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August 4, 2014

Ms. El Kromhout, P.G.
Permitting and Compliance Assistance Program
Solid Waste Section
Florida Department of Environmental Protection ("Department")
2600 Blair Stone Road, MS 4565
Tallahassee, Florida 32399

Subject: Response to Request for Additional Information (RAI)
FDEP Application for Renewal of Operations Permit
Class III Landfill Operations Permit
Application No. 0078767-034-SO/T3, WACS No. 27540
Tomoka Farms Road Solid Waste Management Facility
Volusia County, Florida

Dear Ms. Kromhout:

On behalf of the Volusia County Solid Waste Division, we are submitting the response to the above-referenced RAI received July 17, 2014. The response is formatted in the same order as received from the Department and the comments are repeated for ease of reference. Per your request, revisions are provided in underline (Addition)/ Strikethrough (Deletion) mode, with entire "Sections" resubmitted for revisions to the original application. A Table of Contents for the Revised Sections referencing the comment number is included.

Engineering Report Comments:

Comment No. 1: The estimate of remaining life is given 4 times in the application with 3 different values: section 1.1 ERL=2034, section 4.4.2 ERl=2043, section 4.4.3 ERl=2044, and section 13.2 ERl=2043. Please clarify which estimate of remaining life is the actual estimate.

Response: The estimated remaining life of the Class III Landfill is until 2044 in accordance with the October 31, 2014 Capacity and Site Life Estimate Report submitted to the Department. The Class III landfill disposal capacity based on the May 2013 topographic survey was estimated to last until January 2044. Revised Sections 1, 4 and 13 of the Engineering Report are provided in Attachment A to this RAI response.

Comment No. 2: In section 1.4.6. Hydrogeological Investigation Requirements, a separate status update is mentioned as being provided as an attachment, but was not provided. Please provide the status update.

Response: The report was not completed on time to be submitted prior to issuance of the RAI. However, the MPIS Technical Report, covering May 2012 through May 2014, has been updated and is submitted as Attachment D to this RAI Repose. The reference to this submittal in the Engineering Report as an attachment has been removed and a revised Section 1.0 is provided in Attachment A.

Comment No. 3: Section 4.4.4 discusses on-site cover material. Please clarify what type of cover material (daily, closure, etc.) is referred to in this section.

Response: These borrow pits will be used to supply the landfill operations with the fill material for daily and intermediate cover requirements. The use of onsite soils for closure activities is dependent on the soil characteristics required for the closure. If onsite soils from the permitted borrow pits meet closure project soil specifications, the County may decide to use the on-site soils may for sequential and final closure construction projects. Revised Section 4.0 of the Engineering Report is provided in Attachment A.

Comment No. 4: Section 11.0 Part M - Special Waste Handling Requirements states, "No special wastes are disposed in the Class Ill disposal unit." Asbestos is disposed in the Class Ill disposal unit which has special waste handling protocols per 62-701.520(3), F.A.C. Please revise.

Response: Asbestos is disposed in the Class III landfill in accordance with the special waste handling protocols per 62-701.520. Section 1.0 and Section 11.0 of the engineering report are revised and submitted in Attachment A to these responses.

Comment No. 5: In Attachment B, drawing B-7 Well location Information (April 2014) is listed but not provided. Please provide drawing B-7.

Response: Reference to Drawing B-7 on the Attachment B divider is not correct. “Well location information was provided in Tab B-7 in the form of a table from the April 2014 SJRWMD permitted well database and a figure denoting the City of Daytona Utilities Department potable water supply wellfield. This information was provided in Attachment B of the original application.

Operations Plan Comments

Comment No. 6: The Operations Plan included in the application appears to be a previous version. Please use the June 10, 2014 Operations Plan previously approved in modification 0078767-033-SO-MM issued June 17, 2014 for any revisions moving forward.

Response: Comment Noted. The June 10, 2014 Operations Plan is adopted for this permit application as the most updated Operations Plan. A complete copy of the updated Operation Plan is on file with the Department. The Operation Plan is not revised as a result of this RAI response and is not resubmitted.

Comment No. 7: In Section 5 of the Operation Plan, Figure 1-1 is referenced but not provided. Please provide

Response: Figure 1-1 (Site Map) is provided in Attachment B to the RAI response.

Comment No. 8: Please check that Appendix C is included in the Table of Contents.

Response: Comment Noted. The TOC for the June 10, 2014 Operations Plan is correct.

Cost Estimate Comments

Comment No. 9: Page 1, Item 1, states "It is assumed that monitoring wells will be in place at time of closure; therefore wells are not included as part of the closure construction estimate." Drawing B-7 Well location Information (April 2014) in section

"Attachment B" of the application is missing. Without drawing B-7, determination of any wells left to be installed is not clear. If wells have been planned for but are not currently installed, please include a cost for those wells in the cost estimate.

Response: Monitoring wells for the entire Class III landfill are currently in place and are shown on Figure B-6. Existing wells are shown on Figure B-6 submitted with the application. No revision in monitoring well costs is needed in the cost estimate as no new wells are proposed. Also please refer to Response No. 5 regarding Figure B-7.

Comment No. 10: Page 2, Item 3, Cover Material {a) states "The unit cost has been inflated using FDEP approved inflation factor of 1.015..." This is not the correct inflation factor. The 2014 factor of 1.017 should be used.

Response: The cost for cover material has been revised using an inflation factor of 1.017. The revised cost estimate is provided in Attachment C to these responses.

Comment No. 11: Page 4, Closure Item 12 and long-Term Care Item 15- Contingency, contingencies of 10% have been accepted for projects without question. Please provide supporting documentation and details that a 5% contingency is sufficient for both closure and long-term care costs.

Response: HDR was tasked by Volusia County to update the closure cost estimates. They have provided the following response to Comment No. 11:

> "In HDR's professional judgment, a 5% contingency is appropriate for the financial assurance closure and long-term care cost estimates. The long-term care items and costs are explicitly defined for all portions of post-closure care including water quality sampling, leachate management, final cover repair, and professional services. For modern and well managed landfills, the uncertainties in landfill closure construction that would increase the likelihood of Contract Change Orders and cost overruns are minimalized with experienced landfill contractors, modern 3D AutoCAD grading programs, and streamlined designs. HDR has been the CQA Consultant and Engineer-of-Record for three these three landfill closures which had less than 5% additional cost to the contractor bid costs.
>
> - Hernando County NW Waste Management Facility Phase I Closure, completed July 2014. 3.4% in additional costs over contract base price
> - Lake County Central Class I Landfill Phase II Closure, completed November 2012. 0.6% additional costs over contract base price.
> - Sarasota County's Central Solid Waste Disposal Complex Phase I Closure, completed in July 2012. 3.1% over the contract price."

Monitoring Plan Implementation Schedule (MPIS) Comments

Comment No. 12: For the MPIS, please provide a site drawing with all monitoring sites (ground water monitoring wells and surface water monitoring locations) indicated on the map.

Response: The site drawing showing all of the monitoring sites for groundwater and surface water is provided in Attachment D to these responses.

Comment No. 13: Please provide the MPIS Technical Report, covering May 2012 through May 2014, due at time of permit renewal {8/10/2014) as described in the current approved MPIS (dated April 17, 2014).

Response: The MPIS Technical Report covering the period of May 2013 through May 2014 will be submitted under separate cover.

Comment No. 14: The request to remove SW-1 from the MPIS is acknowledged by Department staff. The introduction of stormwater flow from Interstate 4 runoff collected on adjacent property to the pond and its contribution to the water quality of the site is a potential concern. Department staff is proposing changing the status of SW-1 from a Compliance sampling site to a background sampling site. This arrangement would allow for observation of conditions in order to see if the runoff from Interstate 4 is impacting the water quality on site.

Response: SW-1 is denoted as "well type CO" with a zone/screen designation as "background" in Attachment A-TFRLF Monitoring Sites, in the latest MPIS issued June 28, 2013 (North Cell Operations permit renewal). Volusia Solid Waste Division accepts the Department's proposed change in status for surface water sampling location SW-1, from a compliance sampling point to a background sampling point.

If you have any questions, please advice.

Sincerely,

NEEL-SCHAFFER, INC.

Mehran (Ron) S. Beladi, PE
Vice-President
Sr. Engineer Manager

Copy:

Richard Tedder, P.E. Program Administrator, FDEP Tallahassee
Cory Dilmore, P.E., Permitting, FDEP Tallahassee
F. Thomas Lubozynski, P.E., FDEP-Central District, Waste Program Administrator
Kim Rush, P.E., Permitting, FDEP-Central District
Leonard Marion, Director, Volusia County Solid Waste Division (VCSWD)
Junos Reed, P.E., TFRLF Operations Manager, VCSWD
Jennifer Stirk, Environmental Compliance, VCSWD

TABLE OF CONTENT
INFORMATION PROVIDED
FOR
RESPONSES TO JULY 17, 2014 RAI

RESPONSE NUMBER	INFORMATION PROVIDED	LOCATION OF INFORMATION IN RESPONSES
1.	Revised Section 1, 4 and 13 of Engineering Report	Attachment A
2.	MPIS Technical Report- May 2012 through May 2014	Attachment D
3.	Revised Section 4 of the Engineering Report	Attachment A
4.	Revised Section 11.0 of Engineering Report Revised Section 1.0 of the Engineering Report	Attachment A
5.	No Additional Information Provided	N/A
6.	No Additional Information Provided	Reference to June 10 2014 version of Operations Plan on file with Department
7.	Figure 1-1 of Operations Plan	Attachment B
8.	Revised Table of Contents of Engineering Report	Attachment A
9.	No Additional Information Provided	N/A
10.	Revised Closure Cost Estimate	Attachment C
11.	Revised Closure Cost Estimate	Attachment C
12.	Monitoring Point Location Map	Attachment B
13.	MPIS Technical Report-May 2012 through May 2014	Attachment D
14.	No Additional Information Provided	N/A

Attachment A

SECTION 1.0

Permit Application Checklist (62-701, FAC)

1.1 Executive Summary

Volusia County (the "County") is currently permitted by the Florida Department of Environmental Protection ("FDEP") to operate a Class III solid waste landfill at the Tomoka Farms Road Landfill Facility (TFRLF) in Port Orange, Florida. The Class III landfill covers approximately 88.06 acres and is located east of the closed South Cell disposal unit and southeast of the active North Cell Class I landfill. The Class III Landfill was permitted to be constructed on top of a pre-1985 closed mixed solid waste cell. The projected end life of the Class III landfill as permitted is estimated to be approximately the year ~~2034~~ 2044.

The County is submitting this application to renew the current operations permit. No changes in the existing permitted grading plan, filling sequence plan, passive landfill gas (LFG) plan, or the closure cover design are proposed under this application. Copies of select permit drawings included in this application are for ease of reference. The complete set of permit drawings were submitted signed and sealed to FDEP as part of the previous permit application and are on file with the Department. The permit plans submitted previously are not requested to be changed in this application. It is requested the new operations permit be issued for a ten (10) year period.

Partial copies of the current operations permit and MPIS, the permitting plans previously submitted and copy of the 2009 construction permit are included in Appendix A for ease of reference.

1.2 Existing Information and Reference Documentation

The source information referenced in this application for renewal of the Class III operations permit is contained in the Application for renewal of Operations Permit No. SO64-0078767-026 dated June 23, 2009, as well as subsequent responses to requests for information (RAI). Additional source information is provided in the June 30, 2008 Class III intermediate modification construction application and responses to RAI. The sources of information are listed below.

Table 1-1
Sources of Information and Related Documents Referenced
Class III Landfill Operations Permit Renewal Application

Reference Number	Description of Permitting Document or Related Document
1.	Application to Renew Existing Operations Permit, North Class I Cell, TFRLF dated June 23, 2009, RAI response No. 1 , dated July 22, 2009; RAI response No. 2 , dated August 5, 2009 Permit No. SO64-0078767-026, current Permit expires October 9, 2014. Designated as "2009 Operations Permit"

2.	Application for Permit to Construct an Expansion to the TFRLF Class III Disposal Unit, Volusia County, dated June 30, 2008. Permit Number SC64-0078767-024. RAI Response No. 1 dated September 25, 2008 Permit SC64-0078767-024 issued 1/21/2009 Designated as "2008 Construction Permit"
3.	Class III Modification Construction Drawings, TFRLF, Sheets 1-9, dated April 2008, received and stamped July 28, 2008.
4.	Tomoka Farms Road Landfill Class III Cell Fill Sequence Plan, August 2009
5.	TFRLF Operations Plan, Volusia County, Florida, Revised April 2013 (Minor modification for glass cullet), Included as Attachment C of this application.
6.	TFRLF Technical Water Quality Monitoring Report dated April 6, 2012.
7.	TFRLF ERP No. ERP64-020632-002EM; permit covers entire site including Class III.
8.	Closure Cost Financial Assurance Responsibility Report Fiscal Year 2013, August 29, 2013, (contains Class III waste projections and Class III depletion analysis)
9.	NPDES General Permit FLRDSB933-003 for the TFRLF site

1.3 Facility Owner and Operator

The Facility is owned by the County of Volusia Board of County Council, and is operated by the County's Public Works Solid Waste Division.

The designated responsible person for the TFRLF is:

Mr. Leonard Marion, Director
Volusia County Solid Waste Division
Tomoka Farms Road Landfill Facility
1990 Tomoka Farms Road
Port Orange, Florida
Phone (386) 947-2952
E-mail: lmarion@volusia.org

The designated person responsible to manage day-to-day operations of TFRLF is:

Mr. Junos Reed, P.E., Engineer III
Operations Manager
Tomoka Farms Road Landfill Facility
1990 Tomoka Farms Road
Port Orange, Florida
Phone (386) 947-2952
E-mail: jreed@volusia.org

1.4 Checklist (FDEP Form 62-701.900(1))

This application checklist located in front of this Section provides the location and disposition of information listed in the FDEP Solid Waste Management Facility Application Form No. 62-701.900(1). The format of the checklist follows the information sequence of the application form.

1.4.1 PARTS A & B - General Information and Disposal Facility General Information

The required information for this section is included on the application form.

1.4.2 PART C - Prohibitions (62-701.300, FAC)

Part C of the Permit Application Form does not change as the prohibitions to siting and operations have been previously met and no exemptions are sought. The Class III landfill is within the setback limit. Items for Part C have been noted as "No Change" on the form. See Section 2.0.

1.4.3 PART D - Solid Waste Management Facility Permit Requirements, General (62-701.320, FAC)

Submittal information pertaining to the operations renewal application (application copies, certification, transmittal letter, permitting fees, engineering report, operational drawings, proof of publication and airport safety requirements is included in Section 3.0 of this document.

1.4.4 PARTS E & F - Landfill Permit Requirements and General Criteria for Landfills (62-701.330 & 340, FAC)

The required information for Part E and Part F is included in Section 4.0 of this document. The drawings prepared with this application report include the vicinity map, aerial map, recent topographic survey, cross-sections and plot plan. Drawings and Maps are provided in Attachment B. An updated well inventory is also included in Attachment B.

1.4.5 PART G - Landfill Construction Requirements (62-701.400, FAC)

Part G of the Permit Application Form does not apply and has been noted as "Not Applicable" on the form. Closure requirements are addressed in Section 12 and Section 13.

1.4.6 PART H - Hydrogeological Investigation Requirements (62-701.410(1), FAC)

The information for Part H is already on file with the Department. There is no change in the previous hydrogeological investigation as a result of filling and operation of the Class III landfill. The application form has been marked "No Change".

Under a Department-approved contamination assessment, the area north and east of the Class III unit has been monitored over the past four years for contamination. The results of the contamination assessment were summarized in the April 6, 2012 Technical Water Quality Monitoring Report. A separate status update is being prepared by the County's consultant and will be submitted under separate cover ~~and is provided as Attachment XX to this application~~.

1.4.7 PART I – Geotechnical Investigation Requirements (62-701.410(2), FAC)

The required information for this section has not changed from the analysis presented in the Application for Permit to Construct an Expansion to the Tomoka Farms Road Landfill Class III Disposal Unit (Reference 2). The application form has been marked "No Change". See Section 7.0.

1.4.8 PART J - Vertical Expansion of Landfills (62-701.430, FAC)

No vertical expansion is proposed in this application. The maximum elevation is established by the 2008 construction permit to be approximate elevation 165 feet NGVD. The application form has been marked "Not Applicable". See Section 8.0.

1.4.9 PART K - Landfill Operation Requirements (62-701.500, FAC)

Operational procedures for the Class III landfill unit are included in the April 2013 Operations Plan, previously submitted to the Department as part of the April 2014 minor modification of the North Cell operations permit. The Operations Plan and the embedded Contingency Operations Plan is provided in Attachment C. The required information for this section is included in Section 9.0 of this permit application. A reduced sized set of FDEP approved Operation Plans from the 2009 operations permit application is provided for reference in Appendix D. a reduced size copy of the permitted fill sequence drawings previously submitted to FDEP are also provided for reference in Appendix D.

1.4.10 PART L - Water Quality and Leachate Monitoring Requirements (62-701.510, FAC)

The required information for this section is included in Section 10.0 of this document.

1.4.11 PART M - Special Waste Handling Requirements (62-701.520, FAC)

The required information for this section is included in Section 11.0 of this document. ~~No special wastes are landfilled~~ Asbestos waste is disposed ~~into~~ the Class III Landfill. ~~The application form has been marked "Not Applicable".~~

1.4.12 PART N - Gas Management System Requirements (62-701.530, FAC)

The required information for this section is included in Section 12.0 of this document. A passive gas control system as presented in the 2009 operations permit application is proposed to be constructed at closure with no change. The application form has been marked "No Change". Landfill Gas Recovery is "Not Applicable" to the Class III unit.

1.4.13 PART O, P, & Q - Landfill Closure Requirements, Other Closure Procedures, and Long Term Care (62-701.600, 610 & 620, FAC)

The required information for this section is included in Section 13.0 of this document. The landfill closure cover requirements as presented in the 2009 operations permit application is proposed to be constructed at closure with no change. The application form has been marked "No Change". This application is for operations permit renewal only; landfill closure requirements, closure procedures and long-term care procedures are "Not Applicable." The County does not propose to permit closing of the Class III landfill under this operations permit renewal application.

1.4.14 PART R - Financial Assurance (62-701.630, FAC)

The required information for this section is included in Section 14.0 of this document. An updated detailed closure cost estimate, based on the permitted closure design is provided in Attachment E. Volusia County will provide annual financial responsibility cost estimates and financial assurance documentation as required.

1.4.15 PART S - Certification by Applicant and Engineer or Public Officer

The required information for this section has been included on the final page of the application form.

SECTION 4.0

Part E & F-Landfill Permit Requirements and General Criteria for Landfill (62-701.330&340, FAC)

4.1 Vicinity Map and Aerial Map

The vicinity map and aerial map are provided in Attachment B. The vicinity map is also used as the base for the airport map. The vicinity map is on a Year 2012 base. The wide- area aerial is from the FDOT database and is dated January 2012. Recent aerials of the landfill site do not extend to the limits of the 2012 aerial.

4.2 Plot Plan and Cross Sections (62-701.330(3) (b), FAC)

The buildout plot plan and the buildout cross sections for the Class III disposal unit (July 2009) currently on file with the Department do not change for this application. The plot plan and cross-sections based on the June 2013 topographic survey are presented in Attachment B.

4.3 Topographic Information and Survey (62-701.330(3) (c), FAC)

The topographic maps with a scale not greater than 200 feet per inch showing the proposed fill areas, access roads, and grades required for proper drainage were provided in the 2009 operation permit application Drawings. These drawings are provided in Attachment D in reduced size format for reference. An updated topographic survey, dated June 2013 is provided in Attachment B.

4.4 A Report Describing the Landfill (62-701.330 (3) (d), FAC)

4.4.1 Current and Projected Population of Area Served and Type and Quantity of Waste Projections

The projections for the generation of Class III waste to be disposed at the Tomoka Farms Road Landfill Facility through the year 2043 are based on existing solid waste volume depletion information for the period of 2006 through 2013 and population projections available from the Office of Economic and Demographic Research (EDR-Florida) and the Volusia County Planning Department. Population projections used in the FY 2013 Financial Responsibility Cost Estimate Report, August 2013 are used for airspace utilization projections in this application. The 2014 population of the Volusia County Class III wasteshed is estimated to be 503,200 people. The population within the Class III wasteshed is projected to grow to 530,492 people in 2020.

The wasteshed is comprised of unincorporated areas within Volusia County and incorporated cities and towns within Volusia County. Class III waste consists of bulky items such as furniture and carpeting, construction and demolition debris (C&D) and land clearing wastes. Typical Class III solid waste is about 40 percent residential and 60 percent commercial in origin. Class III waste was accepted from the City of Deland in 2012 and 2013 after several years of diversion.

Waste tonnage projections for Class III waste are based on a medium population growth scenario used by EDR- Florida. Class III disposal quantity projections were based on the following assumptions:

- Class III solid waste disposal tonnage will increase in direct proportion to population (i.e., the per capita disposal rate will remain constant).
- The base quantity for future Class III solid waste disposal projections is the average annual Class III per capita volumetric disposal rate for FY 2007 through FY 2012.

The Class III solid waste disposal rate for the Tomoka Farms Landfill Facility decreased from 0.42 cubic yards per capita in operational year 2007 to 0.16 cubic yards of in-place cubic yards per capita in FY 2012. Note that there were no major storm events during these years and the economic slowdown of 2008 to 2011 is slowly recovering. The six year (2007-2012) average rate used to project future disposal quantities in this analysis was 0.0.253 cubic yards per capita.

Apparent waste density is used to convert from volume to tonnage. Apparent density refers to the quantity of waste placed in the landfill in tons, divided by the volume of landfill capacity consumed, not including the amount and volume of cover material. As waste decomposes, the landfill subsides, recovering landfill capacity and increasing apparent waste density as additional waste is placed in the recovered volume. A five year analysis of historic volume used compared to Class III tonnages disposed for years 2008 through 2012 results in an apparent density of approximately 1,680 pounds/CY in place. Note that the volume usage is 2013 has not been calculated in the financial responsibility report as this calculation is dependent on the April 2014 topographic mapping.

EDR population estimates are used for Years 2013 through 2040. Office of Economic and Demographic Research (EDR) is the source for Volusia County population estimates for 2012 through 2040. Population estimates for 2041 through 2043 are based upon the average annual population growth rate from 2013 through 2040. Table 4-1 presents historical Class III solid waste volume utilization for FY 2007 through FY 2012. The waste tonnage projections used for planning the buildout and filling of the Class III landfill are provided in Table 4-1. As is normal for any long-term projection, the further into the future the projection extends the higher the degree of uncertainty.

4.4.2 Anticipated Site Life based on Permitted Configuration

Typical Cell Cross Sections

In accordance with previously submitted documents as part of the 2008 Fill Sequence Plan in the construction permit modification application, the cross sections for the Class III landfill are based on site geometry and the following criteria:

- Maximum cell side slope of 4:1
- Waste placed in 20 foot lifts
- Approximate 27 foot-wide drainage swales constructed every 20 vertical feet
- Apparent density based on annual survey data

Table 4-1

Historical and Projected Class III Wastes Volumes and Tonnages

Operational Year	Service Area Population	Volume Used (C.Y.)	Estimated Volume Use (Projected C.Y.)	Actual or Projected Tonnage (Tons)
2007	508,014	212,703		---
2008	481,390	84,739		92,084
2009	422,841	51,831		66,893
2010	421,780	145,471		67,503
2011	410,167	122,020		62,132
2012	497,145	78,803		66,788
2013	499,562		126,389	106,167
2014	503,155		127,298	106,930
2015	507,749		128,460	107,906
2016	512,596		129,687	108,937
2017	517,337		130,886	109,944
2018	521,873		132,034	110,909
2019	526,237		133,138	111,836
2020	530,492		134,214	112,740
2021	534,681		135,274	113,630
2022`	538,796		136,315	114,505
2023	542,819		137,333	115,360
2024	546,730		138,323	116,191
2025	550,509		139,279	116,994
2026	554,143		140,198	117,766
2027	557,630		141,080	118,507
2028	560,975		141,927	119,219
2029	564,179		142,737	119,899
2030	567,245		143,513	120,551
2031	570,179		144,255	121,174
2032	572,998		144,968	121,773
2033	575,720		145,657	122352
2034	578,363		146,326	122,914
2035	580,946		146,979	123,462
2036	583,480		147,620	124,001
2037	585,946		148,244	124,525
2038	588,322		148,845	125,030
2039	590,586		149,418	125,511
2040	592,716		149,957	125,964
2041	596,451		150,902	126758
2042	600,209		151,853	127,557
2043	603,991		47,034	39,509

Source: FY 2013 Financial Responsibility Cost Estimates, August 2013; Operational Year is October 1 through September 30th of the following year.

As presented in the 2013 Financial Responsibility Report, the remaining volume in the Class III landfill unit as of September 30, 2013 is estimated to be 4,133,759 cubic yards. Using the projected annual volumes presented in Table 4-1, the remaining airspace capacity is depleted in ~~the year 2043~~ January 2044. The filling timeline is updated on an annual basis.

4.4.3 Cell Closure Phasing

The Class III landfill unit does not have a bottom liner or leachate collection system. Volusia County is currently permitted to close the Class III landfill at the end of volume depletion or approximately Year 2044. No phased closure is currently planned or sought under this permit.

4.4.4 Source and Type of Cover Material

The County has numerous consumptive use permits for excavation of onsite (TRFLF) and offsite (property adjacent to the TFRLF Facility) borrow pits. Sand, silty sand, and clayey sand will be used as cover material.

These borrow pits will be used to obtain cover material for daily cover operations and for intermediate cover. The use of onsite soils for closure activities is dependent on the soil characteristics required for the closure (permeability, fines content. organic content, carbonate content, etc.) If onsite soils from the permitted borrow pits meet closure project soil specifications, these soils can be used for final closure.

The County will closely monitor the use and availability of cover material to insure that adequate material is always available. If at any time during the life of the Class III Landfill it appears that an adequate supply of material is not available onsite for cover and construction, future construction activities will be performed using off site soils.

4.5 Water Quality Laboratory Requirements (62-701.330 (3) (g), FAC)

Surface and groundwater quality sampling and testing at the landfill are conducted by certified laboratories under continuing service contract with the Volusia County Public Works. The County has a current contract with Pace Laboratories, a FDEP-approved laboratory, to provide for sampling, testing and reporting water quality results. Note that all results are reviewed by the Volusia County Solid Waste Division prior to submittal.

4.6 Closure and Long-Term Care Financial Responsibility (62-701.340 (3) (h), FAC)

The Volusia County Solid Waste System has used and plans to continue using the escrow account mechanism to demonstrate financial responsibility for closure and long-term care of the County-owned disposal facilities. The County maintains an escrow fund to pay for the closing cost of the cells. Long-term care costs are paid through a combination of escrow account withdrawals and annual operating funds. Annual financial responsibility updates are performed by an independent Engineer in accordance with FDEP requirements as established in Chapter 62-701.630. The remaining airspace is calculated and the annual contribution to the closure accounts to assure sufficient funding for closing is determined. The long term annual cost is also adjusted or recalculated based on post closure permit and maintenance requirements, using either inflation factors or third party vendor and material prices.

Volusia County provides annual financial assurance through a qualified landfill management escrow account that holds closing funds for the TFR Landfill disposal units and the Plymouth Landfill. A separate fund also holds annual maintenance funds on a year by year basis. An annual independent audit of the closure and long-term care funds is performed and the audit results are provided in a certification letter to the FDEP. The FY 2013 annual financial responsibility report was submitted to FDEP, and the Department has approved the cost estimate for closure and long term care of the Class III unit.

An updated closure and long-term care cost estimate has been prepared and provided with this application as Attachment E.

4.7 100-Year Flood Plain (62-701.340(3) (b)

There is "No Change" from previously submitted information. Please refer to the 2008 construction permit application.

4.8 Edge of Waste (62-701.340(3) (c)

A minimum of 100 feet horizontal separation is maintained between the property boundary and toe of final cover slope on all sides of the landfill. The edge of waste for the Class III unit (and the underlying Class I and C&D landfill) is greater than 800 feet from the property line on the northeast boundary of the facility, and more than 1000 feet from the County property line on the north, east, and south.

SECTION 11.0

Part M - Special Waste Handling Requirements (62-701.520, FAC)

Information regarding the special waste handling program and other requirements of this section has been submitted to the FDEP and is on file with the Department. Asbestos wastes are disposed in the Class III landfill in accordance with the special waste handling protocols per 62-701.520. ~~No special wastes are disposed in the Class III disposal unit.~~ Special Waste handling procedures are presented in the TFRLF Operations Plan. The Application has been marked "Not Applicable."

SECTION 13.0

Part O, P, and Q - Landfill Final Closure Requirements, Closure Procedures, and Long-Term Care (62-701.600, 610 & 620, FAC)

13.1 Closure Schedule Requirements (62-701.600(2), FAC)

A closure permit or alteration of the prior closure plan presented in the 2009 operations permit application is not requested under this operations permit renewal application. To date, no portion of the defined boundaries of the Class III landfill has been formally closed. The current operation permit allows closure after completion of filling. Most of the application items for Parts O.P and Q are marked "Not Applicable" or "No Change" for this operations permit renewal application.

Notice to the public for final closure of the Class III unit will be given 90 days before the facility is anticipated to cease waste acceptance. A closure permit application will be prepared and filed at or prior to public notice to cease waste acceptance. The closure plan will include the closure design plan, the closure operation plan, a plan for long-term care and a demonstration of proof of financial assurance for long- term care. Final closure construction will proceed according to the permitted closure plan. Following final closure construction, the closure will be certified by a Florida Professional Engineer and all required closure information will be sent to the FDEP for review and approval. The required survey, legal description, owner information and long- term maintenance entity will be recorded in the public records.

13.2 Closure Design Plan Requirements (62-701.600(3), FAC)

The previously permitted closure design plan does not change for this operations permit renewal application. The permit application has been marked "No Change." The final receipt of waste for deposition into the Class III landfill is projected to be Year 20434.

13.2.1 Closure Phasing

The Class III landfill is proposed to be closed under one final construction project after the airspace is depleted. Closure phasing does not change from the current closure plan provided with the 2009 renewal application. The application form has been marked "No Change."

13.2.2 Final Cover Closure System Layering for Sideslope and Top Slope

The final closure design presented in the 2009 operations permit application and approved by the Department does not change. The application form has been marked "No Change."

13.2.3 Final Cover Installation Plans

A detailed final cover installation plan is not required for this operations permit renewal since closure construction is not requested. These items have been marked "No Change" on the permit application form. The final cover installation plan submitted for the 2008 construction permit included a CQA plan and specifications.

Final cover layers will be installed within the approved closure schedule established by a closure permit or a modification to the operations permit. Generally closure would start within six-months to one year following the cessation of waste acceptance. The closure construction is estimated to be about two years due to the Class III closure area. Drought-resistant Bahia sod or grass would be used for vegetation. The top (deck) gradient (as shown on the approved final closure plan) is five percent slope to the uppermost terrace.

Cover material for final closure maintenance would be imported from offsite borrow pits if there were no other ongoing waste filling activities on the TFRLF. If there was an active onsite borrow operation, the decision of onsite vs. offsite borrow would be based on overall cost of borrow, transport and placement.

13.2.4 Final Cover Design Requirements

No change is proposed for cover system components as presented in the 2009 operations permit application. The permit application has been marked "No Change."

13.2.5 Secondary Stormwater Management System Design

No changes in the approved secondary stormwater management system design are sought under this operations permit application. The application has been marked "No Change." Modeling and calculations for the stormwater collection, treatment and conveyance system were provided in the 2008 Construction Permit Application First Response to Request for Information.

13.2.6 Access Control

The majority of the 3,500-acre facility perimeter of the TFRLF is fenced. There are multiple access gates that are consistently locked and checked. Access to the landfill from the south west and east is limited due to offsite and onsite ditches. The main access to the landfill is controlled through the entrance road that has a locking gate near Tomoka Farms Road. The main access road passes through the scalehouse facility, with side roads to the administration office building, Class I landfill, Class III Landfill and support facilities. Following closure of the entire facility, the entire perimeter of the landfill property will be fenced, and access controlled through locked gates.

13.2.7 Landfill Gas Management

At this time, there are no plans for LFG collection and venting prior to final closure. A passive LFG vent system was previously approved in the operations permit renewal. No changes are proposed under this operations permit application. The permit application has been marked "No Change."

13.3 Closure Operation Plan (62-701.600(4), FAC)

No closure activities are proposed under this operations permit application. A closure operation plan is not required. Items 3 trough 7 of Part O of the application have been marked "Not Applicable."

The County will prepare detailed construction plans, specifications and CQA procedures for closing from the information provided in the 2008 Construction permit application, the 2009 operations permit application, this application and subsequent renewal submittals; solicit bids from general and specialty contractors, evaluate bids and award construction contracts. The selected Contractor will supply all materials labor and equipment to construct the closure improvements.

County and independent consultants will provide observation during construction; review Contractor work and coordinate CQA testing to assure materials and installation meet project requirements. After the closure construction, the County will prepare and submit for Department approval a completion of construction certification document, describing the project, any substantial deviations, construction documentation and certification. After the final closure, the County will prepare additional documentation for legal description and final survey. After Department approval of the certification, the County will publish a declaration to the public, request an official date of closing from FDEP and record the declaration, and site survey/ legal description in the public record. The long term care period will begin after the FDEP establishes an official date of closing. The long term care period for Class III landfill units is 30 years.

The County's Solid Waste Management System provides funding for annual LTC from a LTC escrow fund. These escrow funds are updated on an annual basis and reports are submitted to FDEP. The County files required financial responsibility reports and annual audit statement in conformance with 62.701.630 F.A.C. requirements.

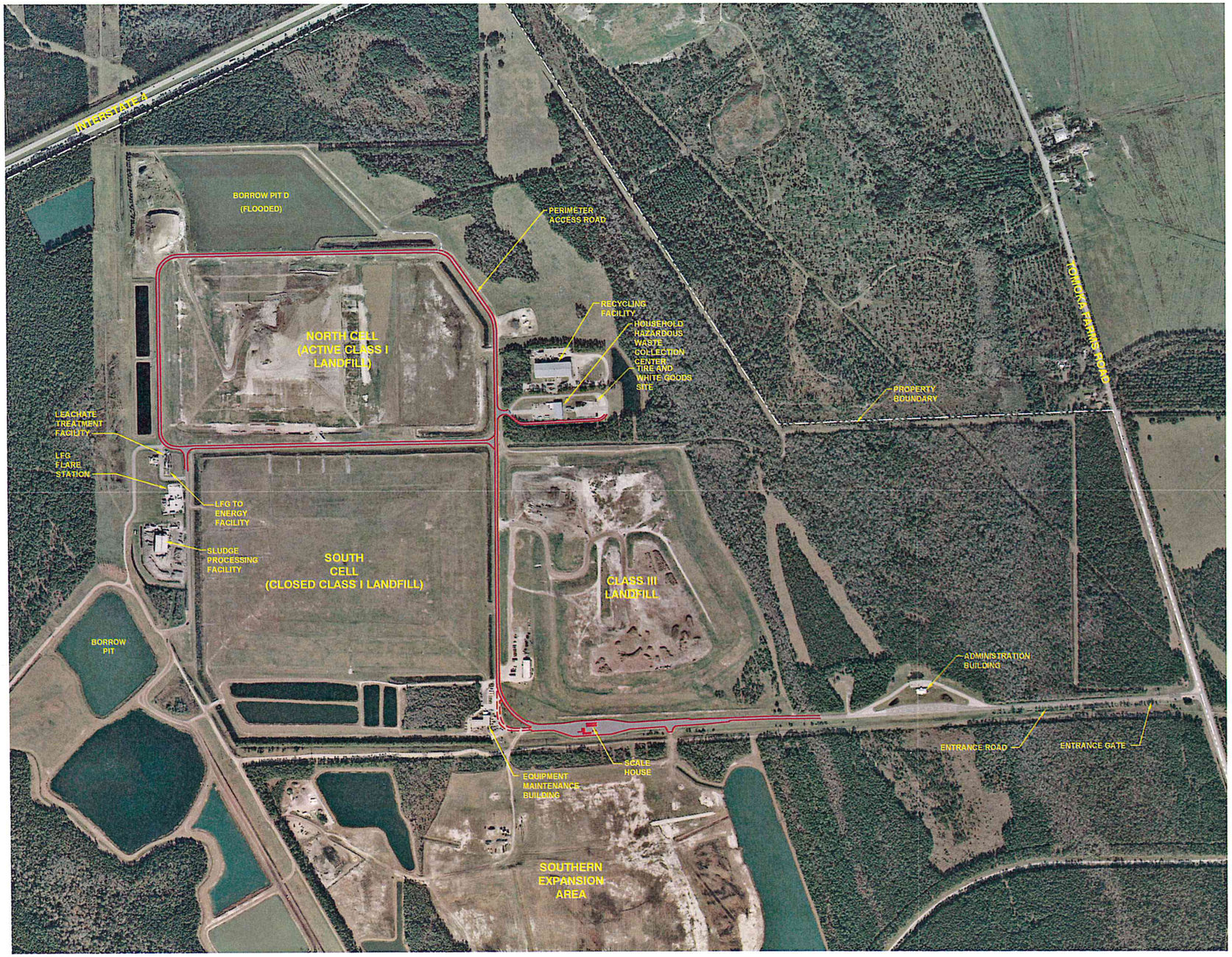
13.4 Part P-Other Closure Procedures (62-701.610, FAC)

Part P is not applicable to operation permit renewal applications. No final use for the closed landfill unit other than passive green space has been determined. The application form has been marked "Not Applicable.".

13.5 Part Q-Long-Term Care Requirements (62-701.620, FAC)

A Long-Term Care Plan is not required for operation permit renewals. The application form has been marked "Not Applicable.".

Attachment B



N

0 500 1000

SCALE: 1" =1000'

LEGEND

PROPERTY BOUNDARY

NOTES:

1. AERIAL IMAGERY WAS TAKEN FROM FDOT WEBSITE DATED JANUARY 2012.
2. PROPERTY BOUNDARY WAS OBTAINED FROM VOLUSIA COUNTY PROPERTY APPRAISERS FOR YEAR 2013.

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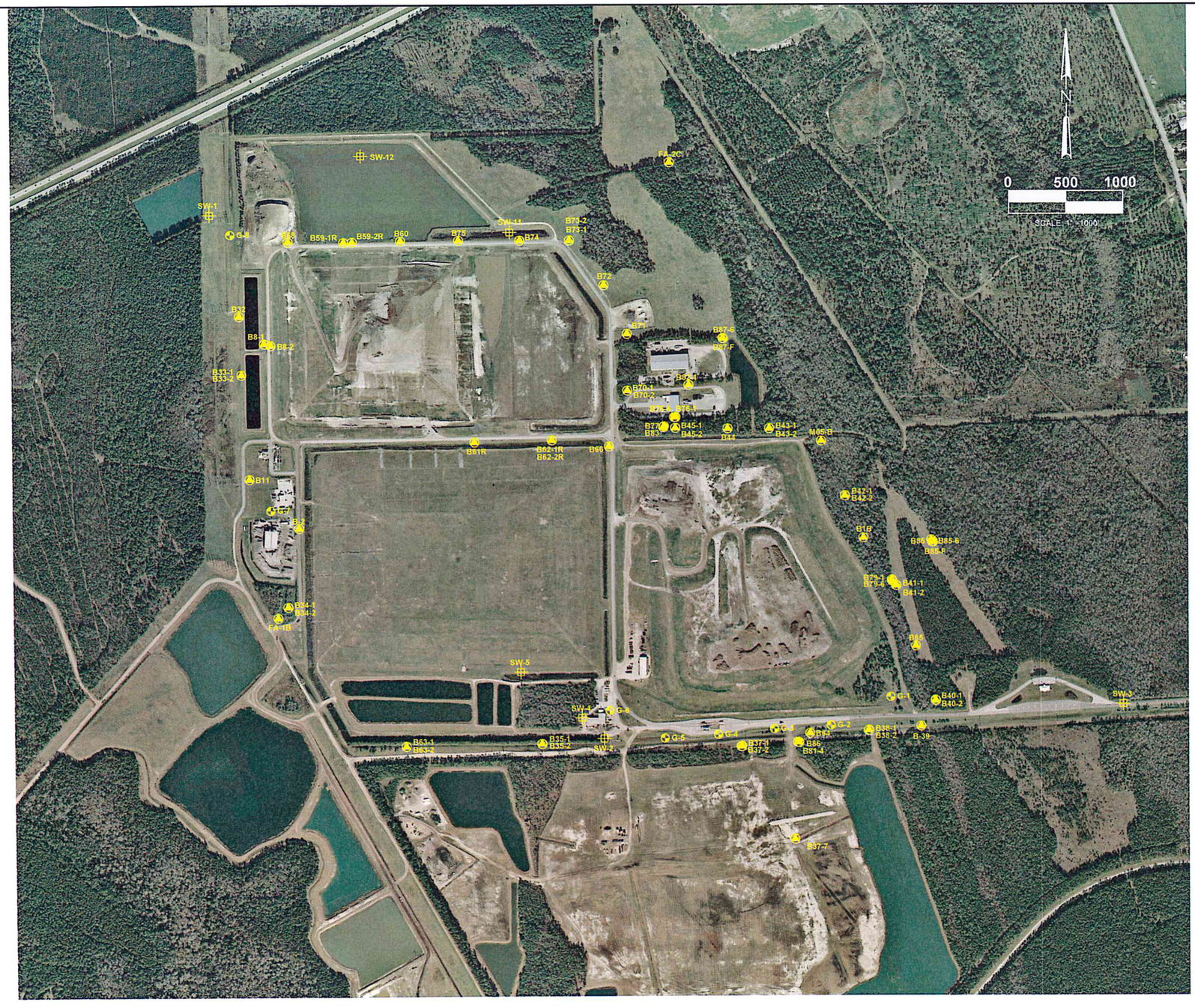
SITE PLAN
TOMOKA FARMS ROAD SOLID WASTE FACILITY
VOLUSIA COUNTY, FLORIDA

PROJ. NO.: NS.12033.001

FIGURE: 1-1



LEGEND

- MONITORING WELL
- SURFACE WATER SAMPLING LOCATION
- LANDFILL GAS MONITORING WELL

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B1-B	29°07'57"	81°05'14"	28.78
B2	29°07'58"	81°06'09"	34.53
B5	29°07'40"	81°05'38"	32.59
B8-1	29°08'14"	81°06'11"	33.53
B8-2	29°08'14"	81°06'11"	33.37
B11	29°08'02"	81°06'14"	32.95
B32	29°08'17"	81°06'14"	30.92
B33-1	29°08'12"	81°06'14"	34.69
B33-2	29°08'12"	81°06'14"	32.97
B34-1	29°07'51"	81°06'11"	31.19
B34-2	29°07'51"	81°06'11"	31.20
B35-1	29°07'39"	81°05'46"	29.26
B35-2	29°07'39"	81°05'46"	29.34
B36	29°07'39"	81°05'31"	29.33
B37-01	29°07'39"	81°05'25"	28.63
B37-02	29°07'39"	81°05'25"	28.76
B38-1	29°07'40"	81°05'13"	28.24
B38-2	29°07'40"	81°05'13"	28.12
B39	29°07'40"	81°05'08"	29.09
B40-1	29°07'43"	81°05'07"	27.77
B40-2	29°07'43"	81°05'07"	27.67
B41-1	29°07'53"	81°05'11"	29.16
B41-2	29°07'53"	81°05'11"	29.27
B42-1	29°08'01"	81°05'16"	28.30
B42-2	29°08'01"	81°05'16"	28.47
B43-1	29°08'07"	81°05'23"	28.09
B43-2	29°08'07	81°05'23"	28.23
B44	29°08'07"	81°05'27"	30.03
B45-1	29°08'07"	81°05'32"	30.28
B45-2	29°08'07"	81°05'32"	30.35
B59-1R	29°08'23"	81°06'05"	32.44
B59-2R	29°08'23"	81°06'05"	33.12
B60	29°08'24"	81°05'59"	32.95
B61R	29°08'05"	81°05'52"	39.42
B62-1R	29°08'05"	81°05'44"	38.97
B62-2R	29°08'05"	81°05'44"	39.36

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B63-1	29°07'39"	81°05'59"	30.03
B63-2	29°07'39"	81°05'59"	30.38
B64	29°07'40"	81°05'19"	28.22
B65	29°07'48"	81°05'09"	27.97
B66	29°08'06"	81°05'38"	31.26
B68	29°08'23"	81°06'10"	32.98
B70-1	29°08'11"	81°05'37"	31.03
B70-2	29°08'11"	81°05'37"	31.51
B71	29°08'15"	81°05'37"	30.75
B72	29°08'20"	81°05'39"	28.93
B73-1	29°08'24"	81°05'42"	29.20
B73-2	29°08'24"	81°05'42"	28.95
B74	29°08'24"	81°05'47"	33.78
B75	29°08'24"	81°05'53"	31.62
B76-1	29°08'08"	81°05'31"	27.39
B76-6	29°08'08"	81°05'31"	27.33
B77	29°08'07"	81°05'32"	31.13
B79-1	29°07'54"	81°05'09"	27.53
B79-6	29°07'54"	81°05'10"	27.51
B81-4	29°07'39"	81°05'19"	29.76
B82-1	29°08'11"	81°05'30"	30.78
B83	29°08'07"	81°05'32"	30.57
B85	29°07'57"	81°05'05"	27.07
B85-6	29°07'57"	81°05'05"	27.02
B85-F	29°07'57"	81°05'05"	27.47
B86	29°07'40"	81°05'19"	29.46
B87-6	29°08'15"	81°05'26"	29.37
B87-F	29°08'15"	81°05'26"	29.25
FA-1B	29°07'51"	81°06'11"	32.22
FA-2C	29°08'31"	81°05'32"	28.10
FM-B	29°07'42"	81°05'36"	33.88
M05-B	29°08'06"	81°05'18"	29.80

NOTES:

WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.

LANDFILL GAS MONITORING WELL SCHEDULE

WELL	EXIST. SURFACE ELEV. (NGVD)	BOREHOLE BOTTOM ELEV. (NGVD)	BOREHOLE DEPTH (FT.)	SCREEN INTERVAL (NGVD)	NORTHING	EASTING
G-1	26.6	16.6	10	16.6 – 23.6	1743134	628678
G-2	28.0	18.0	10	18.0 – 25.0	1742884	628150
G-3	27.5	17.5	10	17.5 – 24.5	1742855	627650
G-4	28.0	18.0	10	18.0 – 26.0	1742807	627159
G-5	28.0	18.0	10	18.0 – 26.0	1742777	626688
G-6	32.0	19.0	13	19.0 – 29.0	1743018	626204
G-7	31.0	18.0	13	18.0 – 28.0	1744790	623240
G-8	28.0	15.0	13	15.0 – 25.0	1747215	622901

NOTE:

LANDFILL GAS MONITORING WELL SCHEDULE FROM SCS LFG MONITORING PLAN DATED APRIL 20, 2001.

AERIAL PHOTOGRAPHY FROM FDOT DATED JANUARY 4, 2012.
MONITORING WELL LOCATIONS FROM HDR & SCS.

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CLASS III LANDFILL - OVERALL SITE WITH MONITORING WELL LOCATIONS
TOMOKA FARMS ROAD SOLID WASTE FACILITY
VOLUSIA COUNTY, FLORIDA

PROJ. NO.: NS.12033.001

FIGURE: B-6

Attachment C

Financial Assurance Responsibility
Closure and Long-term Care Cost Estimates
Tomoka Farms Road Landfill – Class III Landfill
Volusia County, Florida
RAI Response July 2014

Closure and long-term care cost estimates for the Volusia County Tomoka Farms Road Class III Landfill (Landfill) are being re-calculated according to 62-701.630(3)(a), FAC. The signed and sealed FDEP Form is provided in Attachment R-1. Quotes from third-party sources are provided in Attachment R-2.

The basis for the landfill closure & long term care related quantities is the revised Financial Assurance Cost Estimates (FACE) Report (September 2008) provided with "*RAI Response regarding July 2008 Application for Class III Expansion*". The FACE estimates were approved by the FDEP on January 21, 2009 when the FDEP issued a permit authorizing Class III expansion. No changes are proposed to the closure design as part of this permit renewal application.

The basis for unit cost include 2014 pricing, FDEP-submitted closure design and regulations contained in Chapter 62-701 of the Florida Administrative Code (FAC). Revised cost estimates are provided on FDEP Form 62-701.900(28). Note that some unit costs are obtained from 2014 RS Means and 2014 FDOT Estimates. The RS Means unit costs are obtained from 2014 online edition and adjusted for the Orlando area. The FDOT estimates are for either for FDOT Area 6 (if available) that includes Volusia County or for state wide average.

CLOSURE COSTS

Closure footprint area = 88.06 AC
Closure 3-D area from CAD = 3,915,560 SF = 435,062 SY

Monitoring Wells (Item 1)

It is assumed that monitoring wells will be in place at time of closure; therefore wells are not included as part of the closure construction estimate.

Slope and Fill (Item 2)

Quantity of soil required for 12" grading/intermediate cover layer = 145,021 CY (*from Sept 2008 FACE Report*)

It is assumed that the 12" intermediate cover layer will be in place at the time of closure. Moreover, it is assumed that approximately 25% of the intermediate cover soil will require grading before liner installation.

Thus, quantity of cover soil in 12" intermediate cover soil layer requiring grading = 36,255 CY

A unit cost of $3.00/CY for soil installation (spreading and placement) has been obtained from Southeast Environmental Contracting, Inc (SEC). The unit cost for soil grading is assumed to be the same as soil installation cost.

Cover Material (Item 3)

The proposed final cover consists of 40-mil textured LLDPE geomembrane, 250-mil geocomposite drainage layer and 18" layer of cover soil.

(a) Cover Soil:
From *Sept 2008 FACE Report,* the area requiring cover soil = 3,915,560 SF

Volume of Cover Soil in 18" layer= (3,915,560 SF × 1.5 FT / 27) = 217,531 CY

A unit cost of $11.25/CY for off-site installed cover soil has been obtained from August 2013 FACE Report for North Cell Class I Landfill closure as an average unit cost from two different third party contractors (original quotes provided in Attachment R-2). The unit cost has been inflated using FDEP approved inflation factor of 1.017; therefore, unit cost of installed off-site cover soil is calculated as $11.44/CY.

(b) Synthetics-40 mil:
Quantity of textured 40-mil LLDPE geomembrane = 435,062 SY

Units cost of $4.05/SY for installed geomembrane has been obtained from Comanco.

(c) Geocomposite:
Total 250-mil geocomposite required = 309,446 SY
(Note: Above quantity is based on *Sept 2008 FACE Report* and excludes the diversion swale area of 125,616 SY)

Units cost of $3.60 for installed geocomposite has been obtained from Comanco.

Top Soil Cover (Item 4)

The top soil cover consists of 6" layer of soil capable of supporting vegetative growth. From *Sept 2008 FACE Report* the area requiring top soil = 3,915,560 SF

Volume of Cover Soil in 6" layer= (3,915,560 SF × 0.5 FT / 27) = 72,510 CY

A unit cost of $12.50/CY for off-site installed top soil has been obtained from August 2013 FACE Report for North Cell Class I Landfill closure as an average cost from two different third party contractors (original quotes provided in Attachment R-2). The unit cost has been inflated using FDEP approved inflation factor of 1.017; therefore, unit cost of installed off-site top soil is calculated as $12.71/CY.

Vegetation (Item 5)

From Sept 2008 FACE Report, the area from the CAD Civil 3-D that requires vegetation = 315,105 SY

It is assumed that approximately 13 acres of top area (with 5% slope) will be hydro seeded and remainder of the area will be sodded.

Area requiring hydroseeding = 13 AC = 62,920 SY
Area requiring sodding = 252,185 SY

A unit cost of $36.64 per 1000 SF (or $1,596.04 per AC) for hydroseeding is obtained from RS Means 2014 online edition.

A unit cost of $1.51 per SY for installed sod has been obtained from 2014 FDOT Estimates.

Stormwater Control System (Item 6)

No separate earthwork and grading are considered as it is covered in items 2 through 4, and berm installation. Also, the installation of the perimeter channel is a part of the landfill's on-going operations and therefore, not included in this cost estimate.

- Piping:
  Total length of 18" corrugated HDPE downchutes required for drainage = 6,686 LF
  Total length of 15" HDPE pipe required for drainage = 11,879 LF
  (Above quantities obtained from *Sept 2008 FACE Report*)

  A unit cost of $19.01/LF and $12.09/LF for installed 18"HDPE and 15" HDPE respectively has been obtained from 2014 RS Means online edition.

  Average unit cost for 18,565 LF piping = $14.58/LF

- Control Structures:
  Number of control structures required = 39 (*from Sept 2008 FACE Report*)

  Control structures are assumed to be FDOT U-Type Endwall with 1:4 slope and 18" downcomer pipe diameter. A unit cost of $1,200 for an installed FDOT U-Type Endwall has been obtained from 2014 FDOT Cost Estimates.

- Berm:
  Length of tack-on berm= 30,443 FT
  Cross sectional area of berm= 4.5 SF
  (Length and Cross Sectional Area obtained from *Sept 2008 FACE Report*)

  Volume of soil = (30,443 FT × 4.5 SF / 27) = 5,074 CY

  For unit cost of soil, refer to unit cost of Item 3(a). Note that the unit price includes off-site materials, spreading and placement.

- Others:
  Number of 24" HDPE Inlets = 4
  Number of 18" HDPE Inlets = 35
  (Number of inlets obtained from *Sept 2008 FACE Report*)

  Length of 12" HDPE pipe required for inlet to downchute connections= 1,872 FT
  (*from Closure Plan Details provided in Class III Operations Permit Renewal, dated June 2009*)

  Unit costs of $800/EA and $700/EA for 24"HDPE and 18" HDPE inlets have been obtained from SEC.

A unit cost of $10.25/LF for installed 12"HDPE pipe has been obtained from RS Means 2014 Online Edition.

The total cost for inlets and inline drain piping has been added as lump sum cost.

Passive Gas Control (Item 7)
Passive gas venting will be used for the Class III Landfill closure. As reported in the *Sept 2008 FACE Report*, 43 vents will be installed with total depth for all vents estimated to be 3,795 ft.

A unit cost of $130 /LF for installed passive vent has been obtained from SEC Contracting.

Active Gas Extraction Control (Item 8)
No active gas collection system is proposed as a part of the Closure.

Security System (Item 9)
Perimeter fencing, gates and signs already exists at the facility and some cost has already been allocated in Class I Landfill's closure cost estimate for this line item.

Closure Permit, Contracts, CQA and Certification (Items 10 & 11)
Professional engineering services will be needed during three phases of the closure process: permitting, construction and certification. Engineering and professional services hours and cost estimates listed are based on HDR experience on similar projects.

Contingency (Item 12)
A 5% of total closure cost will be allocated as a contingency.

Site Specific Costs (Item 13)
Mobilization is based on HDR's experience with construction projects and requirements included in contract documents for similar projects.

LONG-TERM CARE COSTS

Ground Water Monitoring (Item 1)
Groundwater monitoring cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's Long Term Care (LTC) cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

Surface Water Monitoring (Item 2)
Surfacewater monitoring cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's LTC cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

Gas Monitoring (Item 3)
Perimeter gas probe monitoring cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's LTC cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

Leachate Collection System (Items 4&5)

The Class III landfill does not have a leachate collection system.

Groundwater Monitoring Well Maintenance (Item 6)
Groundwater monitoring well maintenance cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's LTC cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

Gas System Maintenance (Item 7)
Assume a lump sum amount of $500 per year for passive vent maintenance and replacement.

Landscaping (Item 8)
The closure area of 88.06 AC has been adjusted with a factor of 1.03 to count 4(H) to 1(V). Thus, 90.7 AC landfill cap will need landscaping/mowing four times a year.

The unit cost of $28.30 per AC is based on 2014 FDOT Cost Estimates

Total annual mowing cost = $28.30 per AC * 4 = $113.20 per AC

Erosion Control and Cover Maintenance (Item 9)

To account for erosion control and cover maintenance in the post closure care period, reconstruction of the final cover including sod, liner and soil fill material were considered. An annual average soil loss of 666 CY was calculated using the United Soil Loss Equation (USLE). This is a conservative calculation since it is assumed that 60% of the ground is covered by vegetation. Refer to Attachment R-3 for further explanation of the USLE equation.

For this financial assurance estimate, it is assumed that soil will erode in channels that will cut an average of six inches deep into the final cover. It was assumed that 25% of the disturbed area will require liner repairs.

- Sodding: 3,996 SY = 35,964 SF = 666 CY * 27 CF/CY / (0.5 FT average depth)
- Liner Repair: 999 SY = 8,991 SF = 666 CY * 27 CF/CY * 25% / 0.5 FT

- Soil: 666 CY

Refer to Item 5 of the closure cost for installed sod unit cost.

Refer to Item 3 of the closure cost for LLDPE & geocomposite (combined) repair unit cost.

Refer to Item 4 of the closure cost for installed off-site soil cost (top soil assumed). Note that grading of disturbed area is included in this unit cost.

Stormwater Maintenance (Item 10)
The following assumptions have been made for stormwater system maintenance:

- 500 feet of downcomer piping will need to replaced every 5-years;
- 1 control structure need to be replaced every 5-years;
- Berm maintenance cost has been assumed as part of Item 9 above and no cost is added;
- 1 inlet needs to be replaced every year; and
- 250 feet of inline drain piping needs to be replaced every 5-years.

The unit costs for the above components are listed in Item 6 of the closure cost estimates. Note that the downchute piping cost is an average of 18" and 15" HDPE pipe unit costs, and the inlet unit cost is an average of 24" and 18" inlets.

Annual costs are itemized below:

- Downcomer Piping: $1,555 (= 500 * $15.55 / 5)
- Control Structure: $240 (= 1 * $1,200 / 5)
- Inlet Replacement: $750
- Inline drain piping: $512.50 (= 250 * $10.25 / 5)

Thus, total annual cost = $3,057.50.

Security System Maintenance (Item 11)
Security system maintenance cost for the Tomoka Farms Road Landfill is included with the Class I Landfill's Long Term Care (LTC) cost. Thus, no separate cost has been considered for Class III Landfill's LTC.

Utilities (Item 12)
A lump sum amount of $50/month is assumed as cost associated with utilities associated with Class III landfill.

Leachate Collection/Treatment Systems Operation (Item 13)
The Class III landfill does not have a leachate collection system.

Administrative Costs (Item 14)
Professional engineering services expected during the long-term care period include semiannual water quality reports and 5-year water quality technical reports, ten-year long-term care permit renewal applications, five-year stabilization reports and other miscellaneous reporting requirements. Administrative cost estimates listed on the FDEP Form are based on HDR experience on similar projects.

Attachment R-1
FDEP Form 62-701.900(28)

Print Form | Reset Form

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEP Form # 62-701.900(28), F.A.C.
Form Title: Closure Cost Estimating Form For Solid Waste Facilities
Effective Date: January 6, 2010
Incorporated in Rule 62-701.630(3), F.A.C.

CLOSURE COST ESTIMATING FORM FOR SOLID WASTE FACILITIES

Date of DEP Approval: _____

I. GENERAL INFORMATION:

Facility Name: Tomoka Farms Road Landfill- Class III Landfill WACS ID: 27540
Permit Application or Consent Order No.: SO64-0078767-019 Expiration Date: 10/9/2014
Facility Address: 1990 Tomoka Farms Road, Daytona Beach, Florida
Permittee or Owner/Operator: Volusia County Solid Waste Division
Mailing Address: 3151 East New York Avenue, DeLand, Florida 32724

Latitude: 29 ° 07 ' 53 " Longitude: 81 ° 05 ' 31 "
Coordinate Method: AutoCAD/GPS Datum: NAD 1983/90 (east)
Collected by: J.E. Zapert Company/Affiliation: Sliger & Associates, Inc.

Solid Waste Disposal Units Included in Estimate:

Phase / Cell	Acres	Date Unit Began Accepting Waste	Active Life of Unit From Date of Initial Receipt of Waste	If active: Remaining life of unit	If closed: Date last waste received	If closed: Official date of closing
Class III LF	88.06	June 1998	16.0 years	29.6 years	NA	NA

Total disposal unit acreage included in this estimate: Closure: 88.06 Long-Term Care: 88.06

Facility type: ☐ Class I ☒ Class III ☐ C&D Debris Disposal
(Check all that apply) ☐ Other: _____

II. TYPE OF FINANCIAL ASSURANCE DOCUMENT (Check type)

☐ Letter of Credit* ☐ Insurance Certificate ☒ Escrow Account
☐ Performance Bond* ☐ Financial Test ☐ Form 29 (FA Deferral)
☐ Guarantee Bond* ☐ Trust Fund Agreement

* - Indicates mechanisms that require the use of a Standby Trust Fund Agreement

Northwest District
160 Government Center
Pensacola, FL 32502-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-807-3300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
13051 N. Telecom Pky.
Temple Terrace, FL 33637
813-632-7600

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
239-332-6975

Southeast District
400 N. Congress Ave., Ste. 200
West Palm Beach, FL 33401
561-681-6600

III. ESTIMATE ADJUSTMENT

40 CFR Part 264 Subpart H as adopted by reference in Rule 62-701.630, Florida Administrative Code, (F.A.C.) sets forth the method of annual cost estimate adjustment. Cost estimates may be adjusted by using an inflation factor or by recalculating the maximum costs of closure in current dollars. Select one of the methods of cost estimate ajustment below.

☐ **(a) Inflation Factor Adjustment** ☒ **(b) Recalculated or New Cost Estimates**

Inflation adjustment using an inflation factor may only be made when a Department approved closure cost estimate exists and no changes have occurred in the facility operation which would necessitate modification to the closure plan. The inflation factor is derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflatory by the Deflator for the previous year. The inflation factor may also be obtained from the Solid Waste website www.dep.state.fl.us/waste/categories/swfr or call the Financial Coordinator at (850) 245-8706.

This adjustment is based on the Department approved closing cost estimate dated: _____

Latest Department Approved **Closing Cost** Estimate:		Current Year Inflation Factor, ***e.g. 1.02***		Inflation Adjusted Closing Cost Estimate:
_____	×	_____	=	_____

This adjustment is based on the Department approved long-term care cost estimate dated: _____

Latest Department Approved Annual **Long-Term Care** Cost Estimate:		Current Year Inflation Factor, ***e.g. 1.02***		Inflation Adjusted Annual Long-Term Care Cost Estimate:
_____	×	_____	=	_____

Number of Years of Long Term Care Remaining: × _____

Inflation Adjusted Long-Term Care Cost Estimate: = _____

Signature by: ☐ **Owner/Operator** ☒ **Engineer** (check what applies)

_____ Signature	_____ Address
_____ Name & Title	_____ City, State, Zip Code
_____ Date	_____ E-Mail Address
_____ Telephone Number	

IV. ESTIMATED CLOSING COST (check what applies)

☒ **Recalculated Cost Estimate** ☐ **New Facility Cost Estimate**

Notes: 1. Cost estimates for the time period when the extent and manner of landfill operation makes closing most ex
2. Cost estimate must be certified by a professional engineer.
3. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.
4. In some cases, a price quote in support of individual item estimates may be required.

Description	Unit	Number of Units	Cost / Unit	Total Cost
1. Proposed Monitoring Wells	**(Do not include wells already in existence.)**			
	EA	0	$0.00	
			Subtotal Proposed Monitoring Wells:	
2. Slope and Fill (bedding layer between waste and barrier layer):				
Excavation	CY			
Placement and Spreading	CY			
Grading of in-place Material	CY	36,255	$3.00	$108,765.00
Off-Site Material	CY			
Delivery	CY			
			Subtotal Slope and Fill:	$108,765.00
3. Cover Material (Barrier Layer):				
Off-Site Material (Installed)	CY	217,531	$11.44	$2,488,554.64
Synthetics - 40 mil	SY	435,062	$4.05	$1,762,001.10
Synthetics - GCL	SY			
Synthetics - Geonet	SY			
Synthetics - Other (explain)	SY	309,446	$3.60	$1,114,005.60
250-mil Geocomposite			Subtotal Cover Material:	$5,364,561.34
4. Top Soil Cover:				
Off-Site Material (Installed)	CY	72,510	$12.71	$921,602.10
Delivery	CY			
Spread	CY			
			Subtotal Top Soil Cover:	$921,602.10
5. Vegetative Layer				
Sodding	SY	252,185	$1.51	$380,799.35
Hydroseeding	AC	13	$1,596.04	$20,748.52
Fertilizer	AC			
Mulch	AC			
Other (explain)				
			Subtotal Vegetative Layer:	$401,547.87
6. Stormwater Control System:				
Installed Berm (off-site material)	CY	5,074	$11.42	$57,945.08
Grading	SY			
Piping	LF	18,565	$14.58	$270,677.70
Ditches	LF			
Berms	LF			
Control Structures	EA	39	$1,200.00	$46,800.00
Other (explain)	LS	1	$46,888.00	$46,888.00
See Report text			Subtotal Stormwater Control System:	$422,310.78

Description	Unit	Number of Units	Cost / Unit	Total Cost
7. Passive Gas Control:				
Wells	EA			
Pipe and Fittings	LF	3,795	$130.00	$493,350.00
Monitoring Probes	EA			
NSPS/Title V requirements	LS	1		
			Subtotal Passive Gas Control:	$493,350.00
8. Active Gas Extraction Control:				
Traps	EA			
Sumps	EA			
Flare Assembly	EA			
Flame Arrestor	EA			
Mist Eliminator	EA			
Flow Meter	EA			
Blowers	EA			
Collection System	LF			
Other (explain)				
			Subtotal Active Gas Extraction Control:	
9. Security System:				
Fencing	LF			
Gate(s)	EA			
Sign(s)	EA			
			Subtotal Security System:	
10. Engineering:				
Closure Plan Report	LS	1	$50,000.00	$50,000.00
Certified Engineering Drawings	LS	1	$25,000.00	$25,000.00
NSPS/Title V Air Permit	LS	1		
Final Survey	LS	1	$25,000.00	$25,000.00
Certification of Closure	LS	1	$25,000.00	$25,000.00
Other (explain)				
			Subtotal Engineering:	$125,000.00

Description	Hours	Cost / Hour	Hours	Cost / Hour	Total Cost
11. Professional Services					
	Contract Management		Quality Assurance		
P.E. Supervisor	120	$130.0(	40	$130.0(	$20,800.00
On-Site Engineer	360	$90.00	200	$90.00	$50,400.00
Office Engineer	100	$100.0(	144	$100.0(	$24,400.00
On-Site Technician			2,000	$65.00	$130,000.00
Other (explain)					

Description	Unit	Number of Units	Cost / Unit	Total Cost
Quality Assurance Testing	LS	1	$50,000.00	$50,000.00
			Subtotal Professional Services:	$275,600.00

	Subtotal of 1-11 Above:	$8,112,737.09
12. Contingency 5 % of Subtotal of 1-11 Above		$405,636.85
	Subtotal Contingency:	$405,636.85
	Estimated Closing Cost Subtotal:	$8,518,373.94

Description	**Total Cost**
13. Site Specific Costs	
Mobilization	$150,000.00
Waste Tire Facility	
Materials Recovery Facility	
Special Wastes	
Leachate Management System Modification	
Other (explain) _____	
_____ Subtotal Site Specific Costs:	$150,000.00

TOTAL ESTIMATED CLOSING COSTS ($): $8,668,373.94

V. ANNUAL COST FOR LONG-TERM CARE

See 62-701.600(1)a.1., 62-701.620(1), 62-701.630(3)a. and 62-701.730(11)b. F.A.C. for required term length. For landfills certified closed and Department accepted, enter the remaining long-term care length as "Other" and provide years remaining.

(Check Term Length) ☐ 5 Years ☐ 20 Years ☒ 30 Years ☐ Other, ___ Years

Notes: 1. Cost estimates must be certified by a professional engineer.

2. Cost estimates based on third party suppliers of material, equipment and labor at fair market value.

3. In some cases, a price quote in support of individual item estimates may be required.

All items must be addressed. Attach a detailed explanation for all entries left blank.

Description	Sampling Frequency (Events / Year)	Number of Wells	(Cost / Well) / Event	Annual Cost
1. Groundwater Monitoring [62-701.510(6), and (8)(a)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
			Subtotal Groundwater Monitoring:	
2. Surface Water Monitoring [62-701.510(4), and (8)(b)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
			Subtotal Surface Water Monitoring:	
3. Gas Monitoring [62-701.400(10)]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
			Subtotal Gas Monitoring:	
4. Leachate Monitoring [62-701.510(5), (6)(b) and 62-701.510(8)c]				
Monthly	12			
Quarterly	4			
Semi-Annually	2			
Annually	1			
Other (explain) _____				
			Subtotal Leachate Monitoring:	

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. Leachate Collection/Treatment Systems Maintenance				
Maintenance				
Collection Pipes	LF			
Sumps, Traps	EA			
Lift Stations	EA			
Cleaning	LS	1		
Tanks	EA			

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
5. (continued)				
Impoundments				
Liner Repair	SY			
Sludge Removal	CY			
Aeration Systems				
Floating Aerators	EA			
Spray Aerators	EA			
Disposal				
Off-site (Includes transportation and disposal)	1000 gallon			
			Subtotal Leachate Collection / Treatment Systems Maintenance:	
6. Groundwater Monitoring Well Maintenance				
Monitoring Wells	LF			
Replacement	EA			
Abandonment	EA			
			Subtotal Groundwater Monitoring Well Maintenance:	
7. Gas System Maintenance				
Piping, Vents	LS	1	$500.00	$500.00
Blowers	EA			
Flaring Units	EA			
Meters, Valves	EA			
Compressors	EA			
Flame Arrestors	EA			
Operation	LS	1		
			Subtotal Gas System Maintenance:	$500.00
8. Landscape Maintenance				
Mowing	AC	90.7	$113.20	$10,267.24
Fertilizer	AC			
			Subtotal Landscape Maintenance:	$10,267.24
9. Erosion Control and Cover Maintenance				
Sodding	SY	3,996	$1.51	$6,033.96
Regrading	AC			
Liner Repair	SY	999	$10.70	$10,689.30
Clay	CY	666	$12.69	$8,451.54
			Subtotal Erosion Control and Cover Maintenance:	$25,174.80
10. Storm Water Management System Maintenance				
Conveyance Maintenance	LS	1	$3,057.50	$3,057.50
			Subtotal Storm Water Management System Maintenance:	$3,057.50
11. Security System Maintenance				
Fences	LS	1		
Gate(s)	EA			
Sign(s)	EA			
			Subtotal Security System Maintenance:	

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
12. Utilities	LS	1	$600.00	$600.00
			Subtotal Utilities:	$600.00
13. Leachate Collection/Treatment Systems Operation				
Operation				
P.E. Supervisor	HR			
On-Site Engineer	HR			
Office Engineer	HR			
OnSite Technician	HR			
Materials	LS	1		
		Subtotal Leachate Collection/Treatment Systems Operation:		
14. Administrative				
P.E. Supervisor	HR	30	$135.00	$4,050.00
On-Site Engineer	HR			
Office Engineer	HR	60	$100.00	$6,000.00
OnSite Technician	HR	48	$65.00	$3,120.00
Other				
Administrative Assistant			Subtotal Administrative:	$13,170.00
			Subtotal of 1-14 Above:	$52,769.54
15. Contingency	10	% of Subtotal of 1-14 Above		$5,276.95
			Subtotal Contingency:	$5,276.95

Description	Unit	Number of Units / Year	Cost / Unit	Annual Cost
16. Site Specific Costs				
			Subtotal Site Specific Costs:	
			ANNUAL LONG-TERM CARE COST ($ / YEAR):	$58,046.49
			Number of Years of Long-Term Care:	30
			TOTAL LONG-TERM CARE COST ($):	$1,741,394.82

VI. CERTIFICATION BY ENGINEER

This is to certify that the Cost Estimates pertaining to the engineering features of this solid waste management facility have been examined by me and found to conform to engineering principles applicable to such facilities. In my professional judgment, the Cost Estimates are a true, correct and complete representation of the financial liabilities for closing and/or long-term care of the facility and comply with the requirements of Rule 62-701.630 F.A.C. and all other Department of Environmental Protection rules, and statutes of the State of Florida. It is understood that the Cost Estimates shall be submitted to the Department annually, revised or adjusted as required by Rule 62-701.630(4), F.A.C.

Signature

Clifford G. Koenig, Project Manager
Name and Title (please type)

7-31-2014
Date

CLIFFORD G. KOENIG No. 64078 STATE OF FLORIDA PROFESSIONAL ENGINEER

Florida Registration Number
(please affix seal)

200 W Forsyth St, Ste 800
Mailing Address

Jacksonville, FL 32202
City, State, Zip Code

Cliff.Koenig@hdrinc.com
E-Mail address (if available)

(904) 598-8900
Telephone Number

VII. SIGNATURE BY OWNER/OPERATOR

Signature of Applicant

Leonard Marion, Director
Name and Title (please type)

lmarion@co.volusia.fl.us
E-Mail address (if available)

3151 East New York Avenue
Mailing Address

DeLand, FL 32724
City, State, Zip Code

(386)-943-7889
Telephone Number

Attachment R-2
Third-Party Quotes

FROM AUGUST 2013 FACE REPORT FOR NORTH CELL CLOSURE
USED FOR 18" COVER SOIL AND 6" TOP SOIL UNIT COSTS

Beben, David

From: Jerry L. Pinder <jerry.pinder@ercflorida.com>
Sent: Tuesday, August 13, 2013 11:11 AM
To: Beben, David
Cc: Nestor Reyes
Subject: RE: Volusia Cost Estimates

From: Beben, David [mailto:David.Beben@hdrinc.com]
Sent: Monday, August 12, 2013 1:33 PM
To: Jerry Pinder (jerry.pinder@ercflorida.com)
Subject: RE: Volusia Cost Estimates

Hi Jerry – any updates?

From: Beben, David
Sent: Thursday, August 08, 2013 4:40 PM
To: Jerry Pinder (jerry.pinder@ercflorida.com)
Subject: Volusia Cost Estimates

Hi Jerry, we are collecting cost quotes for the Tomoka Farms landfill in Daytona. It will be for the regulatory submittal for closure of the North Cell. Please complete the unit cost for the six items to the best of your knowledge.

Item	Quantity	Unit	Unit Cost	Comments
18" Cover soil Layer (off-site material)	221,281	CY	9.00	Installed unit cost including materials, hauling and installation costs.
6" Top vegetative soil (off-site materials)	73,760	CY	10.00	Installed unit cost including materials, hauling and installation costs.
Textured 40-mil LLDPE	460,264	SY	.30	Installed unit cost including materials and installation costs.
Double sided geocomposite	460,264	SY	.41	Installed unit cost including materials and installation costs.
Sodding	387,175	SY	2.10	Installed unit cost including materials and installation costs.
Hydroseeding	11.44	AC	2,500	

Thanks,

DAVID BEBEN | **HDR Engineering, Inc.**
PE | Project Engineer

200 West Forsyth St. Suite 800 | Jacksonville, FL 32202

FROM AUGUST 2013 FACE REPORT FOR NORTH CELL CLOSURE
USED FOR 18" COVER SOIL AND 6" TOP SOIL UNIT COSTS

Beben, David

From: Earl Holmes <secontracting@windstream.net>
Sent: Thursday, August 08, 2013 5:00 PM
To: Beben, David
Subject: Fw: Volusia Cost Estimates

From: Beben, David
Sent: Thursday, August 08, 2013 4:41 PM
To: mailto:earl@southeastenvironmental.com
Subject: Volusia Cost Estimates

Hi Earl, we are collecting cost quotes for the Tomoka Farms landfill in Daytona. It will be for the regulatory submittal for closure of the North Cell. Please complete the unit cost for the six items to the best of your knowledge.

Item	Quantity	Unit	Unit Cost	Comments
18" Cover soil Layer (off-site material)	221,281	CY	13.50	Installed unit cost including materials, hauling and installation costs.
6" Top vegetative soil (off-site materials)	73,760	CY	15.00	Installed unit cost including materials, hauling and installation costs.
Textured 40-mil LLDPE	460,264	SY	4.90	Installed unit cost including materials and installation costs.
Double sided geocomposite	460,264	SY	5.85	Installed unit cost including materials and installation costs.
Sodding	387,175	SY	2.40	Installed unit cost including materials and installation costs.
Hydroseeding	11.44	AC	2500.00	

Thanks,

DAVID BEBEN
PE

HDR Engineering, Inc.
Project Engineer

200 West Forsyth St. Suite 800 | Jacksonville, FL 32202
904.598.8923 | f:904.598.8988
david.beben@hdrinc.com | hdrinc.com

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Singh, Karamjit

From: Beben, David
Sent: Friday, May 30, 2014 10:42 AM
To: Singh, Karamjit
Subject: FW: Cost Quotes

Karam,

Here are the unit cost estimates from Earl Holmes of Southeast Environmental Contracting, Inc. (5667 Val Del Rd, Hahira, GA 31632).

Let me know if you have any questions.

David Beben, PE
D 904.598.8923 **M** 225.223.5384

hdrinc.com/follow-us

-------- Original message --------
From: Earl Holmes <secontracting@windstream.net>
Date: 05/14/2014 2:05 PM (GMT-05:00)
To: "Beben, David" <David.Beben@hdrinc.com>
Subject: Fw: Cost Quotes

Please see the costs below.

From: Beben, David
Sent: Friday, May 02, 2014 3:45 PM
To: mailto:secontracting@windstream.net ; mailto:southern_m_n_m@yahoo.com
Subject: Cost Quotes

Earl & Michelle,
HDR is working on two cost estimates for FDEP landfill permits – Steelfield Road Landfill near Panama City and Tomoka Farms. We need some assistance procuring Contractor quotes for the estimates. A table with the material and quantities is below to fill out. Please let me know if you have any questions or need clarification. Thank you for the assistance. Have a great weekend.

David Beben, PE
Engineer

HDR
200, W. Forsyth Street, Ste. 800
Jacksonville, FL 32259
D 904.598.8923 **M** 225.223.5384
david.beben@hdrinc.com

hdrinc.com/follow-us

	Volusia County Tomoka Farms Road Landfill	
	Quantity	Unit Cost ($)

Offsite Cover Soil – 18" layer over liner	217,531 CY	Place & Install$ 3 /CY
Passive Vents	43 Wells; each 88 feet deep (avg)	$ 130 /FT
HDPE Inlets 18" Diameter	4	$ 700 /EA
HDPE Inlets 24" Diameter	157	$ 800 /EA

Singh, Karamjit

From: Beben, David
Sent: Thursday, May 22, 2014 10:23 AM
To: Singh, Karamjit
Subject: RE: Cost Quotes

Karam,

Here is quote for geosynthetics (40-mil LLDEP and 250-mil geocomposite).

Let me know if you have any questions.

Thanks,
David

From: Nick Bridges [mailto:nbridges@comanco.com]
Sent: Wednesday, May 14, 2014 2:19 PM
To: Beben, David
Subject: FW: Cost Quotes

David,

Here is your pricing (below). Let us know if you need help with anything else.

Thanks

Nick Bridges

Nick Bridges, E.I. | Project Engineer
COMANCO Environmental Corp.
4301 Sterling Commerce Dr. | Plant City, FL 33566
813-988-8829 Office | 813-323-3651 Cell
nbridges@comanco.com | www.comanco.com

From: Beben, David [mailto:David.Beben@hdrinc.com]
Sent: Friday, May 02, 2014 3:48 PM
To: Nick Bridges; John Jacobs
Subject: Cost Quotes

Nick & John
HDR is working on two cost estimates for FDEP landfill permits – Steelfield Road Landfill near Panama City and Tomoka Farms. We need some assistance procuring Contractor quotes for the estimates. Please let me know if you have any questions or need clarification. Thank you for the assistance. Have a great weekend.

David Beben, PE
Engineer

HDR
200, W. Forsyth Street, Ste. 800
Jacksonville, FL 32259
D 904.598.8923 M 225.223.5384
david.beben@hdrinc.com

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	Bay County Steelfield Road Landfill		Volusia County Tomoka Farms Road Landfill	
	Quantity	Unit Cost ($)	Quantity	Unit Cost ($)
40-mil textured LLDPE	175,160 SY	$4.05/SY	435,062 SY	$4.05/SY
250-mil geocomposite double-sided	175,160 SY	$3.60/SY	309,466 SY	$3.60/SY

Florida Department of Transportation
Item Average Unit Cost
From 2013/04/01 to 2014/03/31

Contract Type: CC AREAS: 06
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430175218	1	$47.00	$11,515.00	245.000	LF	N	PIPE CULV, OPT MATL, OTHER, 18"S/CD
0430175224	1	$51.00	$6,528.00	128.000	LF	N	PIPE CULV, OPT MATL, OTHER, 24"S/CD
0430982125	1	$500.00	$16,500.00	33.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" CD
0430982129	1	$640.00	$7,040.00	11.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" CD
0430982133	1	$1,800.00	$1,800.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" CD
0430982140	1	$2,250.00	$2,250.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 42" CD
0430982629	1	$1,700.00	$3,400.00	2.000	EA	N	MITERED END SECT, OPT - OTHER, 24" CD
0430984125	2	$705.82	$47,290.00	67.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" SD
0430984129	2	$892.91	$9,822.00	11.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" SD
0430984133	1	$1,082.00	$1,082.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" SD
0430984623	1	$887.00	$1,774.00	2.000	EA	N	MITERED END SECT, OPTIONAL,OTHER,15" SD
0430984625	2	$632.98	$29,750.00	47.000	EA	N	MITERED END SECT, OPT / OTHER, 18" SD
0430984629	1	$1,500.00	$24,000.00	16.000	EA	N	MITERED END SECT, OPT / OTHER, 24" SD
0436 1 1	1	$170.00	$51,000.00	300.000	LF	N	TRENCH DRAIN, STANDARD
0458 1 21	1	$100.00	$61,200.00	612.000	LF	N	BRIDGE DECK EXPANSION JNT, REHAB,POURED
0520 1 7	1	$16.00	$32,944.00	2,059.000	LF	N	CONCRETE CURB & GUTTER, TYPE E
0520 1 10	1	$46.00	$9,430.00	205.000	LF	N	CONCRETE CURB & GUTTER, TYPE F
0520 6	1	$16.00	$12,352.00	772.000	LF	N	SHOULDER GUTTER- CONCRETE
0522 1	1	$51.00	$16,626.00	326.000	SY	N	CONC SIDEWALK AND DRIVEWAYS, 4" THICK
0522 2	2	$60.15	$4,257.00	70.770	SY	N	CONC SIDEWALK AND DRIVEWAYS, 6" THICK
0524 1 2	1	$34.00	$21,930.00	645.000	SY	N	CONCRETE DITCH PAVT, NR, 4"
0524 1 4	1	$39.00	$409,266.00	10,494.000	SY	N	CONCRETE DITCH PAVT, NR, 6"
0524 1 29	1	$86.00	$3,956.00	46.000	SY	N	CONC DITCH PAVT, 4", REINFORCED
0530 3 4	1	$126.00	$12,600.00	100.000	TN	N	RIPRAP, RUBBLE, F&I, DITCH LINING
0536 1 1	3	$28.22	$34,138.00	1,209.500	LF	N	GUARDRAIL- ROADWAY
0536 7	1	$139.00	$556.00	4.000	EA	N	SPECIAL GUARDRAIL POST
0536 8	1	$2,200.00	$6,600.00	3.000	EA	N	GUARDRAIL- BRIDGE ANCHORAGE ASSEM, F&I
0536 73	1	$3.00	$487.50	162.500	LF	N	GUARDRAIL REMOVAL
0536 85 22	3	$1,900.00	$11,400.00	6.000	EA	N	GUARDRAIL END ANCHORAGE ASSEMBLY- FLARED
0536 85 24	1	$2,200.00	$11,000.00	5.000	EA	N	GUARDRAIL END ANCHORAGE ASSEM- PARALLEL
0536 85 25	1	$575.00	$1,725.00	3.000	EA	N	GUARDRAIL END ANCHORAGE ASSEM- TYPE II
0550 10120	1	$5.00	$44,805.00	8,961.000	LF	N	FENCING, TYPE A, 5.1-6.0, STANDARD
0550 60134	1	$2,000.00	$8,000.00	4.000	EA	N	FENCE GATE,TYP A, SLIIDE/CAN, 18.1-20.'
0570 1 1	1	$.25	$37,777.50	151,110.000	SY	N	PERFORMANCE TURF
0570 1 2	2	$1.51	$789,389.25	523,164.300	SY	N	PERFORMANCE TURF, SOD
0630 2 11	3	$4.92	$284,782.10	57,861.000	LF	N	CONDUIT, F& I, OPEN TRENCH
0630 2 12	3	$18.39	$277,304.00	15,078.000	LF	N	CONDUIT, F& I, DIRECTIONAL BORE
0630 2 14	1	$12.50	$1,250.00	100.000	LF	N	CONDUIT, F& I, ABOVEGROUND
0630 2 15	1	$26.50	$22,472.00	848.000	LF	N	CONDUIT, F& I, BRIDGE MOUNT
0632 7 1	1	$5,000.00	$10,000.00	2.000	PI	N	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL

Date: 08-May-14

Tomoka Farms Road Landfill - Class III
Year 2014 Quarter 1
Unit Detail Report

Prepared By:
Karamjit Singh
HDR

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 32 Exterior Improvements					
329219140200	Seeding athletic fields, seeding athletic field mix with mulch and fertilizer, 8 lb. per M.S.F., hydro or air seeding	1.00	M.S.F.	$36.64	$36.64
Division 32 Exterior Improvements Subtotal					**$36.64**
Division 33 Utilities					
333113203080	Public sanitary utility sewerage piping, piping HDPE Corrugated Type S with watertight gaskets, 12" diameter, excludes excavation or backfill	1.00	L.F.	$10.25	$10.25
333113203100	Public sanitary utility sewerage piping, piping HDPE Corrugated Type S with watertight gaskets, 15" diameter, excludes excavation or backfill	1.00	L.F.	$12.09	$12.09
333113203120	Public sanitary utility sewerage piping, piping HDPE Corrugated Type S with watertight gaskets, 18" diameter, excludes excavation or backfill	1.00	L.F.	$19.01	$19.01
Division 33 Utilities Subtotal					**$41.35**
Subtotal					**$77.99**
General Contractor's Markup on Subs			**0.00%**		**$0.00**
Subtotal					**$77.99**
General Conditions			**0.00%**		**$0.00**
Subtotal					**$77.99**
General Contractor's Overhead and Profit			**0.00%**		**$0.00**
Grand Total					**$77.99**

Florida Department of Transportation
Item Average Unit Cost
From 2013/10/01 to 2014/03/31

Contract Type: CC STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0430174230	1	$64.50	$2,580.00	40.000	LF	N	PIPE CULV, OPT MATL, OTHER, 30"SD
0430175112	1	$300.00	$5,100.00	17.000	LF	N	PIPE CULV, OPT MATL, ROUND, 12"S/CD
0430175115	6	$160.53	$60,678.86	378.000	LF	N	PIPE CULV, OPT MATL, ROUND, 15"S/CD
0430175118	15	$40.74	$1,297,381.68	31,842.000	LF	N	PIPE CULV, OPT MATL, ROUND, 18"S/CD
0430175124	8	$48.88	$931,735.18	19,061.000	LF	N	PIPE CULV, OPT MATL, ROUND, 24"S/CD
0430175130	7	$66.10	$821,108.54	12,422.000	LF	N	PIPE CULV, OPT MATL, ROUND, 30"S/CD
0430175136	4	$77.56	$208,636.40	2,690.000	LF	N	PIPE CULV, OPT MATL, ROUND, 36"S/CD
0430175142	4	$101.90	$201,656.80	1,979.000	LF	N	PIPE CULV, OPT MATL, ROUND, 42"S/CD
0430175148	2	$115.84	$132,401.55	1,143.000	LF	N	PIPE CULV, OPT MATL, ROUND, 48"S/CD
0430175154	1	$130.00	$172,250.00	1,325.000	LF	N	PIPE CULV, OPT MATL, ROUND, 54"S/CD
0430175160	1	$160.00	$15,520.00	97.000	LF	N	PIPE CULV, OPT MATL, ROUND, 60"S/CD
0430175215	1	$81.02	$18,553.58	229.000	LF	N	PIPE CULV, OPT MATL, OTHER, 15"S/CD
0430175218	7	$45.23	$151,214.97	3,343.000	LF	N	PIPE CULV, OPT MATL, OTHER, 18"S/CD
0430175224	3	$56.09	$104,888.00	1,870.000	LF	N	PIPE CULV, OPT MATL, OTHER, 24"S/CD
0430175230	1	$74.00	$188,848.00	2,552.000	LF	N	PIPE CULV, OPT MATL, OTHER, 30"S/CD
0430175242	1	$130.00	$20,410.00	157.000	LF	N	PIPE CULV, OPT MATL, OTHER, 42"S/CD
0430185142	1	$950.00	$113,050.00	119.000	LF	N	PIPE CULV,OPT MATL, ROUND, JACK&BORE,42"
0430185148	1	$1,100.00	$260,700.00	237.000	LF	N	PIPE CULV,OPT MATL, ROUND, JACK&BORE,48"
0430185154	1	$1,265.00	$149,270.00	118.000	LF	N	PIPE CULV,OPT MATL, ROUND, JACK&BORE,54"
0430611125	1	$1,200.00	$2,400.00	2.000	EA	N	U-ENDWALL, BAFFLES,STD 261,1:4 SLP, 18"
0430611225	1	$900.00	$900.00	1.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:3 SLP,18"
0430611325	2	$2,037.50	$8,150.00	4.000	EA	N	U-ENDWALL, BAFFLES, STD 261,1:2 SLP,18"
0430830	3	$246.58	$24,731.64	100.300	CY	N	PIPE FILLING AND PLUGGING
0430982120	1	$600.00	$600.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 8" CD
0430982121	1	$750.00	$2,250.00	3.000	EA	N	MITERED END SECT, OPTIONAL RD, 12" CD
0430982123	1	$695.00	$695.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 15" CD
0430982125	5	$671.96	$30,910.00	46.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" CD
0430982129	4	$1,084.81	$26,035.48	24.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" CD
0430982133	2	$1,686.00	$6,744.00	4.000	EA	N	MITERED END SECT, OPTIONAL RD, 30" CD
0430982138	1	$2,105.00	$4,210.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 36" CD
0430982140	2	$2,447.50	$4,895.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 42" CD
0430982141	1	$3,025.00	$3,025.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 48" CD
0430982142	1	$4,785.00	$9,570.00	2.000	EA	N	MITERED END SECT, OPTIONAL RD, 54" CD
0430982143	1	$4,930.00	$4,930.00	1.000	EA	N	MITERED END SECT, OPTIONAL RD, 60" CD
0430982625	1	$1,200.00	$9,600.00	8.000	EA	N	MITERED END SECT, OPT - OTHER, 18" CD
0430982629	3	$1,309.00	$10,472.00	8.000	EA	N	MITERED END SECT, OPT - OTHER, 24" CD
0430982633	1	$1,454.00	$1,454.00	1.000	EA	N	MITERED END SECT, OPT - OTHER, 30" CD
0430984123	1	$370.00	$1,850.00	5.000	EA	N	MITERED END SECT, OPTIONAL RD, 15" SD
0430984125	8	$740.81	$115,565.60	156.000	EA	N	MITERED END SECT, OPTIONAL RD, 18" SD
0430984129	7	$904.20	$41,593.00	46.000	EA	N	MITERED END SECT, OPTIONAL RD, 24" SD

Florida Department of Transportation
Item Average Unit Cost
From 2013/04/01 to 2014/03/31

Contract Type: CC AREAS: 06
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0102 1	4	$210.45	$387,222.60	1,840.000	DA	N	MAINTENANCE OF TRAFFIC
0102 2 1	1	$25,000.00	$25,000.00	1.000	LS	N	SPECIAL DETOUR 1
0102 2 2	1	$11,000.00	$11,000.00	1.000	LS	N	SPECIAL DETOUR 2
0102 2 3	1	$18,000.00	$18,000.00	1.000	LS	N	SPECIAL DETOUR 3
0102 2 4	1	$15,000.00	$15,000.00	1.000	LS	N	SPECIAL DETOUR 4
0102 2 5	1	$22,500.00	$22,500.00	1.000	LS	N	SPECIAL DETOUR 5
0102 2 6	1	$8,000.00	$8,000.00	1.000	LS	N	SPECIAL DETOUR 6
0102 14	2	$50.00	$16,000.00	320.000	MH	N	TRAFFIC CONTROL OFFICER
0102 60	3	$.28	$36,330.24	129,784.000	ED	N	WORK ZONE SIGN
0102 71 11	1	$12.00	$10,920.00	910.000	LF	N	BARRIER WALL,TEMP,F&I,CONCRETE
0102 71 21	1	$4.50	$4,095.00	910.000	LF	N	BARRIER WALL,TEMP,REL,CONCRETE
0102 74 1	3	$.17	$71,200.33	412,613.000	ED	N	TEMP BARR-TYPS I,II,DI,VP, DRUM, LC
0102 74 2	1	$.27	$10,600.20	39,260.000	ED	N	BARRICADE,TEMP,TYPE III, 6'
0102 76	2	$7.46	$4,590.00	615.000	ED	N	ARROW BOARD /ADVANCE WARNING ARROW PANEL
0102 77	3	$.02	$8,622.48	411,112.000	ED	N	HIGH INTENSITY FLASH LI,TEMP,TYP B
0102 78	2	$2.57	$13,414.65	5,211.000	EA	N	TEMPORARY RETROREFLECTIVE PAVT MARKER
0102 79	1	$.13	$659.49	5,073.000	ED	N	LIGHTS,BARR WALL MNT,TEMP,TYP C,STDY BRN
0102 89 1	1	$950.00	$5,700.00	6.000	LO	N	TEMPORARY CRASH CUSHION, RED OPT
0102 99	3	$14.19	$33,028.00	2,327.000	ED	N	PORTABLE CHANGEABLE MESSAGE SIGN,TEMP
0102104	1	$5.80	$6,264.00	1,080.000	ED	N	TEMPORARY SIGNALIZATION AND MAINT, INTER
0102107 1	1	$7.40	$7,992.00	1,080.000	ED	N	TEMP TRAFFIC DETECTION & MAINTEN, INTER
0102150 1	2	$8.24	$10,130.00	1,230.000	ED	N	PORTABLE REGULATORY,SIGN
0102150 2	2	$8.24	$10,130.00	1,230.000	ED	N	RADAR SPEED DISPLAY UNIT
0104 10 3	3	$.76	$38,571.55	50,740.000	LF	N	SEDIMENT BARRIER
0104 18	3	$57.88	$5,556.00	96.000	EA	N	INLET PROTECTION SYSTEM
0107 1	2	$15.55	$38,816.00	2,496.000	AC	N	LITTER REMOVAL
0107 2	2	$28.33	$62,212.00	2,196.000	AC	N	MOWING
0110 1 1	3	$2,457.09	$377,655.24	153.700	AC	N	CLEARING & GRUBBING
0110 4	1	$19.00	$6,099.00	321.000	SY	N	REMOVAL OF EXISTING CONCRETE PAVEMENT
0110 6	1	$2,100.00	$6,300.00	3.000	EA	N	PLUGGING WATER WELLS, NON-ARTESIAN
0110 7 1	2	$102.26	$5,420.00	53.000	EA	N	MAILBOX, F&I SINGLE
0110 15	1	$5,300.00	$5,300.00	1.000	LS	N	ARBORIST WORK, COMPLETE
0120 1	1	$3.00	$1,218,306.00	406,102.000	CY	N	REGULAR EXCAVATION
0120 2 2	1	$12.82	$179,736.40	14,020.000	CY	N	BORROW EXCAVATION, TRUCK MEASURE
0120 4	1	$13.00	$468,832.00	36,064.000	CY	N	SUBSOIL EXCAVATION
0120 6	1	$1.60	$384,363.20	240,227.000	CY	N	EMBANKMENT
0120 71	1	$55,562.86	$55,562.86	1.000	LS	N	REGULAR EXCAVATION (3-R PROJECTS ONLY)
0160 4	1	$2.80	$644,330.40	230,118.000	SY	N	TYPE B STABILIZATION
0162 1 11	1	$.27	$65,870.82	243,966.000	SY	N	PREPARED SOIL LAYER, FINISH SOIL, 6"
0285701	1	$5.80	$220,046.78	37,939.100	SY	N	OPTIONAL BASE,BASE GROUP 01

Attachment R-3
USLE Calculation

Tomoks Farms Road Landfill - Class III
May 2014

Soil Erosion using the Universal Soil Loss Equation (USLE)

The Universal Soil Loss Equation $A = R * K * LS * C * P$

Name	Value	Reference*
Rainfall Factor		
R =	400	Figure 1 of USDA "Predicting Rainfall Loss Handbook"

Soil Erodibility Factor

K = 0.08 Figure 3 of USDA "Predicting Rainfall Loss Handbook"; assuming 10% silt and very fine sand (.15 to .075 mm), 90% sand (0.1 to 2 mm), 2% organic matter, fine granular structure, and moderate permeability

Topographic Factor

LS = 7.21 Table 3 USDA "Predicting Rainfall Loss Handbook"; 150 ft slope, 25% slope (Based on Closure Design)

Cover and Management Factor

C = 0.042 Assuming 60% of the ground is covered by vegetation.

