Q	14 Q	13 Q	13
Total Dissolved Solids	SDWS	500	mg/L	140	150	130	150
Field Parameters							
Conductivity	NS	NS	umhos/cm	208	232	213	217
Dissolved Oxygen	NS	NS	mg/L	3.5	3.4	3.2	3.2
Dissolved Oxygen	MPIS	20	% Sat.	41.58	41.15	38.01	38.01
Field pH	SDWS	6.5-8.5	SU	5.02	5.2	5.26	5.26
Field Temperature	NS	NS	Degrees C	24.1	24.8	24.2	24.5
Turbidity	NS	NS	NTU	3.42	5.53	4.62	3.14

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-6BR

Parameter	Standard	MCL	Units	12/20/2013	6/13/2014	6/10/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	1.9 U	4.8 I	---
Chloroform	GCTL	70	ug/L	0.45 I	0.58 I	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	320	190	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	---
Arsenic	PDWS	10	ug/L	1 I	1 I	---
Barium	PDWS	2000	ug/L	10	9.7 I	---
Beryllium	PDWS	4	ug/L	0.08 U	0.089 I	---
Cadmium	PDWS	5	ug/L	1.6 IV	0.45 UJ	---
Chromium	PDWS	100	ug/L	13	7.6 I	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.4 U	1.5 I	---
Iron	SDWS	300	ug/L	340	160	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	21	15	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	2 I	2 I	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	0.93 U	---
Sodium	PDWS	160	mg/L	8.2	8.5	7.5
Thallium	PDWS	2	ug/L	0.16 I	0.25 I	---
Vanadium	GCTL	49	ug/L	3.7 I	2.6 I	---
Zinc	SDWS	5000	ug/L	6.1 IV	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	1.57 U	1.85 U	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	4.2	4.3	3.8
Total Dissolved Solids	SDWS	500	mg/L	160	180	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	291	301	300
Dissolved Oxygen	NS	NS	mg/L	1.5	1.3	1.1
Dissolved Oxygen	MPIS	20	% Sat.	17.82	15.44	13.07
Field pH	SDWS	6.5-8.5	SU	7.74	7.83	7.83
Field Temperature	NS	NS	Degrees C	24	23.8	23.9
Turbidity	NS	NS	NTU	4.26	3.59	3.27

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-7A

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	12/18/2014	6/10/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	4.4 I	6.6 I	1.9 U	1.9 U
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.36 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	34 I	60 I	---	---
Antimony	PDWS	6	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.33 U	0.33 U	0.33 U	0.33 U
Barium	PDWS	2000	ug/L	15	15	14	17
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	0.45 U	0.45 U
Chromium	PDWS	100	ug/L	1.4 I	1.8 I	1.3 I	2.7 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	2.1 I	4.3 I	2.1 I
Iron	SDWS	300	ug/L	87 I	96 I	42 I	150
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	1 I	2.3 I	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	2.7 I	2.6 I	3.7 I	3 I
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	5.9 I	4.9 U
Silver	SDWS	100	ug/L	0.93 U	1 I	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	6.3	6.4	6.4	6.5
Thallium	PDWS	2	ug/L	0.087 I	0.13 IV	0.076 I	0.07 I
Vanadium	GCTL	49	ug/L	1.3 I	1.1 U	1.1 U	1.1 U
Zinc	SDWS	5000	ug/L	4.5 U	4.5 U	4.5 U	4.5 U
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	2.87 UG	2.77	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.022 U	0.025 I
Nitrate (as N)	PDWS	10	mg/L	13	12 Q	13 Q	13
Total Dissolved Solids	SDWS	500	mg/L	190	210	210	230
Field Parameters							
Conductivity	NS	NS	umhos/cm	310	321	334	327
Dissolved Oxygen	NS	NS	mg/L	0.9	0.8	0.6	0.7
Dissolved Oxygen	MPIS	20	% Sat.	10.69	9.5	6.99	8.32
Field pH	SDWS	6.5-8.5	SU	7.13	7.06	7.06	7.44
Field Temperature	NS	NS	Degrees C	23.7	23.9	23.2	23.5
Turbidity	NS	NS	NTU	1.97	2.7	2.19	4.3

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. G = Sample MDC is greater than requested RL.
20. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-7B

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014	6/10/2015
Volatile Organic Compounds						
Acetone	GCTL	6300	ug/L	1.9 U	5.5 I	---
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	---
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	---
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	---
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	---
Metals						
Aluminum	SDWS	200	ug/L	51 I	78 I	---
Antimony	PDWS	6	ug/L	0.4 U	0.69 I	---
Arsenic	PDWS	10	ug/L	0.67 I	0.62 I	---
Barium	PDWS	2000	ug/L	3.9 IV	3.7 I	---
Beryllium	PDWS	4	ug/L	0.08 U	0.23 I	---
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ	---
Chromium	PDWS	100	ug/L	0.66 U	0.66 U	---
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	---
Copper	SDWS	1000	ug/L	1.4 U	1.4 U	---
Iron	SDWS	300	ug/L	22 U	35 I	---
Lead	PDWS	15	ug/L	2.6 U	2.6 U	---
Manganese	SDWS	50	ug/L	0.75 I	0.88 I	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	---
Nickel	PDWS	100	ug/L	1.3 U	1.3 U	---
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	---
Silver	SDWS	100	ug/L	0.93 U	0.93 U	---
Sodium	PDWS	160	mg/L	6.6	6.7	6.7
Thallium	PDWS	2	ug/L	0.05 U	0.29 IV	---
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U	---
Zinc	SDWS	5000	ug/L	4.6 I	4.5 U	---
Radiochemistry						
Gross Alpha	PDWS	15	pCi/L	0.898 U	2.03	---
General Chemistry						
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 U	0.024 I
Nitrate (as N)	PDWS	10	mg/L	0.053 I	0.099 I	0.06 I
Total Dissolved Solids	SDWS	500	mg/L	61	79	---
Field Parameters						
Conductivity	NS	NS	umhos/cm	138	140	145
Dissolved Oxygen	NS	NS	mg/L	0.3	0.1	0.1
Dissolved Oxygen	MPIS	20	% Sat.	3.5	1.17	1.17
Field pH	SDWS	6.5-8.5	SU	6.98	7.24	7.61
Field Temperature	NS	NS	Degrees C	23.4	23.4	23.4
Turbidity	NS	NS	NTU	3.71	3.72	8.01

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-8R

Parameter	Standard	MCL	Units	12/20/2013	6/13/2014	12/18/2014	6/10/2015
Volatile Organic Compounds							
Acetone	GCTL	6300	ug/L	1.9 U	1.9 U	1.9 U	1.9 U
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U	0.35 I	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U	0.17 U	0.17 U
Metals							
Aluminum	SDWS	200	ug/L	100	290	---	---
Antimony	PDWS	6	ug/L	0.51 I	2.3	0.67 I	5.5
Arsenic	PDWS	10	ug/L	0.51 I	0.54 I	0.66 I	0.68 I
Barium	PDWS	2000	ug/L	9.4 I	10	12	17
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.87 IV	0.45 UJ	0.45 U	0.45 U
Chromium	PDWS	100	ug/L	2 I	2.2 I	2 I	2.1 I
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.5 I	5.7 I	1.7 I	5.2 I
Iron	SDWS	300	ug/L	78 I	220	160	210
Lead	PDWS	15	ug/L	2.6 U	2.6 U	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	0.74 I	2.6 IV	---	---
Mercury	PDWS	2	ug/L	0.027 U	0.027 U	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	2.2 I	1.3 U	2.6 I
Selenium	PDWS	50	ug/L	4.9 U	4.9 U	4.9 U	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.93 U	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	12	11	13	11
Thallium	PDWS	2	ug/L	0.05 U	0.05 U	0.05 U	0.05 U
Vanadium	GCTL	49	ug/L	1.1 U	1.5 I	1.9 I	1.7 I
Zinc	SDWS	5000	ug/L	6.1 IV	9.6 I	4.5 I	26
Radiochemistry							
Gross Alpha	PDWS	15	pCi/L	2.52	4.88	---	---
General Chemistry							
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 UJ	0.022 U	0.022 U
Nitrate (as N)	PDWS	10	mg/L	1.3	1.2	1.5	1.8
Total Dissolved Solids	SDWS	500	mg/L	110	88	97	100
Field Parameters							
Conductivity	NS	NS	umhos/cm	158	189	183	184
Dissolved Oxygen	NS	NS	mg/L	2.2	2	2.3	1.9
Dissolved Oxygen	MPIS	20	% Sat.	26.13	23.76	27.32	22.57
Field pH	SDWS	6.5-8.5	SU	6.5	6.41	6.45	6.44
Field Temperature	NS	NS	Degrees C	24.2	24.3	24.5	24.5
Turbidity	NS	NS	NTU	8.88	6.16	4.81	4.65