Support Practice Factor

P = 1 support practice factor, assumed for slope with no farming

Assumptions:

density	95	lb/ft^3	dry density for silty sand
acreage	88.06	acres	

Table of Soil Loss

C	A (tons/year)	tons/ year	CF/ year	CY/ year
0.042	10	854	17,974	666

reference United States Department of Agriculture. "Predicting Rainfall Erosion Losses." Agriculture Handbook No. 537, December 1978.

PREDICTING RAINFALL EROSION LOSSES

A GUIDE TO CONSERVATION PLANNING

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURE HANDBOOK NUMBER 537

PREPARED BY SCIENCE AND EDUCATION ADMINISTRATION

site as the product of six major factors whose most likely values at a particular location can be expressed numerically. Erosion variables reflected by these factors vary considerably about their means from storm to storm, but effects of the random fluctuations tend to average out over extended periods. Because of the unpredictable short-time fluctuations in the levels of influential variables, however, present soil loss equations are substantially less accurate for prediction of specific events than for prediction of longtime averages.

The soil loss equation is

$$A = R K L S C P \qquad (1)$$

where

A is the computed soil loss per unit area, expressed in the units selected for **K** and for the period selected for **R**. In practice, these are usually so selected that they compute **A** in tons per acre per year, but other units can be selected.

R, the rainfall and runoff factor, is the number of rainfall erosion index units, plus a factor for runoff from snowmelt or applied water where such runoff is significant.

K, the soil erodibility factor, is the soil loss rate per erosion index unit for a specified soil as measured on a unit plot, which is defined as a 72.6-ft length of uniform 9-percent slope continuously in clean-tilled fallow.

L, the slope-length factor, is the ratio of soil loss from the field slope length to that from a 72.6-ft length under identical conditions.

S, the slope-steepness factor, is the ratio of soil loss from the field slope gradient to that from a 9-percent slope under otherwise identical conditions.

C, the cover and management factor, is the ratio of soil loss from an area with specified cover and management to that from an identical area in tilled continuous fallow.

P, the support practice factor, is the ratio of soil loss with a support practice like contouring, stripcropping, or terracing to that with straight-row farming up and down the slope.

The soil loss equation and factor evaluation charts were initially developed in terms of the English units commonly used in the United States. The factor definitions are interdependent, and direct conversion of acres, tons, inches, and feet to metric units would not produce the kind of integers that would be desirable for an expression of the equation in that system. Therefore, only the English units are used in the initial presentation of the equation and factor evaluation materials, and their counterparts in metric units are given in the Appendix under **Conversion to Metric System.**

Numerical values for each of the six factors were derived from analyses of the assembled research data and from National Weather Service precipitation records. For most conditions in the United States, the approximate values of the factors for any particular site may be obtained from charts and tables in this handbook. Localities or countries where the rainfall characteristics, soil types, topographic features, or farm practices are substantially beyond the range of present U.S. data will find these charts and tables incomplete and perhaps inaccurate for their conditions. However, they will provide guidelines that can reduce the amount of local research needed to develop comparable charts and tables for their conditions.

The subsection on **Predicting Cropland Soil Losses**, page 40 illustrates how to select factor values from the tables and charts. Readers who have had no experience with the soil loss equation may wish to read that section first. After they have referred to the tables and figures and located the values used in the sample, they may move readily to the intervening detailed discussions of the equation's factors.

The soil loss prediction procedure is more valuable as a guide for selection of practices if the user has a general knowledge of the principles and factor interrelations on which the equation is based. Therefore, the significance of each factor is discussed before presenting the reference table or chart from which local values may be obtained. Limitations of the data available for evaluation of some of the factors are also pointed out.

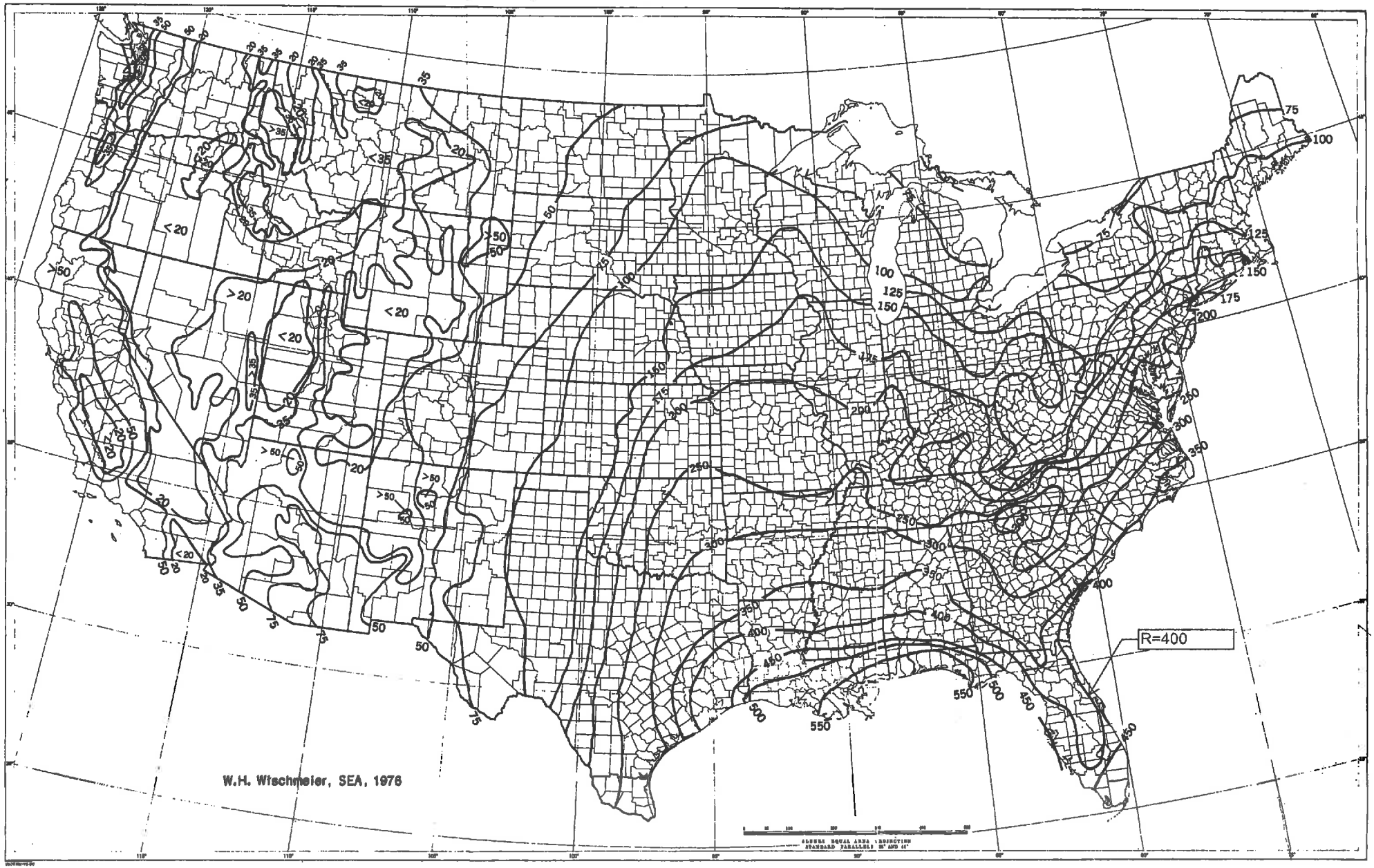

FIGURE 1.—Average annual values of the rainfall erosion index.

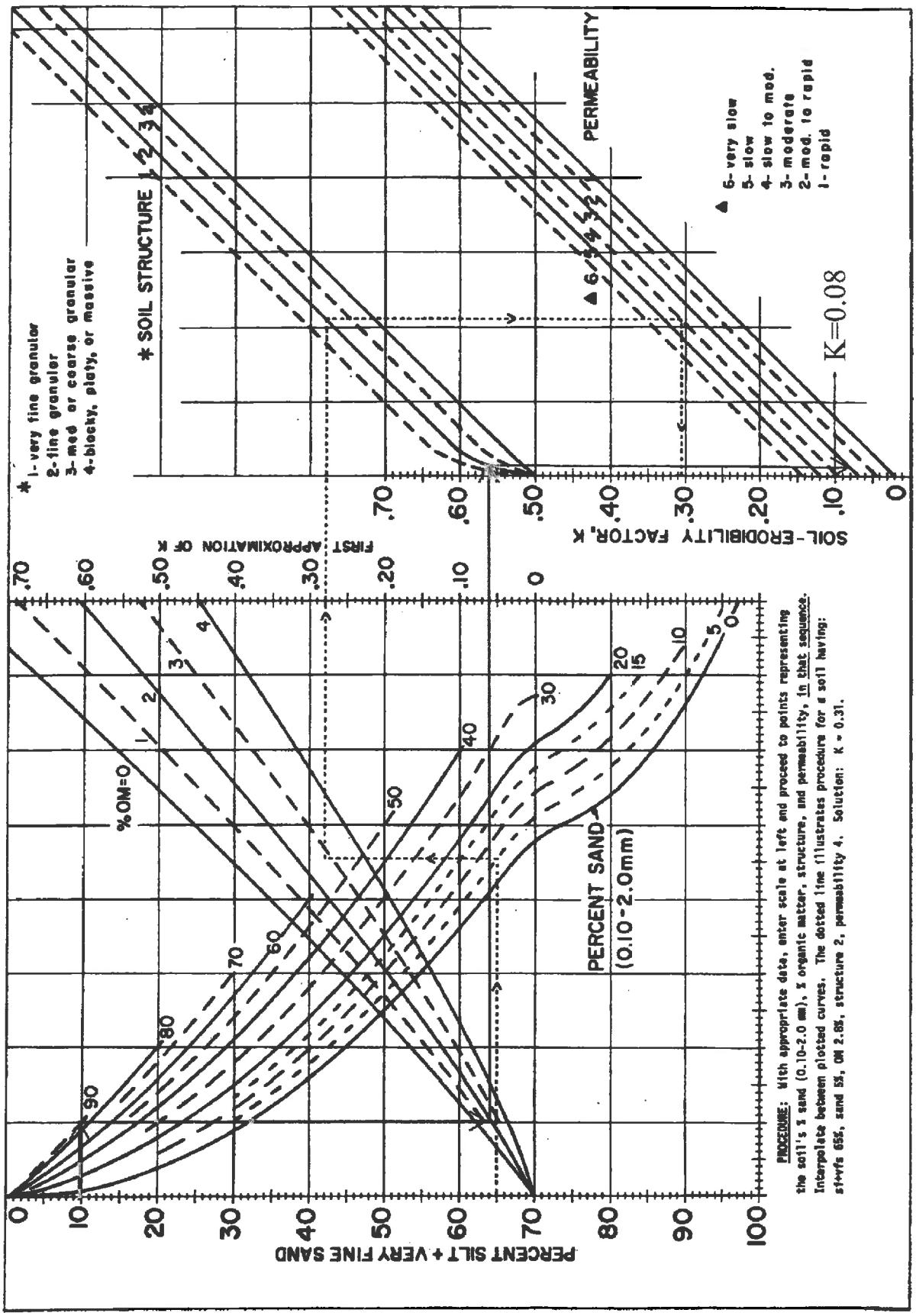

FIGURE 3.—The soil-erodibility nomograph. Where the silt fraction does not exceed 70 percent, the equation is $100\ K = 2.1\ M^{1.14}\ (10^{-4})\ (12 - a) + 3.25\ (b - 2) + 2.5\ (c - 3)$ where M = (percent si + vfs) (100 — percent c), a = percent organic matter, b = structure code, and c = profile permeability class.

TOPOGRAPHIC FACTOR (LS)

Both the length and the steepness of the land slope substantially affect the rate of soil erosion by water. The two effects have been evaluated separately in research and are represented in the soil loss equation by **L** and **S**, respectively. In field applications, however, considering the two as a single topographic factor, **LS**, is more convenient.

Slope-Effect Chart

LS is the expected ratio of soil loss per unit area from a field slope to that from a 72.6-ft length of uniform 9-percent slope under otherwise identical conditions. This ratio for specified combinations of field slope length and uniform gradient may be obtained directly from the slope-effect chart (fig. 4). Enter on the horizontal axis with the field slope length, move vertically to the appropriate percent-slope curve, and read **LS** on the scale at the left. For example, the **LS** factor for a 300-ft length of 10-percent slope is 2.4. Those who prefer a table may use table 3 and interpolate between listed values.

To compute soil loss from slopes that are appreciably convex, concave, or complex, the chart **LS** values need to be adjusted as indicated in the section **LS Values for Irregular Slopes**. Figure 4 and table 3 assume slopes that have essentially uniform gradient. The chart and table were derived by the equation

$$LS = (\lambda/72.6)^m \ (65.41 \sin^2 \theta + 4.56 \sin \theta + 0.065) \quad (4)$$

where λ = slope length in feet;
θ = angle of slope; and
m = 0.5 if the percent slope is 5 or more, 0.4 on slopes of 3.5 to 4.5 percent, 0.3 on slopes of 1 to 3 percent, and 0.2 on uniform gradients of less than 1 percent.

The basis for this equation is given in the subsection discussing the individual effects of slope length and steepness. However, the relationships expressed by the equation were derived from data obtained on cropland, under natural rainfall, on slopes ranging from 3 to 18 percent in steepness and about 30 to 300 ft in length. How far beyond these ranges in slope characteristics the relationships derived from the data continue to be accurate has not been determined by direct soil loss measurements.

The Palouse Region of the Northwest represents

TABLE 3.—*Values of the topographic factor,* **LS**, *for specific combinations of slope length and steepness*[1]

Percent slope	Slope length (feet)											
	25	50	75	100	150	200	300	400	500	600	800	1,000
0.2	0.060	0.069	0.075	0.080	0.086	0.092	0.099	0.105	0.110	0.114	0.121	0.126
0.5	.073	.083	.090	.096	.104	.110	.119	.126	.132	.137	.145	.152
0.8	.086	.098	.107	.113	.123	.130	.141	.149	.156	.162	.171	.179
2	.133	.163	.185	.201	.227	.248	.280	.305	.326	.344	.376	.402
3	.190	.233	.264	.287	.325	.354	.400	.437	.466	.492	.536	.573
4	.230	.303	.357	.400	.471	.528	.621	.697	.762	.820	.920	1.01
5	.268	.379	.464	.536	.656	.758	.928	1.07	1.20	1.31	1.52	1.69
6	.336	.476	.583	.673	.824	.952	1.17	1.35	1.50	1.65	1.90	2.13
8	.496	.701	.859	.992	1.21	1.41	1.72	1.98	2.22	2.43	2.81	3.14
10	.685	.968	1.19	1.37	1.68	1.94	2.37	2.74	3.06	3.36	3.87	4.33
12	.903	1.28	1.56	1.80	2.21	2.55	3.13	3.61	4.04	4.42	5.11	5.71
14	1.15	1.62	1.99	2.30	2.81	3.25	3.98	4.59	5.13	5.62	6.49	7.26
16	1.42	2.01	2.46	2.84	3.48	4.01	4.92	5.68	6.35	6.95	8.03	8.98
18	1.72	2.43	2.97	3.43	4.21	3.86	5.95	6.87	7.68	8.41	9.71	10.9
20	2.04	2.88	3.53	4.08	5.00	5.77	7.07	8.16	9.12	10.0	11.5	12.9

[1] $LS = (\lambda/72.6)^m \ (65.41 \sin^2 \theta + 4.56 \sin \theta + 0.065)$ where λ = slope length in feet; m = 0.2 for gradients < 1 percent, 0.3 for 1 to 3 percent slopes, 0.4 for 3.5 to 4.5 percent slopes, 0.5 for 5 percent slopes and steeper; and θ = angle of slope. (For other combinations of length and gradient, interpolate between adjacent values or see fig. 4.)

tion and developmental areas can be obtained from table 5 if good judgment is exercised in comparing the surface conditions with those of agricultural conditions specified in lines of the table. Time intervals analogous to cropstage periods will be defined to begin and end with successive construction or management activities that appreciably change the surface conditions. The procedure is then similar to that described for cropland.

Establishing vegetation on the denuded areas as quickly as possible is highly important. A good sod has a C value of 0.01 or less (table 5-B), but such a low C value can be obtained quickly only by laying sod on the area, at a substantial cost. When grass or small grain is started from seed, the probable soil loss for the period while cover is developing can be computed by the procedure outlined for estimating cropstage-period soil losses. If the seeding is on topsoil, without a mulch, the soil loss ratios given in line 141 of table 5 are appropriate for cropstage C values. If the seeding is on a desurfaced area, where residual effects of prior vegetation are no longer significant, the ratios for periods SB, 1 and 2 are 1.0, 0.75 and 0.50, respectively, and line 141 applies for cropstage 3. When the seedbed is protected by a mulch, the pertinent mulch factor from the upper curve of figure 6 or table 9 is applicable until good canopy cover is attained. The combined effects of vegetative mulch and low-growing canopy are given in figure 7. When grass is established in small grain, it can usually be evaluated as established meadow about 2 mo after the grain is cut.

C Values for Pasture, Range, and Idle Land

Factor C for a specific combination of cover conditions on these types of land may be obtained from table 10 (57). The cover characteristics that must be appraised before consulting this table are defined in the table and its footnotes. Cropstage periods and EI monthly distribution data are generally not necessary where perennial vegetation has become established and there is no mechanical disturbance of the soil.

Available soil loss data from undisturbed land were not sufficient to derive table 10 by direct comparison of measured soil loss rates, as was done for development of table 5. However, analyses of the assembled erosion data showed that the research information on values of C can be extended to completely different situations by combining subfactors that evaluate three separate and distinct, but interrelated, zones of influence: (a) vegetative cover in direct contact with the soil surface, (b) canopy cover, and (c) residual and tillage effects.

Subfactors for various percentages of surface cover by mulch are given by the upper curve of

TABLE 10.—*Factor C for permanent pasture, range, and idle land*[1]

Vegetative canopy			Cover that contacts the soil surface					
			Percent ground cover					
Type and height[2]	Percent cover[3]	Type[4]	0	20	40	60	80	95+
No appreciable canopy		G	0.45	0.20	0.10	0.042	0.013	0.003
		W	.45	.24	.15	.091	.043	.011
Tall weeds or short brush with average drop fall height of 20 in	25	G	.36	.17	.09	.038	.013	.003
		W	.36	.20	.13	.083	.041	.011
	50	G	.26	.13	.07	.035	.012	.003
		W	.26	.16	.11	.076	.039	.011
	75	G	.17	.10	.06	.032	.011	.003
		W	.17	.12	.09	.068	.038	.011
Appreciable brush or bushes, with average drop fall height of 6½ ft	25	G	.40	.18	.09	.040	.013	.003
		W	.40	.22	.14	.087	.042	.011
	50	G	.34	.16	.08	.038	.012	.003
		W	.34	.19	.13	.082	.041	.011
	75	G	.28	.14	.08	.036	.012	.003
		W	.28	.17	.12	.078	.040	.011
Trees, but no appreciable low brush. Average drop fall height of 13 ft	25	G	.42	.19	.10	.041	.013	.003
		W	.42	.23	.14	.089	.042	.011
	50	G	.39	.18	.09	.040	.013	.003
		W	.39	.21	.14	.087	.042	.011
	75	G	.36	.17	.09	.039	.012	.003
		W	.36	.20	.13	.084	.041	.011

[1] The listed C values assume that the vegetation and mulch are randomly distributed over the entire area.

[2] Canopy height is measured as the average fall height of water drops falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 ft.

[3] Portion of total-area surface that would be hidden from view by canopy in a vertical projection (a bird's-eye view).

[4] G: cover at surface is grass, grasslike plants, decaying compacted duff, or litter at least 2 in deep.
W: cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral-root network near the surface) or undecayed residues or both.

Attachment D

Water Quality Technical Report – August 2014

Tomoka Farms Road Landfill, Volusia County

Facility SW WACS No. 27540

FDEP Permit Number: 0078767-030-SO-01

Prepared for:

Volusia County Division of Solid Waste Management
3151 East New York Avenue
Deland, Florida 32724

Submitted To:

Florida Department of Environmental Protection
Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Prepared by:

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Appendices

1.0 INTRODUCTION

HDR, Inc. prepared this technical water quality monitoring report for the Tomoka Farms Road Landfill (TFRLF) on behalf of Volusia County (County) located in Volusia County, Florida in accordance with Florida Department of Environmental Protection (FDEP) Permit (No. SF64-0078767-030-SO-01) and the Florida Administrative Code (FAC) (Chapter 62-701.510(8)(b)). The Tomoka Farms Landfill is operated under the following FDEP permit numbers:

- The North Class I Landfill cell operates under FDEP permit no. SO64-0078767-030-SO-1, now modification no. 0078767-320-SO-MM.
- The Class III Landfill cell operates under FDEP permit no. SO64-0078767-026.
- The closed South Class I cell is being monitored under closure permit no. SF64-0078767-028.

Specific conditions of the permit (SO64-0078767-030-SO-1) require that a Monitoring Plan Implementation Schedule (MPIS) technical report "be submitted to the FDEP by the Permittee at the time of application for renewal of the Class III permit (SO64-0078767-026 by August 10, 2014. A site map is located as Figure 1 in Appendix A. The following lists the specific data and information included in this report.

The MPIS technical report provides a summary and interpretation of the water level and chemical data from monitoring events performed at the site during routine semiannual compliance monitoring from May 2012 through May 2014 (technical reporting period):

- May 2012
- November 2012
- May 2013
- November 2013
- May 2014

This technical report includes groundwater and surface water monitoring data from 54 groundwater wells and 7 surface water sites listed in Attachment A of the MPIS (Permit No.SO64-0078767-030-SO-1). The semiannual groundwater monitoring included those parameters listed in item 7 of the MPIS and the surface monitoring parameters included those listed in item 12 of the MPIS.

Additionally six compliance monitoring wells in Zone 1-2 (including B45-2 and B64) and Zone 4 (including B1-B, B41-1, B43-1, B45-1) were monitored quarterly for the parameters listed in 40 CFR Part 258 Appendix II from 2012 to 2014, were also included in the report.

These six wells were part of the approved quarterly evaluation monitoring. This technical report is completed in accordance with the requirements provided in the MPIS:

- Tabular displays of any data which shows that a monitoring parameter has been detected, and graphical displays of any leachate key indicator parameters detected (such as pH, specific conductance, TDS, TOC, sulfate, chloride, sodium, and iron);
- Hydrographs for all permitted monitoring wells;
- Trend analyses of any monitoring parameters consistently detected;
- A comparison among shallow, middle, and deep zone wells;
- Comparison between background water quality and water quality in detection and compliance wells;
- Correlation 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;
- An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based upon site conditions;

2.0 HYDROGEOLOGIC CONDITIONS

Groundwater elevations were measured prior to each of the groundwater sampling events during the technical reporting period. The measurements were recorded on the same day and were in accordance with the requirements in Condition #7 of the (MPIS) and were measured from the top of the PVC casing prior to purging and sampling procedures. Groundwater contour maps for Zone 1-2 (upper surficial aquifer), Zone 4 (lower surficial aquifer), Zone 6 (lower surficial aquifer), and Floridan aquifer at the site for each of the semiannual sampling events performed during the technical reporting period are provided in Appendix A. The groundwater flow is from the southwest towards northeast across the site, which is consistent with historical flow directions. The groundwater and surface water elevations measured throughout the technical reporting period are summarized in the Tables 2 and 3 in Appendix C.

Hydrographs depicting the groundwater elevations within each well for each sampling event over the monitoring period were generated and are presented in Appendix B. The groundwater levels fluctuated slightly over time but were mostly consistent with the historic ranges. The groundwater elevation at B39 was reported several feet below the historic range during the May 2012 sampling event, indicating a possible anomalous water level reading. The groundwater elevations in Zones 1-2 were comparable to elevations in

Zone 4, but groundwater elevations in Zone 6 and the Floridan aquifer were typically lower, indicating downward flow from the upper surficial and deeper surficial zones to the lower elevations in the Floridan aquifer.

The velocity of groundwater in the upper and lower surficial aquifer beneath the site was calculated using a form of Darcy's law[1], $V = k(dh/dl)/\theta$, 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 (unit less)

[1] Lohman, S. W., "Ground-Water Hydraulics." Geological Survey Professional Paper 708, 1972, pp.10-11.

Groundwater velocities for Zone 1-2, Zone 4, Zone 6, and Floridan aquifer was calculated and provided in Table 4, Appendix C. and are considered representative of groundwater flow. Hydraulic gradients were calculated using the difference between the groundwaterelevation of an up-gradient well and a down-gradient well.

For the upper surficial aquifer zone (Zone 1-2), the groundwater gradient was calculated between well B-11 and well B-74 across the North cell, between well B34-2 and B62-2 across the south cell, and between well B35-2 and B42-2 across the Class III Landfill for each sampling event during the technical reporting period.

For Zone 4 surficial aquifer, the groundwater gradient was calculated between well B33-1 and well B-73-1 across the North cell, between well B34-1 and B62-1 across the south cell, and between well B36 and B42-1 across the Class III Landfill for each sampling event during the technical reporting period.

For Zone 6 surficial aquifer, the groundwater gradient was calculated between well B86 and well B-79-6 across the Class III Landfill from May 2013 to May 2014 sampling event during the technical reporting period.

For the Floridan aquifer, the groundwater gradient was calculated between well FA-1B and well FA-2C across the North and South cells, and between well F-MB and F87-F across the Class III Landfill during the technical reporting period. Velocity calculations for well pair F-MB and F87-F were available only for Fall 2013 and Spring 2014, after installation of well F87-F in late 2013.

Hydraulic conductivity values for the surficial aquifer Zones 2 and Zone 4 utilized were obtained from David N. Gomberg, Ph.D., July 16, 2001, *Tomoka Landfill: Technical Evaluation of Monitoring Results*. The hydraulic conductivity for the Zone 6 surficial aquifer

and Floridan aquifer were based on the US Geological survey results in the David N. Gomberg, Ph.D., May 1992, *Tomoka Landfill: Hydrogeologic Summary and Groundwater Monitoring Plan.* Finally, the effective porosity of the aquifer material is estimated to be 0.25. A summary of the estimates used and the groundwater velocity calculations performed is shown in the Table 4 in Appendix C. The groundwater velocity across the landfill site is estimated to be an average of 1.93 feet per year (ft/yr), 4.28 ft/yr, 0.08 ft/yr, and 2.3 ft/yr for Zone 1-2, Zone 4, and Zone 6 of the surficial aquifer and Floridan aquifer. The groundwater flow velocity values across the north, south, and Class III Landfill were all lower than 5 ft/yr.

3.0 WATER QUALITY MONITORING PROGRAM

The water quality monitoring program consists of semiannual groundwater and surface water monitoring. The following sections provide a summary of the current monitoring program for each media.

3.1 GROUNDWATER MONITORING PROGRAM

The groundwater compliance monitoring network for the site includes the 54 monitoring wells outlined in Attachment A of the MPIS. The required field and laboratory groundwater monitoring parameters are listed in item 7 of the MPIS. The monitoring well locations are shown on Figure 1 in Appendix A. During spring 2012, B39 and B42-2 were dry and not sampled. Additionally quarterly evaluation monitoring data for six compliance monitoring wells in Zone 1-2 (including B45-2 and B64) and Zone 4 (including B1-B, B41-1, B43-1, B45-1) from February 2012 to February 2014 were also included in this report. The quarterly monitored parameters included those listed in item 7 of the MPIS and those parameters listed in 40 CFR Part 258 Appendix II.

3.2 SURFACE WATER MONITORING PROGRAM

The surface water compliance monitoring network for the site includes the 7 surface water samples outlined in Attachment A of the MPIS. The surface water locations are shown on Figure 1 in Appendix A. The required field and laboratory surface water monitoring parameters are listed in item 12 of the MPIS.

During spring 2012, SW-3 and SW-4 were dry and not sampled. During spring 2013, SW-3 was dry and not sampled. All other surface water samples were collected and analyzed for the permitted field and laboratory parameters.

4.0 WATER QUALITY SUMMARY

Below is a summary of the groundwater and surface water quality during the technical reporting period. The discussion below identifies the regulatory exceedances as well as trends in the analytical data.

4.1 GROUNDWATER QUALITY

Water quality data for the groundwater parameters monitored during this reporting period were evaluated in accordance with Chapter 62-701.510. Selected data tables and graphs are presented to support the evaluation of the adequacy of the water quality monitoring frequency and sampling locations. The data tables and graphs display the data in a manner that differentiates between the upper, lower, and intermediate surficial aquifers and the Floridan aquifer. The tables in Appendix B summarizes water quality detections and exceedances for parameters detected during the technical reporting period. Exceedances are concentrations in excess of primary or secondary drinking water standards (PDWS and SDWS) listed in Chapter 62-550, FAC or the Groundwater Cleanup Target Levels (GCTLs) listed in Chapter 62-777, FAC. Graphs of water quality data and water quality trends for selected parameters detected at the site from 2008 to 2014 monitoring periods are included in Appendix D. The following section discusses exceedances and includes related trends, where appropriate.

4.1.1. Inorganic Exceedances and Trends

General inorganic parameters detected in the groundwater included ammonia-N, chloride, iron, nitrate, sodium, sulfate, and total dissolved solids (TDS). Trace metals detected in the groundwater include antimony, arsenic, beryllium, barium, cadmium, chromium cobalt, copper, lead, mercury, nickel, selenium, silver, vanadium, and zinc. The detected groundwater monitoring results for Zone 1-2, Zone 4 and 6, and Floridan aquifer are provided in Tables 5 to 7 in Appendix C. Only ammonia-N, arsenic, chloride, iron, pH, sodium, sulfate, and TDS were detected in groundwater in excess of applicable PDWS, SDWS, and/or GCTLs for at least one sampling event during the technical reporting period. These exceedances are discussed below. Other inorganic parameters did not exceed their respective regulatory standard and are not further discussed.

Ammonia

Ammonia has been consistently detected above the GCTL of 2.8 milligrams per liter (mg/L in Zone 1-2 monitoring wells B61R and B62-2R and Zone 4 monitoring wells B1-B and B41-1. Ammonia was also detected at least once from B64 (Spring 2012) in Zone 1-2 and B2, B43-1,

B62-1R, and M05-B in Zone 4. The highest detected ammonia-N concentration in zone 1-2 well was from B62-2R (19.8 mg/L) during May 2012 period and in Zone 4 well was from B41-1 (79.4 mg/L) during February 2013 monitoring event. Ammonia concentrations showed a decreasing trend in Zone 1-2 wells (B61R, B62-2R, and B64) and Zone 4 wells (B1-B, B43-1, and B62-1R). In B41-1, ammonia-N concentration fluctuated over time but showed a decreasing trend recently (Appendix D).

Ammonia has historically exceeded the GCTL at the TFRLF; and Ammonia-N evaluation monitoring for ammonia was conducted from February 2010 to November 2013 in accordance with the October 26, 2009, FDEP letter. Per FDEP Memorandum dated December 3, 2012, addressing the subject "Monitoring and Evaluation of Ammonia in Groundwater at Solid Waste Management Facilities SMW-13.10," the ammonia GCTL is no longer being relied on or enforced. Consequently, ammonia is no longer used by FDEP for regulatory compliance. The ammonia-N evaluation monitoring was terminated in the beginning of 2014 based on the DEP letter dated May 9, 2013.

Arsenic

Arsenic has been detected in B-33-2, B34-2, B39, and B75 above the PDWS during the reporting period. Arsenic was detected above the PDWS of 10 µg/L at Zone 1-2 monitoring well B33-2 and B34-2 (11.4 µg/L and 12.2 µg/L, respectively) during the May 2012 sampling event; in B39 (13.2 µg/L) during May 2014 sampling event; and in B75 in all semiannual events except in November 2012 ranging from 8.4 µg/ to 17.9 µg/L. Arsenic has not been detected above the PDWS in the Zone 4, Zone 6, and Floridan aquifer monitoring wells.

Arsenic concentrations fluctuated over time in B34-2 and B75 during this technical reporting period. Arsenic concentrations at B33-2 showed a decreasing trend (Appendix D).

Chloride

Chloride was detected in both Zone 1-2 and Zone 4 wells including the Zone 4 background well B36 above the SDWS of 250 mg/L. Chloride was detected above the SDWS of 250 mg/L in Zone 1-2 monitoring well B45-2 (265 mg/L) during May 2012 monitoring event and in the Zone 4 monitoring wells B36 (250 mg/L during May 2012), MO5-B (475 mg/L during Nov. 2012) and B8-2 (all semiannual events except Nov. 2012 and ranging from 71.6 mg/L to 335 mg/L). Chloride has not been detected above the SDWS in the Zone 6 monitoring well or in Floridan aquifer monitoring wells. Time series plots for chloride (Appendix D) showed that chloride concentrations in most wells showed decreasing trends or were stable. But chloride concentrations fluctuated over time in Zone 4 wells (B8-2 and B36).

Iron

Iron has been consistently detected above the SDWS of 300 µg/L in surficial aquifer (Zone 1-2, Zone 4, and Zone 6) and Floridan aquifer monitoring wells. Iron concentrations appear to

trend down in most compliance wells except B75 of Zone 1-2 and B-2, B8-2, B34-1, B37-1, and B68 of Zone 4 monitoring wells. Iron concentrations have continued to show downward trends during this reporting period. These downwards trends are apparent in compliance and detection wells B11, B33-2, B37-2, B42-2, B44, B45-2, B59-2R, B62-2R, B64, B71, and B73-2 of Zone 1-2, wells B62-1R, B63-1, and MO5-B of Zone 4, and F-MB of the Floridan aquifer.

pH

The pH measurements have consistently remained below the SDWS range of 6.5-8.5 in the majority of Zone 1-2 (except B33-2, B34-2, B66) and Zone 4 surficial monitoring wells (except B62-1R), which is typical in the surficial aquifer in Florida. Groundwater pH in Floridan aquifer wells were within the normal pH range during this technical reporting period.

Additionally, groundwater pH values for several wells were occasionally detected above 6.5 S.U. These wells include B59-2R, B61R, B62-2R, B63-2, B64, B66, B72, and B74 in Zone 1-2 and wells B-5, B8-2, B32, B34-1, B36, B59-1R, B63-1, and B73-1 in Zone 4.

Sodium

Sodium has been consistently detected above the SDWS of 160 mg/L in Zone 4 monitoring wells B37-1, B-45-1, and B62-1R. Zone 4 monitoring well B41-1 has also exceeded the sodium SDWS except during the November 2012 and 2014 monitoring events. Sodium concentrations in B37-1 and B45-1 showed an increasing trend while that of B62-1R showed a decreasing trend. Sodium has not been detected in B33-2 above PDWS during this reporting period. Sodium concentration has indicated a downward trend over the history of monitoring in B33-2. Sodium has not been detected above the SDWS in B8 screened in Zone 6 or in Floridan aquifer monitoring wells.

In a letter dated October 26, 2009, the FDEP indicated that implementation of evaluation monitoring for sodium was not required. Therefore, no additional action is recommended at this time.

Sulfate

Sulfate was detected above the SDWS of 250 mg/L in Zone 1-2 background monitoring well B-34-2 during the November 2013 and May 2014 sampling events. Sulfate has been consistently detected above the SDWS in Zone 4 background monitoring well B-2. Sulfate has not been detected above the SDWS in the Zone 6 surficial well or Floridan aquifer monitoring wells. Because background well B2 is hydraulically up gradient from the landfill, sulfate exceedances may not be due to the landfill. The sulfate concentration in B-2 appears to fluctuate over time and no apparent trends for sulfate are observed in B-2.

TDS

TDS was detected above the SDWS of 500 mg/L in Zone 1-2 monitoring wells B33-2, B34-2, B39, B40-2, B41-2, B43-2, B45-2, B59-2R, B61R, B62-2R, B63-2, B64, B65, and B75 at least once over the reporting period. TDS has been consistently detected in B33-2, B34-2, B59-2R, B61R, B62-2R, and B75 above the SDWS. TDS has been consistently detected above the SDWS in Zone 4 wells B2, B34-1, B36-1, B37-1, B41-1, B42-1, B45-1, and M05-B. TDS was detected at least once above the SDWS in Zone 4 wells B1-B, B32, B68, and B8-2B. In Zone 1-2, TDS concentrations appear to trend upward in background well B34-2; and trend downward in B33-2 and B64. No trends for TDS were apparent in Zone 4 wells. TDS concentrations have not been detected above the SDWS in the Zone 6 well and Floridan aquifers monitoring wells; but TDS concentrations in these wells have shown an increasing trend.

4.1.2 Organic Parameters Exceedances and Trends

Trace levels of volatile organic compounds (VOC) were detected in at least one site well during semiannual compliance monitoring and quarterly evaluation monitoring. These compounds include 1,1-dichloroethane, 1,2-dibromo-3-chlorpropane, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 2,4-dimethylphenol, 2-methylnaphthalene, acetone, benzene, chlorobenzene, cis-1,2-dichloroethene, cyanide, d-N-butyl phthalate, endrin, ethylbenzene, naphthalene, tetrachloroethene, toluene, vinyl chloride, and xylenes. Most of these detections were between the detection limits and the reporting limits and were well below any groundwater standards and will not be further discussed. However, benzene and vinyl chloride were detected above the PDWS in at least one well during the technical reporting period. The detection of benzene and vinyl chloride are further discussed below:

Benzene

Benzene was detected once above the PDWS in B37-2 (3 µg/L) during the November 2012 sampling event; but has not detected above the detection limit since November 2013. Benzene was also detected in B45-2 at trace levels and below the PDWS during this reporting period. Benzene has been consistently detected above the PDWS of 1.0 µg/L in Zone 4 monitoring wells B36, B37-1, and B45-1 during the quarterly evaluation monitoring and semiannual compliance monitoring during the reporting period. Benzene was also detected in B41-1 and B43-1 at or slightly above the PDWS during May 2012 sampling event. Benzene has not been detected in the Floridan aquifer monitoring wells. Benzene evaluation monitoring in the vicinity of the background well B-36 and compliance wells B5 and B37-1 has been on going since 2010 under the Limited Scope Remedial Action Plan (LRAP) Approval Order dated March 19, 2009. The other benzene exceedance at wells B41-1, B43-1, B45-1, and B45-2 have historically exceeded the PDWS at the TFRLF.

Vinyl Chloride

Vinyl chloride was detected above the PDWS of 1 µg/L in Zone 4 monitoring well B37-1 only once during November 2013 sampling event, but it has not been detected above the detection limit in the other sampling events during the reporting period. Zone 4 monitoring well B-5 has periodically exceeded the PDWS throughout the technical reporting period. Vinyl chloride was also detected at least once in B37-2 and B75 in Zone 1-2 and B5 in Zone 4 at trace levels and below the PDWS during the reporting period. Vinyl Chloride has not been detected above the PDWS in the Zone 6 well B8 and all Floridan aquifer monitoring wells. Vinyl chloride in the vicinity of the compliance wells B-5 currently is being remediated under the LRAP.

4.2. SURFACE WATER QUALITY

Water quality data for the surface water parameters monitored during this reporting period were evaluated in accordance with Chapter 62-701.510. The detected surface water monitoring results have been summarized in Table 8 in Appendix C for all parameters detected in the surface waters during the technical reporting period. The detected surface water parameters were compared to the Freshwater Surface Cleanup Target Levels (CTLs) listed in Chapter 62-777, FAC.

Graphs of surface water quality data and water quality trends for selected parameters detected at the site during from 2008 to 2014 are included in Appendix D. Both dissolved oxygen and pH from the field measurements and laboratory parameters iron, lead, mercury, fecal coliform, and unionized ammonia-N were detected at least once above the Class III Standard in the surface water samples during the reporting period. The following section discusses exceedances and includes related trends, where appropriate.

Dissolved Oxygen

The dissolved oxygen (DO) levels in the surface water samples varied from 0.63 mg/L in SW-3 to 10.75 in SW-5. DO was detected below the surface water standard of >5.0 mg/L at least once from all surface water locations except SW-5 from May 2012 to May 2014 sampling events with the lowest DO level of 0.63 mg/L detected in SW-3 during May 2014 monitoring event. Trend analysis (Appendix D) showed that DO varied with time and site, but there is not trend in DO levels over time. Dissolved oxygen is a field measured parameter and subject to variability in field conditions.

pH

The pH measurements in the surface waters have been detected within the surface water standard range of 6.0-8.5 during the technical reporting period except once in SW-12 pH level (8.67 S.U.) was slightly above 8.5 S.U. during May 2012 sampling event. The pH was

measured within the pH range during other sampling events. There were no apparent trends in pH measurements observed during the reporting period. Additionally, pH is a field measured parameter and subject to variability in field conditions.

Unionized Ammonia

Unionized ammonia was detected in SW-5 slightly above the Class III Standard (<0.02 mg/L) during May 2012, May 2013, and Nov. 2013 monitoring events. But two of the detections were between the detection limit and the reporting limit. Unionized ammonia has not been detected above any detection limit from any other surface water sites during the reporting period.

Fecal Coliform

Fecal coliform was detected in SW-3 (240 #/100 ml) and SW-12 (300 #/100 ml) above the monthly average limit but below the every day limit during the reporting period. Fecal coliform was also detected in SW-11 twice (400 and 2200 #/100 ml, respectively) during the reporting period. Fecal coliform has not been detected above any Class III standard from any other surface water samples.

Iron

Iron was detected above the Class III standard in surface water location SW-2 and SW-3 once each and detected in SW-5 and SW-11 more than once during the reporting period. Iron has been consistently detected in SW-5 above the Class III standard over the reporting period. Iron concentrations varied over time; but there is no clear trend over time for the detected iron levels in the surface water.

Lead

Lead was detected in SW-1 (0.66 µg/L) once above the calculated Class III standard (0.33 µg/L) during the May 2012 monitoring period. The lead has not been detected in the subsequent monitoring events indicating that the detection could be due to laboratory error.

Mercury

Mercury was detected in SW-3 (0.0122 µg/L) once slightly above the Class III Standard (0.012 µg/L) during May 2014 monitoring event, but it was not detected above any surface water standard previously. This detection will be verified during the next semiannual sampling event.

5.0 CORRELATION BETWEEN TDS and SC

A simple ratio was calculated to evaluate the correlation between TDS and specific conductance (SC) data. The ratio between TDS and SC 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 SC ratio of 0.55 to 0.75[2]. A full range of ratios from 0.54 to 0.96 can be expected. Ratios outside this range may indicate that one or both measurements are suspect.

A summary of the TDS/SC ratios for the technical reporting period is presented in Table 9, Appendix C. Overall, the majority of ratios lied within the expected range. Deviations may be due to analytical error or sampling procedures, but they are most likely due to differences in field sampling techniques and do not affect the quality of the reported analytical data.

[2] Hem, John D., "Study and Interpretation of Chemical Characteristics of Natural Water." USGS Water Supply Paper 2254, 1992, page 67.

6.0 ADEQUACY OF MONITORING PROGRAM

This section assesses the adequacy of the monitoring program to observe potential effects of the site's operations on groundwater and surface water.

6.1 MONITORING WELLS AND LOCATIONS

The existing monitoring wells were located based on groundwater flow directions. Groundwater is monitored hydraulically up-gradient to determine background conditions and down-gradient to determine potential impacts caused by the landfill. The Tomoka Farms Road Landfill permit specifies the compliance monitoring protocol for groundwater wells and the surface water locations and sampling frequency for the monitoring program. The compliance monitoring protocol specified in the operating permit provides an appropriate surficial and Floridan aquifer groundwater monitoring program for the site at this time. However, it appears that adequate monitoring can be maintained with fewer wells in Zone 1-2 and Zone 4, based on the following justifications:

Parameters of Detections:
In Zone 1-2, only field pH and iron were detected above the SDWS in B38-2, B42-2, B44, B66, B70-2, B71, B72, B73-2, and B74; and only field pH, iron, and TDS were detected above the SDWS in B40-2, B43-2, B59-2R, and B63-2. In Zone 4, only field pH and iron were

detected above the SDW in B38-1, B40-1, B59-1R,B60, B63-1, and B70-1 were detected above the SDWS; and only field pH, iron, and TDS were detected above the SDWS in B68, and B73-1. These results also agree with the historic data since 2008.

Interior Wells and Upper Gradient Wells:
Three wells in Zone 1-2 (B61R, B62-2R, and B66) and one well in Zone 4 (B62-1R) are interior wells with other wells installed and monitored farther down gradient from them. Also currently there are an excessive number of background wells and detection/compliance wells installed up-gradient of the landfill in Zone 1-2 and Zone 4. HDR proposes to remove B33-1, B34-2, B35-2 from Zone 1-2 and B2, B33-1, B35-1, B62-1R, and B8-2 from Zone 4 and change B63-1 and B63-2 from compliance well into background wells.

Therefore, HDR recommends eliminating the following wells from the monitoring program: B33-2, B34-2, B35-2, B38-2, B40-2, B44, B61R, B62-2R, B66, B71 and B73-2 from the Zone 1-2; and B2, B8-2, B32, B33-1, B35-1, B38-1, B40-1B59-1R, B62-1R, and B68 from Zone 4 of the surficial aquifer.

6.2 FREQUENCY

Groundwater and surface water sampling is conducted semiannually at the TFRL. However, the extremely slow groundwater flow velocity across the site and a large data set that shows very little variation in reported values justifies reducing the sampling frequency. A reduction to annual groundwater and surface water sampling is recommended.

6.3 MONITORING PARAMETERS

Current routine groundwater and surface water compliance monitoring parameters include various volatile organic, metals, and inorganic constituents listed in 62-701.510(7) and in accordance with the operating permit. The FDEP Central District is currently conducting workshops to develop criterion to justify reducing parameters at certain landfills. Therefore, no parameter modifications are proposed, pending the development of the FDEP guidelines which are expected before the end of 2014.

7.0 PROFESSIONAL CERTIFICATION

This document has been prepared under my direction in general accordance with Chapter 62-701, Florida Solid Waste Management Facility Regulations. The information contained within this report is to the best of my knowledge and belief, true, accurate, and complete.

Handi Wang, PhD
HDR Engineering, Inc.
Sr. Environmental Scientist

John Catches, PG 8/1/2014
HDR, Inc.
FL License No. 2203

APPENDIX A

GROUNDWATER POTENTIOMETRIC MAPS

N

SCALE IN FEET

−600 0 600 1200

LEGEND

B37−2 ZONE 1−2 MONITORING WELL

B37−1 ZONE 4 MONITORING WELL

FACILITY BOUNDARY

WASTE UNIT BOUNDARY

Figure 1

HDR

PROJECT TITLE	TOMOKA FARMS ROAD LANDFILL
SHEET TITLE	SITE MAP
PROJECT NUMBER	195292
PROJECT MANAGER	C. LEBRON
DATE	01/2013
REFERENCE SHEET	
REFERENCE DOCUMENT	
EXHIBIT NUMBER	FIGURE 1

C:\pwworking\tpatd0419990\Figure 1.dwg, 1/16/2013 9:03:01 AM, 1:1

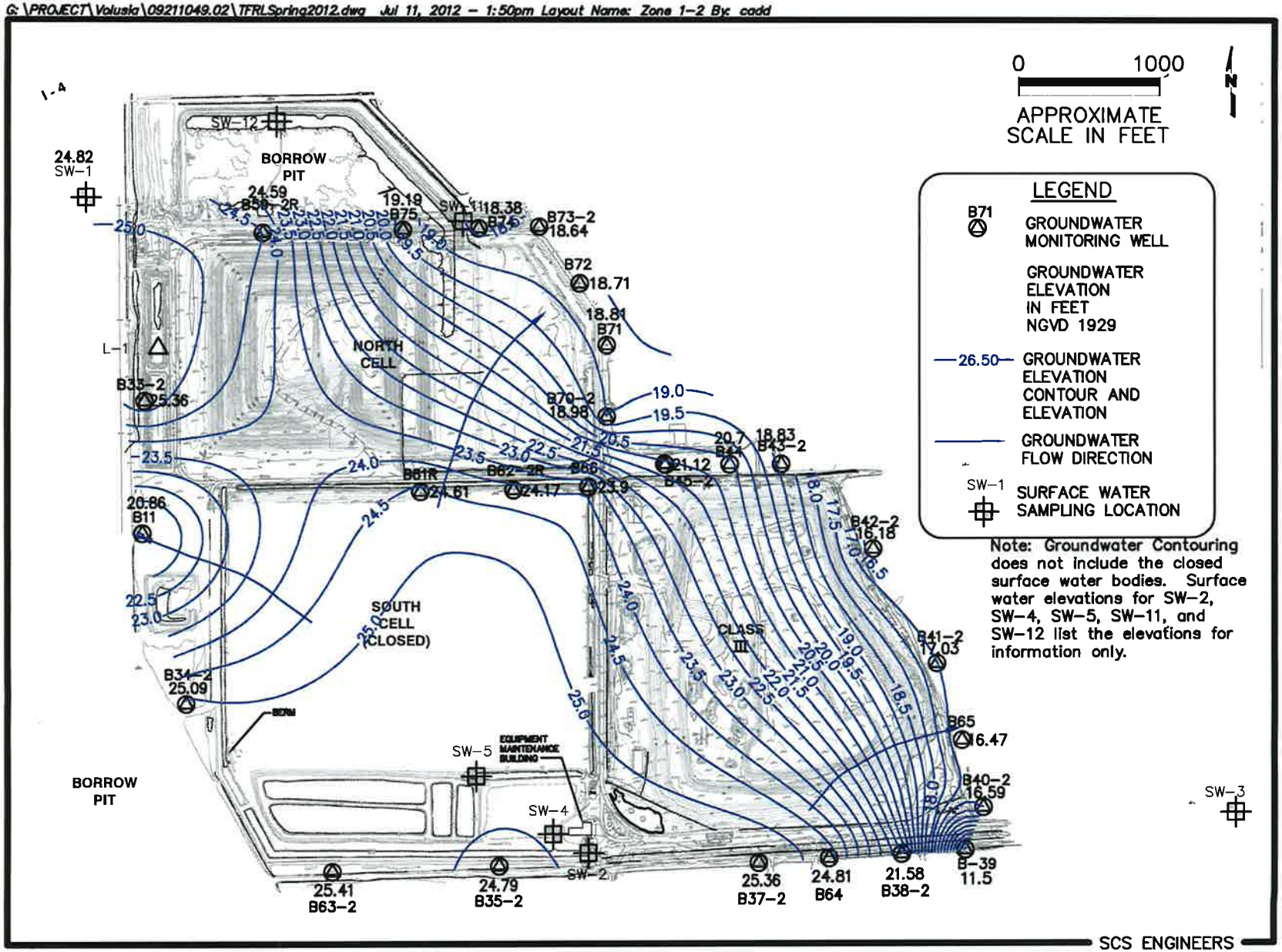


Figure 2

Figure 2. Groundwater Elevation Contour Map, Aquifer Zone 1-2
Tomoka Farms Road Landfill, April 30, 2012

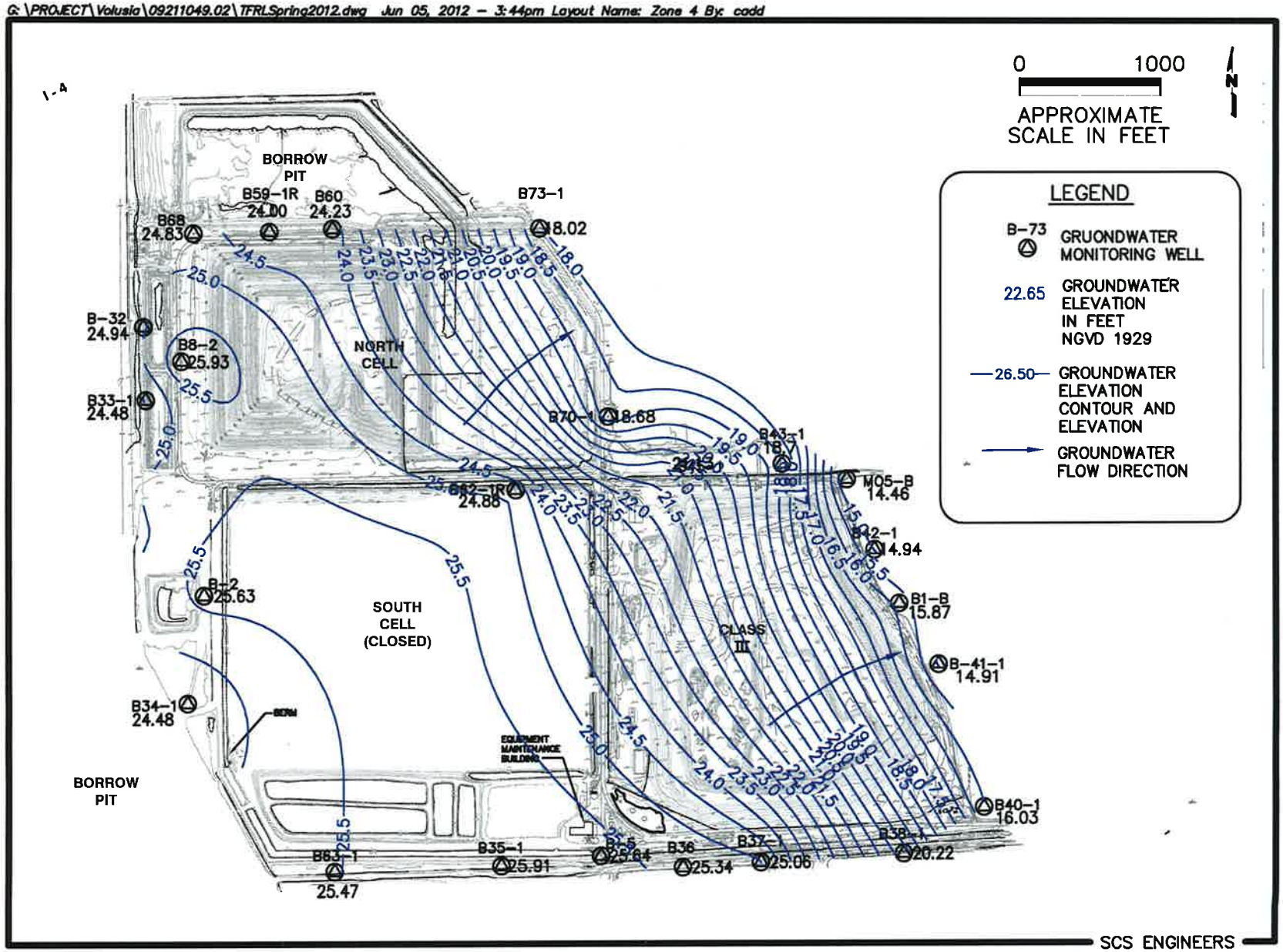
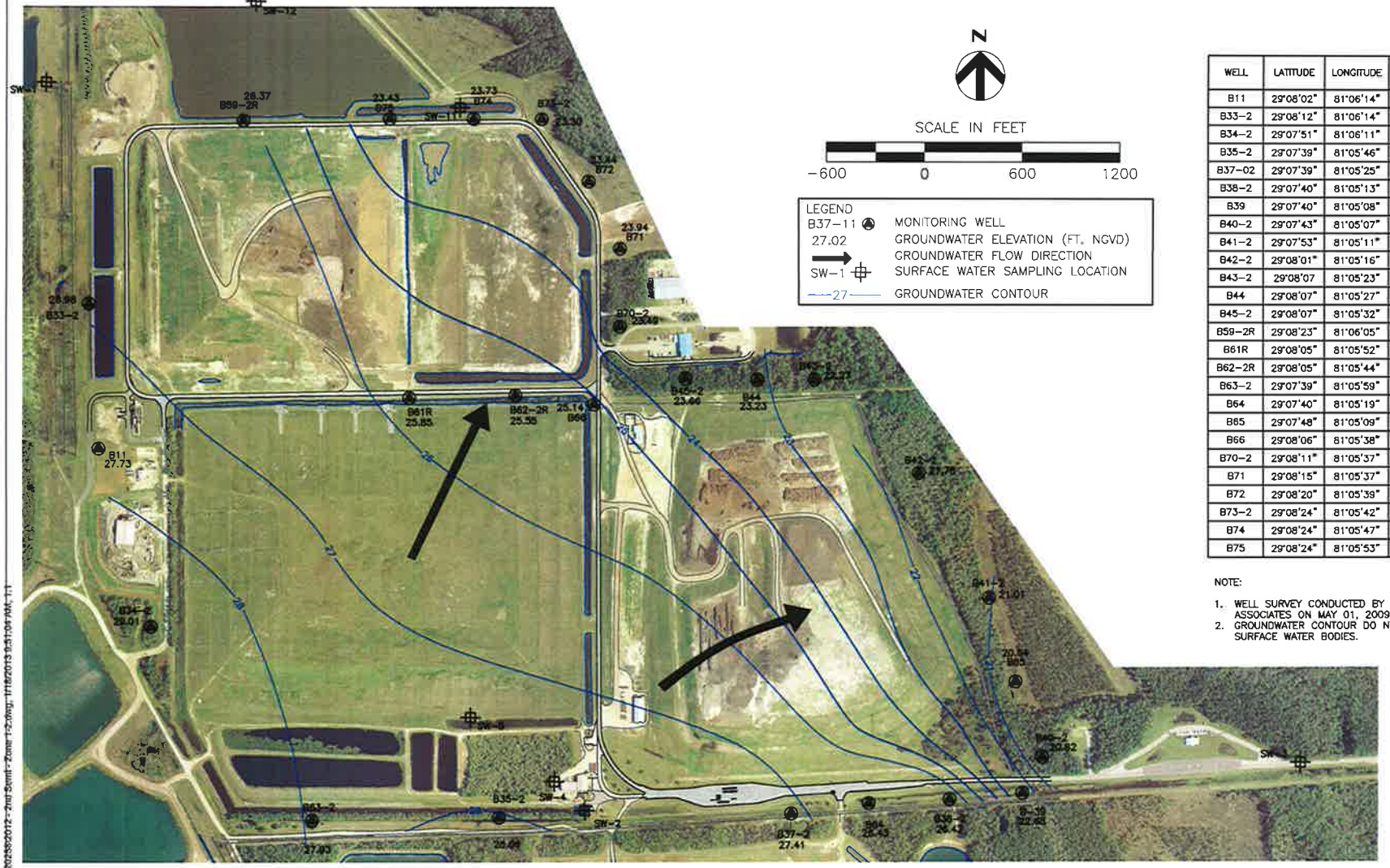


Figure 3

Figure 3. Groundwater Elevation Contour Map, Aquifer Zone 4
Tomoka Farms Road Landfill, April 30, 2012



WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B11	29°08'02"	81°06'14"	32.95
B33-2	29°08'12"	81°06'14"	32.97
B34-2	29°07'51"	81°06'11"	31.20
B35-2	29°07'39"	81°05'46"	29.34
B37-02	29°07'39"	81°05'25"	28.76
B38-2	29°07'40"	81°05'13"	28.12
B39	29°07'40"	81°05'08"	29.09
B40-2	29°07'43"	81°05'07"	27.67
B41-2	29°07'53"	81°05'11"	29.27
B42-2	29°08'01"	81°05'16"	28.47
B43-2	29°08'07	81°05'23"	28.23
B44	29°08'07"	81°05'27"	30.03
B45-2	29°08'07"	81°05'32"	30.35
B59-2R	29°08'23"	81°06'05"	33.12
B61R	29°08'05"	81°05'52"	39.42
B62-2R	29°08'05"	81°05'44"	39.36
B63-2	29°07'39"	81°05'59"	30.38
B64	29°07'40"	81°05'19"	28.22
B65	29°07'48"	81°05'09"	27.97
B66	29°08'06"	81°05'38"	31.26
B70-2	29°08'11"	81°05'37"	31.51
B71	29°08'15"	81°05'37"	30.75
B72	29°08'20"	81°05'39"	28.93
B73-2	29°08'24"	81°05'42"	28.95
B74	29°08'24"	81°05'47"	33.78
B75	29°08'24"	81°05'53"	31.62

NOTE:

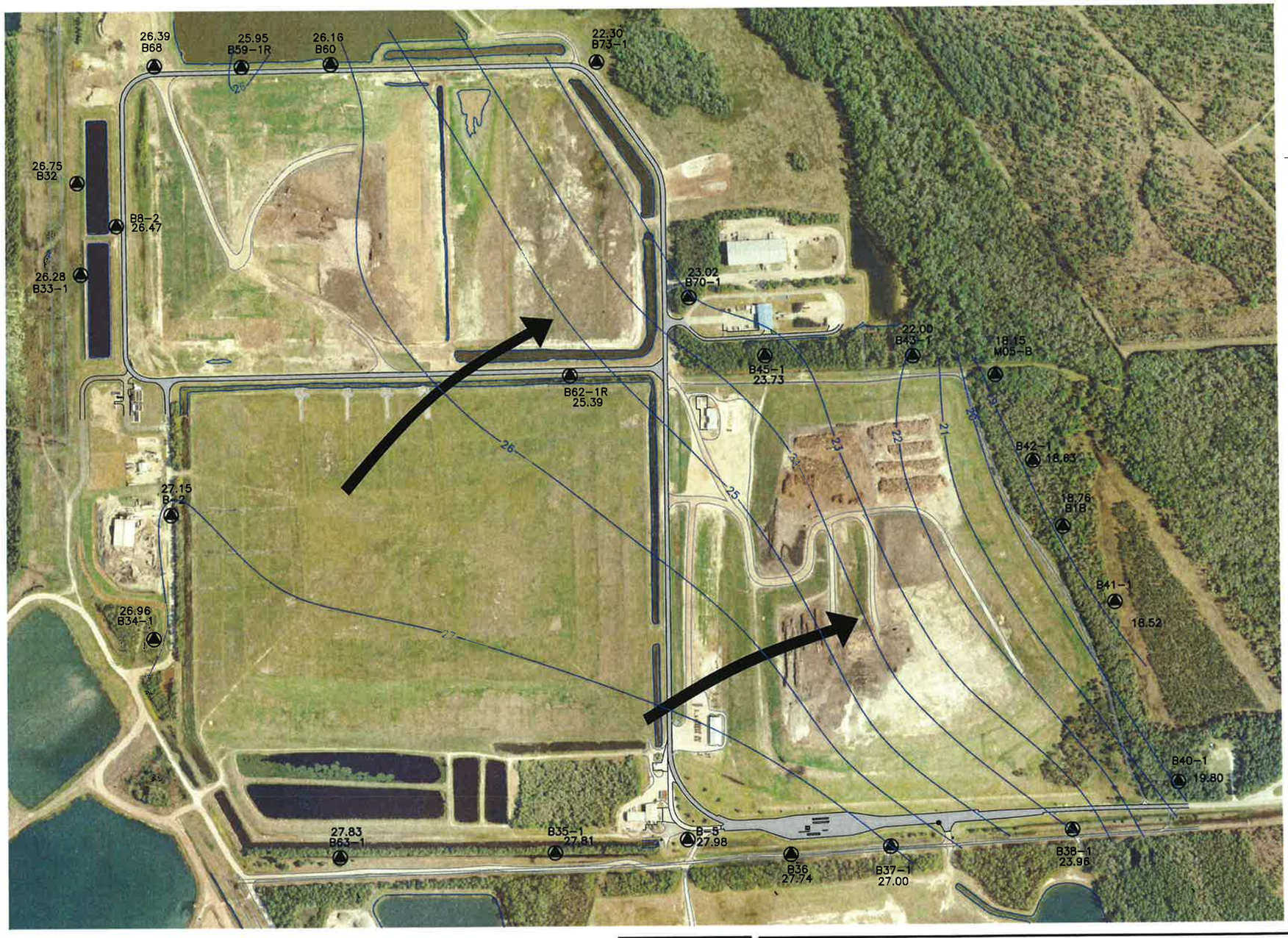
1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUNDWATER CONTOUR DO NOT INCLUDE THE SURFACE WATER BODIES.

Figure 4

HDR

PROJECT TITLE	TOMOKA FARMS ROAD LANDFILL
SHEET TITLE	ZONES 1&2 GROUNDWATER POTENTIOMETRIC MAP 2ND 2012 SEMIANNUAL SAMPLING EVENT
PROJECT NUMBER	195292
PROJECT MANAGER	C. LEBRON
DATE	01/2013
REFERENCE SHEET	
REFERENCE DOCUMENT	
EXHIBIT NUMBER	FIGURE 2

C:\pwworking\prano\d0202585\2012 - 2nd Semi - Zone 1-2.dwg, 1/18/2013 8:51:04 AM, 1:1



WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B1-B	29°07'57"	81°05'14"	28.78
B2	29°07'58"	81°06'09"	34.53
B32	29°08'17"	81°06'14"	30.92
B33-1	29°08'12"	81°06'14"	34.69
B34-1	29°07'51"	81°06'11"	31.19
B35-1	29°07'39"	81°05'46"	29.26
B36	29°07'39"	81°05'31"	29.33
B37-01	29°07'39"	81°05'25"	28.63
B38-1	29°07'40"	81°05'13"	28.24
B40-1	29°07'43"	81°05'07"	27.77
B41-1	29°07'53"	81°05'11"	29.16
B42-1	29°08'01"	81°05'16"	28.30
B43-1	29°08'07"	81°05'23"	28.09
B45-1	29°08'07"	81°05'32"	30.28
B5	29°07'40"	81°05'38"	32.59
B59-1R	29°08'23"	81°06'05"	32.44
B60	29°08'24"	81°05'59"	32.95
B62-1R	29°08'05"	81°05'44"	38.97
B63-1	29°07'39"	81°05'59"	30.03
B68	29°08'23"	81°06'10"	32.98
B70-1	29°08'11"	81°05'37"	31.03
B73-1	29°08'24"	81°05'42"	29.20
B8-2	29°08'14"	81°06'11"	33.37
M05-B	29°08'06"	81°05'18"	29.80

NOTE:

WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.

C:\pw\working\tpa\d0420258\d2012 - 2nd Semi - Zone 4.dwg, 1/18/2013 9:48:22 AM, 1:1

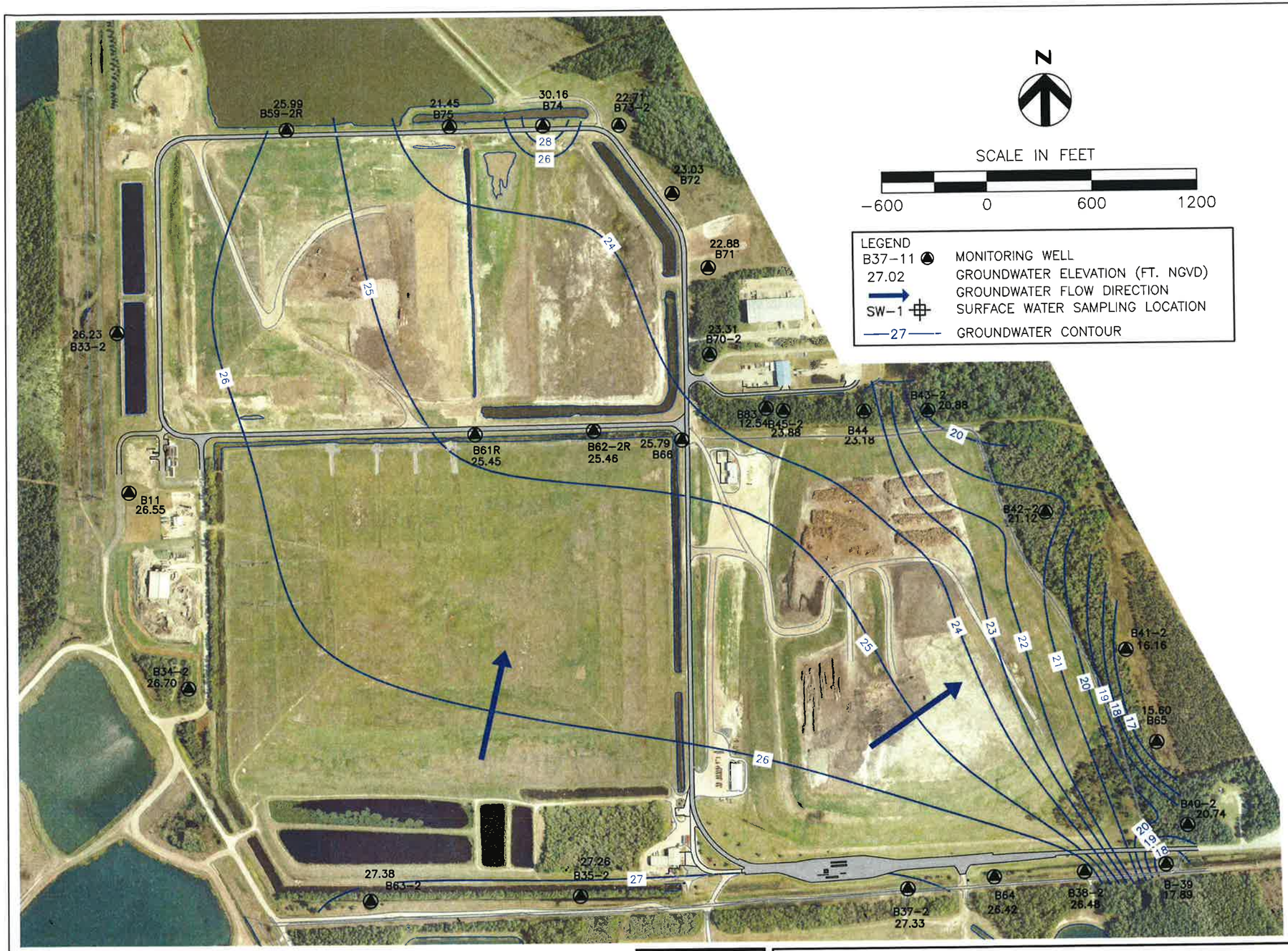
Figure 5

HDR

PROJECT TITLE
TOMOKA FARMS ROADS LANDFILL

SHEET TITLE
ZONE 4 GROUNDWATER POTENTIOMETRIC MAP
2ND 2012 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER	195292
PROJECT MANAGER	C. LEBRON
DATE	01/2013
REFERENCE SHEET	
REFERENCE DOCUMENT	
EXHIBIT NUMBER	FIGURE 3



WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B11	29°08'02"	81°06'14"	32.95
B33−2	29°08'12"	81°06'14"	32.97
B34−2	29°07'51"	81°06'11"	31.20
B35−2	29°07'39"	81°05'46"	29.34
B37−02	29°07'39"	81°05'25"	28.76
B38−2	29°07'40"	81°05'13"	28.12
B39	29°07'40"	81°05'08"	29.09
B40−2	29°07'43"	81°05'07"	27.67
B41−2	29°07'53"	81°05'11"	29.27
B42−2	29°08'01"	81°05'16"	28.47
B43−2	29°08'07	81°05'23"	28.23
B44	29°08'07"	81°05'27"	30.03
B45−2	29°08'07"	81°05'32"	30.35
B59−2R	29°08'23"	81°06'05"	33.12
B61R	29°08'05"	81°05'52"	39.42
B62−2R	29°08'05"	81°05'44"	39.36
B63−2	29°07'39"	81°05'59"	30.38
B64	29°07'40"	81°05'19"	28.22
B65	29°07'48"	81°05'09"	27.97
B66	29°08'06"	81°05'38"	31.26
B70−2	29°08'11"	81°05'37"	31.51
B71	29°08'15"	81°05'37"	30.75
B72	29°08'20"	81°05'39"	28.93
B73−2	29°08'24"	81°05'42"	28.95
B74	29°08'24"	81°05'47"	33.78
B75	29°08'24"	81°05'53"	31.62
B83	29°08'07"	81°05'32"	30.57

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUNDWATER CONTOURS DO NOT INCLUDE THE SURFACE WATER BODIES.
3. GROUND WATER LEVELS WERE MEASURED ON MAY 6, 2013.

Figure 6

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONES 1 & 2 GROUNDWATER POTENTIOMETRIC MAP
1ST 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

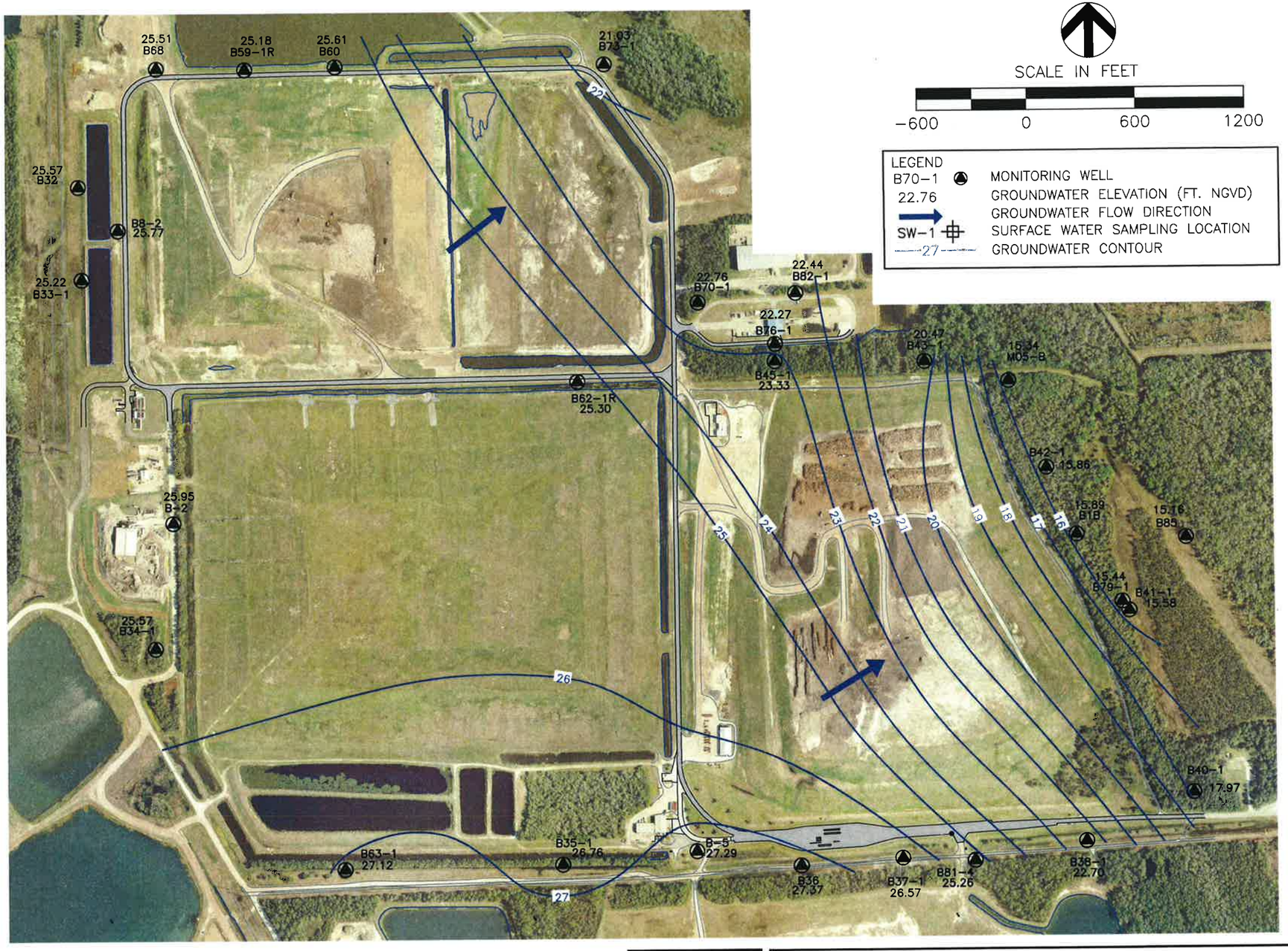
PROJECT MANAGER
C. LEBRON

DATE
06/2013

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 2



N

SCALE IN FEET

−600 0 600 1200

LEGEND

B70−1	MONITORING WELL
22.76	GROUNDWATER ELEVATION (FT. NGVD)
	GROUNDWATER FLOW DIRECTION
SW−1	SURFACE WATER SAMPLING LOCATION
27	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B1−B	29°07'57"	81°05'14"	28.78
B2	29°07'58"	81°06'09"	34.53
B32	29°08'17"	81°06'14"	30.92
B33−1	29°08'12"	81°06'14"	34.69
B34−1	29°07'51"	81°06'11"	31.19
B35−1	29°07'39"	81°05'46"	29.26
B36	29°07'39"	81°05'31"	29.33
B37−01	29°07'39"	81°05'25"	28.63
B38−1	29°07'40"	81°05'13"	28.24
B40−1	29°07'43"	81°05'07"	27.77
B41−1	29°07'53"	81°05'11"	29.16
B42−1	29°08'01"	81°05'16"	28.30
B43−1	29°08'07"	81°05'23"	28.09
B45−1	29°08'07"	81°05'32"	30.28
B5	29°07'40"	81°05'38"	32.59
B59−1R	29°08'23"	81°06'05"	32.44
B60	29°08'24"	81°05'59"	32.95
B62−1R	29°08'05"	81°05'44"	38.97
B63−1	29°07'39"	81°05'59"	30.03
B68	29°08'23"	81°06'10"	32.98
B70−1	29°08'11"	81°05'37"	31.03
B73−1	29°08'24"	81°05'42"	29.20
B8−2	29°08'14"	81°06'11"	33.37
M05−B	29°08'06"	81°05'18"	29.80
B76−1	29°08'08"	81°05'31"	27.39
B79−1	29°07'54"	81°05'09"	27.53
B81−4	29°07'39"	81°05'19"	29.76
B82−1	29°08'11"	81°05'30"	30.78
B85	29°07'57"	81°05'05"	27.07

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON MAY 6, 2013.

Figure 7

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONE 4 GROUNDWATER POTENTIOMETRIC MAP
1ST 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

PROJECT MANAGER
C. LEBRON

DATE
06/2013

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 3

N

SCALE IN FEET

−600 0 600 1200

LEGEND

B76-6	MONITORING WELL
15.94	GROUNDWATER ELEVATION (FT. NGVD)
	GROUNDWATER FLOW DIRECTION
SW-1	SURFACE WATER SAMPLING LOCATION
16	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B8-1	29°08'14"	81°06'11"	33.53
B76-6	29°08'08"	81°05'31"	27.33
B77	29°08'07"	81°05'32"	31.13
B79-6	29°07'54"	81°05'10"	27.51
B86	29°07'40"	81°05'19"	29.46

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON MAY 6, 2013.

Figure 8

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONE 6 GROUNDWATER POTENTIOMETRIC MAP
1ST 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

PROJECT MANAGER
C. LEBRON

DATE
06/2013

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 4

N

SCALE IN FEET

−700 0 700 1400

LEGEND

FA−2C ●	MONITORING WELL
11.62	GROUNDWATER ELEVATION (FT. NGVD)
→	GROUNDWATER FLOW DIRECTION
SW−1 ⊕	SURFACE WATER SAMPLING LOCATION
—15—	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
FA−1B	29°07'51"	81°06'11"	32.22
FA−2C	29°08'31"	81°05'32"	28.10
FM−B	29°07'42"	81°05'36"	33.88

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON MAY 6, 2013.

Figure 9

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
FLORIDIAN AQUIFER GROUNDWATER POTENTIOMETRIC MAP
1ST 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

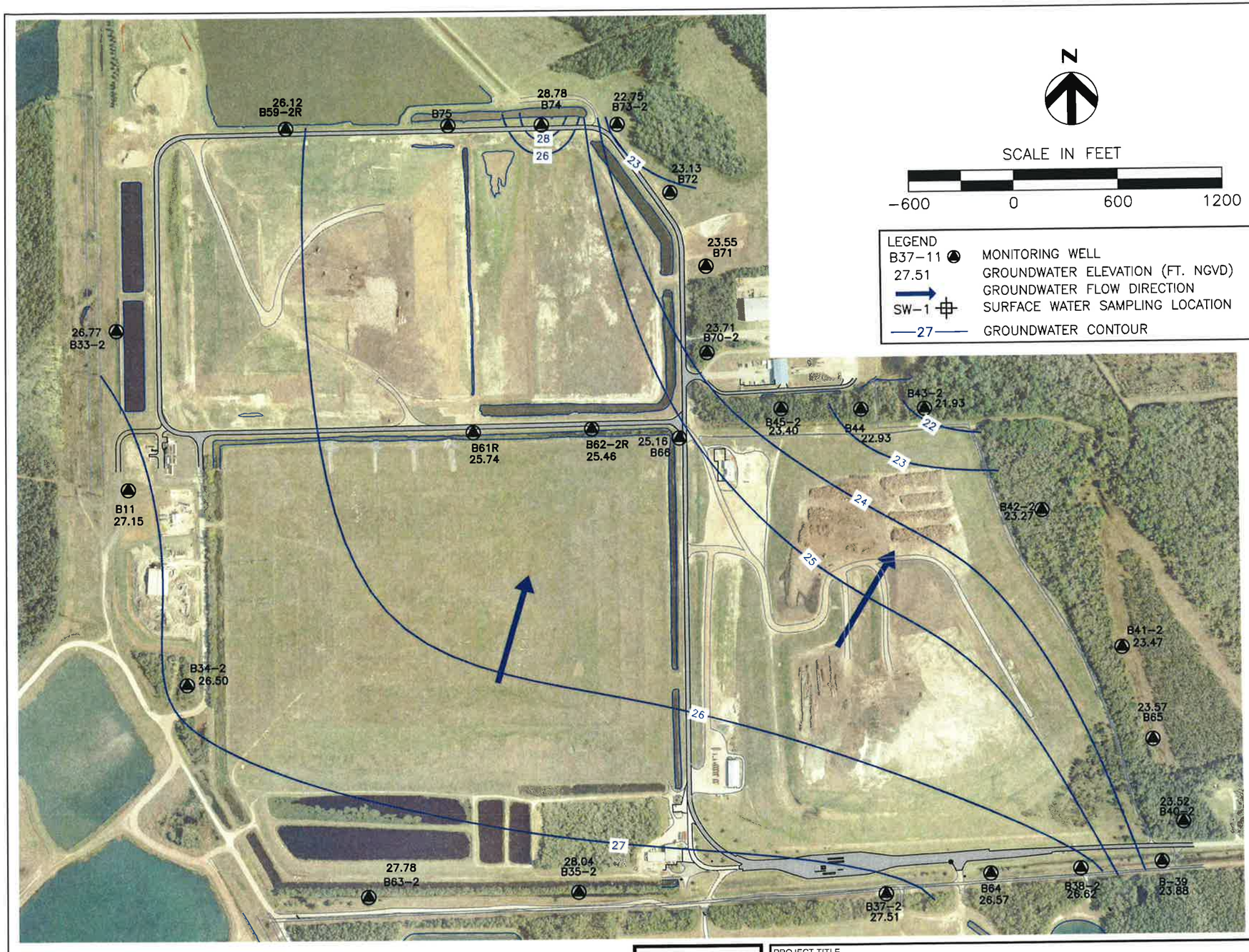
PROJECT MANAGER
C. LEBRON

DATE
06/2013

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 5



N

SCALE IN FEET

−600 0 600 1200

LEGEND

B37–11 ▲	MONITORING WELL
27.51	GROUNDWATER ELEVATION (FT. NGVD)
→	GROUNDWATER FLOW DIRECTION
SW–1 ⊕	SURFACE WATER SAMPLING LOCATION
—27—	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B11	29°08'02"	81°06'14"	32.95
B33–2	29°08'12"	81°06'14"	32.97
B34–2	29°07'51"	81°06'11"	31.20
B35–2	29°07'39"	81°05'46"	29.34
B37–02	29°07'39"	81°05'25"	28.76
B38–2	29°07'40"	81°05'13"	28.12
B39	29°07'40"	81°05'08"	29.09
B40–2	29°07'43"	81°05'07"	27.67
B41–2	29°07'53"	81°05'11"	29.27
B42–2	29°08'01"	81°05'16"	28.47
B43–2	29°08'07	81°05'23"	28.23
B44	29°08'07"	81°05'27"	30.03
B45–2	29°08'07"	81°05'32"	30.35
B59–2R	29°08'23"	81°06'05"	33.12
B61R	29°08'05"	81°05'52"	39.42
B62–2R	29°08'05"	81°05'44"	39.36
B63–2	29°07'39"	81°05'59"	30.38
B64	29°07'40"	81°05'19"	28.22
B65	29°07'48"	81°05'09"	27.97
B66	29°08'06"	81°05'38"	31.26
B70–2	29°08'11"	81°05'37"	31.51
B71	29°08'15"	81°05'37"	30.75
B72	29°08'20"	81°05'39"	28.93
B73–2	29°08'24"	81°05'42"	28.95
B74	29°08'24"	81°05'47"	33.78
B75	29°08'24"	81°05'53"	31.62

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUNDWATER CONTOURS DO NOT INCLUDE THE SURFACE WATER BODIES.
3. GROUND WATER LEVELS WERE MEASURED ON NOVEMBER 4, 2013.

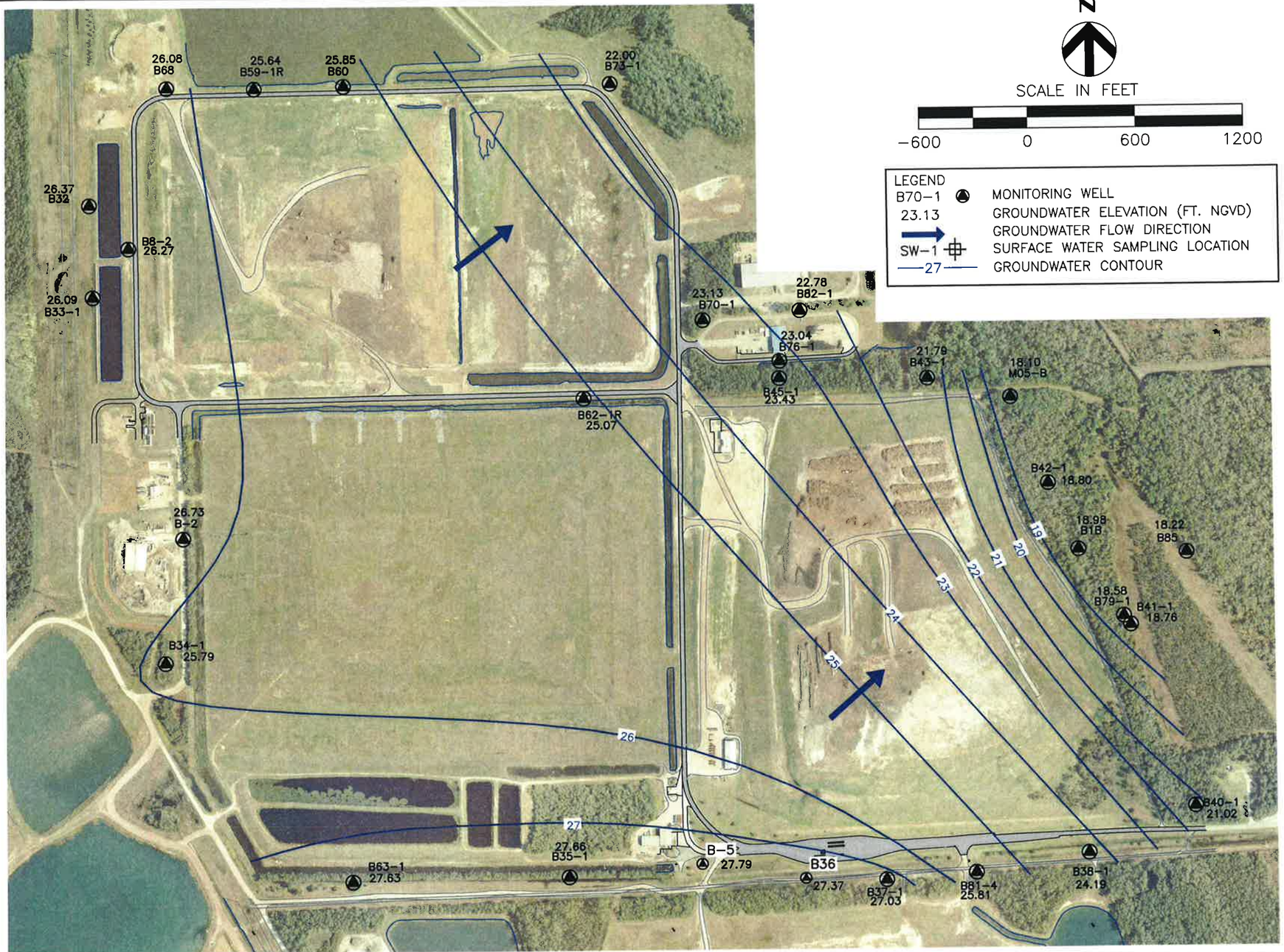
Figure 10

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONES 1 & 2 GROUNDWATER POTENTIOMETRIC MAP
2ND 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER	195292
PROJECT MANAGER	C. LEBRON
DATE	01/2014
REFERENCE SHEET	
REFERENCE DOCUMENT	
EXHIBIT NUMBER	FIGURE 2



WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B1-B	29°07'57"	81°05'14"	28.78
B2	29°07'58"	81°06'09"	34.53
B32	29°08'17"	81°06'14"	30.92
B33-1	29°08'12"	81°06'14"	34.69
B34-1	29°07'51"	81°06'11"	31.19
B35-1	29°07'39"	81°05'46"	29.26
B36	29°07'39"	81°05'31"	29.33
B37-01	29°07'39"	81°05'25"	28.63
B38-1	29°07'40"	81°05'13"	28.24
B40-1	29°07'43"	81°05'07"	27.77
B41-1	29°07'53"	81°05'11"	29.16
B42-1	29°08'01"	81°05'16"	28.30
B43-1	29°08'07"	81°05'23"	28.09
B45-1	29°08'07"	81°05'32"	30.28
B5	29°07'40"	81°05'38"	32.59
B59-1R	29°08'23"	81°06'05"	32.44
B60	29°08'24"	81°05'59"	32.95
B62-1R	29°08'05"	81°05'44"	38.97
B63-1	29°07'39"	81°05'59"	30.03
B68	29°08'23"	81°06'10"	32.98
B70-1	29°08'11"	81°05'37"	31.03
B73-1	29°08'24"	81°05'42"	29.20
B8-2	29°08'14"	81°06'11"	33.37
M05-B	29°08'06"	81°05'18"	29.80
B76-1	29°08'08"	81°05'31"	27.39
B79-1	29°07'54"	81°05'09"	27.53
B81-4	29°07'39"	81°05'19"	29.76
B82-1	29°08'11"	81°05'30"	30.78
B85	29°07'57"	81°05'05"	27.07

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON NOV. 4, 2013.

Figure 11

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONE 4 GROUNDWATER POTENTIOMETRIC MAP
2ND 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

PROJECT MANAGER
C. LEBRON

DATE
01/2014

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 3

N

SCALE IN FEET

-600 0 600 1200

LEGEND

B76-6	MONITORING WELL
17.98	GROUNDWATER ELEVATION (FT. NGVD)
	GROUNDWATER FLOW DIRECTION
SW-1	SURFACE WATER SAMPLING LOCATION
16	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B8-1	29°08'14"	81°06'11"	33.53
B76-6	29°08'08"	81°05'31"	27.33
B77	29°08'07"	81°05'32"	31.13
B79-6	29°07'54"	81°05'10"	27.51
B86	29°07'40"	81°05'19"	29.46
B85-6	29°07'57"	81°05'05"	27.02
B87-6	29°08'15"	81°05'26"	29.37

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON NOV. 4, 2013.