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-FL1

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014
Volatile Organic Compounds					
Acetone	GCTL	6300	ug/L	3.8 I	1.9 U
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.18 I	0.17 U
Metals					
Aluminum	SDWS	200	ug/L	18 U	62 I
Antimony	PDWS	6	ug/L	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.36 I	0.33 U
Barium	PDWS	2000	ug/L	28	32
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.45 U
Chromium	PDWS	100	ug/L	0.66 U	0.66 U
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	1.7 I
Iron	SDWS	300	ug/L	22 U	51 I
Lead	PDWS	15	ug/L	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	13	7.9 I
Mercury	PDWS	2	ug/L	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.8 I	1.3 U
Selenium	PDWS	50	ug/L	4.9 U	4.9 U
Silver	SDWS	100	ug/L	1 I	1.1 I
Sodium	PDWS	160	mg/L	11	8.9
Thallium	PDWS	2	ug/L	0.17 I	0.15 IV
Vanadium	GCTL	49	ug/L	1.8 I	1.5 I
Zinc	SDWS	5000	ug/L	5.9 I	4.5 U
Radiochemistry					
Gross Alpha	PDWS	15	pCi/L	5.03	1.81
General Chemistry					
Ammonia as N	GCTL	2.8	mg/L	0.03 I	0.022 U
Nitrate (as N)	PDWS	10	mg/L	1.7	1.5
Total Dissolved Solids	SDWS	500	mg/L	140	180
Field Parameters					
Conductivity	NS	NS	umhos/cm	296	325
Dissolved Oxygen	NS	NS	mg/L	0.4	0.3
Dissolved Oxygen	MPIS	20	% Sat.	4.49	3.56
Field pH	SDWS	6.5-8.5	SU	6.68	6.91
Field Temperature	NS	NS	Degrees C	21.4	23.7
Turbidity	NS	NS	NTU	6.13	7.78

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-FL2R

Parameter	Standard	MCL	Units	12/20/2013	6/13/2014
Volatile Organic Compounds					
Acetone	GCTL	6300	ug/L	1.9 U	12 I
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U
Metals					
Aluminum	SDWS	200	ug/L	1900	990
Antimony	PDWS	6	ug/L	0.73 I	0.83 I
Arsenic	PDWS	10	ug/L	2.4 I	1.4 I
Barium	PDWS	2000	ug/L	14	9.7 I
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	1.1 IV	0.45 UJ
Chromium	PDWS	100	ug/L	17	20
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	2.3 I	1.6 I
Iron	SDWS	300	ug/L	340	26 I
Lead	PDWS	15	ug/L	2.6 U	3.2 I
Manganese	SDWS	50	ug/L	2.9 I	0.48 IV
Mercury	PDWS	2	ug/L	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	1.3 U
Selenium	PDWS	50	ug/L	4.9 U	7.5 I
Silver	SDWS	100	ug/L	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	2	1.7
Thallium	PDWS	2	ug/L	0.05 U	0.05 U
Vanadium	GCTL	49	ug/L	18	15
Zinc	SDWS	5000	ug/L	7.6 IV	4.5 U
Radiochemistry					
Gross Alpha	PDWS	15	pCi/L	0.811 U	1.05 U
General Chemistry					
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.022 UJ
Nitrate (as N)	PDWS	10	mg/L	0.34 I	0.73
Total Dissolved Solids	SDWS	500	mg/L	110	120
Field Parameters					
Conductivity	NS	NS	umhos/cm	157	147
Dissolved Oxygen	NS	NS	mg/L	1.5	1.2
Dissolved Oxygen	MPIS	20	% Sat.	17.82	14.26
Field pH	SDWS	6.5-8.5	SU	10.05	9.35
Field Temperature	NS	NS	Degrees C	24.1	23.9
Turbidity	NS	NS	NTU	6.08	5

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

Summary of Detected Parameters, MW-FL3

Parameter	Standard	MCL	Units	12/19/2013	6/12/2014
Volatile Organic Compounds					
Acetone	GCTL	6300	ug/L	1.9 U	3.5 I
Chloroform	GCTL	70	ug/L	0.16 U	0.16 U
Iodomethane	NS	NS	ug/L	0.23 U	0.23 U
Methylene Chloride	PDWS	5	ug/L	0.32 U	0.32 U
Toluene	SDWS	40	ug/L	0.17 U	0.17 U
Metals					
Aluminum	SDWS	200	ug/L	57 I	120
Antimony	PDWS	6	ug/L	0.4 U	0.4 U
Arsenic	PDWS	10	ug/L	0.55 I	0.53 I
Barium	PDWS	2000	ug/L	27	26
Beryllium	PDWS	4	ug/L	0.08 U	0.08 U
Cadmium	PDWS	5	ug/L	0.45 U	0.45 UJ
Chromium	PDWS	100	ug/L	0.66 U	0.66 U
Cobalt	GCTL	140	ug/L	1.2 U	1.2 U
Copper	SDWS	1000	ug/L	1.4 U	1.5 I
Iron	SDWS	300	ug/L	60 I	300
Lead	PDWS	15	ug/L	2.6 U	2.6 U
Manganese	SDWS	50	ug/L	22	43
Mercury	PDWS	2	ug/L	0.027 U	0.027 U
Nickel	PDWS	100	ug/L	1.3 U	1.3 U
Selenium	PDWS	50	ug/L	4.9 U	4.9 U
Silver	SDWS	100	ug/L	0.93 U	0.93 U
Sodium	PDWS	160	mg/L	5.4	5.6
Thallium	PDWS	2	ug/L	0.058 I	0.06 IV
Vanadium	GCTL	49	ug/L	1.1 U	1.1 U
Zinc	SDWS	5000	ug/L	6.1 I	13 I
Radiochemistry					
Gross Alpha	PDWS	15	pCi/L	4.13	3.74
General Chemistry					
Ammonia as N	GCTL	2.8	mg/L	0.022 U	0.025 I
Nitrate (as N)	PDWS	10	mg/L	0.042 U	0.042 U
Total Dissolved Solids	SDWS	500	mg/L	130	150
Field Parameters					
Conductivity	NS	NS	umhos/cm	243	250
Dissolved Oxygen	NS	NS	mg/L	0	0
Dissolved Oxygen	MPIS	20	% Sat.	11.88	11.66
Field pH	SDWS	6.5-8.5	SU	7.28	7.23
Field Temperature	NS	NS	Degrees C	23.8	23.4
Turbidity	NS	NS	NTU	15.52	7.79

Notes:

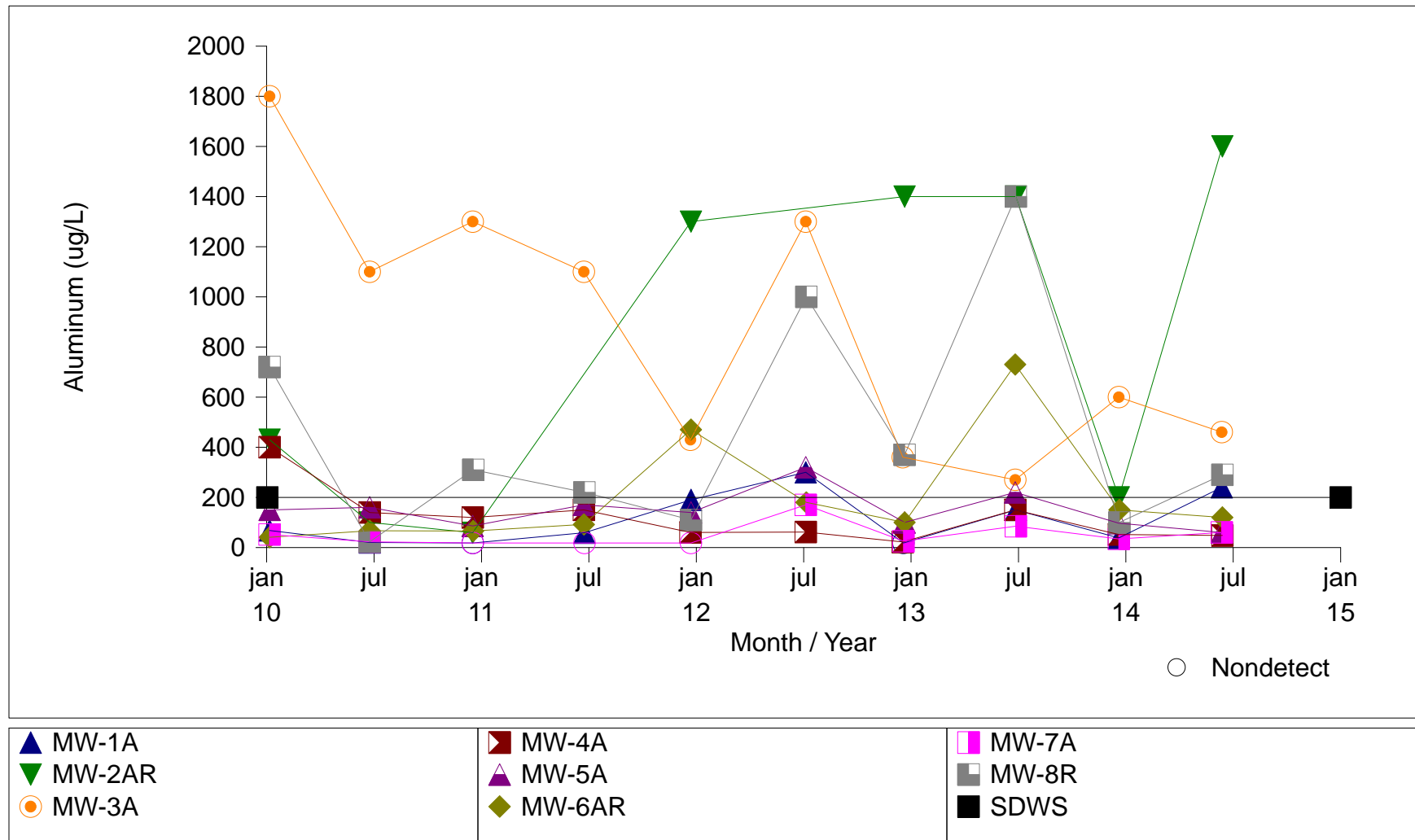
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. SU = Standard Units
9. NTU = nephelometric turbidity units
10. umhos/cm = micromhos per centimeter
11. % Sat = percent saturation
12. Yellow shaded values indicate parameter concentrations exceed primary, secondary drinking water standards, or groundwater cleanup target levels.
13. Degrees C = degrees Celsius
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
16. V = Analyte was detected in the sample and associated method blank.
17. Q = Sample held beyond the accepted holding time.
18. Y = Laboratory analysis was from an improperly preserved sample. The data may not be accurate.
19. Dry = Monitoring well purged dry and a sample was not collected.