Figure 12

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONE 6 GROUNDWATER POTENTIOMETRIC MAP
2ND 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

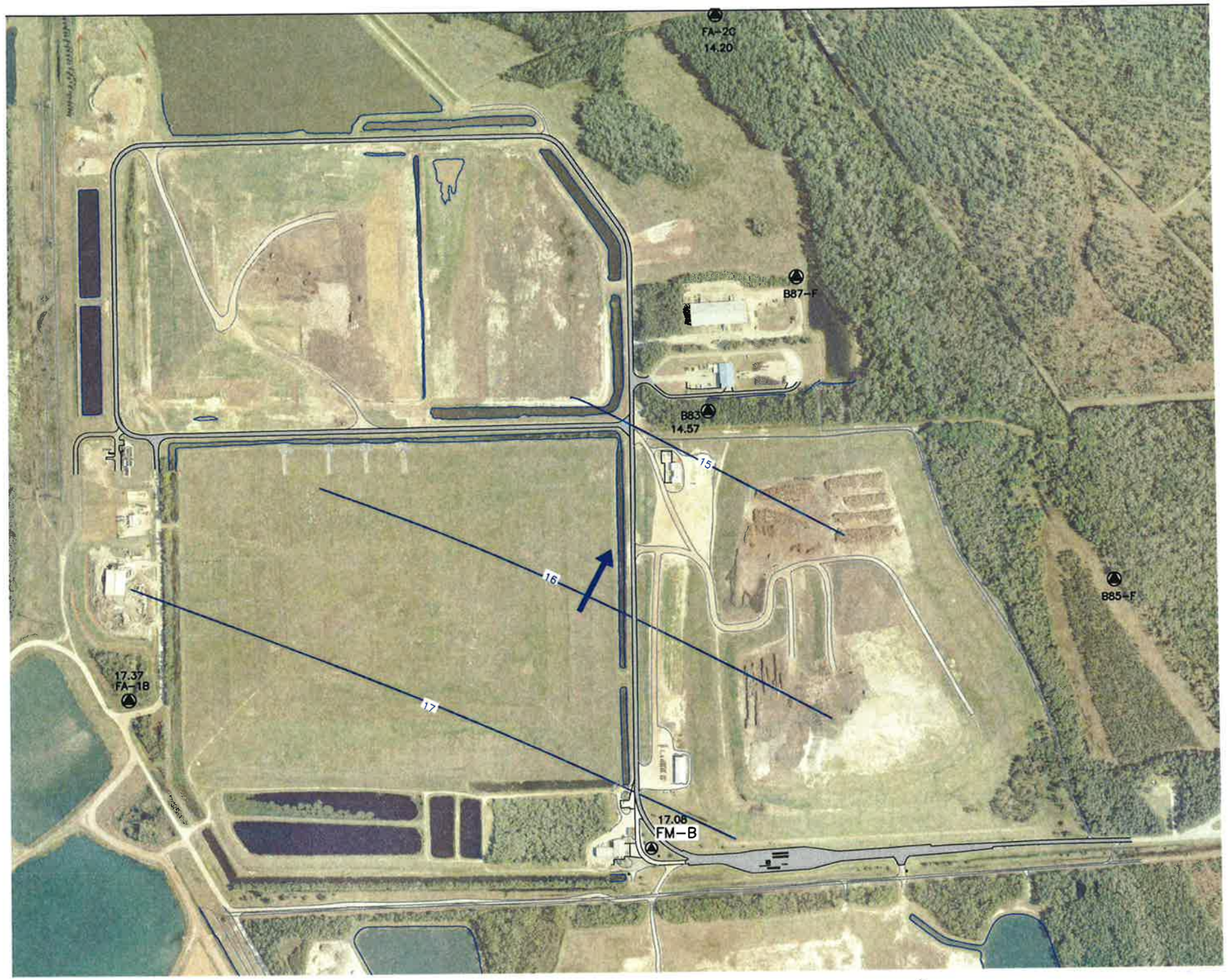
PROJECT MANAGER
C. LEBRON

DATE
01/2014

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 4



N

SCALE IN FEET

−700 0 700 1400

LEGEND

FA−2C	MONITORING WELL
14.20	GROUNDWATER ELEVATION (FT. NGVD)
	GROUNDWATER FLOW DIRECTION
SW−1	SURFACE WATER SAMPLING LOCATION
15	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
FA−1B	29°07'51"	81°06'11"	32.22
FA−2C	29°08'31"	81°05'32"	28.10
FM−B	29°07'42"	81°05'36"	33.88
B85−F	29°07'57"	81°05'05"	27.47
B87−F	29°08'15"	81°05'26"	29.25
B83	29°08'07"	81°05'32"	30.57

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON NOV. 4, 2013.

Figure 13

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
FLORIDAN AQUIFER GROUNDWATER POTENTIOMETRIC MAP
2ND 2013 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
195292

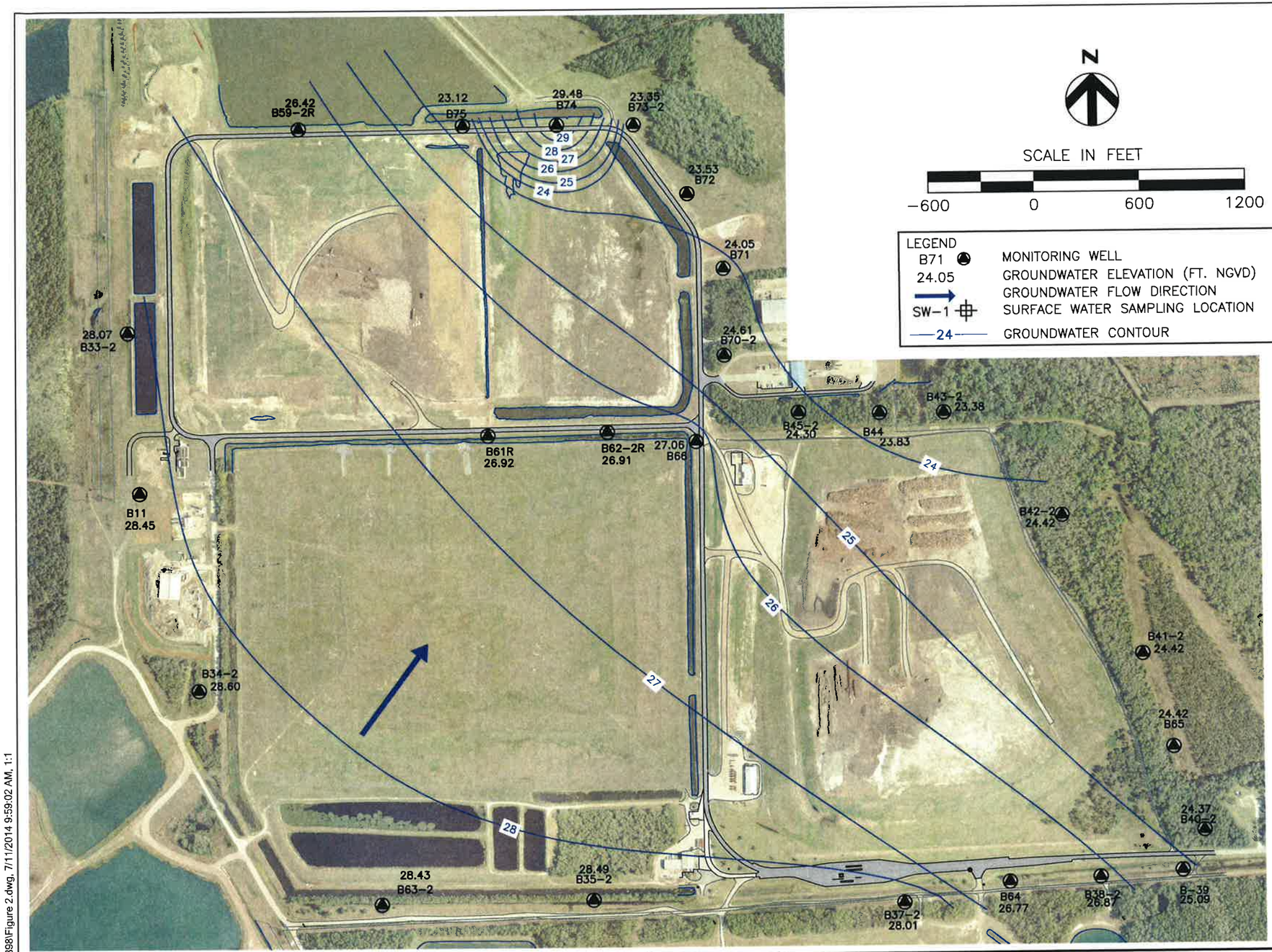
PROJECT MANAGER
C. LEBRON

DATE
01/2014

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 5



WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B11	29°08'02"	81°06'14"	32.95
B33-2	29°08'12"	81°06'14"	32.97
B34-2	29°07'51"	81°06'11"	31.20
B35-2	29°07'39"	81°05'46"	29.34
B37-02	29°07'39"	81°05'25"	28.76
B38-2	29°07'40"	81°05'13"	28.12
B39	29°07'40"	81°05'08"	29.09
B40-2	29°07'43"	81°05'07"	27.67
B41-2	29°07'53"	81°05'11"	29.27
B42-2	29°08'01"	81°05'16"	28.47
B43-2	29°08'07	81°05'23"	28.23
B44	29°08'07"	81°05'27"	30.03
B45-2	29°08'07"	81°05'32"	30.35
B59-2R	29°08'23"	81°06'05"	33.12
B61R	29°08'05"	81°05'52"	39.42
B62-2R	29°08'05"	81°05'44"	39.36
B63-2	29°07'39"	81°05'59"	30.38
B64	29°07'40"	81°05'19"	28.22
B65	29°07'48"	81°05'09"	27.97
B66	29°08'06"	81°05'38"	31.26
B70-2	29°08'11"	81°05'37"	31.51
B71	29°08'15"	81°05'37"	30.75
B72	29°08'20"	81°05'39"	28.93
B73-2	29°08'24"	81°05'42"	28.95
B74	29°08'24"	81°05'47"	33.78
B75	29°08'24"	81°05'53"	31.62

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUNDWATER CONTOURS DO NOT INCLUDE THE SURFACE WATER BODIES.
3. GROUND WATER LEVELS WERE MEASURED ON MAY 16, 2014.

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Figure 14

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONES 1 & 2 GROUNDWATER POTENTIOMETRIC MAP
1ST 2014 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
234399

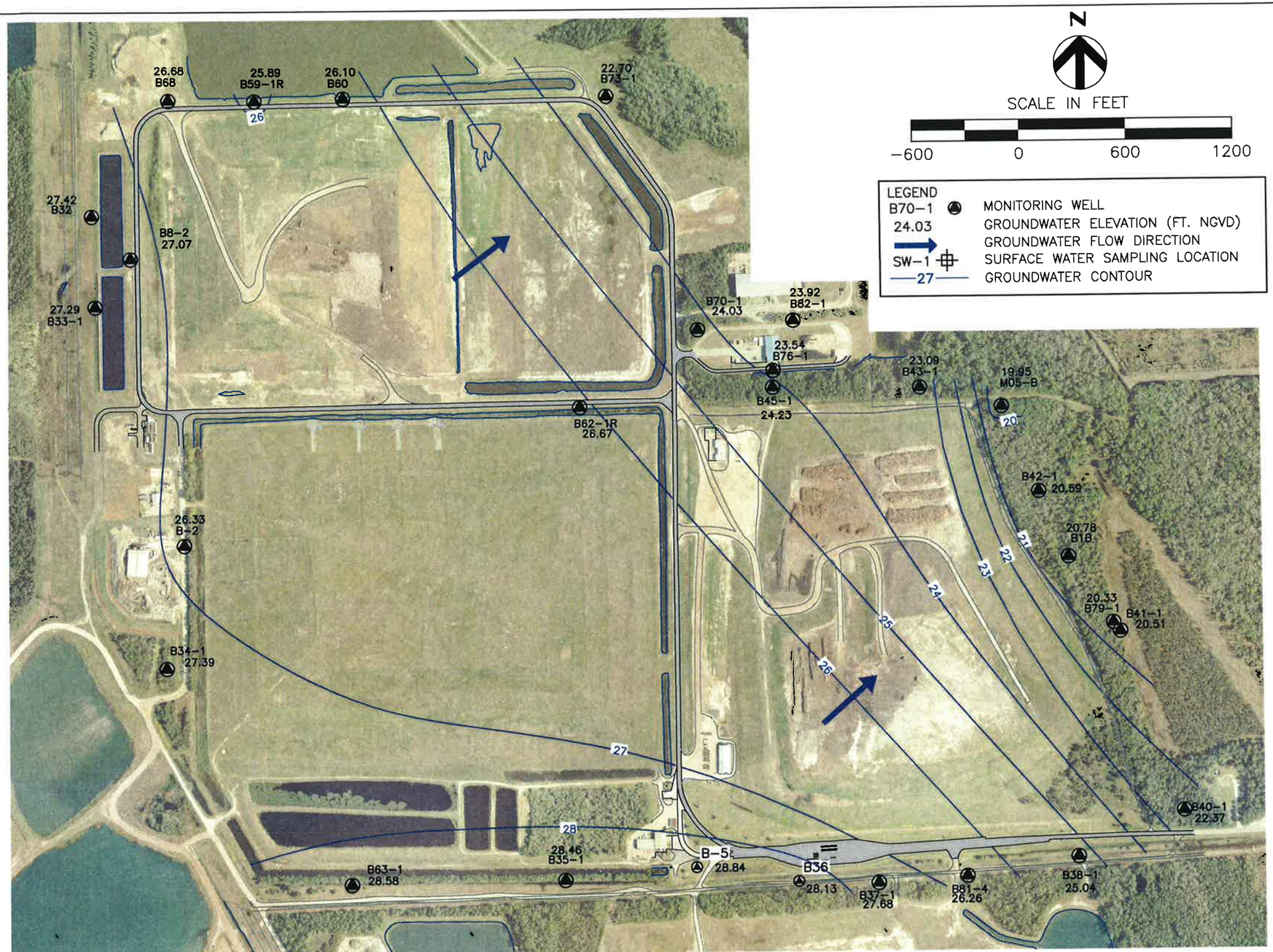
PROJECT MANAGER
J. CATCHES

DATE
07/2014

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 2



N

SCALE IN FEET

−600 0 600 1200

LEGEND

B70−1 ●	MONITORING WELL
24.03 →	GROUNDWATER ELEVATION (FT. NGVD)
	GROUNDWATER FLOW DIRECTION
SW−1 ⌗	SURFACE WATER SAMPLING LOCATION
—27—	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B1−B	29°07'57"	81°05'14"	28.78
B2	29°07'58"	81°06'09"	34.53
B32	29°08'17"	81°06'14"	30.92
B33−1	29°08'12"	81°06'14"	34.69
B34−1	29°07'51"	81°06'11"	31.19
B35−1	29°07'39"	81°05'46"	29.26
B36	29°07'39"	81°05'31"	29.33
B37−01	29°07'39"	81°05'25"	28.63
B38−1	29°07'40"	81°05'13"	28.24
B40−1	29°07'43"	81°05'07"	27.77
B41−1	29°07'53"	81°05'11"	29.16
B42−1	29°08'01"	81°05'16"	28.30
B43−1	29°08'07"	81°05'23"	28.09
B45−1	29°08'07"	81°05'32"	30.28
B5	29°07'40"	81°05'38"	32.59
B59−1R	29°08'23"	81°06'05"	32.44
B60	29°08'24"	81°05'59"	32.95
B62−1R	29°08'05"	81°05'44"	38.97
B63−1	29°07'39"	81°05'59"	30.03
B68	29°08'23"	81°06'10"	32.98
B70−1	29°08'11"	81°05'37"	31.03
B73−1	29°08'24"	81°05'42"	29.20
B8−2	29°08'14"	81°06'11"	33.37
M05−B	29°08'06"	81°05'18"	29.80
B76−1	29°08'08"	81°05'31"	27.39
B79−1	29°07'54"	81°05'09"	27.53
B81−4	29°07'39"	81°05'19"	29.76
B82−1	29°08'11"	81°05'30"	30.78

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON MAY 16, 2014.

Figure 15

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONE 4 GROUNDWATER POTENTIOMETRIC MAP
1ST 2014 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER	234399
PROJECT MANAGER	J. CATCHES
DATE	07/2014
REFERENCE SHEET	
REFERENCE DOCUMENT	
EXHIBIT NUMBER	FIGURE 3

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N

SCALE IN FEET

−600 0 600 1200

LEGEND

B76-6	MONITORING WELL
19.53	GROUNDWATER ELEVATION (FT. NGVD)
	GROUNDWATER FLOW DIRECTION
SW-1	SURFACE WATER SAMPLING LOCATION
20	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
B8	29°08'14"	81°06'11"	33.53
B76-6	29°08'08"	81°05'31"	27.33
B77	29°08'07"	81°05'32"	31.13
B79-6	29°07'54"	81°05'10"	27.51
B86	29°07'40"	81°05'19"	29.46
B85-6	29°07'57"	81°05'05"	27.02
B87-6	29°08'15"	81°05'26"	29.37

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON MAY 16, 2014.

Figure 16

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
ZONE 6 GROUNDWATER POTENTIOMETRIC MAP
1ST 2014 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
234399

PROJECT MANAGER
J. CATCHES

DATE
07/2014

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 4

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N

SCALE IN FEET

−700 0 700 1400

LEGEND

FA−2C ●	MONITORING WELL
15.45	GROUNDWATER ELEVATION (FT. NGVD)
→	GROUNDWATER FLOW DIRECTION
SW−1 ⊕	SURFACE WATER SAMPLING LOCATION
—15—	GROUNDWATER CONTOUR

WELL	LATITUDE	LONGITUDE	TOP OF CASING ELEVATION (NGVD)
FA−1B	29°07'51"	81°06'11"	32.22
FA−2C	29°08'31"	81°05'32"	28.10
F−MB	29°07'42"	81°05'36"	33.88
B85−F	29°07'57"	81°05'05"	27.47
B87−F	29°08'15"	81°05'26"	29.25
B83	29°08'07"	81°05'32"	30.57

NOTES:

1. WELL SURVEY CONDUCTED BY SLIGER & ASSOCIATES ON MAY 01, 2009.
2. GROUND WATER LEVELS WERE MEASURED ON MAY 16, 2014.

Figure 17

HDR

PROJECT TITLE
TOMOKA FARMS ROAD LANDFILL

SHEET TITLE
FLORIDAN AQUIFER GROUNDWATER POTENTIOMETRIC MAP
1ST 2014 SEMIANNUAL SAMPLING EVENT

PROJECT NUMBER
234399

PROJECT MANAGER
J. CATCHES

DATE
07/2014

REFERENCE SHEET

REFERENCE DOCUMENT

EXHIBIT NUMBER
FIGURE 5

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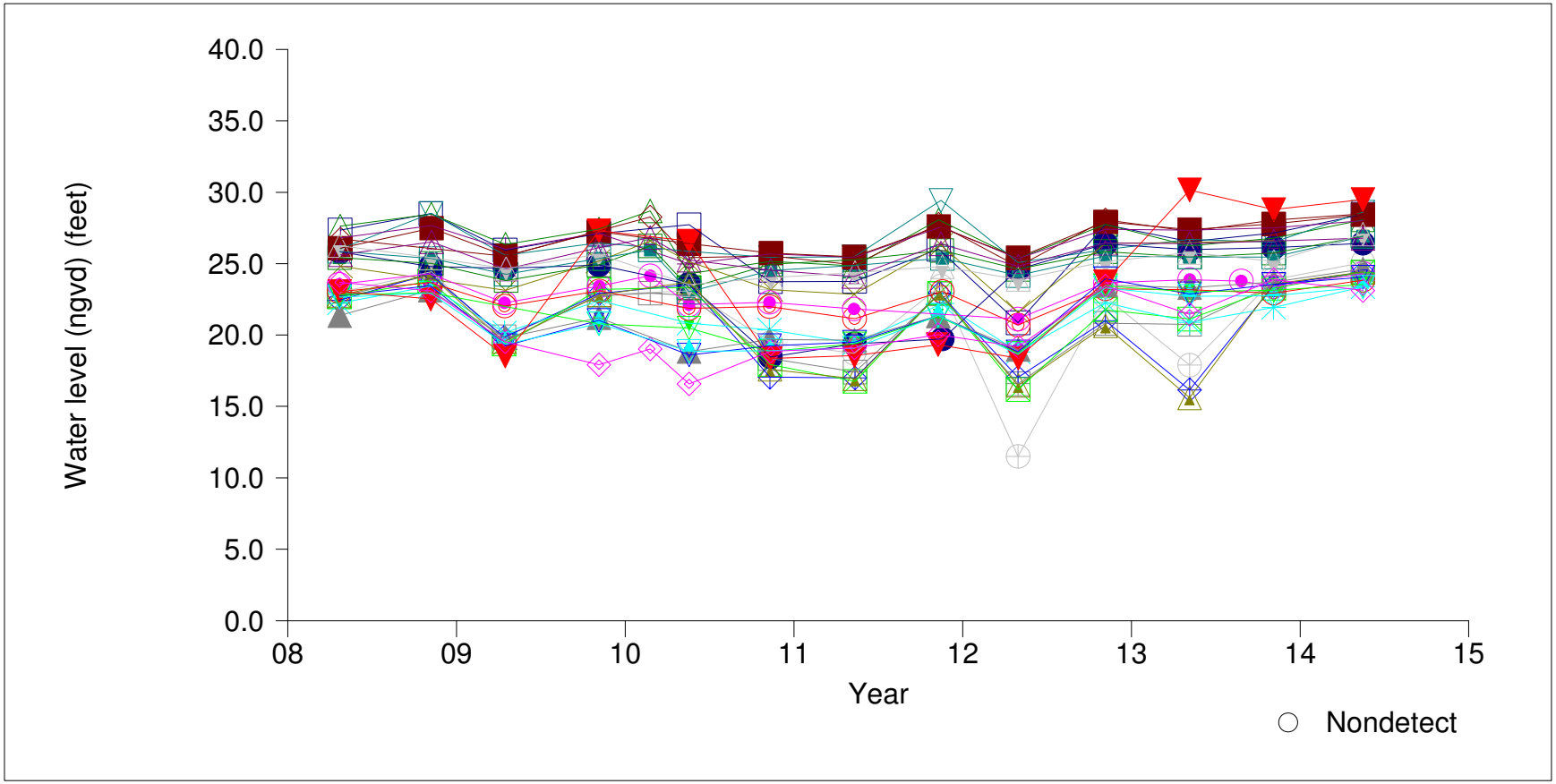
APPENDIX B

HYDROGRAPHS

TOMOKA FARMS ROAD LANDFILL

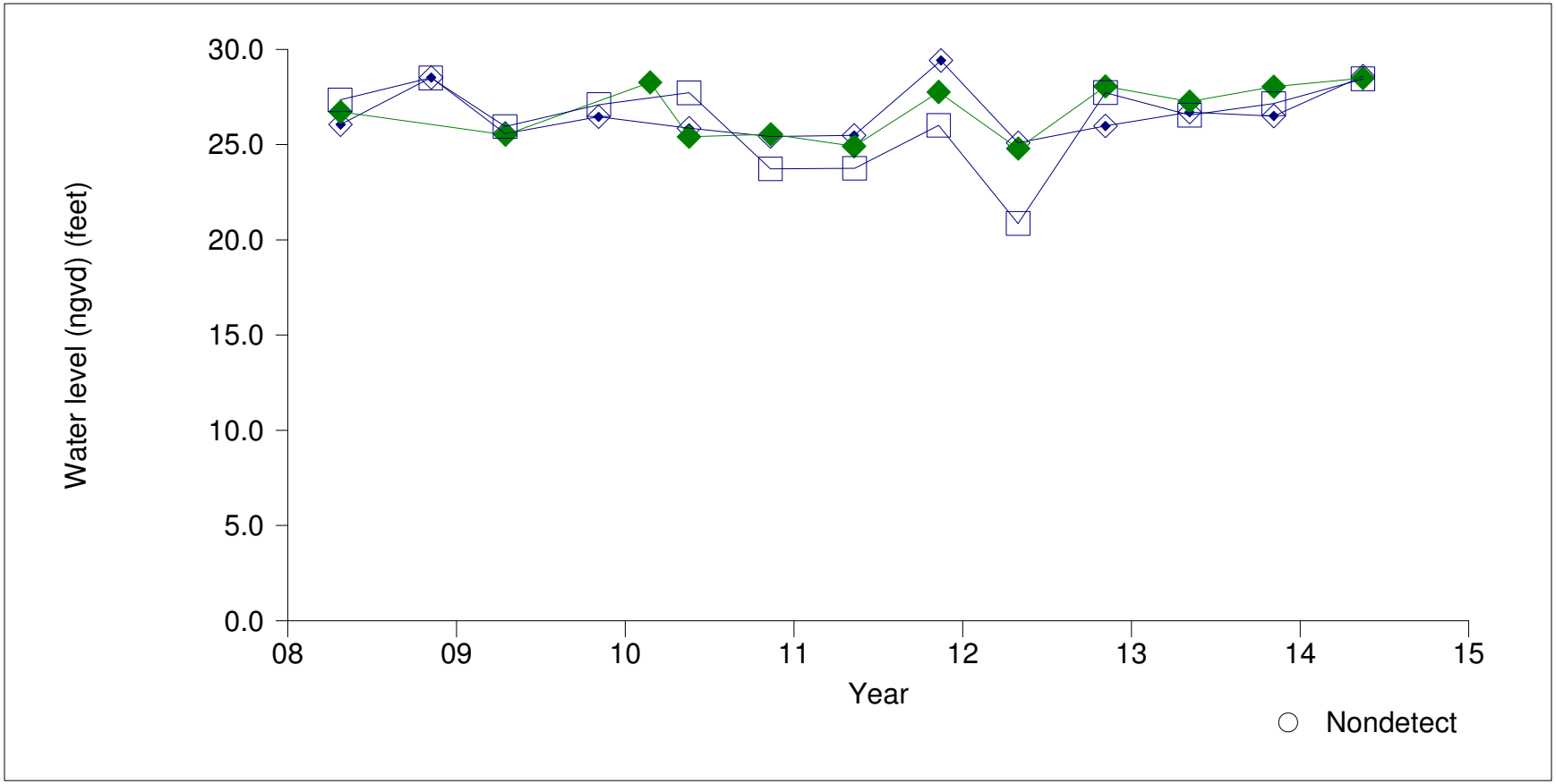
Hydrograph - Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

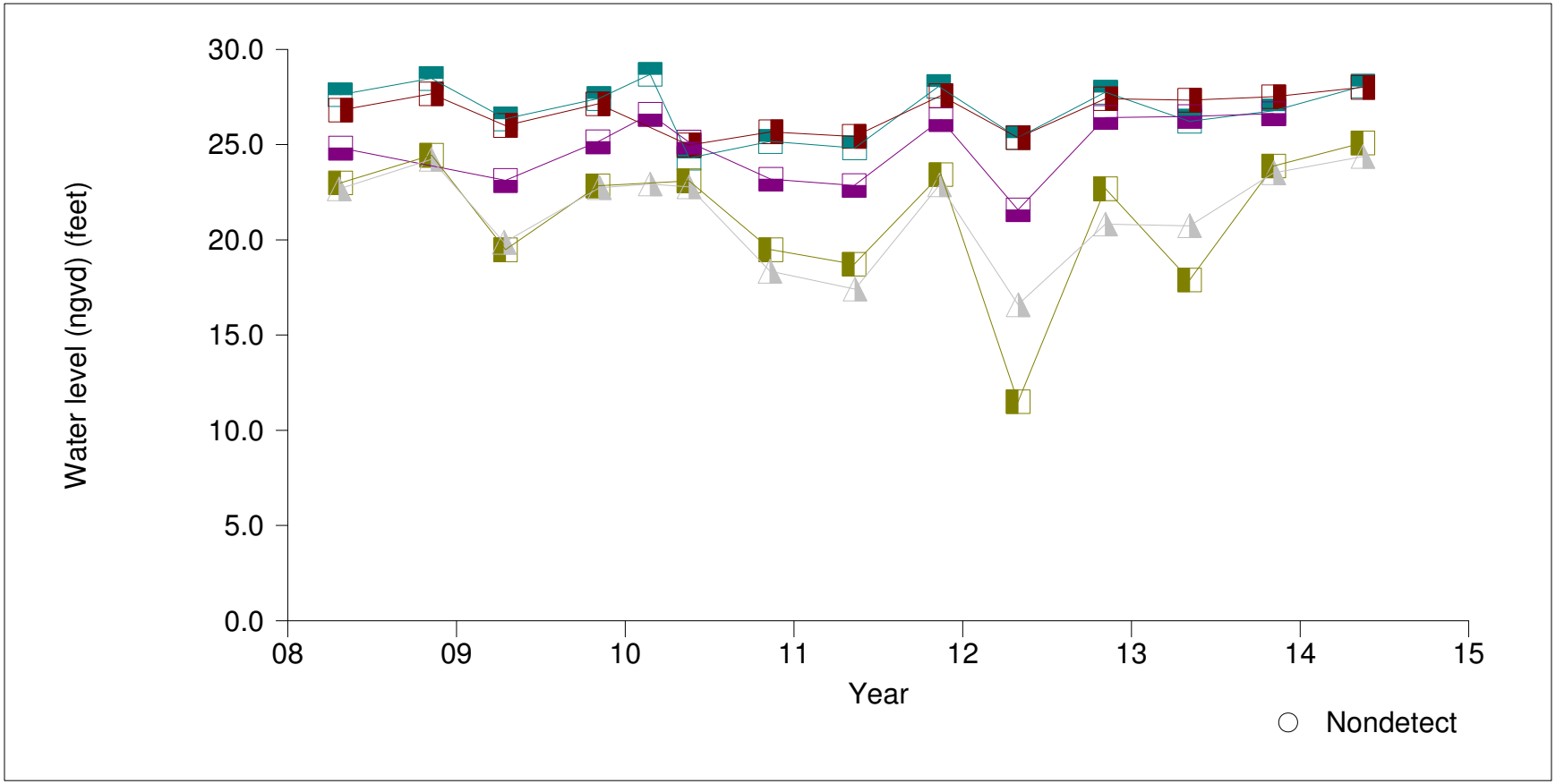
Hydrograph - Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

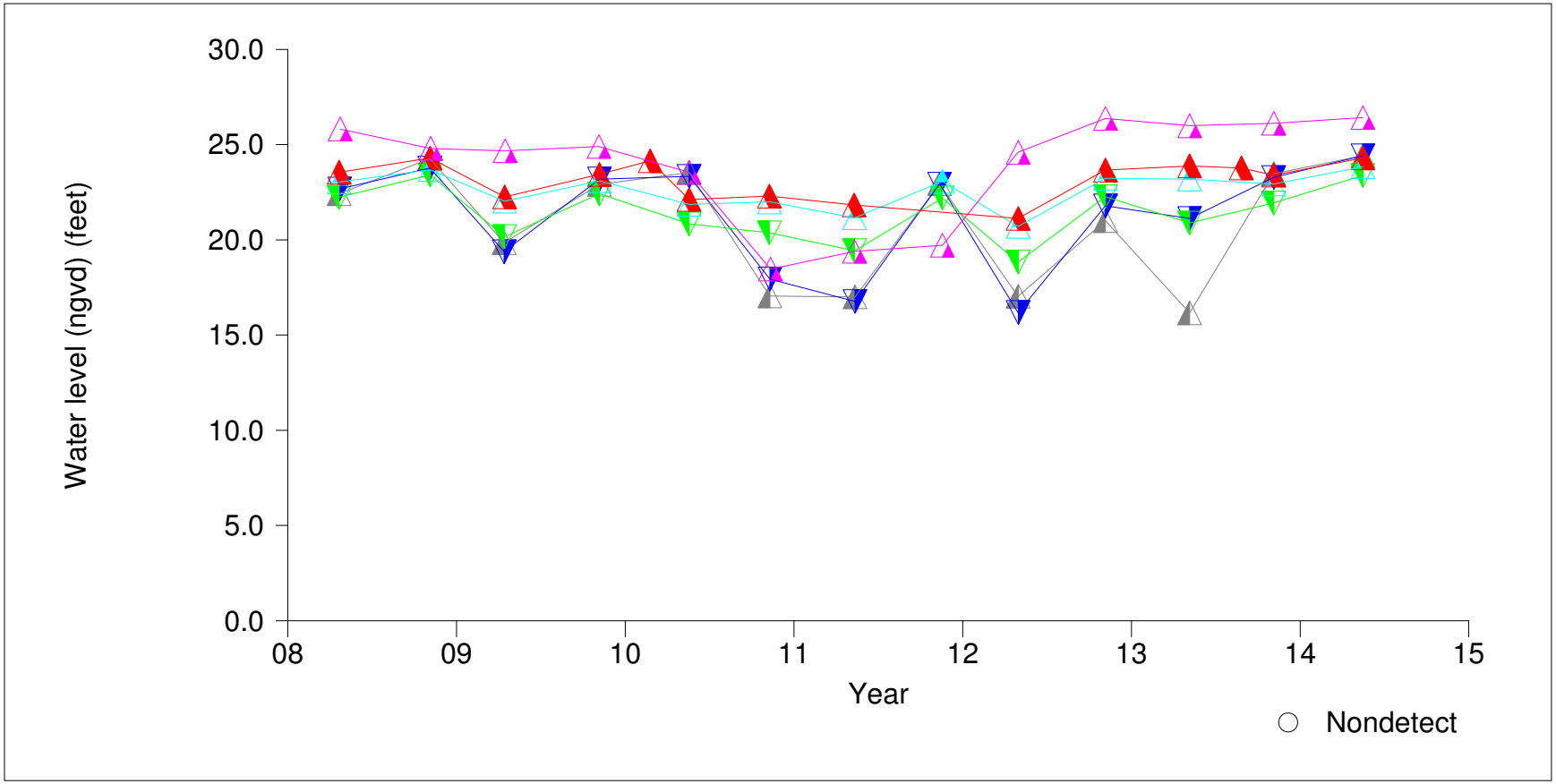
Hydrograph - Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

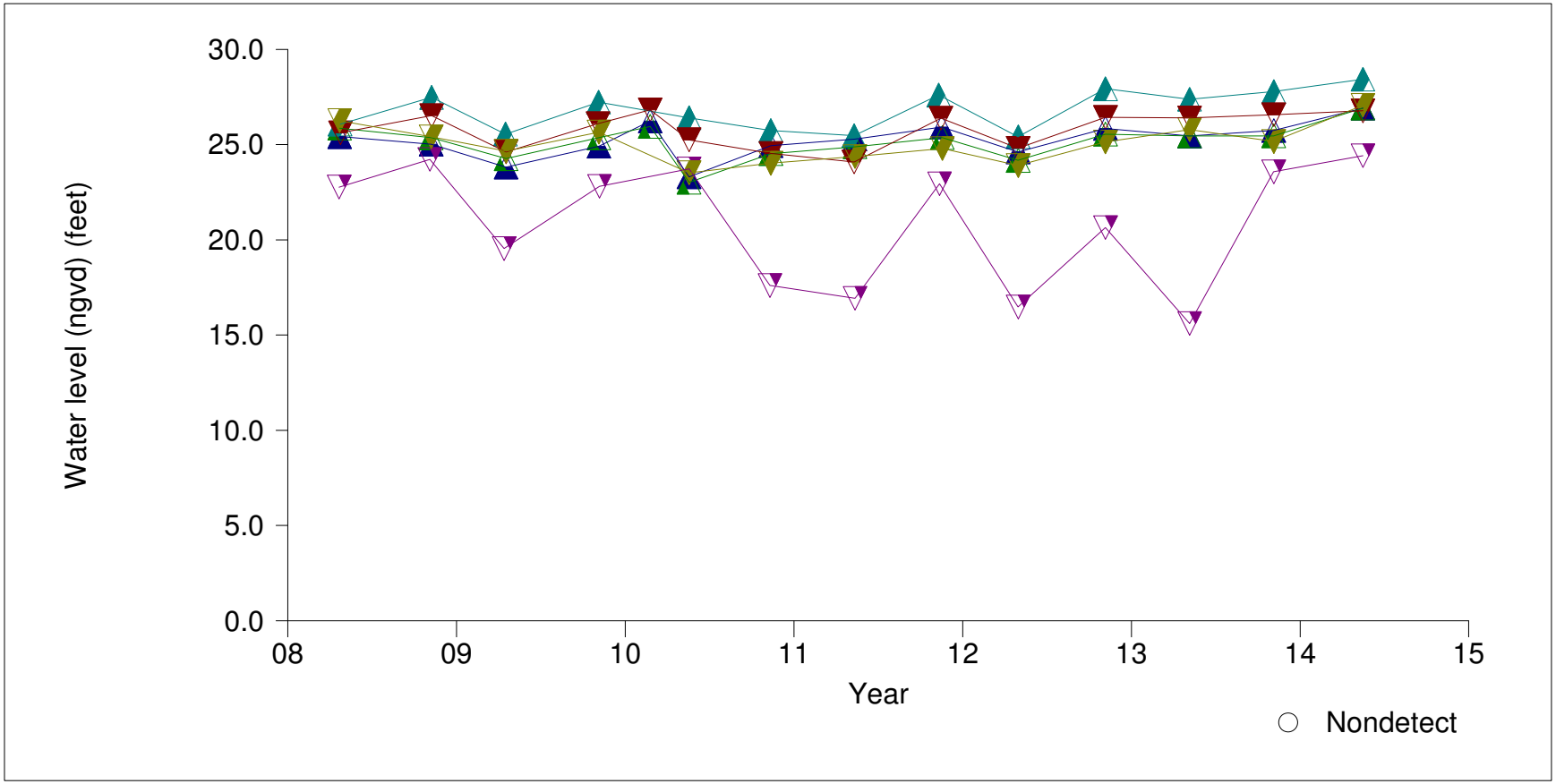
Hydrograph - Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Hydrograph - Zone 1-2

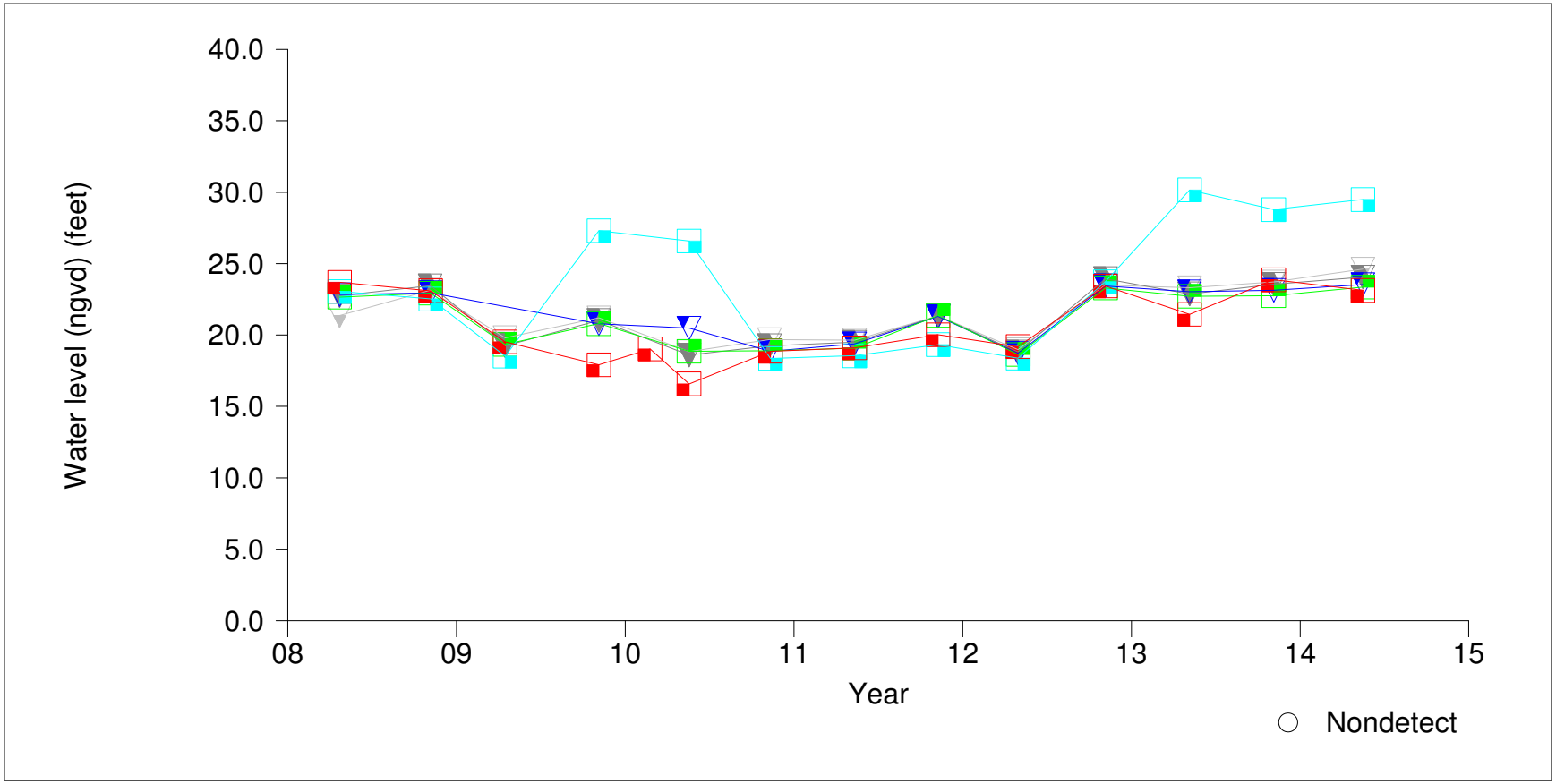


B61R
B62-2R
B63-2
B64
B65
B66

Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

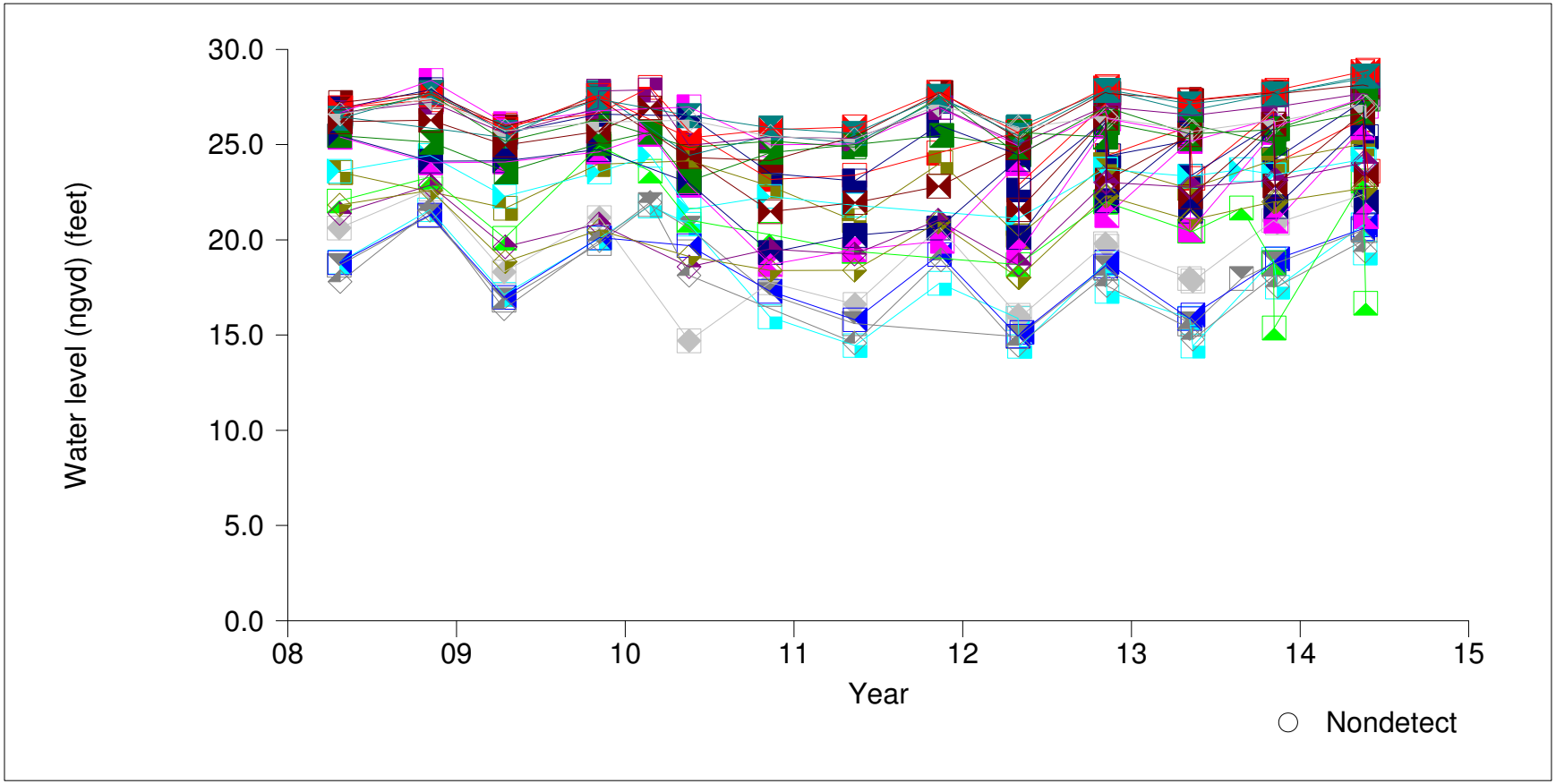
Hydrograph - Zone 1-2



Prepared by: HDR Engineering, Inc.

Tomoka Farms Road Landfill

Hydrograph - Zone 4

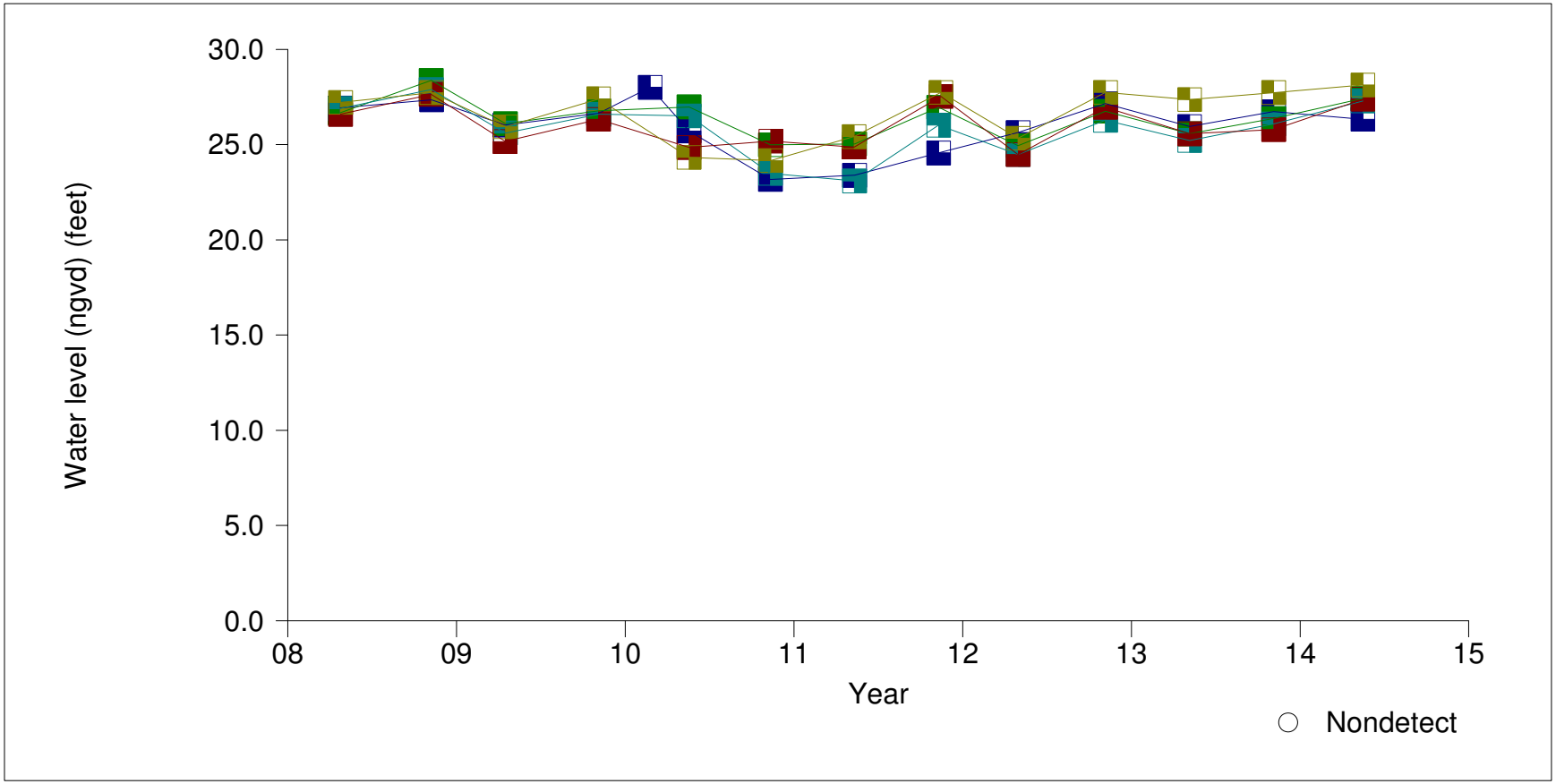


B1-B	B33-1	B36	B40-1	B43-1	B59-1R	B63-1	B70-1
B-2	B34-1	B37-1	B41-1	B45-1	B60	B68	B73-1
B-32	B35-1	B38-1	B42-1	B-5	B62-1R	B70-1	B8-2

Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

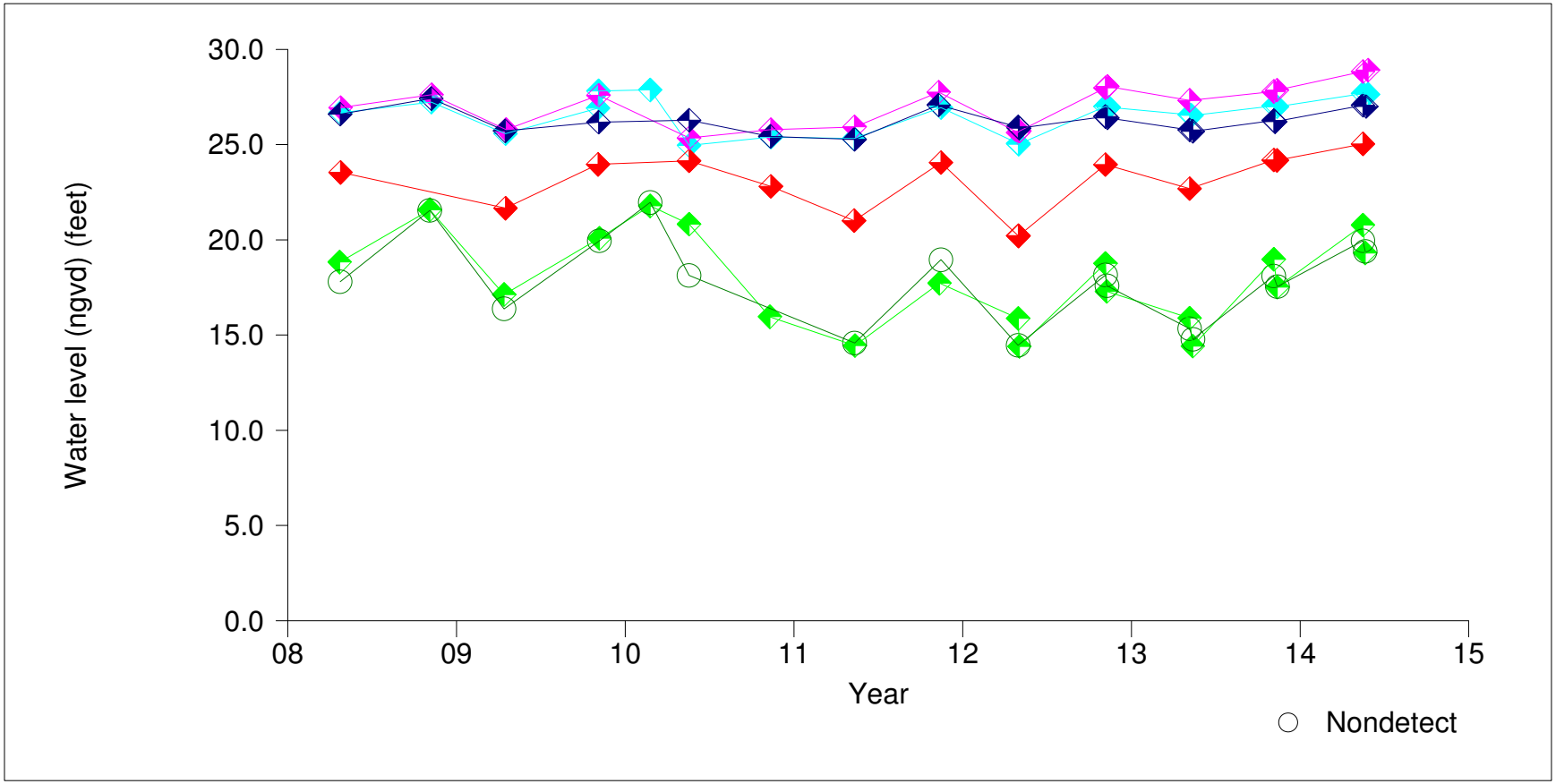
Hydrograph - Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

Tomoka Farms Road Landfill

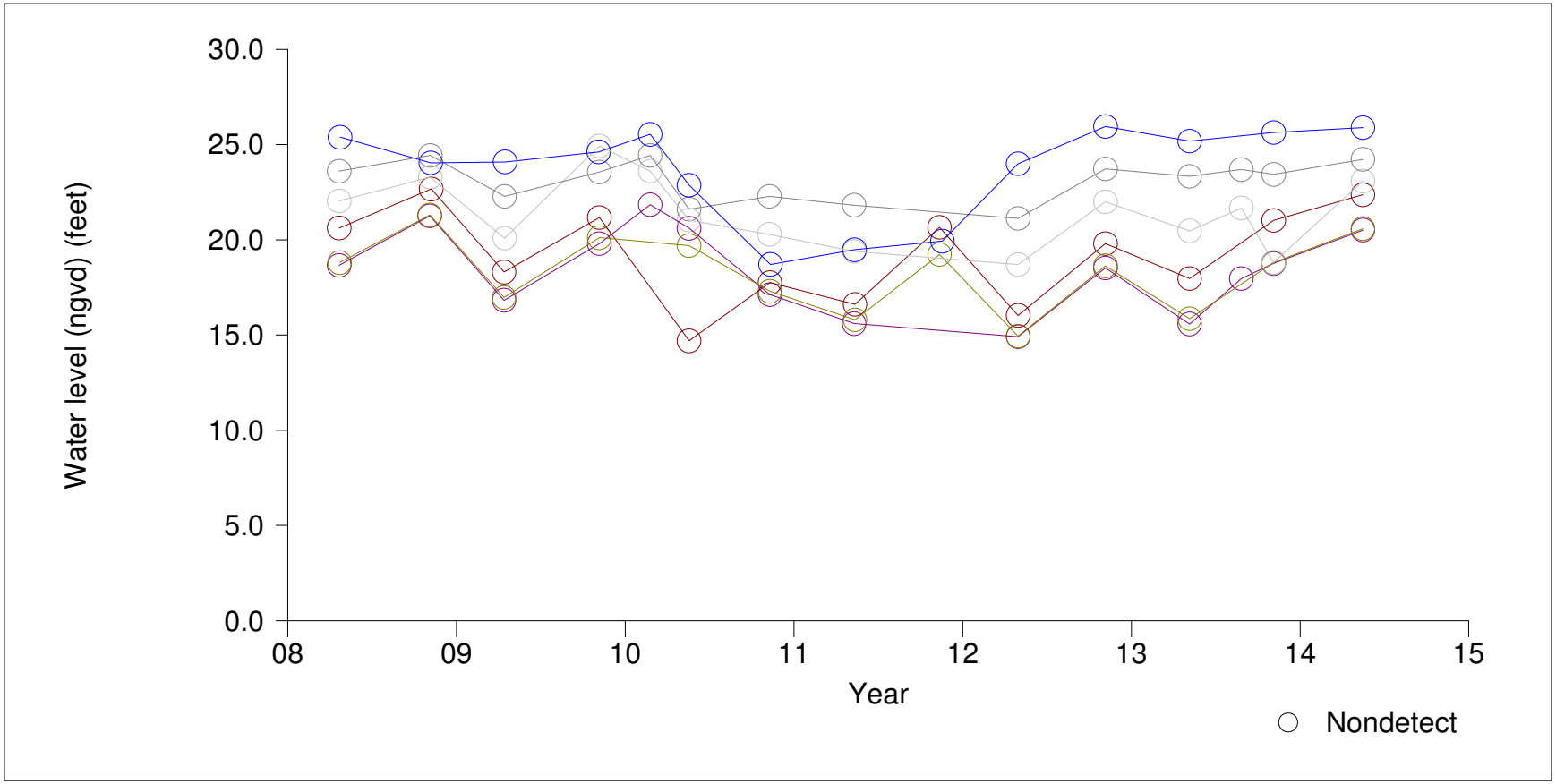
Hydrograph - Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Hydrograph - Zone 4

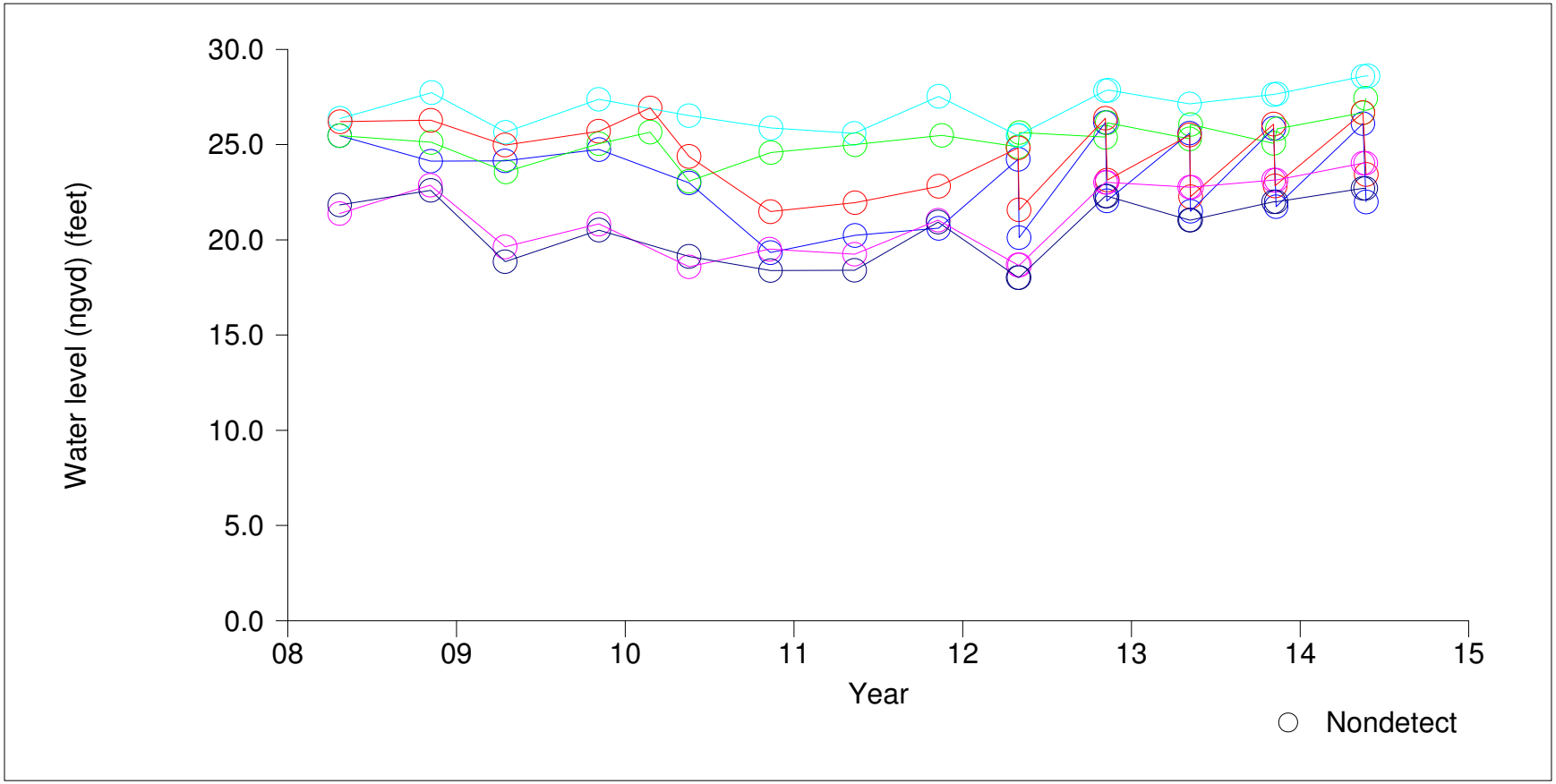


B40-1	B43-1
B41-1	B45-1
B42-1	B59-1R

Prepared by: HDR Engineering, Inc.

Tomoka Farms Road Landfill

Hydrograph - Zone 4

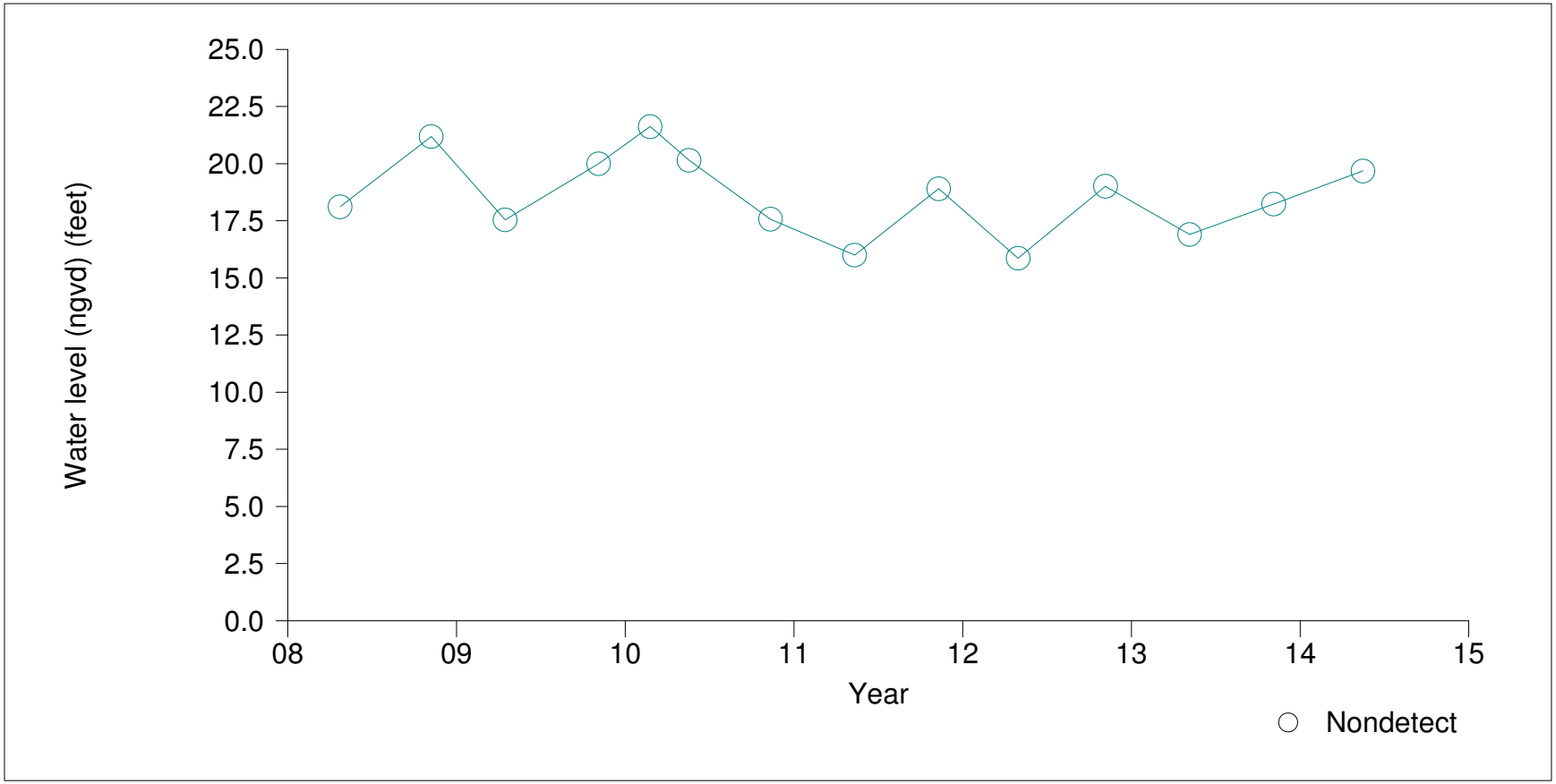


B60	B68
B62-1R	B70-1
B63-1	B73-1

Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

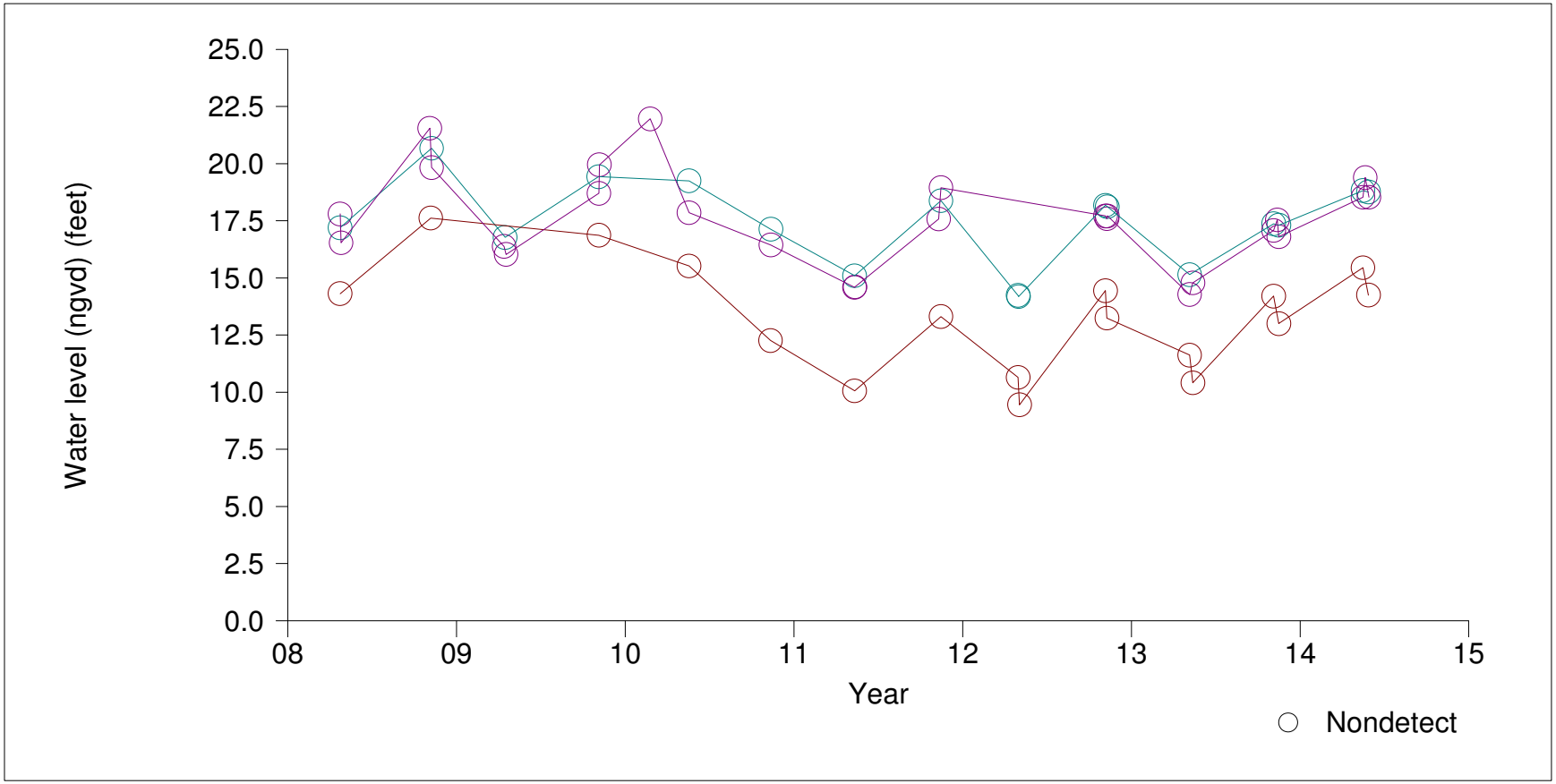
Hydrograph - Zone 6



Prepared by: HDR Engineering, Inc.

Tomoka Farms Road Landfill

Hydrograph - Floridan



Prepared by: HDR Engineering, Inc.

APPENDIX C

TABLES

1. Groundwater Well Construction Details
2. Groundwater Elevation Data
3. Surface Water Elevation Data
4. Groundwater Flow Velocity Calculation
5. Summary of Detected Groundwater Parameters – Zone 1-2
6. Summary of Detected Groundwater Parameters – Zone 4 & 6
7. Summary of Detected Groundwater Parameters – Floridan Aquifer
8. Summary of Detected Surface Water Parameters
9. Total Dissolved Solids/Specific Conductance (TDS/SC) Ratios

Appendix C - Table 1
Tomoka Farms Road Landfill Monitoring Well Construction Details

Well ID	Also Known as	Well Type	Latitude	Longitude	Year Constructed	Monitored Zone	Well Diameter (Inches)	Riser Pipe Length (ft)	Ground Surface Elevation * (ft, NGVD)	Casing and Screen Characteristics								
										Casing				Screen				
										Bottom Depth (ft, BTOC)	Bottom Depth (ft, BLS)	TOC Elevation* (ft, NGVD)	Bottom Elevation (ft, NGVD)	Screen Length (ft)	Depth Top (ft, BLS)	Depth Bottom (ft, BLS)	Elevation Top (ft, NGVD)	Elevation Bottom (ft, NGVD)
B11	B-11B, B-11	BG	29°08'02"	-81°06'14"	1989	Zone 1-2	2	1.5	31.5	15.5	14	32.95	17.5	10	4	14	27.5	17.5
B62-2R		CO	29°08'05"	-81°05'44"	2002	Zone 1-2	2	4.1	35.3	22.1	18	39.36	17.3	7	11	18	24.3	17.3
B44	B-44	CO	29°08'07"	-81°05'27"	1994	Zone 1-2	2	1.7	28.3	13.7	12	30.03	16.3	7	5	12	23.3	16.3
B63-2		CO	29°07'39"	-81°05'59"	1994	Zone 1-2	2	2.1	28.3	14.1	12	30.38	16.3	7	5	12	23.3	16.3
B59-2R	B5-9-2	CO	29°08'23"	-81°06'05"	2005	Zone 1-2	2	2.8	30.3	17.8	15	33.12	15.3	10	5	15	25.3	15.3
B-66		CO	29°08'06"	-81°05'38"	1994	Zone 1-2	2	1.1	30.2	16.1	15	31.26	15.2	10	5	15	25.2	15.2
B33-2		BG	29°08'12"	-81°06'14"	1994	Zone 1-2	2	2.9	30.1	17.9	15	32.97	15.1	10	5	15	25.1	15.1
B42-2		CO	29°08'01"	-81°05'16"	1994	Zone 1-2	2	1.8	26.7	13.8	12	28.47	14.7	7	5	12	21.7	14.7
B43-2		CO	29°08'07"	-81°05'23"	1994	Zone 1-2	2	1.6	26.6	13.6	12	28.23	14.6	7	5	12	21.6	14.6
B-64		CO	29°07'40"	-81°05'19"	1994	Zone 1-2	2	1.6	26.6	13.6	12	28.22	14.6	7	5	12	21.6	14.6
B34-2		BG	29°07'51 "	-81°06'11"	1994	Zone 1-2	2	1.8	29.4	16.8	15	31.2	14.4	10	5	15	24.4	14.4
B45-2		CO	29°08'07"	-81°05'32"	1994	Zone 1-2	2	1.8	28.6	16.8	15	30.35	13.6	10	5	15	23.6	13.6
B35-2		BG	29°07'39"	-81°05'46"	1994	Zone 1-2	2	1.7	27.6	16.7	15	29.34	12.6	10	5	15	22.6	12.6
B37-2		CO	29°07'39"	-81°05'25"	1994	Zone 1-2	2	1.4	27.4	16.4	15	28.76	12.4	10	5	15	22.4	12.4
B41-2		CO	29°07'53"	-81°05'11"	1994	Zone 1-2	2	1.9	27.4	16.9	15	29.27	12.4	10	5	15	22.4	12.4
B74		DE	29°08'24"	-81°05'47"	2003	Zone 1-2	2	3.5	30.3	21.5	18	33.78	12.3	15	3	18	27.3	12.3
B75		DE	29°08'24"	-81°05'53"	2003	Zone 1-2	2	1.3	30.3	19.3	18	31.62	12.3	15	3	18	27.3	12.3
B-39		CO	29°07'40"	-81°05'08"	1994	Zone 1-2	2	1.9	27.2	16.9	15	29.09	12.2	10	5	15	22.2	12.2
B38-2		CO	29°07'40"	-81°05'13"	1994	Zone 1-2	2	1.8	26.3	16.8	15	28.12	11.3	10	5	15	21.3	11.3
B-65		CO	29°07'48"	-81°05'09"	1994	Zone 1-2	2	1.9	26.1	16.9	15	27.97	11.1	10	5	15	21.1	11.1
B-61R	B-61	CO	29°08'05"	-81°05'52"	2002	Zone 1-2	2	3.7	35.7	28.7	25	39.42	10.7	10	15	25	20.7	10.7
B40-2		CO	29°07'43"	-81°05'07"	1994	Zone 1-2	2	2.1	25.6	17.1	15	27.67	10.6	10	5	15	20.6	10.6
B70-2		DE	29°08'11"	-81°05'37"	2003	Zone 1-2	2	3	28.5	21	18	31.51	10.5	15	3	18	25.5	10.5
B72		DE	29°08'20"	-81°05'39"	2003	Zone 1-2	2	0.9	28	18.9	18	28.93	10	15	3	18	25	10
B71		DE	29°08'15"	-81°05'37"	2003	Zone 1-2	2	2.9	27.9	20.9	18	30.75	9.9	15	3	18	24.9	9.9
B73-2		DE	29°08'24"	-81°05'42"	2003	Zone 1-2	2	2.5	26.5	20.5	18	28.95	8.5	15	3	18	23.5	8.5
B-5	B5-B, B5	CO	29°07'40"	-81°05'38"	1991	Zone 4	2	1.4	31.2	24.4	23	32.59	8.2	5	18	23	13.2	8.2
B-2	B-2-B	BG	29°07'58"	-81°06'09"	2005	Zone 4	2	2.9	31.6	26.9	24	34.53	7.6	5	19	24	12.6	7.6
B-68		CO	29°08'23"	-81°06'10"	1994	Zone 4	2	2.3	30.7	32.3	30	32.98	0.7	10	20	30	10.7	0.7
B8-2		IM	29°08'14"	-81°06'11"	1994	Zone 4	2	2.8	30.6	32.8	30	33.37	0.6	10	20	30	10.6	0.6
B-60	B60	CO	29°08'24"	-81°05'59"	1994	Zone 4	2	2.5	30.5	32.5	30	32.95	0.5	10	20	30	10.5	0.5
B62-1R		CO	29°08'05"	-81°05'44"	2002	Zone 4	2	3.8	35.2	38.8	35	38.97	0.2	15	20	35	15.2	0.2
B33-1		BG	29°08'12"	-81°06'14"	1991	Zone 4	2	3	31.7	35	32	34.69	-0.3	10	22	32	9.7	-0.3
B43-1		CO	29°08'07"	-81°05'23"	1994	Zone 3-4	2	1.5	26.6	28.5	27	28.09	-0.4	10	17	27	9.6	-0.4
B-32		BG	29°08'17"	-81°06'14"	1994	Zone 4	2	1.3	29.6	31.3	30	30.92	-0.4	10	20	30	9.6	-0.4
B63-1		CO	29°07'39"	-81°05'59"	1994	Zone 4	2	1.6	28.4	30.6	29	30.03	-0.6	10	19	29	9.4	-0.6
B59-1R	B5-9-1	CO	29°08'23"	-81°06'05"	2005	Zone 4	2	2.1	30.3	34.1	32	32.44	-1.7	10	22	32	8.3	-1.7
B40-1		CO	29°07'43"	-81°05'07"	1994	Zone 4	2	2.2	25.6	30.2	28	27.77	-2.4	10	18	28	7.6	-2.4
B34-1		BG	29°07'51"	-81°06'11"	1994	Zone 4	2	1.8	29.4	33.8	32	31.19	-2.6	10	22	32	7.4	-2.6

Appendix C - Table 1
Tomoka Farms Road Landfill Monitoring Well Construction Details

Well ID	Also Known as	Well Type	Latitude	Longitude	Year Constructed	Monitored Zone	Well Diameter (Inches)	Riser Pipe Length (ft)	Ground Surface Elevation * (ft, NGVD)	Casing and Screen Characteristics								
										Casing				Screen				
										Bottom Depth (ft, BTOC)	Bottom Depth (ft, BLS)	TOC Elevation* (ft, NGVD)	Bottom Elevation (ft, NGVD)	Screen Length (ft)	Depth Top (ft, BLS)	Depth Bottom (ft, BLS)	Elevation Top (ft, NGVD)	Elevation Bottom (ft, NGVD)
B42-1		CO	29°08'01"	-81°05'16"	1994	Zone 4	2	1.6	26.7	31.6	30	28.3	-3.3	10	20	30	6.7	-3.3
B35-1		BG	29°07'39"	-81°05'46"	1994	Zone 4	2	1.7	27.6	33.7	32	29.26	-4.4	10	22	32	5.6	-4.4
B36	B-36	BG	29°07'39"	-81°05'31"	1994	Zone 4	2	1.6	27.7	34.6	33	29.33	-5.3	10	23	33	4.7	-5.3
MO5B	MO-5B,MO5	CO	29°08'06"	-81°05'18"	1987	Zone 4	2	3.4	26.4	35.4	32	29.8	-5.6	5	27	32	-0.6	-5.6
B1-B	B-1B	CO	29°07'57"	-81°05'14"	1987	Zone 4	2	1.8	27	34.8	33	28.78	-6	5	28	33	-1	-6
B70-1		CI	29°08'11 "	-81°05'37"	2003	Zone 4	2	2.5	28.5	37.5	35	31.03	-6.5	10	25	35	3.5	-6.5
B45-1		CO	29°08'07"	-81°05'32"	1994	Zone 4	2	2	28.3	37	35	30.28	-6.7	10	25	35	3.3	-6.7
B73-1		CO	29°08'24"	-81°05'42"	2003	Zone 4	2	2.3	26.9	37.3	35	29.2	-8.1	10	25	35	1.9	-8.1
B41-1		CO	29°07'53"	-81°05'11"	1994	Zone 4	2	1.8	27.4	38.8	37	29.16	-9.6	10	27	37	0.4	-9.6
B37-1		CO	29°07'39"	-81°05'25"	1994	Zone 4	2	1.4	27.2	38.4	37	28.63	-9.8	10	27	37	0.2	-9.8
B38-1		CO	29°07'40"	-81°05'13"	1994	Zone 4	2	2	26.2	39	37	28.24	-10.8	10	27	37	-0.8	-10.8
B8	B8-1	IM	29°08'14"	-81°06'11"	1987	Zone 6	2	2.6	30.9	50.6	48	33.53	-17.1	5	43	48	-12.1	-17.1
FA-1B		BG	29°07'51"	-81°06'11"	1987	Floridan	2	3	29.2	95	92	32.22	-62.8	1	91	92	-61.8	-62.8
FA-2C		CO	29°08'31"	-81°05'32"	1991	Floridan	2	2.6	25.5	102.6	100	28.1	-74.5	6	94	100	-68.5	-74.5
F-MB	FM-B	CO	29°07'42"	-81°05'36"	2008	Floridan	2	2.8	31.08	100.8	98	33.88	NA	NA	NA	NA	NA	NA

Note: ft = feet
NGVD = National Geodetic Vertical Datum
TOC = Top of Casing
BTOC = Below Top of Casing
BLS = Below Land Surface
*Surfey data taken from Survey performed by Sliger & Associates, Inc., dated October 8, 2013

Appendix C
Table 2 - Groundwater Elevation Data
Tomoka Farms Landfill
Reporting Period Spring 2012 to Spring 2014

Well Number	Aquifer Zone	Top of Casing (feet, NGVD)	Monitoring Date				
			4/30/12	11/5/12	5/6/13	11/4/13	5/16/14
			Groundwater Elevation (ft, NGVD)				
Zone 1 & 2							
B11	1-2	32.95	20.86	27.73	26.55	27.15	28.45
B33-2	1-2	32.97	25.36	26.98	26.23	26.77	28.07
B34-2	1-2	31.20	25.09	29.01	26.70	26.50	28.60
B35-2	1-2	29.34	24.79	28.06	27.26	28.04	28.49
B37-2	1-2	28.76	25.36	27.41	27.33	27.51	28.01
B38-2	1-2	28.12	21.58	26.42	26.48	26.62	26.87
B-39	1-2	29.09	11.50	22.68	17.89	23.88	25.09
B40-2	1-2	27.67	16.59	20.82	20.74	23.52	24.37
B41-2	1-2	29.27	17.03	21.01	16.16	23.47	24.42
B42-2	1-2	28.47	16.18	21.78	21.12	23.27	24.42
B43-2	1-2	28.23	18.83	22.27	20.88	21.93	23.38
B44	1-2	30.03	20.70	23.23	23.18	22.93	23.83
B45-2	1-2	30.35	21.12	23.66	23.88	23.40	24.30
B59-2R	1-2	33.12	24.59	26.37	25.99	26.12	26.42
B61R	1-2	39.42	24.61	25.85	25.45	25.74	26.92
B62-2R	1-2	39.36	24.17	25.55	25.46	25.46	26.91
B63-2	1-2	30.38	25.41	27.93	27.38	27.78	28.43
B64	1-2	28.22	24.81	26.43	26.42	26.57	26.77
B65	1-2	27.97	16.47	20.64	15.60	23.57	24.42
B66	1-2	31.26	23.90	25.14	25.79	25.16	27.06
B70-2	1-2	31.51	18.98	23.49	23.31	23.71	24.61
B71	1-2	30.75	18.81	23.94	22.88	23.55	24.05
B72	1-2	28.93	18.71	23.44	23.03	23.13	23.53
B73-2	1-2	28.95	18.64	23.30	22.71	22.75	23.35
B74	1-2	33.78	18.38	23.73	30.16	28.78	29.48
B75	1-2	31.62	19.19	23.43	21.45	23.87	23.12
Zone 4							
B-1B	4	28.78	15.87	18.76	15.89	18.98	20.78
B-2	4	34.53	25.63	27.15	25.95	26.73	26.33
B-5	4	32.59	25.64	27.98	27.29	27.79	28.84
B8-2	4	33.37	25.93	26.47	25.77	26.27	27.07
B-32	4	30.92	24.94	26.75	25.57	26.37	27.42
B33-1	4	34.69	24.48	26.28	25.22	26.09	27.29
B34-1	4	31.19	24.48	26.96	25.57	25.79	27.39
B35-1	4	29.26	25.91	27.81	26.76	27.66	28.46

Well Number	Aquifer Zone	Top of Casing (feet, NGVD)	Monitoring Date				
			4/30/12	11/5/12	5/6/13	11/4/13	5/16/14
			Groundwater Elevation (ft, NGVD)				
B-36	4	29.33	25.34	27.74	27.37	27.73	28.13
B37-1	4	28.63	25.06	27.00	26.57	27.03	27.68
B38-1	4	28.24	20.22	23.96	22.70	24.19	25.04
B40-1	4	27.77	16.03	19.80	17.97	21.02	22.37
B41-1	4	29.16	14.91	18.52	15.58	18.76	20.51
B42-1	4	28.30	14.94	18.63	15.86	18.80	20.59
B43-1	4	28.09	18.70	22.00	20.47	21.79	23.09
B45-1	4	30.28	21.13	23.73	23.33	23.43	24.23
B59-1R	4	32.44	24.00	25.95	25.18	25.64	25.89
B60	4	32.95	24.23	26.16	25.61	25.85	26.10
B62-1R	4	38.97	24.88	25.39	25.30	25.07	26.67
B63-1	4	30.03	25.47	27.83	27.12	27.63	28.58
B68	4	32.98	24.83	26.39	25.51	26.08	26.68
B70-1	4	31.03	18.68	23.02	22.76	23.13	24.03
B73-1	4	29.20	18.02	22.30	21.03	22.00	22.70
MO5-B	4	29.80	14.46	18.15	15.34	18.10	19.95
B76-1	4	27.39			22.27	23.04	23.54
B79-1	4	27.53			15.44	18.58	20.33
B81-4	4	29.76			25.26	25.81	26.26
B82-1	4	30.78			22.44	22.78	23.93
Zone 6							
B8	6	33.53	15.86	19.01	16.63	18.23	19.68
B76-6	6	27.33			15.94	17.98	19.53
B77	6	31.13			16.23	18.33	19.83
B79-6	6	27.51			15.58	18.71	20.51
B85-6	6	27.02				18.87	19.92
B86	6	29.46			18.19	20.46	22.01
B87-6	6	29.37				17.97	19.17
Floridian Aquifer							
B85-F	FL	27.47				16.72	17.27
B87-F	FL	29.43				15.73	16.73
FA-1B	FL	32.22	14.24	18.18	15.17	17.37	18.82
FA-2C	FL	28.10	10.65	14.44	11.62	14.20	15.45
F-MB	FL	33.88	13.76	17.71	14.79	17.08	18.53

Notes: NGVD = National Geodetic Vertical Datum of 1929

Shade cell indicated that well was not yet installed for the period.

Appendix C
Table 3 - Surface Water Elevation Data
Tomoka Farms Road, Volusia County, Florida
Spring 2012 to Spring 2014

Location	Staff Gage Reference Elevation (ft, NGVD)	Staff Gage Reading (ft-are)	Surface Water Elevation (ft, NGVD)				
			4/30/12	11/5/12	5/6/13	11/4/13	5/16/14
SW-1	24	2.7	24.82	25.89	24.9	25.7	26.7
SW-2	24	5.40	26	28.23	26.78	28.05	29.4
SW-3	21	2.10	Dry	Dry	Dry	Dry	23.1
SW-4	26	3.30	Dry	Dry	26.75	28	29.3
SW-5	24	3.20	24.63	24.68	26.15	24.2	27.2
SW-11	17	5.56	18.5	22.70	19.3	Dry	22.56
SW-12	22	4.30	24.43	26.3	1.64	1.64	1.64

Notes:

NGVD = National Geodetic Vertical Datum of 1929;

Dry = Not Calculated; sampling point was dry at the time of the reading;

ft-are = feet above reference elevation.

Appendix C- Table 4
Groundwater Flow Rate Calculations
MPIS Technical Reporting Period - May 2012 through May 2014

Upper Surficial (Zone 1-2) Aquifer Groundwater Flow Velocity Across the North Cell								
Date	**B33-2 GW Elevation (ft, NGVD)**	**B73-2 GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	25.36	18.64	6.72	3120	0.002154	0.88	0.25	0.008
Nov-12	27.75	23.3	4.45	3120	0.001426	0.88	0.25	0.005
May-13	26.23	22.71	3.52	3120	0.001128	0.88	0.25	0.004
Nov-13	26.77	22.75	4.02	3120	0.001288	0.88	0.25	0.005
May-14	28.07	23.35	4.72	3120	0.001513	0.88	0.25	0.005
							Average	**0.005**
						Average (ft/yr)		**1.93**

Upper Surficial (Zone 1-2) Aquifer Groundwater Flow Velocity Across the South Cell								
Date	**B34-2 GW Elevation (ft, NGVD)**	**B62-2R GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	25.09	24.17	0.92	2150	0.000428	0.88	0.25	0.0015
Nov-12	25.98	25.55	0.43	2150	0.0002	0.88	0.25	0.0007
May-13	26.7	25.46	1.24	2150	0.000577	0.88	0.25	0.0020
Nov-13	26.5	25.46	1.04	2150	0.000484	0.88	0.25	0.0017
May-14	28.6	26.91	1.69	2150	0.000786	0.88	0.25	0.0028
							Average	**0.0017**
						Average (ft/yr)		**0.64**

Upper Surficial (Zone 1-2) Aquifer Groundwater Flow Velocity Across the Class III Landfill								
Date	**B35-2 GW Elevation (ft, NGVD)**	**B42-2 GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	21.12	16.18	4.94	3500	0.001411	0.88	0.25	0.0050
Nov-12	28.06	21.78	6.28	3500	0.001794	0.88	0.25	0.0063
May-13	27.26	21.12	6.14	3500	0.001754	0.88	0.25	0.0062
Nov-13	28.04	23.27	4.77	3500	0.001363	0.88	0.25	0.0048
May-14	28.49	24.42	4.07	3500	0.001163	0.88	0.25	0.0041
							Average	**0.0053**
						Average (ft/yr)		**1.92**

Notes:

Hydraulic conductivities for zones 2 and 4 were obtained from: David N. Gomberg, Ph.D., July 16, 2001,

Tomoka Landfill: Biennial Evaluation of Monitoring Results.

Appendix C - Table 4
Groundwater Flow Rate Calculations
MPIS Technical Reporting Period - May 2012 through May 2014
Tomoka Farms Road Landfill

Lower Surficial (Zone 4) Aquifer Groundwater Flow Velocity Across the North Cell								
Date	**B33-1 GW Elevation (ft, NGVD)**	**B73-1 GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	24.48	18.02	6.46	3120	0.0021	1.474	0.25	0.012
Nov-12	26.28	22.3	3.98	3120	0.0013	1.474	0.25	0.008
May-13	25.22	21.03	4.19	3120	0.0013	1.474	0.25	0.008
Nov-13	26.09	22	4.09	3120	0.0013	1.474	0.25	0.008
May-14	27.29	22.7	4.59	3120	0.0015	1.474	0.25	0.009
							Average	0.009
						Average (ft/yr)		3.22

Lower Surficial (Zone 4) Aquifer Groundwater Flow Velocity Across the South Cell								
Date	**B34-1 GW Elevation (ft, NGVD)**	**B62-1R GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	24.48	24.88	-0.4	2750	-0.0001	1.474	0.25	-0.001
Nov-12	26.96	25.39	1.57	2750	0.0006	1.474	0.25	0.003
May-13	25.57	25.3	0.27	2750	0.0001	1.474	0.25	0.001
Nov-13	25.79	25.07	0.72	2750	0.0003	1.474	0.25	0.002
May-14	27.39	26.67	0.72	2750	0.0003	1.474	0.25	0.002
							Average	0.001
						Average (ft/yr)		0.45

Lower Surficial (Zone 4) Aquifer Groundwater Flow Velocity Across the Class III Landfill								
Date	**B35-1 GW Elevation (ft, NGVD)**	**B42-1 GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	25.91	14.94	10.97	3450	0.0032	1.474	0.25	0.019
Nov-12	27.81	18.63	9.18	3450	0.0027	1.474	0.25	0.016
May-13	26.76	15.86	10.9	3450	0.0032	1.474	0.25	0.019
Nov-13	27.66	18.8	8.86	3450	0.0026	1.474	0.25	0.015
May-14	28.46	20.59	7.87	3450	0.0023	1.474	0.25	0.013
							Average	0.016
						Average (ft/yr)		5.96

Notes:

Hydraulic conductivities for zones 2 and 4 are obtained from: David N. Gomberg, Ph.D., July 16, 2001,

Tomoka Landfill: Biennial Evaluation of Monitoring Results.