APPENDIX C

TIME SERIES PLOTS OF WATER QUALITY TRENDS

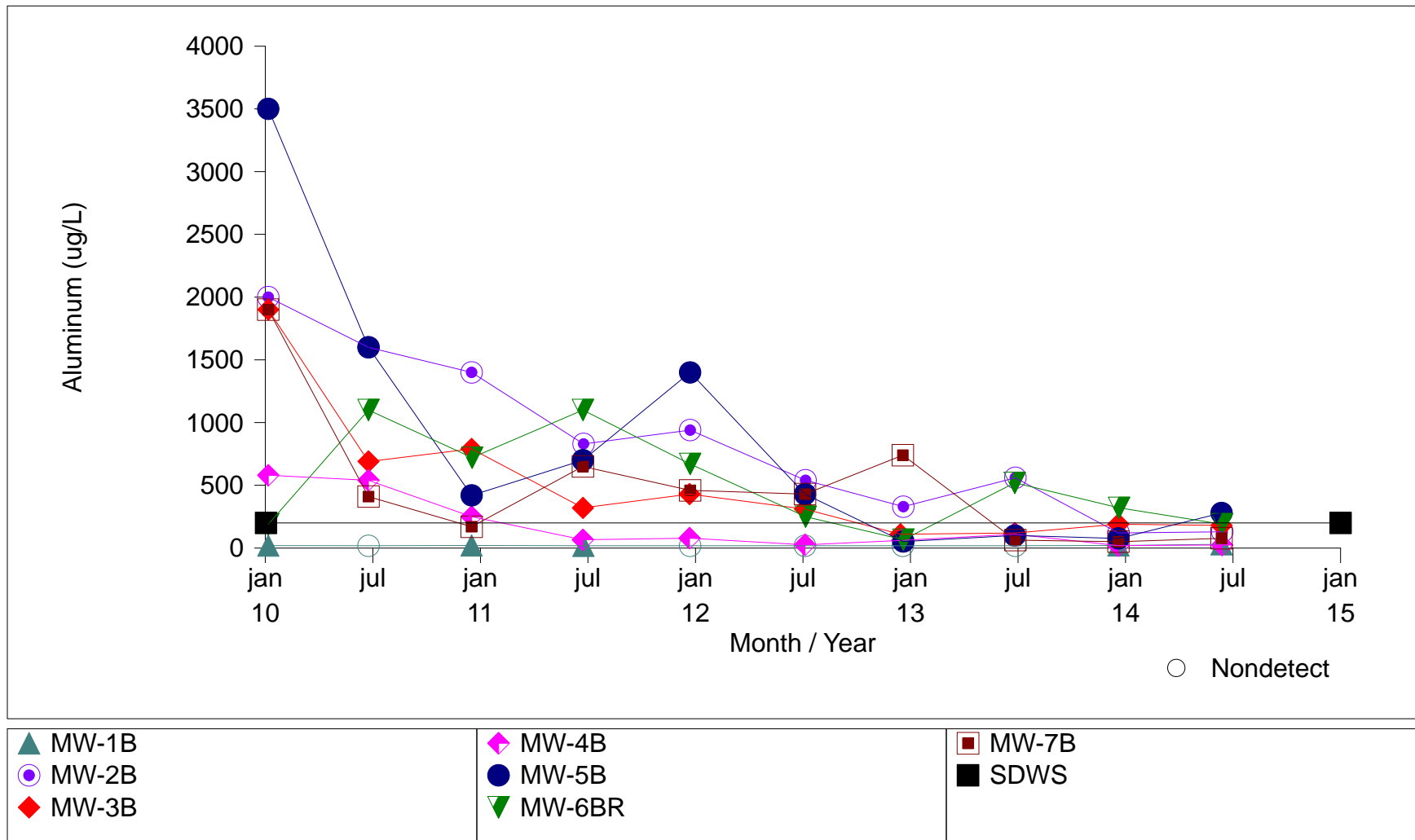
Vista Landfill

Figure C-1. Upper Surficial Time Series Plot for Aluminum



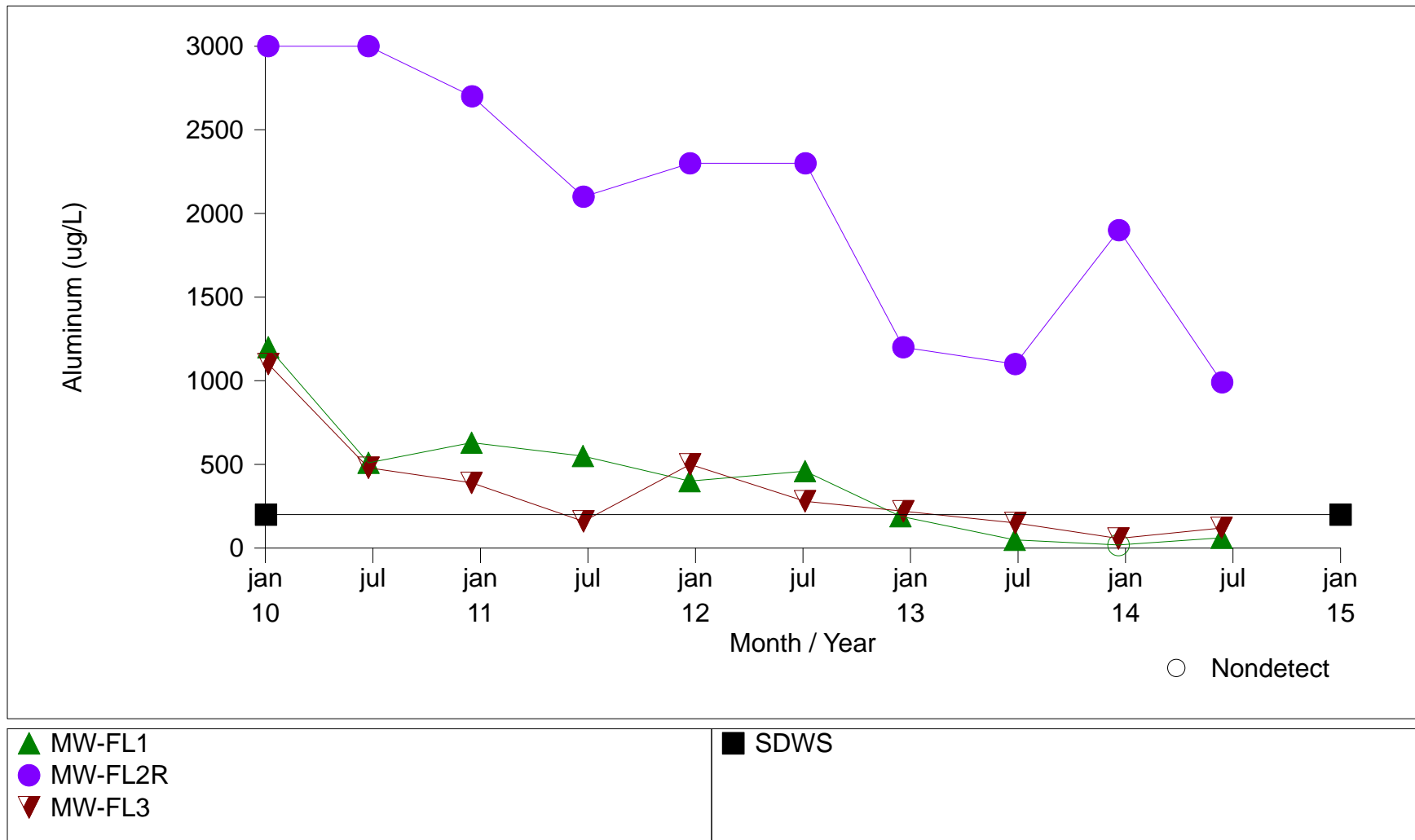
Vista Landfill

Figure C-2. Lower Surficial Time Series Plot for Aluminum