Appendix C - Table 4
Groundwater Flow Rate Calculations
MPIS Technical Reporting Period - May 2012 through May 2014

Lower Surficial (Zone 6) Aquifer Groundwater Flow Velocity Across the Class III Landfill								
Date	**B86 GW Elevation (ft, NGVD)**	**B79-6 GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
May-13	18.19	15.58	2.61	1643	0.001589	4.82E-02	0.25	0.0003
Nov-13	20.46	18.71	1.75	1643	0.001065	4.82E-02	0.25	0.0002
May-14	22.01	20.51	1.5	1643	0.000913	4.82E-02	0.25	0.0002
							Average	**0.0002**
						Average (ft/yr)		**0.08**

Floridan Aquifer Groundwater Flow Velocity Across the North and South Cells								
Date	**FA-1B GW Elevation (ft, NGVD)**	**FA-2C GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Apr-12	14.24	10.65	3.59	5292	0.000678	2.83	0.25	0.0077
Nov-12	18.18	14.44	3.74	5292	0.000707	2.83	0.25	0.0080
May-13	15.17	11.62	3.55	5292	0.000671	2.83	0.25	0.0076
Nov-13	17.37	14.2	3.17	5292	0.000599	2.83	0.25	0.0068
May-14	18.82	15.45	3.37	5292	0.000637	2.83	0.25	0.0072
							Average	**0.0075**
Floridan Aquifer Groundwater Flow Velocity Across the Class III Landfill								
Date	**F-MB GW Elevation (ft, NGVD)**	**F87-F GW Elevation (ft, NGVD)**	**Delta H (ft)**	**Distance (ft)**	**Gradient (i)**	**Hydraulic Conductivity (ft/day)**	**Porosity (n)**	**Velocity (ft/day)**
Nov-13	17.08	15.73	1.35	3465	0.00039	2.83	0.25	0.0044
May-14	18.53	16.73	1.8	3465	0.000519	2.83	0.25	0.0059
							Average	**0.0051**
						Average (ft/yr)		**4.60**

Notes:

Hydraulic conductivities for zones 6 and Floridan Aquifer were obtained from: David N. Gomberg, Ph.D., May 1992, *Tomoka Landfill: Hydrogeologic Summary and Groundwater Monitoring Plan.*

Appendix C - Table 5
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 1-2 Wells
Tomoka Farms Road Landfill

Well B11								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.39	0.94	0.21	0.56	0.25
Field Temperature	-	NE	deg C	26.16	24.88	23.24	25.34	26.59
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.03**	**5.24**	**4.81**	**4.74**	**5.08**
Specific Conductance	-	NE	umhos/cm	148	158	158	175	164
Turbidity	-	NE	NTU	0.95	1.08	1.93	0.23	0.5
Ammonia-N	2.8	GCTL	mg/L	0.5		0.51	0.69	0.6
Chloride	250	SDWS	mg/L	11.2	11	11.7	16.9	17.7
Iron	300	SDWS	ug/L	**2880**	**2730**	**3410**	**2660**	**3680**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.025 U	0.025 U	0.1	0.043 U
Sodium	160	PDWS	mg/L	5.6	7	6.9	8.9	8.4
Sulfate	250	SDWS	mg/L	16.4	17.8	18.4	22	23.1
Total Dissolved Solids	500	SDWS	mg/L	136	153	123	161	152
Barium	2000	PDWS	ug/L	46.1	47.6	53.3	56.5	60.1
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.52 I
Chromium	100	PDWS	ug/L	3.8 I	2.5 U	3.6 I	3 I	3.3 I
Vanadium	49	GCTL	ug/L	15.6	15.7	16.1	14.2	14.2

Well B33-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	1.38	1.83	1.86	0.45	0.21
Field Temperature	-	NE	deg C	24.9	23.89	23.72	24.41	26.11
PH, FIELD	6.5-8.5	SDWS	S.U.	6.68	6.83	**6.45**	**6.26**	6.76
Specific Conductance	-	NE	umhos/cm	1507	1165	958	992	980
Turbidity	-	NE	NTU	50.3	14.6	183	7.07	3.82
Ammonia-N	2.8	GCTL	mg/L	0.28	0.3	0.1	0.28	0.3
Chloride	250	SDWS	mg/L	126	51.5	16.5	46.3	47.1
Iron	300	SDWS	ug/L	**5060**	**2990**	**6570**	**3420**	**5900**
Nitrate-N	10	PDWS	mg/L	0.05 U	0.05 U	0.08	0.086 U	0.086 U
Sodium	160	PDWS	mg/L	**224**	121	118	113	116
Sulfate	250	SDWS	mg/L	33.2	27.9	26.1	33.7	26.4
Total Dissolved Solids	500	SDWS	mg/L	**1060**	**795**	**918**	458	**752**
Antimony	6	PDWS	ug/L	0.5 U	0.5 U	1.9	0.68 I	0.5 U
Arsenic	10	PDWS	ug/L	**11.4**	8.1 I	5.1 I	5 U	5.9 I
Barium	2000	PDWS	ug/L	91.8	75.5	83.9	87.4	74.4
Chromium	100	PDWS	ug/L	11.5	4.7 I	23.2	5.2	4.5 I
Copper	1000	SDWS	ug/L	4 I	2.5 U	6.1	2.5 U	2.5 U
Lead	15	PDWS	ug/L	6.1 I	5 U	5 U	5 U	5 U
Nickel	100	PDWS	ug/L	9.4	4 I	9.3	3.6 I	3.4 I
Selenium	50	PDWS	ug/L	7.5 U	7.5 U	11.4 I	7.5 U	7.5 U
Vanadium	49	GCTL	ug/L	17.8	10.2	37	9 I	10.1
Zinc	5000	SDWS	ug/L	10 U	10 U	10.2 I	10 U	10 U
Acetone	6300	GCTL	ug/L	8.7 I	5 U	5 U	10 U	10 U

Appendix C - Table 5
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 1-2 Wells
Tomoka Farms Road Landfill

Well B34-2								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.1	0.34	0.26	0.2	0.31
Field Temperature	-	NE	deg C	22.49	22.04	20.77	23.48	23.6
PH, FIELD	6.5-8.5	SDWS	S.U.	6.98	7	6.69	6.57	6.91
Specific Conductance	-	NE	umhos/cm	1874	1448	1783	1541	2121
Turbidity	-	NE	NTU	3.67	0.9	4.14	1.63	5.91
Ammonia-N	2.8	GCTL	mg/L	1.2	0.62	0.48	0.12	0.16
Chloride	250	SDWS	mg/L	46.2	58.8	64.9	53.4	94.5
Iron	300	SDWS	ug/L	**20200**	**13300**	**13800**	**2860**	**3280**
Sodium	160	PDWS	mg/L	30.7	29.9	43.5	75.9	96.7
Sulfate	250	SDWS	mg/L	131	5 U	33.2	**370**	**284**
Total Dissolved Solids	500	SDWS	mg/L	**1250**	**876**	**1160**	**1280**	**1680**
Arsenic	10	PDWS	ug/L	**12.2**	5.9 I	7.5 I	5 U	5 U
Barium	2000	PDWS	ug/L	105	58.8	88.9	79.6	109
Copper	1000	SDWS	ug/L	5 I	2.5 U	2.5 U	2.5 U	2.5 U
Lead	15	PDWS	ug/L	7.3 I	5 U	5 U	5 U	5 U
Nickel	100	PDWS	ug/L	7.6	6.2	6.3	6.2	8.9
Silver	100	SDWS	ug/L	2.5 U	2.5 U	2.5 U	3 I	2.5 U
Vanadium	49	GCTL	ug/L	5.8 I	5 U	5 U	5 U	5 U
Acetone	6300	GCTL	ug/L	5 I	5 U	5 U	10 U	10 U
Well B35-2								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.07	0.56	0.25	0.13	0.03
Field Temperature	-	NE	deg C	22.91	21.23	21.19	23.44	24.53
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.58**	**6.01**	**5.33**	**5.85**	**5.38**
Specific Conductance	-	NE	umhos/cm	384	427	440	473	396
Turbidity	-	NE	NTU	1.43	7.05	2.28	2.62	2.45
Ammonia-N	2.8	GCTL	mg/L	1.4	1.9	2.1	1.5	1.1
Chloride	250	SDWS	mg/L	58.3	49.7	74.1	53.4	96.3
Iron	300	SDWS	ug/L	**12100**	**16200**	**17500**	**25600**	**9540**
Sodium	160	PDWS	mg/L	38.7	37.9	47.9	40	56.2
Sulfate	250	SDWS	mg/L	2.5 U	2.5 U	2.5 I	2.5 U	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	287	287	319	331	298
Barium	2000	PDWS	ug/L	52	56	64.4	81	64.4
Chromium	100	PDWS	ug/L	5.4	2.5 U	6.7	2.5 U	7.2
Copper	1000	SDWS	ug/L	2.5 U	2.7 I	2.5 U	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	11.7	8.7 I	11.8	5.2 I	12.1

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Zone 1-2 Wells
Tomoka Farms Road Landfill

Well B37-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.17	0.32	0.19	0.16	0.09
Field Temperature	-	NE	deg C	24.29	22.65	22.51	24.2	25.18
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.07**	**6.56**	**5.94**	**6.09**	6.57
Specific Conductance	-	NE	umhos/cm	551	491	525	486	398
Turbidity	-	NE	NTU	1.05	16.1	14.4	8.73	1.66
Ammonia-N	2.8	GCTL	mg/L	0.36	0.42	0.31	0.28	0.19
Chloride	250	SDWS	mg/L	50.2	32.5	46.3	28.6	16.2
Iron	300	SDWS	ug/L	**10200**	**8980**	**12300**	**10900**	**6930**
Sodium	160	PDWS	mg/L	30.8	19	29	19.5	13.7
Sulfate	250	SDWS	mg/L	2.5 U	2.5 U	5.5	2.5 U	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	319	311	325	350	265
Barium	2000	PDWS	ug/L	31.1	26.9	31	29.4	25.6
Copper	1000	SDWS	ug/L	2.5 U	2.7 I	2.5 U	2.5 U	2.5 U
Acetone	6300	GCTL	ug/L	5 U	5 U	5 U	10 U	21.2
Benzene	1	PDWS	ug/L	0.5 U	**3**	0.28 I	0.1 U	0.1 U
Chlorobenzene	100	PDWS	ug/L	1.1	0.74 I	0.72 I	0.5 U	0.5 U
Vinyl chloride	1	PDWS	ug/L	0.5 U	0.57 I	0.5 U	0.5 U	0.5 U

Well B38-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.15	0.47	0.26	0.13	0.15
Field Temperature	-	NE	deg C	22.13	20.89	21.02	21.61	23.2
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.97**	**5.99**	**5.57**	**5.73**	**6.01**
Specific Conductance	-	NE	umhos/cm	440	497	406	500	470
Turbidity	-	NE	NTU	7.22	2.41	2.66	2.12	1.65
Ammonia-N	2.8	GCTL	mg/L	0.88	1.3	0.44	1.4	0.84
Chloride	250	SDWS	mg/L	37	33.2	61.4	50.9	51.3
Iron	300	SDWS	ug/L	**2960**	**9680**	**3520**	**8650**	**8390**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.025 U	0.043 I	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	20.2	22.1	35.8	34.2	38.7
Sulfate	250	SDWS	mg/L	16.8	2.5 U	3 I	2.5 U	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	284	353	301	367	347
Barium	2000	PDWS	ug/L	20.2	29.7	20.5	28.9	24.4
Lead	15	PDWS	ug/L	5 U	5.2 I	5 U	5 U	5 U
Acetone	6300	GCTL	ug/L	5 U	5 U	5 U	10 U	23.6

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Well B39								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	DRY	0.55	2.45	0.19	0.24
Field Temperature	-	NE	deg C	DRY	23.41	20.2	23.21	23.91
PH, FIELD	6.5-8.5	SDWS	S.U.	DRY	**4.62**	**4.69**	**4.61**	**4.92**
Specific Conductance	-	NE	umhos/cm	DRY	177	181	192	178
Turbidity	-	NE	NTU	DRY	7.88	8.04	3.73	4.58
Ammonia-N	2.8	GCTL	mg/L	DRY	0.068	0.34	0.3	0.67
Chloride	250	SDWS	mg/L	DRY	29.8	28.6	37.2	32
Iron	300	SDWS	ug/L	DRY	**5950**	**7470**	**10100**	**11100**
Sodium	160	PDWS	mg/L	DRY	16.4	16.4	19.2	18.9
Sulfate	250	SDWS	mg/L	DRY	5.7	7.7	3 I	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	DRY	191	136	258	247
Arsenic	10	PDWS	ug/L	DRY	5 U	5 U	7.1 I	**13.2**
Barium	2000	PDWS	ug/L	DRY	30	33.6	31.8	24.3
Chromium	100	PDWS	ug/L	DRY	5.9	3.1 I	7.6	7.7
Copper	1000	SDWS	ug/L	DRY	2.5 U	2.5 U	2.9 I	2.5 U
Nickel	100	PDWS	ug/L	DRY	2.5 U	2.5 U	3.7 I	2.5 U
Vanadium	49	GCTL	ug/L	DRY	21.7	6.9 I	37.6	37.5
Acetone	6300	GCTL	ug/L	DRY	5 U	5 U	10 U	18.2 I
Well B40-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	1.06	0.99	1.34	0.17	0.34
Field Temperature	-	NE	deg C	22.84	21.87	21.56	22.66	21.34
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.22**	**6.02**	**5.62**	**5.86**	**6.06**
Specific Conductance	-	NE	umhos/cm	699	570	699	682	661
Turbidity	-	NE	NTU	68.4	9.26	7.82	17.2	4.39
Ammonia-N	2.8	GCTL	mg/L	0.6	0.38	0.049 I	0.68	0.76
Chloride	250	SDWS	mg/L	59.9	32.7	31.8	22.3	24.4
Iron	300	SDWS	ug/L	**5500**	**4150**	**302**	**3000**	**4830**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.025 U	2.5	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	47.1	27.1	31.1	21.8	21.6
Sulfate	250	SDWS	mg/L	151	126	178	107	53.6
Total Dissolved Solids	500	SDWS	mg/L	**502**	420	497	**507**	478
Antimony	6	PDWS	ug/L	0.5 U	0.5 U	1	0.5 U	0.5 U
Arsenic	10	PDWS	ug/L	5 U	5.3 I	5 U	5 U	5 U
Barium	2000	PDWS	ug/L	50.4	40.4	51.8	38.1	41.2
Chromium	100	PDWS	ug/L	3.2 I	2.5 U	2.6 I	2.7 I	2.5 U
Copper	1000	SDWS	ug/L	2.5 U	2.8 I	2.5 U	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	2.7 I	2.5 U	2.5 U	2.5 U	2.5 U
Selenium	50	PDWS	ug/L	7.5 U	7.5 U	0.91 I	7.5 U	7.5 U
Vanadium	49	GCTL	ug/L	9.8 I	23.8	15	5 U	5 U

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Well B41-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.59	0.77	1.11	0.3	0.19
Field Temperature	-	NE	deg C	22.96	22.41	23.32	20.82	21
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.19**	6.54	**6.06**	**6.48**	6.7
Specific Conductance	-	NE	umhos/cm	1097	1322	1004	569	508
Turbidity	-	NE	NTU	6.47	1.06	2.27	0.9	0.64
Ammonia-N	2.8	GCTL	mg/L	0.59	0.047 I	0.02 U	0.32	0.34
Chloride	250	SDWS	mg/L	34.4	30.8	30.3	35.2	29.2
Iron	300	SDWS	ug/L	**3890**	**316**	**1530**	**889**	**839**
Nitrate-N	10	PDWS	mg/L	0.05 U	0.05 U	3.2	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	33.9	32.7	29.9	23.5	21.9
Sulfate	250	SDWS	mg/L	223	237	122	26.2	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	**782**	**898**	**646**	438	366
Antimony	6	PDWS	ug/L	0.5 U	0.5 U	0.7 I	0.5 U	0.5 U
Barium	2000	PDWS	ug/L	101	111	127	26.4	26.3
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.59 I	0.5 U
Chromium	100	PDWS	ug/L	2.9 I	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	6.3 I	9.8 I	22.7	5 U	5 U
Acetone	6300	GCTL	ug/L	5.6 I	5 U	5 U	10 U	10 U
Well B42-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	DRY	0.56	0.88	0.17	0.31
Field Temperature	-	NE	deg C	DRY	21.92	22.49	22.69	21.58
PH, FIELD	6.5-8.5	SDWS	S.U.	DRY	**5.97**	**5.48**	**5.88**	**6.22**
Specific Conductance	-	NE	umhos/cm	DRY	544	660	335	281
Turbidity	-	NE	NTU	DRY	6.59	40.9	7.35	7.77
Ammonia-N	2.8	GCTL	mg/L	DRY	0.062	0.04 I	0.13	0.22
Chloride	250	SDWS	mg/L	DRY	35.1	39.1	8.1	5.6
Iron	300	SDWS	ug/L	DRY	214	**504**	**429**	**2450**
Nitrate-N	10	PDWS	mg/L	DRY	0.24	0.29	0.55	0.043 U
Sodium	160	PDWS	mg/L	DRY	32.2	39.5	11.8	6
Sulfate	250	SDWS	mg/L	DRY	105	152	23.8	7.8
Total Dissolved Solids	500	SDWS	mg/L	DRY	391	499	252	198
Antimony	6	PDWS	ug/L	DRY	0.5 U	0.84 I	0.5 U	0.5 U
Barium	2000	PDWS	ug/L	DRY	71	91.1	24.7	18.5
Beryllium	4	PDWS	ug/L	DRY	0.5 U	0.5 U	0.51 I	0.5 U
Chromium	100	PDWS	ug/L	DRY	2.5 U	4.2 I	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	DRY	9.6 I	18.2	5 U	5 U

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Tomoka Farms Road Landfill

Well B43-2								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.94	0.91	0.72	0.59	0.4
Field Temperature	-	NE	deg C	22.21	21.57	21.75	23.18	23.69
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.33**	**6.34**	**6.09**	**5.9**	**6.14**
Specific Conductance	-	NE	umhos/cm	1159	861	820	665	566
Turbidity	-	NE	NTU	5.85	5.86	9.98	3.06	12.7
Ammonia-N	2.8	GCTL	mg/L	0.92	0.28	0.99	0.02 U	0.02 U
Chloride	250	SDWS	mg/L	138	74.3	83.2	94.4	75.4
Iron	300	SDWS	ug/L	**24600**	**11600**	**40700**	**1190**	**706**
Nitrate-N	10	PDWS	mg/L	0.05 U	0.05 U	0.05 U	0.043 U	0.44
Sodium	160	PDWS	mg/L	87.2	78.3	112	59	40.4
Sulfate	250	SDWS	mg/L	73.7	51.5	47.9	49.1	30.4
Total Dissolved Solids	500	SDWS	mg/L	**676**	**527**	**541**	474	444
Barium	2000	PDWS	ug/L	78.8	60.2	95.5	30.2	18.3
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.51 I	0.5 U
Chromium	100	PDWS	ug/L	2.5 U	2.5 U	2.5 U	2.5 U	2.9 I
Vanadium	49	GCTL	ug/L	5 U	5 U	5 U	5 U	5.4 I
Chlorobenzene	100	PDWS	ug/L	0.5 U	0.5 U	0.66 I	0.5 U	0.5 U
Well B44								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.22	1.66	0.68	0.25	0.49
Field Temperature	-	NE	deg C	22.04	21.97	21.71	22.84	21.91
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.29**	**4.74**	**5.07**	**5.15**	**5.41**
Specific Conductance	-	NE	umhos/cm	196	145	143	166	171
Turbidity	-	NE	NTU	2.82	8.7	11.1	3.56	3.93
Ammonia-N	2.8	GCTL	mg/L	0.02 U	0.02 U	0.02 U	0.024 I	0.02 U
Chloride	250	SDWS	mg/L	22.5	15	13.4	27.4	33.7
Iron	300	SDWS	ug/L	**13700**	**6940**	**7520**	**7260**	**9220**
Sodium	160	PDWS	mg/L	17.1	14.4	13.7	18.1	15.8
Sulfate	250	SDWS	mg/L	19.6	13.4	15.2	9.7	13.2
Total Dissolved Solids	500	SDWS	mg/L	132	103	93	134	132
Barium	2000	PDWS	ug/L	18.5	14.1	15.6	12.3	21.7
Chromium	100	PDWS	ug/L	2.5 U	2.5 U	2.5 U	2.5 I	2.5 U
Copper	1000	SDWS	ug/L	2.5 U	2.5 U	2.5 U	32.3	2.5 U
Vanadium	49	GCTL	ug/L	5 U	5.9 I	5 U	7.4 I	5 U

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Well B59-2R								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.06	0.87	0.36	0.12	0.22
Field Temperature	-	NE	deg C	24.44	22.8	23.3	24.93	26.3
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.31**	7.22	**6.29**	**6.4**	6.7
Specific Conductance	-	NE	umhos/cm	939	863	972	753	751
Turbidity	-	NE	NTU	12.4	14.05	9.41	3.99	8.69
Ammonia-N	2.8	GCTL	mg/L	0.37	0.25	0.45	0.36	0.38
Chloride	250	SDWS	mg/L	28.4	22.5	26.8	21.7	21.9
Iron	300	SDWS	ug/L	**11200**	**1050**	**9090**	**5320**	**6030**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.28	0.05 U	0.088	0.043 U
Sodium	160	PDWS	mg/L	45.2	40.9	41.6	39.1	33.4
Sulfate	250	SDWS	mg/L	49.1 J	121 J	87.5	82	55.5
Total Dissolved Solids	500	SDWS	mg/L	**575**	**598**	**630**	**583**	**513**
Barium	2000	PDWS	ug/L	79.9	85	85.4	82	81.8
Copper	1000	SDWS	ug/L	2.7 I	2.5 U	2.5 U	2.5 U	2.5 U
Mercury	2	PDWS	ug/L	0.1 U	0.1 U	0.1 U	0.47	0.1 U
Well B61R								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.26	0.96	0.2	0.36	0.56
Field Temperature	-	NE	deg C	24.23	23.9	22.59	24.39	22.82
PH, FIELD	6.5-8.5	SDWS	S.U.	6.52	**6.37**	**6.12**	**6.23**	**6.4**
Specific Conductance	-	NE	umhos/cm	1138	1004	1200	1039	1048
Turbidity	-	NE	NTU	8.38	9.26	2.58	0.54	0.41
Ammonia-N	2.8	GCTL	mg/L	**14**	**12.1**	**12.2**	**12.5**	**10.8**
Chloride	250	SDWS	mg/L	17.8	19.9	22.4	22.1	21.7
Iron	300	SDWS	ug/L	**13800**	**14100**	**15900**	**16900**	**19700**
Sodium	160	PDWS	mg/L	27.6	25.1	26.5	28.4	26.5
Total Dissolved Solids	500	SDWS	mg/L	**592**	**557**	**652**	**588**	**663**
Barium	2000	PDWS	ug/L	152	142	158	135	152
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.56 I	0.5 U
Copper	1000	SDWS	ug/L	2.5 U	5	2.5 U	2.5 U	2.5 U
Acetone	6300	GCTL	ug/L	7 I	5 U	5 U	10 U	10 U
Chlorobenzene	100	PDWS	ug/L	0.5 U	0.72 I	0.8 I	0.91 I	0.74 I
Xylene (Total)	20	SDWS	ug/L	0.5 U	0.5 U	1.5	0.5 U	0.5 U

Appendix C - Table 5
Summary of Detected Groundwater Parameters - May 2012 to May 2014
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Well B62-2R								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.09	0.84	0.21	0.26	0.36
Field Temperature	-	NE	deg C	24.71	25.5	22.64	24.19	23.23
PH, FIELD	6.5-8.5	SDWS	S.U.	6.7	6.55	**6.39**	**6.44**	6.62
Specific Conductance	-	NE	umhos/cm	1788	1167	1382	1136	961
Turbidity	-	NE	NTU	2.54	2.12	4.3	1.19	9.14
Ammonia-N	2.8	GCTL	mg/L	**19.8**	**11.9**	**9.9**	**11.1**	**5.8**
Chloride	250	SDWS	mg/L	68.5	29.1	21	22.9	17.6
Iron	300	SDWS	ug/L	**9500**	**9540**	**10800**	**8810**	**6990**
Sodium	160	PDWS	mg/L	84.9	47.4	38.2	34.2	22.4
Sulfate	250	SDWS	mg/L	42.8	38.7	10.4	7.9	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	**988**	**726**	**812**	**688**	**649**
Barium	2000	PDWS	ug/L	120	89.3	106	81.6	90
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.54 I	0.5 U
Nickel	100	PDWS	ug/L	5.5	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	5.8 I	5.9 I	5 U	5.3 I	5 U
Acetone	6300	GCTL	ug/L	5 U	8.3 I	5 U	10 U	10 U
Chlorobenzene	100	PDWS	ug/L	0.5 U	1.9	1.2	1.4	0.68 I
Well B63-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.3	0.59	0.26	0.22	0.16
Field Temperature	-	NE	deg C	24.68	22.42	22.8	23.64	24.12
PH, FIELD	6.5-8.5	SDWS	S.U.	6.81	6.84	**6.46**	**6.39**	6.59
Specific Conductance	-	NE	umhos/cm	708	1025	691	728	826
Turbidity	-	NE	NTU	1.5	3.89	9.66	11	15.1
Ammonia-N	2.8	GCTL	mg/L	0.037 I	0.02 U	0.02 U	0.034 I	0.054
Chloride	250	SDWS	mg/L	66.2	106	75.2	58.7	57.4
Iron	300	SDWS	ug/L	**4950**	**16700**	**8640**	**15000**	**20400**
Sodium	160	PDWS	mg/L	37	72.5	51	40.2	41.3
Sulfate	250	SDWS	mg/L	2.5 U	2.5 U	9.6	2.5 U	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	410	**582**	383	457	**518**
Arsenic	10	PDWS	ug/L	5 U	5.7 I	5 U	5 U	5 U
Barium	2000	PDWS	ug/L	58.9	78.2	42.7	50.3	63.6

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Well B65								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.63	0.58	1.03	0.4	0.29
Field Temperature	-	NE	deg C	23.04	22.27	22.18	22.7	20.85
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.32**	**6.04**	**5.65**	**5.86**	**6.13**
Specific Conductance	-	NE	umhos/cm	765	551	683	684	514
Turbidity	-	NE	NTU	2.92	4.18	2.72	0.82	1.11
Ammonia-N	2.8	GCTL	mg/L	0.49	0.27	0.43	0.77	0.55
Chloride	250	SDWS	mg/L	51.2	39.9	44.8	33.8	33.8
Iron	300	SDWS	ug/L	**3240**	**738**	**2640**	**1170**	**949**
Sodium	160	PDWS	mg/L	35.1	30.1	34.8	29	25.4
Sulfate	250	SDWS	mg/L	190	78.3	130	119	17
Total Dissolved Solids	500	SDWS	mg/L	**560**	390	484	**541**	369
Barium	2000	PDWS	ug/L	64.8	44.6	67.4	48.9	38.2
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.54 I	0.5 U
Chromium	100	PDWS	ug/L	2.5 U	4 I	3.1 I	3.3 I	3 I
Copper	1000	SDWS	ug/L	2.5 U	2.5 U	2.5 U	3.2 I	2.5 U
Vanadium	49	GCTL	ug/L	5.2 I	7.5 I	6.2 I	5 U	5 U
1,2-Dichloroethane	5	PDWS	ug/L	0.5 U	0.88 I	0.5 U	0.5 U	0.5 U
Acetone	6300	GCTL	ug/L	5 I	5 U	5 U	10 U	10 U
Well B66								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.34	0.72	2.8	1.34	0.36
Field Temperature	-	NE	deg C	23.49	23.4	21.85	23.75	24.74
PH, FIELD	6.5-8.5	SDWS	S.U.	6.59	7.87	**6.45**	**6.43**	6.79
Specific Conductance	-	NE	umhos/cm	806	464	721	471	486
Turbidity	-	NE	NTU	9.74	1.9	1.37	1.11	0.93
Ammonia-N	2.8	GCTL	mg/L	0.02 U	0.02 U	0.02 U	0.024 I	0.11
Chloride	250	SDWS	mg/L	91.2	10.1	88.5 L	17.4	18.6
Iron	300	SDWS	ug/L	**501**	**712**	64.9	64.8	187
Nitrate-N	10	PDWS	mg/L	0.27	1.6	1.8	0.74	0.043 U
Sodium	160	PDWS	mg/L	60	10.1	57.2	17.7	20.9
Sulfate	250	SDWS	mg/L	77.5	24.2	38.6	27	8.1
Total Dissolved Solids	500	SDWS	mg/L	469	256	429	302	310
Antimony	6	PDWS	ug/L	0.65 I	0.58 I	0.84 I	0.5 U	0.5 U
Barium	2000	PDWS	ug/L	38.4	27.6	40.7	24.6	39
Vanadium	49	GCTL	ug/L	10.5	13.3	7.9 I	9 I	5.9 I
Acetone	6300	GCTL	ug/L	5 U	5 U	5 U	10 U	15.1 I
Xylene (Total)	20	SDWS	ug/L	0.5 U	0.5 U	1.5	0.5 U	0.5 U

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Well B70-2								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.3	0.93	1.02	0.38	0.61
Field Temperature	-	NE	deg C	23.49	21.9	22.78	24.19	24.92
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.25**	7.03	**5.61**	**5.97**	**6.24**
Specific Conductance	-	NE	umhos/cm	271	493	380	435	484
Turbidity	-	NE	NTU	5.18	8.34	4.27	10.52	7.84
Ammonia-N	2.8	GCTL	mg/L	0.043 I	0.02 U	0.02 U	0.02 U	0.02 U
Chloride	250	SDWS	mg/L	23.8	11	9.4	7.9	22.6
Iron	300	SDWS	ug/L	**11200**	**832**	**820**	**1010**	**3440**
Nitrate-N	10	PDWS	mg/L	0.025 U	5.2	2.6	0.41	0.12
Sodium	160	PDWS	mg/L	18.9	8	11.9	8.4	13.2
Sulfate	250	SDWS	mg/L	44.9	25.5	40.5 J	42	48.7
Total Dissolved Solids	500	SDWS	mg/L	165	272	226	302	343
Barium	2000	PDWS	ug/L	35.4	38.3	52.9	44.8	51.3
Copper	1000	SDWS	ug/L	2.5 U	3.5 I	2.5 U	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	5 U	6.4 I	5 U	5.5 I	5 U
Zinc	5000	SDWS	ug/L	10 U	10 U	10 U	10 U	10.7 I
Well B71								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	1.53	1.02	1.7	0.45	0.36
Field Temperature	-	NE	deg C	24.01	25	23.1	24.44	25.68
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.48**	**6.46**	**5.51**	**5.58**	**5.8**
Specific Conductance	-	NE	umhos/cm	342	438	260	287	206
Turbidity	-	NE	NTU	1.74	3.22	11.2	1.88	7.14
Ammonia-N	2.8	GCTL	mg/L	0.11	0.02 U	0.02 U	0.02 U	0.028 I
Chloride	250	SDWS	mg/L	7.5	13	10.3	5.8	4.8 I
Iron	300	SDWS	ug/L	**19500**	121	253	**340**	280
Nitrate-N	10	PDWS	mg/L	0.025 U	2.3	1.1	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	12.4	8.4	7.6	5.7	4.5
Sulfate	250	SDWS	mg/L	106 J	26.3	36.6	23.4	15.8
Total Dissolved Solids	500	SDWS	mg/L	226	320	194	240	185
Barium	2000	PDWS	ug/L	40.6	22.6	27.3	19.8	13.2
Chromium	100	PDWS	ug/L	3.1 I	2.5 U	2.5 U	2.5 U	2.5 U
Copper	1000	SDWS	ug/L	2.5 U	4.7 I	2.5 U	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	5.3 I	9.3 I	6.2 I	6.2 I	8 I
Zinc	5000	SDWS	ug/L	53.1	20.1	17.7 I	18.2 I	17.5 I

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Well B72								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.63	0.86	1.99	0.86	2.27
Field Temperature	-	NE	deg C	25.23	25.5	23.69	25.21	26.41
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.87**	6.55	**6.18**	**6.19**	6.63
Specific Conductance	-	NE	umhos/cm	575	669	559	572	517
Turbidity	-	NE	NTU	11.4	4.88	39.1	5.73	4.44
Ammonia-N	2.8	GCTL	mg/L	0.03 I	0.02 U	0.02 U	0.02 U	0.02 U
Chloride	250	SDWS	mg/L	5.8	6.5	11.9	4.1 I	3.8 I
Iron	300	SDWS	ug/L	**17000**	**1560**	**3290**	**542**	**339**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.15	0.025 U	0.11	0.043 U
Sodium	160	PDWS	mg/L	10	6.6	7	6.5	4.1
Sulfate	250	SDWS	mg/L	95.9	99.5	68.9	79.9	21.3
Total Dissolved Solids	500	SDWS	mg/L	363	433	358	399	349
Barium	2000	PDWS	ug/L	51.7	48.4	57.2	38.1	31.1
Copper	1000	SDWS	ug/L	4.3 I	2.5 U	2.5 U	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	3.4 I	2.5 U	2.5 U	2.5 U	2.5 U
Zinc	5000	SDWS	ug/L	27	50.2	21.4	66.7	75.7
Acetone	6300	GCTL	ug/L	5 U	13.6	5 U	10 U	10 U
Well B73-2								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.34	1.03	2	0.42	0.24
Field Temperature	-	NE	deg C	23.99	22.7	23.37	24.66	26.06
PH, FIELD	6.5-8.5	SDWS	S.U.	6.53	**6.44**	**5.84**	**5.98**	**6.34**
Specific Conductance	-	NE	umhos/cm	327	325	168	253	257
Turbidity	-	NE	NTU	10.5	15.02	34.7	2.32	5.44
Ammonia-N	2.8	GCTL	mg/L	0.02 U	0.032 I	0.02 U	0.02 U	0.038 I
Chloride	250	SDWS	mg/L	6.8	7.8	6.3	2.9 I	7.3
Iron	300	SDWS	ug/L	**583**	**3350**	**1840**	**2310**	**5180**
Nitrate-N	10	PDWS	mg/L	0.43	0.13	0.55	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	5.4	5	4.5	4.3	4.3
Sulfate	250	SDWS	mg/L	31.3	10.4	10	4.4 I	6
Total Dissolved Solids	500	SDWS	mg/L	219	224	153	201	179
Arsenic	10	PDWS	ug/L	5 U	8.1 I	5 U	5.5 I	8 I
Barium	2000	PDWS	ug/L	30.9	30.8	22.2	26.7	28.1
Chromium	100	PDWS	ug/L	2.5 U	2.5 U	3.7 I	2.5 U	2.5 U
Cobalt	140	GCTL	ug/L	5 U	5 U	5 U	5 U	5.5 I
Copper	1000	SDWS	ug/L	5.1	2.5 U	2.5 U	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	2.5 U	3.6 I	2.6 I	3.8 I	3.4 I
Vanadium	49	GCTL	ug/L	5 U	5 U	5.2 I	5 U	5 U
Zinc	5000	SDWS	ug/L	10 U	27.8	23.5	21.6	31.7

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Well B74								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.17	0.77	0.28	0.16	0.18
Field Temperature	-	NE	deg C	24.94	23	22.71	23.52	24.21
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.59**	6.91	6.54	**6.39**	6.8
Specific Conductance	-	NE	umhos/cm	289	205	729	664	681
Turbidity	-	NE	NTU	1.72	2.24	5.76	0.13	6.11
Ammonia-N	2.8	GCTL	mg/L	0.12	0.02 U	0.093	0.13	0.077
Chloride	250	SDWS	mg/L	12.7	8.6	27.1	24.9	25.2
Iron	300	SDWS	ug/L	**677**	**350**	**3650**	**4120**	**4740**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.36	0.025 U	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	7.2	8.4	48	45.9	43.4
Sulfate	250	SDWS	mg/L	15.2	15.2	10.6	12.7	12
Total Dissolved Solids	500	SDWS	mg/L	217	161	456	437	440
Barium	2000	PDWS	ug/L	11.8	7.6 I	48.4	46.2	49.2
Well B75								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.08	0.83	0.17	0.29	0.27
Field Temperature	-	NE	deg C	24.92	23.8	23.48	24.87	24.46
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.26**	**6.34**	**6.11**	**6.05**	**6.37**
Specific Conductance	-	NE	umhos/cm	1389	1059	1341	1163	1250
Turbidity	-	NE	NTU	6.79	20.45	19.3	10.61	7.5
Ammonia-N	2.8	GCTL	mg/L	1.3	1.7	1.3	1.7	1.6
Chloride	250	SDWS	mg/L	82	56.1	65.3	62	64.1
Iron	300	SDWS	ug/L	**45800**	**37600**	**48200**	**45600**	**45400**
Sulfate	250	SDWS	mg/L	15.8	5 U	12.2	5 U	8.8 I
Total Dissolved Solids	500	SDWS	mg/L	**778**	**616**	**832**	**725**	**756**
Arsenic	10	PDWS	ug/L	**17.9**	5 U	**11.6**	8.4 I	**12.3**
Barium	2000	PDWS	ug/L	108	94	108	107	113
Cadmium	5	PDWS	ug/L	0.84 I	0.5 U	0.5 U	0.5 U	0.5 U
Chromium	100	PDWS	ug/L	2.5 U	2.5 U	2.8 I	2.5 U	2.5 U
Copper	1000	SDWS	ug/L	6.2	6	2.8 I	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	2.8 I	2.5 U	2.5 U	2.5 U	2.5 U
Sodium	160	PDWS	mg/L	58.5	52	50.3	54.5	53.6
Vanadium	49	GCTL	ug/L	5.9 I	6.4 I	7.4 I	5.4 I	5.7 I
1,1-Dichloroethane	70	GCTL	ug/L	0.56 I	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	6300	GCTL	ug/L	6.5 I	8 I	5 U	10 U	10 U
Benzene	1	PDWS	ug/L	0.83 I	0.1 U	0.1 U	0.1 U	0.1 U
Toluene	40	SDWS	ug/L	0.5 U	0.58 I	0.5 U	0.5 U	0.5 U
Vinylchloride	1	PDWS	ug/L	0.68 I	0.5 U	0.5 U	0.5 U	0.5 U

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Well B45-2											
Parameter	Limit	Standard	Unit	Sampling Event							
				May-12	Nov-12	Feb-13	May-13	Aug-13	Nov-13	Feb-14	May-14
Dissolved Oxygen	-	NE	mg/L	0.2	0.67	0.28	0.42	0.35	0.26	0.26	0.37
Field Temperature	-	NE	deg C	22.51	21.95	21.32	21.45	25.12	23.39	19.2	21.73
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.11**	**5.68**	**4.86**	**5.2**	**5.49**	**5.69**	**5.82**	**6.22**
Specific Conductance	-	NE	umhos/cm	989	654	634	1065	659	1655	1151	555
Turbidity	-	NE	NTU	2.5	7.9	8.64	6.05	6.32	2.39	4.62	4.6
Ammonia-N	2.8	GCTL	mg/L	0.06	0.058	0.032 I	0.02 U	0.028 I	0.02 U	0.02 U	0.02 U
Chloride	250	SDWS	mg/L	**265**	73.6	146	114	58.9	63	53.8	43.3
Iron	300	SDWS	ug/L	**54,000**	**1,130**	**11,000**	**2,670**	**651**	273	**536**	282
Nitrate-N	10	PDWS	mg/L	0.025 U	28.9	0.25	39.1	37.9	166	112 Q	29.8
Sodium	160	PDWS	mg/L	57.7	36.4	43.5	53.6	35.4	59.3	55.8	32.5
Sulfate	250	SDWS	mg/L	6.7	17.8	NS	26.4	29.6	24.6	39.9	41.2
Total Dissolved Solids	500	SDWS	mg/L	**683**	420	403	**724**	**534**	**1,320**	**1,050**	469
Barium	2000	PDWS	ug/L	148	46	95.5	97.8	52.7	101	104	34.5
Beryllium	4	PDWS	ug/L	0.53 I	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium	100	PDWS	ug/L	3.1 I	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Cobalt	140	GCTL	ug/L	5 U	5 U	5 I	5 U	5 U	5 U	5 U	5 U
Copper	1000	SDWS	ug/L	4.6 I	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	4.6 I	2.5 U	6	2.5 U	2.5 U	2.5 U	2.7 I	2.5 U
Vanadium	49	GCTL	ug/L	14.3	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	5000	SDWS	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	22.5	10 U
Acetone	6300	GCTL	ug/L	6.3 I	5 U	5 U	5 U	5 U	10 U	10 U	10 U
Benzene	1	PDWS	ug/L	0.95 I	0.12 I	0.27 I	0.17 I	0.1 U	0.1 U	0.11 I	0.1 U

Well B64											
Parameter	Limit	Standard	Unit	Sampling Event							
				May-12	Nov-12	Feb-13	May-13	Aug-13	Nov-13	Feb-14	May-14
Dissolved Oxygen	-	NE	mg/L	0.52	0.48	0.17	0.35	NS	0.19	NS	0.28
Field Temperature	-	NE	deg C	23.29	21.97	19.2	22.22	NS	22.84	NS	23.86
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.45**	7.03	**6.17**	6.55	NS	6.59	NS	6.66
Specific Conductance	-	NE	umhos/cm	1060	724	867	582	NS	506	NS	619
Turbidity	-	NE	NTU	12.3	4.68	26.4	9.71	NS	8.59	NS	1.26
Ammonia-N	2.8	GCTL	mg/L	**3.9**	0.45	0.42	0.17	NS	0.35	NS	0.4
Chloride	250	SDWS	mg/L	47.5	57.6	NS	62.3	NS	62.7	NS	58.5
Iron	300	SDWS	ug/L	**38,900**	**18,600**	NS	**9,420**	NS	**16,500**	NS	**22,300**
Sodium	160	PDWS	mg/L	43.9	38.6	NS	42.5	NS	40.8	NS	39.5
Sulfate	250	SDWS	mg/L	29.1	4 I	NS	2.5 U	NS	2.5 U	NS	2.5 U
Total Dissolved Solids	500	SDWS	mg/L	**625**	490	NS	354	NS	336	NS	419
Arsenic	10	PDWS	ug/L	6.5 I	5 U	NS	5 U	NS	5.4 I	NS	5.9 I
Barium	2000	PDWS	ug/L	162	68	NS	41	NS	37.3	NS	52.7
Acetone	6300	GCTL	ug/L	5 U	5 U	NS	5 U	NS	10 U	NS	31.5
Chlorobenzene	100	PDWS	ug/L	4.5	0.5 U	NS	0.5 U	NS	0.5 U	NS	0.5 U
Toluene	40	SDWS	ug/L	0.5 U	0.5 U	NS	0.5 U	NS	0.5 U	NS	1.7

Notes:

Limit = Maximum threshold limit per regulatory standards;
NE = Not Established;
NS = Not Sampled;
PDWS = Parameter Limit is a Primary Drinking Water Standard (62-550 F.A.C.);
SDWS = Parameter Limit is a Secondary Drinking Water Standard (62-550 F.A.C.);
GCTL = Parameter Limit is a Groundwater Clean-up Target Level (62-777 F.A.C.);
I = The reported value is between the laboratory method detection method and the laboratory practical quantization limit;
J = Estimated value;
Q = Sampled held beyond the accepted holding time;
U = Indicates that the compound was analyzed for but not detected;
V = Indicated that the analyte was detected in both the sample and associated Method Blank;

Appendix C - Table 6
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 4 & 6 Wells
Tomoka Farms Road Landfill

Well B1-B											
Parameter	Limit	Standard	Unit	Sampling Event							
				May-12	Nov-12	Feb-13	May-13	Aug-13	Nov-13	Feb-14	May-14
Dissolved Oxygen	-	NE	mg/L	0.21	0.36	0.33	0.41	NS	0.25	NS	0.35
Field Temperature	-	NE	deg C	23.17	21.88	22.66	22.49	NS	22.77	NS	23.25
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.24**	**6.34**	**6.29**	**5.98**	NS	**6.2**	NS	**6.39**
Specific Conductance	-	NE	umhos/cm	1384	1210	1261	1530	NS	779	NS	779
Turbidity	-	NE	NTU	0.94	0.85	6.76	7.08	NS	1.92	NS	3.2
Ammonia-N	2.8	GCTL	mg/L	**13.2**	**10.4**	**20.4**	**12.4**	NS	**10**	NS	**6.6**
Chloride	250	SDWS	mg/L	85	59.5	NS	94.1	NS	26.5	NS	23.6
Iron	300	SDWS	ug/L	**22,000**	**19,800**	NS	**24,800**	NS	**13,400**	NS	**12,900**
Nitrate-N	10	PDWS	mg/L	0.27	0.05 U	NS	0.12 U	NS	0.043 U	NS	0.043 U
Sodium	160	PDWS	mg/L	70.9	63.9	NS	86.6	NS	43.9	NS	35.8
Sulfate	250	SDWS	mg/L	37.7	44.8	NS	24.4 I	NS	76.9	NS	69.2
Total Dissolved Solids	500	SDWS	mg/L	**762**	**616**	NS	**844**	NS	**537**	NS	**493**
Barium	2000	PDWS	ug/L	292	233	NS	303	NS	170	NS	143
Copper	1000	SDWS	ug/L	2.7 I	2.9 I	NS	2.5 U	NS	2.5 U	NS	2.5 U
Acetone	6300	GCTL	ug/L	8.7 I	5 U	NS	5 U	NS	10 U	NS	10 U
Chlorobenzene	100	PDWS	ug/L	0.5 U	0.5 U	NS	0.7 I	NS	0.5 U	NS	0.5 U

Well B41-1											
Parameter	Limit	Standard	Unit	Sampling Event							
				May-12	Nov-12	Feb-13	May-13	Aug-13	Nov-13	Feb-14	May-14
Dissolved Oxygen	-	NE	mg/L	0.1	0.58	0.28	0.34	0.36	0.71	0.7	0.21
Field Temperature	-	NE	deg C	23.08	22.28	22.53	22.84	23.31	23.09	21.3	22.49
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.26**	**6.25**	**6.24**	**6.04**	**6.15**	**6.18**	**6.3**	**6.28**
Specific Conductance	-	NE	umhos/cm	2357	2364	2329	2420	2025	2259	1946	2073
Turbidity	-	NE	NTU	2.54	1.86	2.91	3.75	1.84	2.54	2.75	3.36
Ammonia-N	2.8	GCTL	mg/L	**69.6**	**83.5**	**79.4**	**77.8**	**72**	**65.9**	**52.7**	**55.9**
Chloride	250	SDWS	mg/L	175	163	165	170	178	177	141	164
Iron	300	SDWS	ug/L	**23,300**	**22,000**	**24,800**	**22,200**	**25,000**	**23,600**	**18,100**	**20,600**
Sodium	160	PDWS	mg/L	**166**	146	**162**	**163**	**162**	**160**	145	141
Sulfate	250	SDWS	mg/L	14.2 I	18	NS	7	48	40	97	80
Total Dissolved Solids	500	SDWS	mg/L	**1,180**	**1,140**	**1,200**	**1,210**	**1,230**	**1,220**	**1,180**	**1,210**
Antimony	6	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.56 I
Barium	2000	PDWS	ug/L	317	261	285	308	312	309	316	316
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.63 I	0.71 I	0.5 U	0.5 U
Chromium	100	PDWS	ug/L	5.3	3.1 I	5.6	6.4	5.3	5.8	5 I	5.9
Copper	1000	SDWS	ug/L	2.7 I	3.9 I	2.5 U	2.5 U	2.5 U	2.5 U	2.7 I	2.5 U
Nickel	100	PDWS	ug/L	2.8 I	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	10.6	10.4	10.4	9.9 I	10.1	10.6	8.6 I	9.4 I
Zinc	5000	SDWS	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	23.1	10 U
1,4-Dichlorobenzene	75	PDWS	ug/L	0.18 U	0.26 I	0.16 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Methylnaphthalene	28	GCTL	ug/L	0.15 U	0.38 I	0.13 U	NS	NS	NS	NS	NS
Benzene	1	PDWS	ug/L	**1.2**	0.86 I	**1.1**	0.13 I	0.99 I	0.47 I	0.53 I	0.36 I
Chlorobenzene	100	PDWS	ug/L	2.4	4.2	4.1	2.1	2.6	4.1	4.5	3.9
Cyanide (CN)	0.2	PDWS	mg/L	0.0014 I	0.0022 I	0.002 U	NS	NS	NS	NS	NS
Endrin	2	SDWS	ug/L	0.0032 I	0.0016 U	0.0016 U	NS	NS	NS	NS	NS
Toluene	40	SDWS	ug/L	0.55 I	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Xylene (Total)	20	SDWS	ug/L	0.5 U	0.5 U	3.7	0.5 U	0.5 U	0.5 U	0.59 I	0.5 U

Appendix C - Table 6
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 4 & 6 Wells
Tomoka Farms Road Landfill

Well B43-1											
Parameter	**Limit**	**Standard**	**Unit**	**Sampling Event**							
				May-12	**Nov-12**	**Feb-13**	**May-13**	**Aug-13**	**Nov-13**	**Feb-14**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.2	0.42	0.16	0.53	0.63	0.33	0.4	0.2
Field Temperature	-	NE	deg C	22.16	22.13	22.33	21.86	23.17	22.92	20.8	24.04
PH, FIELD	6.5-8.5	SDWS	S.U.	**6**	**5.87**	**5.6**	**5.73**	**5.8**	**5.74**	**6.02**	**6.02**
Specific Conductance	-	NE	umhos/cm	771	747	750	777	694	733	761	746
Turbidity	-	NE	NTU	0.94	2.06	13.4	1.76	0.37	0.89	4.1	2.57
Ammonia-N	2.8	GCTL	mg/L	**3.1 J**	**3**	**4**	1.8	2	1.6	1.7	1.5
Chloride	250	SDWS	mg/L	66.5	72.1	73.1	77.9 L	83.1 L	90	94.3	89.5
Iron	300	SDWS	ug/L	**21,900**	**21,200**	**25,100**	**20,700**	**23,400**	**23,000**	**28,500**	**25,700**
Sodium	160	PDWS	mg/L	86.5	75.9	80.7	83.4	82.5	79.3	79.5	83.6
Sulfate	250	SDWS	mg/L	5.8	17.7	NS	32.8	25.1	31.9	41.5	28.2
Total Dissolved Solids	500	SDWS	mg/L	408	415	429	415	419	431	440	447
Barium	2000	PDWS	ug/L	158	143	168	138	142	146	170	154
Beryllium	4	PDWS	ug/L	0.5 U	0.076 I	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Copper	1000	SDWS	ug/L	2.5 U	4.1 I	2.5 U	2.5 U	2.5 U	2.5 U	4.1 I	2.5 U
Zinc	5000	SDWS	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	22.5	10 U
Benzene	1	PDWS	ug/L	**1**	0.59 I	0.85 I	0.37 I	0.1 U	0.1 U	0.1 U	0.1 I
Chlorobenzene	100	PDWS	ug/L	4.9	3.4	4.3	2	1.7	1.4	1.2	1.3
Cyanide (CN)	0.2	PDWS	mg/L	0.001 U	0.001 U	0.002 U	NS	NS	NS	NS	NS
Di-N-Butylphthalate	700	GCTL	ug/L	0.19 U	0.17 U	0.22 I	NS	NS	NS	NS	NS
Naphthalene	14	GCTL	ug/L	0.31 I	0.2 I	0.19 U	NS	NS	NS	NS	NS

Well B45-1											
Parameter	**Limit**	**Standard**	**Unit**	**Sampling Event**							
				May-12	**Nov-12**	**Feb-13**	**May-13**	**Aug-13**	**Nov-13**	**Feb-14**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.08	0.33	0.09	0.2	0.27	0.5	0.42	0.37
Field Temperature	-	NE	deg C	23.16	21.66	22.47	21.85	22.93	23.12	21.35	21.9
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.98**	**6.05**	**5.82**	**5.79**	**5.9**	**5.62**	**6.06**	**6.07**
Specific Conductance	-	NE	umhos/cm	1598	1551	1684	1815	1494	1591	1520	1466
Turbidity	-	NE	NTU	4.32	3.15	14.2	8.2	1.25	0.02	1.86	1.39
Ammonia-N	2.8	GCTL	mg/L	0.043 I	0.02 U	0.034 I	0.021 I	0.046 I	0.047 I	0.037 I	0.065
Chloride	250	SDWS	mg/L	178	169	148	214	169	180	170	200
Iron	300	SDWS	ug/L	**46,200**	**41,200**	**48,300**	**47,700**	**46,600**	**44,200**	**45,300**	**43,400**
Sodium	160	PDWS	mg/L	**215**	**182**	**195**	**202**	**216**	**217**	**229**	**232**
Total Dissolved Solids	500	SDWS	mg/L	**892**	**1,800**	**1,010**	**1,070**	**958**	**948**	**924**	**970**
Arsenic	10	PDWS	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5.3 I	5.8 I
Barium	2000	PDWS	ug/L	151	132	157	135	145	149	156	143
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.51 I	0.5 U	0.5 U
Copper	1000	SDWS	ug/L	4.2 I	7	2.5 U	2.5 U	2.5 U	2.5 U	4.9 I	4 I
Vanadium	49	GCTL	ug/L	5 U	5 U	5 U	5.8 I	5 U	5 U	5 U	5 U
Zinc	5000	SDWS	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	21.2	10 U
Benzene	1	PDWS	ug/L	**13.7**	**10.3**	**11.6**	**10.7**	**8.9**	**10.4**	**11.3**	**10.5**
Chlorobenzene	100	PDWS	ug/L	5.3	5.3	5.5	5.4	5.2	5.7	6	6.1
Chlorobenzilate	0.1	GCTL	ug/L	0.022 U	0.034 I	0.02 U	NS	NS	NS	NS	NS
Cyanide (CN)	0.2	PDWS	mg/L	0.001 U	0.0014 I	0.002 U	NS	NS	NS	NS	NS
Diethyl Phthalate	5600	GCTL	ug/L	0.79 I	0.66 I	0.56 I	NS	NS	NS	NS	NS
Endrin	2	SDWS	ug/L	0.003 I	0.0016 U	0.0016 U	NS	NS	NS	NS	NS
Ethylbenzene	700	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.75 I	0.5 U	0.5 U	0.5 U	0.5 U
Naphthalene	14	GCTL	ug/L	1.1 I	1.1 I	0.99 I	NS	NS	NS	NS	NS
Toluene	40	SDWS	ug/L	0.74 I	0.5 U	0.5 U	0.61 I	0.5 U	0.5 U	0.5 U	0.5 U
Toluidine, O-	0.1	GCTL	ug/L	0.26 U	0.24 U	**0.33 I**	NS	NS	NS	NS	NS
Xylene (Total)	20	SDWS	ug/L	3.4	1.4	2.6	4	1.8	2.3	3	2.3

Appendix C - Table 6
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 4 & 6 Wells
Tomoka Farms Road Landfill

Well B2								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.12	0.51	0.29	0.31	0.24
Field Temperature	-	NE	deg C	23.14	22.28	21.73	24.01	25.59
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.3**	**5.4**	**5.28**	**5.08**	**5.53**
Specific Conductance	-	NE	umhos/cm	1018	834	1059	796	916
Turbidity	-	NE	NTU	5.34	4.82	9.96	0.19	1.44
Ammonia-N	2.8	GCTL	mg/L	**3.6**	2.7	**3.1**	**3.3**	**3.3**
Chloride	250	SDWS	mg/L	45.7	36	38.6	37.5	36.1
Iron	300	SDWS	ug/L	**36,800**	**31,300**	**43,300**	**35,600**	**38,300**
Sodium	160	PDWS	mg/L	31.7	28.8	30.4	31	28.3
Sulfate	250	SDWS	mg/L	**454**	**270**	**377**	**330**	**331**
Total Dissolved Solids	500	SDWS	mg/L	**731**	**594**	**753**	**670**	**743**
Arsenic	10	PDWS	ug/L	6.3 I	5 U	5 U	5 U	5 U
Barium	2000	PDWS	ug/L	112	102	122	114	110
Beryllium	4	PDWS	ug/L	1.7	1.8	1.7	1.7	1.7
Cadmium	5	PDWS	ug/L	0.76 I	0.5 U	0.5 U	0.5 U	0.5 U
Chromium	100	PDWS	ug/L	3.9 I	2.5 U	4.7 I	3 I	3.5 I
Copper	1000	SDWS	ug/L	4.4 I	3.8 I	2.5 U	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	7.8	2.5 U	4.5 I	2.5 U	2.5 U
Vanadium	49	GCTL	ug/L	16.6	17.3	17.8	14.7	17.6
Well B-5								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.1	0.46	0.17	0.32	0.25
Field Temperature	-	NE	deg C	23.61	23.25	22.98	24.51	23.34
PH, FIELD	6.5-8.5	SDWS	S.U.	6.59	6.53	**6.33**	**6.36**	6.56
Specific Conductance	-	NE	umhos/cm	873	778	755	662	924
Turbidity	-	NE	NTU	0.32	1.88	4.23	1.83	1.35
Ammonia-N	2.8	GCTL	mg/L	0.24	0.25	0.33	0.38	0.31
Chloride	250	SDWS	mg/L	26.4	20.4	17.1	16.2	28.1
Iron	300	SDWS	ug/L	**17,900**	**14,600**	**15,400**	**13,600**	**18,500**
Sodium	160	PDWS	mg/L	22.7	22.1	22.7	22.9	34.7
Total Dissolved Solids	500	SDWS	mg/L	492	438	428	424	**562**
Barium	2000	PDWS	ug/L	92.5	75.9	74.9	70.8	108
Copper	1000	SDWS	ug/L	2.5 U	2.5 U	2.5 U	4.8 I	2.5 U
Vinyl Chloride	#N/A	#N/A	ug/L	0.63 I	0.5 U	0.5 U	0.5 U	0.67 I

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Well B8								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.64	1.84	1.07	0.15	1.12
Field Temperature	-	NE	deg C	25.39	23.2	23.08	24.13	27.14
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.16**	**6.28**	**6.23**	**5.92**	6.53
Specific Conductance	-	NE	umhos/cm	624	587	721	599	688
Turbidity	-	NE	NTU	0.58	1.37	NS	0.01	0.47
Ammonia-N	2.8	GCTL	mg/L	0.23	0.16	0.21	0.21	0.16
Chloride	250	SDWS	mg/L	64	65.9	68.5	89.7	79.8
Iron	300	SDWS	ug/L	**683**	**883**	**1,250**	**1,790**	**1,910**
Sodium	160	PDWS	mg/L	38	35.4	33.9 J	39.2	37.6
Sulfate	250	SDWS	mg/L	12.2	17.9	9.5	11.4	10.5
Total Dissolved Solids	500	SDWS	mg/L	414	392	470	470	483
Barium	2000	PDWS	ug/L	32.2	31.6	32.8	37.5	38.4
Copper	1000	SDWS	ug/L	2.5 U	2.5 U	2.5 U	15.4	2.5 U
Lead	15	PDWS	ug/L	6.1 I	5 U	5 U	5 U	5 U
Bromomethane	9.8	GCTL	ug/L	3.2	0.5 U	0.5 U	0.5 U	0.5 U
Well B8-2								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.16	1.12	0.29	0.33	0.13
Field Temperature	-	NE	deg C	26.11	23.4	22.83	24.84	25.83
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.33**	6.87	**5.14**	**4.89**	**5.21**
Specific Conductance	-	NE	umhos/cm	1136	474	1305	1046	1300
Turbidity	-	NE	NTU	1.42	6.41	0.6	0.14	5.09
Ammonia-N	2.8	GCTL	mg/L	0.076	0.02 U	0.053	0.094	0.085
Chloride	250	SDWS	mg/L	**271**	71.6	**288**	**262**	**335**
Iron	300	SDWS	ug/L	**30,600**	**559**	**36,500**	**37,000**	**41,600**
Nitrate-N	10	PDWS	mg/L	0.05 U	0.24	0.05 U	0.086 U	0.086 U
Sodium	160	PDWS	mg/L	37.2	17.1	40.4	48.8	55.3
Sulfate	250	SDWS	mg/L	76.8	72.3	56.5	50.3	37
Total Dissolved Solids	500	SDWS	mg/L	**784**	345	**926**	**942**	**1,130**
Barium	2000	PDWS	ug/L	153	73.2	176	189	226
Cadmium	5	PDWS	ug/L	0.61 I	0.5 U	0.5 U	0.5 U	0.5 U
Copper	1000	SDWS	ug/L	3.3 I	2.5 U	2.5 U	2.5 U	2.5 U
Lead	15	PDWS	ug/L	7.8 I	5 U	5 U	5 U	5 U
Vanadium	49	GCTL	ug/L	5.1 I	5 U	7.4 I	7 I	10.4

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Well B32								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.14	0.75	0.31	0.26	0.2
Field Temperature	-	NE	deg C	22.86	22.71	22.7	24.06	24.41
PH, FIELD	6.5-8.5	SDWS	S.U.	6.69	6.62	**6.47**	**6.2**	6.71
Specific Conductance	-	NE	umhos/cm	655	650	736	836	861
Turbidity	-	NE	NTU	3.01	6.26	4.78	3.94	5.92
Ammonia-N	2.8	GCTL	mg/L	0.067	0.055	0.062	0.076	0.058
Chloride	250	SDWS	mg/L	54.8	55.5	60.9	113	98.7
Iron	300	SDWS	ug/L	**5,680**	**5,820**	**7,050**	**8,930**	**8,700**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.025 U	0.025 U	0.084	0.043 U
Sodium	160	PDWS	mg/L	31	28.6	32	34.2	32.7
Sulfate	250	SDWS	mg/L	38.4	32.9	42.3	66.1 J	57.3
Total Dissolved Solids	500	SDWS	mg/L	430	394	481	**669**	**624**
Barium	2000	PDWS	ug/L	36.1	34.3	41.1	53.2	51.8
Copper	1000	SDWS	ug/L	2.6 I	2.5 U	2.5 U	2.5 U	2.5 U
cis-1,2-Dichloroethene	70	PDWS	ug/L	0.65 I	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	3	SDWS	ug/L	1.4	0.5 U	0.5 U	0.5 U	0.5 U
Well B33-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.11	0.43	0.23	0.24	0.14
Field Temperature	-	NE	deg C	23.29	22.82	23.16	23.65	25.24
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.21**	**6.23**	**6.04**	**5.8**	**6.3**
Specific Conductance	-	NE	umhos/cm	506	534	572	521	614
Turbidity	-	NE	NTU	1.72	2.27	3.04	0.3	0.82
Ammonia-N	2.8	GCTL	mg/L	0.2	0.19	0.17	0.23	0.19
Chloride	250	SDWS	mg/L	49.2	51	55.3	68.8	74.6
Iron	300	SDWS	ug/L	**8,200**	**8,840**	**9,850**	**9,850**	**10,800**
Sodium	160	PDWS	mg/L	54.9	57.2	61.9	64.5	64.6
Total Dissolved Solids	500	SDWS	mg/L	391	389	417	450	470
Barium	2000	PDWS	ug/L	35.4	36.8	42.6	45.4	50.9
Chromium	100	PDWS	ug/L	3.2 I	2.5 U	2.6 I	2.5 U	2.7 I
Copper	1000	SDWS	ug/L	2.5 U	3 I	2.5 U	2.5 U	2.5 U
Lead	15	PDWS	ug/L	5.1 I	5 U	5 U	5 U	5 U
Vanadium	49	GCTL	ug/L	5 I	5.5 I	5 U	5 U	5 U

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Well B34-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.15	0.67	0.58	0.29	0.25
Field Temperature	-	NE	deg C	22.96	21.91	21.42	22.59	23.12
PH, FIELD	6.5-8.5	SDWS	S.U.	6.51	6.55	**6.21**	**6.11**	6.51
Specific Conductance	-	NE	umhos/cm	1066	1132	1127	1009	1154
Turbidity	-	NE	NTU	1.23	2.94	2.25	0.01	1.59
Ammonia-N	2.8	GCTL	mg/L	0.098	0.12	0.13	0.14	0.12
Chloride	250	SDWS	mg/L	64.5 J	59.2	55.2	57.7	53
Iron	300	SDWS	ug/L	**22,400**	**25,200**	**26,100**	**30,300**	**29,800**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.05 U	0.026 I	0.086 U	0.086 U
Sodium	160	PDWS	mg/L	44.8	39.9	40.7	44.7	40.4
Sulfate	250	SDWS	mg/L	132	177	138	165	195
Total Dissolved Solids	500	SDWS	mg/L	**661**	**739**	**740**	**742**	**841**
Barium	2000	PDWS	ug/L	125	134	127	148	142
Copper	1000	SDWS	ug/L	4.5 I	3 I	2.5 U	2.5 U	2.5 U
Well B35-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.09	0.62	0.27	0.19	0.14
Field Temperature	-	NE	deg C	22.9	21.01	21.84	22.62	24.58
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.37**	**5.51**	**5.3**	**5.38**	**5.67**
Specific Conductance	-	NE	umhos/cm	359	337	350	318	333
Turbidity	-	NE	NTU	1.13	0.89	2.74	0.33	2.59
Ammonia-N	2.8	GCTL	mg/L	0.12	0.11	0.12	0.13	0.15
Chloride	250	SDWS	mg/L	82	74.5	72	69.5	70.8
Iron	300	SDWS	ug/L	**10,400**	**9,240**	**10,600**	**9,760**	**10,900**
Sodium	160	PDWS	mg/L	23.9	22.8	24.9	24.5	25.6
Total Dissolved Solids	500	SDWS	mg/L	248	229	235	250	246
Barium	2000	PDWS	ug/L	95	89.2	92.8	91.4	94.5

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Well B36								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.08	0.55	0.19	0.21	0.11
Field Temperature	-	NE	deg C	22.99	21.79	21.62	23.1	24.11
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.42**	6.64	**6.16**	**6.37**	**6.4**
Specific Conductance	-	NE	umhos/cm	1916	1656	1991	947	1763
Turbidity	-	NE	NTU	3.46	1.54	3.63	0.4	1.33
Chloride	250	SDWS	mg/L	**250**	207	235	157	226
Iron	300	SDWS	ug/L	**5,380**	**4,680**	**5,960**	**4,710**	**5,650**
Sodium	160	PDWS	mg/L	116	103	127	105	120
Total Dissolved Solids	500	SDWS	mg/L	**1,150**	**1,010**	**1,270**	**678**	**1,210**
Ammonia-N	2.8	GCTL	mg/L	0.16	0.14	0.16	0.17	0.3
Barium	2000	PDWS	ug/L	124	100	137	106	135
Lead	15	PDWS	ug/L	7.1 I	5 U	5 U	5 U	5 U
1,1-Dichloroethane	70	GCTL	ug/L	1.4	1.1	1.1	1.1	1.3
Benzene	1	PDWS	ug/L	**1.9**	**4.1**	**2.6**	**2.3**	**2.5**
Chlorobenzene	100	PDWS	ug/L	2.3	1.8	3.2	1.8	2.7
Ethylbenzene	700	PDWS	ug/L	0.5 U	0.5 U	0.64 I	0.5 U	0.5 U
Xylene (Total)	20	SDWS	ug/L	0.95 I	4.6	2.8	1	1
Well B37-1								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.14	0.33	0.14	0.23	0.11
Field Temperature	-	NE	deg C	23.46	22.31	22.2	24.1	24.34
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.34**	**6.49**	**6.16**	**5.98**	**6.35**
Specific Conductance	-	NE	umhos/cm	1999	2574	2360	1701	2438
Turbidity	-	NE	NTU	0.59	7.16	2.67	2.35	3.32
Ammonia-N	2.8	GCTL	mg/L	0.54	0.31	0.51	0.17	0.58
Chloride	250	SDWS	mg/L	2.5 U	167	124	86.1	184
Iron	300	SDWS	ug/L	**31,900**	**38,800**	**35,000**	**36,800**	**39,700**
Sodium	160	PDWS	mg/L	**218**	**249**	**227**	**174**	**258**
Total Dissolved Solids	500	SDWS	mg/L	**1,400**	**1,530**	**1,430**	**1,140**	**1,560**
Barium	2000	PDWS	ug/L	207	239	218	186	257
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.56 I	0.5 U
Copper	1000	SDWS	ug/L	2.5 U	3.8 I	2.5 U	4.4 I	2.5 U
Lead	15	PDWS	ug/L	6.9 I	5 U	5 U	5 U	5 U
1,2-Dibromo-3-Chloropropane	0.2	GCTL	ug/L	0.0049 U	0.008 I	0.0053 U	0.005 U	0.0051 U
1,2-Dichlorobenzene	600	PDWS	ug/L	0.5 U	0.5 U	0.5 I	0.5 U	0.5 U
1,4-Dichlorobenzene	75	PDWS	ug/L	0.63 I	1	1	0.5 U	0.7 I
Acetone	6300	GCTL	ug/L	5 U	5 U	5.8 I	10 U	16.7 I
Benzene	1	PDWS	ug/L	**7.9**	**9.7**	**9.5**	**7.4**	**11.5**
Chlorobenzene	100	PDWS	ug/L	12.1	11.6	13.4	3.5	9.6
cis-1,2-Dichloroethene	70	PDWS	ug/L	0.5 U	0.5 U	0.5 U	1.9	0.5 U
Toluene	40	SDWS	ug/L	0.5 U	0.58 I	0.65 I	0.5 U	0.55 I
Vinyl Chloride	#N/A	#N/A	ug/L	0.5 U	0.5 U	0.5 U	**2.4**	0.5 U
Xylene (Total)	20	SDWS	ug/L	1.6	6.2	3.2	5.5	3.2

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Well B38-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.21	0.39	1.17	0.22	0.21
Field Temperature	-	NE	deg C	22.38	21.14	20.81	21.88	22.79
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.26**	**5.52**	**5.18**	**5.23**	**5.5**
Specific Conductance	-	NE	umhos/cm	310	322	324	310	324
Turbidity	-	NE	NTU	5.53	2.19	1.3	1.41	4.14
Ammonia-N	2.8	GCTL	mg/L	0.051	0.031 I	0.05	0.05 I	0.089
Chloride	250	SDWS	mg/L	54.1 J	54.7	53.2	55.5	58.2
Iron	300	SDWS	ug/L	**16,800**	**20,900**	**19,800**	**20,900**	**23,300**
Sodium	160	PDWS	mg/L	23.9	25.2	25.5	25.7	28.3
Sulfate	250	SDWS	mg/L	12.3	16.6	17.9	20	22
Total Dissolved Solids	500	SDWS	mg/L	184	206	196	229	234
Barium	2000	PDWS	ug/L	77.9	91.6	88.5	94.3	104
Mercury	2	PDWS	ug/L	0.1 U	0.1 U	0.1 U	0.1 U	NS
Acetone	6300	GCTL	ug/L	5 U	5 U	5 U	10 U	16.2 I
Well B40-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.69	0.7	0.74	0.34	0.68
Field Temperature	-	NE	deg C	22.63	21.87	21.91	22.66	21.41
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.2**	**5.46**	**5.13**	**5.24**	**5.44**
Specific Conductance	-	NE	umhos/cm	545	538	590	583	636
Turbidity	-	NE	NTU	1	0.37	2.88	0.01	0.3
Ammonia-N	2.8	GCTL	mg/L	0.1	0.093	0.095	0.12	0.11
Chloride	250	SDWS	mg/L	71.1	63.6	59.7	56.7	58.7
Iron	300	SDWS	ug/L	**13,200**	**13,900 J**	**15,200**	**18,200**	**20,600**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.025 U	0.13	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	47.9	48.5	50.8	50.1	51.3
Sulfate	250	SDWS	mg/L	103	116	123	153	184
Total Dissolved Solids	500	SDWS	mg/L	374	351	392	433	491
Antimony	6	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.52 I	0.5 U
Barium	2000	PDWS	ug/L	123	117	136	149	174
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.5 I	0.5 U
Copper	1000	SDWS	ug/L	2.5 U	3.7 I	2.5 U	2.5 U	2.5 U

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Well B42-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.45	0.38	0.48	0.24	0.51
Field Temperature	-	NE	deg C	20.93	21.68	22.08	22.55	22.13
PH, FIELD	6.5-8.5	SDWS	S.U.	**4.9**	**5.73**	**5.47**	**5.56**	**5.73**
Specific Conductance	-	NE	umhos/cm	983	950	932	818	839
Turbidity	-	NE	NTU	0.99	0.82	4.56	0.12	2.03
Ammonia-N	2.8	GCTL	mg/L	0.43	0.36	0.36	0.49	0.34
Chloride	250	SDWS	mg/L	101	87.4	79.9	76.2	78.5
Iron	300	SDWS	ug/L	**14,300**	**15,700**	**14,500**	**13,600**	**14,200**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.05 U	0.28	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	95.7	98.3	91.7	88.5	93
Sulfate	250	SDWS	mg/L	196	233	216	203	222
Total Dissolved Solids	500	SDWS	mg/L	**599**	**646**	**644**	**704**	**636**
Barium	2000	PDWS	ug/L	114	120	119	105	118
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.61 I	0.5 U
Chromium	100	PDWS	ug/L	2.5 U	2.5 U	2.5 U	2.5 U	2.5 I
Well B59-1R								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.07	1.28	0.14	0.14	0.21
Field Temperature	-	NE	deg C	24.44	23.8	23.63	24.5	26.03
PH, FIELD	6.5-8.5	SDWS	S.U.	6.63	6.97	**6.4**	**6.4**	6.74
Specific Conductance	-	NE	umhos/cm	687	635	719	625	649
Turbidity	-	NE	NTU	5.17	2.37	2.44	0.59	0.28
Ammonia-N	2.8	GCTL	mg/L	0.39	2.4	0.58	0.77	0.74
Chloride	250	SDWS	mg/L	66.3	73.6	67.6	72.5	66.7
Iron	300	SDWS	ug/L	**4,890**	**3,920**	**4,700**	**5,750**	**5,120**
Sodium	160	PDWS	mg/L	64.3	54.6	51.9	59.2	56.8
Sulfate	250	SDWS	mg/L	6.4	2.5 U	5.4	4.7 I	4.6 I
Total Dissolved Solids	500	SDWS	mg/L	389	373	430	412	416
Barium	2000	PDWS	ug/L	54.2	64.6	52	59.2	63.7

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Well B60								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.12	1.04	0.14	0.15	0.23
Field Temperature	-	NE	deg C	25.08	22.6	24.25	24.71	25.43
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.4**	7	**6.18**	**6.21**	6.57
Specific Conductance	-	NE	umhos/cm	530	535	570	520	548
Turbidity	-	NE	NTU	0.68	4.76	1.78	0.01	0.22
Ammonia-N	2.8	GCTL	mg/L	0.95	0.77	1	1.1	1.2
Chloride	250	SDWS	mg/L	66.4	68.2	64.3	70.2	64.8
Iron	300	SDWS	ug/L	**3,950**	**3,720**	**4,090**	**4,530**	**4,550**
Sodium	160	PDWS	mg/L	54.6	51.5	51.3	55.9	53.4
Total Dissolved Solids	500	SDWS	mg/L	307	304	339	340	349
Barium	2000	PDWS	ug/L	62.7	57.9	69.7	72.2	80.1
Chromium	100	PDWS	ug/L	2.5 U	0.57 I	2.5 U	2.5 U	2.5 U
Copper	1000	SDWS	ug/L	4.7 I	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	6300	GCTL	ug/L	5 U	14.3	5 U	10 U	10 U
Well B62-1R								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.05	1.1	0.21	2.25	0.32
Field Temperature	-	NE	deg C	24.2	25.3	23.3	23.58	23.67
PH, FIELD	6.5-8.5	SDWS	S.U.	6.73	7.33	6.55	6.52	6.74
Specific Conductance	-	NE	umhos/cm	2871	641	2597	1805	1930
Turbidity	-	NE	NTU	10.16	15.48	43.2	4.67	2.51
Ammonia-N	2.8	GCTL	mg/L	**120**	1.3	**95.9**	**8.1**	**67.3**
Chloride	250	SDWS	mg/L	183	64.8	143	92.9	132
Iron	300	SDWS	ug/L	**20,900**	**6,480**	**16,300**	**15,500**	**15,000**
Sodium	160	PDWS	mg/L	**222**	56.8	**222**	**160**	**189**
Sulfate	250	SDWS	mg/L	32.6	9.1	30.8	12.3	12.1
Total Dissolved Solids	500	SDWS	mg/L	**1,300**	385	**1,260**	**916**	**1,110**
Barium	2000	PDWS	ug/L	519	50.1	411	298	317
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.67 I	0.5 U
Chromium	100	PDWS	ug/L	2.8 I	2.5 U	4.7 I	2.5 U	2.5 U
Copper	1000	SDWS	ug/L	2.7 I	2.5 U	2.5 U	2.5 U	2.5 U
Nickel	100	PDWS	ug/L	6.5	2.5 U	7.1	6.1	5.1
Acetone	6300	GCTL	ug/L	5 U	7.3 I	7.8 I	10 U	10 U
Chlorobenzene	100	PDWS	ug/L	0.6 I	0.5 U	2.9	1.9	2

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Well B63-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.1	0.76	0.11	0.28	0.18
Field Temperature	-	NE	deg C	23.16	22.2	22.37	22.72	23.13
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.49**	6.58	**6.28**	**6.37**	6.65
Specific Conductance	-	NE	umhos/cm	553	544	562	510	491
Turbidity	-	NE	NTU	4.01	1.97	1.35	2.28	0.44
Ammonia-N	2.8	GCTL	mg/L	0.1	0.083	0.1	0.1	0.12
Chloride	250	SDWS	mg/L	48.2	44.3	42.1	40.3	32.5
Iron	300	SDWS	ug/L	**2,330**	**2,570**	**2,490**	**2,340**	**2,340**
Sodium	160	PDWS	mg/L	53.1	53.8	51.2	51.3	51.3
Total Dissolved Solids	500	SDWS	mg/L	347	330	337	338	335
Barium	2000	PDWS	ug/L	45.4	44.1	43.4	44.9	44.2
Lead	15	PDWS	ug/L	5.2 I	5 U	5 U	5 U	5 U
Well B68								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.09	1.31	0.45	0.21	0.1
Field Temperature	-	NE	deg C	24.81	22.9	23.8	24.8	25.65
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.67**	**6.16**	**5.61**	**5.31**	**5.89**
Specific Conductance	-	NE	umhos/cm	741	631	793	657	819
Turbidity	-	NE	NTU	5	15.02	2.4	0.07	0.58
Ammonia-N	2.8	GCTL	mg/L	1.2	0.59	0.79	0.91	0.86
Chloride	250	SDWS	mg/L	41.1	44.1	39.2	45.5	35.8
Iron	300	SDWS	ug/L	**21,300**	**23,700 J**	**23,700**	**27,000**	**27,200**
Sodium	160	PDWS	mg/L	24.3	20.6	23.5	27.8	25.8
Sulfate	250	SDWS	mg/L	2.5 U	2.5 U	2.5 U	14.4	41.4
Total Dissolved Solids	500	SDWS	mg/L	481	428	**528**	434	**585**
Barium	2000	PDWS	ug/L	106	86.8	108	137	134
Copper	1000	SDWS	ug/L	3.1 I	3.1 I	2.5 U	2.5 U	2.5 U
Acetone	6300	GCTL	ug/L	5 U	6.1 I	5 U	10 U	10 U

Appendix C - Table 6
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 4 & 6 Wells
Tomoka Farms Road Landfill

Well B70-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.12	1.87	0.28	0.4	0.21
Field Temperature	-	NE	deg C	23.39	23.1	23.22	23.5	24.95
PH, FIELD	6.5-8.5	SDWS	S.U.	**5.32**	7.17	**5.18**	**5.12**	**5.57**
Specific Conductance	-	NE	umhos/cm	317	265	23.22	296	297
Turbidity	-	NE	NTU	0.12	13.86	0.71	0.4	0.11
Ammonia-N	2.8	GCTL	mg/L	0.038 I	0.02 U	0.078	0.043 I	0.028 I
Chloride	250	SDWS	mg/L	28	27.8	37	34.2	35.1
Iron	300	SDWS	ug/L	**6000**	**4190**	**6570**	**7340**	**6830**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.12	0.025 U	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	25.6	28.8	28.3	28.7	28.3
Sulfate	250	SDWS	mg/L	53.6 J	44	49.1	50.8	50.6
Total Dissolved Solids	500	SDWS	mg/L	202	159	216	220	217
Barium	2000	PDWS	ug/L	39.6	27.5	42.4	41.6	42.1
Zinc	5000	SDWS	ug/L	10 U	10 U	10 U	10 U	46
Well B73-1								
Parameter	**Limit**	**Standard**	**Unit**	**Semiannual Sampling Event**				
				May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	-	NE	mg/L	0.07	1.14	0.37	0.23	0.2
Field Temperature	-	NE	deg C	23.8	22.8	22.98	23.94	25.38
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.48**	7.02	**6.35**	**6.25**	6.64
Specific Conductance	-	NE	umhos/cm	912	411	858	722	730
Turbidity	-	NE	NTU	3.84	10.28	2.07	0.25	0.39
Ammonia-N	2.8	GCTL	mg/L	0.094	0.086	0.088	0.1	0.063
Chloride	250	SDWS	mg/L	58.7	18.6	50.6	55	33.8
Iron	300	SDWS	ug/L	**14,300**	**5,200**	**15,000**	**14,700**	**13,600**
Nitrate-N	10	PDWS	mg/L	0.025 U	0.13	0.05 U	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	49.8	31.1	51.4	47.7	41.1
Sulfate	250	SDWS	mg/L	6.2	20.6	7 I	4.6 I	7.1
Total Dissolved Solids	500	SDWS	mg/L	**502**	279	476	443	382
Barium	2000	PDWS	ug/L	59.4	40.9	59.3	54.5	52.4
Copper	1000	SDWS	ug/L	3.8 I	3.1 I	2.5 U	2.5 U	2.5 U

Appendix C - Table 6
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Zone 4 & 6 Wells
Tomoka Farms Road Landfill

Well MO5-B								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.29	0.44	0.42	0.2	0.21
Field Temperature	-	NE	deg C	22.33	21.06	22.51	23.16	23.55
PH, FIELD	6.5-8.5	SDWS	S.U.	**6.24**	**6.1**	**5.95**	**6**	**6.27**
Specific Conductance	-	NE	umhos/cm	1375	1371	1338	1139	1110
Turbidity	-	NE	NTU	2.88	0.56	0.73	0.3	0.76
Ammonia-N	2.8	GCTL	mg/L	**5.2**	1.5	1.5	1.8	1.7
Chloride	250	SDWS	mg/L	163	**475**	154	125	108
Iron	300	SDWS	ug/L	**10,900**	**11,600**	**10,500**	**9,620**	**8,650**
Nitrate-N	10	PDWS	mg/L	0.17	0.12 U	0.12	0.086 U	0.086 U
Sodium	160	PDWS	mg/L	116	149	146	140	132
Sulfate	250	SDWS	mg/L	19.6	116	42.5	57.1	62.2
Total Dissolved Solids	500	SDWS	mg/L	**806**	**838**	**832**	**788**	**817**
Barium	2000	PDWS	ug/L	247	193	182	158	166
Beryllium	4	PDWS	ug/L	0.5 U	0.5 U	0.5 U	0.7 I	0.5 U
Chromium	100	PDWS	ug/L	3.3 I	3.3 I	4.5 I	4.4 I	4.3 I
Zinc	5000	SDWS	ug/L	10 U	10.5 I	10 U	10 U	10 U

Notes:

Limit = Maximum threshold limit per regulatory standards;

NE= Not Established;

NS = Not Sampled;

PDWS = Parameter Limit is a Primary Drinking Water Standard (62-550 F.A.C.);

SDWS = Parameter Limit is a Secondary Drinking Water Standard (62-550 F.A.C.);

GCTL = Parameter Limit is a Groundwater Clean-up Target Level (62-777 F.A.C.);

I = The reported value is between the laboratory method detection method and the laboratory practical quantization limit;

J = Estimated value;

L = Off scale high. Actual value is known to be greater than the value given;

U = Indicates that the compound was analyzed for but not detected;

V = Indicated that the analyte was detected in both the sample and the associated Method Blank.

Appendix C - Table 7
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Floridan Aquifer Wells
Tomoka Farms Road Landfill

Well FA-1B								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.26	0.11	0.14	0.07	0.19
Field Temperature	-	NE	deg C	22.52	21.23	21.62	21.98	23.25
PH, FIELD	6.5-8.5	SDWS	S.U.	8.22	7.13	6.85	6.96	7.11
Specific Conductance	-	NE	umhos/cm	554	581	576	549	535
Turbidity	-	NE	NTU	1.13	0.46	0.26	0.03	0.22
Ammonia-N	2.8	GCTL	mg/L	0.02 U	0.47	0.33	0.33	0.38
Chloride	250	SDWS	mg/L	19.3	13.6	13.6	22.5	13.6
Iron	300	SDWS	ug/L	27.6 I	**584**	**485**	217	**410**
Nitrate-N	10	PDWS	mg/L	2.1	0.025 U	0.2	0.043 U	0.063
Sodium	160	PDWS	mg/L	9.9	10.4	10.1	15.8	10.4
Total Dissolved Solids	500	SDWS	mg/L	336	326	331	406	350
Barium	2000	PDWS	ug/L	111	36.5	30.4	18.2	28.4
Acetone	6300	GCTL	ug/L	5 U	5 U	5 U	10 U	14.7 I

Well FA-2C								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.05	0.14	0.19	0.22	0.22
Field Temperature	-	NE	deg C	22.64	20.77	21.65	21.73	23.29
PH, FIELD	6.5-8.5	SDWS	S.U.	7.49	7.48	7.13	7.14	7.39
Specific Conductance	-	NE	umhos/cm	734	714	732	707	712
Turbidity	-	NE	NTU	1.33	0.39	0.53	0.01	0.02
Ammonia-N	2.8	GCTL	mg/L	0.51	0.5	0.43	0.48	0.44
Chloride	250	SDWS	mg/L	70.7 J	68.4	65.1	73.4	68
Iron	300	SDWS	ug/L	**1,550**	**1,480**	**1,450**	**1,240**	**1,200**
Sodium	160	PDWS	mg/L	45.2	47.5	46	44.2	47.1
Total Dissolved Solids	500	SDWS	mg/L	417	397	427	458	449
Barium	2000	PDWS	ug/L	20.1	19.8	19.1	22	22.8
Copper	1000	SDWS	ug/L	2.5 U	2.5 U	2.5 U	3.4 I	2.5 U
Acetone	6300	GCTL	ug/L	7.5 I	5 U	5 U	10 U	10 U

Appendix C - Table 7
Summary of Detected Groundwater Parameters - May 2012 to May 2014
Floridan Aquifer Wells
Tomoka Farms Road Landfill

Well F-MB								
Parameter	Limit	Standard	Unit	Semiannual Sampling Event				
				May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	-	NE	mg/L	0.13	0.38	0.13	0.13	0.23
Field Temperature	-	NE	deg C	23.32	21.89	23.32	23.47	24.5
PH, FIELD	6.5-8.5	SDWS	S.U.	7.36	6.9	7.36	6.79	7.01
Specific Conductance	-	NE	umhos/cm	611	612	611	578	585
Turbidity	-	NE	NTU	24.8	0.87	24.8	16.85	2.32
Ammonia-N	2.8	GCTL	mg/L	0.28	0.26	0.28	0.6	0.3
Chloride	250	SDWS	mg/L	21.3	20.7	21.3	14.3	20.5
Iron	300	SDWS	ug/L	**350**	**398**	**350**	**614**	210
Nitrate-N	10	PDWS	mg/L	0.025 U	0.025 U	0.031 I	0.043 U	0.043 U
Sodium	160	PDWS	mg/L	17	16	17	9.9	16.4
Total Dissolved Solids	500	SDWS	mg/L	374	350	374	353	367
Barium	2000	PDWS	ug/L	19.9	19.4	19.9	37.9	19.3

Notes:

Limit = Maximum threshold limit per regulatory standards;

NA = Not Available;

NS = Not Sampled;

PDWS = Parameter Limit is a Primary Drinking Water Standard (62-550 F.A.C.);

SDWS = Parameter Limit is a Secondary Drinking Water Standard (62-550 F.A.C.);

GCTL = Parameter Limit is a Groundwater Clean-up Target Level (62-777 F.A.C.);

I = The reported value is between the laboratory method detection method and the laboratory practical quantization limit;

J = Estimated value;

V = Indicated that the analyte was detected in both the sample and associated Mehod Blank;

U = Indicates that the compound was analyzed for but not detected.