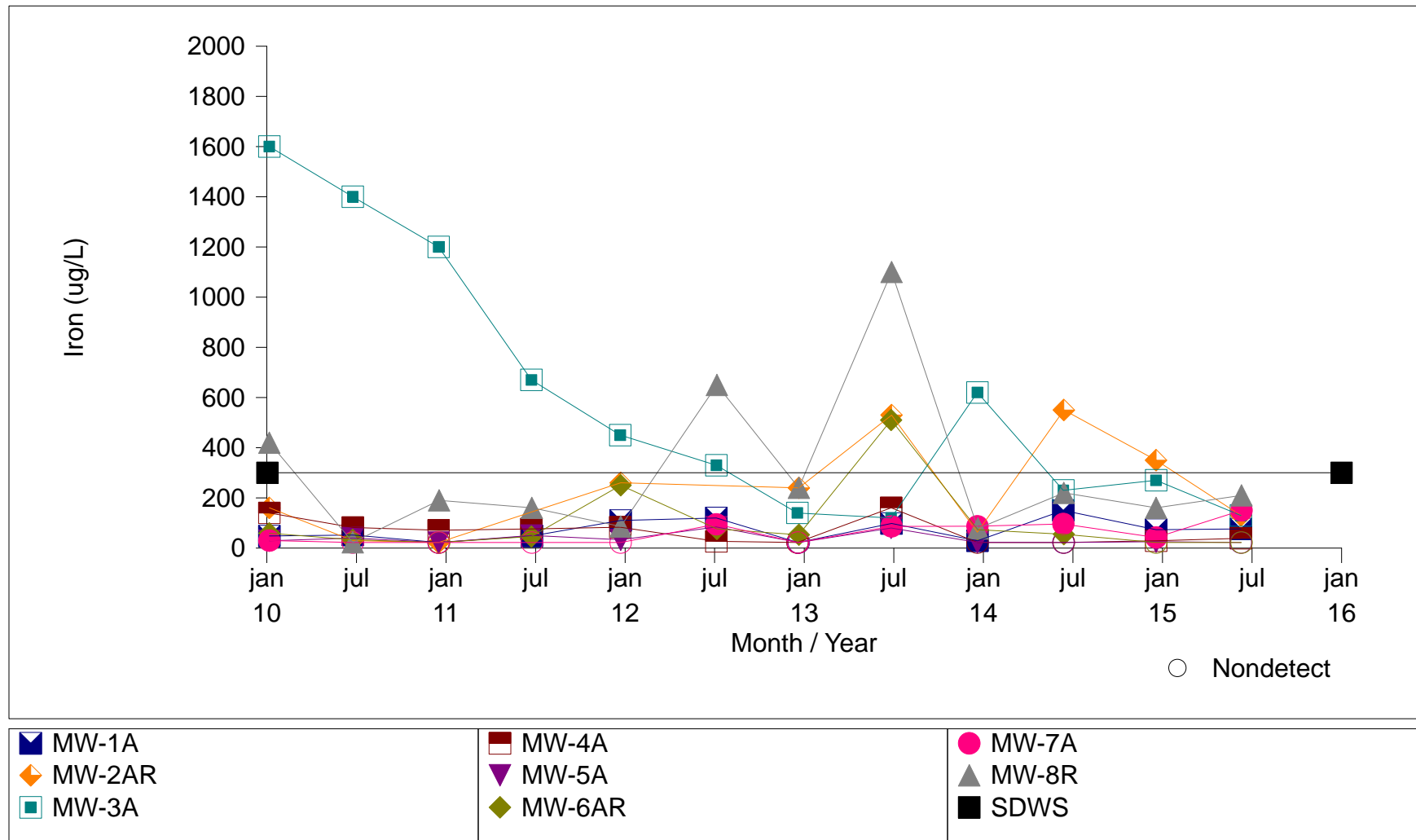
Vista Landfill

C-3. Floridan Time Series Plot for Aluminum



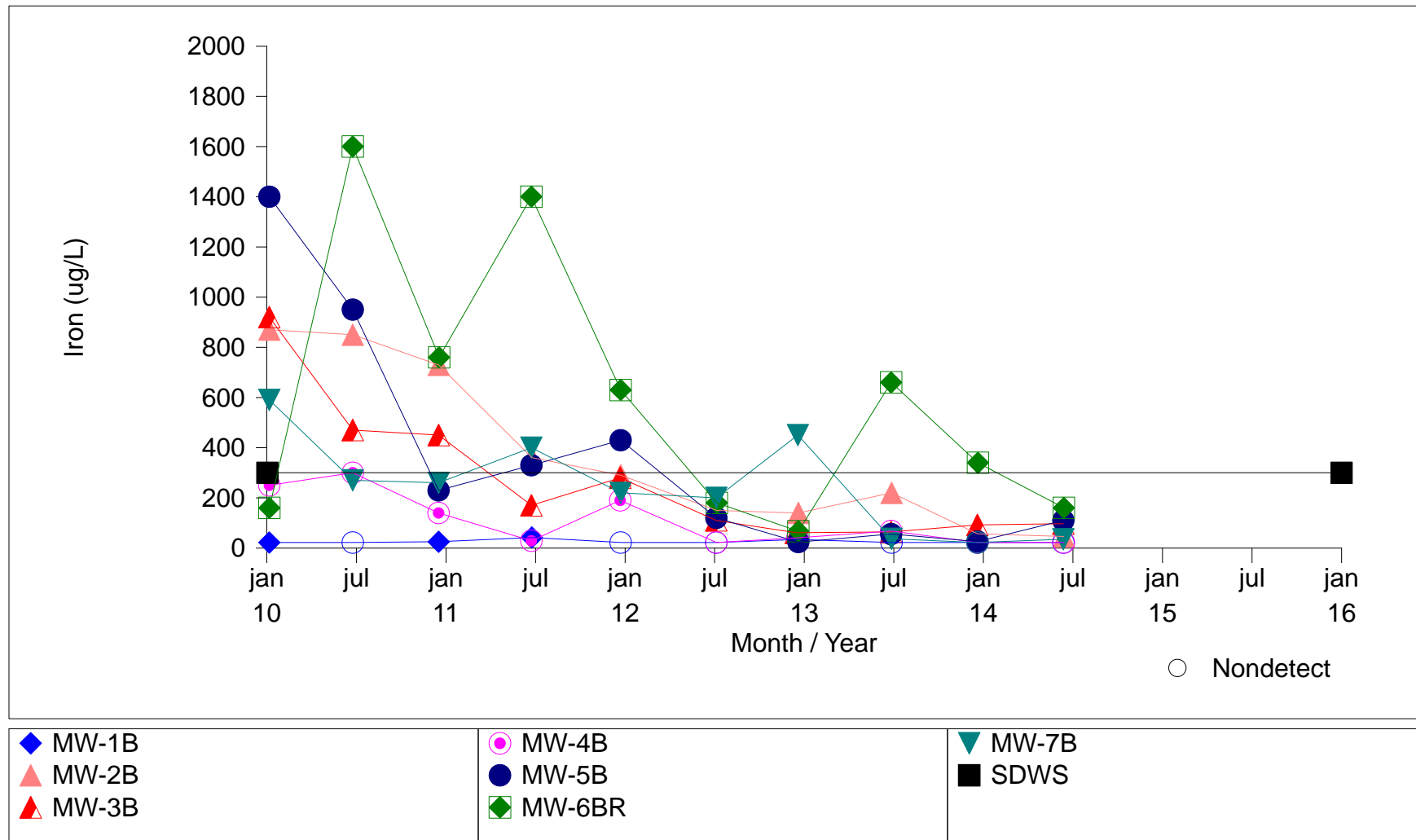
Vista Landfill

Figure C-4. Upper Surficial Time Series Plot for Iron



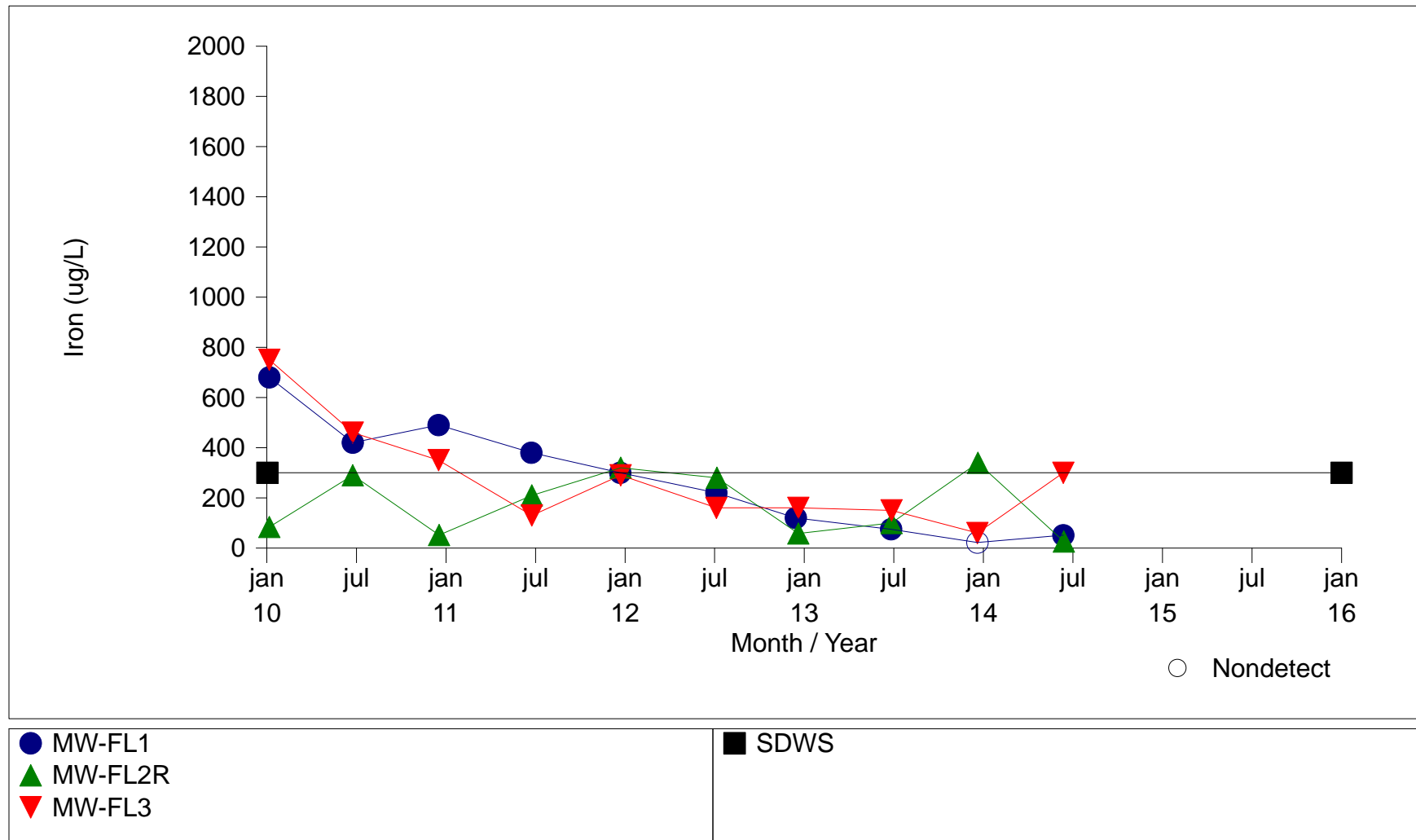
Vista Landfill