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-1							
Parameter	***Class III Standard**	**Unit**	**Semiannual Sampling Event**				
			May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	≥ 5	mg/L	6.2	8.55	**3.1**	5.3	6.39
Field Temperature	No Standard	deg C	27.85	18.68	24.61	22.32	30.65
PH, FIELD	6 - 8.5	S.U.	6.35	8.25	6.47	6.35	6.88
Specific Conductance	1275	umhos/cm	113	101	125	112	114
Turbidity	No Standard	NTU	10.6	6.65	7.23	2.78	0.33
Ammonia-N	No Standard	mg/L	0.18	0.02 U	0.02 U	0.02 U	0.027 I
BOD, 5 day	No Standard	mg/L	2 U	2.6	9	2 U	2 U
Chemical Oxygen Demand	No Standard	mg/L	23.7	54.2	37.5	30.9	41.5
Chlorophyll A	No Standard	ug/L	5.1	33.2	17.8	5.6	5.2
Fecal Coliforms	200	#/100 mL	4	160	1	4	7
Hardness (As CaCO3)	No Standard	mg/L	16.8	14.8	18.2	17.7	18
Iron	1000	ug/L	346	136	397	186	88.6
Nitrate-N	No Standard	mg/L	0.19	0.025 U	0.025 U	0.043 U	0.043 U
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	0.71	0.63	0.8	0.48 I	0.4 I
Phosphorus	No Standard	mg/L	0.05 U	0.05 U	0.056 I	0.055 I	0.05 U
Sodium	No Standard	mg/L	15.4	12.7	14.8	14.2	15.2
Total Dissolved Solids	No Standard	mg/L	83	83	90	88	93
Total Nitrogen	No Standard	mg/L	0.21	0.025 U	0.025 U	0.025 U	0.025 U
Total Organic Carbon	No Standard	mg/L	4.8	8.3	8.4	6.6	4.6
Total Suspended Solids	No Standard	mg/L	5 U	11	6	5 U	5 U
Barium	No Standard	ug/L	10.6	8 I	7.2 I	7.4 I	5 U
Lead	$e^{(1.273[lnH]-4.705)}$	ug/L	**0.66 I**	0.5 U	0.5 U	0.5 U	0.5 U
	Calculated	ug/L	0.33				
Mercury	0.012	ug/L	0.00163	0.00162	0.00303	0.0011	0.000794
Xylene (Total)	No Standard	ug/L	0.5 U	0.5 U	0.5 U	0.54 I	0.5 U

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-2							
Parameter	**Standard**	**Unit**	**Semiannual Sampling Event**				
			May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	≥ 5	mg/L	**4.3**	6	**4.06**	5.18	6.06
Field Temperature	No Standard	deg C	26.61	15.93	24.71	19.49	31.5
PH, FIELD	6 - 8.5	S.U.	7.71	7.42	7.28	7.35	7.43
Specific Conductance	1275	umhos/cm	569	498	543	468	438
Turbidity	No Standard	NTU	4.08	1.42	4.5	1.21	1.01
Ammonia-N	No Standard	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.026 I
BOD, 5 day	No Standard	mg/L	2 U	2 U	2.8	2 U	2 U
Chemical Oxygen Demand	No Standard	mg/L	57.8	50.5	38.4	48.9	33.5
Chlorophyll A	No Standard	ug/L	70.3	8.2	10.6	9.7	4.9
Fecal Coliforms	200	#/100 mL	36	40	8	23	8
Hardness (As CaCO3)	No Standard	mg/L	196	153	171	156	77
Iron	1000	ug/L	509	290	369	293	**1,880**
Nitrate-N	No Standard	mg/L	0.025 U	0.025 U	0.099	0.12	0.043 U
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	1	1.2	0.89	0.71	0.7
Phosphorus	No Standard	mg/L	0.076 I	0.05 U	0.062 I	0.07 I	0.05 U
Sodium	No Standard	mg/L	44.2	35.6	36	39	13.2
Total Dissolved Solids	No Standard	mg/L	334	286	309	282	278
Total Nitrogen	No Standard	mg/L	0.012 I	0.043 I	0.04 I	0.077	0.025 U
Total Organic Carbon	No Standard	mg/L	18.6	15.9	13.6	14.5	13.3
Antimony	No Standard	ug/L	0.5 U	0.5 U	0.5 U	0.8 I	0.5 U
Barium	No Standard	ug/L	35.8	33	35.9	32.3	27.9
Cadmium	No Standard	ug/L	0.05 U	0.05 U	0.05 U	0.08 I	0.05 U
Copper	$e^{(0.8545[lnH]-1.702)}$	ug/L	1.4	0.93 U	0.93 U	3.7	0.93 U
	Calculated	ug/L	16.6			13.6	
Lead	$e^{(1.273[lnH]-4.705)}$	ug/L	0.5 U	0.5 U	0.5 U	0.89 I	0.5 U
	Calculated	ug/L				5.6	
Mercury	0.012	ug/L	0.0004 I	0.0006	0.00075	0.00058	0.0005 U
Selenium	5	ug/L	0.5 U	0.5 U	0.5 U	0.72 I	0.5 U
Silver	No Standard	ug/L	0.05 U	0.05 U	0.05 U	0.057 I	0.05 U
Thallium	No Standard	ug/L	0.5 U	0.5 U	0.5 U	0.68 I	0.5 U

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-3							
Parameter	**Standard**	**Unit**	**Semiannual Sampling Event**				
			May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	≥ 5	mg/L	DRY	6	DRY	**2.3**	**0.63**
Field Temperature	No Standard	deg C	DRY	16.57	DRY	20.55	22.34
PH, FIELD	6 - 8.5	S.U.	DRY	6.99	DRY	6.21	6.38
Specific Conductance	1275	umhos/cm	DRY	332	DRY	176	202
Turbidity	No Standard	NTU	DRY	1	DRY	1.99	41.5
Ammonia-N	No Standard	mg/L	DRY	0.02 U	DRY	0.02 U	0.11
BOD, 5 day	No Standard	mg/L	DRY	2 U	DRY	3.9	30.5
Chemical Oxygen Demand	No Standard	mg/L	DRY	44.2	DRY	99.7	148
Chlorophyll A	No Standard	ug/L	DRY	5.8	DRY	7.6	20.6
Fecal Coliforms	200	#/100 mL	DRY	40	DRY	26	**240**
Hardness (As CaCO3)	No Standard	mg/L	DRY	120	DRY	61.5	139
Iron	1000	ug/L	DRY	367	DRY	**1,000**	329
Nitrate-N	No Standard	mg/L	DRY	0.025 U	DRY	0.09	0.043 U
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	DRY	0.77	DRY	1.3	2.5
Phosphorus	No Standard	mg/L	DRY	0.09 I	DRY	0.11	0.24
Sodium	No Standard	mg/L	DRY	16.3	DRY	14.4	38.8
Total Dissolved Solids	No Standard	mg/L	DRY	192	DRY	160	226
Total Organic Carbon	No Standard	mg/L	DRY	12.7	DRY	27.4	40.5
Barium	No Standard	ug/L	DRY	20	DRY	15.7	28.5
Copper	$e^{(0.8545[lnH]-1.702)}$	ug/L	DRY	0.93 U	DRY	0.93 U	1.5
	Calculated	ug/L					12.4
Lead	$e^{(1.273[lnH]-4.705)}$	ug/L	DRY	0.5 U	DRY	0.5 U	1.5
	Calculated	ug/L					4.8
Mercury	0.012	ug/L	DRY	0.00128	DRY	0.00473	**0.0122**
Zinc	No Standard	ug/L	DRY	10 U	DRY	18 I	10 U
Acetone	1700	ug/L	DRY	5 U	DRY	10 U	45.6
Toluene	No Standard	ug/L	DRY	0.5 U	DRY	0.5 U	614

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-4							
Parameter	**Standard**	**Unit**	**Semiannual Sampling Event**				
			May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	≥ 5	mg/L	DRY	**4.5**	**4.35**	**3.34**	**3.77**
Field Temperature	No Standard	deg C	DRY	17	24.53	19.83	28.69
PH, FIELD	6 - 8.5	S.U.	DRY	7.1	7.15	6.87	7.17
Specific Conductance	1275	umhos/cm	DRY	508	548	517	434
Turbidity	No Standard	NTU	DRY	6.54	7.45	7.53	0.72
Ammonia-N	No Standard	mg/L	DRY	0.027 I	0.02 U	0.02 U	0.04 I
BOD, 5 day	No Standard	mg/L	DRY	2.8	2.5	2.1	2
Chemical Oxygen Demand	No Standard	mg/L	DRY	71.5	45.1	58.3	43.9
Chlorophyll A	No Standard	ug/L	DRY	14.1	11.3	24.7	8.4
Fecal Coliforms	200	#/100 mL	DRY	20 U	40	114	38
Hardness (As CaCO3)	No Standard	mg/L	DRY	143	188	162	135
Iron	1000	ug/L	DRY	315	491	555	276
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	DRY	1.3	0.97	1.1	0.69
Phosphorus	No Standard	mg/L	DRY	0.082 I	0.08 I	0.12	0.05 U
Sodium	No Standard	mg/L	DRY	39.4	39.8	49.5	39.7
Total Dissolved Solids	No Standard	mg/L	DRY	286	318	322	282
Total Nitrogen	No Standard	mg/L	DRY	0.025 U	0.034 I	0.025 U	0.025 U
Total Organic Carbon	No Standard	mg/L	DRY	21.6	13.8	19.6	14
Total Suspended Solids	No Standard	mg/L	DRY	5.5	21.5	8	5 U
Barium	No Standard	ug/L	DRY	23.2	39.4	27.8	28.3
Mercury	0.012	ug/L	DRY	0.00145	0.00247	0.00384	0.000723
Zinc	No Standard	ug/L	DRY	10 U	10 U	10.5 I	10 U

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-5							
Parameter	**Standard**	**Unit**	**Semiannual Sampling Event**				
			May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	≥ 5	mg/L	8.36	7	6.48	5.49	10.75
Field Temperature	No Standard	deg C	28.87	17.18	24.35	20.13	32.36
PH, FIELD	6 - 8.5	S.U.	8.36	7.17	7.76	7.42	8.24
Specific Conductance	1275	umhos/cm	767	823	904	705	415
Turbidity	No Standard	NTU	8.67	8.04	19.6	3.72	4.76
Ammonia-N	No Standard	mg/L	0.21	2.4	1.7	3.2	0.043 I
BOD, 5 day	No Standard	mg/L	2.9	2 U	5.9	2.6	3.4
Chemical Oxygen Demand	No Standard	mg/L	103	81.1	98	86.2	38.1
Chlorophyll A	No Standard	ug/L	24.7	9.2	86.2	16.6	25.5
Fecal Coliforms	200	#/100 mL	10	100	12	14	2
Hardness (As CaCO3)	No Standard	mg/L	133	224	249	214	154
Iron	1000	ug/L	**1,400**	**1,490**	**1,600**	**1,630**	**1,800**
Nitrate-N	No Standard	mg/L	0.21	0.72	0.24	0.32	0.043 U
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	2.3	4.3	4	4.6	1.5
Phosphorus	No Standard	mg/L	0.28	0.05 U	0.085 I	0.083 I	0.05 U
Sodium	No Standard	mg/L	103	62.9	86.1	62	31.4
Total Dissolved Solids	No Standard	mg/L	449	471	534	442	295
Total Nitrogen	No Standard	mg/L	0.14	0.88	0.12	0.33	0.025 U
Total Organic Carbon	No Standard	mg/L	32.8	25.7	26.9	25.2	20.8
Total Suspended Solids	No Standard	mg/L	6	5 U	16.5	5 U	7.5
Unionized Ammonia-N	0.02	mg/L	**0.03 I**	0.02 U	**0.05**	**0.041 I**	0.02 U
Barium	No Standard	ug/L	34.1	55.5	75.2	58.4	30.9
Mercury	0.012	ug/L	0.00067	0.00059	0.00078	0.00111	0.000998
Nickel	$e^{(0.846[lnH]-0.0584)}$	ug/L	2.9 I	2.5 U	2.5 U	2.5 U	2.5 U
	Calculated	ug/L	59.1				
Acetone	1700	ug/L	12.8	5 U	5 U	10 U	14.4 I
Chloroform	No Standard	ug/L	0.5 U	7.9	0.5 U	0.5 U	0.5 U
Toluene	No Standard	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.72 I

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-11							
Parameter	**Standard**	**Unit**	**Semiannual Sampling Event**				
			May-12	**Nov-12**	**May-13**	**Nov-13**	**May-14**
Dissolved Oxygen	≥ 5	mg/L	8.57	7.5	**4.56**	**4.85**	6
Field Temperature	No Standard	deg C	30.33	17.94	24.02	21.54	29.56
PH, FIELD	6 - 8.5	S.U.	7.85	7.6	7.43	7.05	7.48
Specific Conductance	1275	umhos/cm	629	494	588	347	410
Turbidity	No Standard	NTU	8.14	27.8	NS	1.27	1.69
Ammonia-N	No Standard	mg/L	0.026 I	0.13	0.25	0.02 U	0.03 I
BOD, 5 day	No Standard	mg/L	2 U	5.3	3.1	2 U	2 U
Chemical Oxygen Demand	No Standard	mg/L	96.5	65.8	59.7	41.5	64.4
Chlorophyll A	No Standard	ug/L	5.8	23.6	20.6	20	7.9
Fecal Coliforms	200	#/100 mL	**400 Z**	**2,200**	200 Z	146	77
Hardness (As CaCO3)	No Standard	mg/L	150	137	163	135	149
Iron	1000	ug/L	**1,160**	630	**1,280**	160	112
Nitrate-N	No Standard	mg/L	0.14	0.058	0.1	0.043 U	0.043 U
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	1.3	1.5	1.5	0.71	0.87
Phosphorus	No Standard	mg/L	0.21	0.089 I	0.11	0.05 U	0.05 U
Sodium	No Standard	mg/L	74.1	34.2	46	17.3	28.5
Total Dissolved Solids	No Standard	mg/L	387	305	385	219	283
Total Nitrogen	No Standard	mg/L	0.014 I	0.1	0.039 I	0.025 U	0.025 U
Total Organic Carbon	No Standard	mg/L	32.9	18.2	17.6	12.7	14.9
Total Suspended Solids	No Standard	mg/L	5 U	18.5	45.5	5 U	5 U
Antimony	No Standard	ug/L	0.5 U	0.85 I	1	0.5 U	0.54 I
Barium	No Standard	ug/L	27.8	31.3	38.1	23.6	22.4
Beryllium	0.13	ug/L	0.05 U	0.062 I	0.11	0.05 U	0.05 U
Lead	$e^{(1.273[lnH]-4.705)}$	ug/L	0.5 U	0.95 I	1.8	0.5 U	0.5 U
	Calculated	ug/L		4.7	5.9		
Mercury	0.012	ug/L	0.00069	0.00214	0.00457	0.00179	0.00131
Nickel	$e^{(0.846[lnH]-0.0584)}$	ug/L	2.5 U	2.5 U	3 I	2.5 U	2.5 U
	Calculated	ug/L			70.2		
Selenium	5	ug/L	0.5 U	0.72 I	0.96 I	0.5 U	0.5 U
Vanadium	No Standard	ug/L	5 U	5 U	8.2 I	5 U	5 U
Acetone	1700	ug/L	11	5 U	5 U	10 U	10 U

Appendix C - Table 8
Summary of Detected Surface Water Parameters - May 2012 to May 2014
Tomoka Farms Road Landfill

Surface Water Sampling Location SW-12							
Parameter	Standard	Unit	Semiannual Sampling Event				
			May-12	Nov-12	May-13	Nov-13	May-14
Dissolved Oxygen	≥ 5	mg/L	6.97	8.02	**4.43**	5.38	7.2
Field Temperature	No Standard	deg C	28.74	18.71	23.53	22.25	38.42
PH, FIELD	6 - 8.5	S.U.	**8.67**	8.06	7.73	7.81	8.06
Specific Conductance	1275	umhos/cm	648	583	615	532	501
Turbidity	No Standard	NTU	6.27	14.9	32.6	5.46	1.76
Ammonia-N	No Standard	mg/L	0.028 I	0.13	0.085	0.071	0.028 I
Chemical Oxygen Demand	No Standard	mg/L	90.3	63.6	58	53.1	26.8
Chlorophyll A	No Standard	ug/L	12.8	13.6	16.1	6.9	3.4
Fecal Coliforms	200	#/100 mL	6	**300**	1 U	80	4
Hardness (As CaCO3)	No Standard	mg/L	165	153	162	172	171
Iron	1000	ug/L	59.8	318	822	134	29.3 I
Nitrate-N	No Standard	mg/L	0.14	0.099	0.099	0.17	0.043 U
Nitrogen, Kjeldahl (Total)	No Standard	mg/L	1.5	1.4	1.3	0.95	0.74
Phosphorus	No Standard	mg/L	0.23	0.052 I	0.095 I	0.05 U	0.05 U
Sodium	No Standard	mg/L	62.5	43.8	47.9	41.6	37.8
Total Dissolved Solids	No Standard	mg/L	399	342	397	336	333
Total Nitrogen	No Standard	mg/L	0.028 I	0.13	0.041 I	0.17 J	0.025 U
Total Organic Carbon	No Standard	mg/L	24.1	18.6	16.9	14.8	12.6
Total Suspended Solids	No Standard	mg/L	9	6.5	11.5	7	5 U
Antimony	4300	ug/L	0.98 I	1.1	1.1	0.87 I	0.93 I
Barium	No Standard	ug/L	19.2	28.8	27.7	32.4	17.6
Beryllium	0.13	ug/L	0.05 U	0.05 U	0.079 I	0.05 U	0.05 U
Lead	$e^{(1.273[lnH]-4.705)}$	ug/L	0.5 U	0.68 I	1.4	0.5 U	0.5 U
	Calculated	ug/L		5.5	5.9		
Mercury	0.012	ug/L	0.00115	0.00142	0.00418	0.00074	0.000646
Nickel	$e^{(0.846[lnH]-0.0584)}$	ug/L	3.8 I	2.5 U	3 I	2.5 U	2.5 U
	Calculated	ug/L	70.9		69.8		
Selenium	5	ug/L	0.5 U	0.69 I	0.81 I	0.56 I	0.61 I
Vanadium	No Standard	ug/L	7.2 I	5.2 I	7.9 I	5 U	5 U
Acetone	1700	ug/L	5 U	5 U	5 U	10 U	10.4 I
Toluene	No Standard	ug/L	0.5 U	0.5 U	1.5	0.5 U	0.5 U
Xylene (Total)	No Standard	ug/L	0.5 U	0.5 U	0.86 I	0.5 U	0.5 U

Notes:

Results in Bold numbers were above the standard;

* Surface water Class III standards (62-320-530 F.A.C.);

I = The reported value is between the laboratory method detection method and the laboratory practical quantization limit;

J = Estimated value;

U = Indicates that the compound was analyzed for but not detected;

Z = Too many colonies were present. The number value represents the estimated colony count from the highest dilution used in this test.

Table 9 - APPENDIX C
Total Dissolved Solids/Specific Conductance (TDS/SC) Ratio

Well ID	Monitoring Period				
	12-May	Nov-12	May-13	Nov-13	May-14
	TDS/SC Ratio (mg.cm/L.µmhos)				
Zone 1-2					
B11	0.92	0.97	0.78	0.92	0.93
B33-2	0.70	0.68	0.96	0.46	0.77
B34-2	0.67	0.60	0.65	0.83	0.79
B35-2	0.75	0.67	0.73	0.70	0.75
B37-2	0.58	0.63	0.62	0.72	0.67
B38-2	0.65	0.71	0.74	0.73	0.74
B39	Dry	1.08	0.75	1.34	1.39
B40-2	0.72	0.74	0.71	0.74	0.72
B41-2	0.71	0.68	0.64	0.77	0.72
B42-2	Dry	0.72	0.76	0.75	0.70
B43-2	0.58	0.61	0.66	0.71	0.78
B44	0.67	0.71	0.65	0.81	0.77
B45-2	0.69	0.64	0.68	0.80	0.85
B59-2R	0.61	0.69	0.65	0.77	0.68
B61R	0.52	0.55	0.54	0.57	0.63
B62-2R	0.55	0.62	0.59	0.61	0.68
B63-2	0.58	0.57	0.55	0.63	0.63
B64	0.59	0.68	0.61	0.66	0.68
B65	0.73	0.71	0.71	0.79	0.72
B66	0.58	0.55	0.60	0.64	0.64
B70-2	0.61	0.55	0.59	0.69	0.71
B71	0.66	0.73	0.75	0.84	0.90
B72	0.63	0.65	0.64	0.70	0.68
B73-2	0.67	0.69	0.91	0.79	0.70
B74	0.75	0.79	0.63	0.66	0.65
B75	0.56	0.58	0.62	0.62	0.60

Table 9 - APPENDIX C
Total Dissolved Solids/Specific Conductance (TDS/SC) Ratio

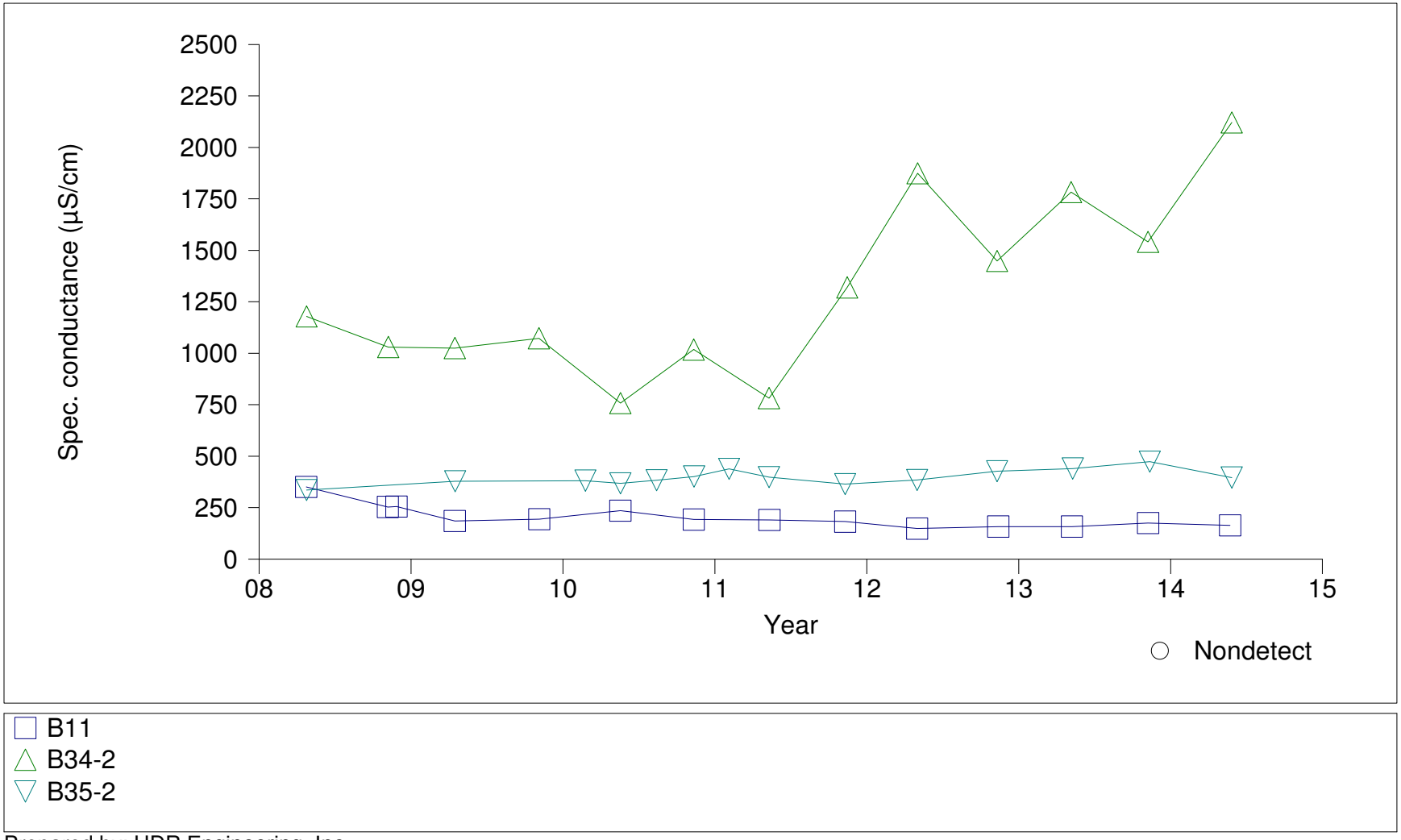
Well ID	Monitoring Period				
	12-May	Nov-12	May-13	Nov-13	May-14
	TDS/SC Ratio (mg.cm/L.µmhos)				
Zone 4 & 6					
B1-B	0.55	0.51	0.55	0.69	0.63
B-2	0.72	0.71	0.71	0.84	0.81
B-32	0.66	0.61	0.65	0.80	0.72
B33-1	0.77	0.73	0.73	0.86	0.77
B34-1	0.62	0.65	0.66	0.74	0.73
B35-1	0.69	0.68	0.67	0.79	0.74
B36	0.60	0.61	0.64	0.72	0.69
B37-1	0.70	0.59	0.61	0.67	0.64
B38-1	0.59	0.64	0.60	0.74	0.72
B40-1	0.69	0.65	0.66	0.74	0.77
B41-1	0.50	0.48	0.50	0.54	0.58
B42-1	0.61	0.68	0.69	0.86	0.76
B43-1	0.53	0.56	0.53	0.59	0.60
B45-1	0.56	1.16	0.59	0.60	0.66
B-5	0.56	0.56	0.57	0.64	0.61
B59-1R	0.57	0.59	0.60	0.66	0.64
B60	0.58	0.57	0.59	0.65	0.64
B62-1R	0.45	0.60	0.49	0.51	0.58
B63-1	0.63	0.61	0.60	0.66	0.68
B68	0.65	0.68	0.67	0.66	0.71
B70-1	0.64	0.60	9.30	0.74	0.73
B73-1	0.55	0.68	0.55	0.61	0.52
B8-2	0.69	0.73	0.71	0.90	0.87
MO5-B	0.59	0.61	0.62	0.69	0.74
B8	0.66	0.67	0.65	0.78	0.70
Floridan Aquifer					
FA-1B	0.61	0.56	0.57	0.74	0.65
FA-2C	0.57	0.56	0.58	0.65	0.63
F-MB	0.61	0.57	0.60	0.61	0.63

APPENDIX D

TIME SERIES GRAPHS

TOMOKA FARMS ROAD LANDFILL

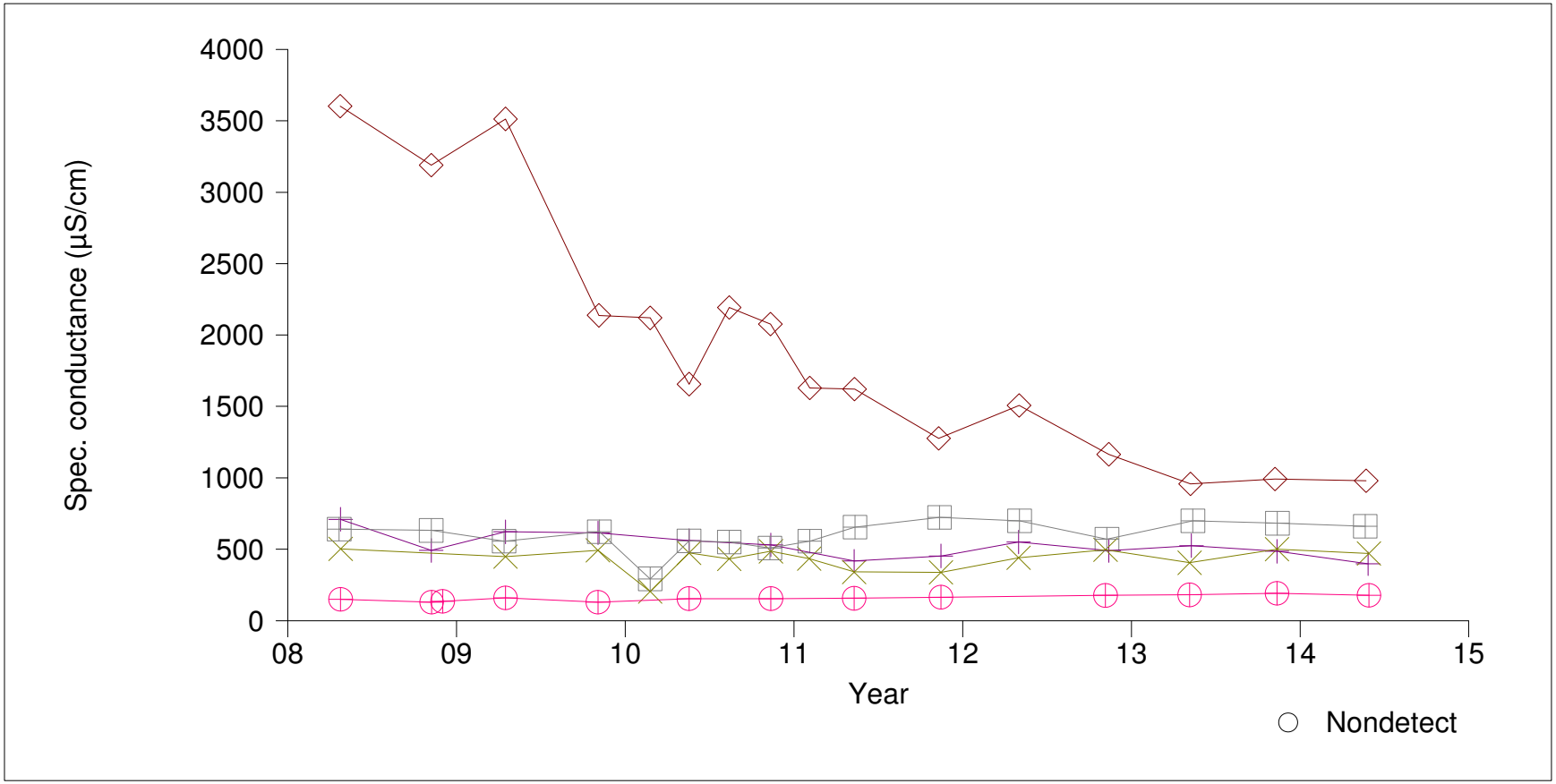
Time Series Plot for Specific Conductance, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

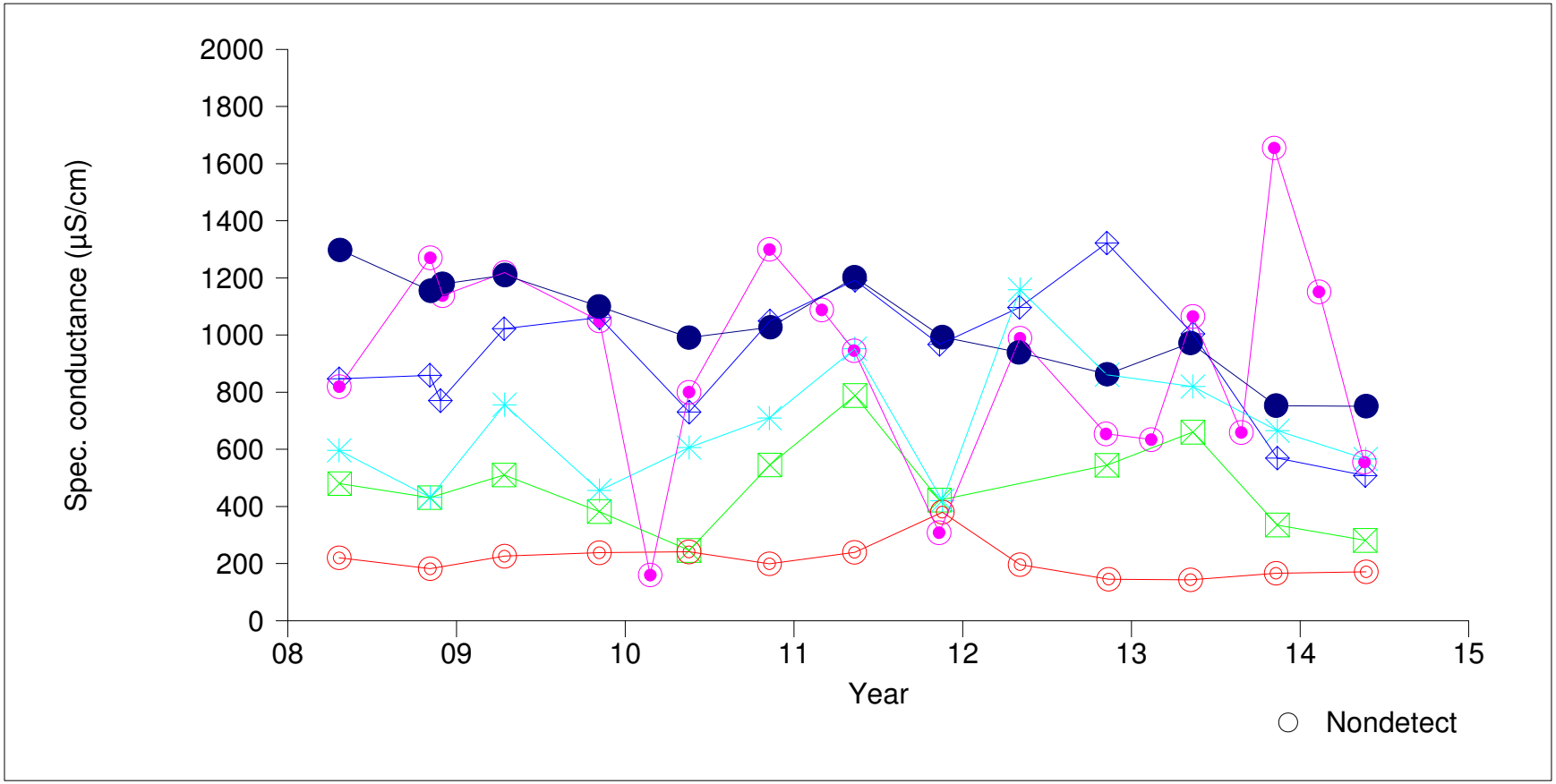
Time Series Plot for Specific Conductance, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

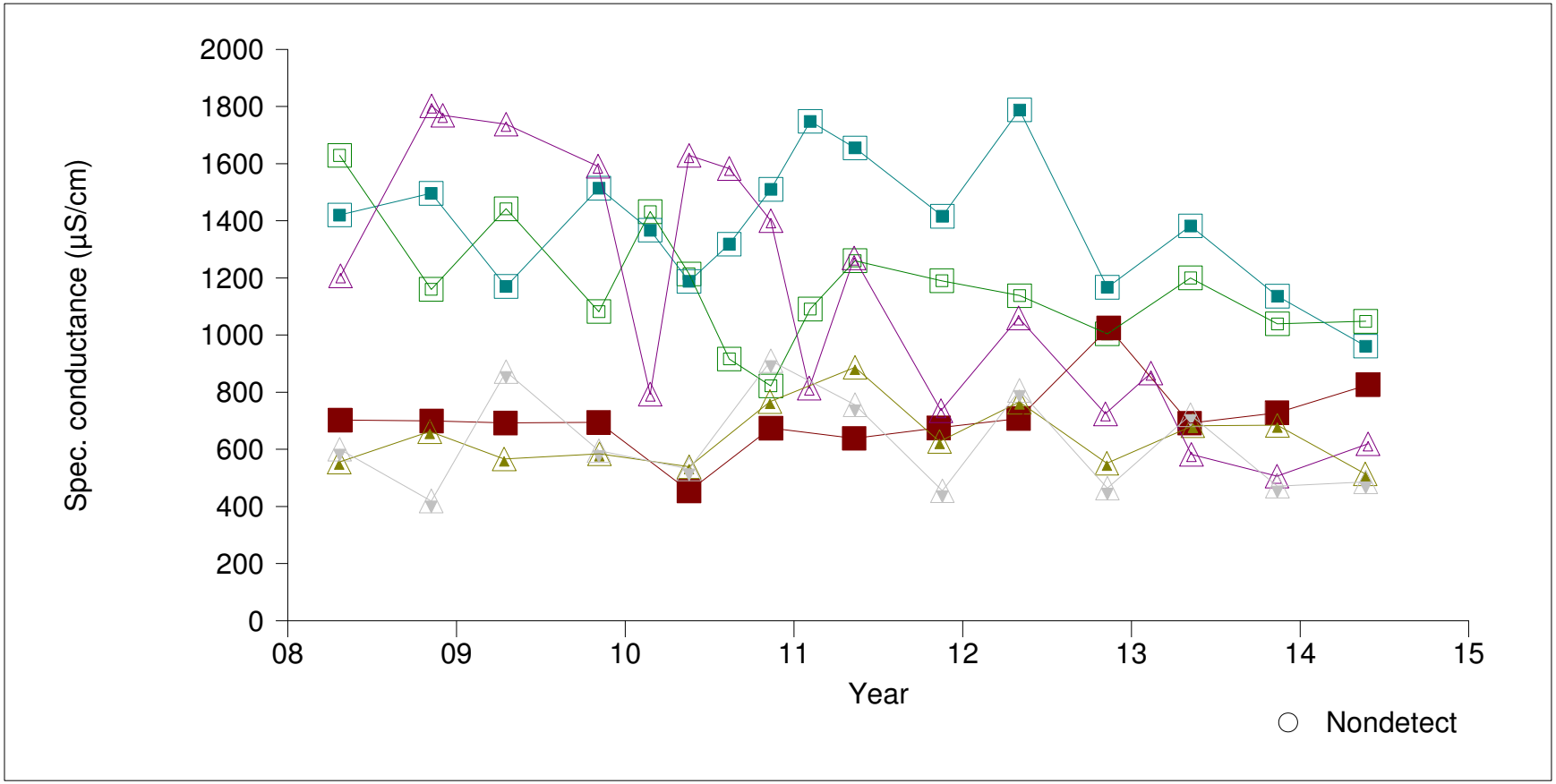
Time Series Plot for Specific Conductance, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

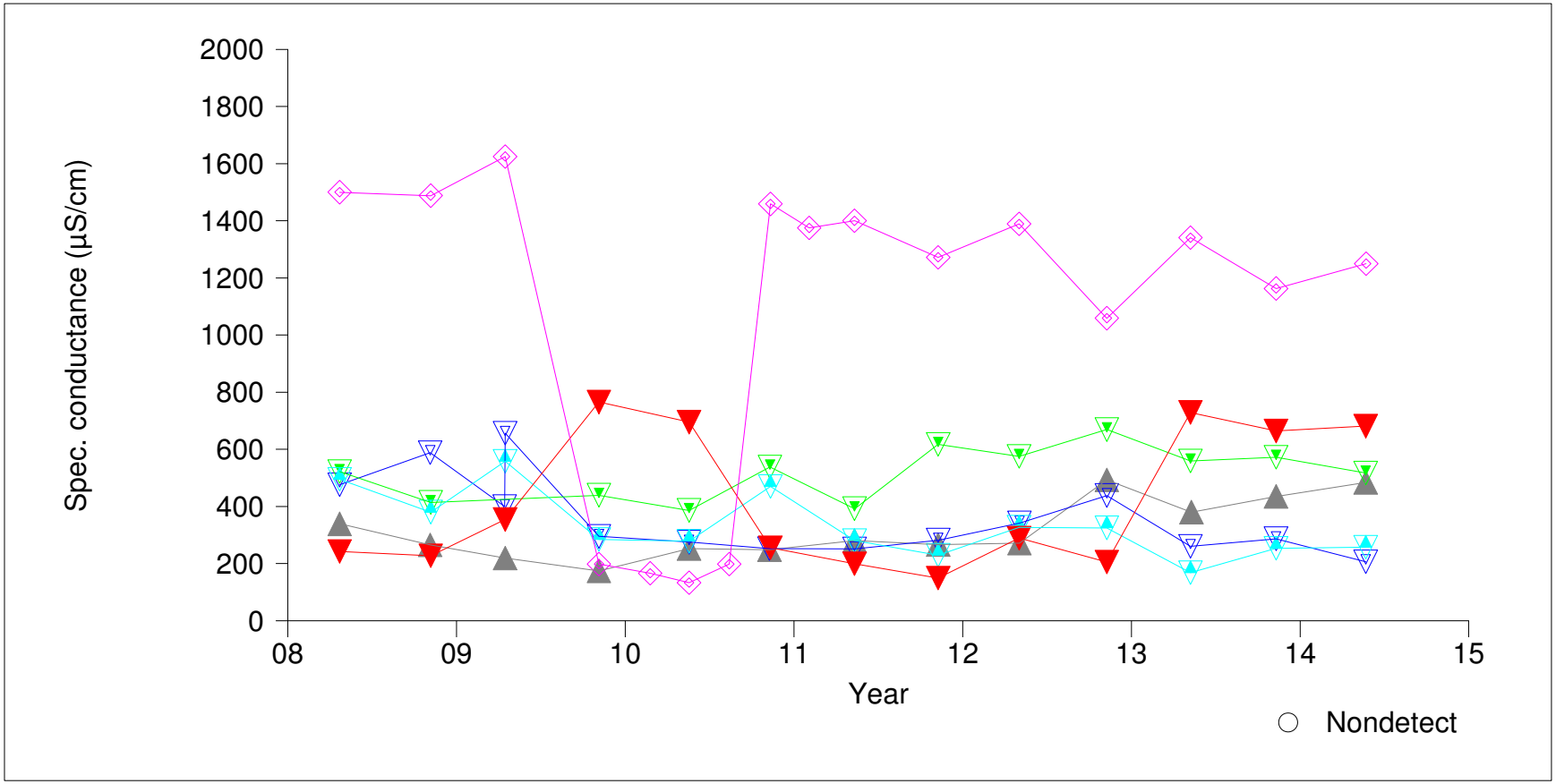
Time Series Plot for Specific Conductance, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

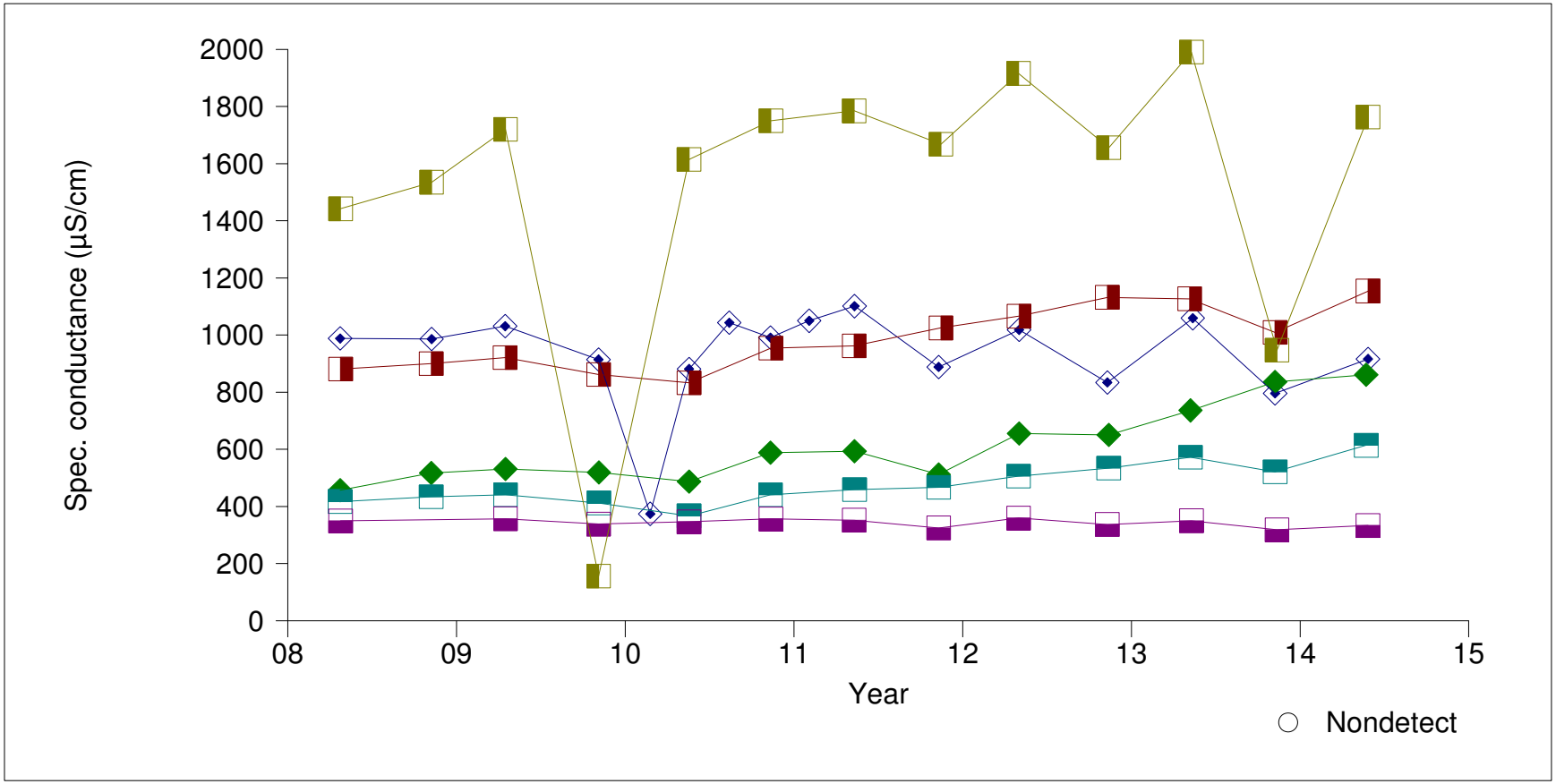
Time Series Plot for Specific Conductance, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

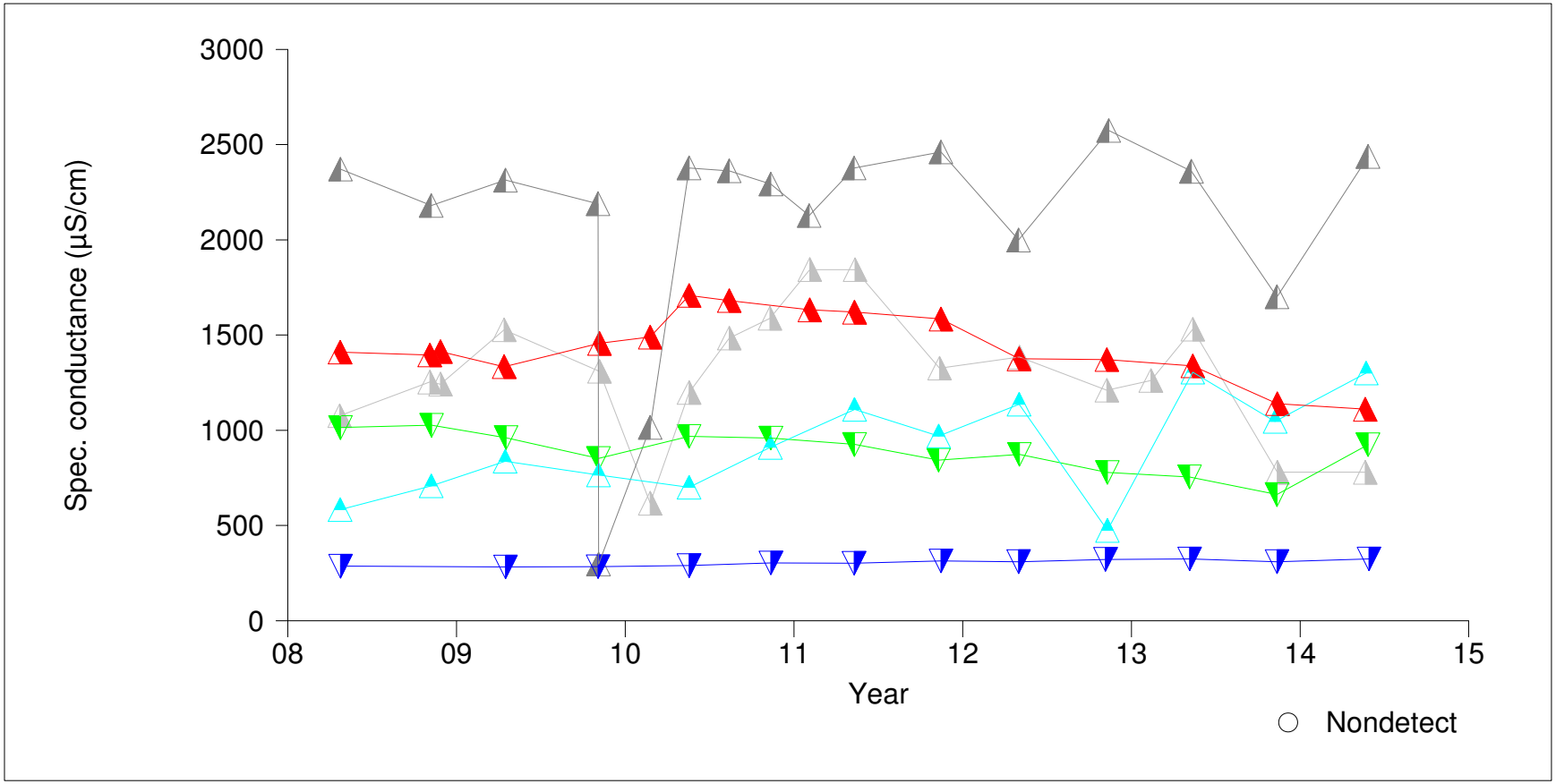
Time Series Plot for Specific Conductance, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

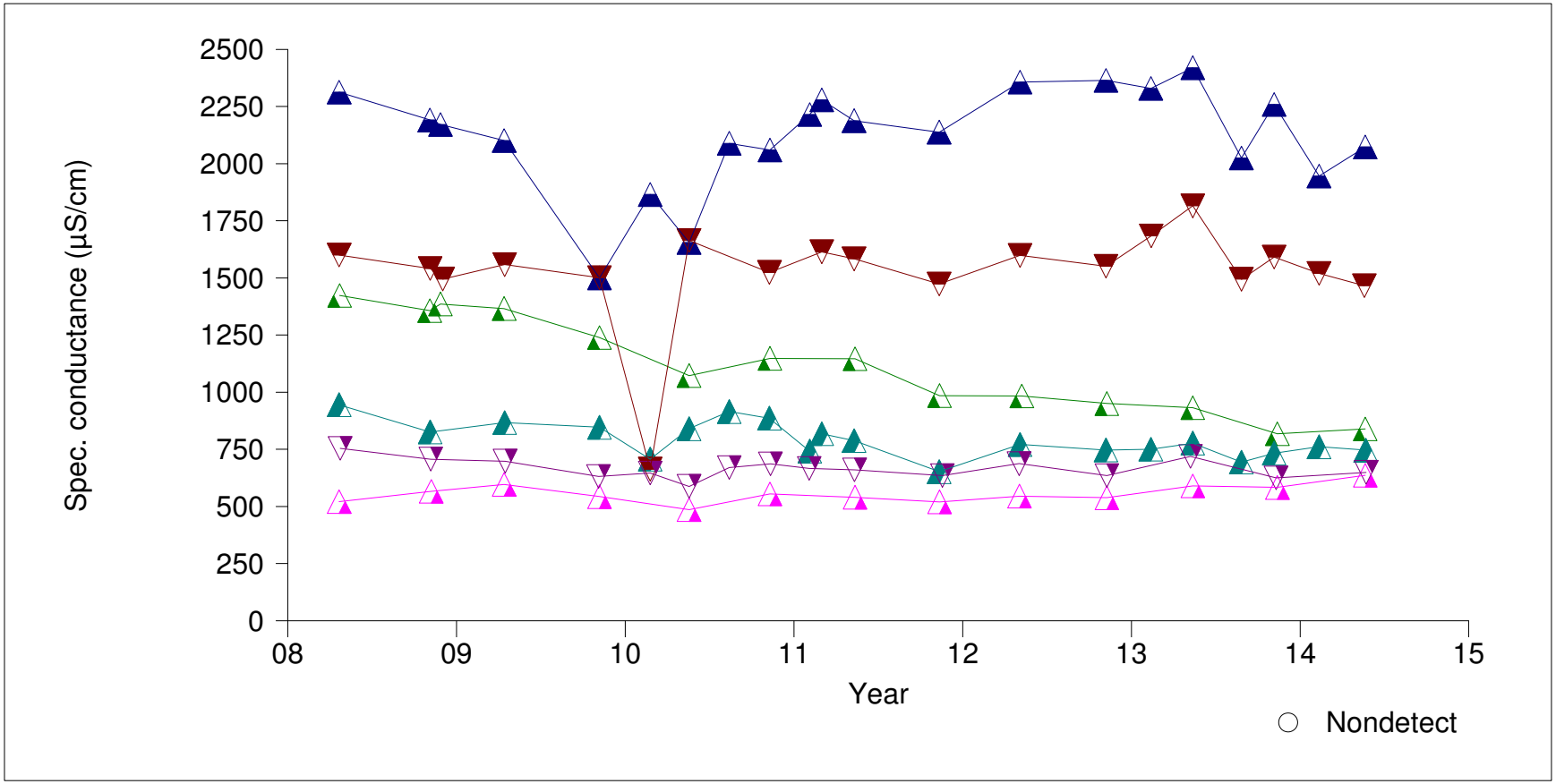
Time Series Plot for Specific Conductance, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

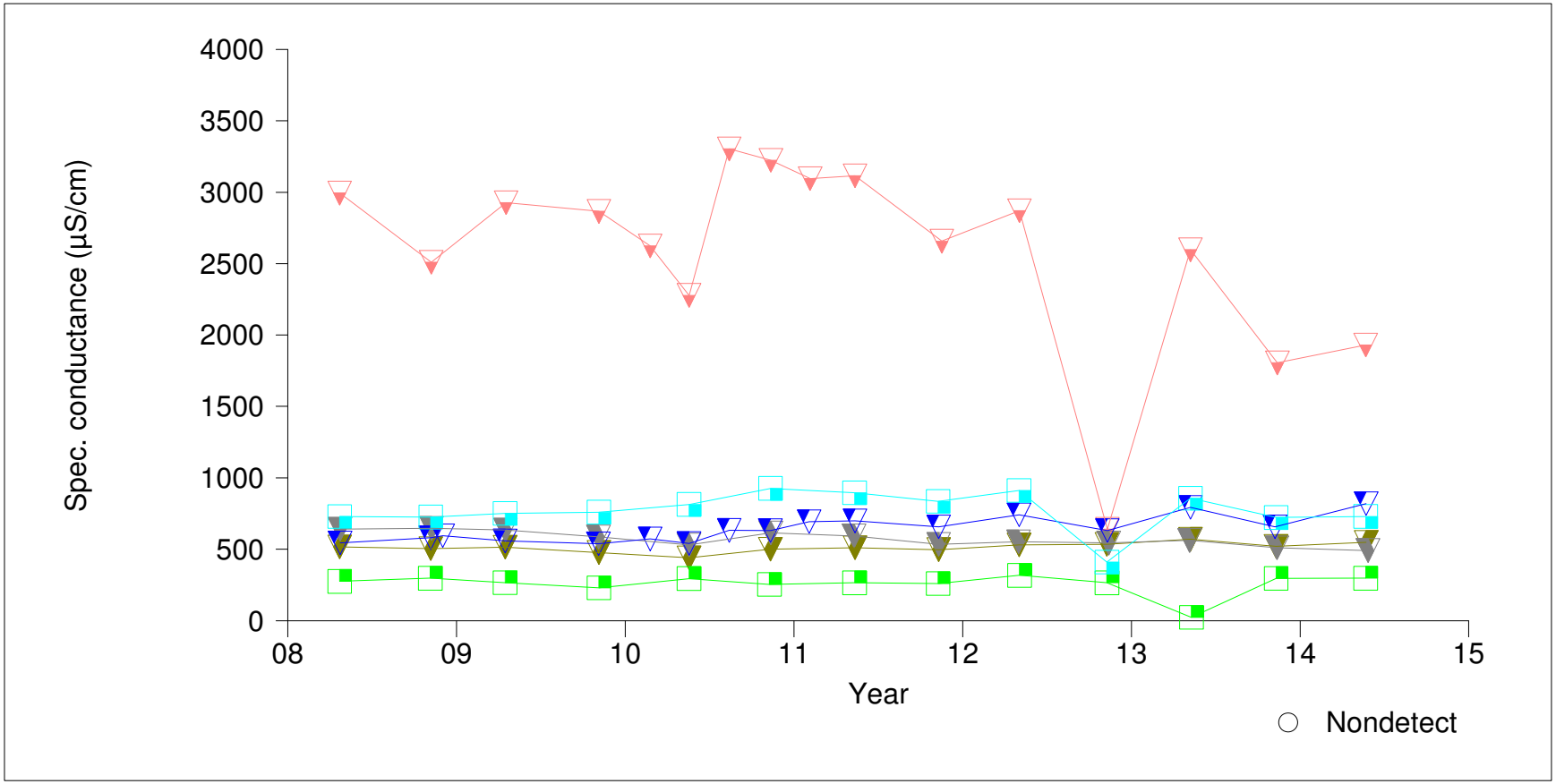
Time Series Plot for Specific Conductance, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

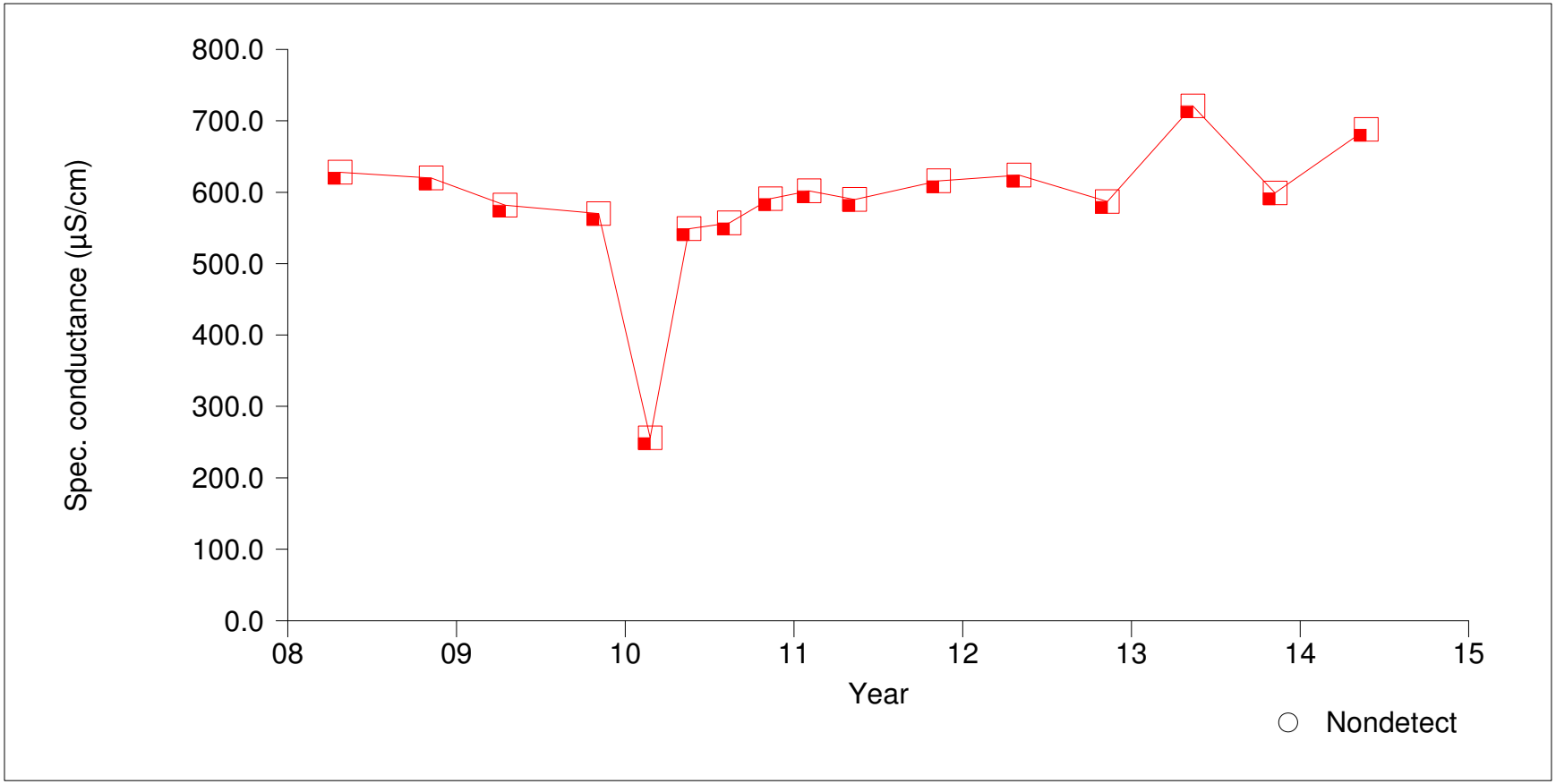
Time Series Plot for Specific Conductance, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

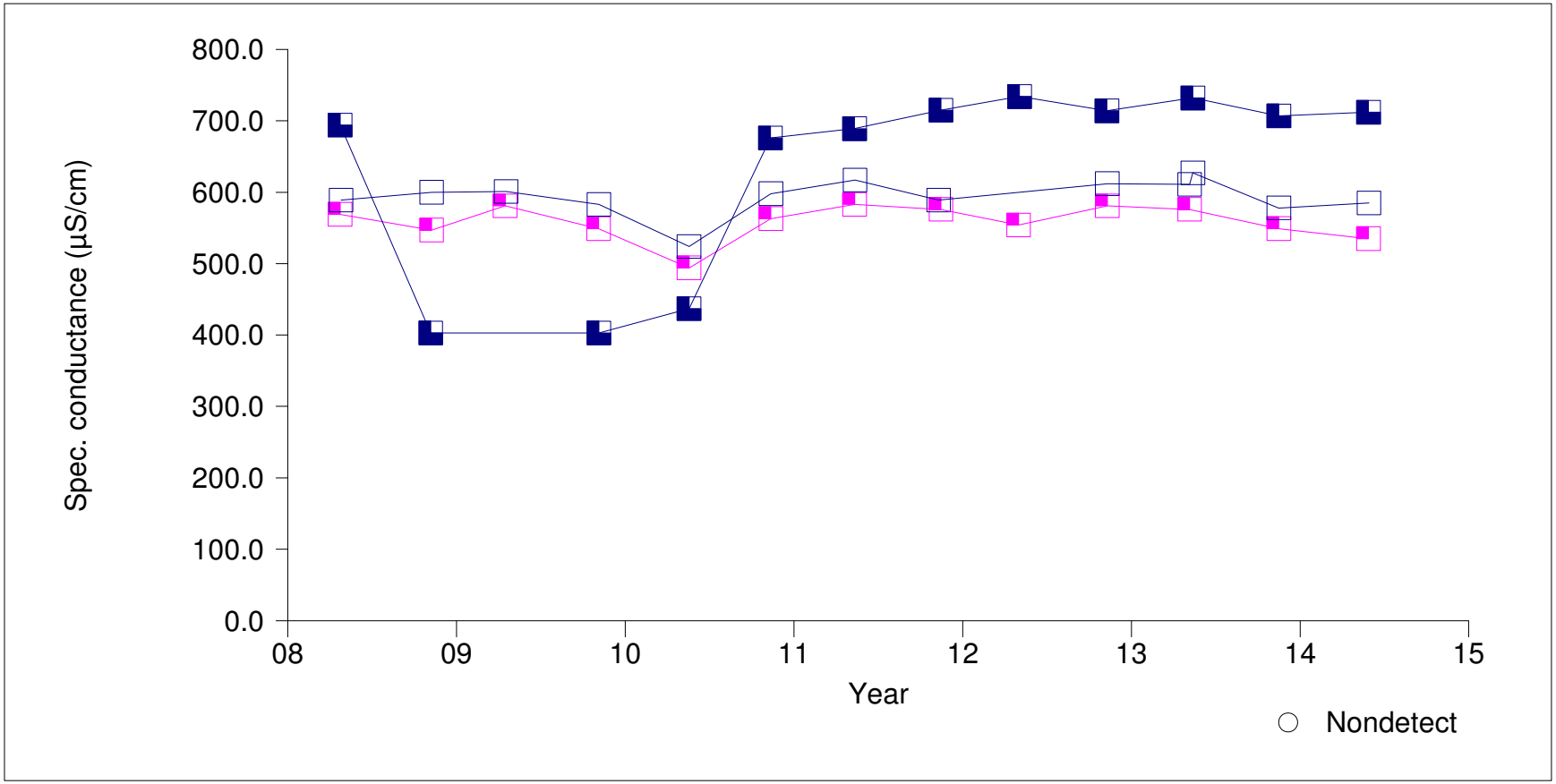
Time Series Plot for Specific Conductance, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

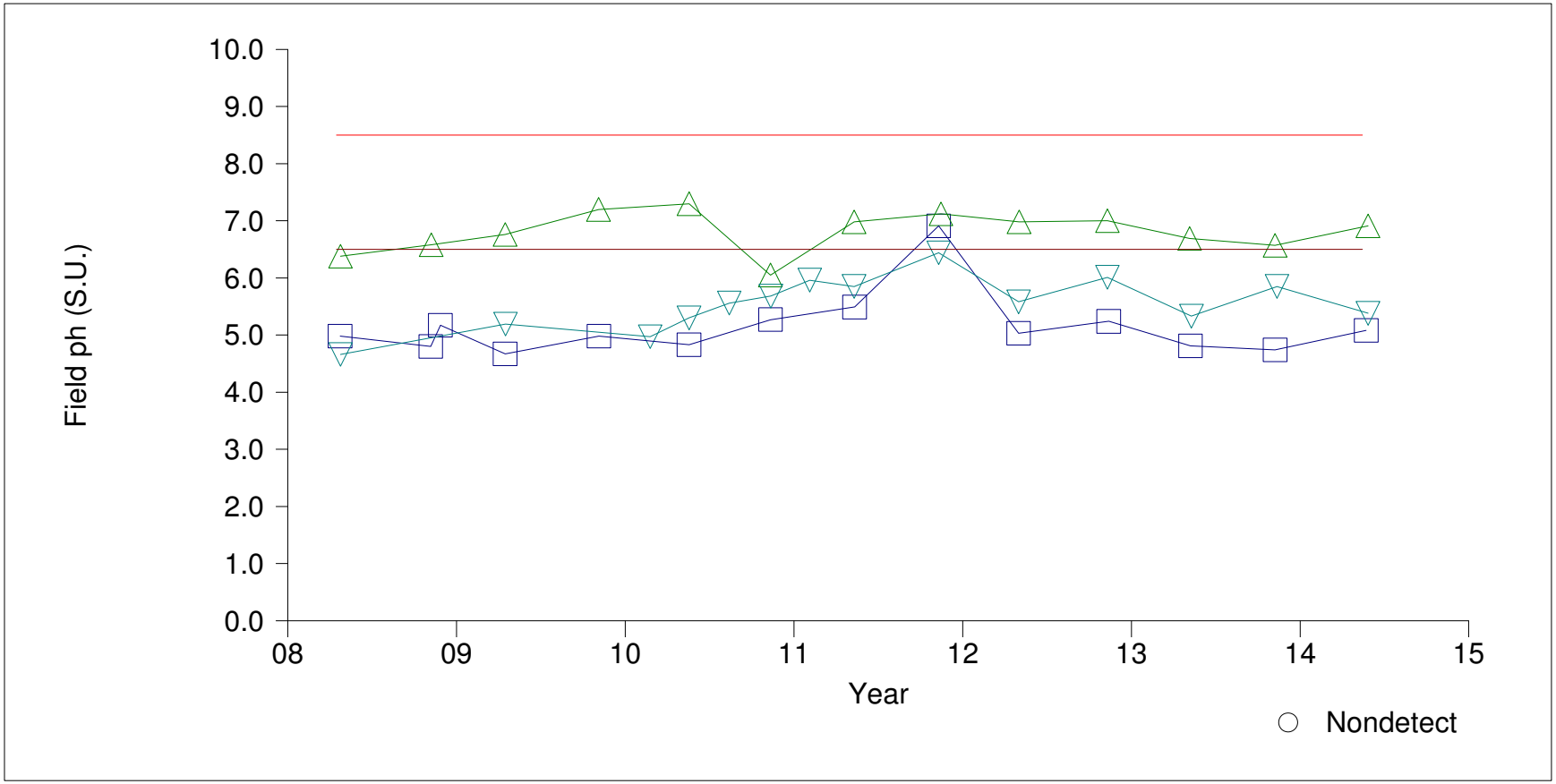
Time Series Plot for Specific Conductance, Floridan Aquifer



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

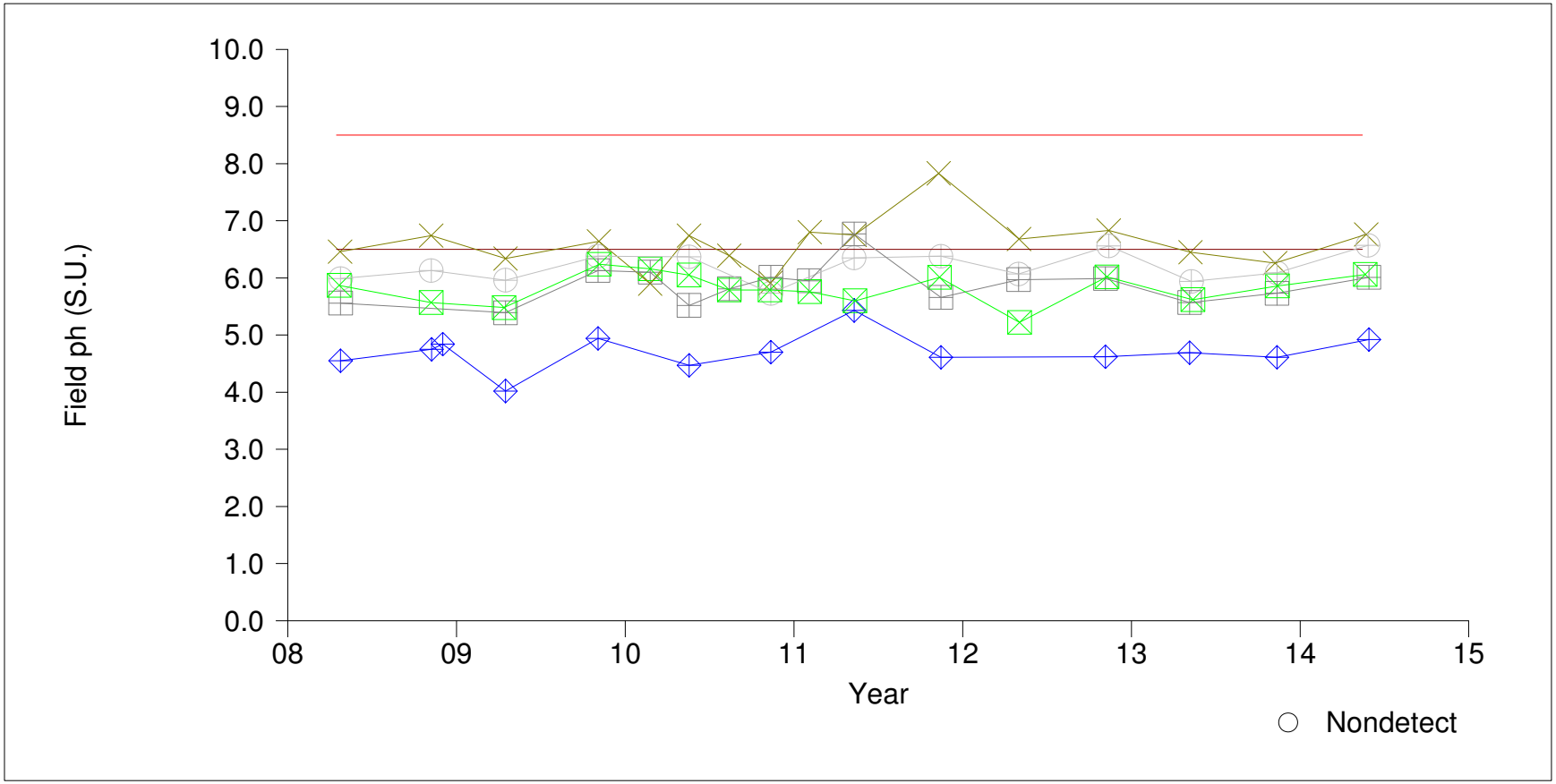
Time Series Plot for Field pH, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

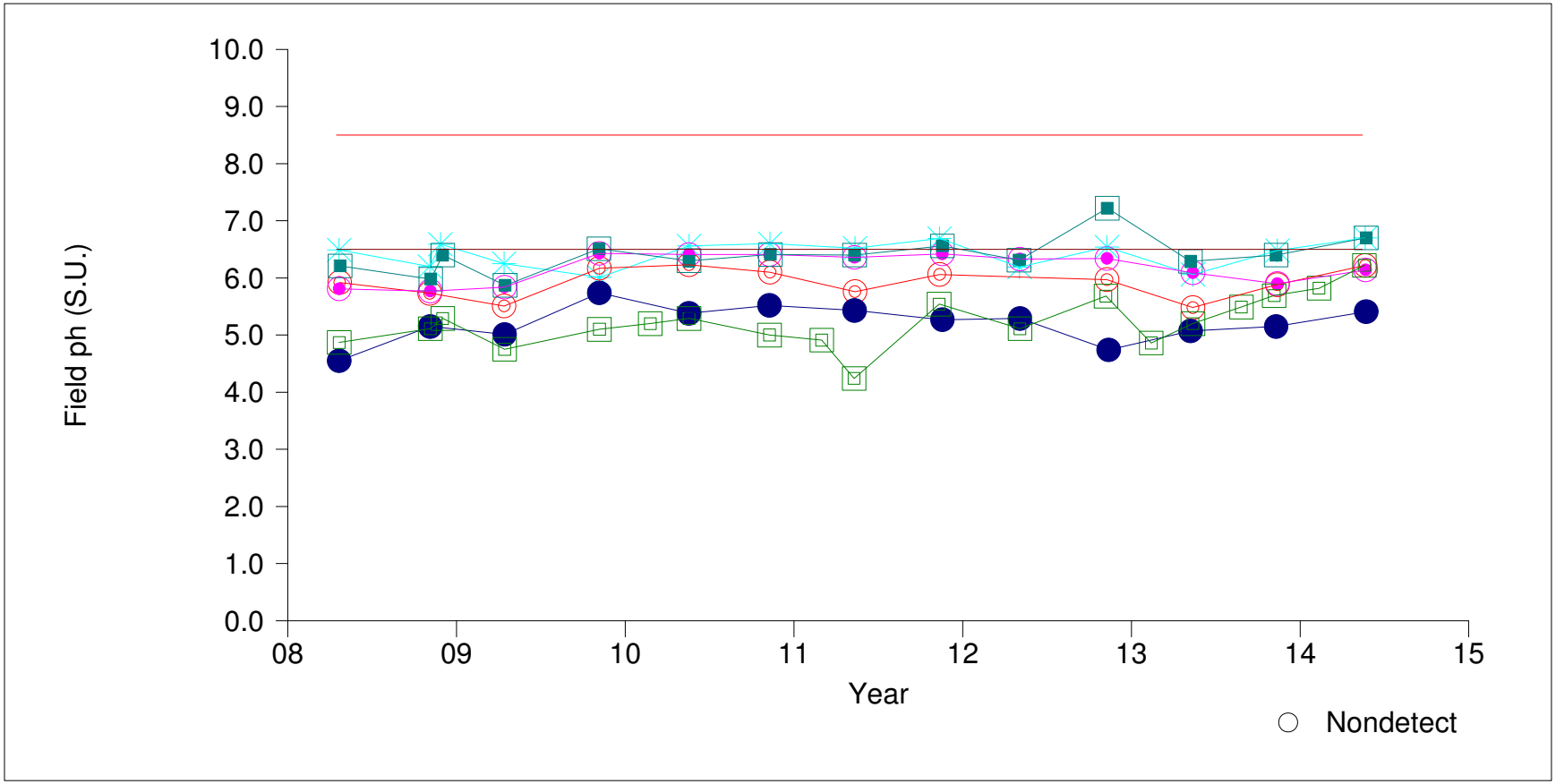
Time Series Plot for Field pH, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

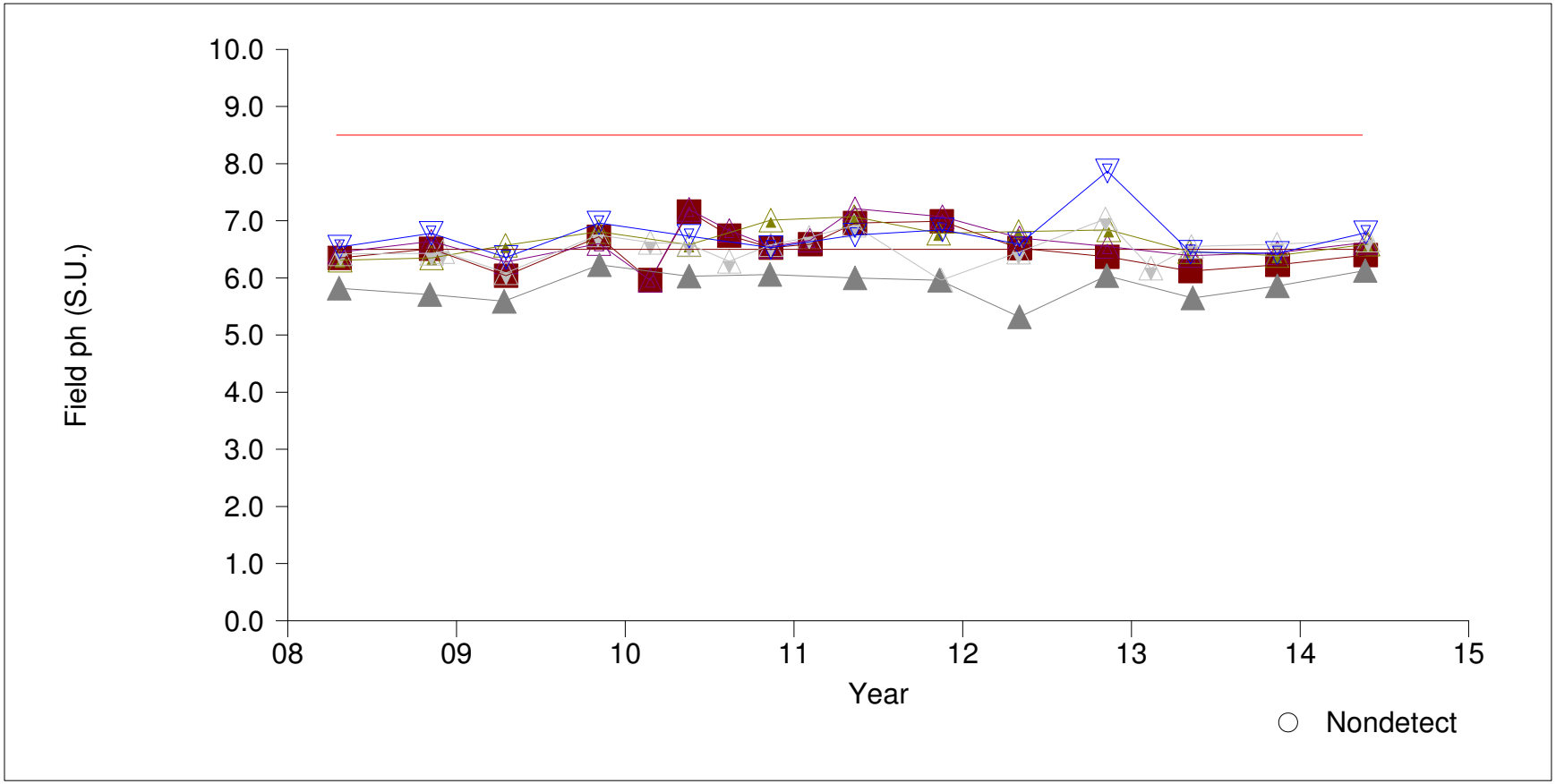
Time Series Plot for Field pH, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

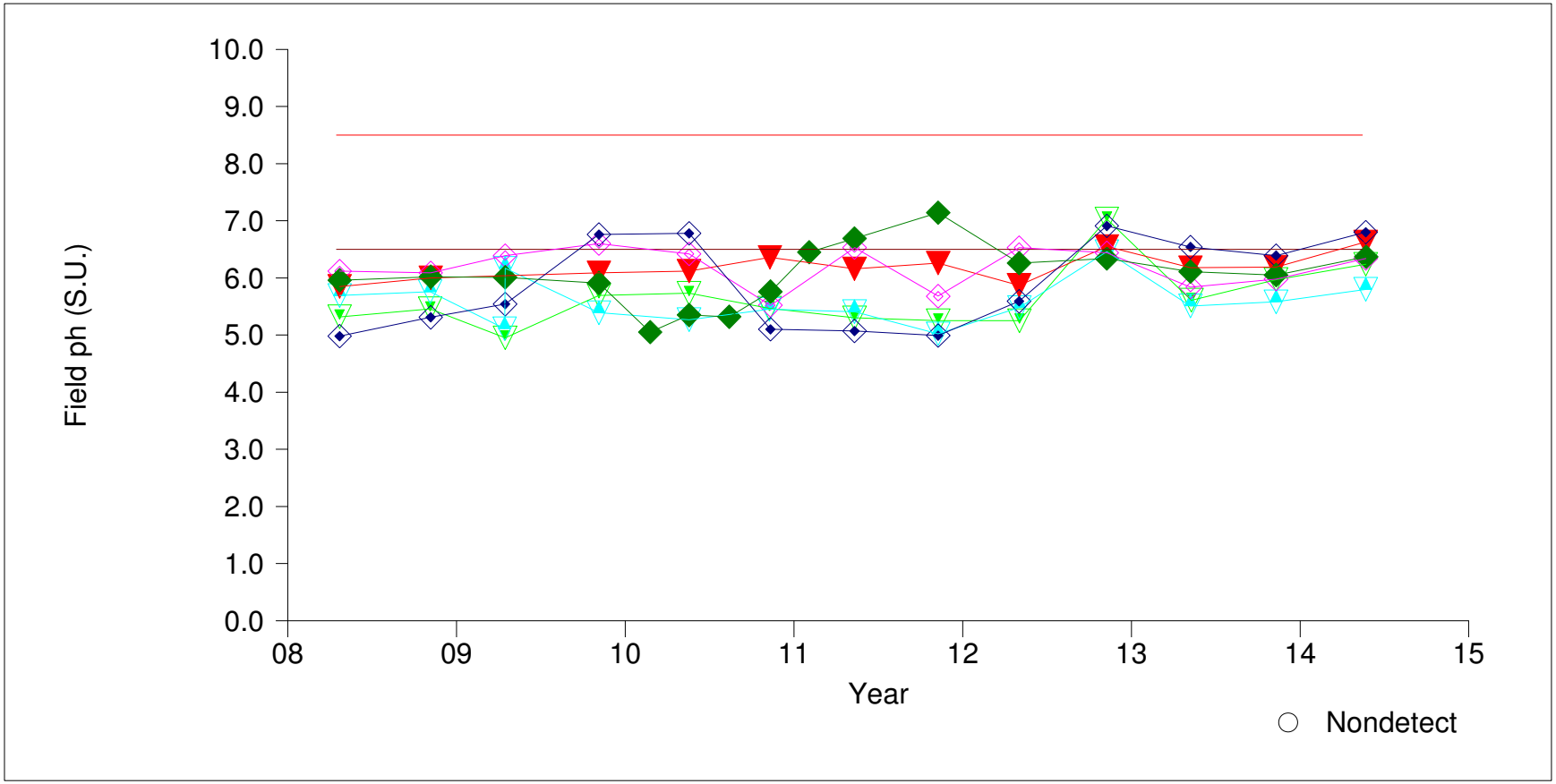
Time Series Plot for Field pH, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

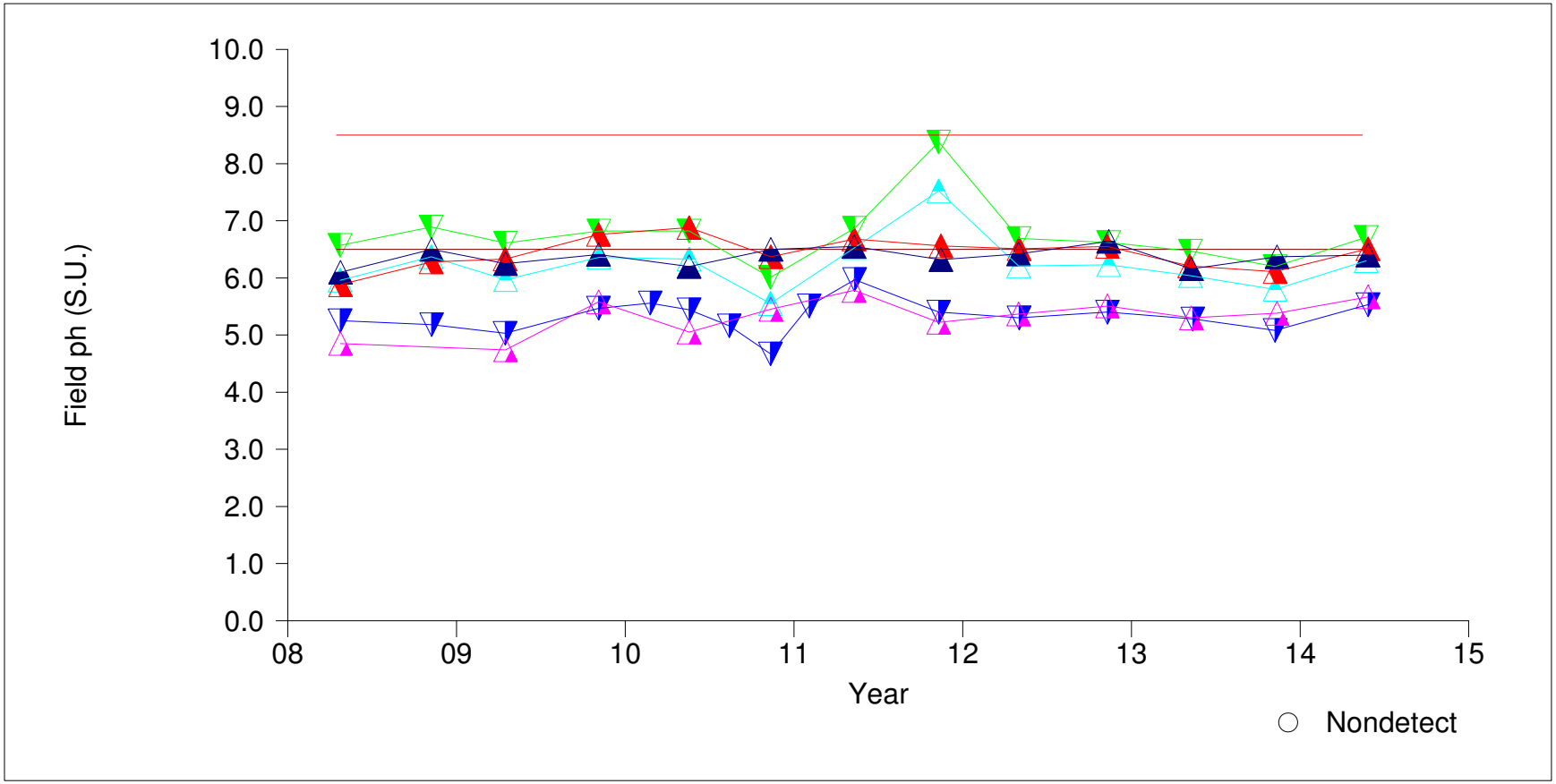
Time Series Plot for Field pH, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

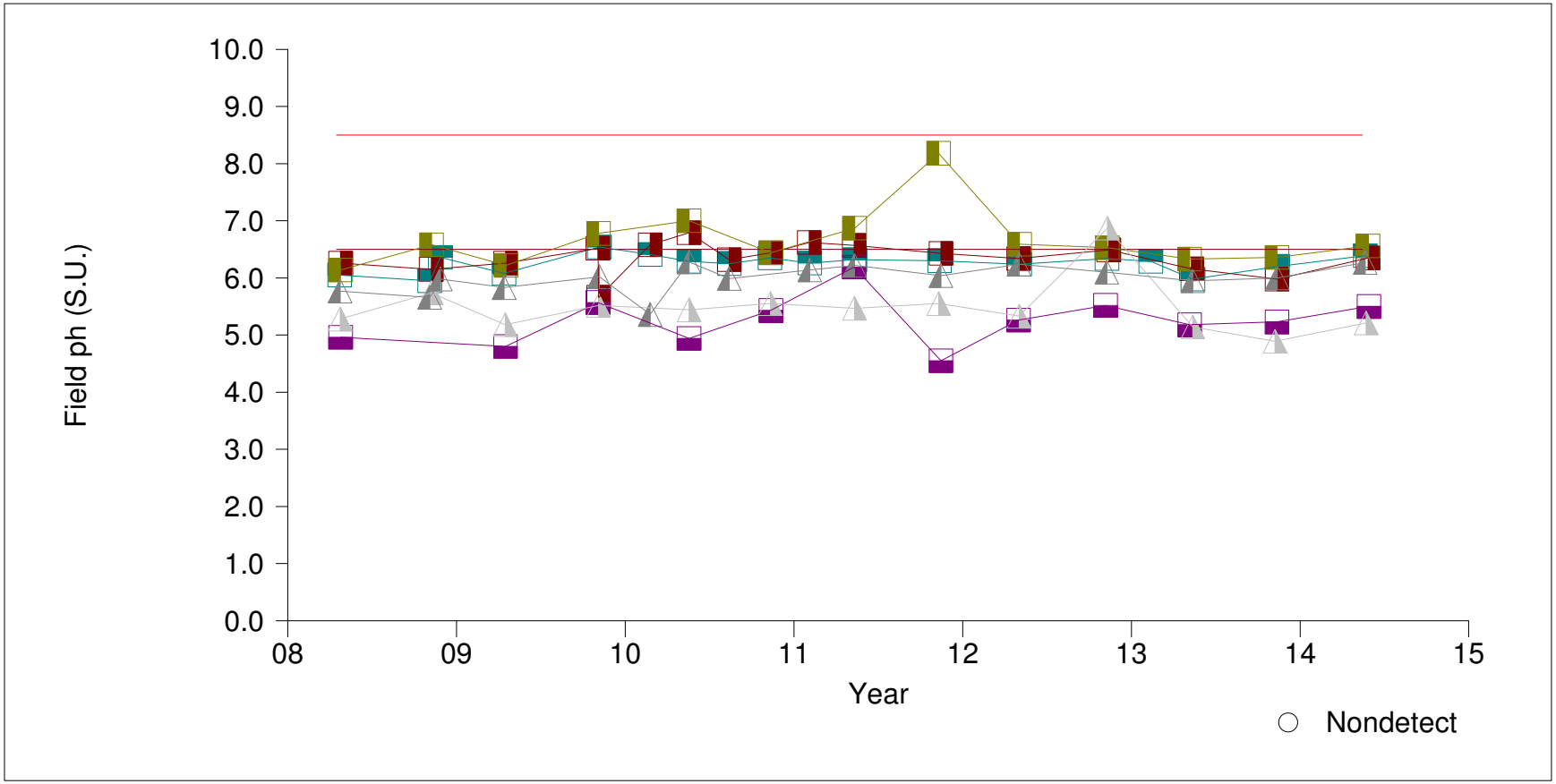
Time Series Plot for Field pH, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

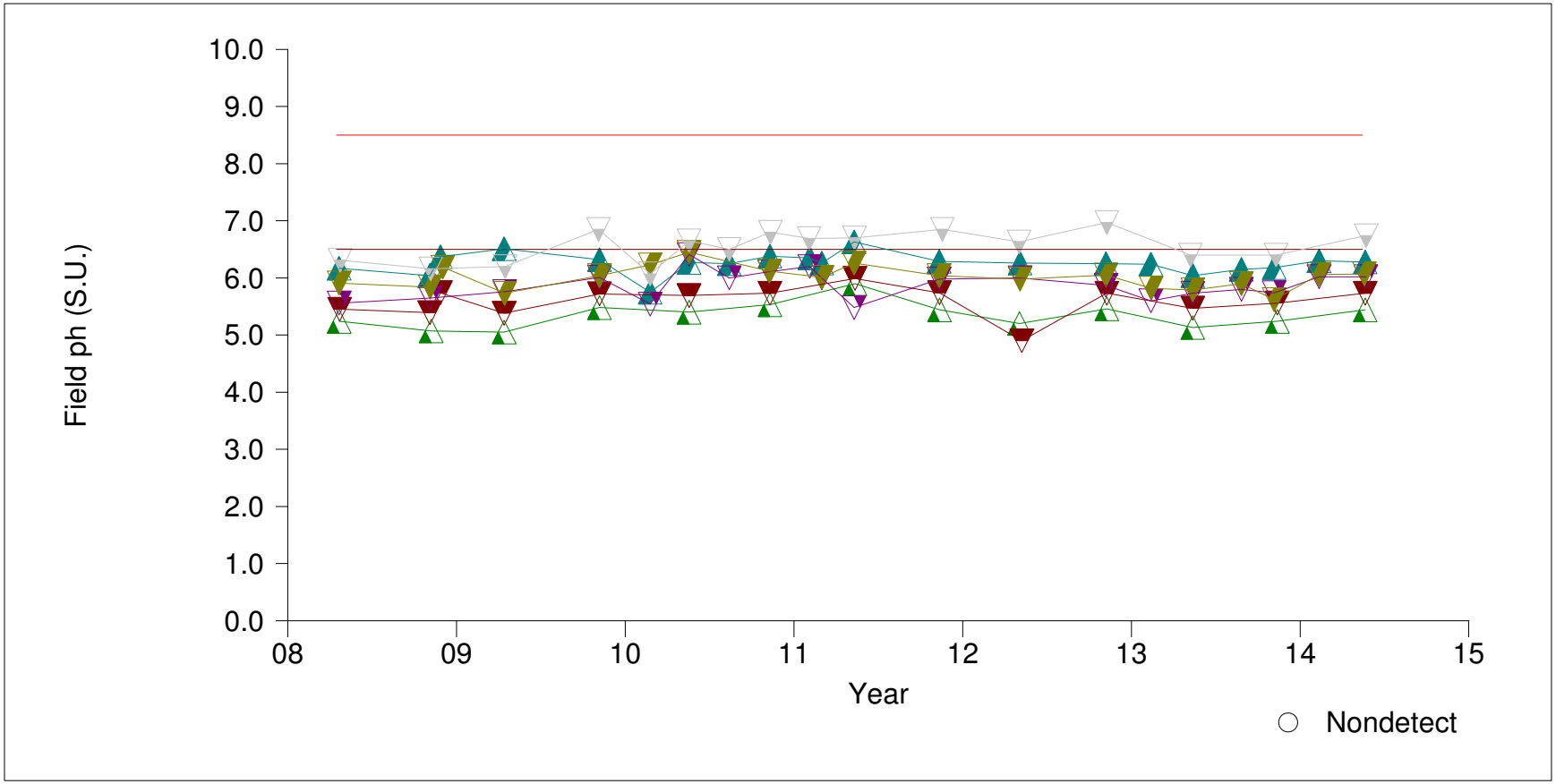
Time Series Plot for Field pH, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

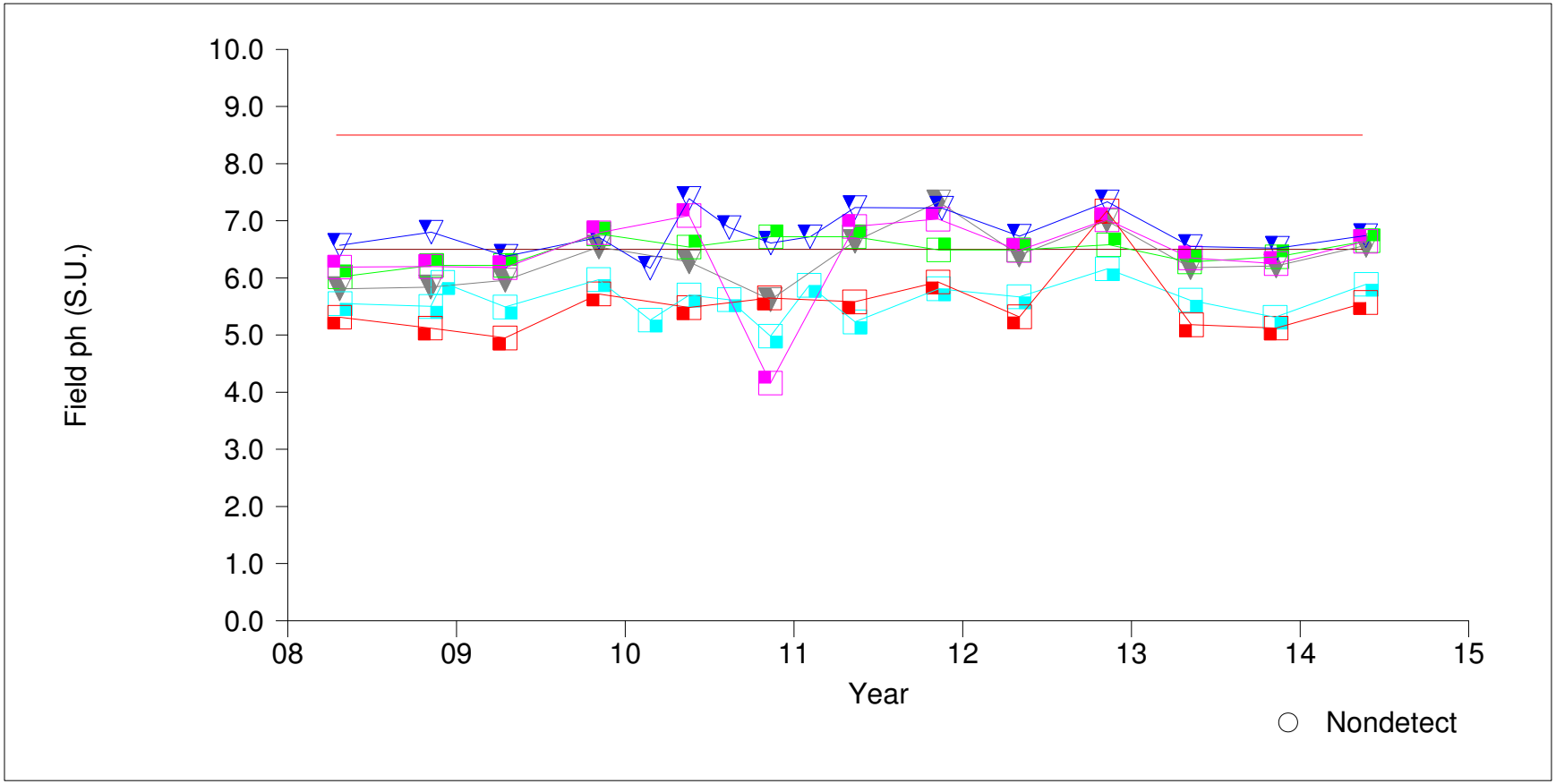
Time Series Plot for Field pH, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

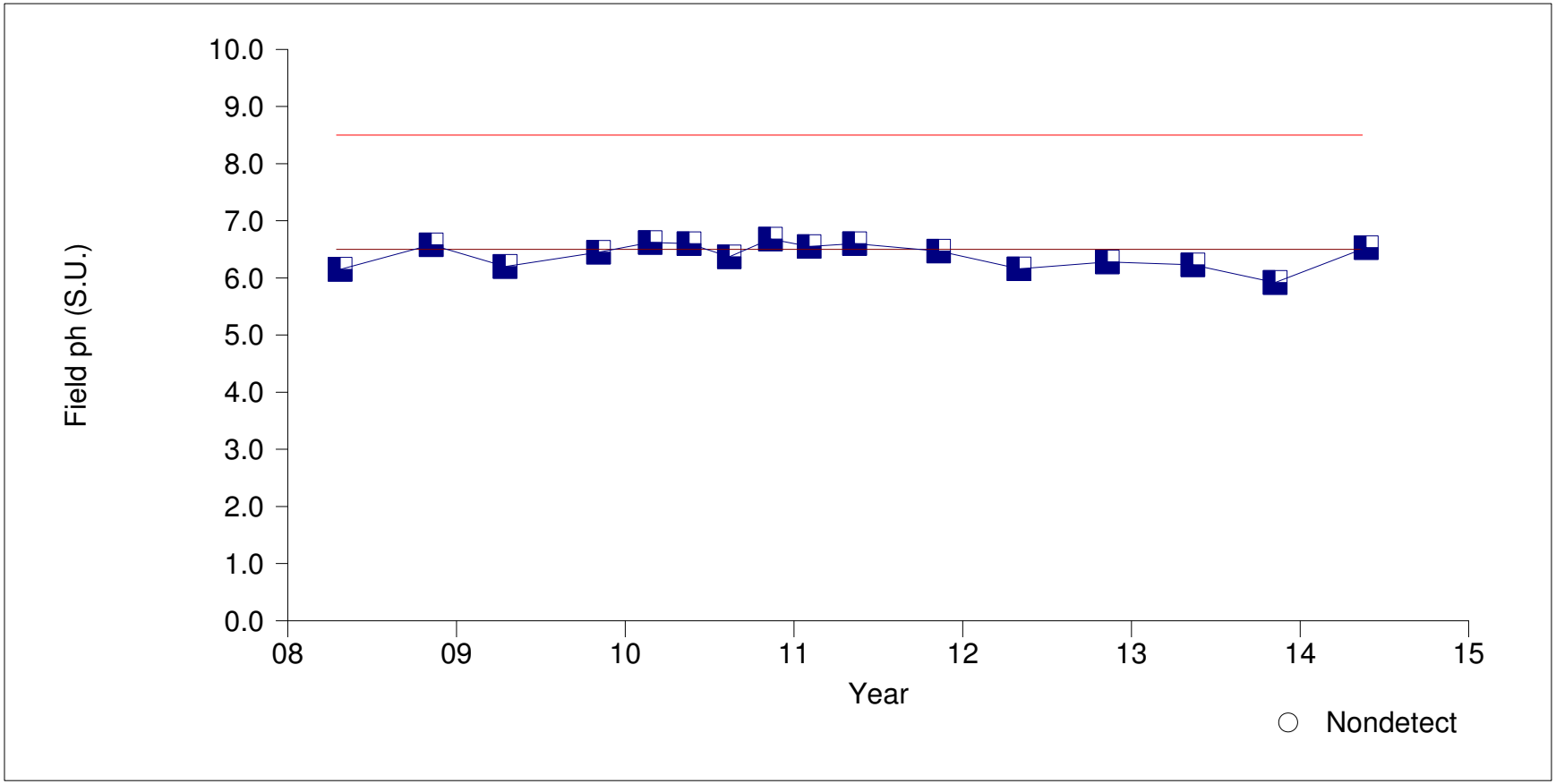
Time Series Plot for Field pH, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

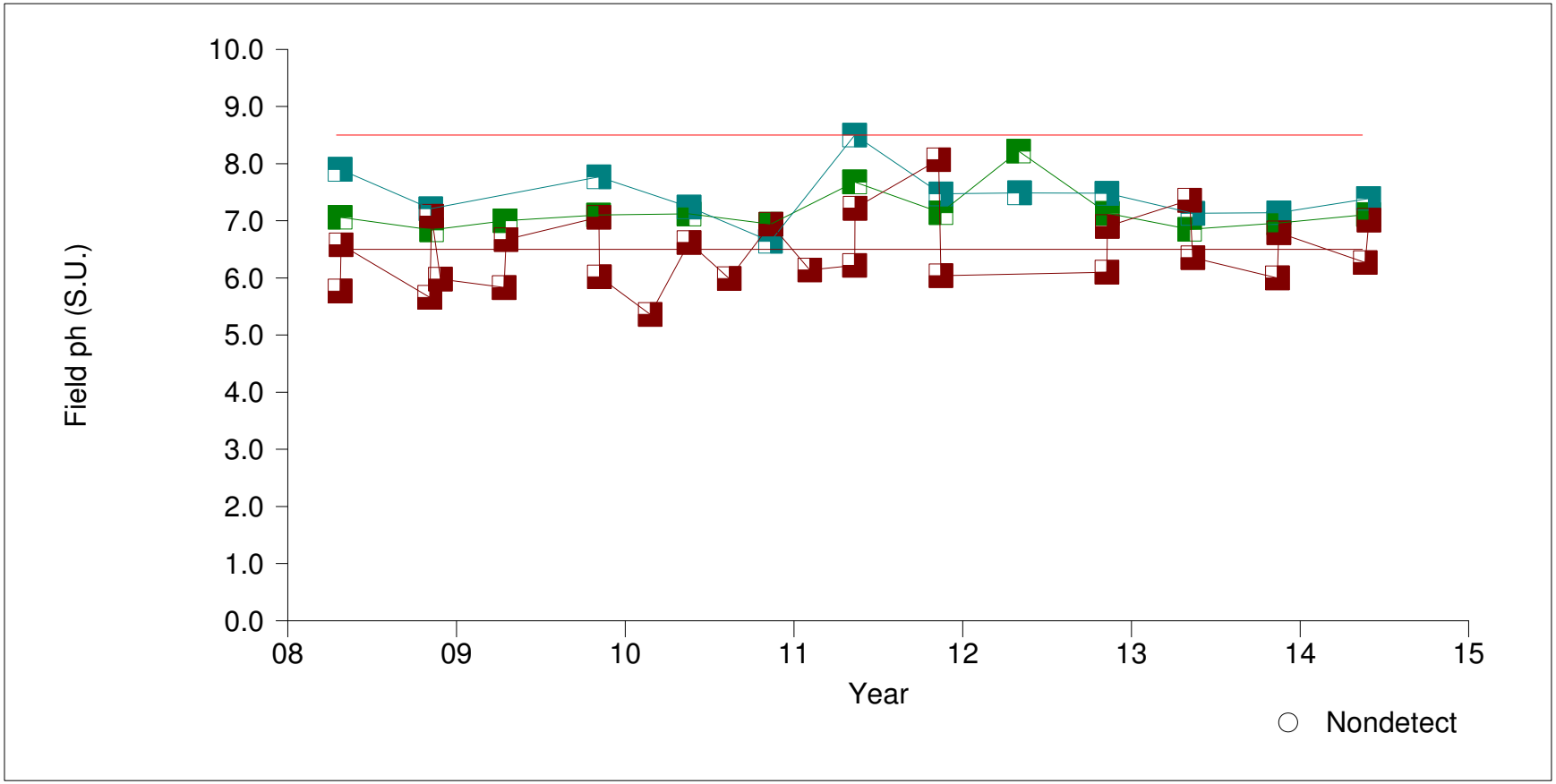
Time Series Plot for Field pH, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

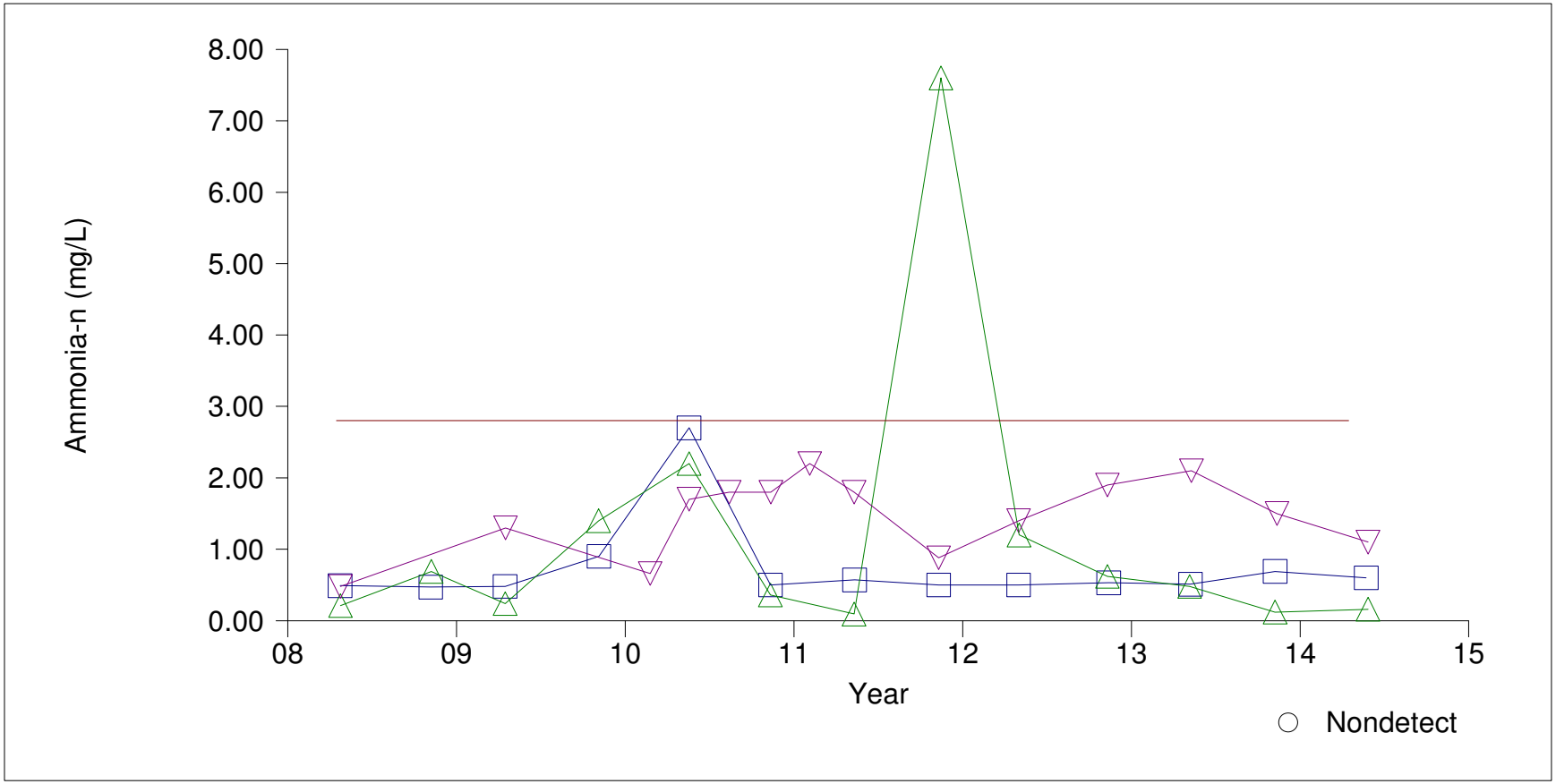
Time Series Plot for Field pH, Floridan Aquifer



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

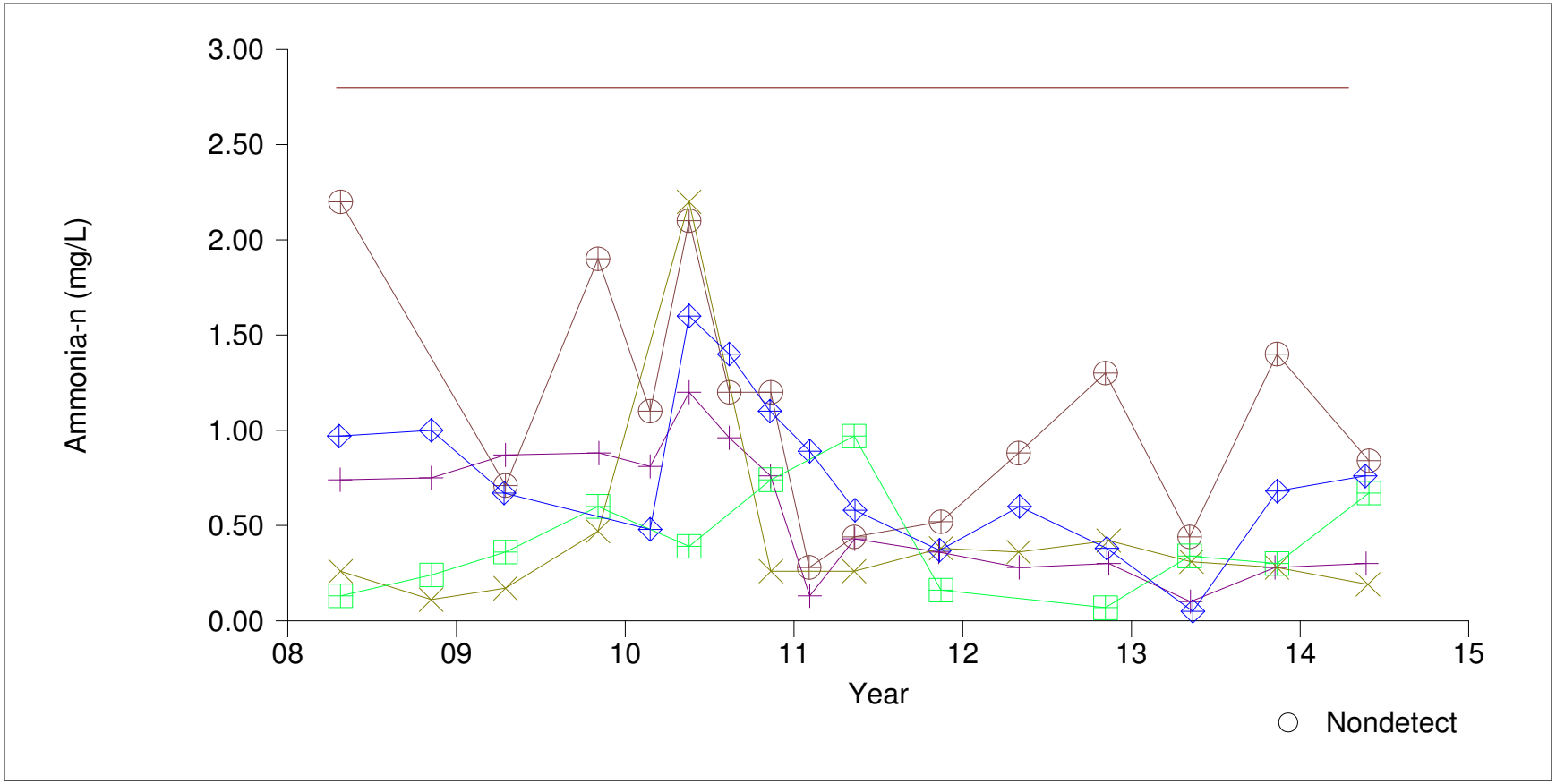
Time Series Plot for Ammonia-N, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

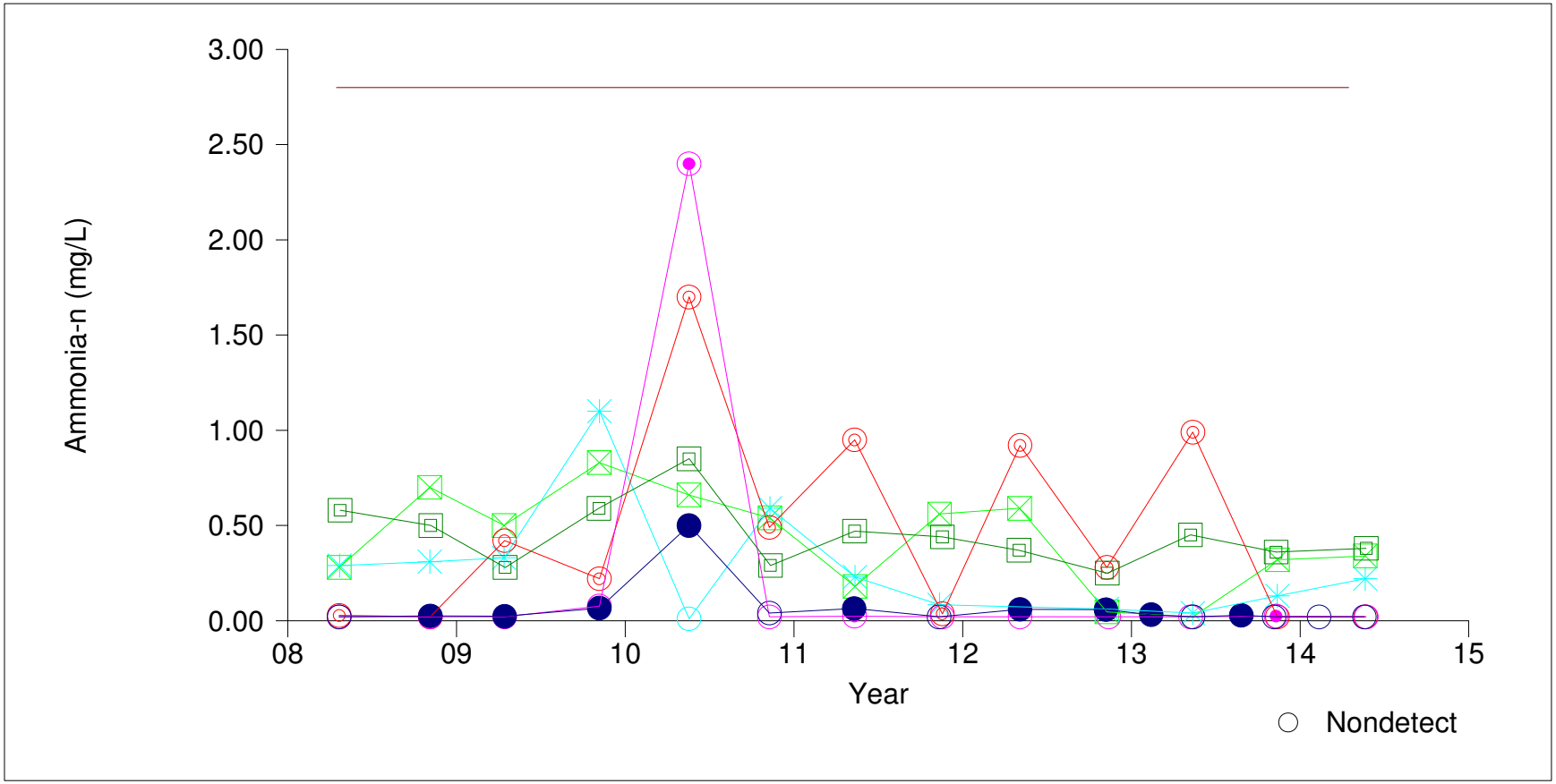
Time Series Plot for Ammonia-N, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

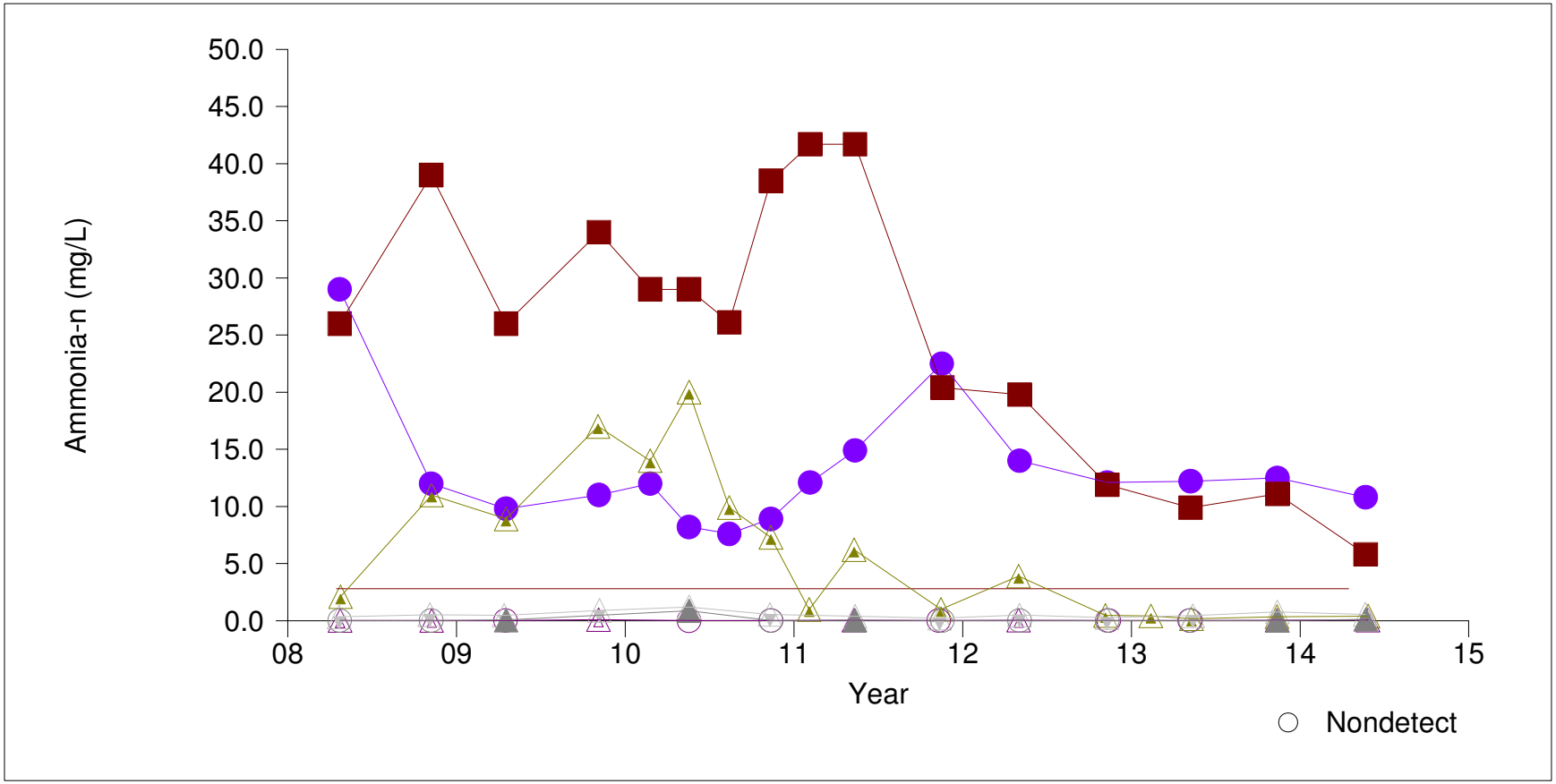
Time Series Plot for Ammonia-N, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

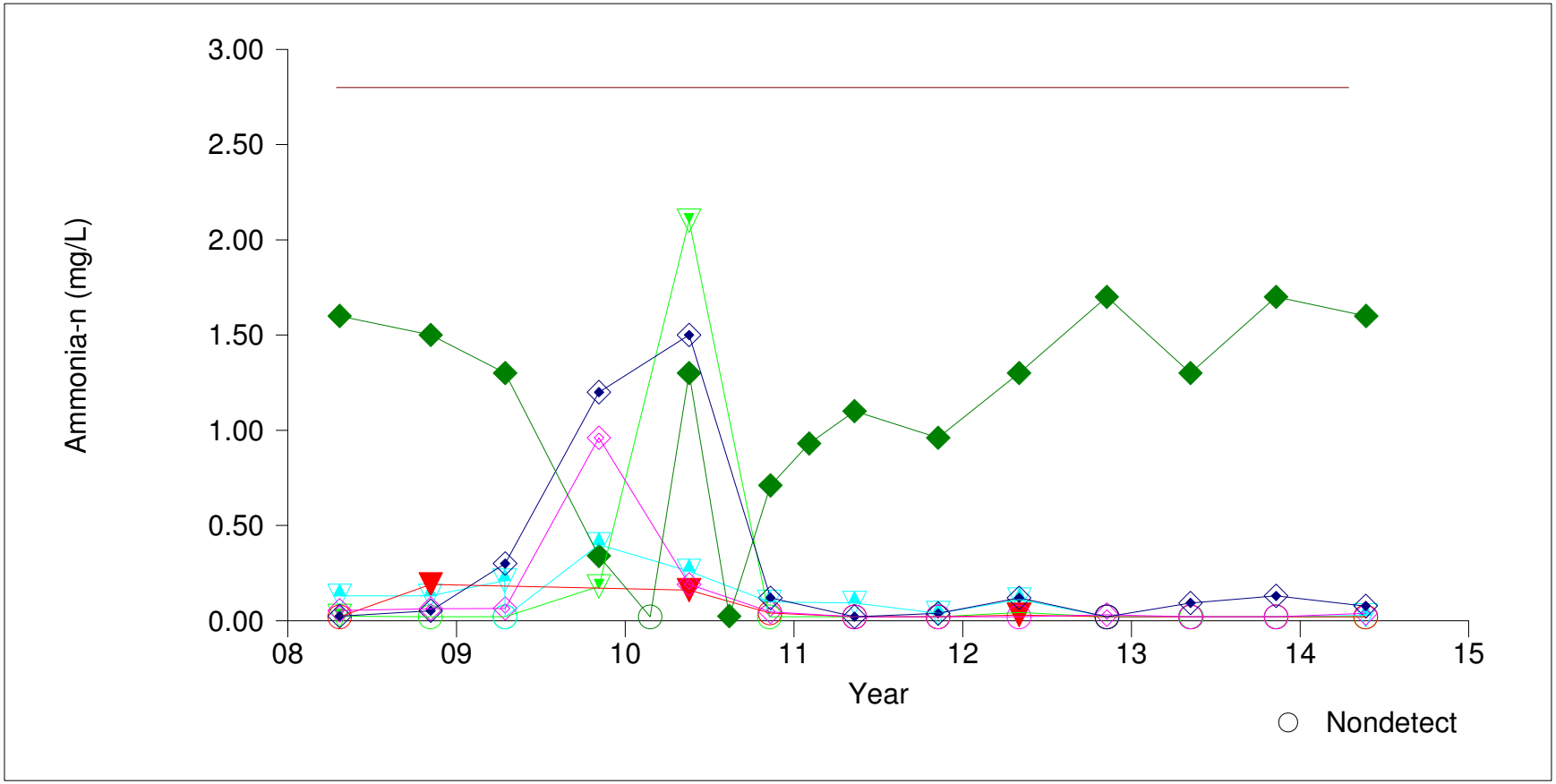
Time Series Plot for Ammonia-N, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

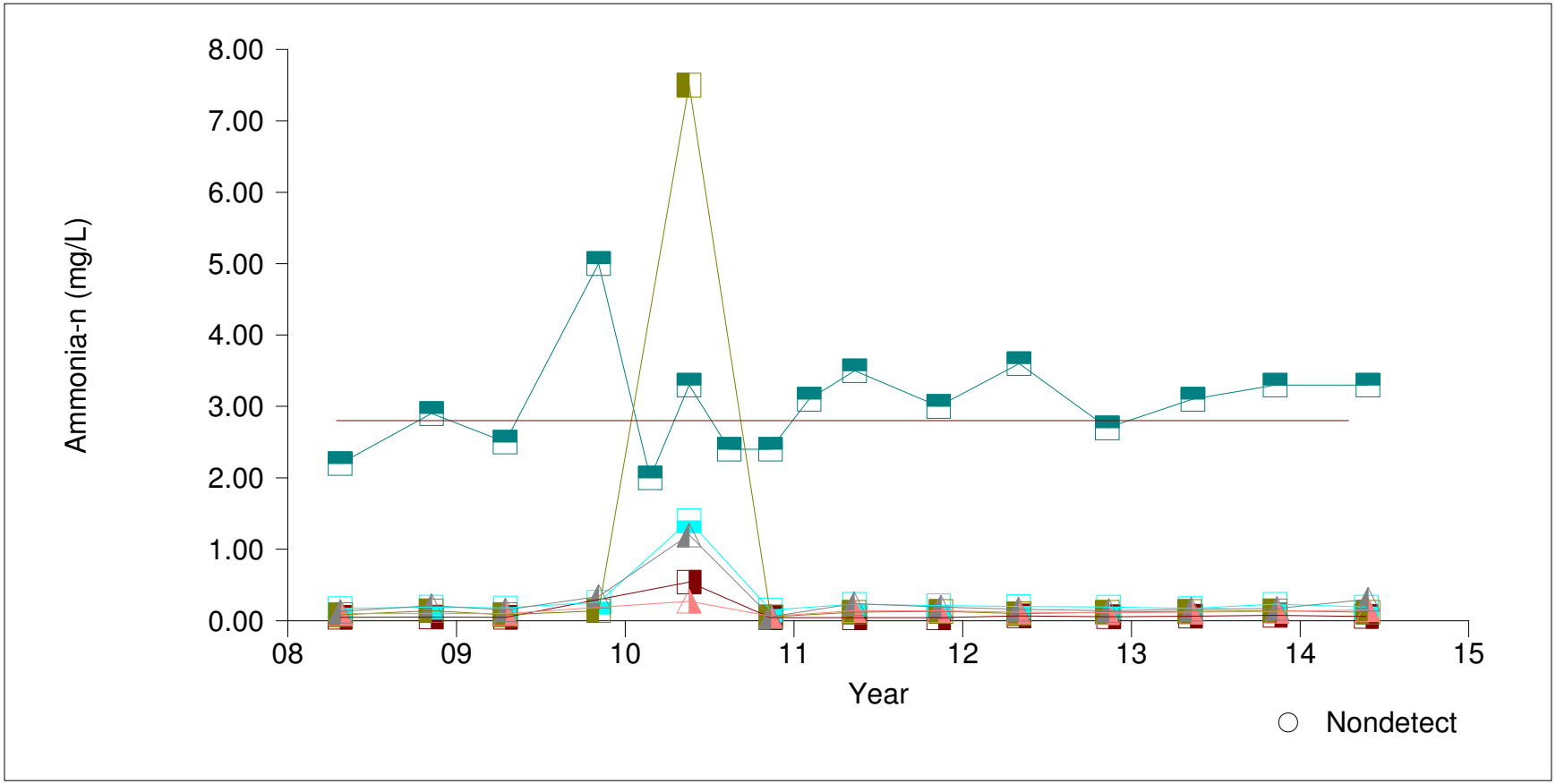
Time Series Plot for Ammonia-N, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

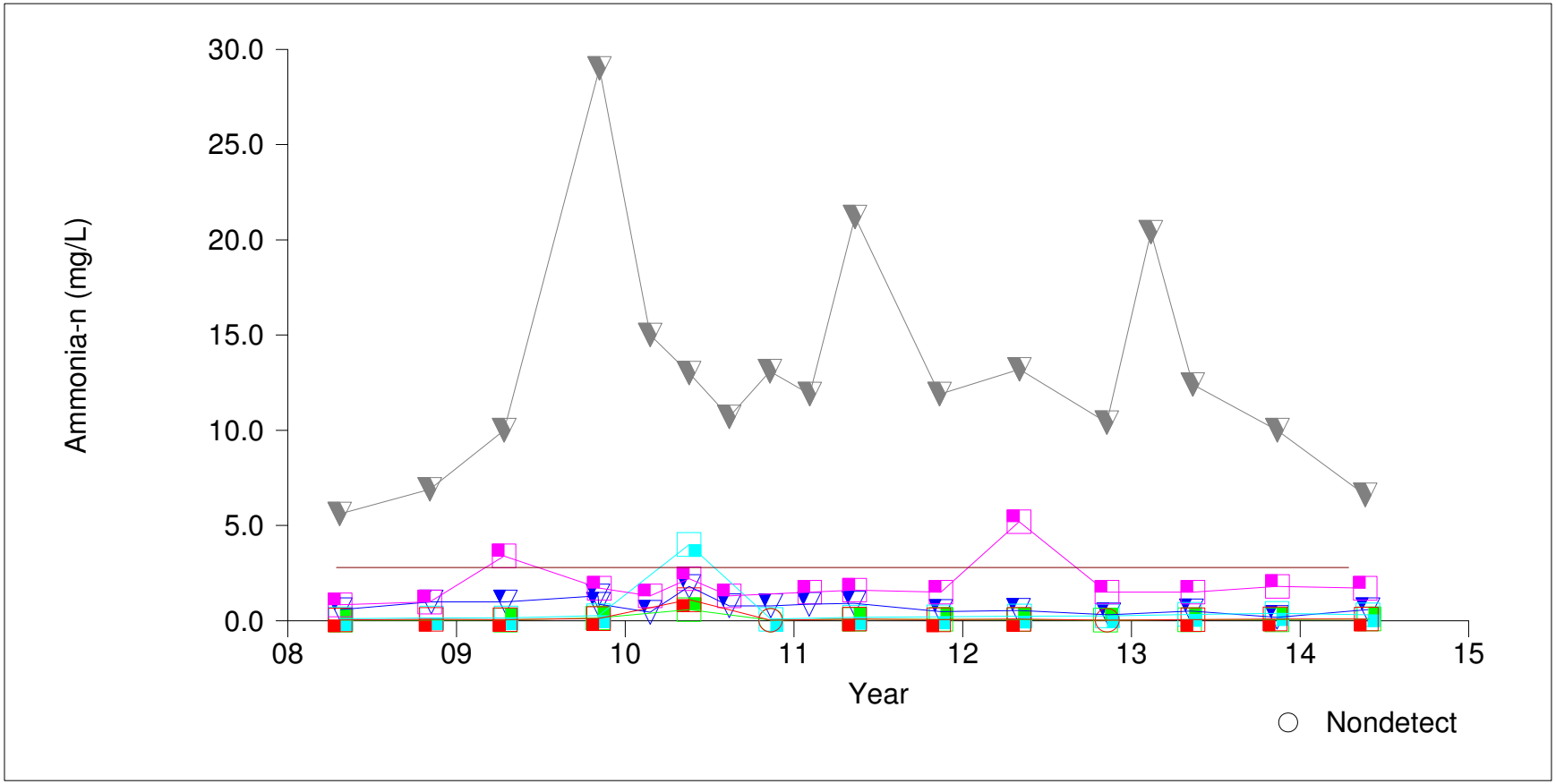
Time Series Plot for Ammonia-N, Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

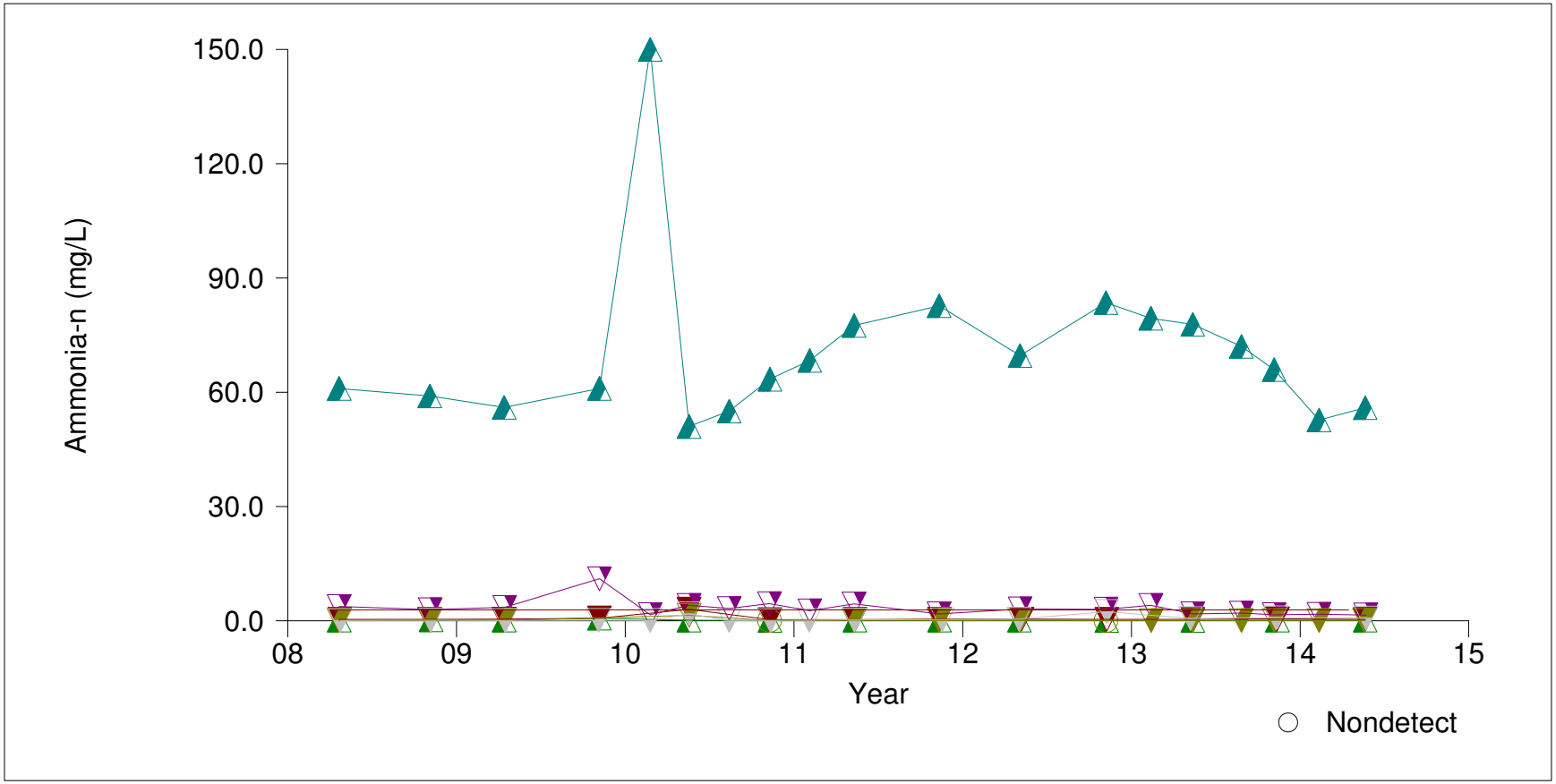
Time Series Plot for Ammonia-N, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

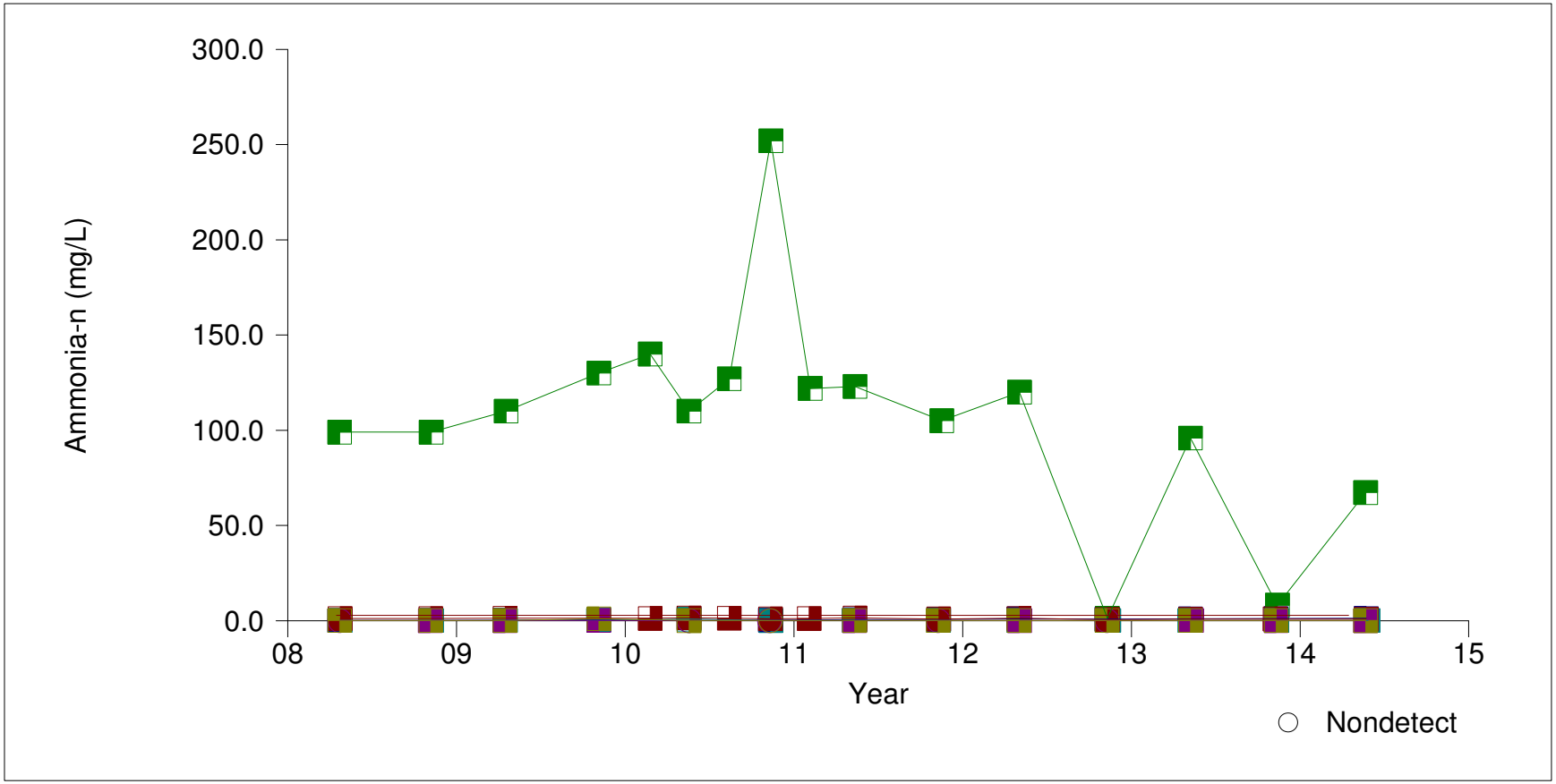
Time Series Plot for Ammonia-N, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

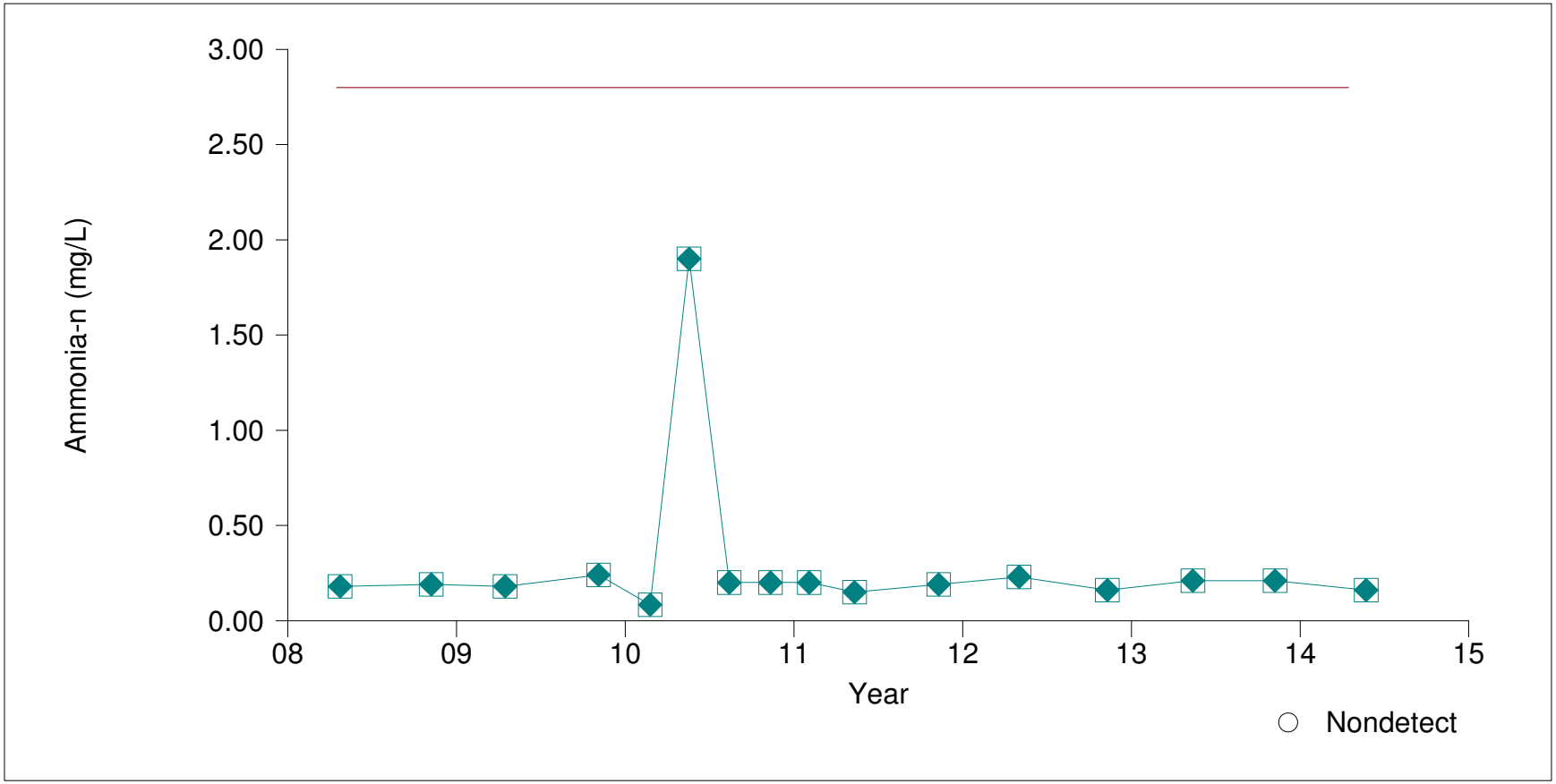
Time Series Plot for Ammonia-N, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

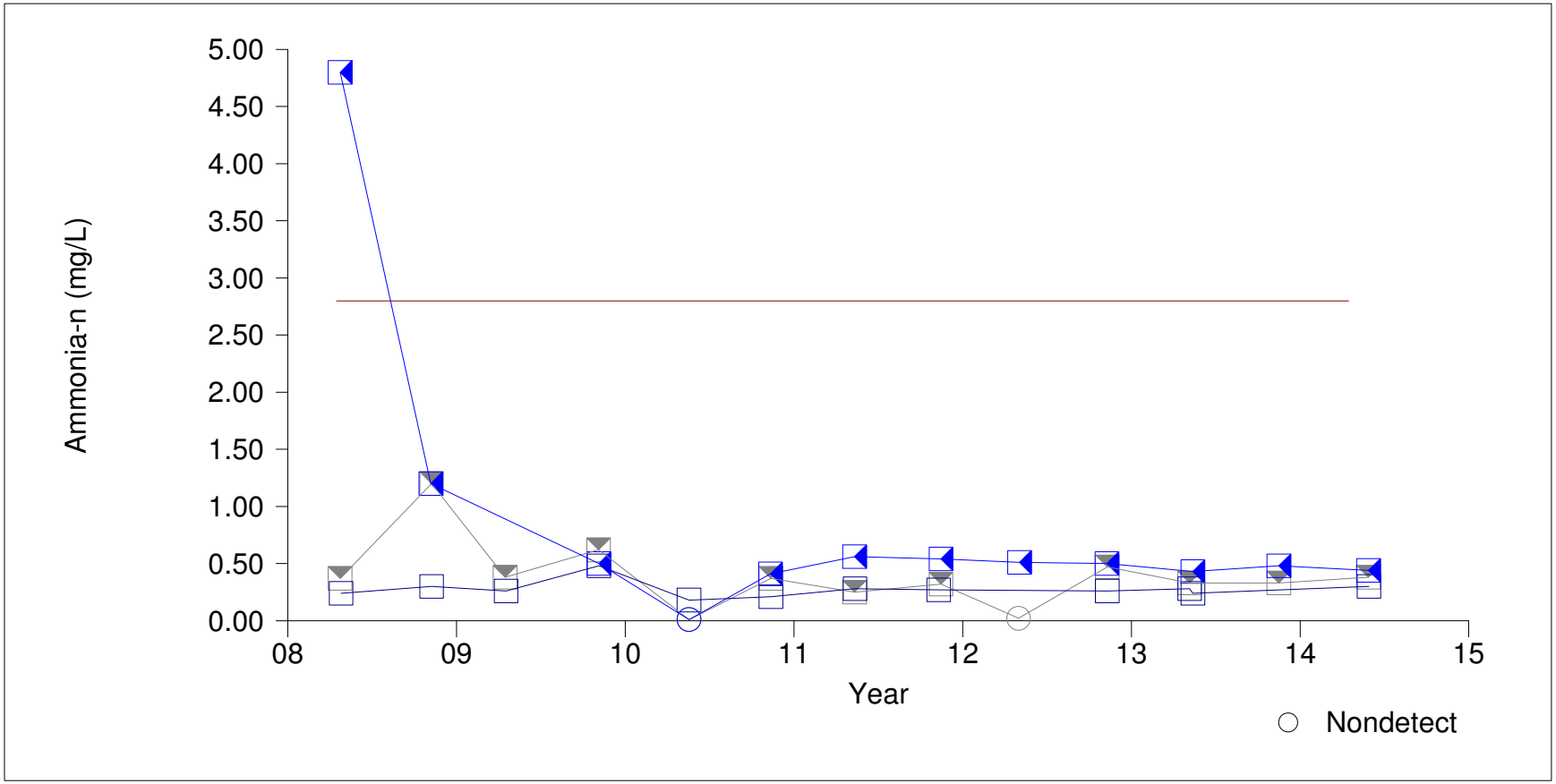
Time Series Plot for Ammonia-N, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

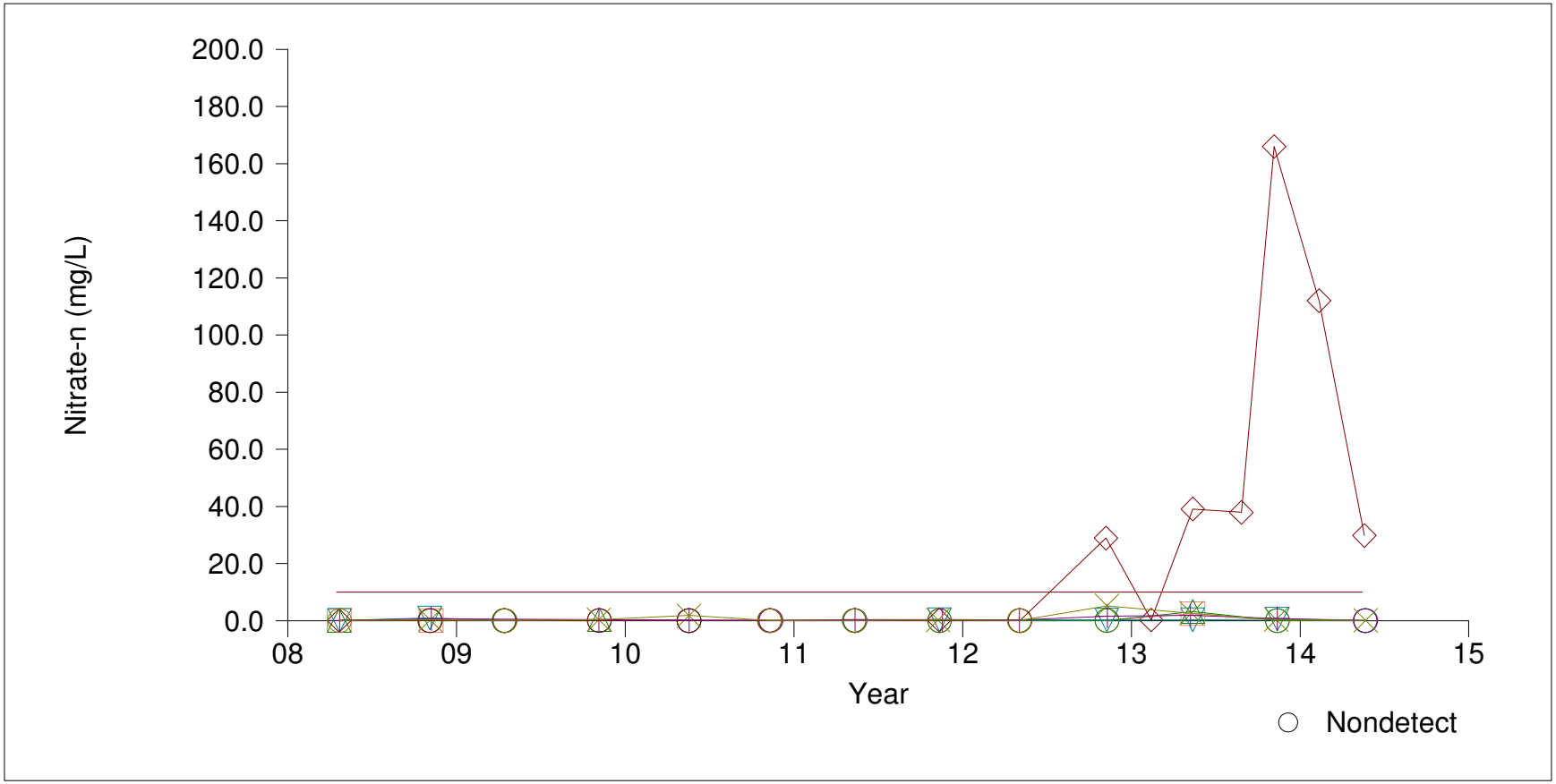
Time Series Plot for Ammonia-N, Floridan Aquifer



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

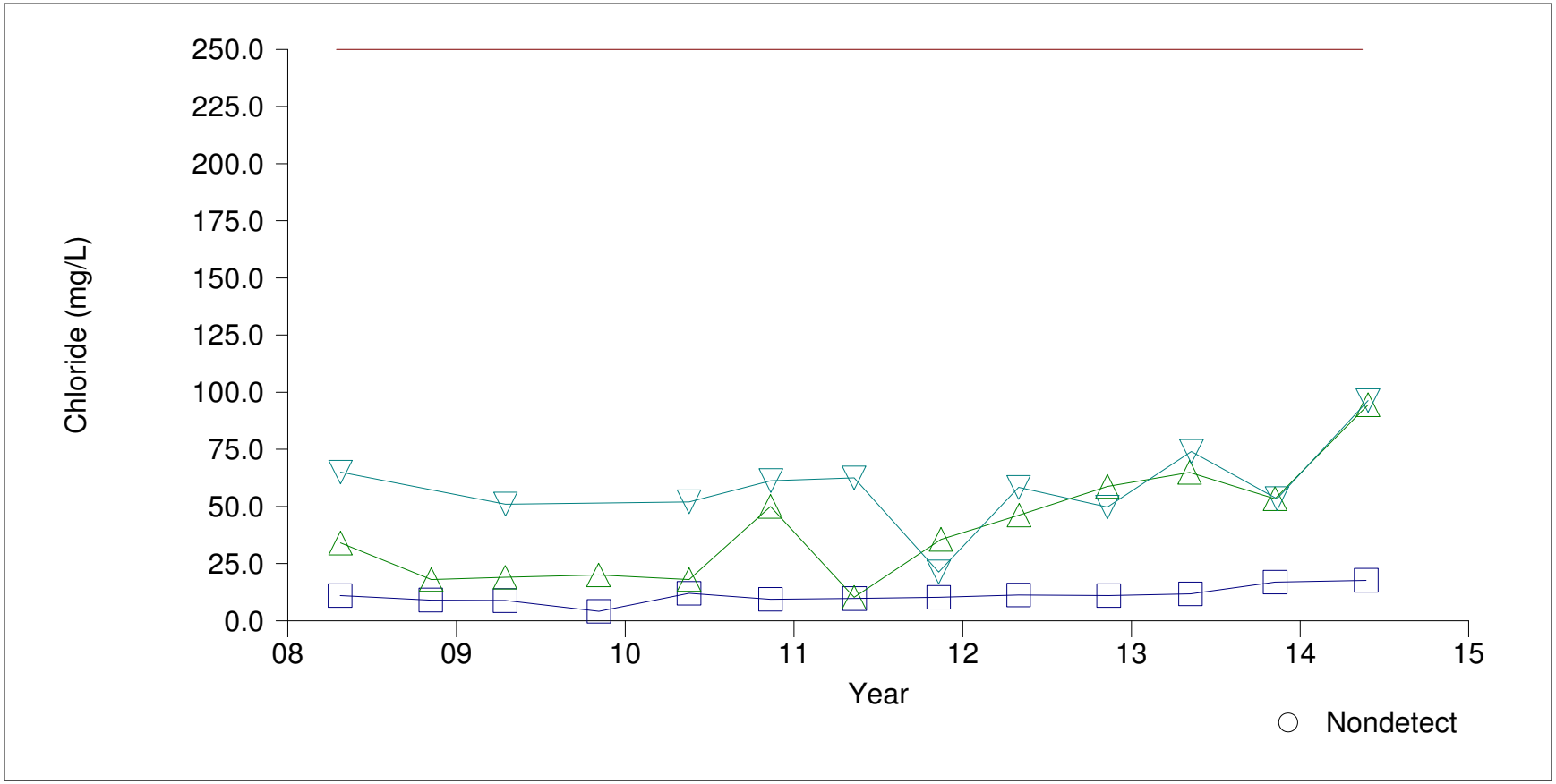
Time Series Plot for Nitrate-N, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

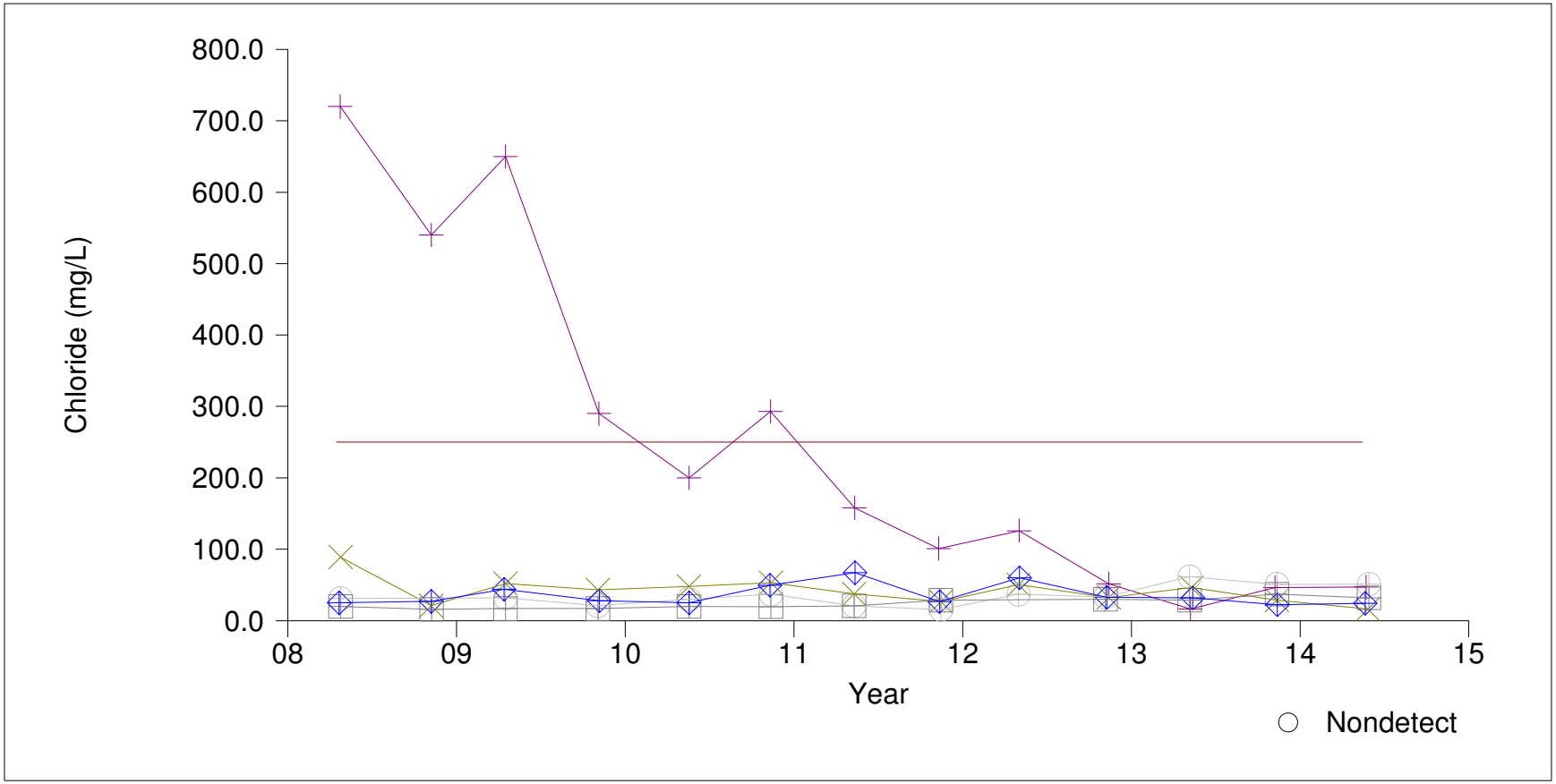
Time Series Plot for Chloride, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

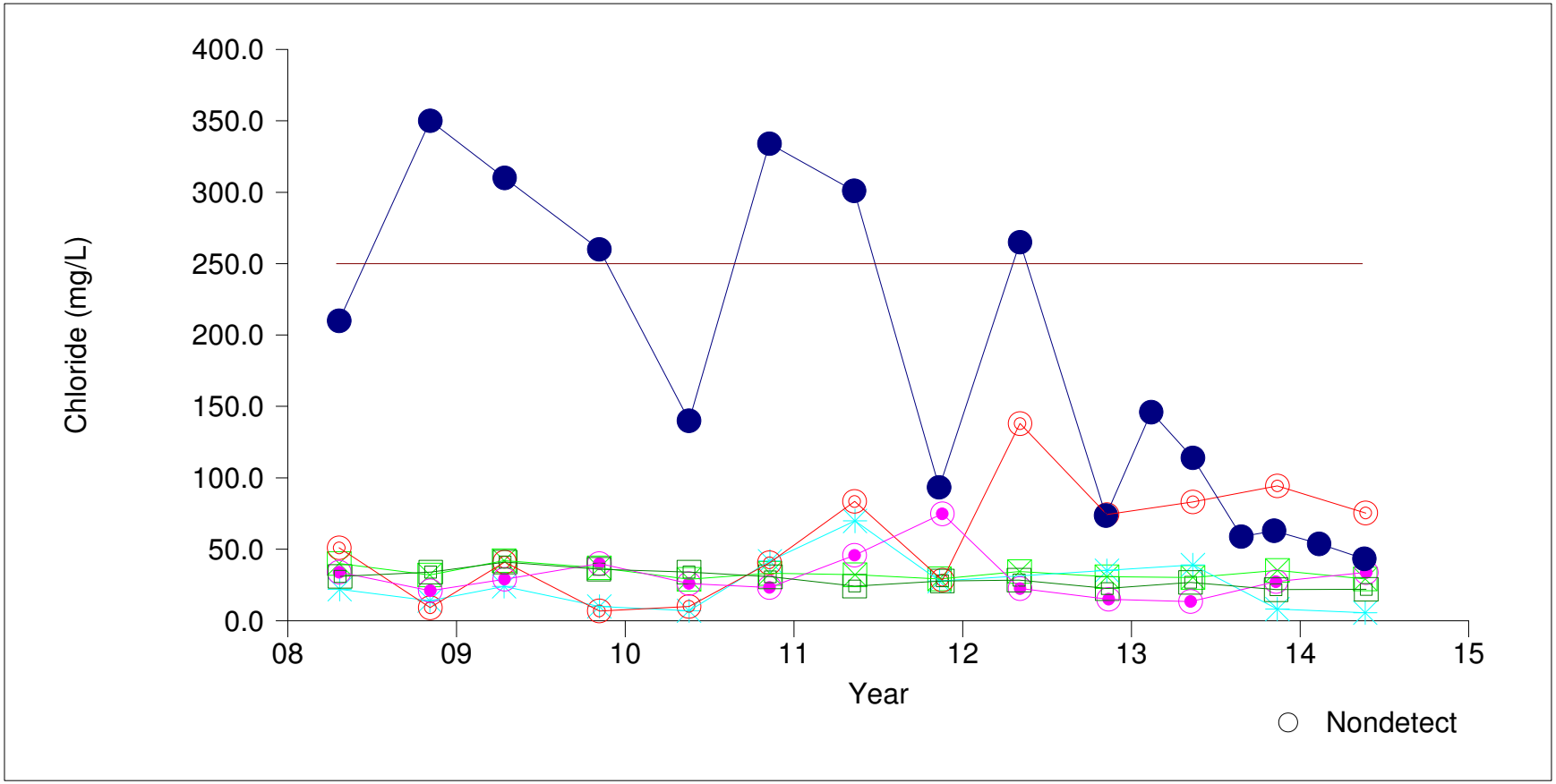
Time Series Plot for Chloride, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

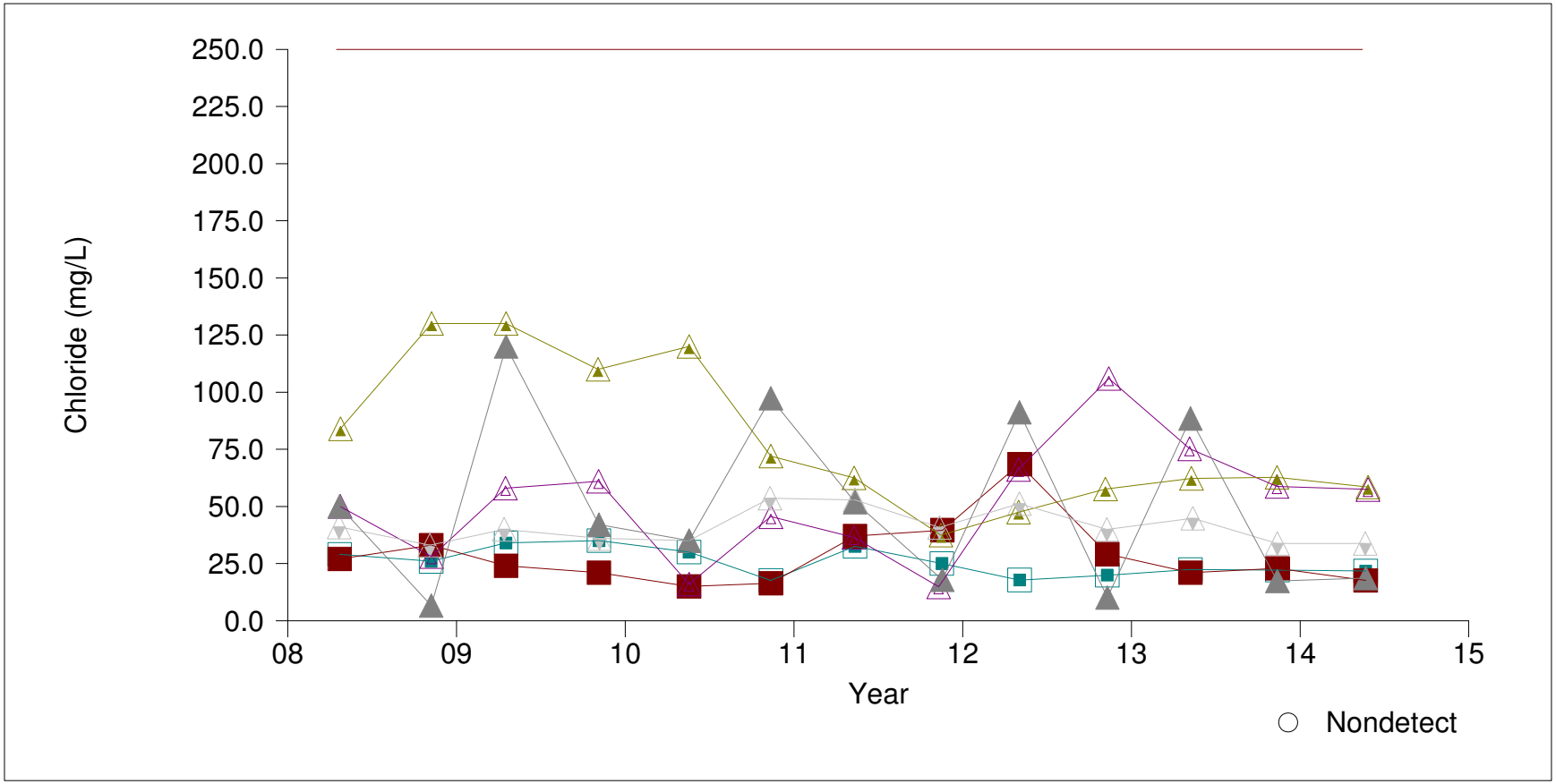
Time Series Plot for Chloride, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

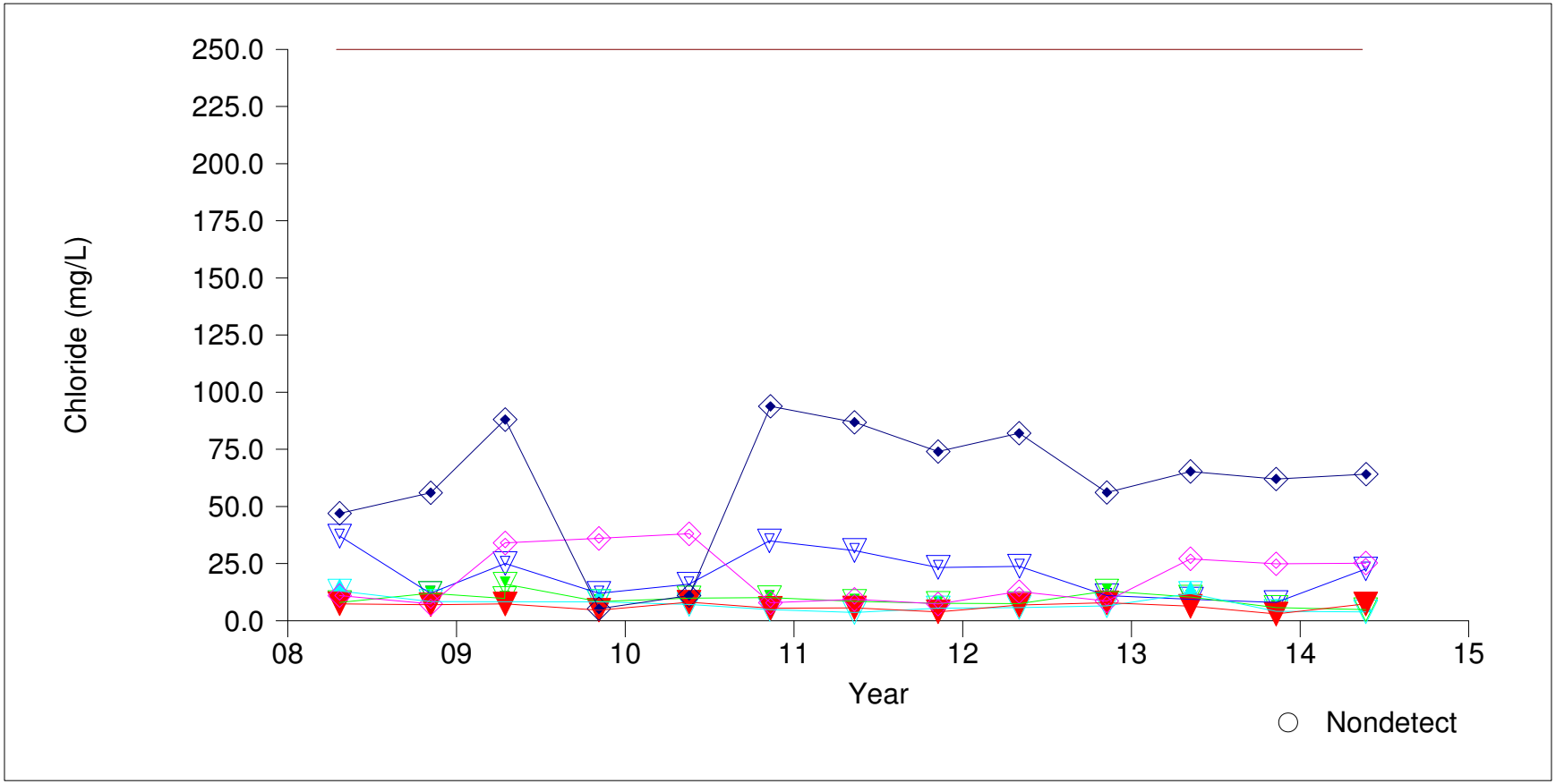
Time Series Plot for Chloride, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

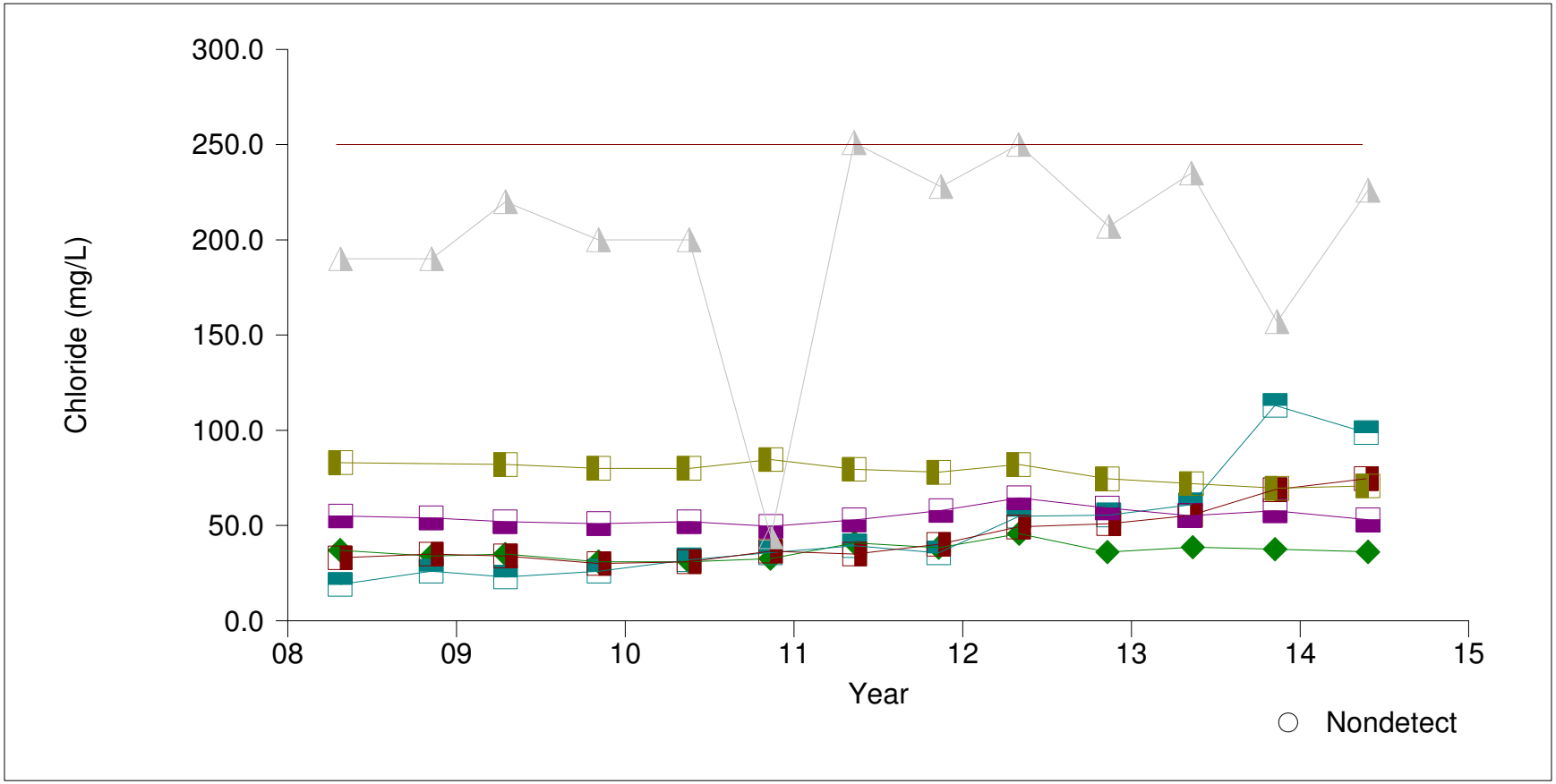
Time Series Plot for Chloride, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

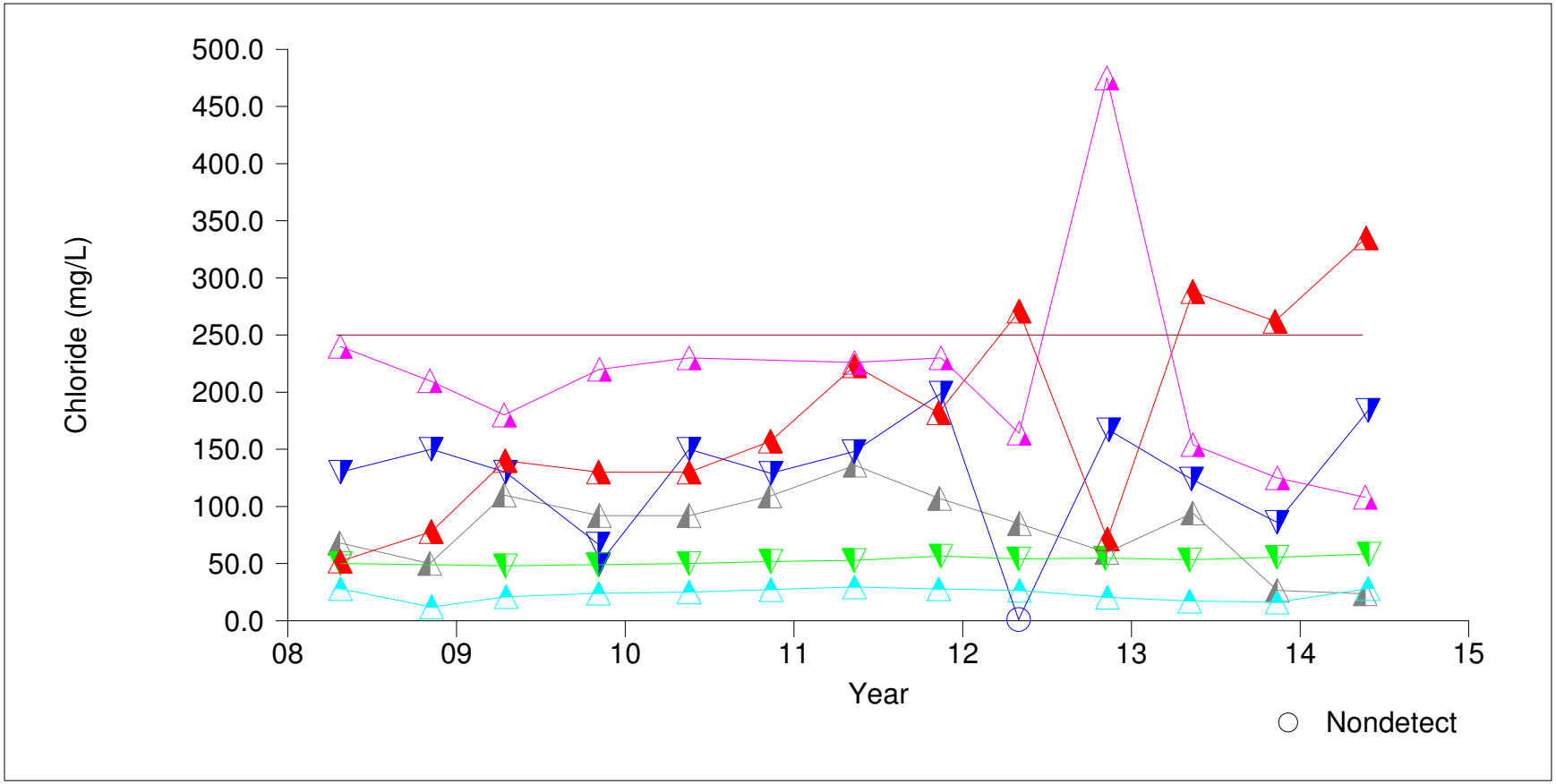
Time Series Plot for Chloride, Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

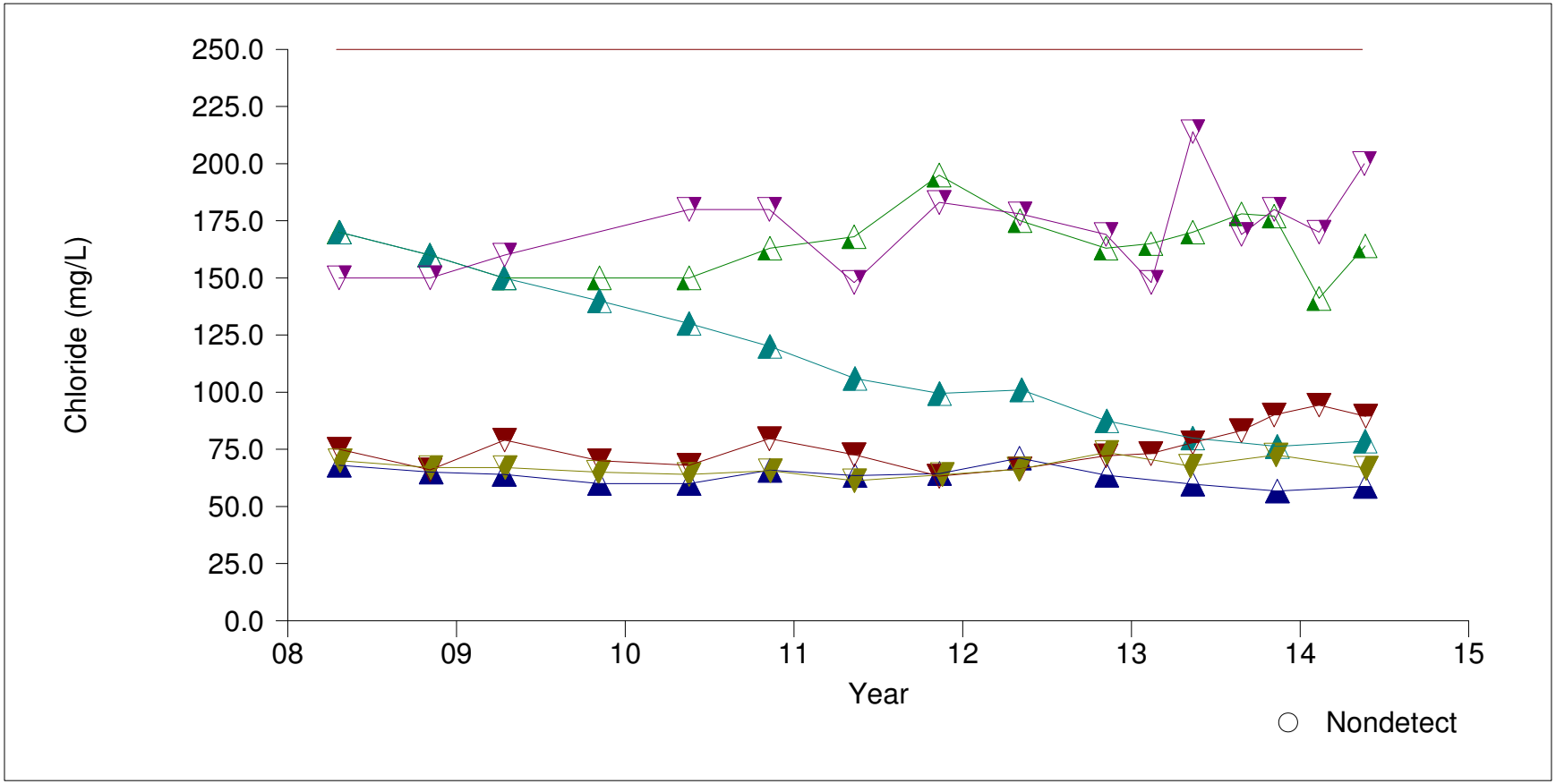
Time Series Plot for Chloride, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

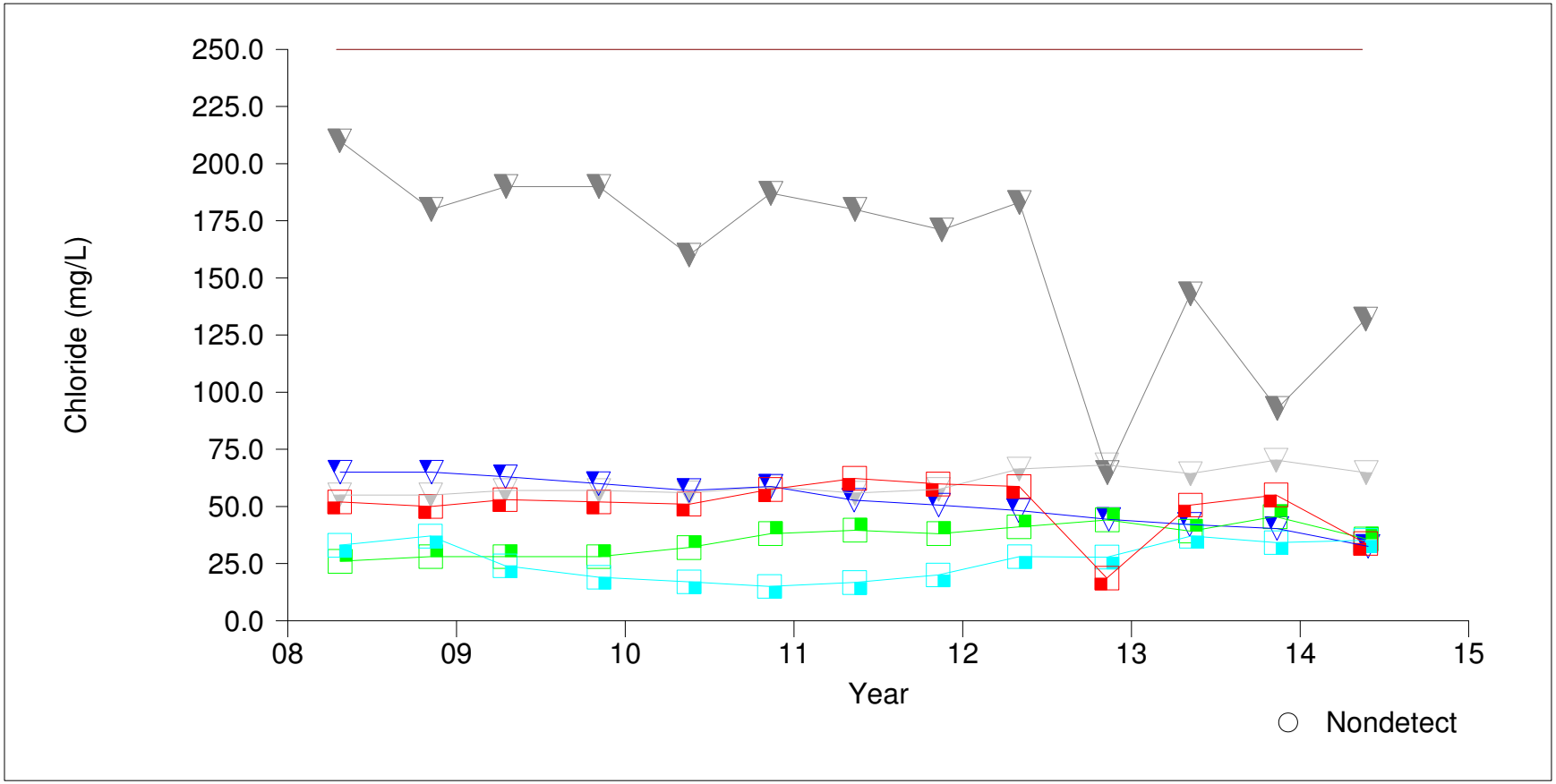
Time Series Plot for Chloride, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

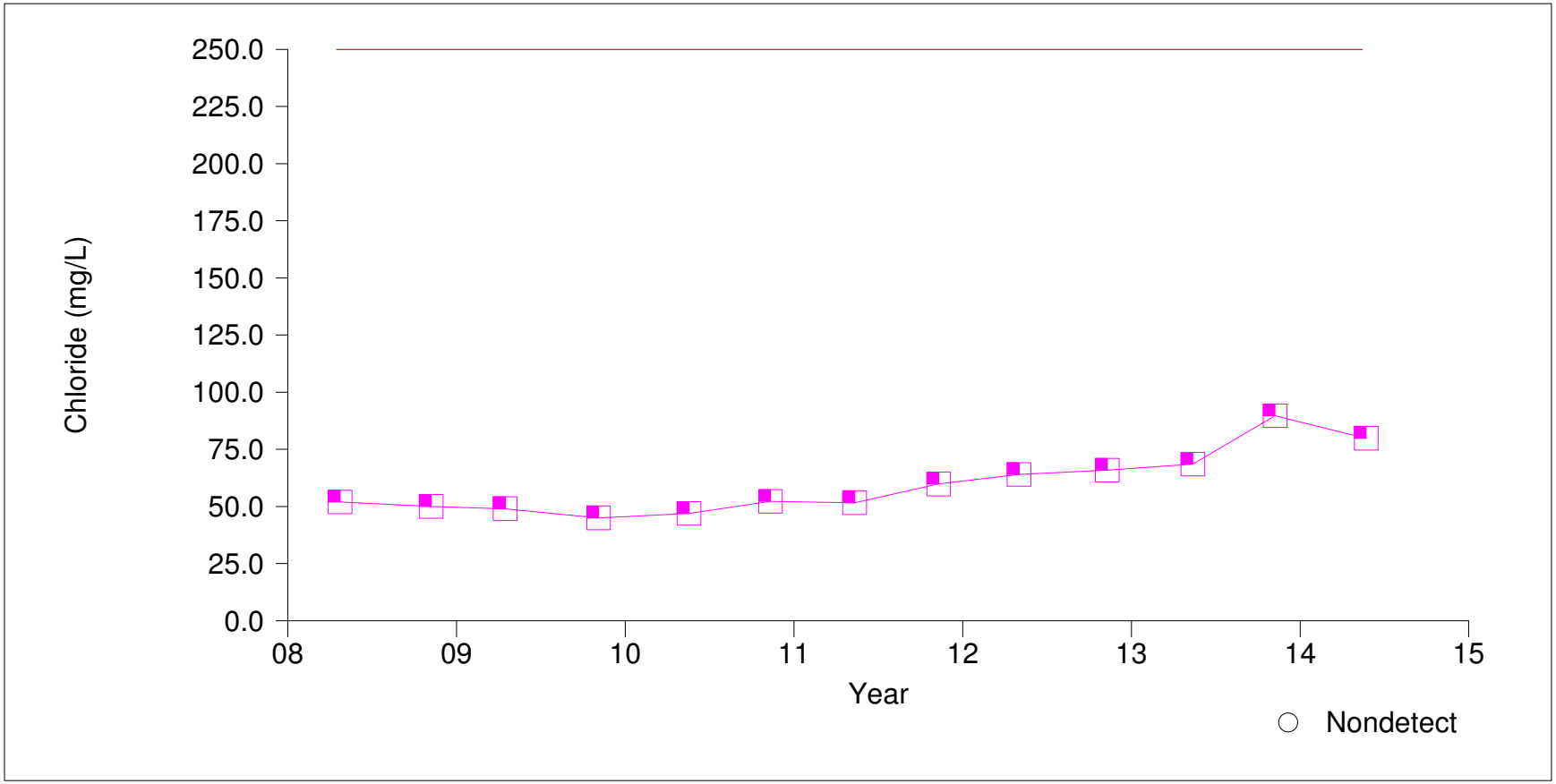
Time Series Plot for Chloride, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

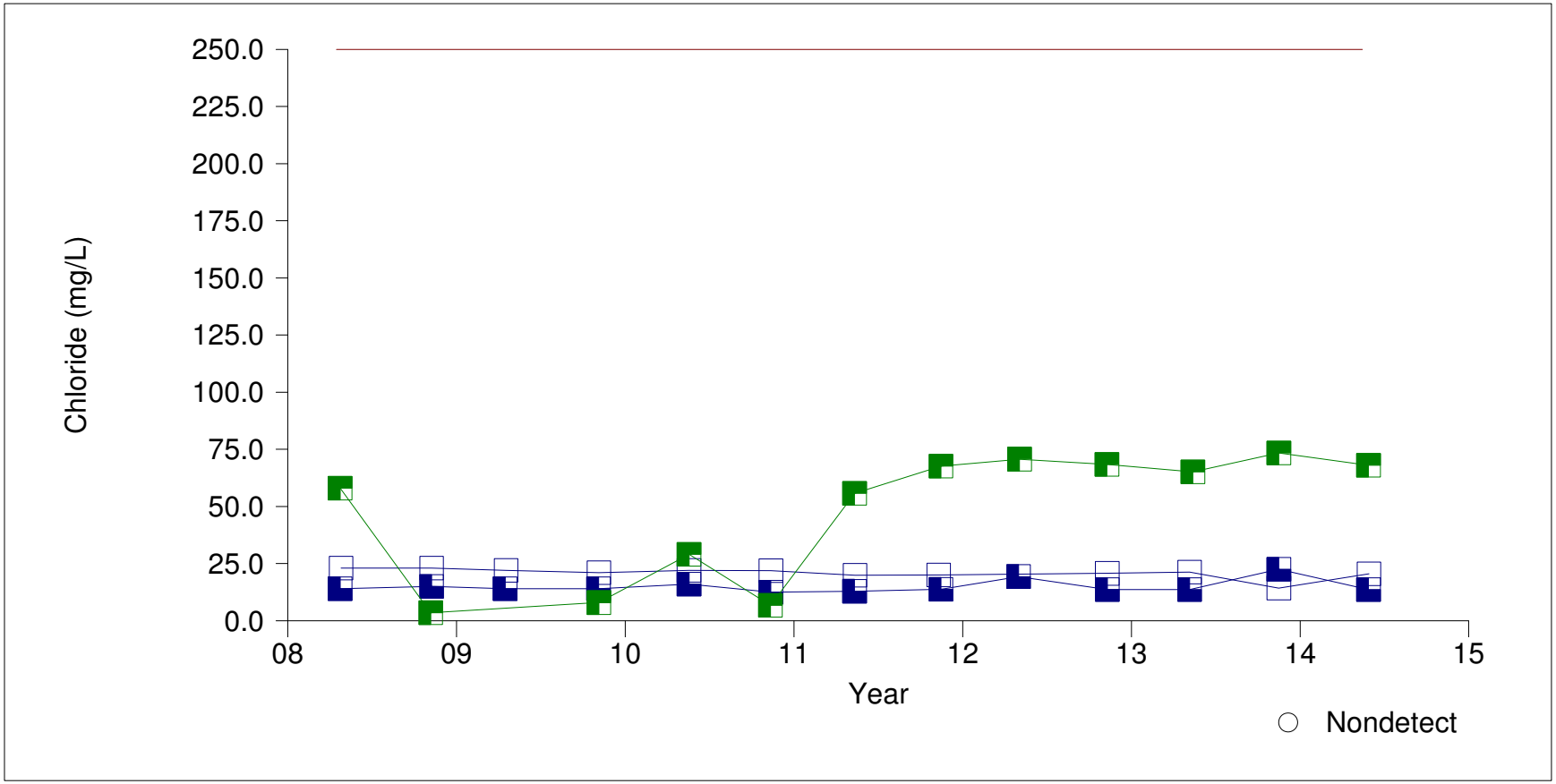
Time Series Plot for Chloride, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