Figure C-5. Lower Surficial Time Series Plot for Iron



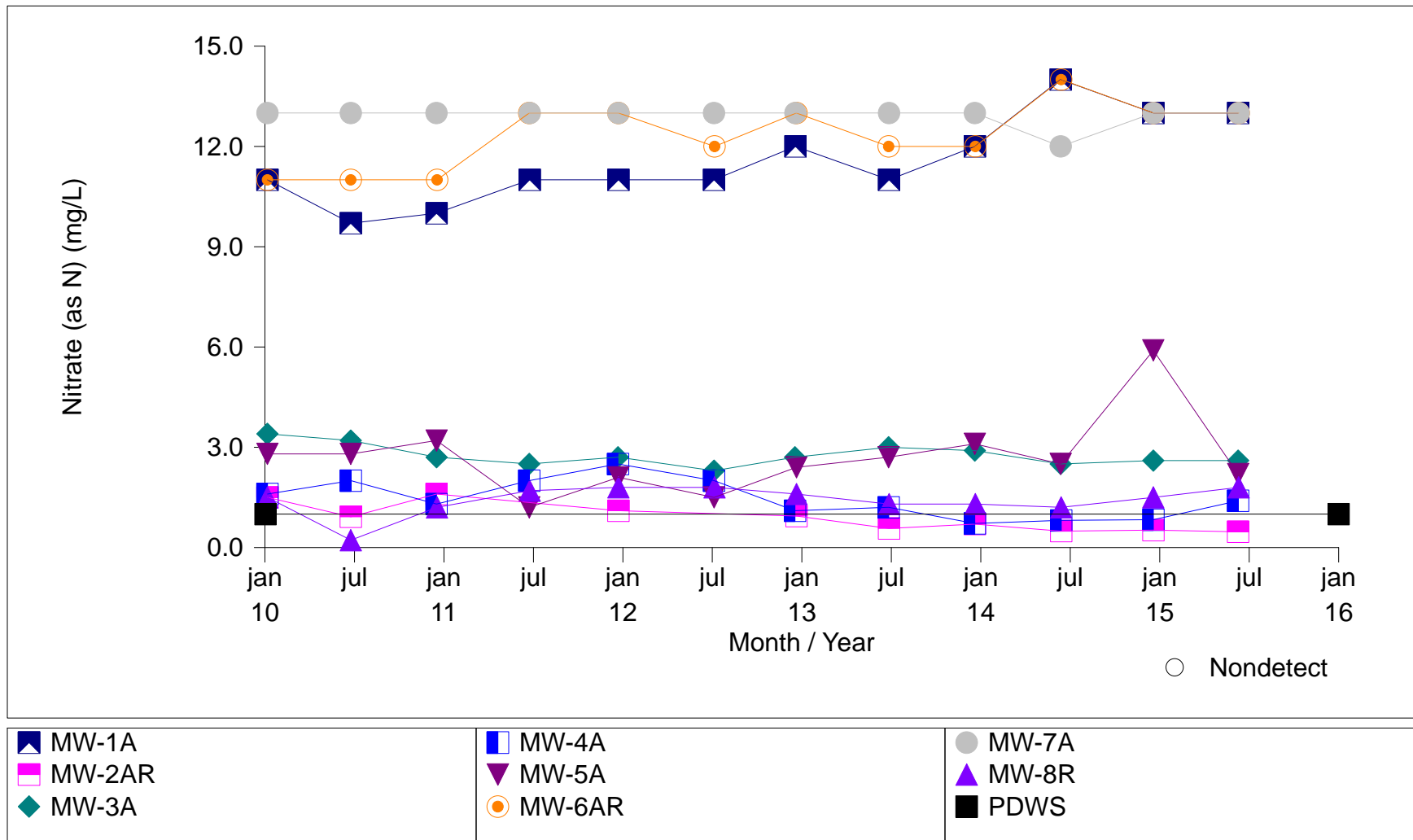
Vista Landfill

Figure C-6. Floridan Time Series Plot for Iron



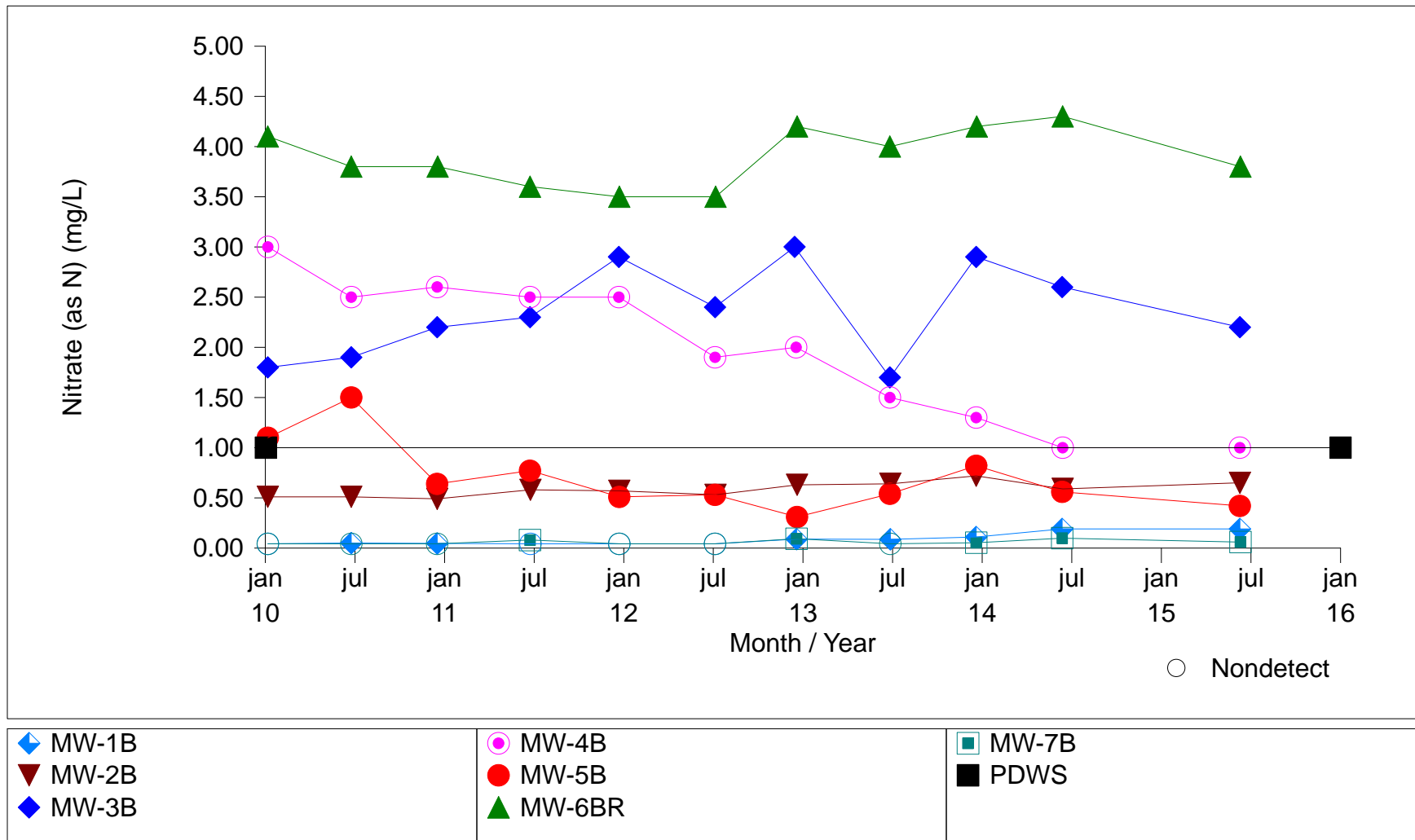
Vista Landfill

Figure C-7. Upper Surficial Time Series Plot for Nitrate (as N)