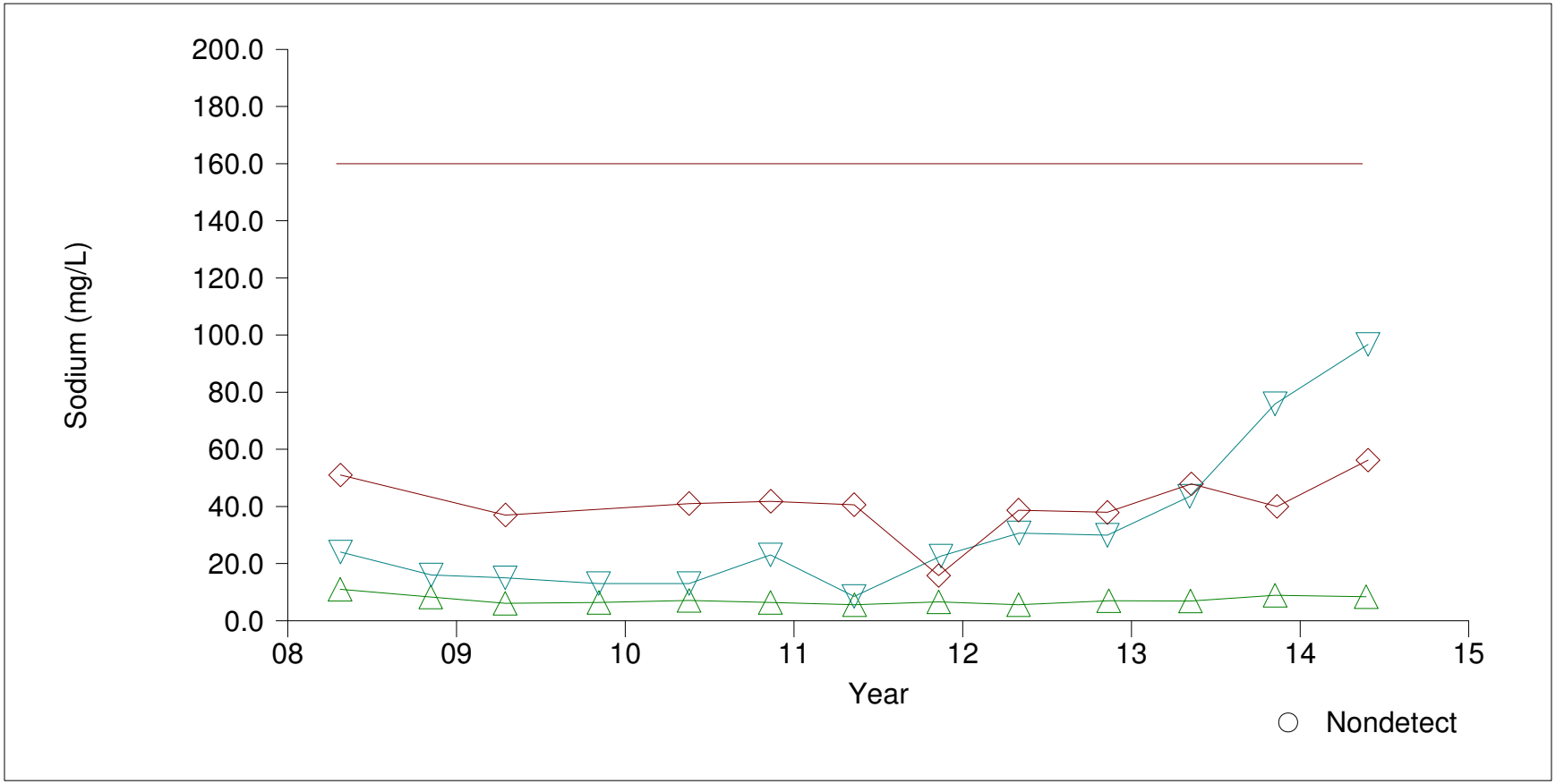
Time Series Plot for Chloride, Floridan



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

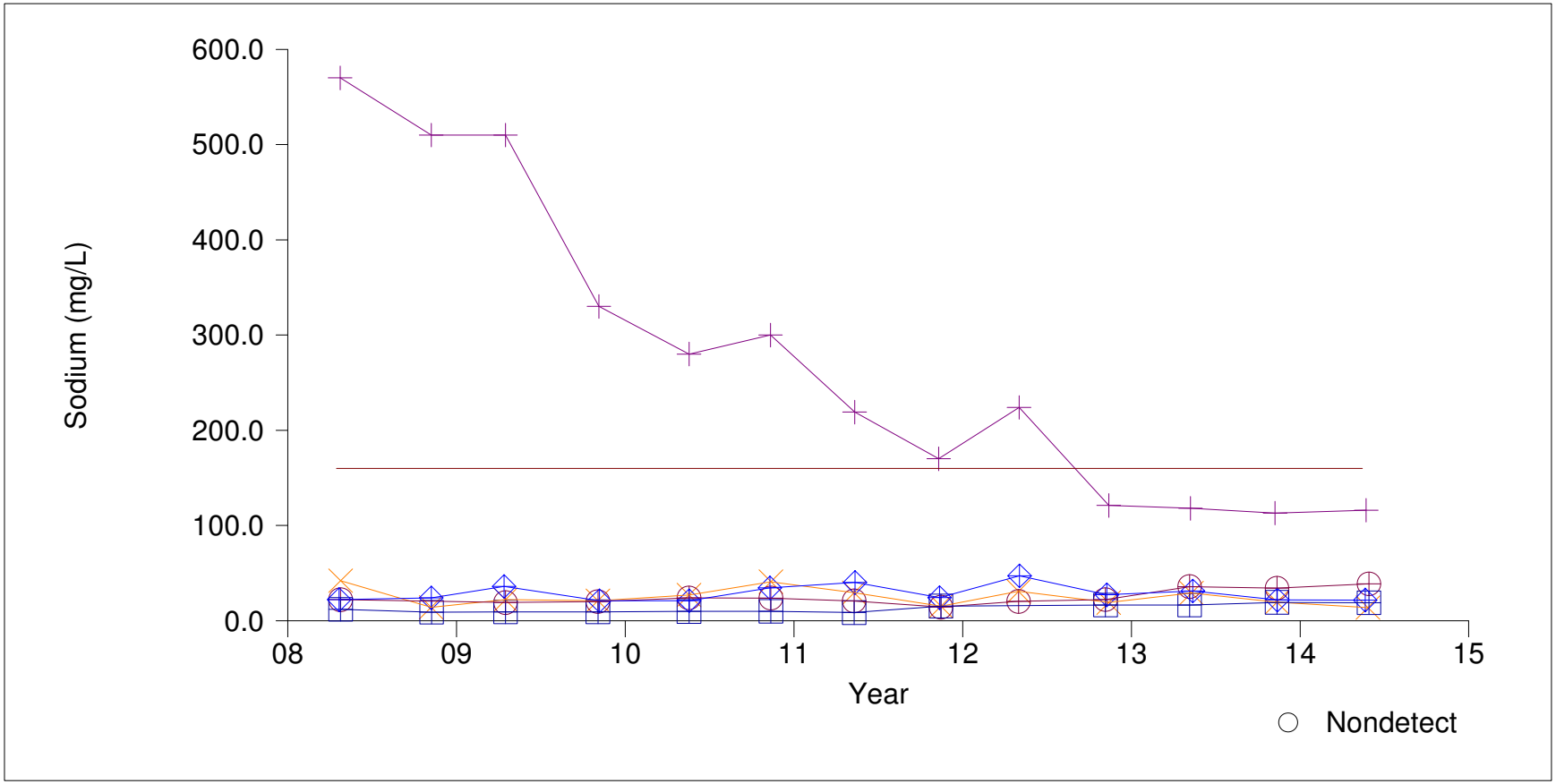
Time Series Plot for Sodium, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

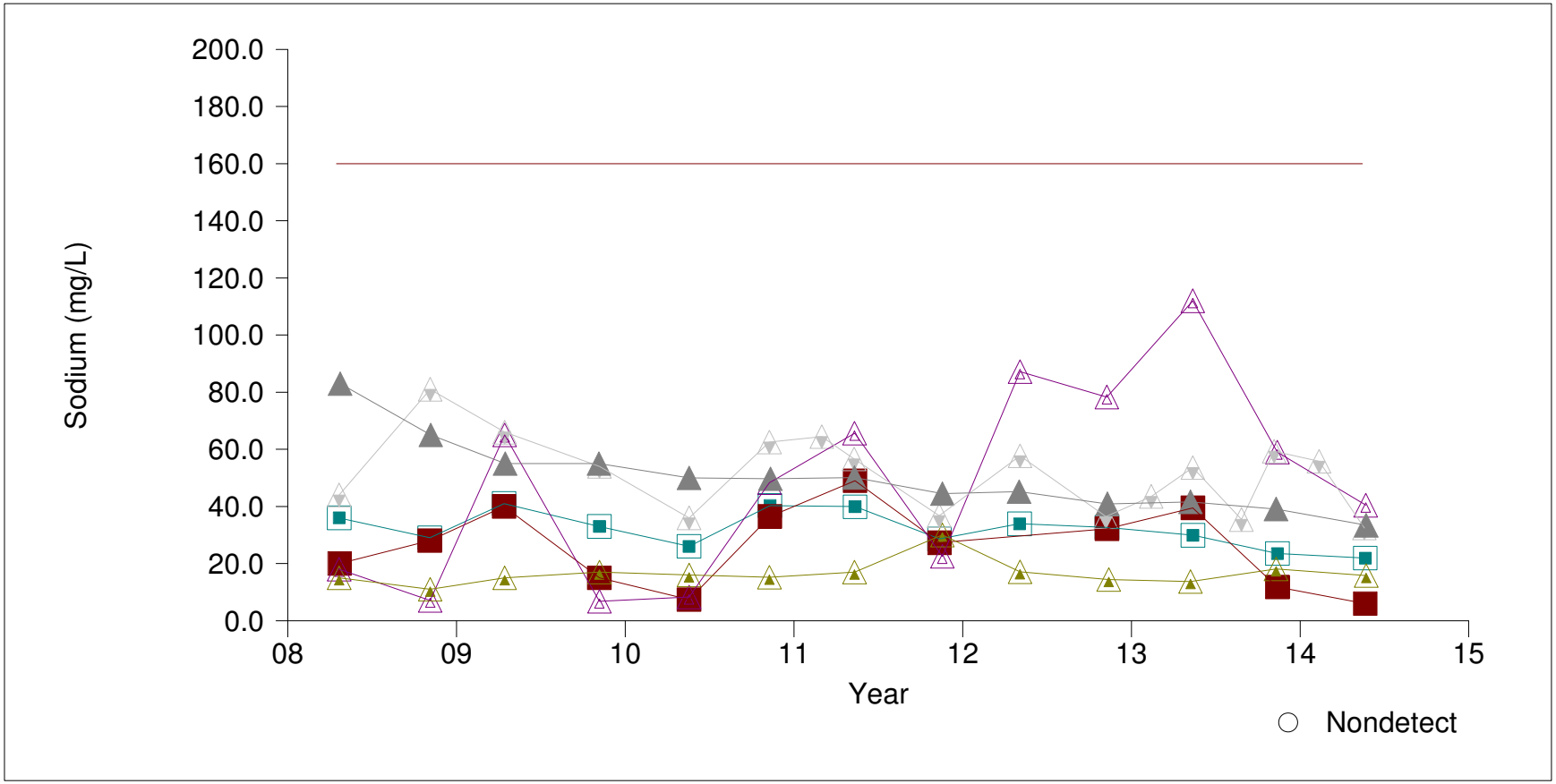
Time Series Plot for Sodium, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

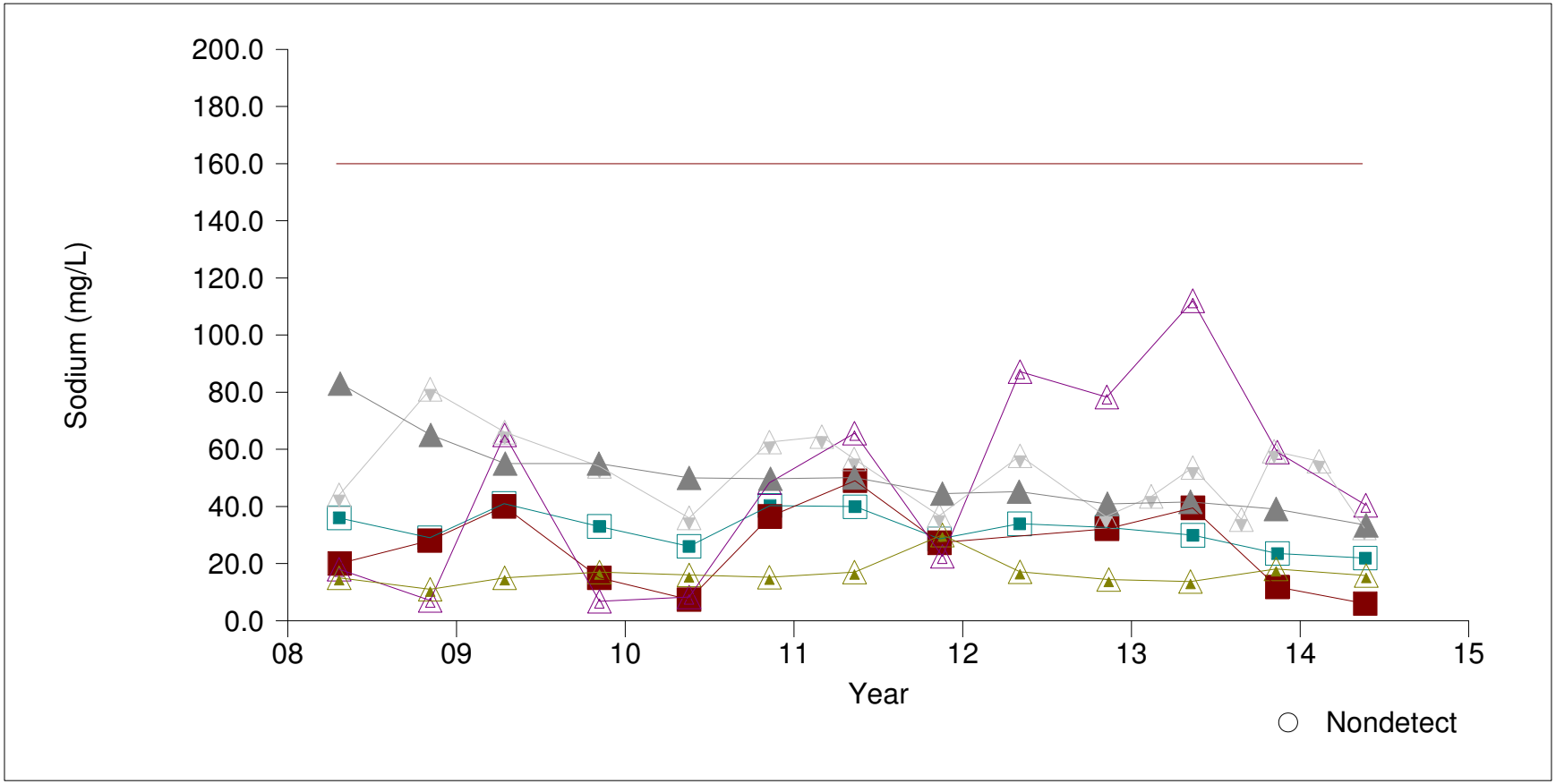
Time Series Plot for Sodium, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

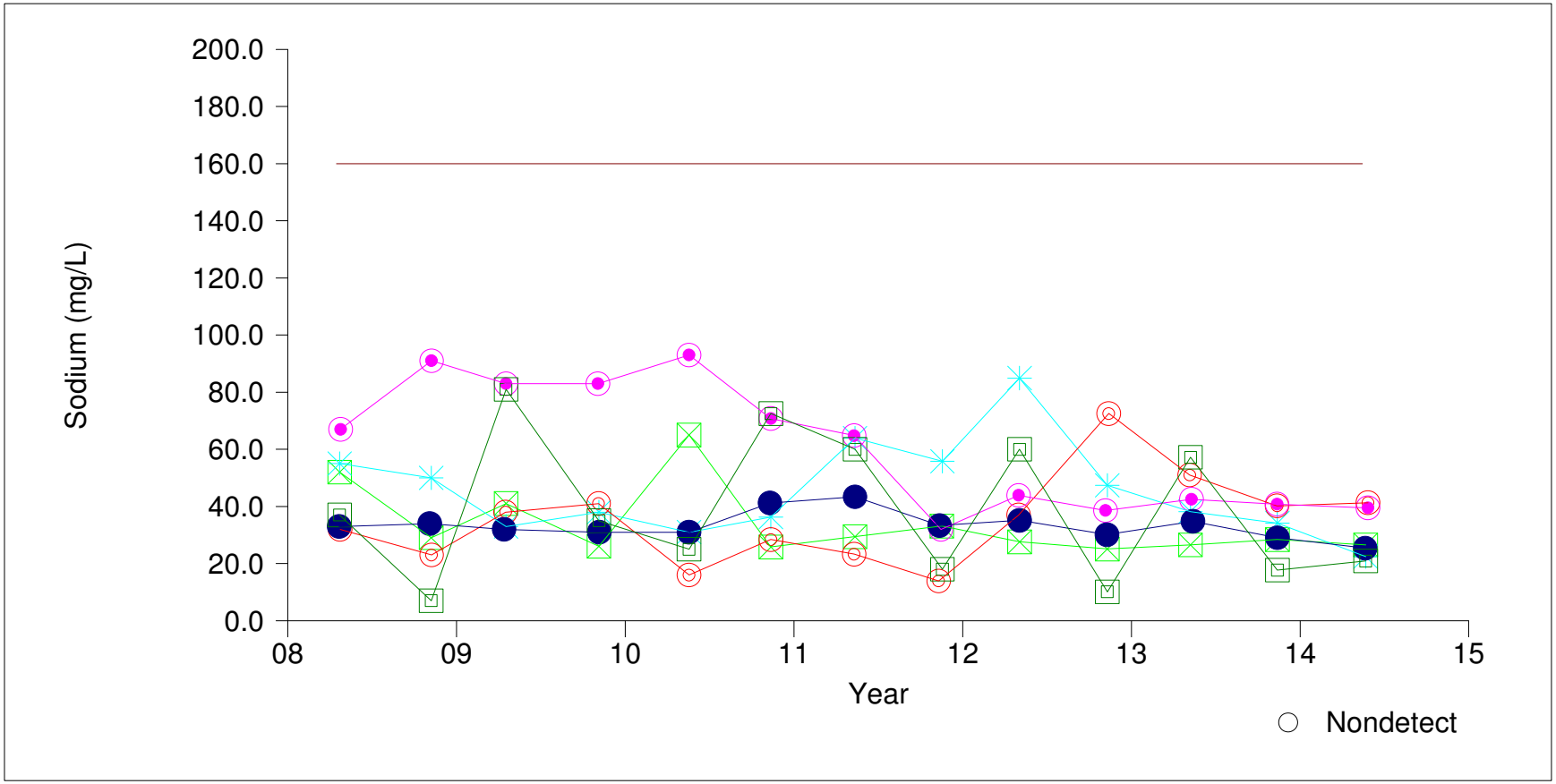
Time Series Plot for Sodium, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

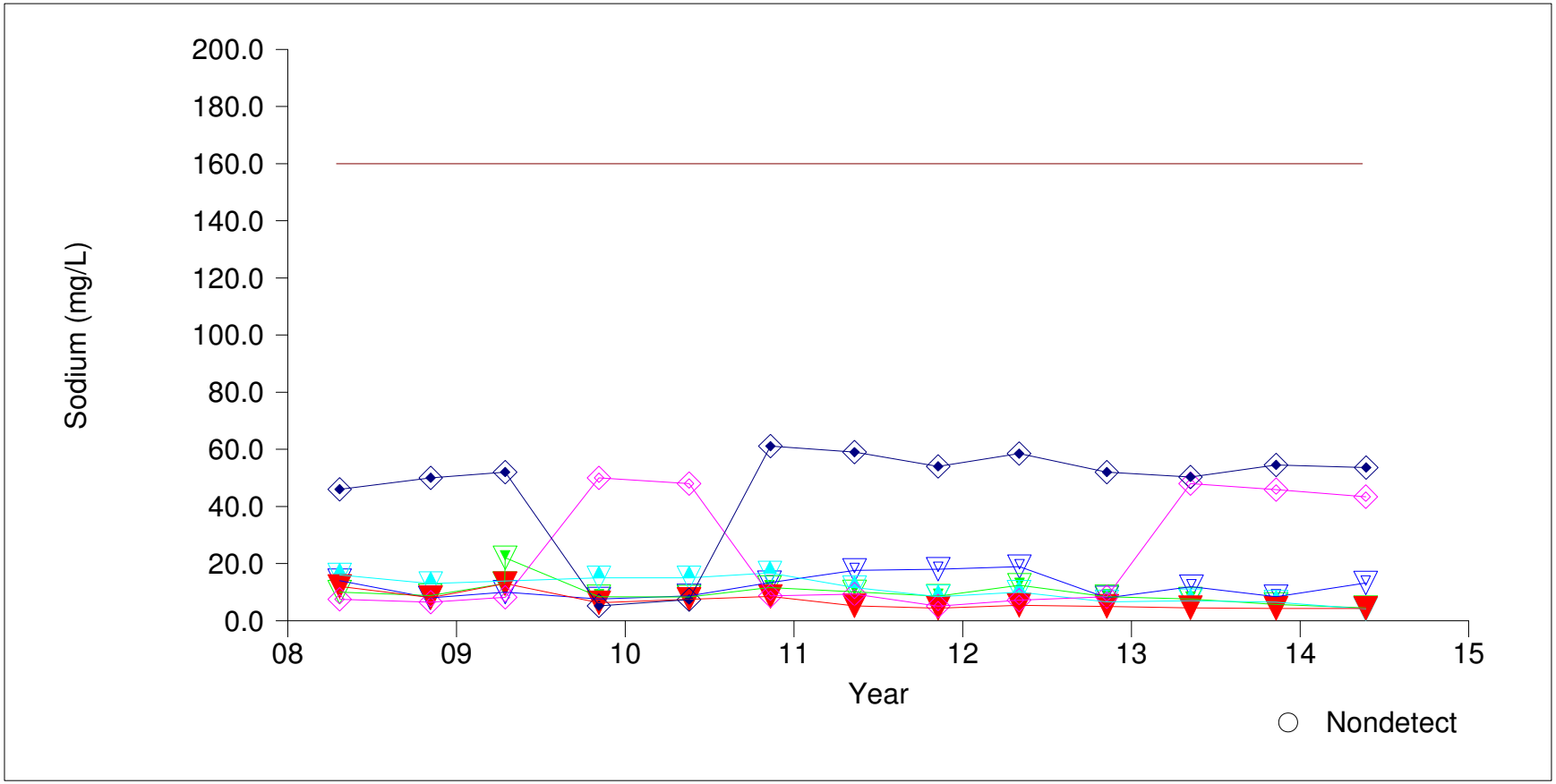
Time Series Plot for Sodium, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

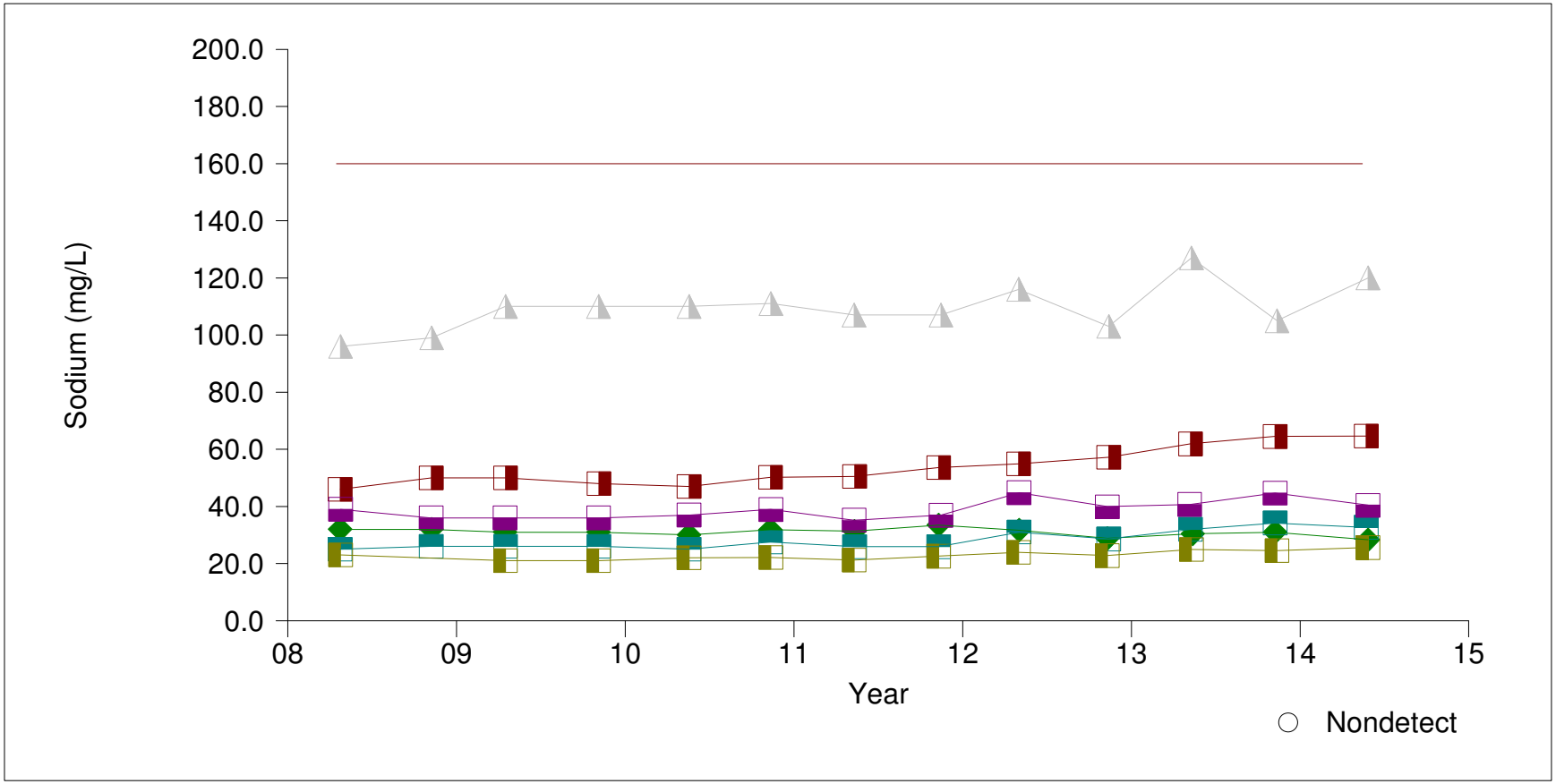
Time Series Plot for Sodium, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

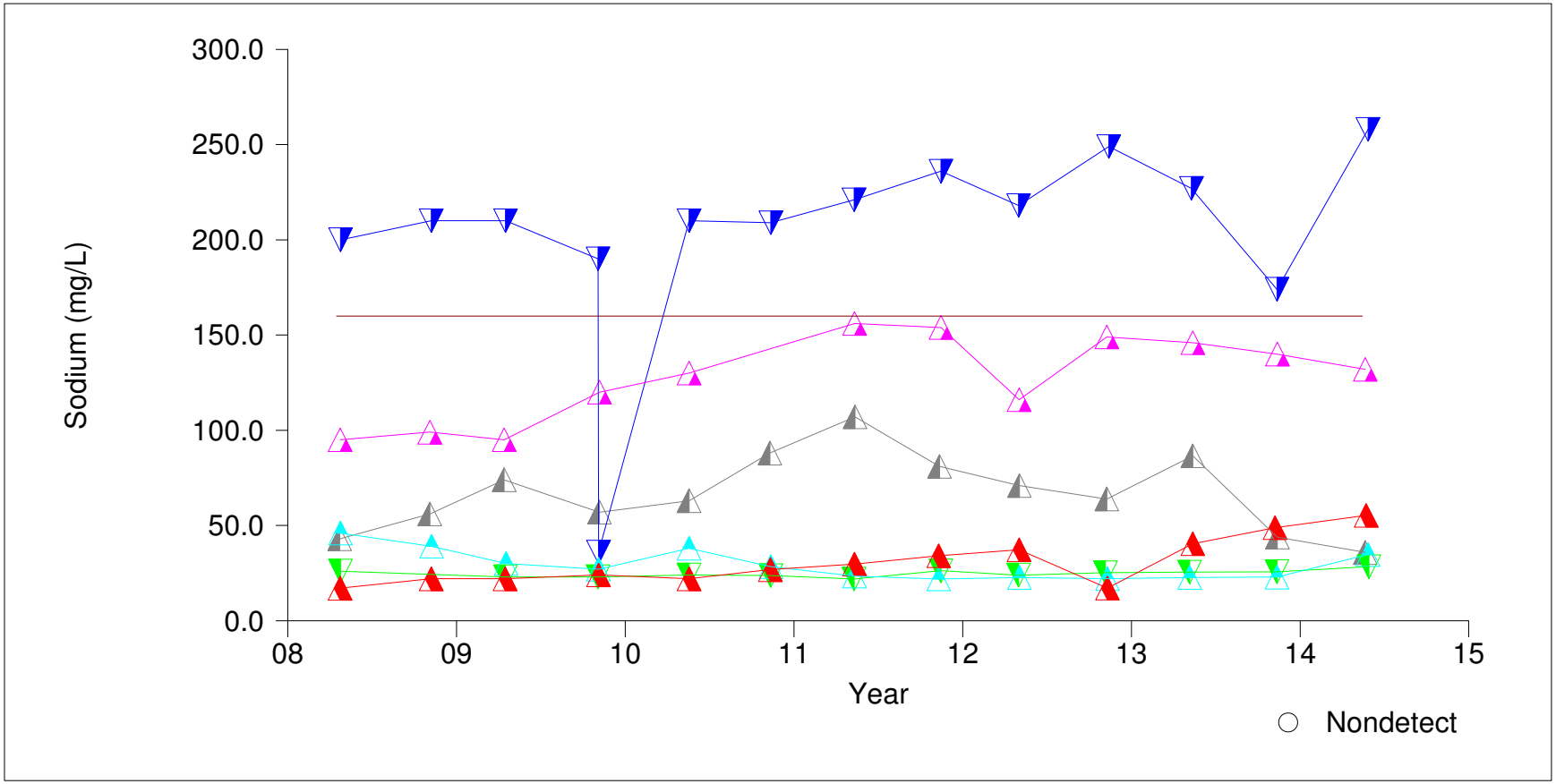
Time Series Plot for Sodium, Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

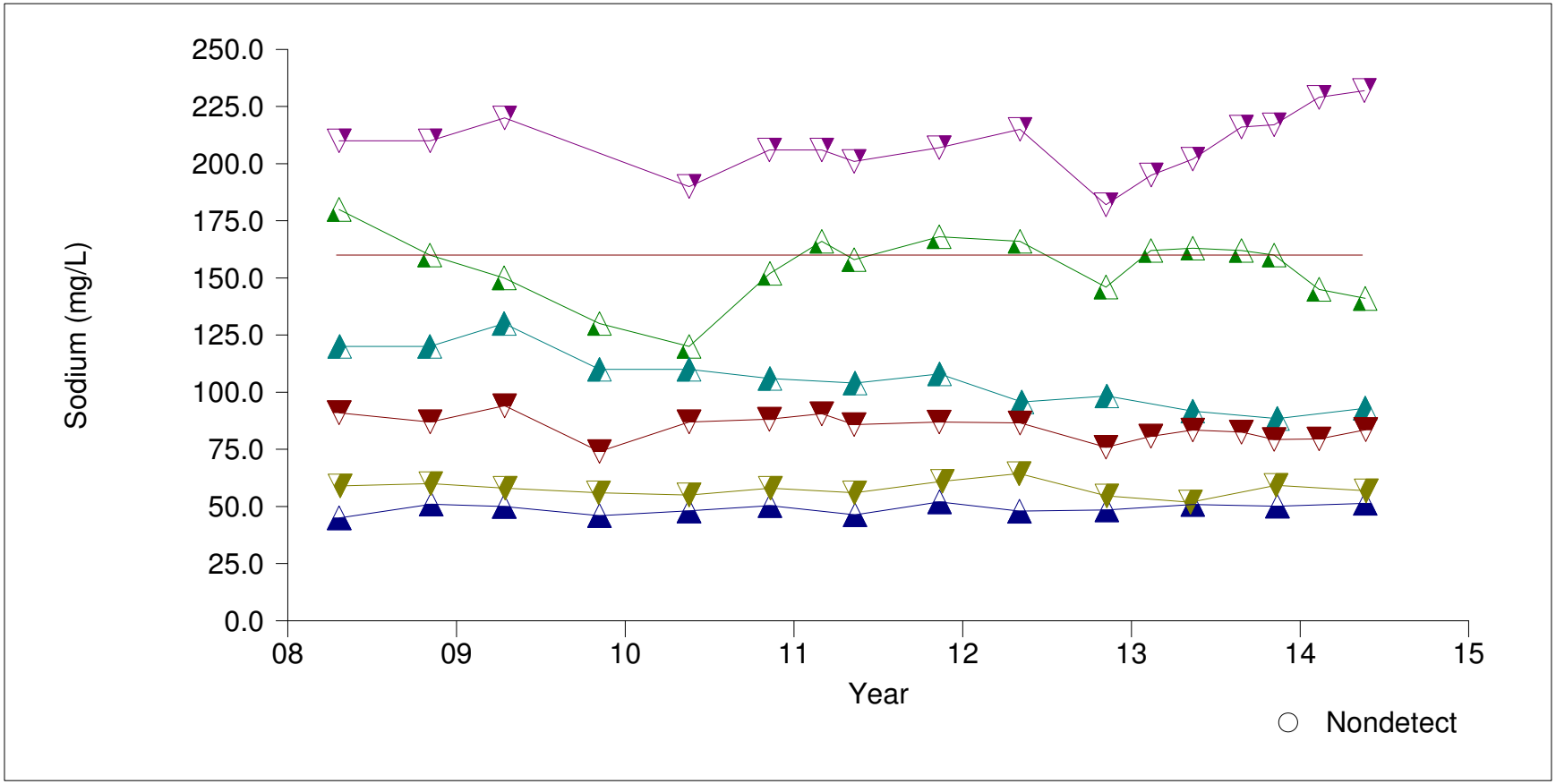
Time Series Plot for Sodium, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

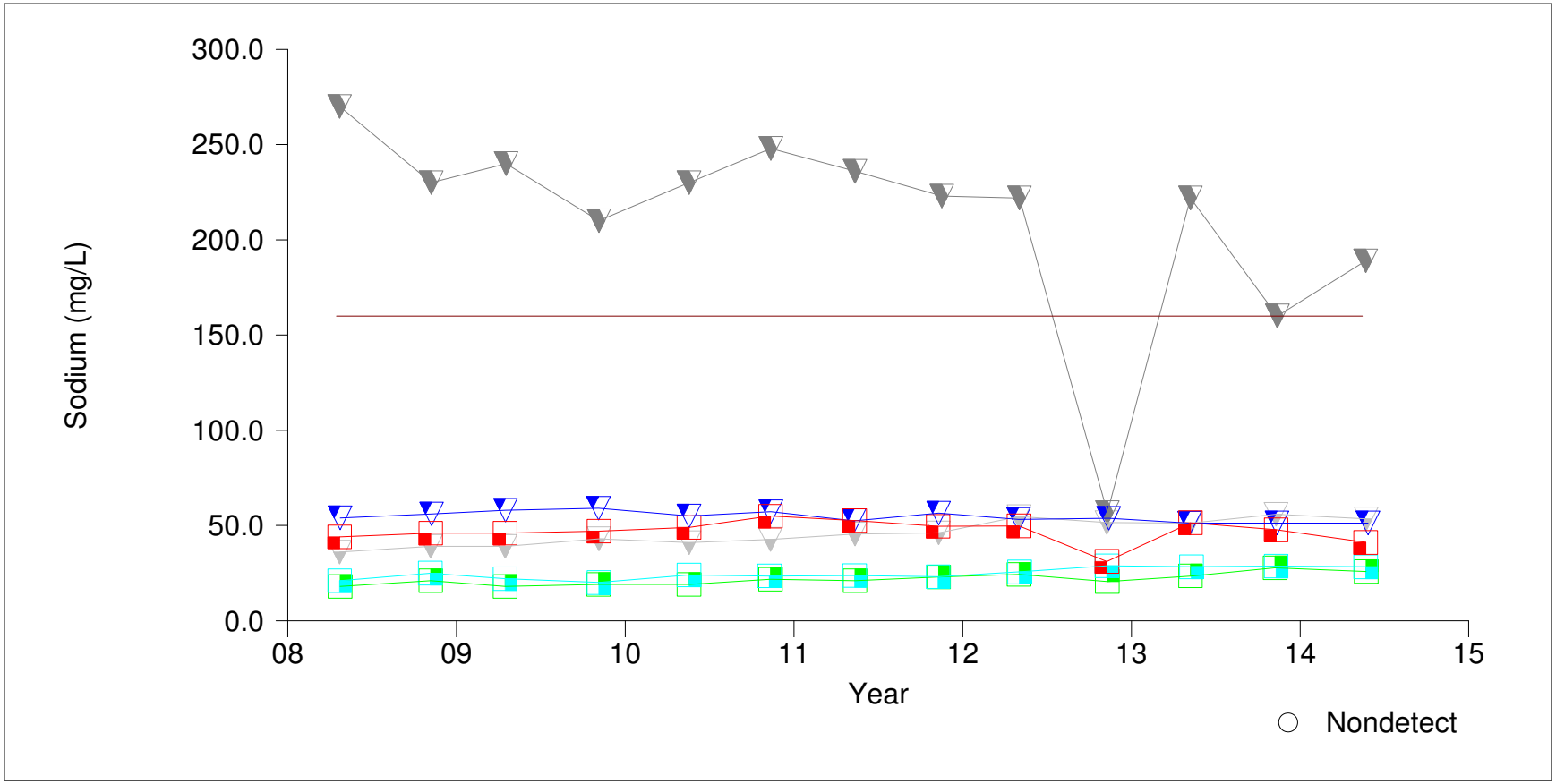
Time Series Plot for Sodium, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

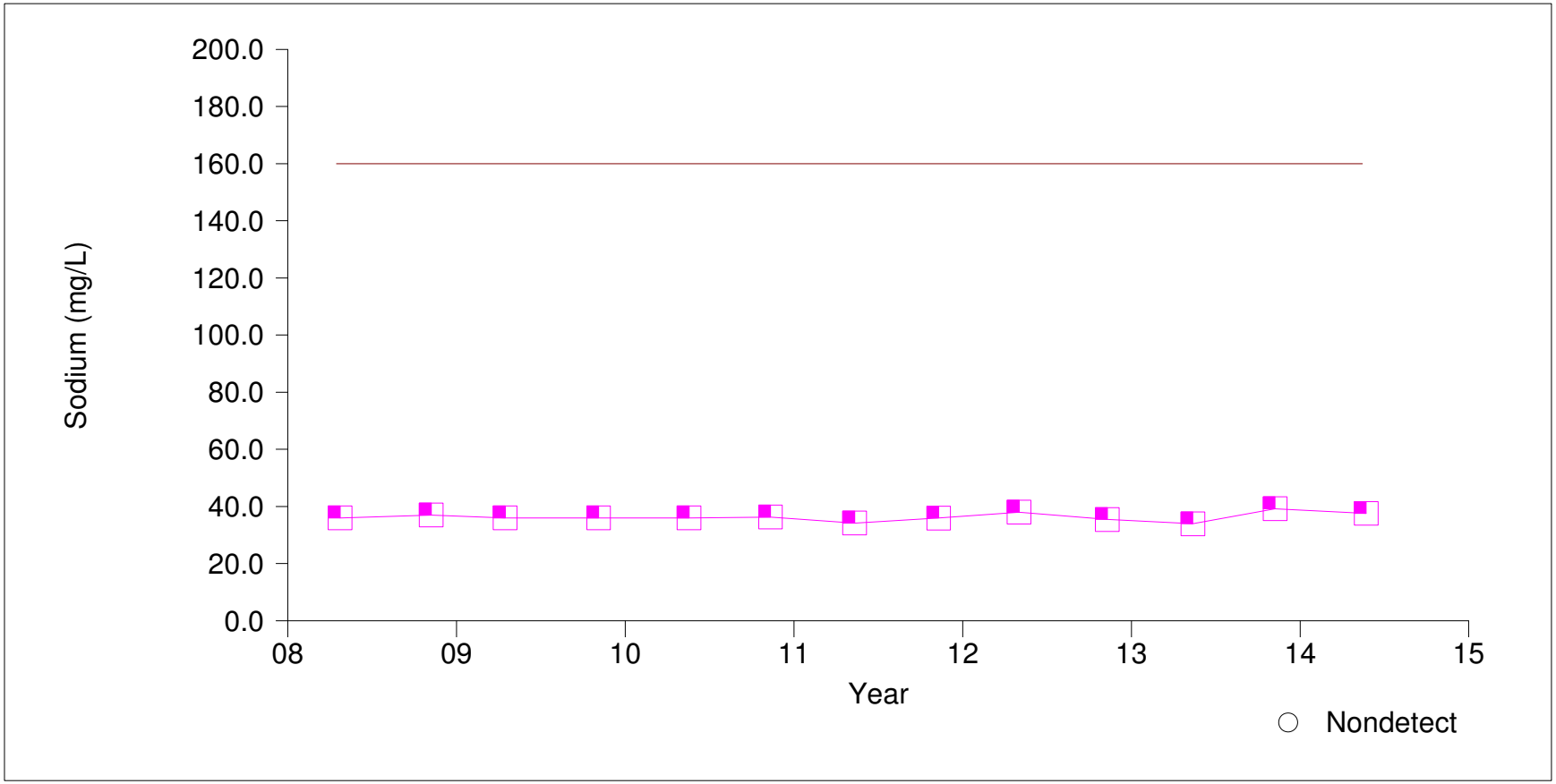
Time Series Plot for Sodium, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

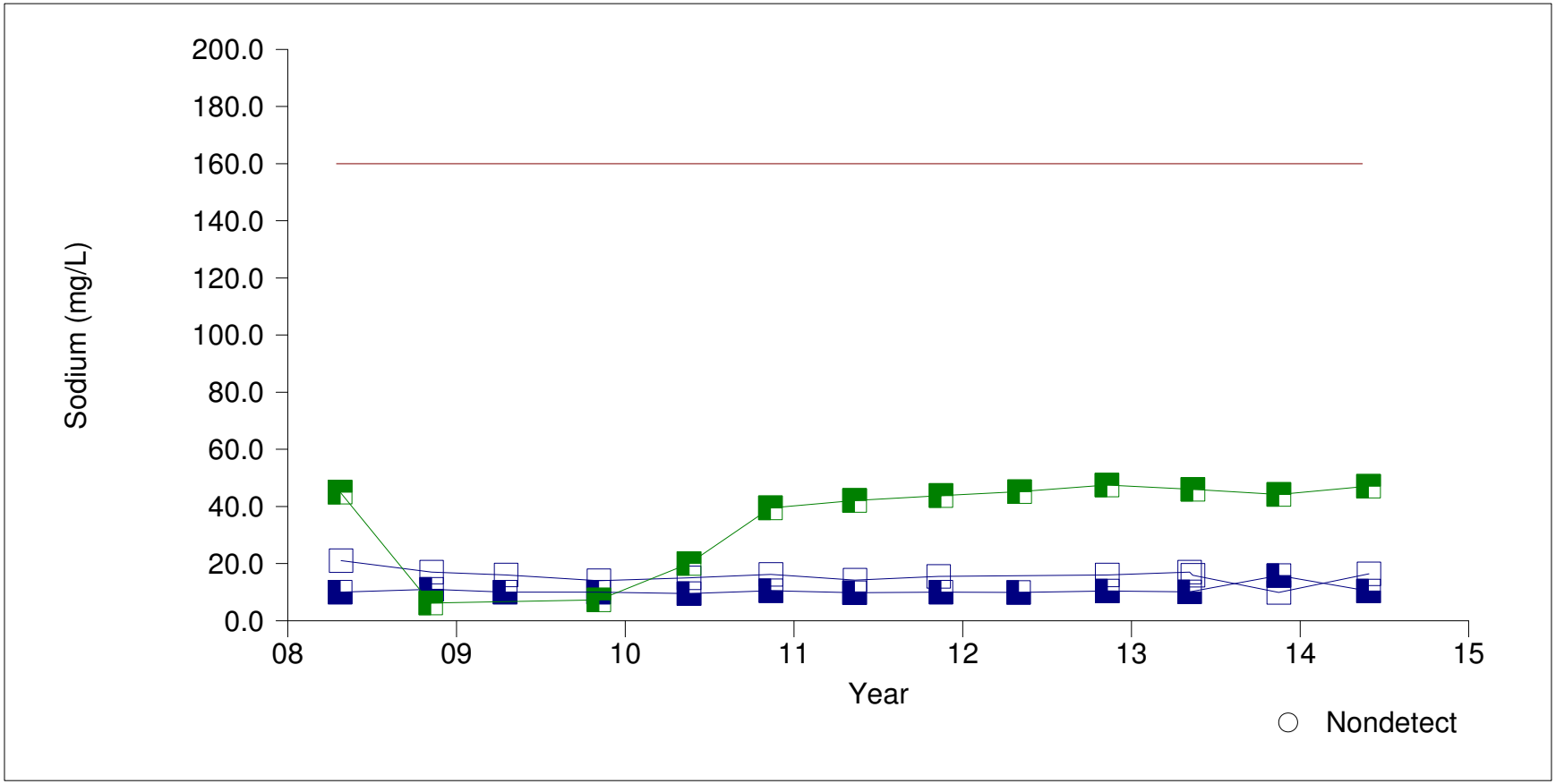
Time Series Plot for Sodium, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

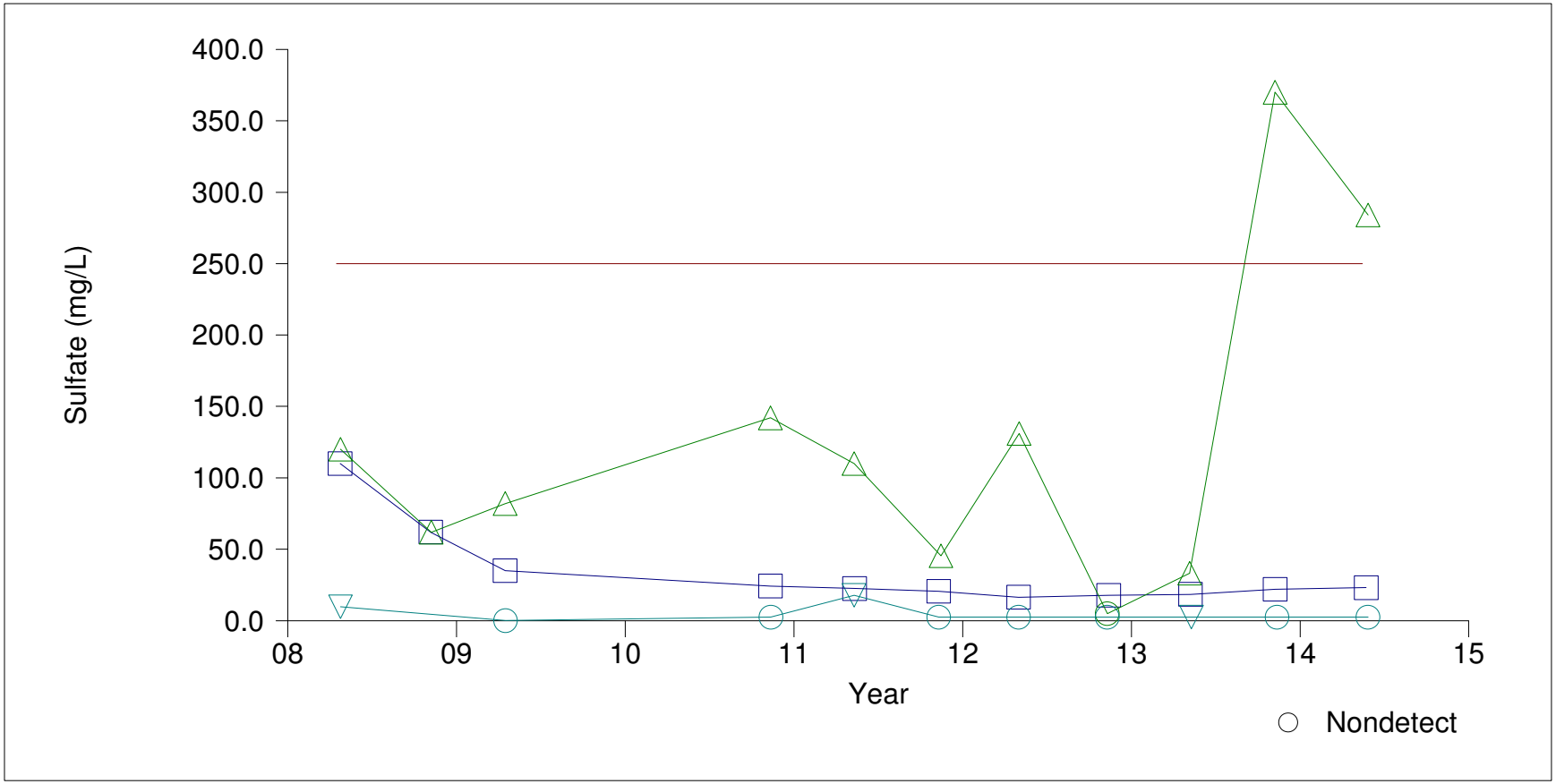
Time Series Plot for Sodium, Floridan Aquifer



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

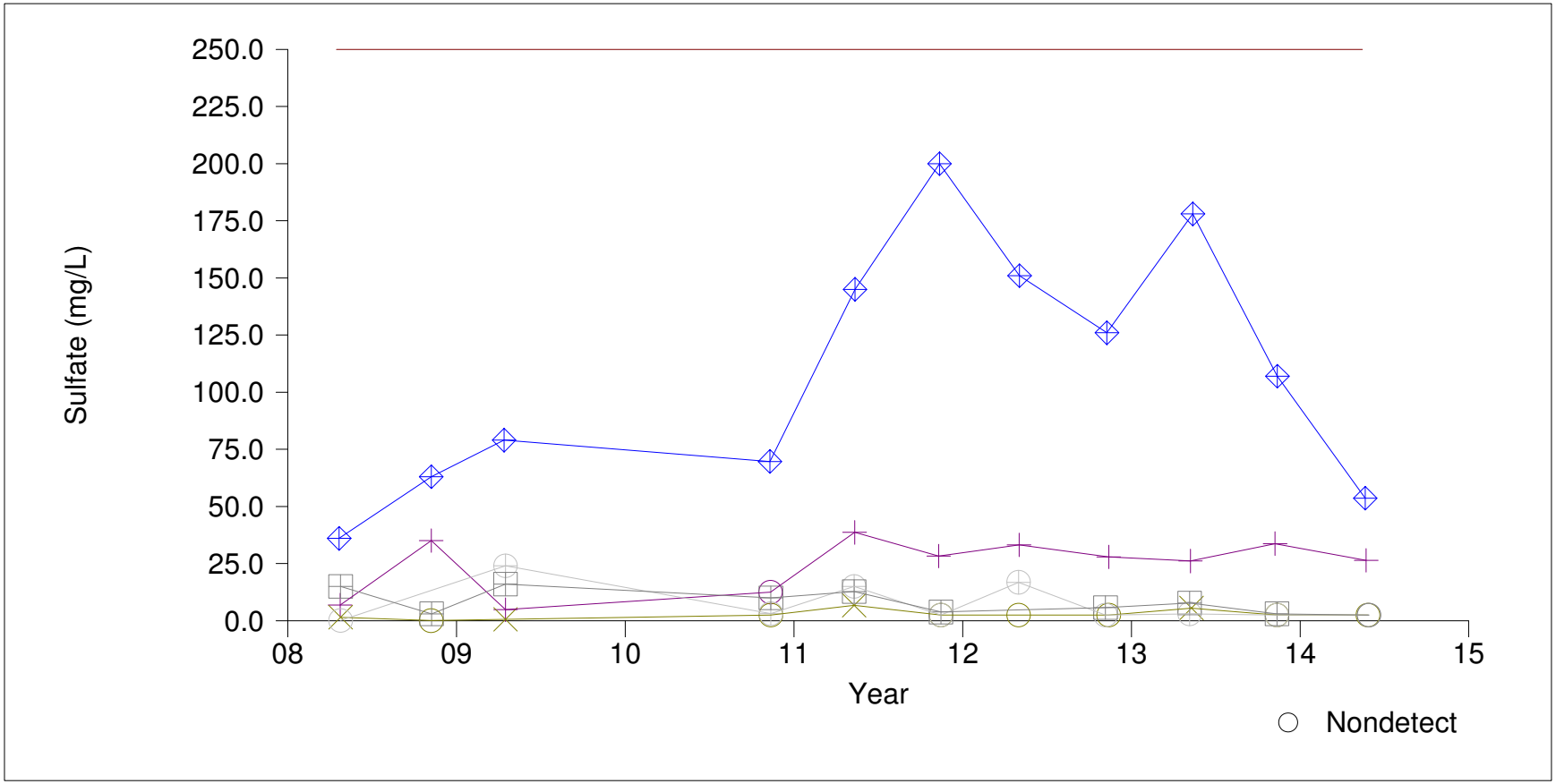
Time Series Plot for Sulfate, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

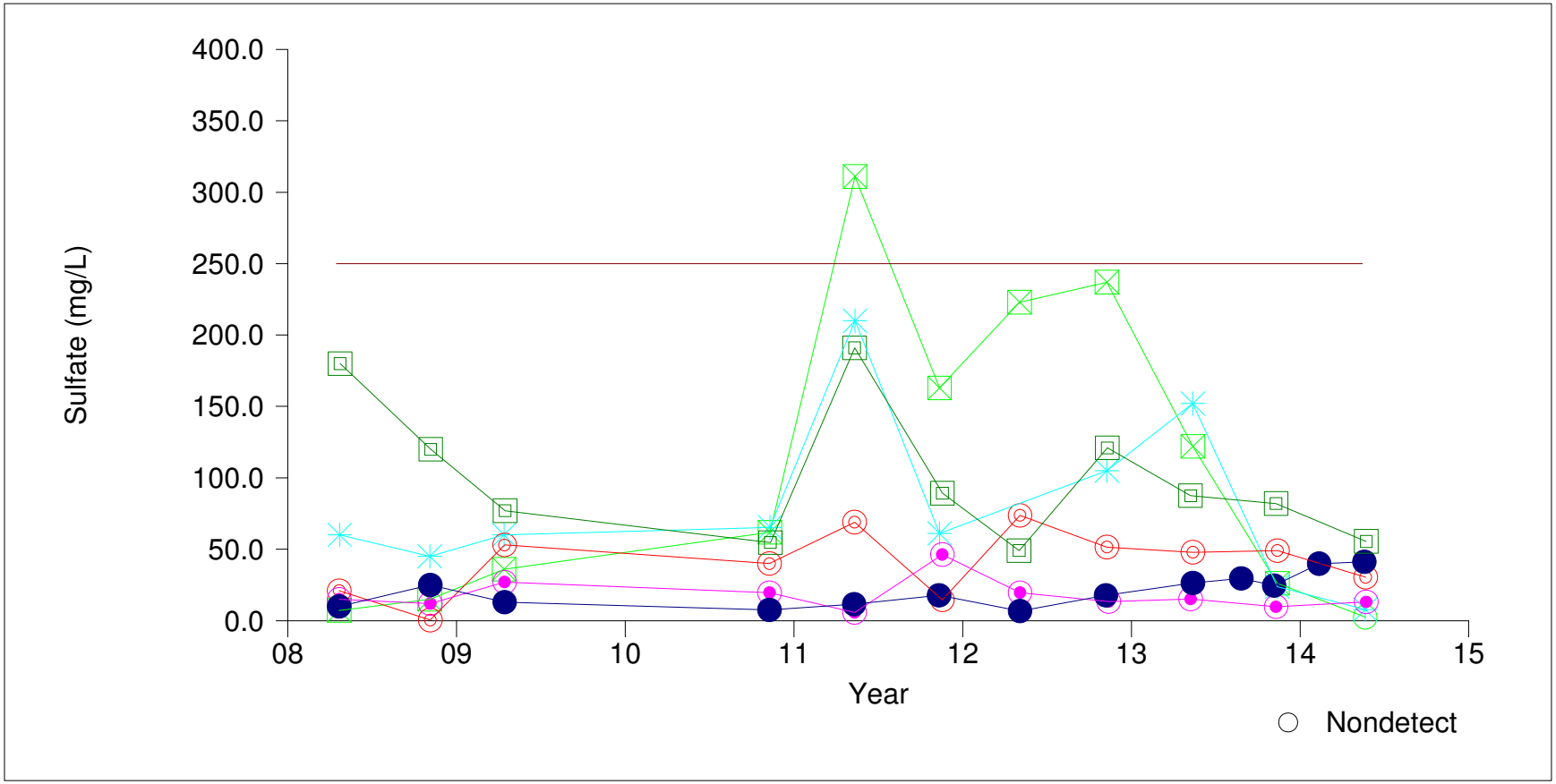
Time Series Plot for Sulfate, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

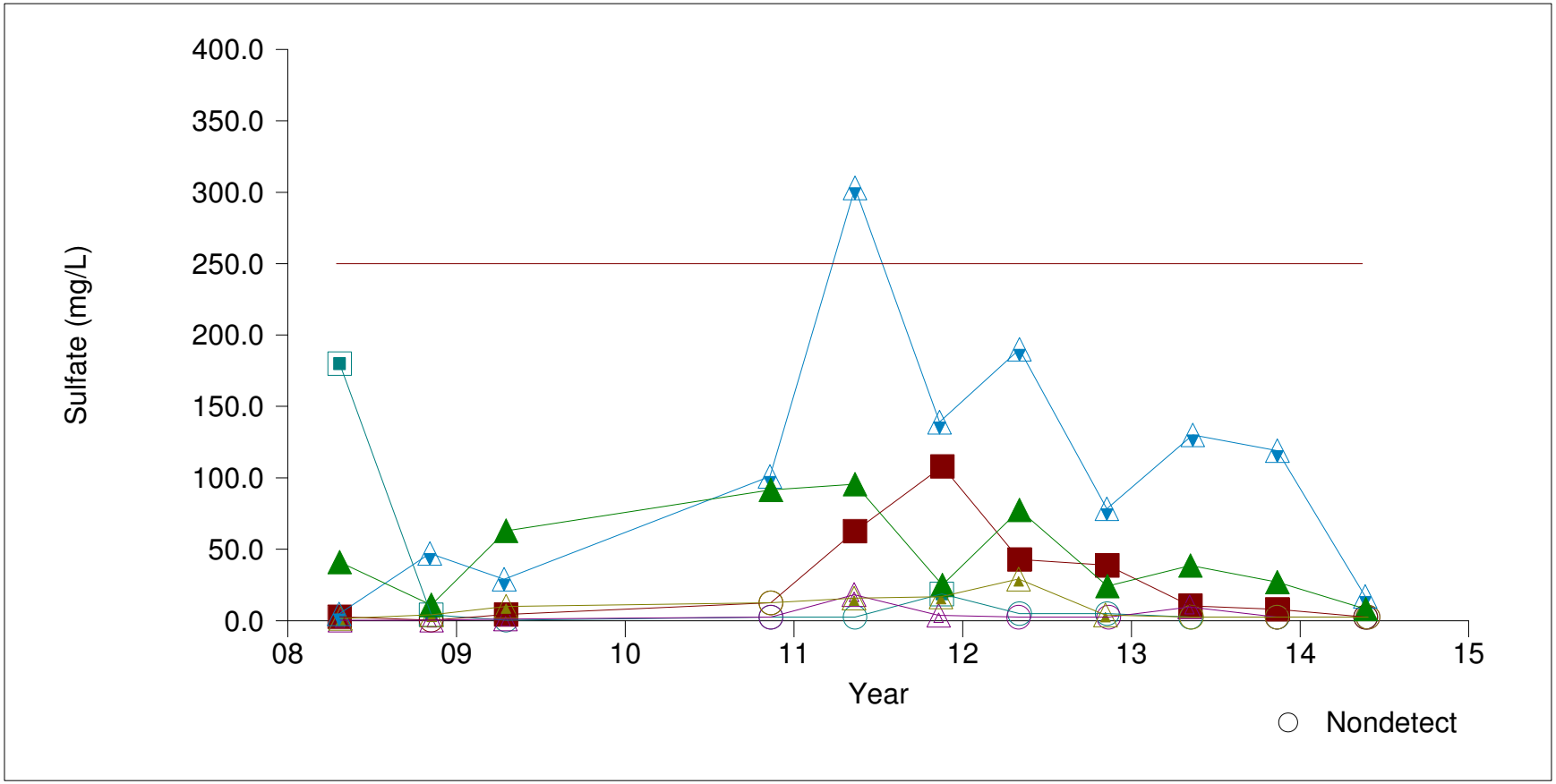
Time Series Plot for Sulfate, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

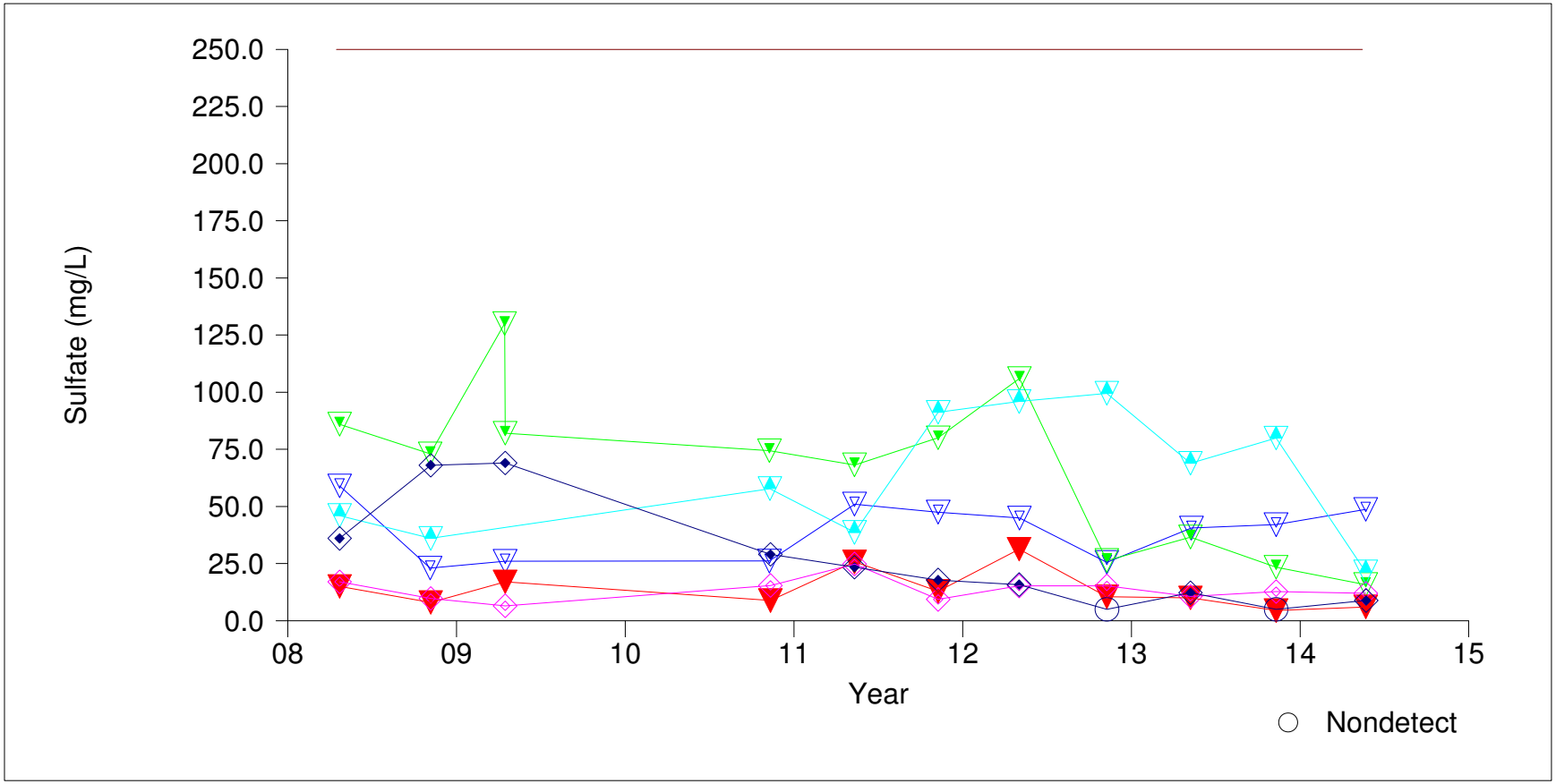
Time Series Plot for Sulfate, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Time Series Plot for Sulfate, Zone 1-2

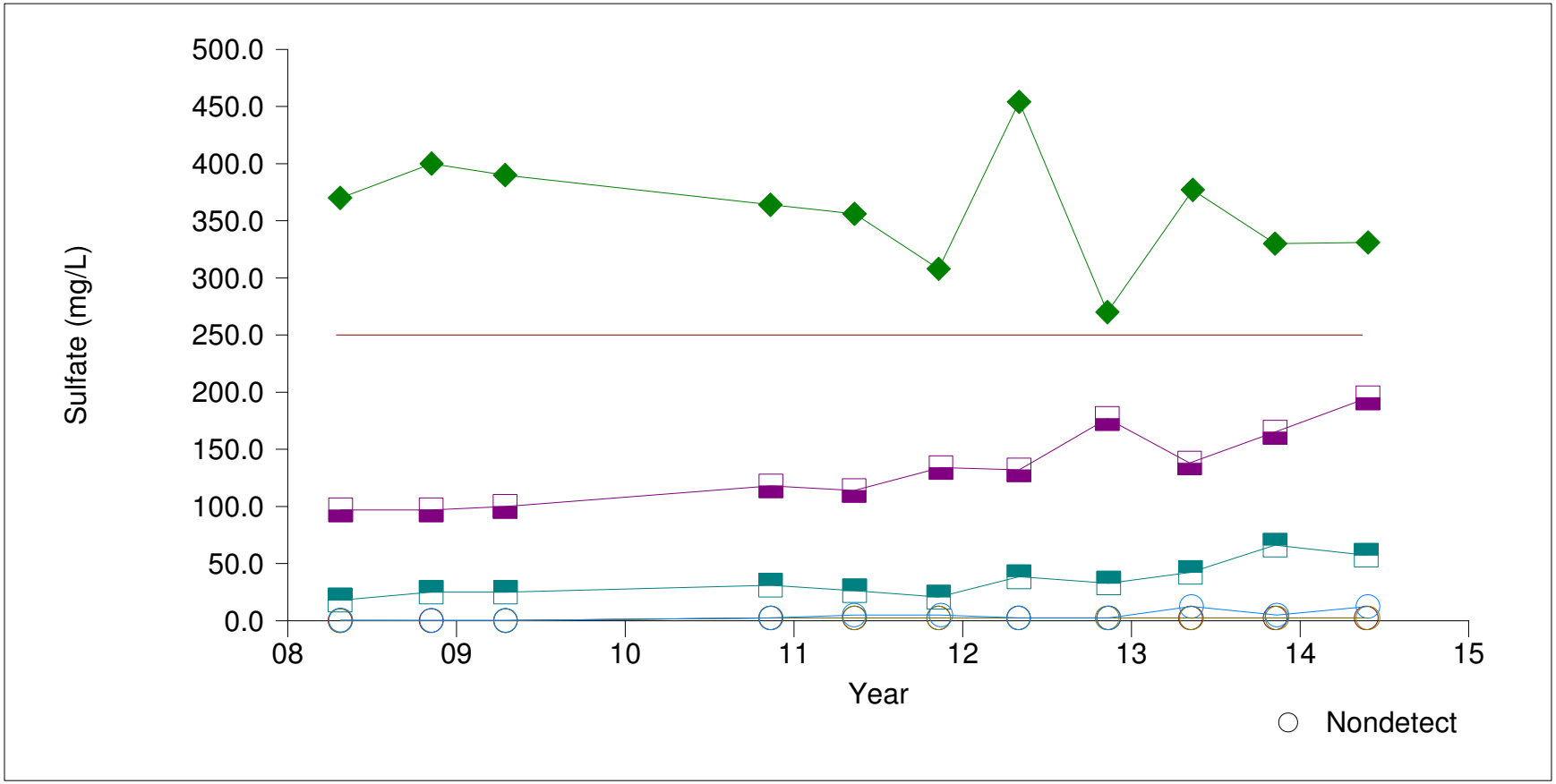


B70-2	B73-2	SDWS
B71	B74	
B72	B75	

Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

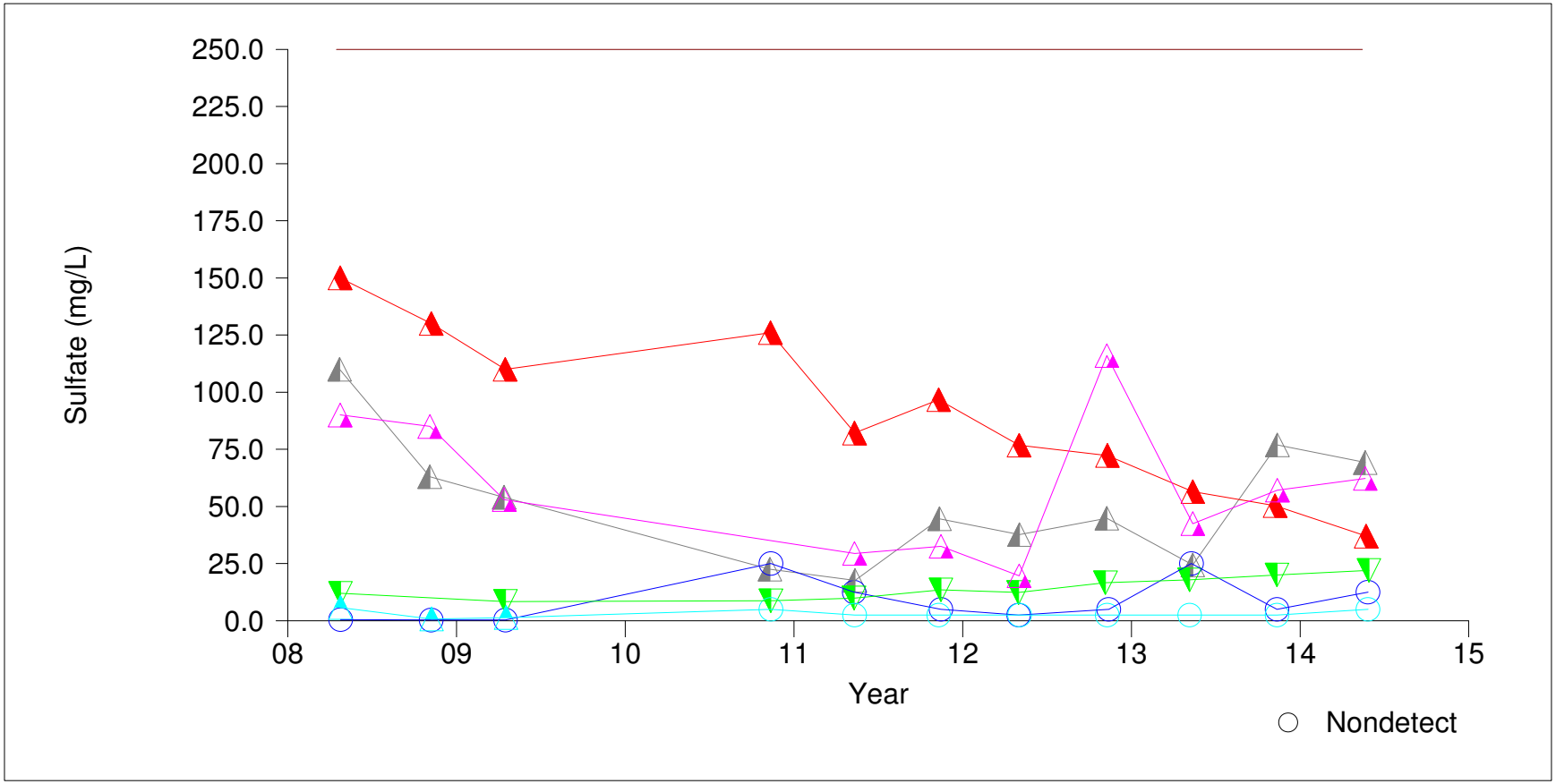
Time Series Plot for Sulfate, Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

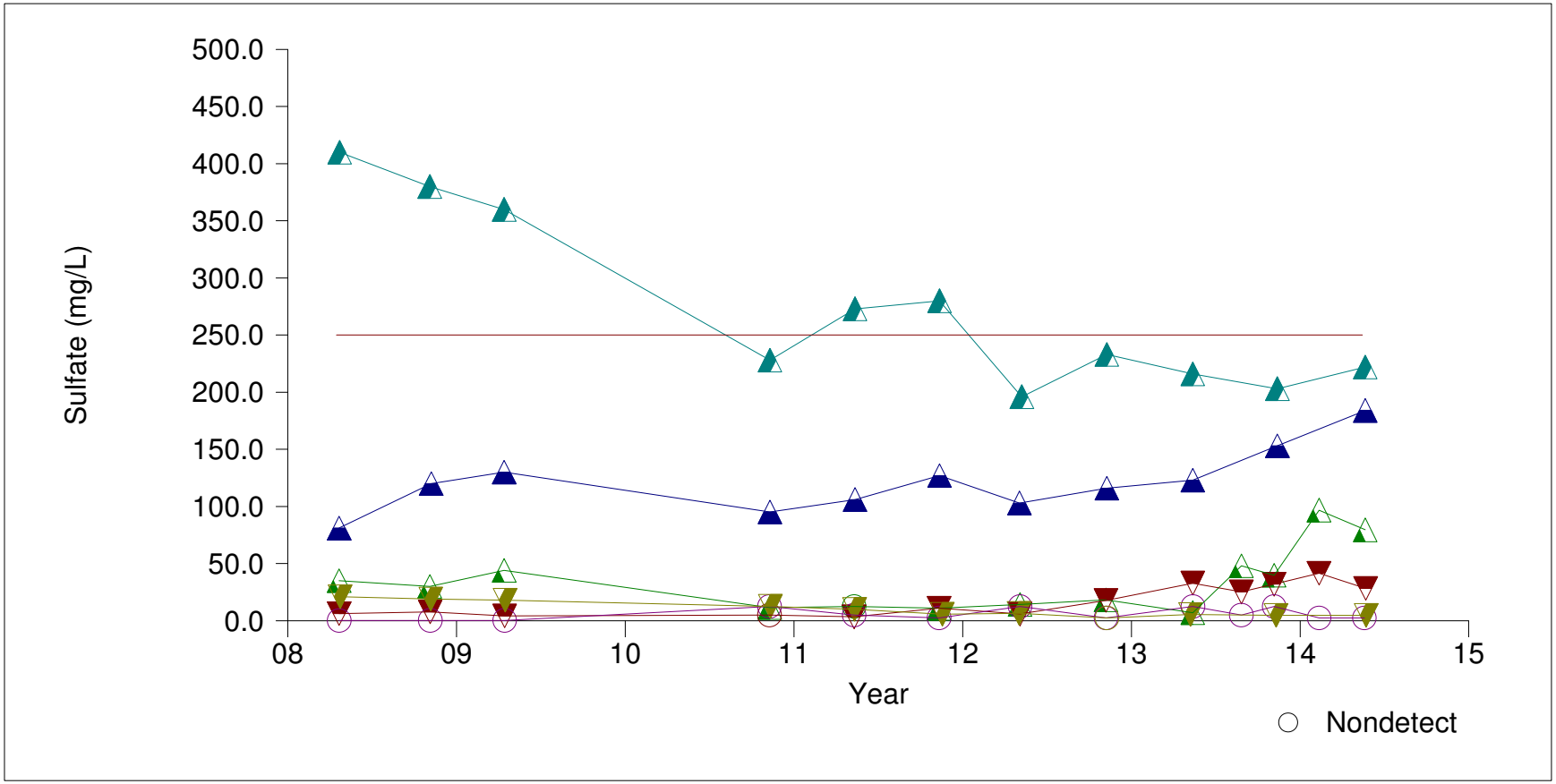
Time Series Plot for Sulfate, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

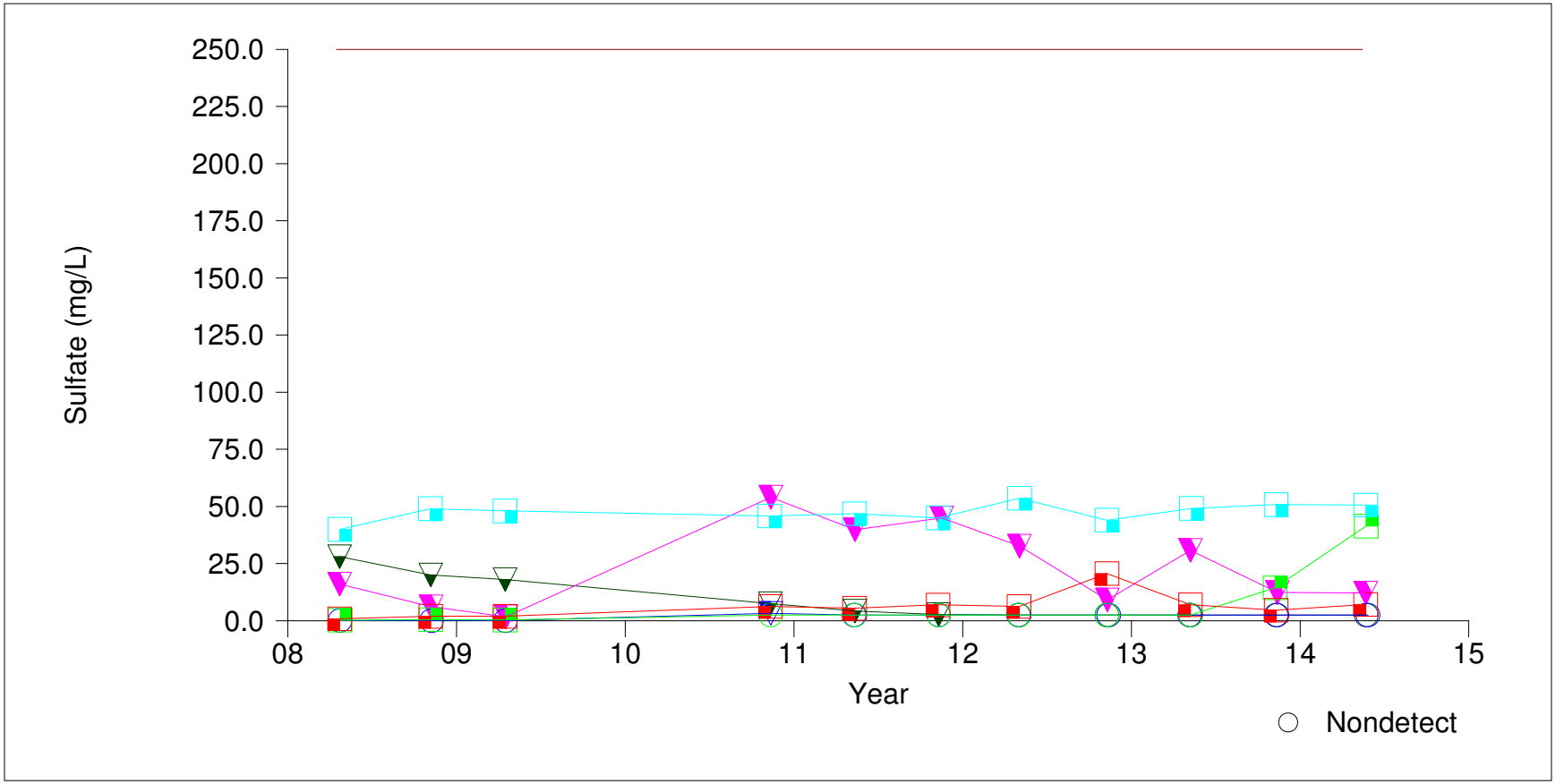
Time Series Plot for Sulfate, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

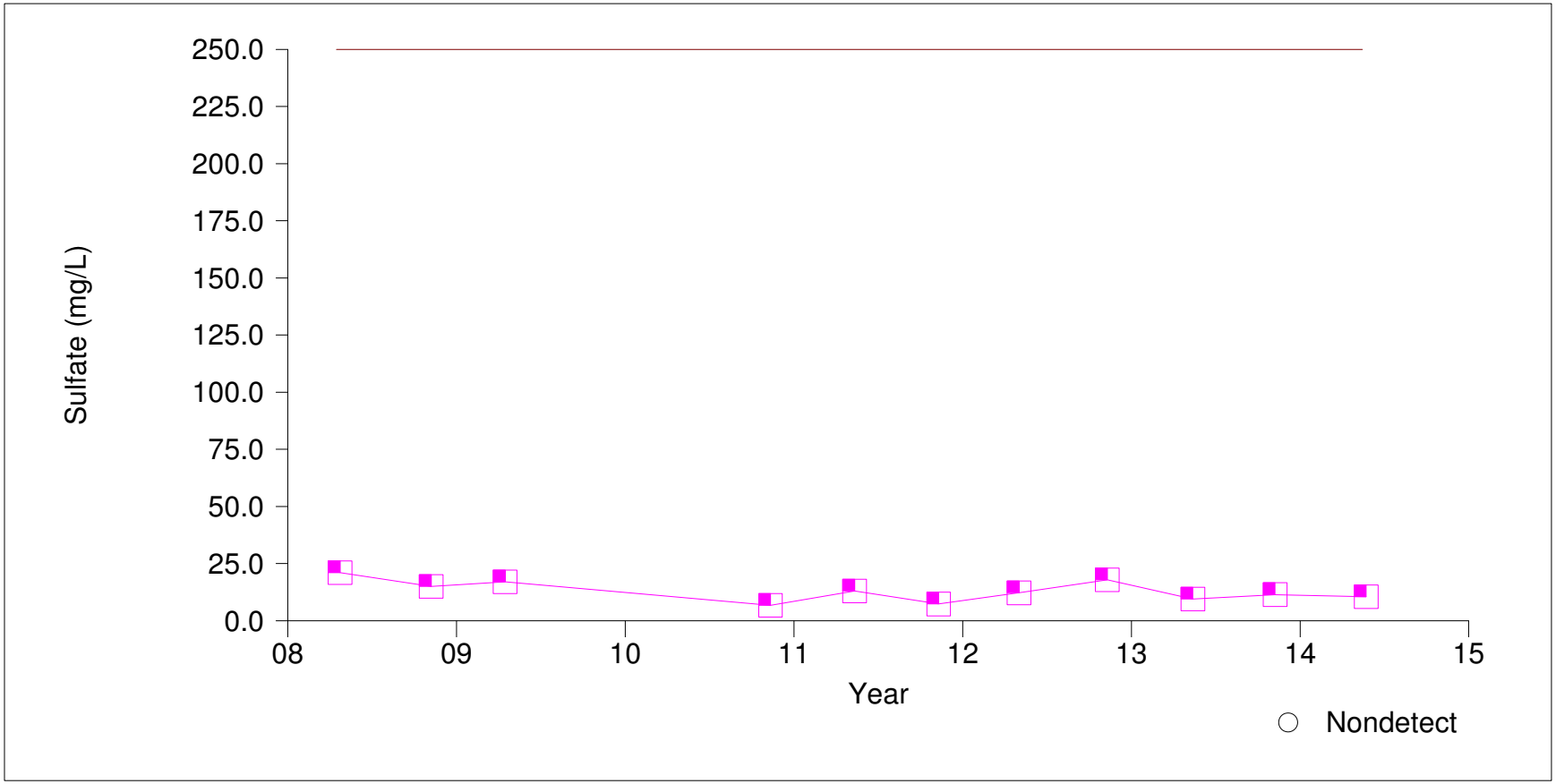
Time Series Plot for Sulfate, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

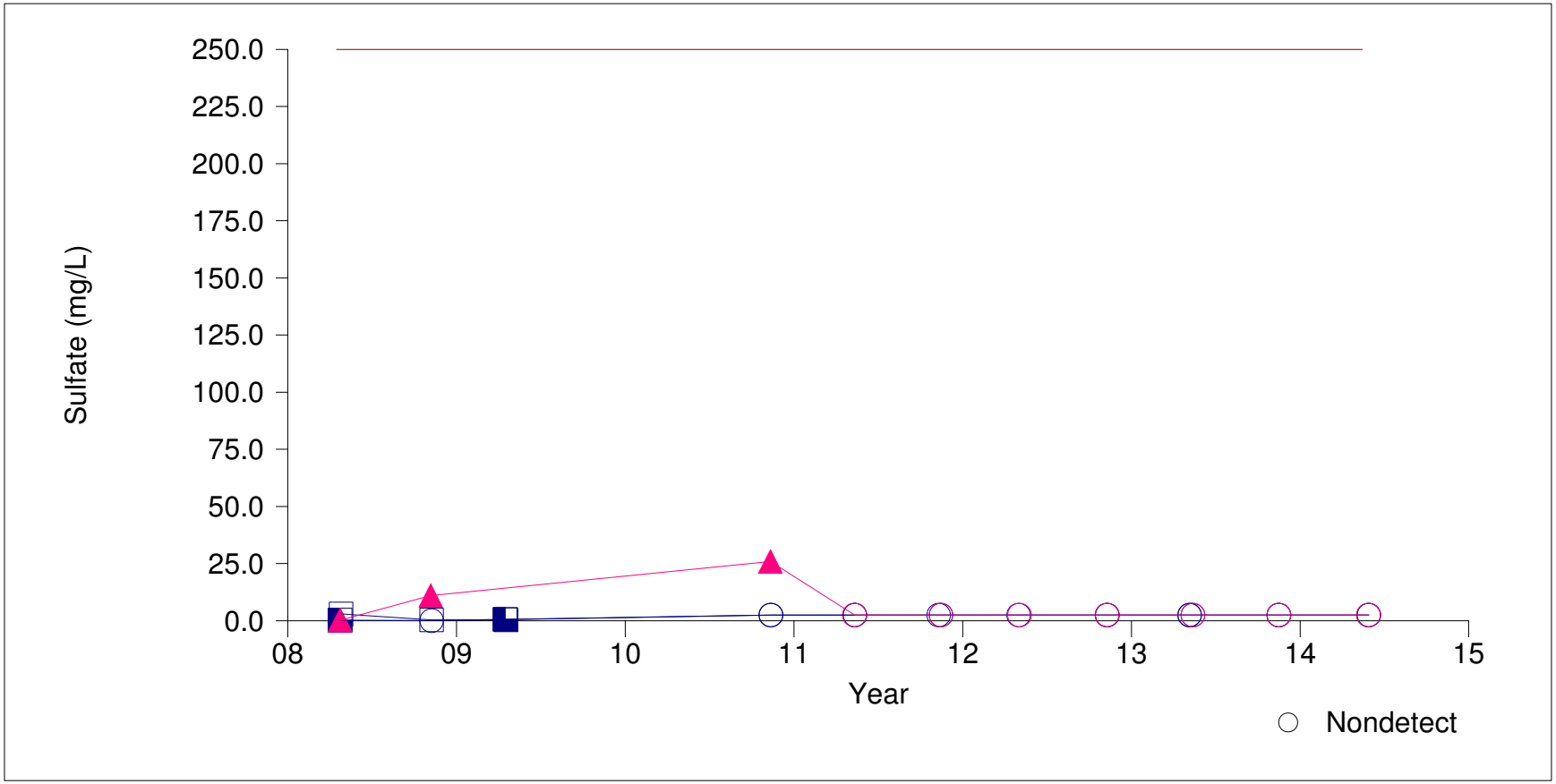
Time Series Plot for Sulfate, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Time Series Plot for Sulfate, Floridan Aquifer



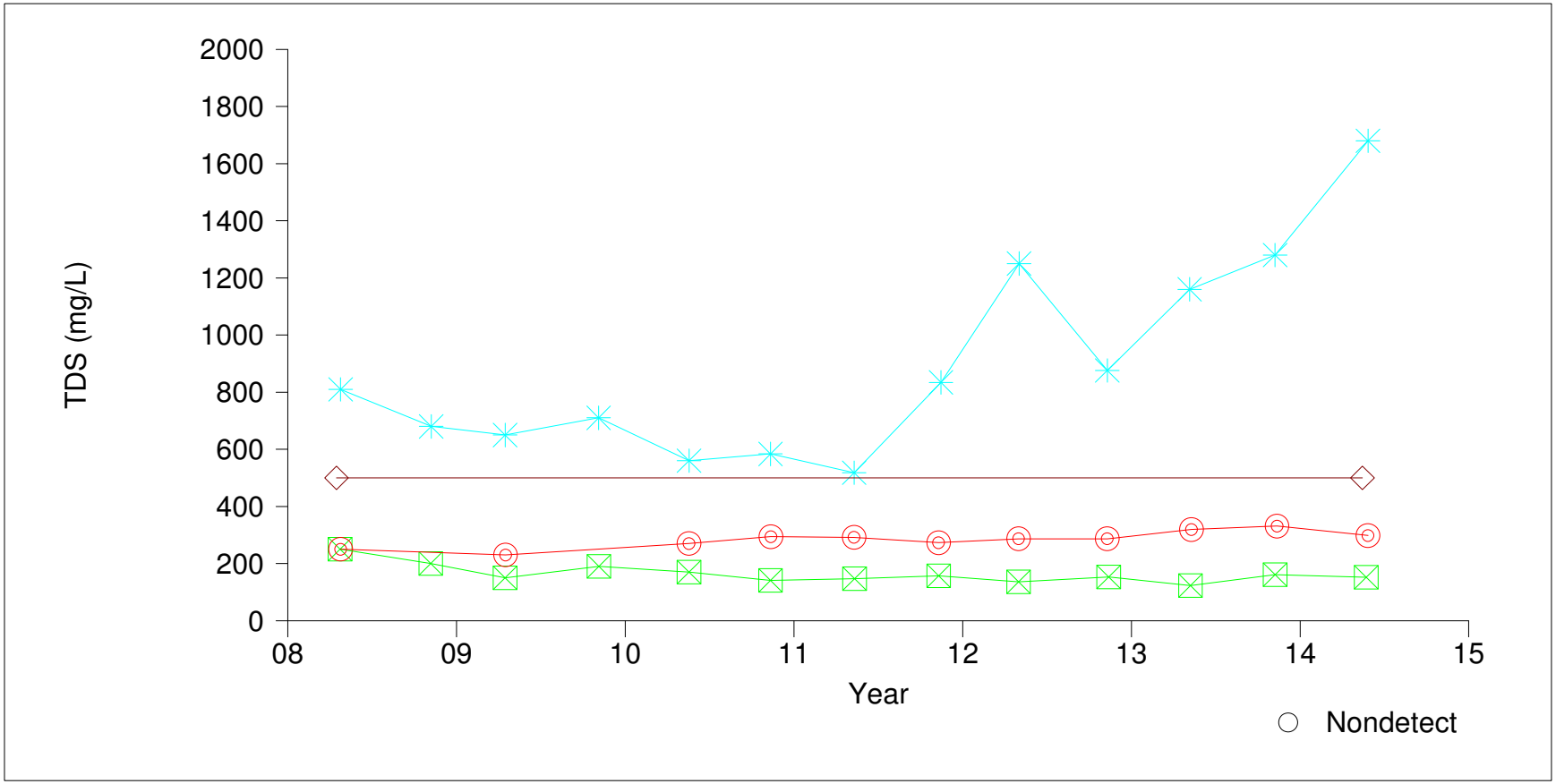
FA-1B
F-MB
FA-2C

SDWS

Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

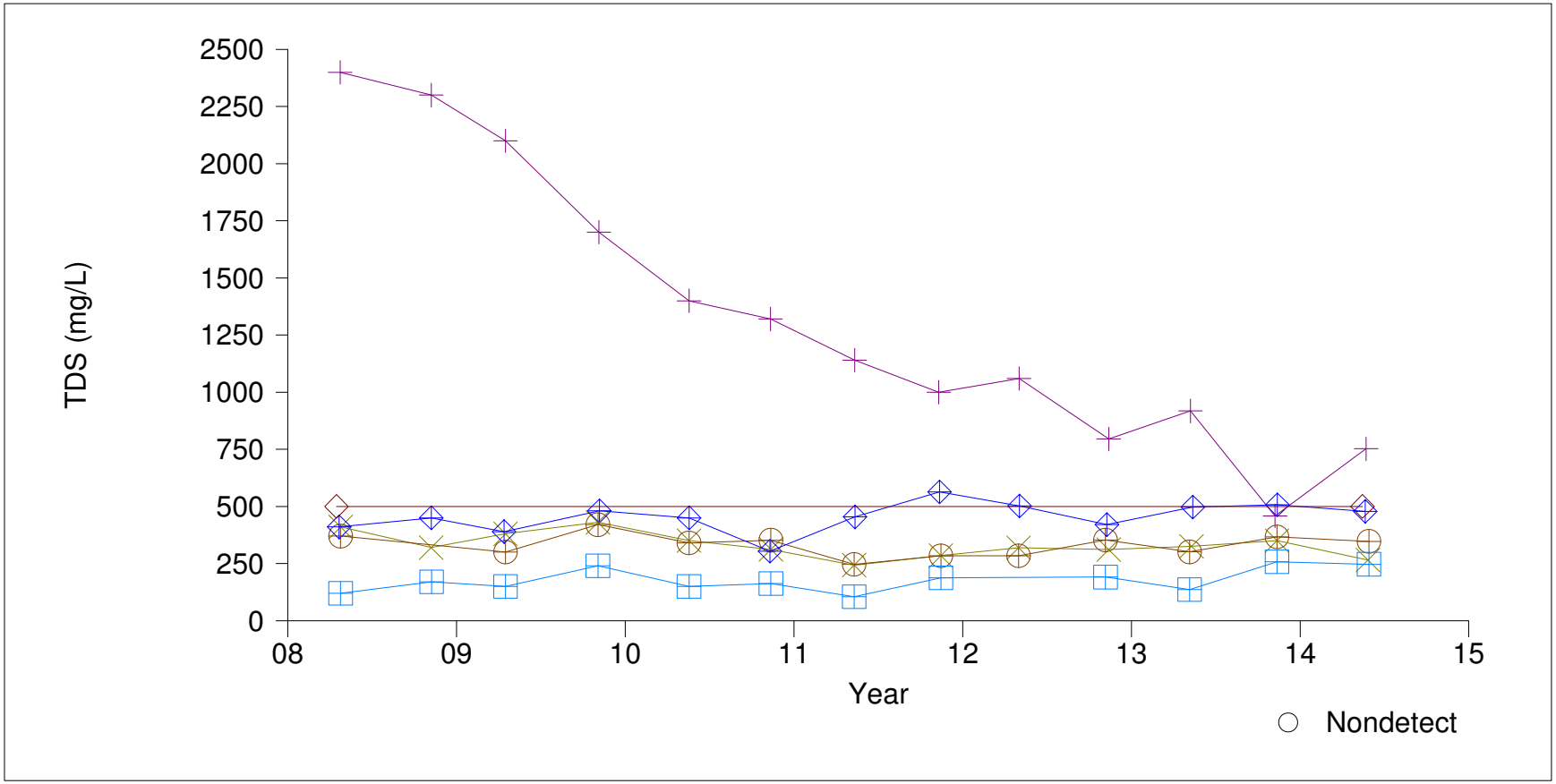
Time Series Plot for Total Dissolved Solids (TDS), Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