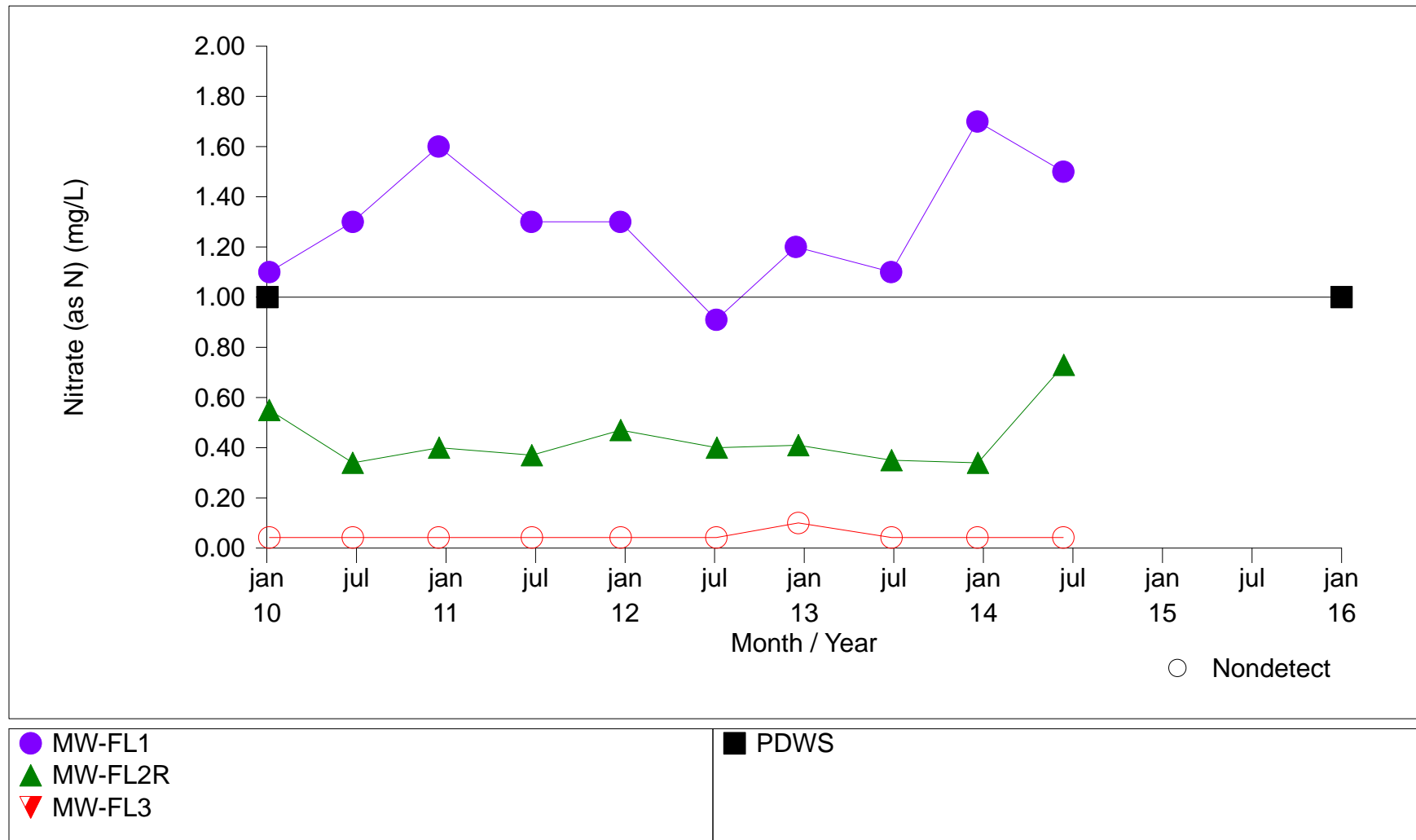
Vista Landfill

Figure C-8. Upper Surficial Time Series Plot for Nitrate (as N)



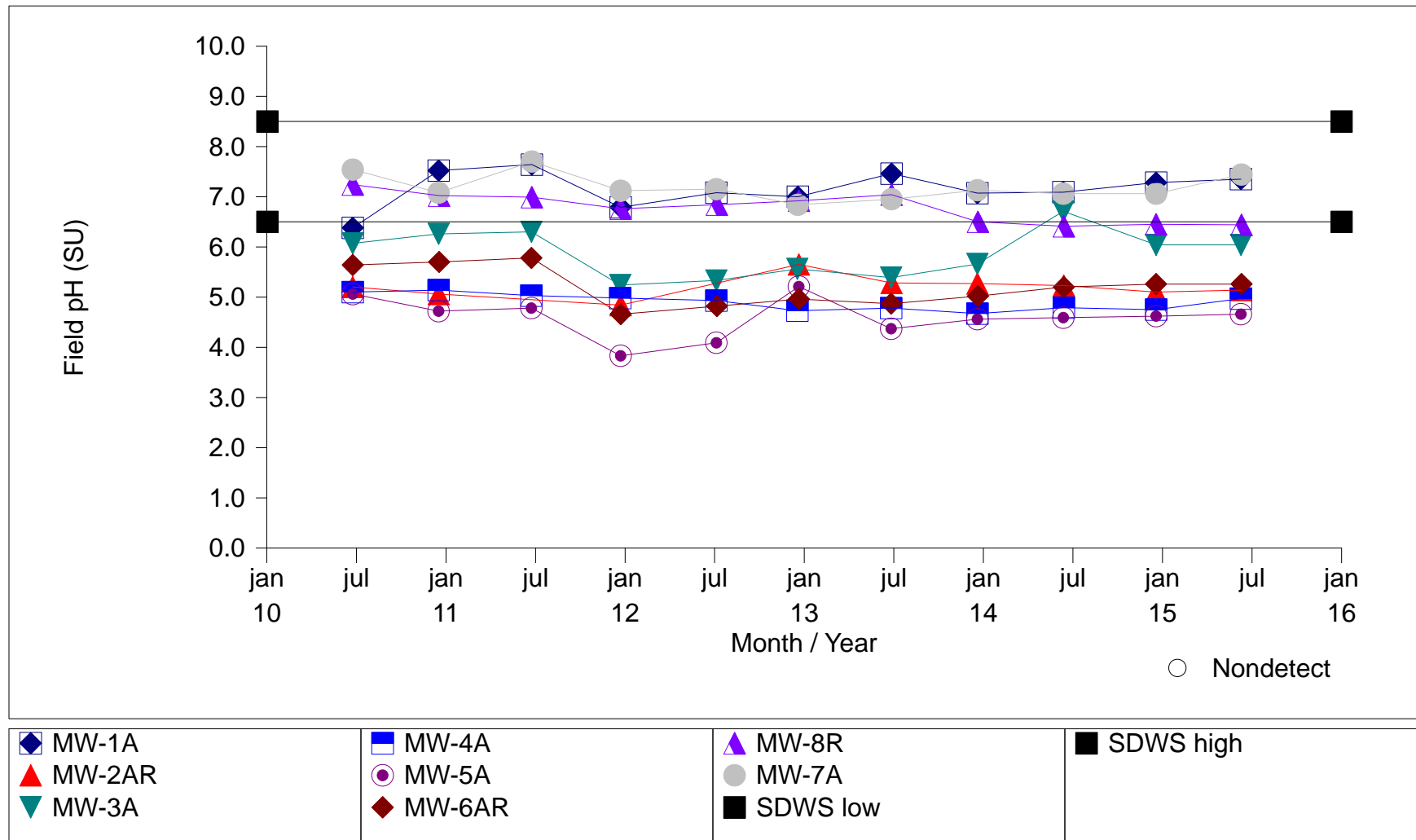
Vista Landfill

C-9. Floridan Time Series Plot for Nitrate (as N)



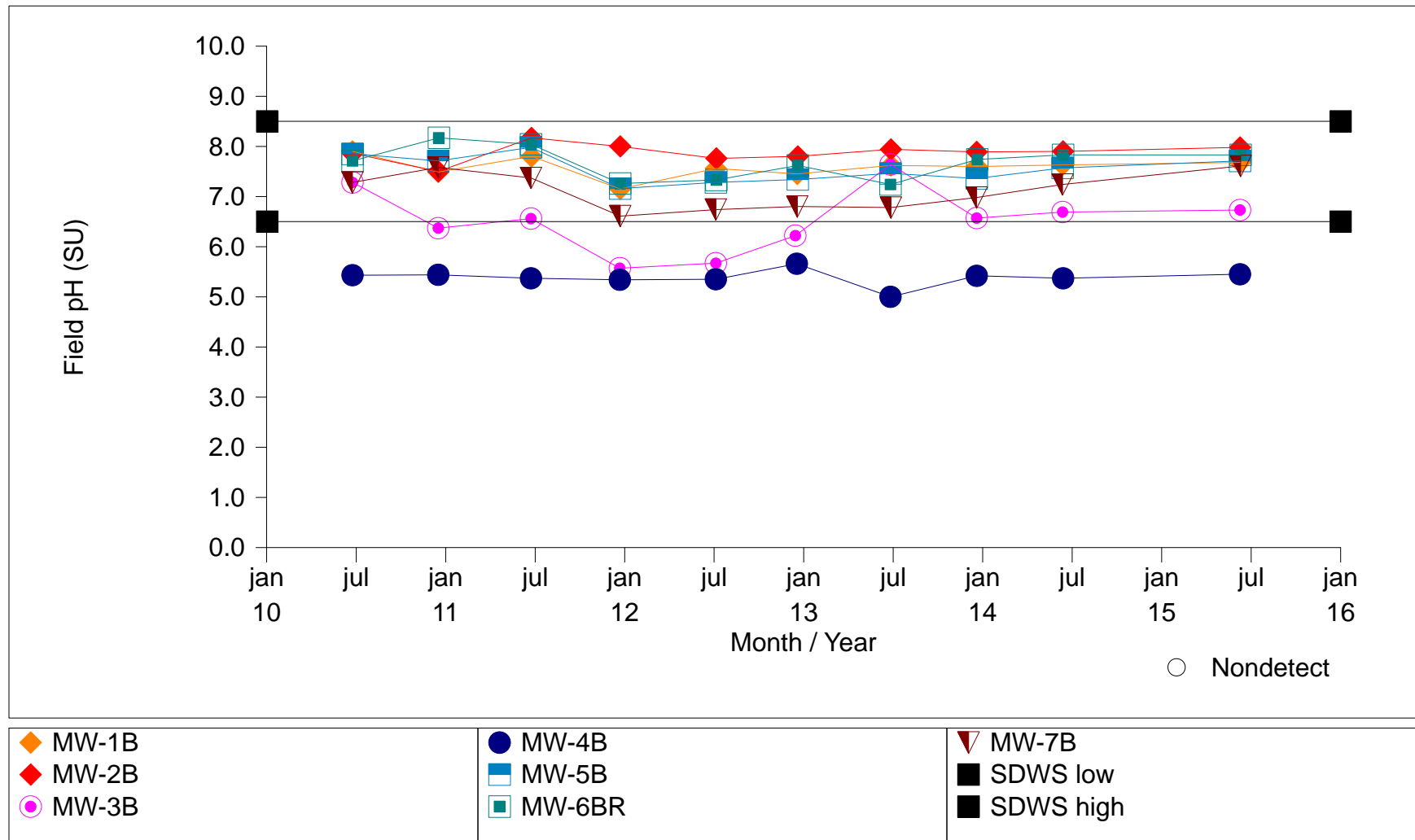
Vista Landfill

Figure C-10. Upper Surficial Time Series Plot for pH



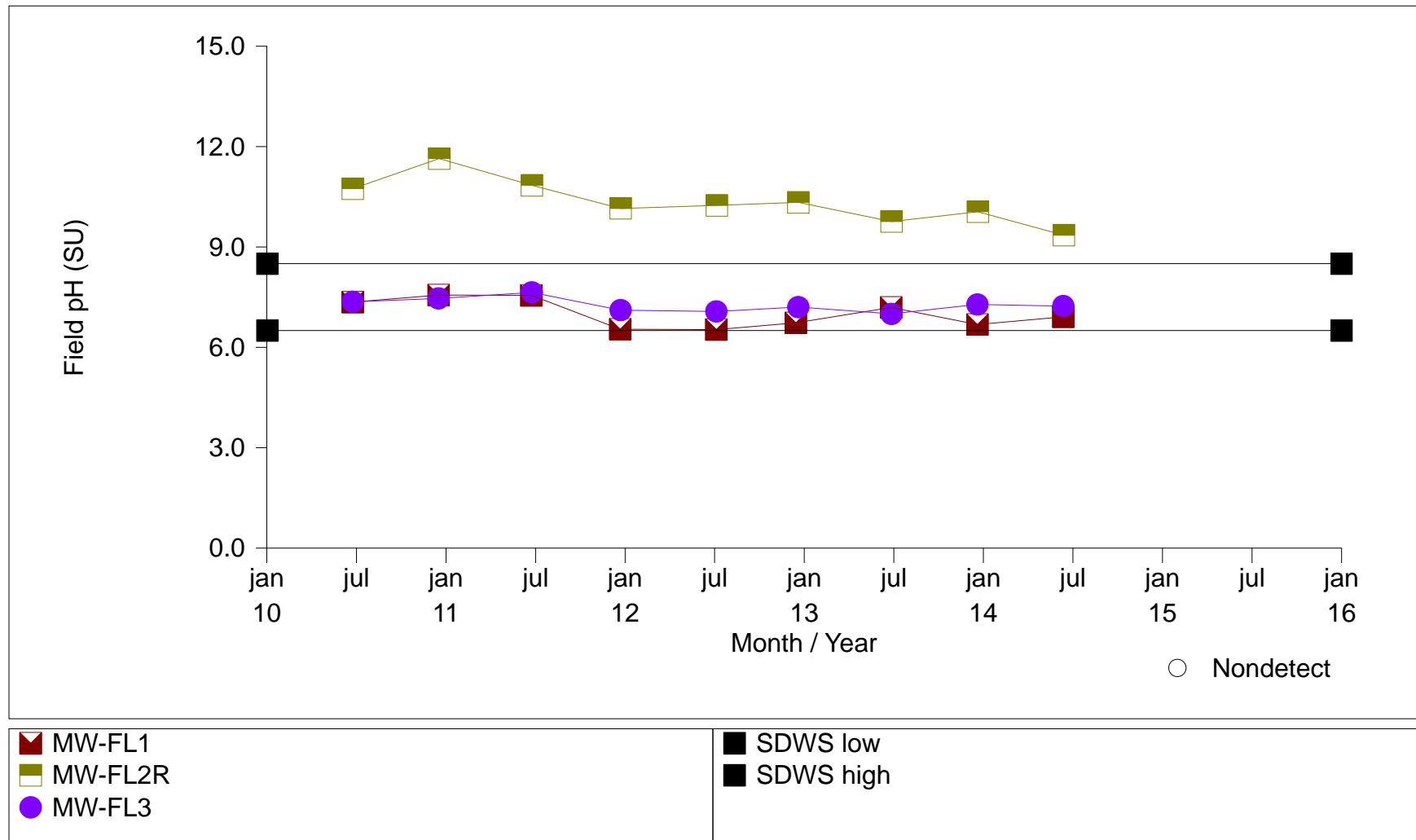
Vista Landfill

Figure C-11. Lower Surficial Time Series Plot for pH



Vista Landfill

Figure C-12. Floridan Time Series Plot for pH



Vista Landfill

Figure C-13. Time Series Plot for Gross Alpha at MW-3A