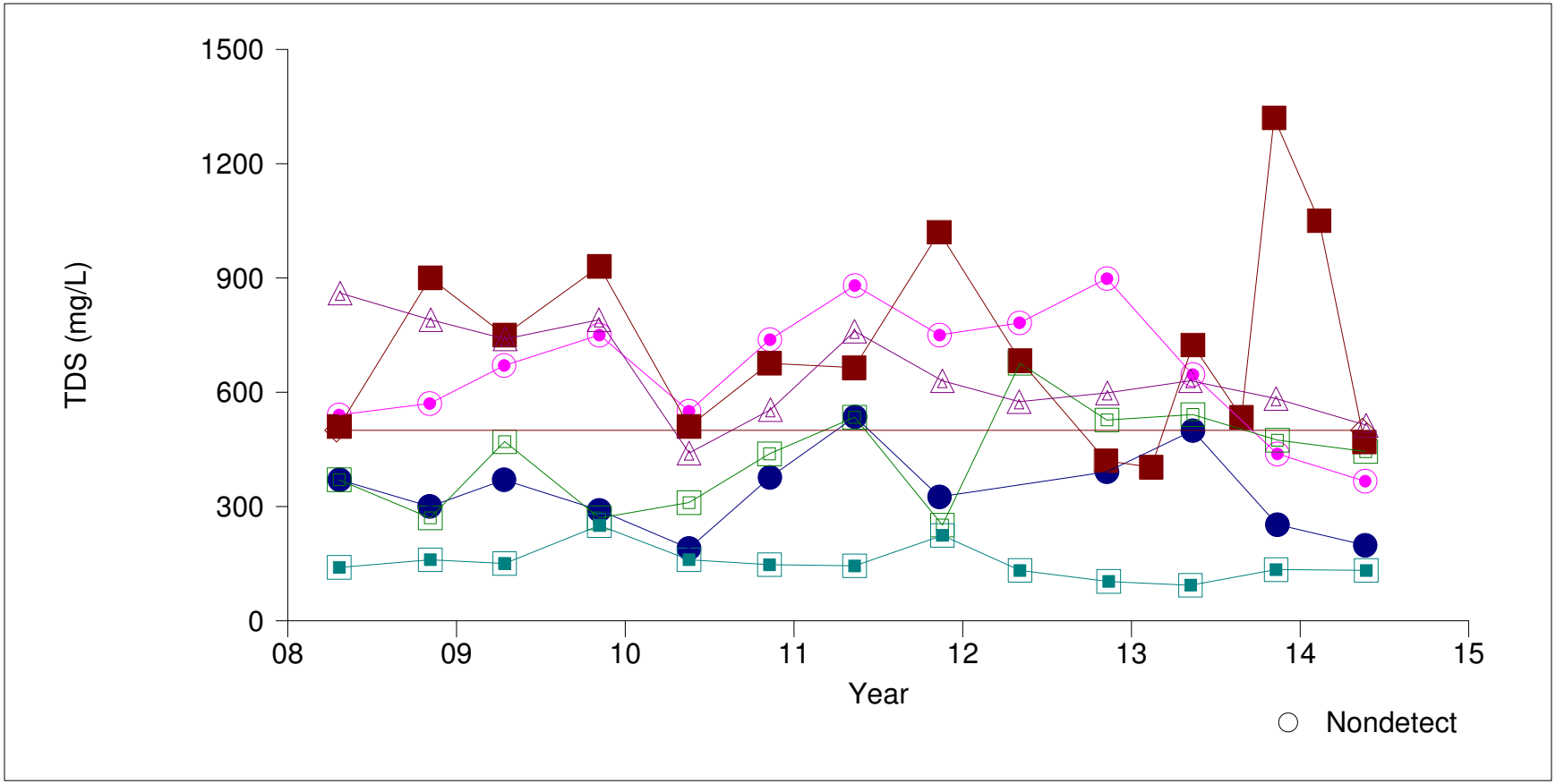
Time Series Plot for Total Dissolved Solids (TDS), Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

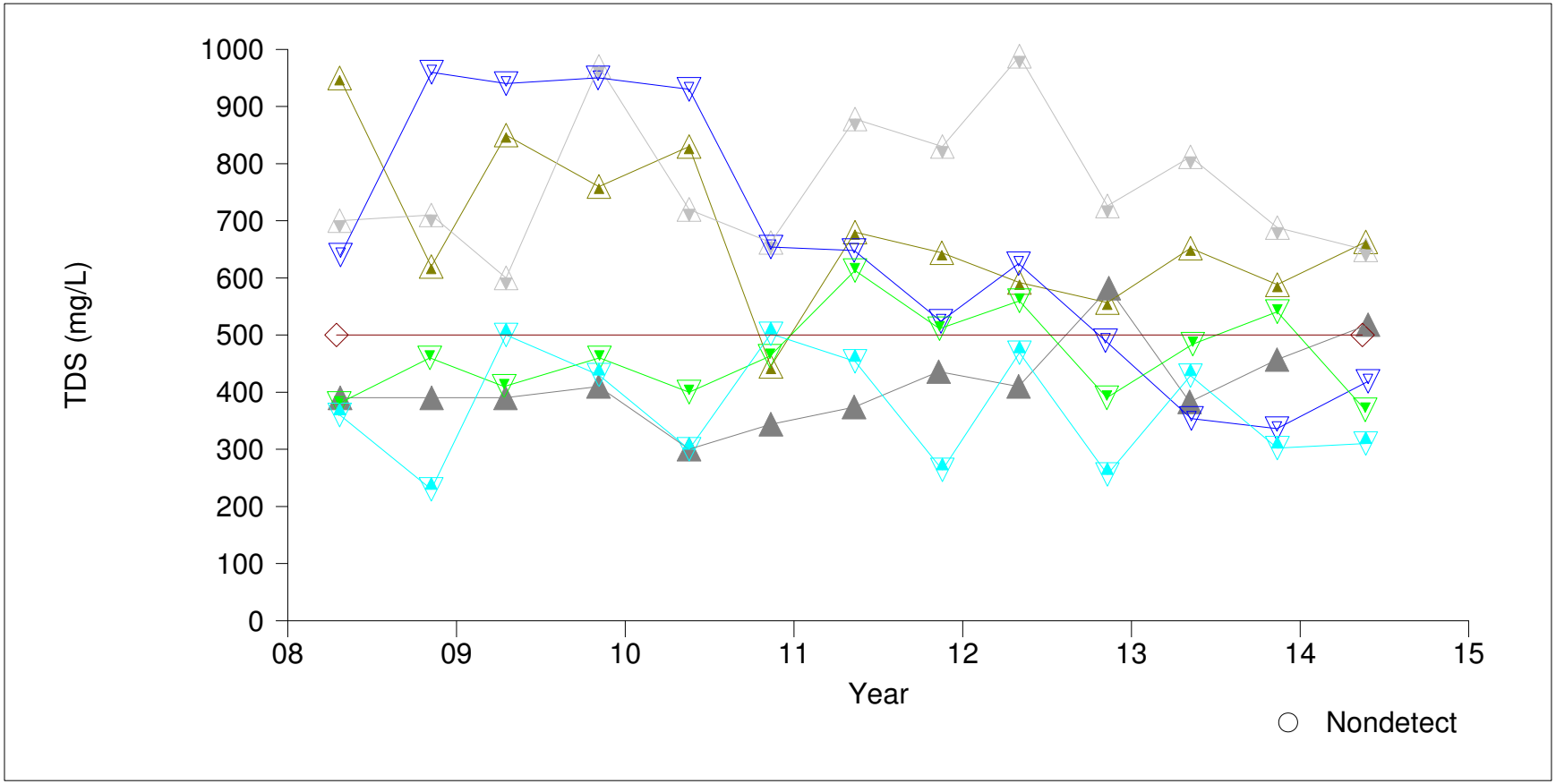
Time Series Plot for Total Dissolved Solids (TDS), Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

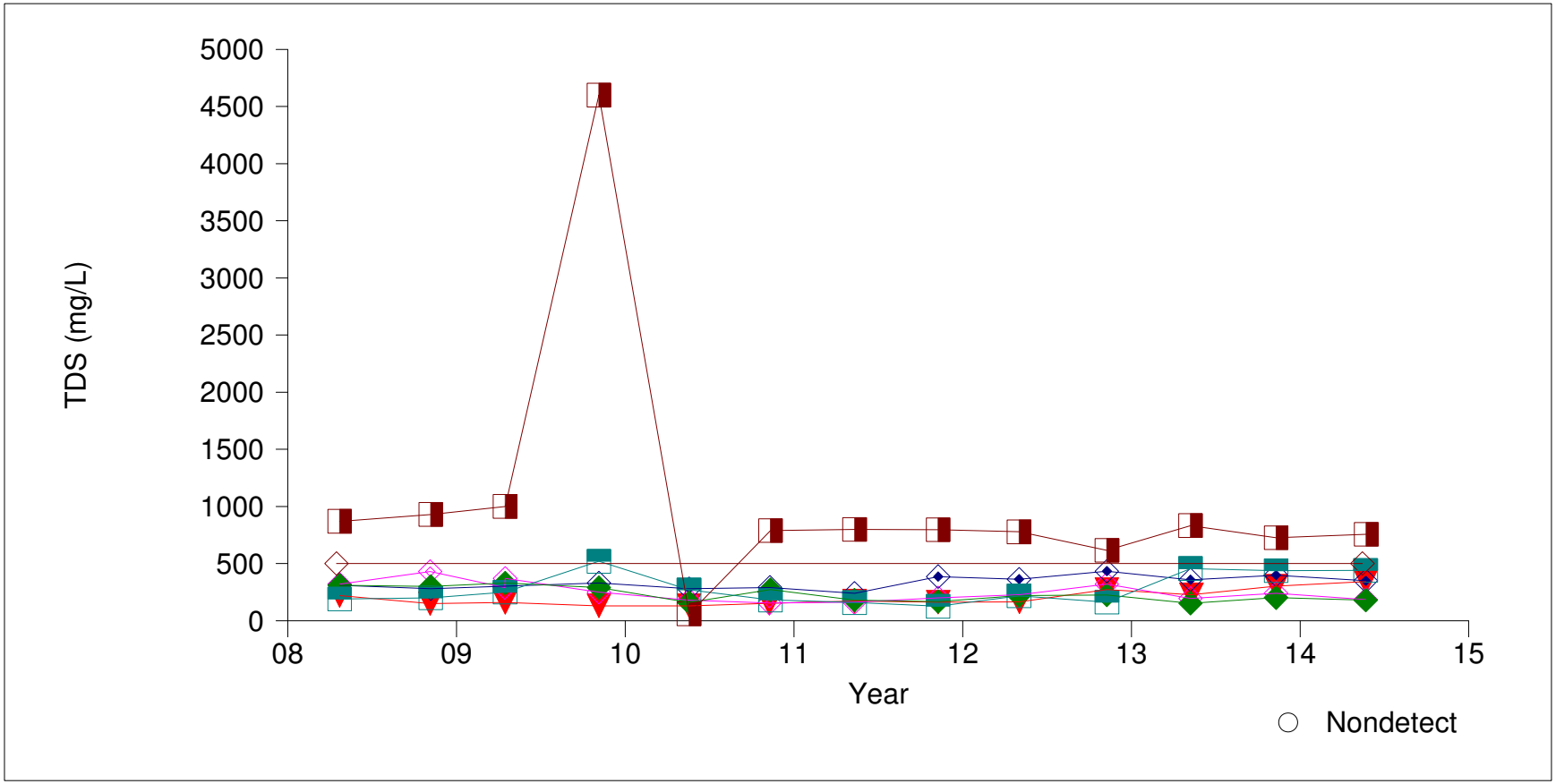
Time Series Plot for Total Dissolved Solids (TDS), Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

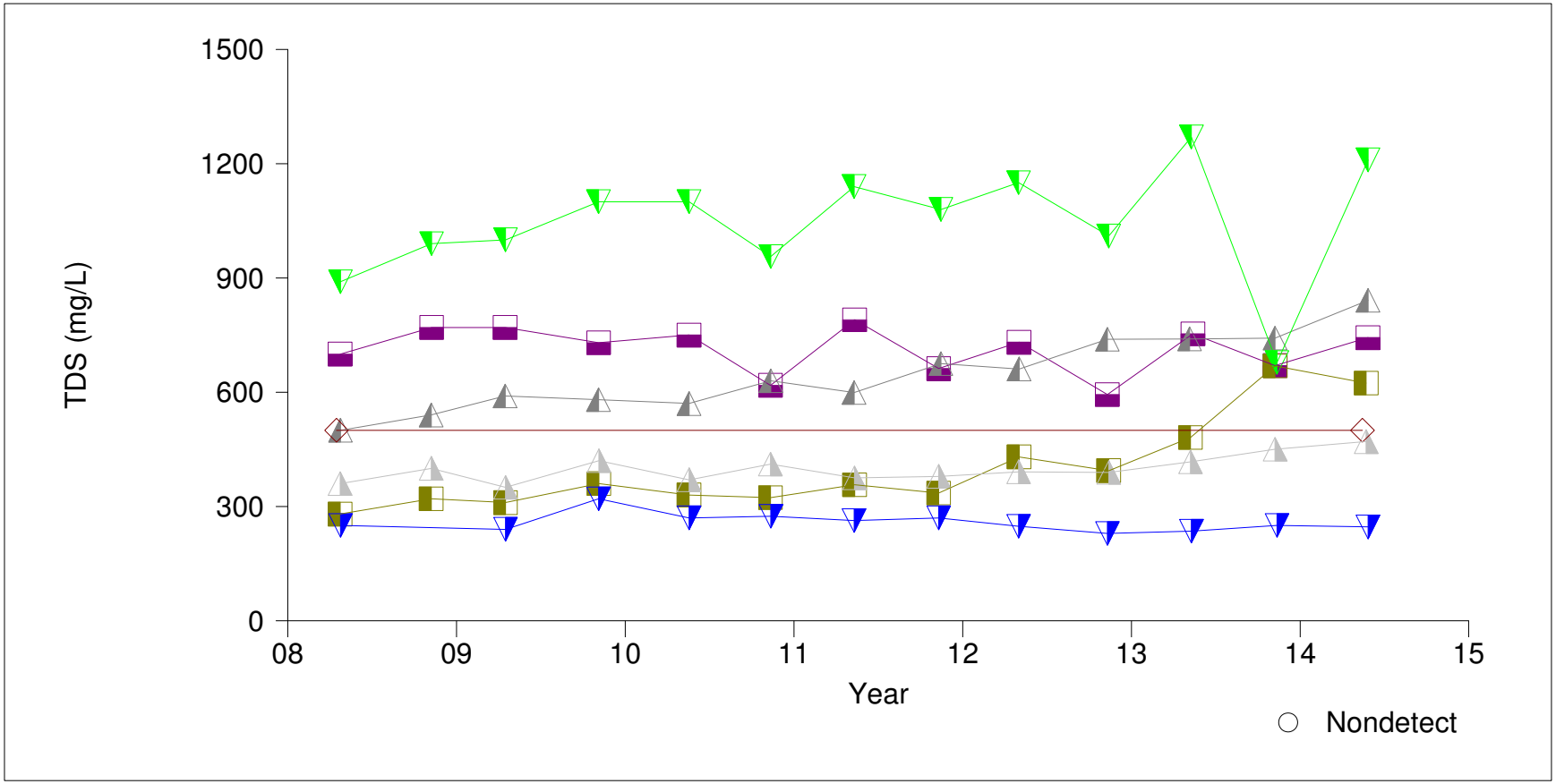
Time Series Plot for Total Dissolved Solids (TDS), Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

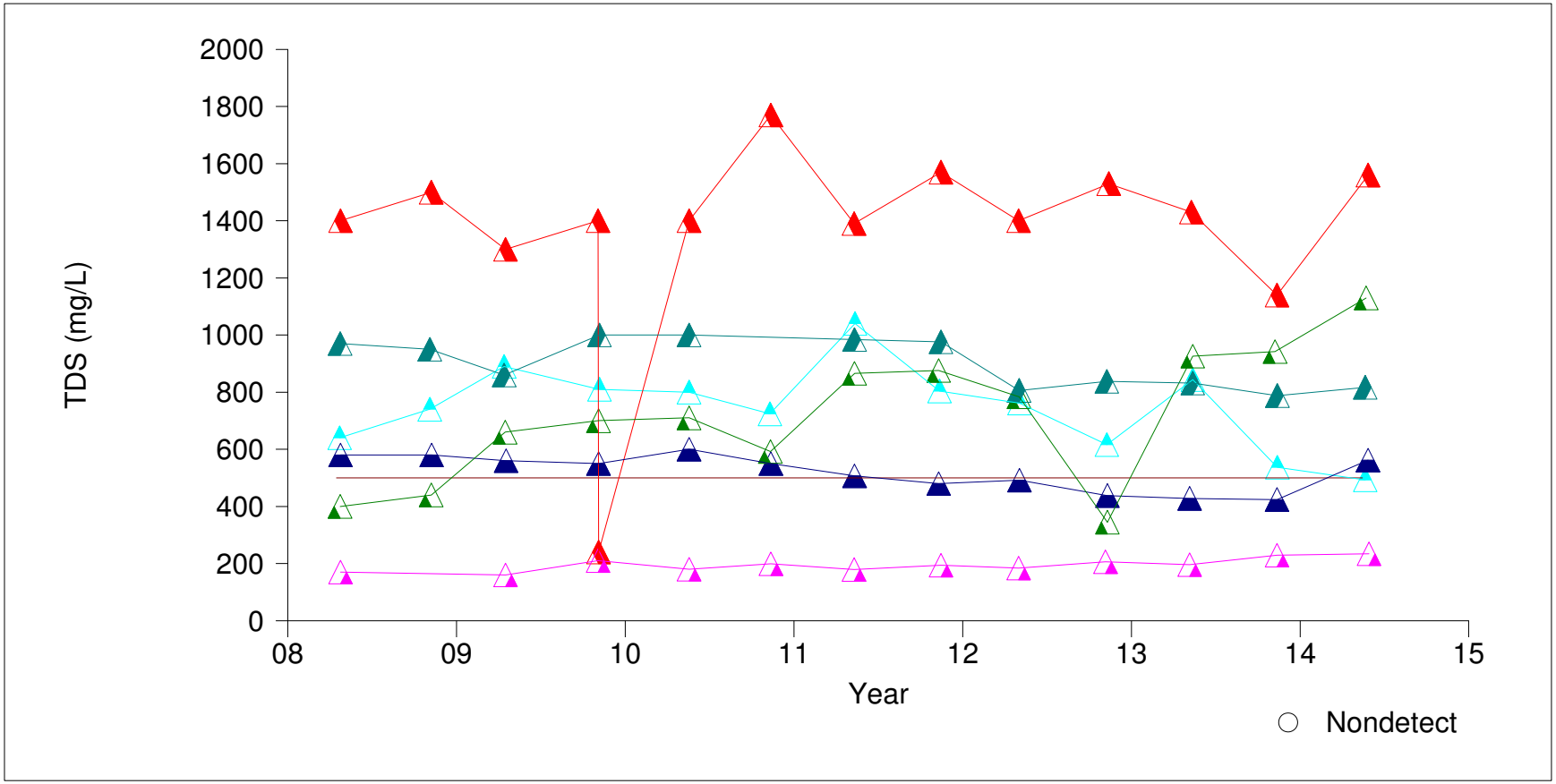
Time Series Plot for Total Dissolved Solids (TDS), Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

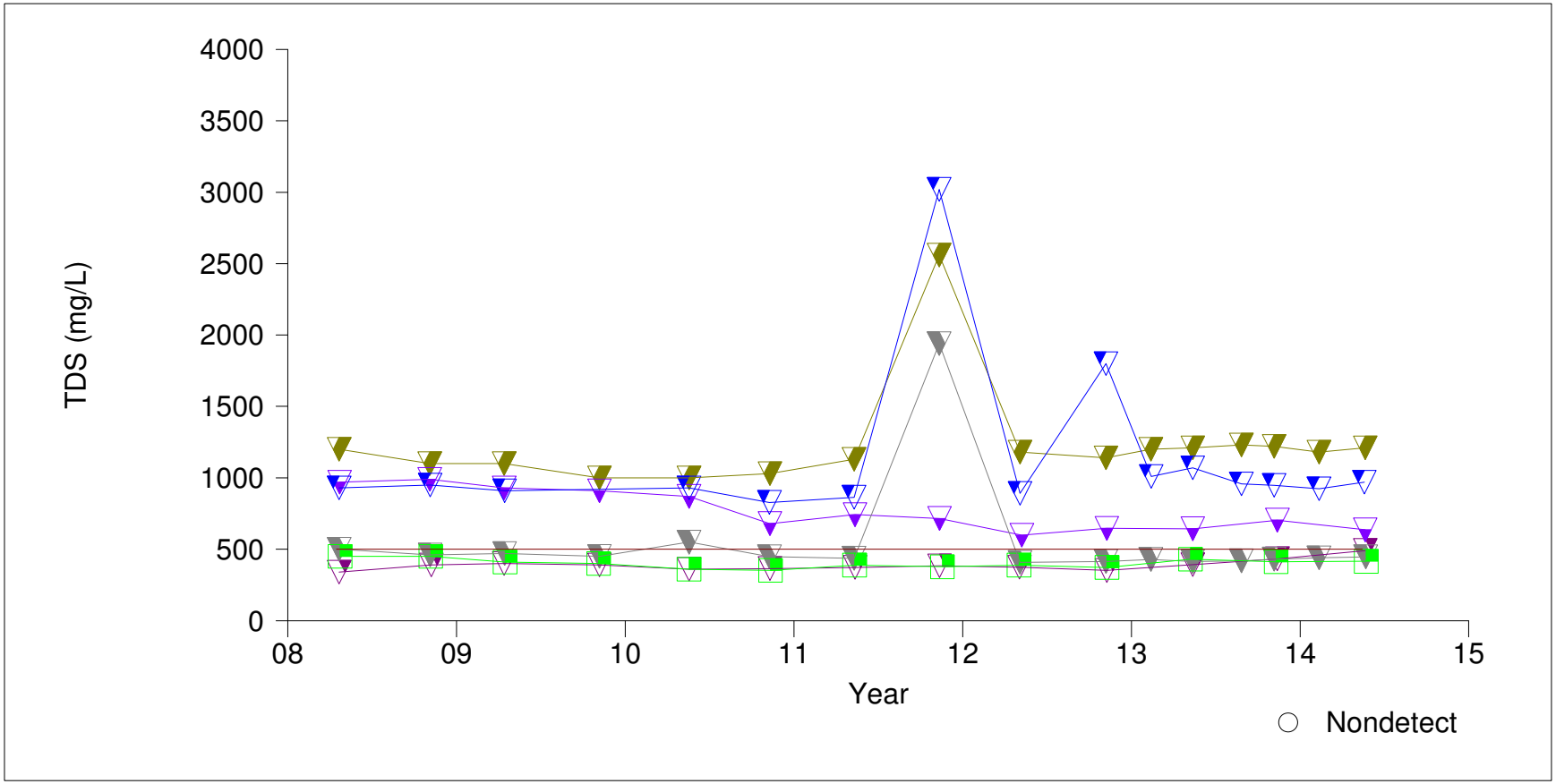
Time Series Plot for Total Dissolved Solids (TDS), Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

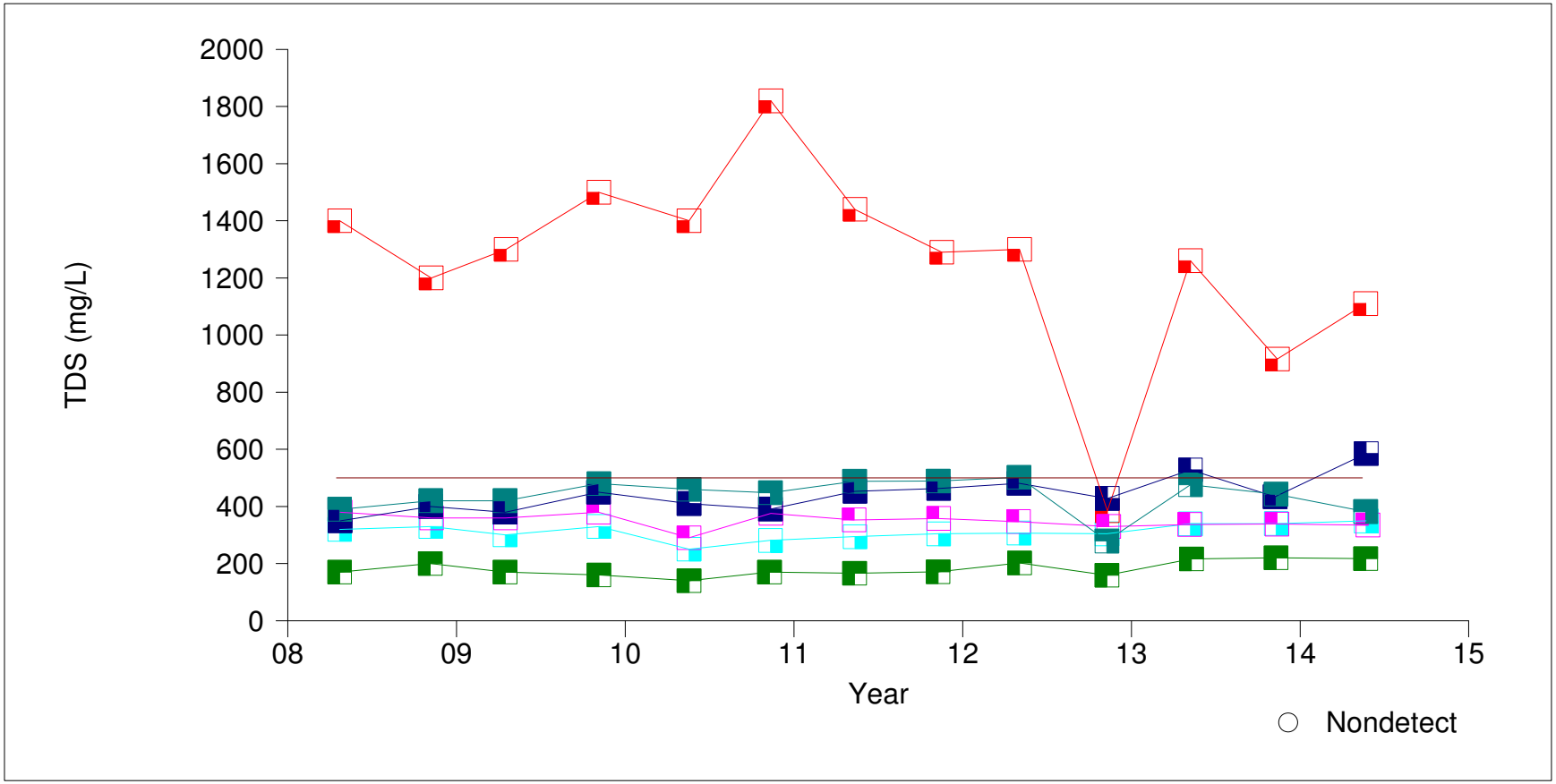
Time Series Plot for Total Dissolved Solids (TDS), Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

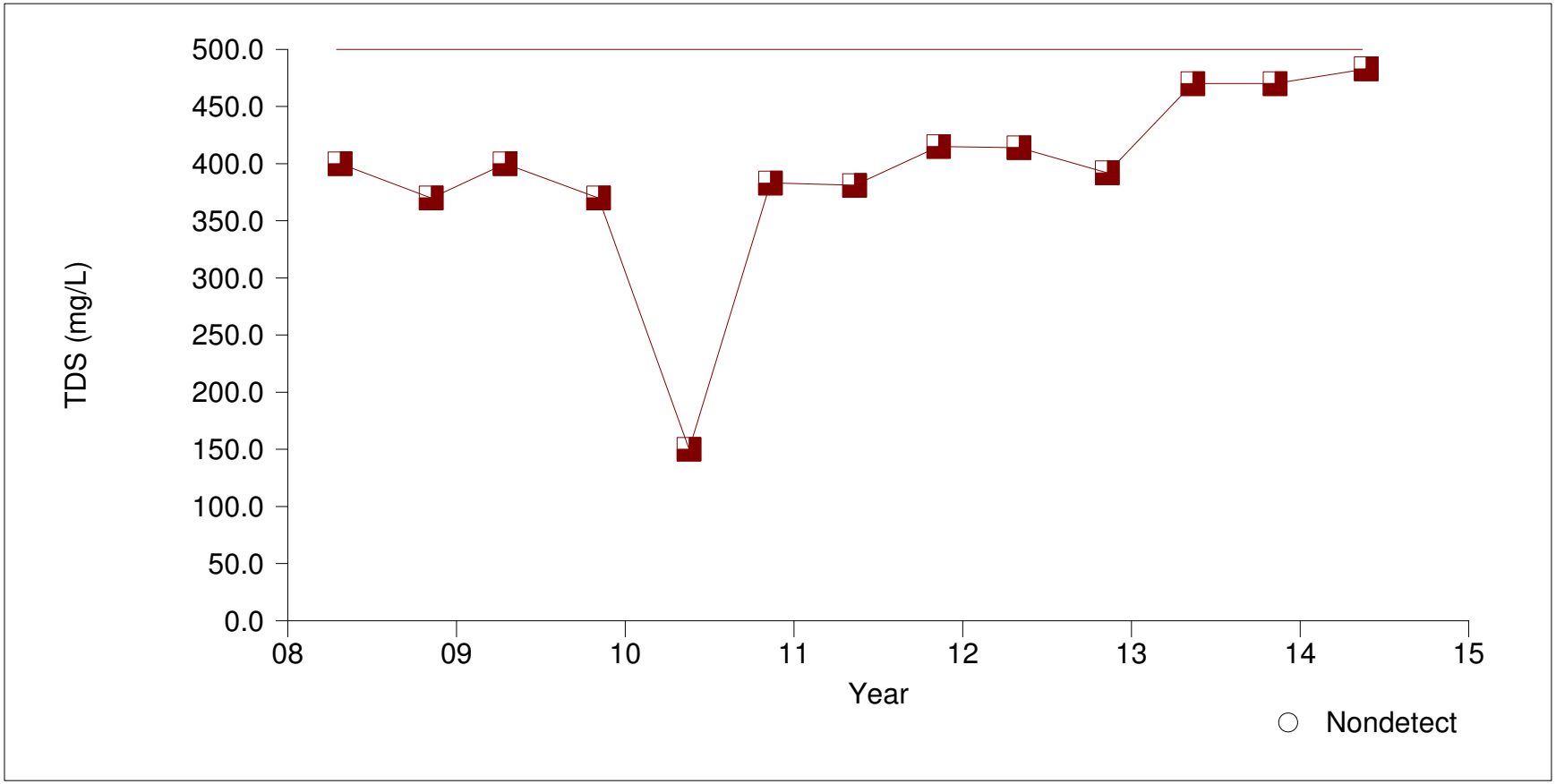
Time Series Plot for Total Dissolved Solids (TDS), Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

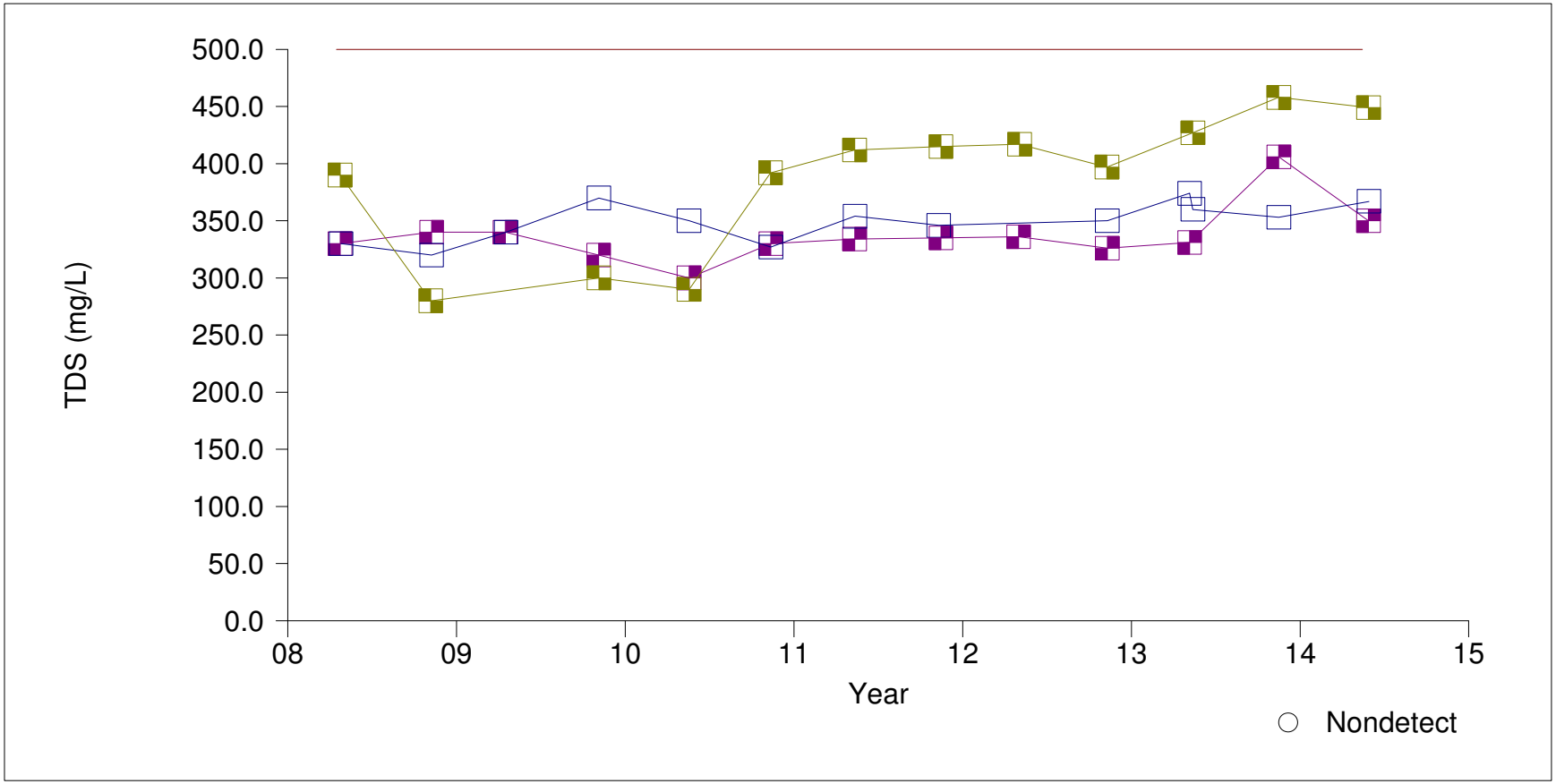
Time Series Plot for Total Dissolved Solids (TDS), Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

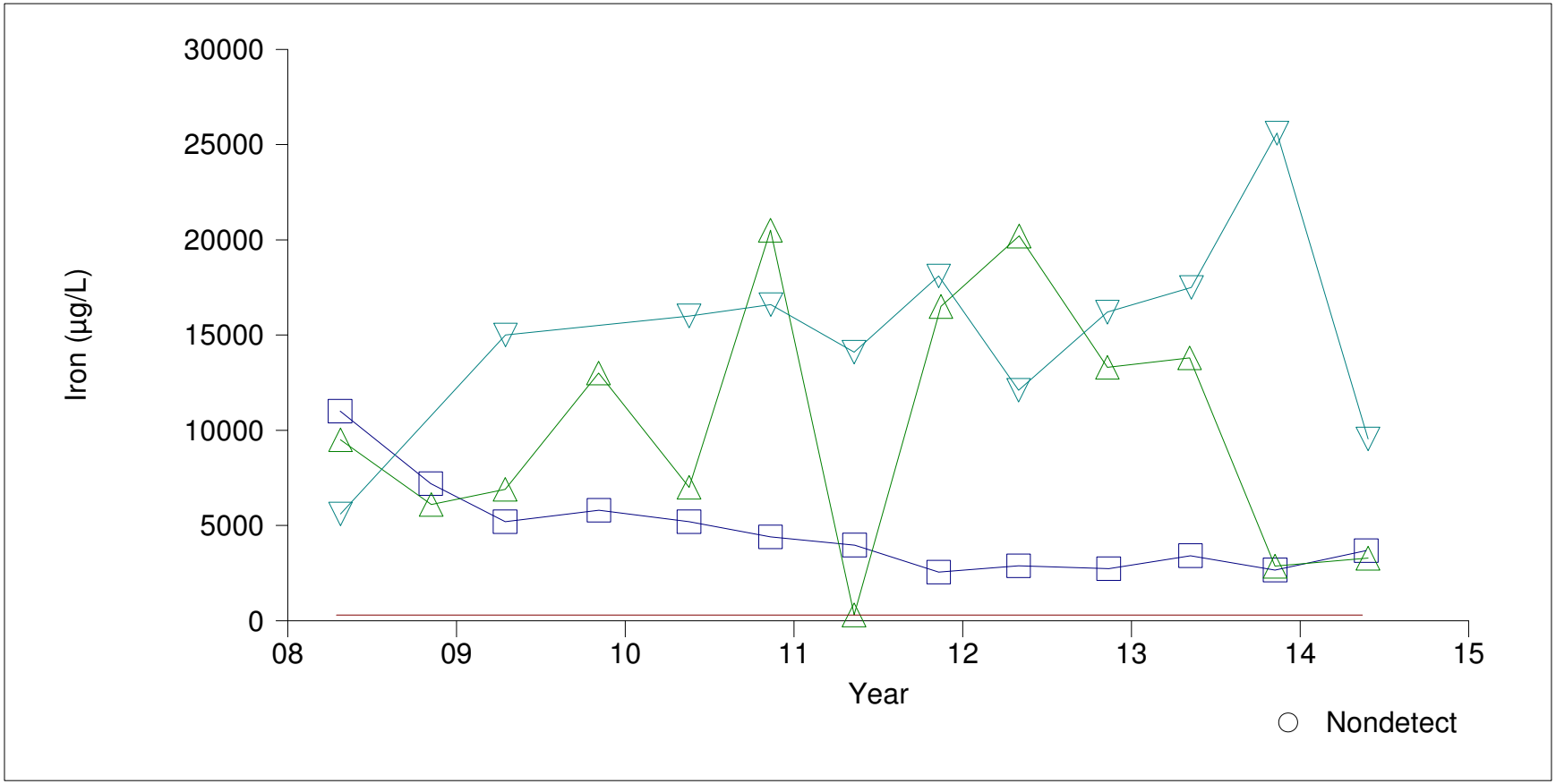
Time Series Plot for Total Dissolved Solids (TDS), Floridan Aquifer



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

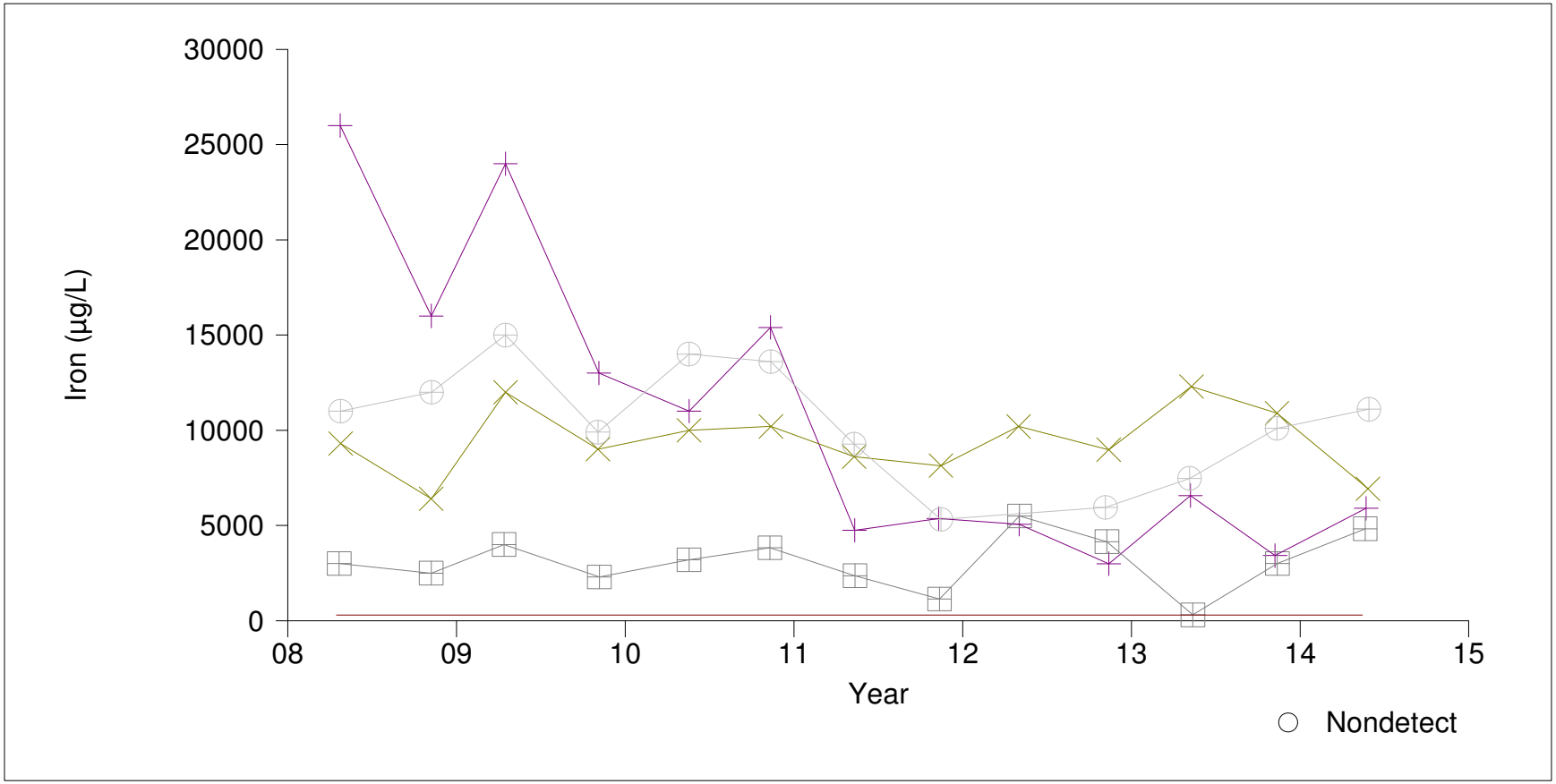
Time Series Plot for Iron, Zone 1-2 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

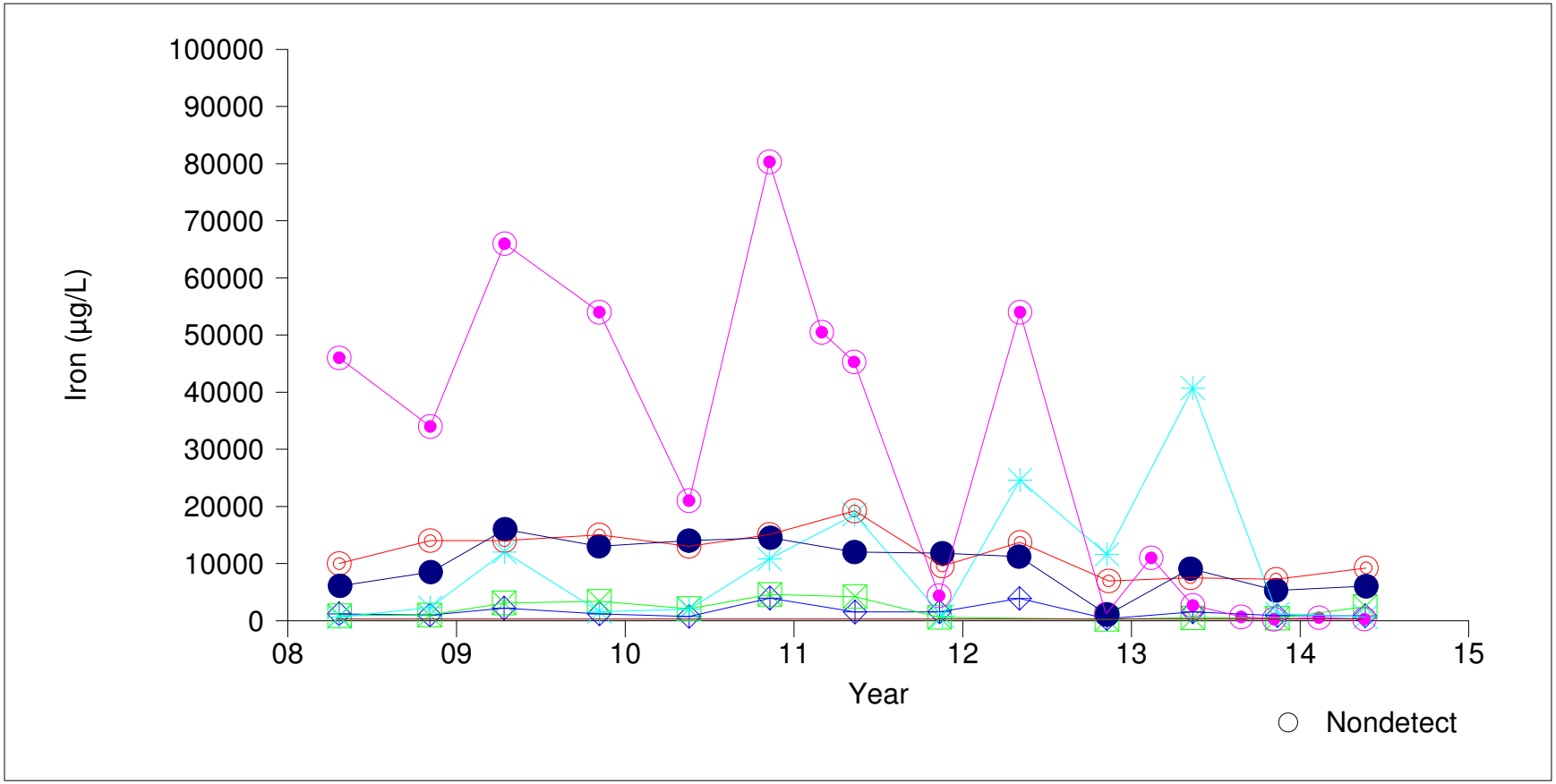
Time Series Plot for Iron, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

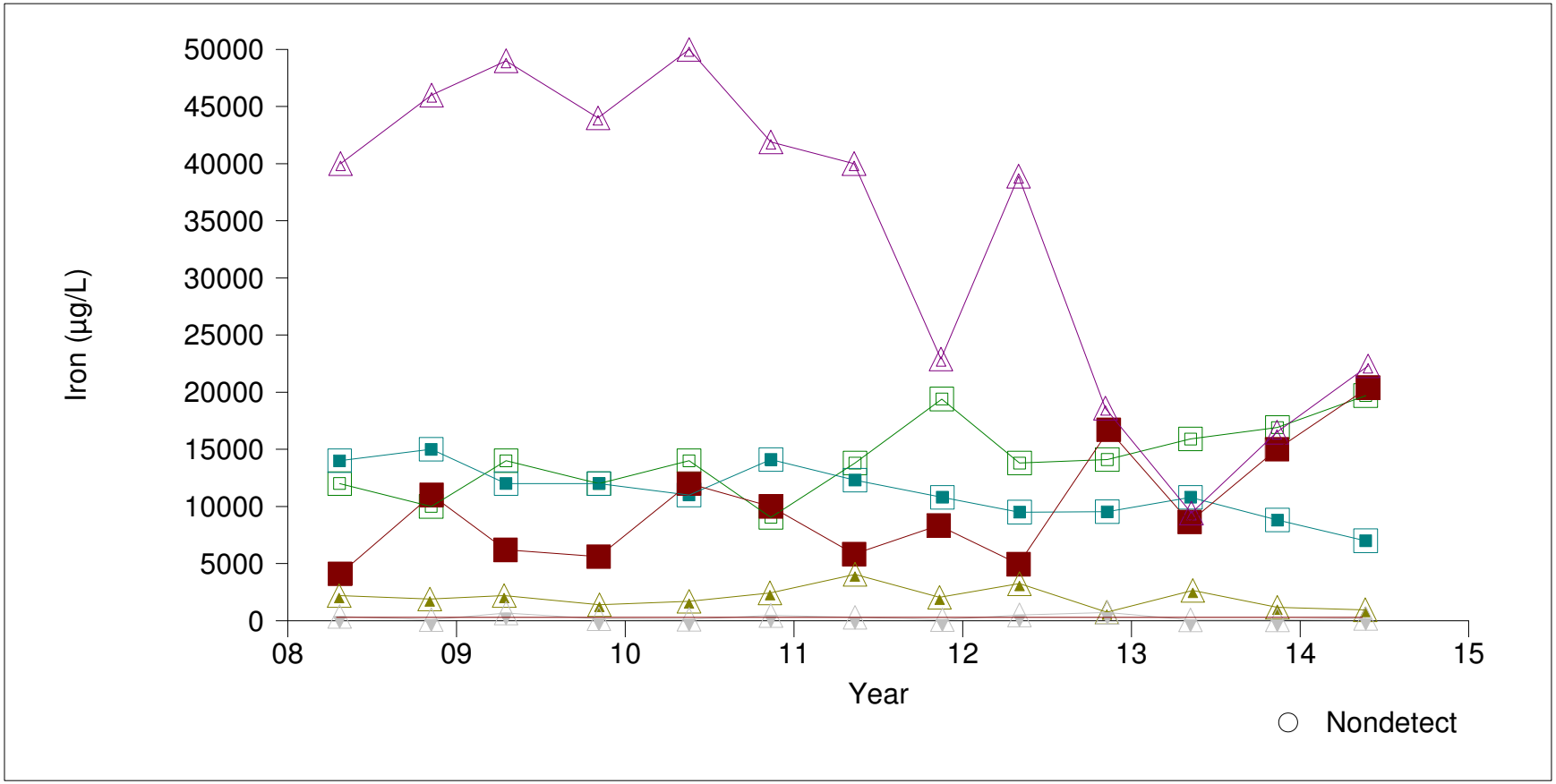
Time Series Plot for Iron, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

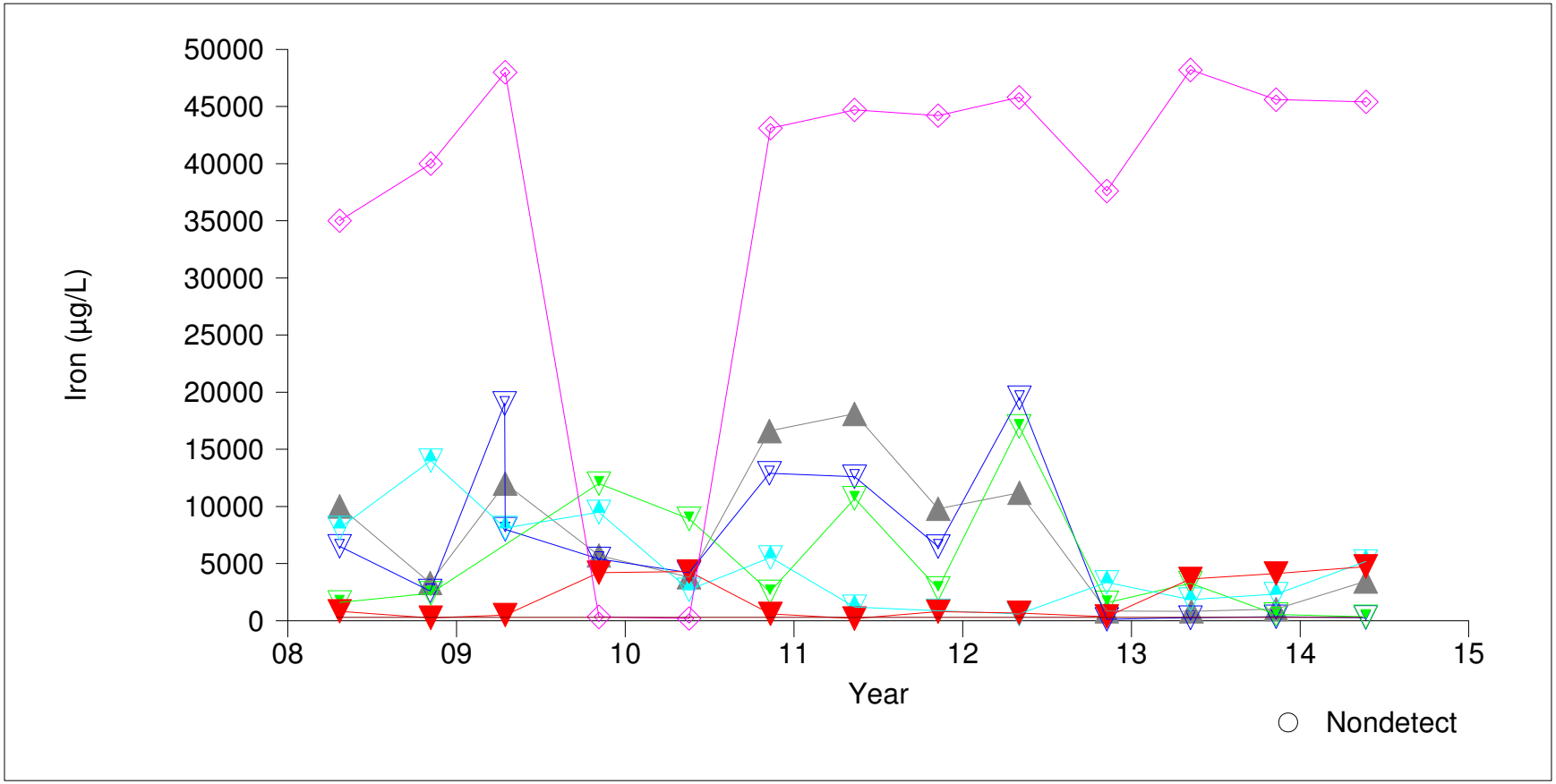
Time Series Plot for Iron, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Time Series Plot for Iron, Zone 1-2

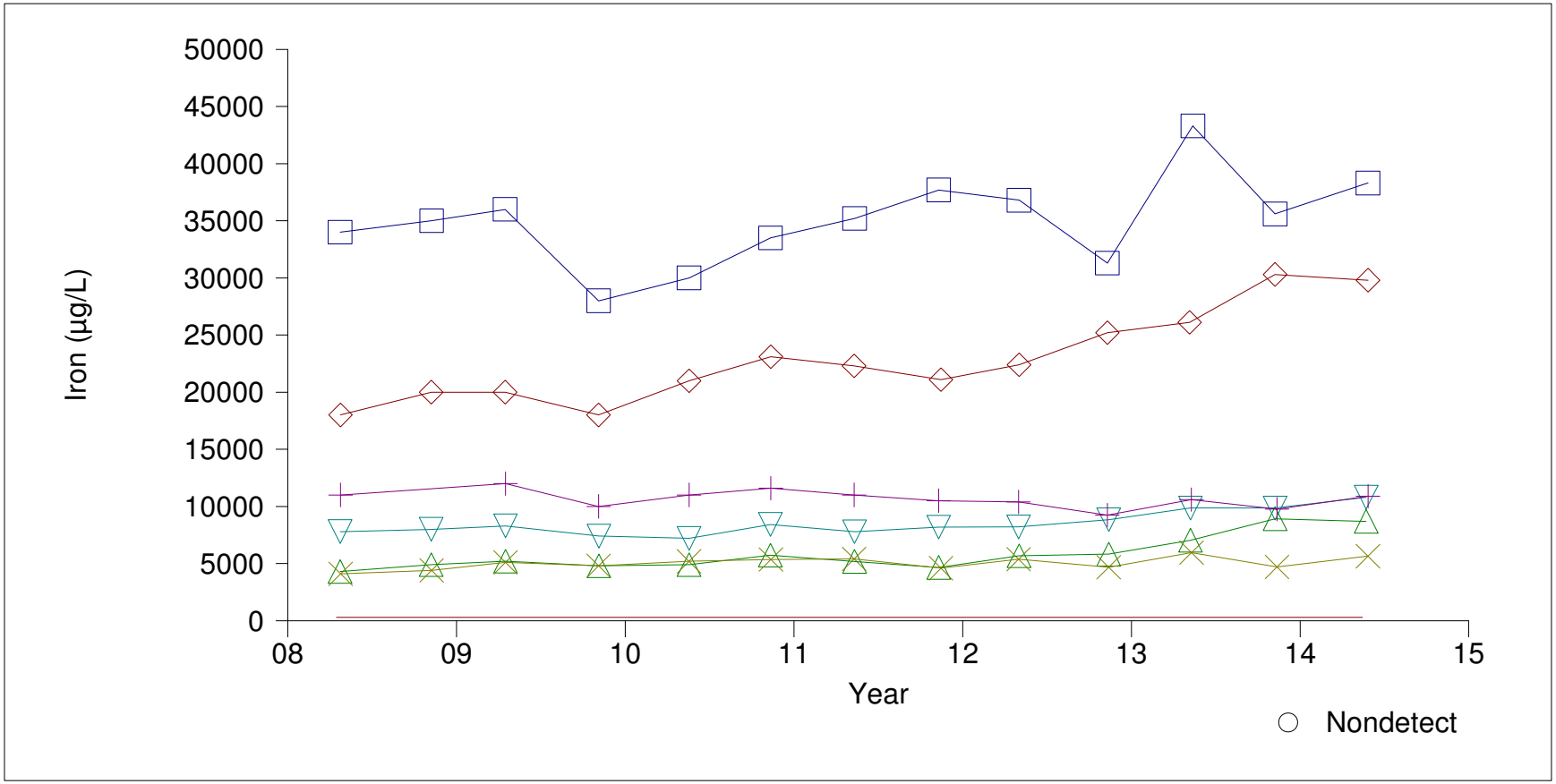


B70-2	B73-2	SDWS
B71	B74	
B72	B75	

Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

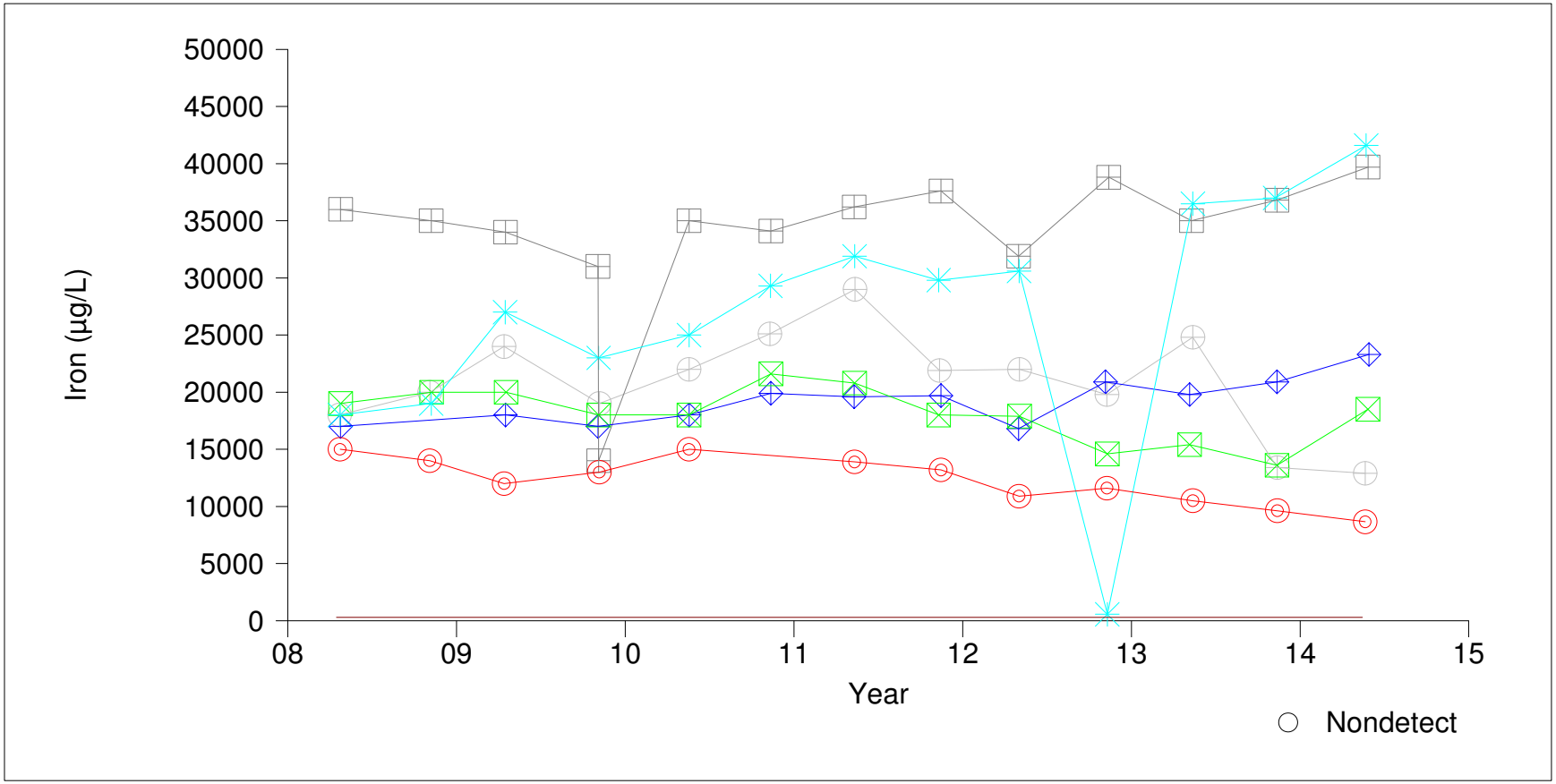
Time Series Plot for Iron, Zone 4 Background Wells



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

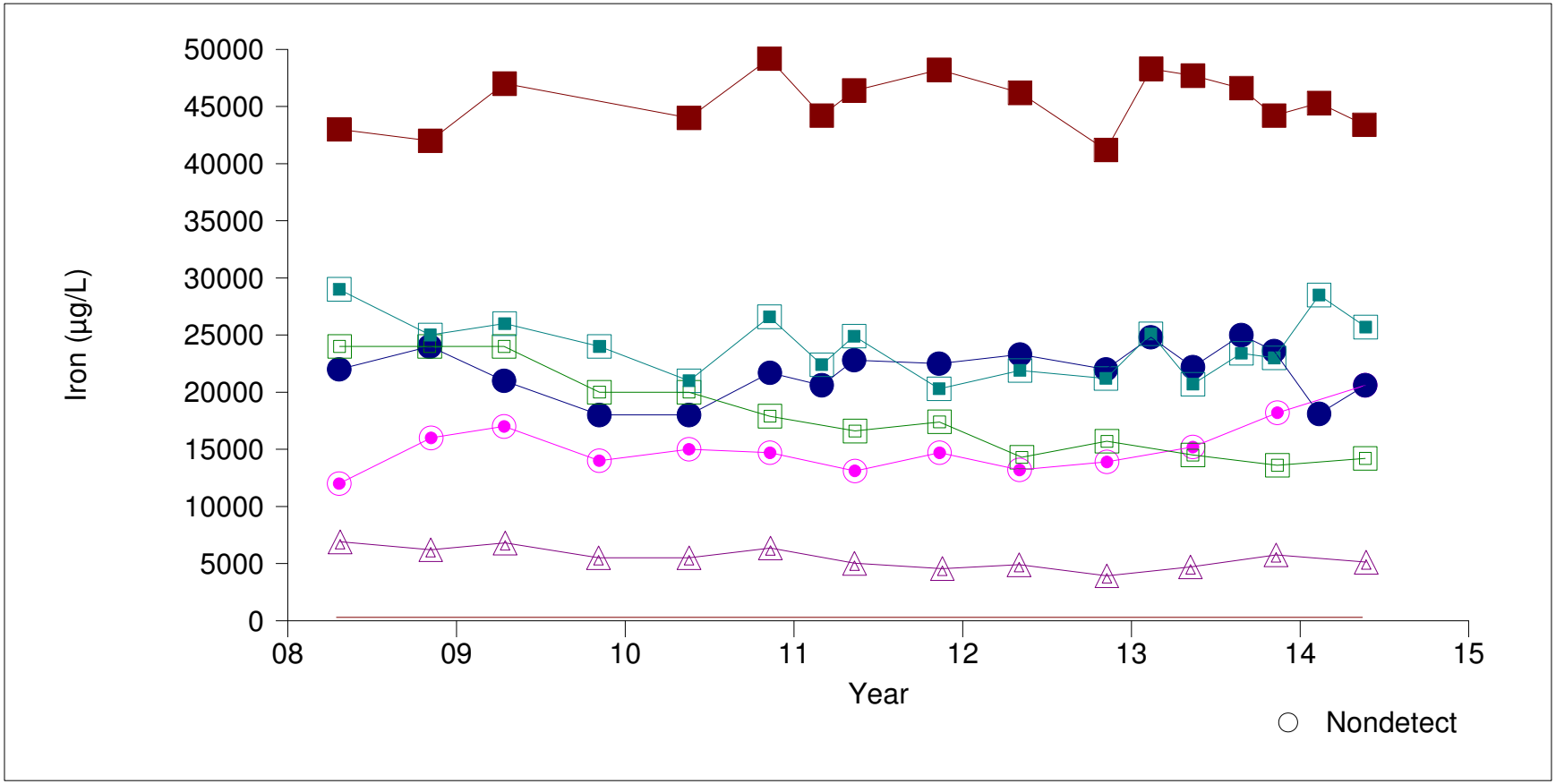
Time Series Plot for Iron, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

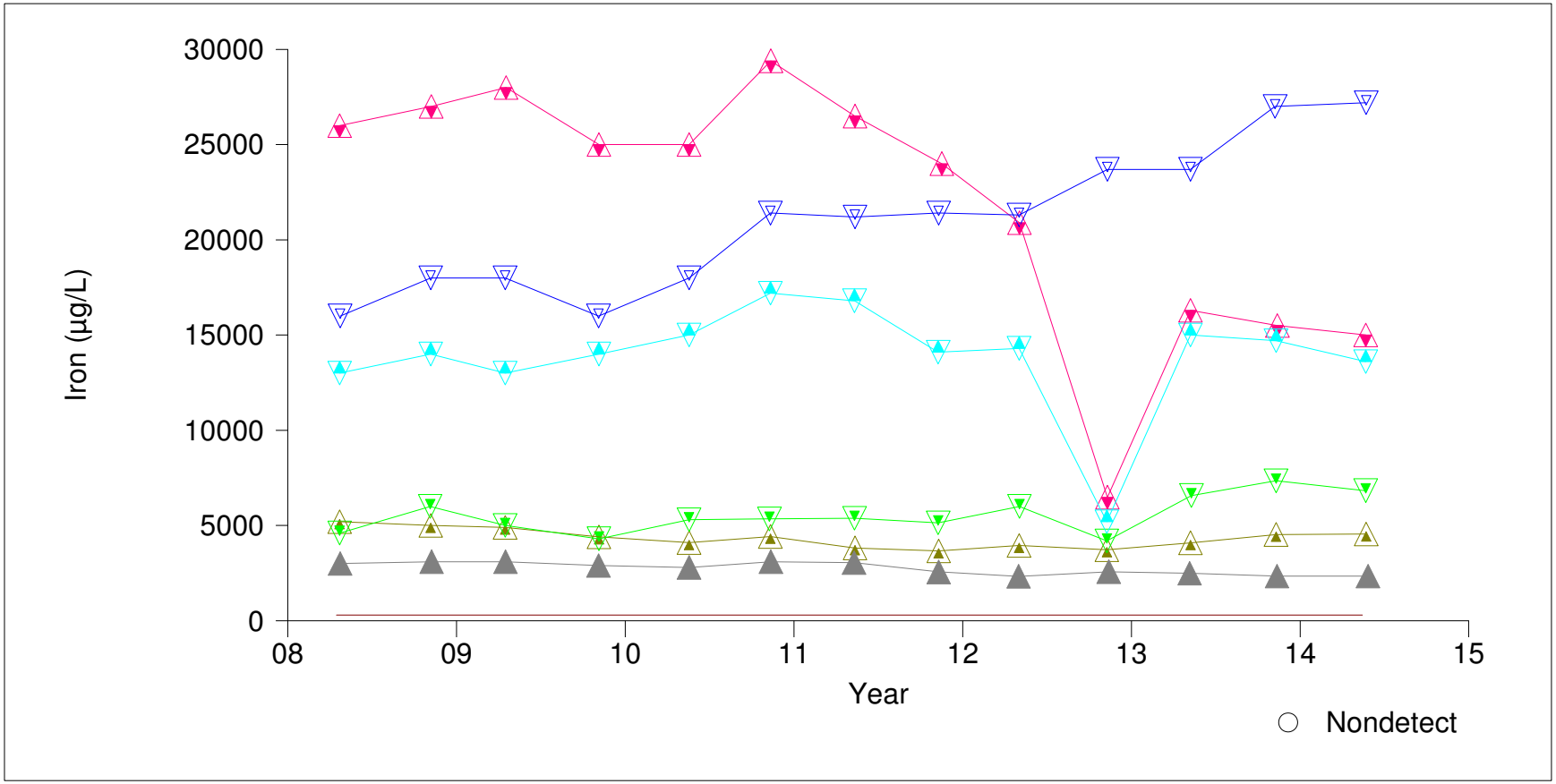
Time Series Plot for Iron, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

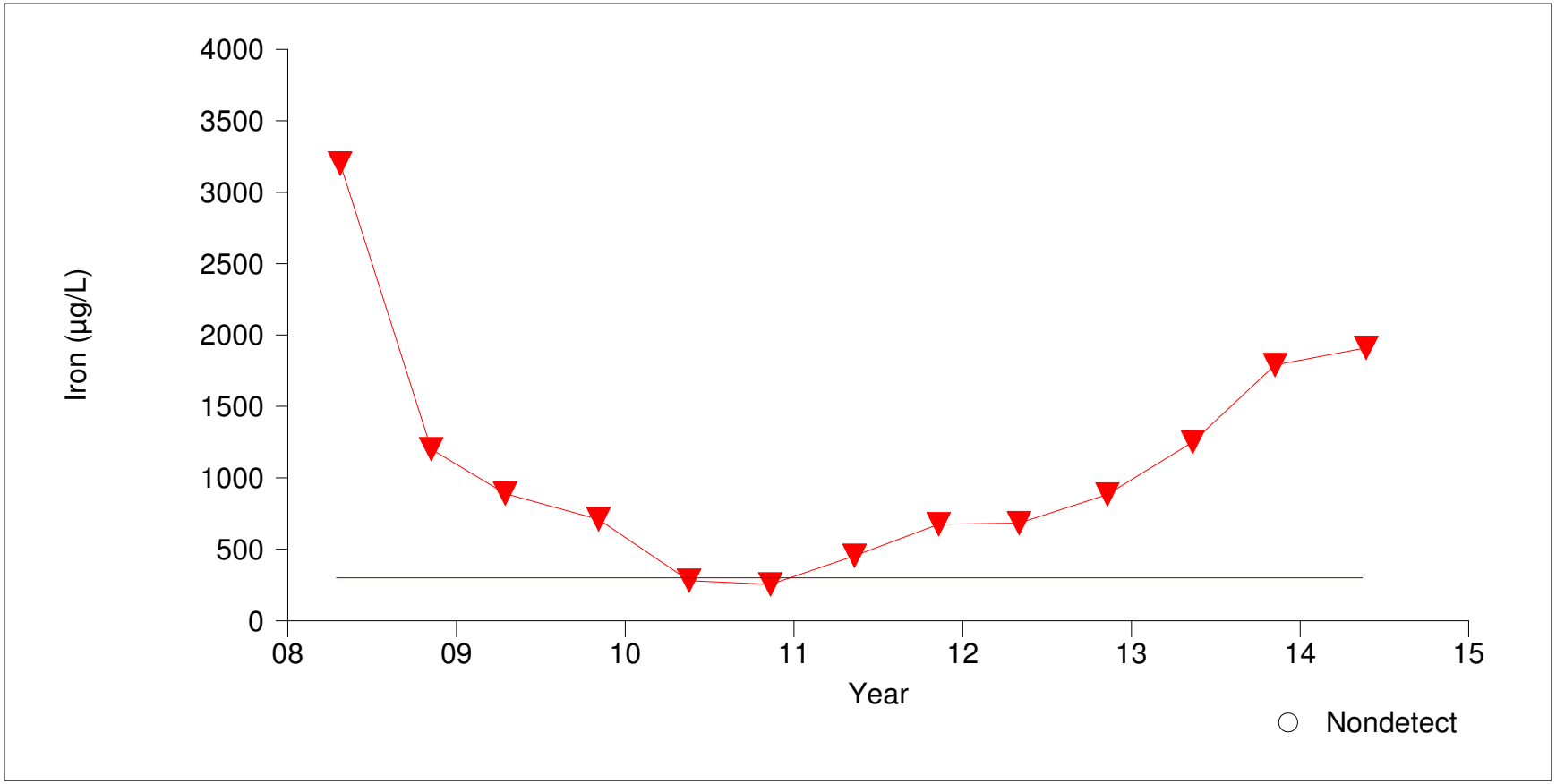
Time Series Plot for Iron, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

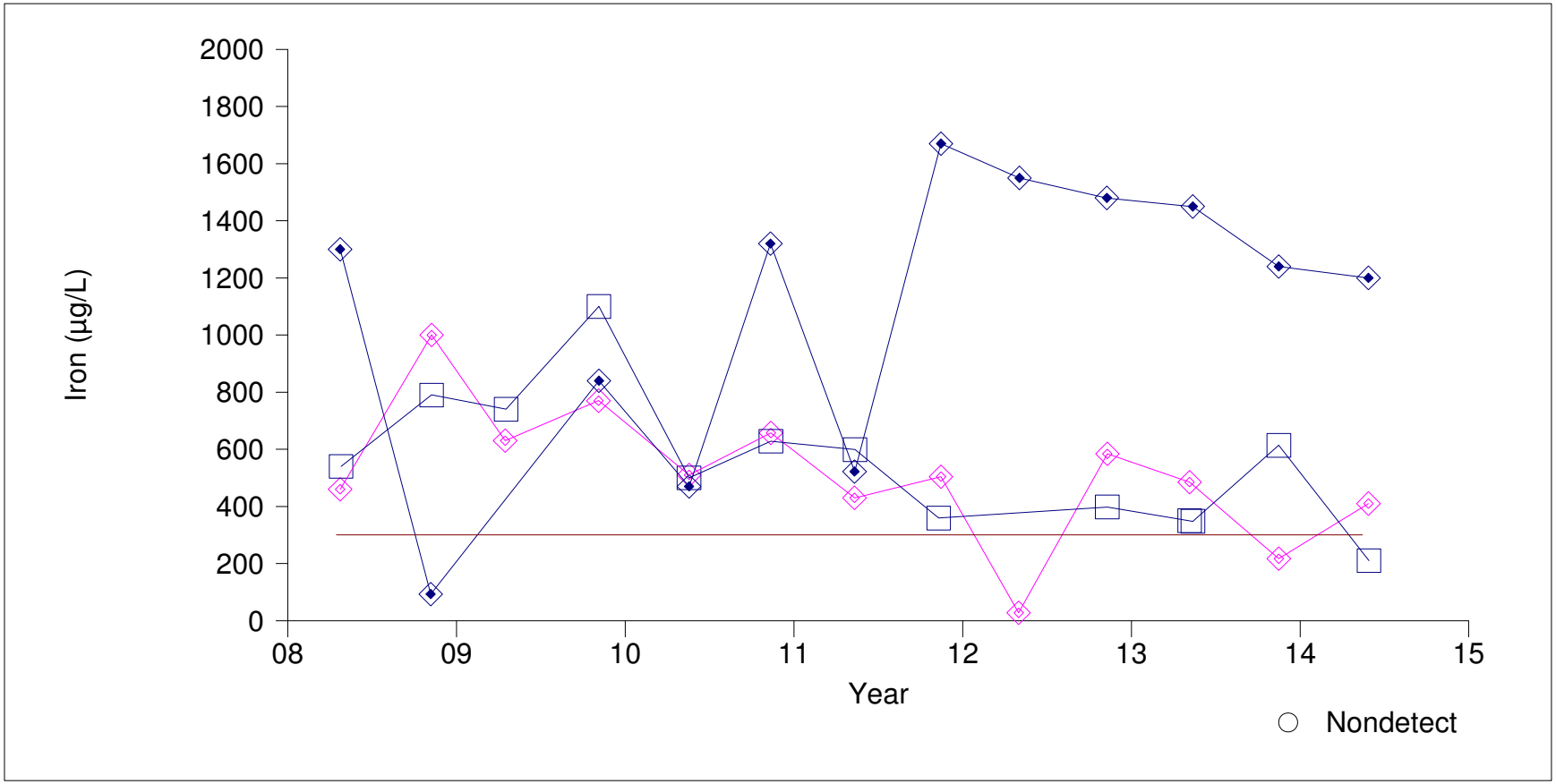
Time Series Plot for Iron, Zone 6



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

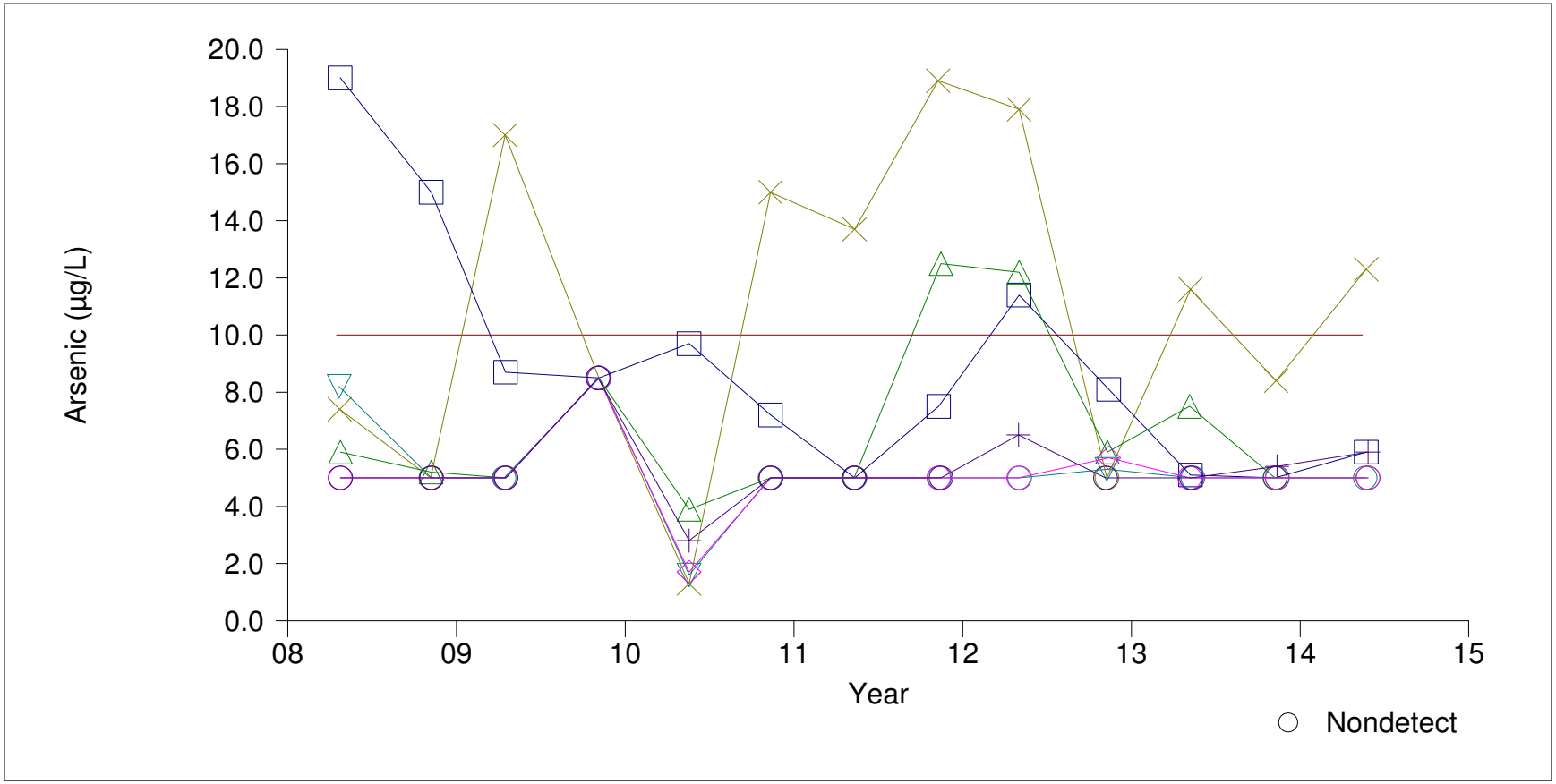
Time Series Plot for Iron, Floridan Aquifer



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

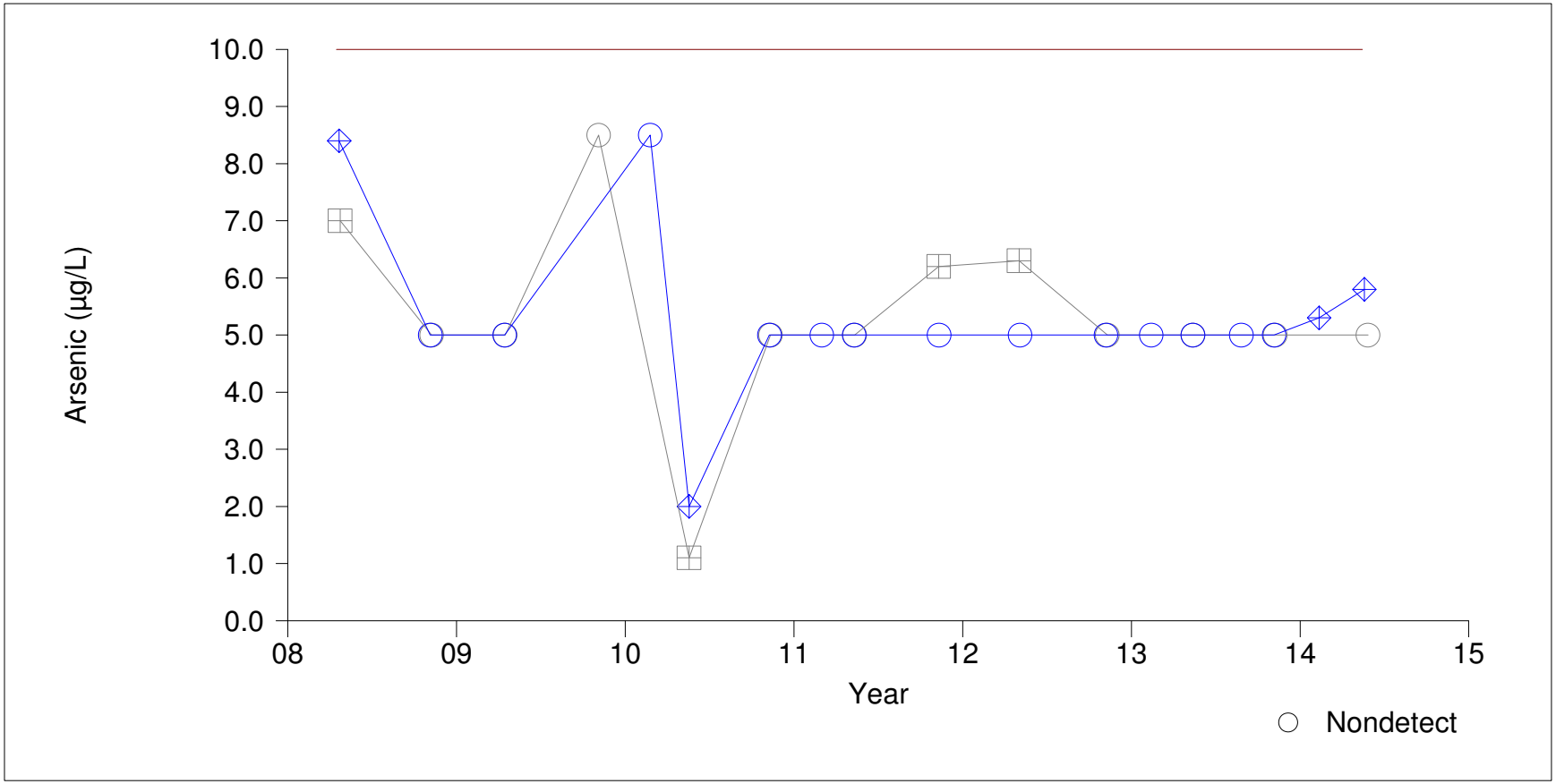
Time Series Plot for Arsenic, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

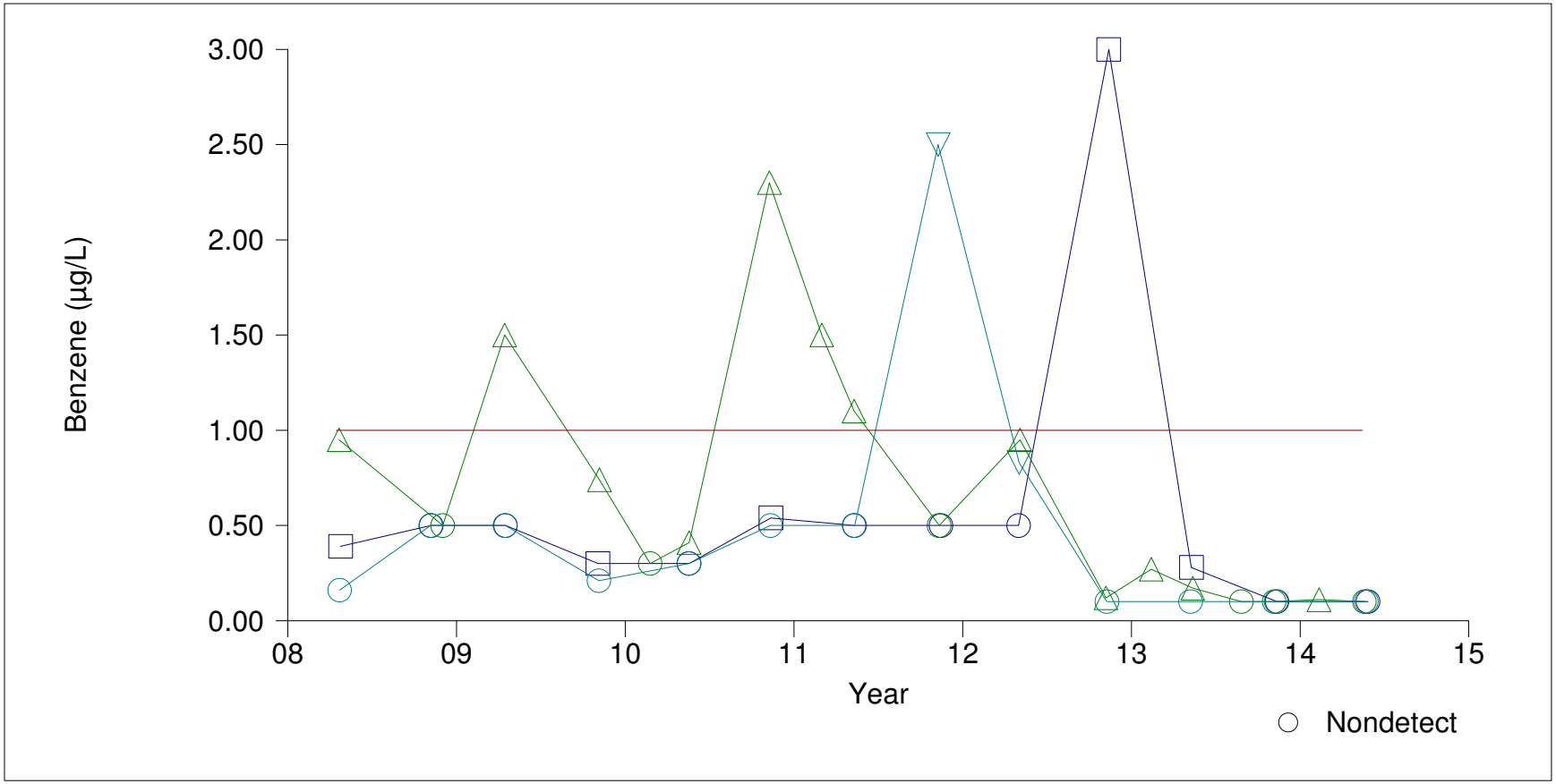
Time Series Plot for Arsenic, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

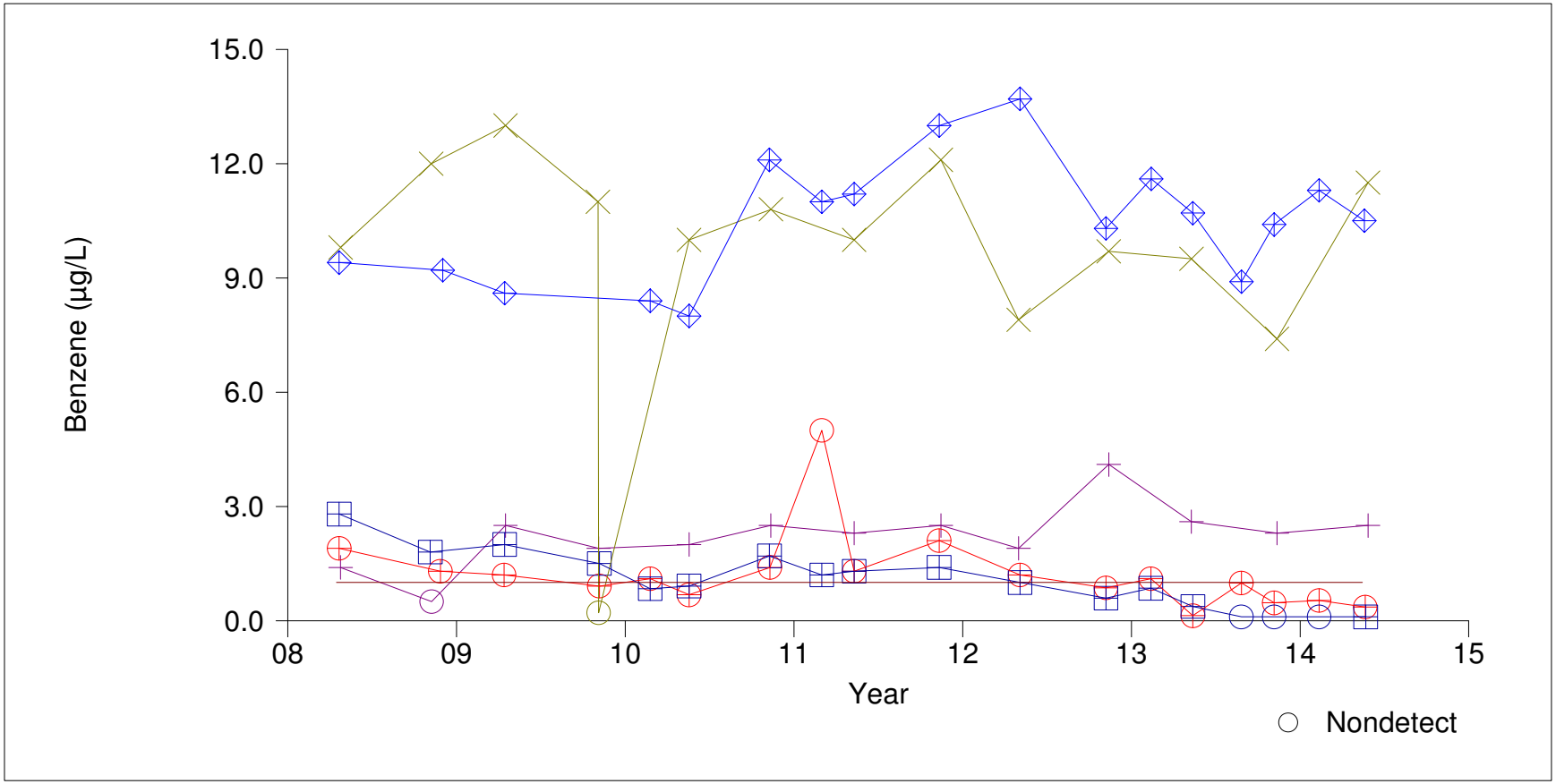
Time Series Plot for Benzene, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

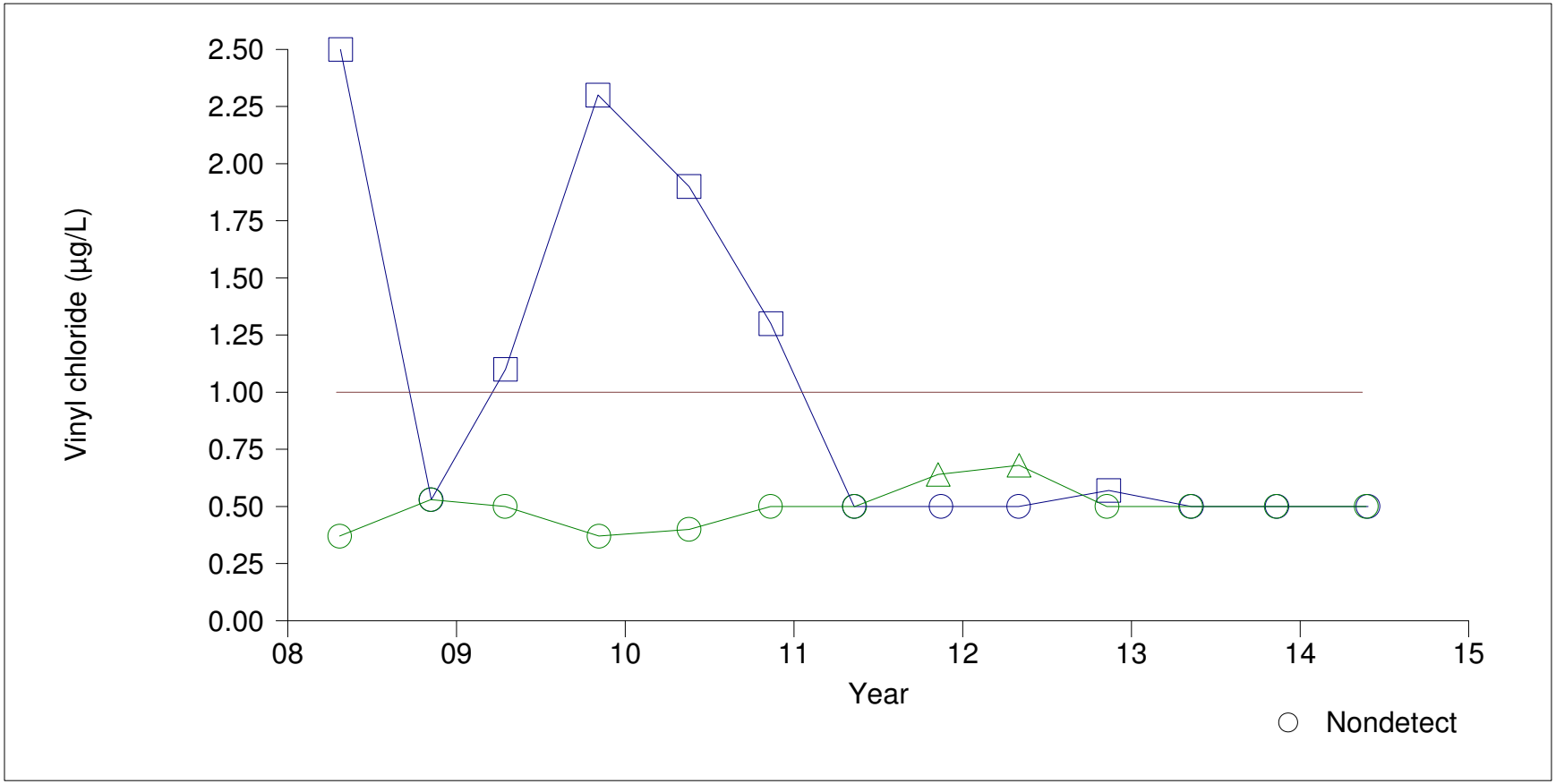
Time Series Plot for Benzene, Zone 4



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

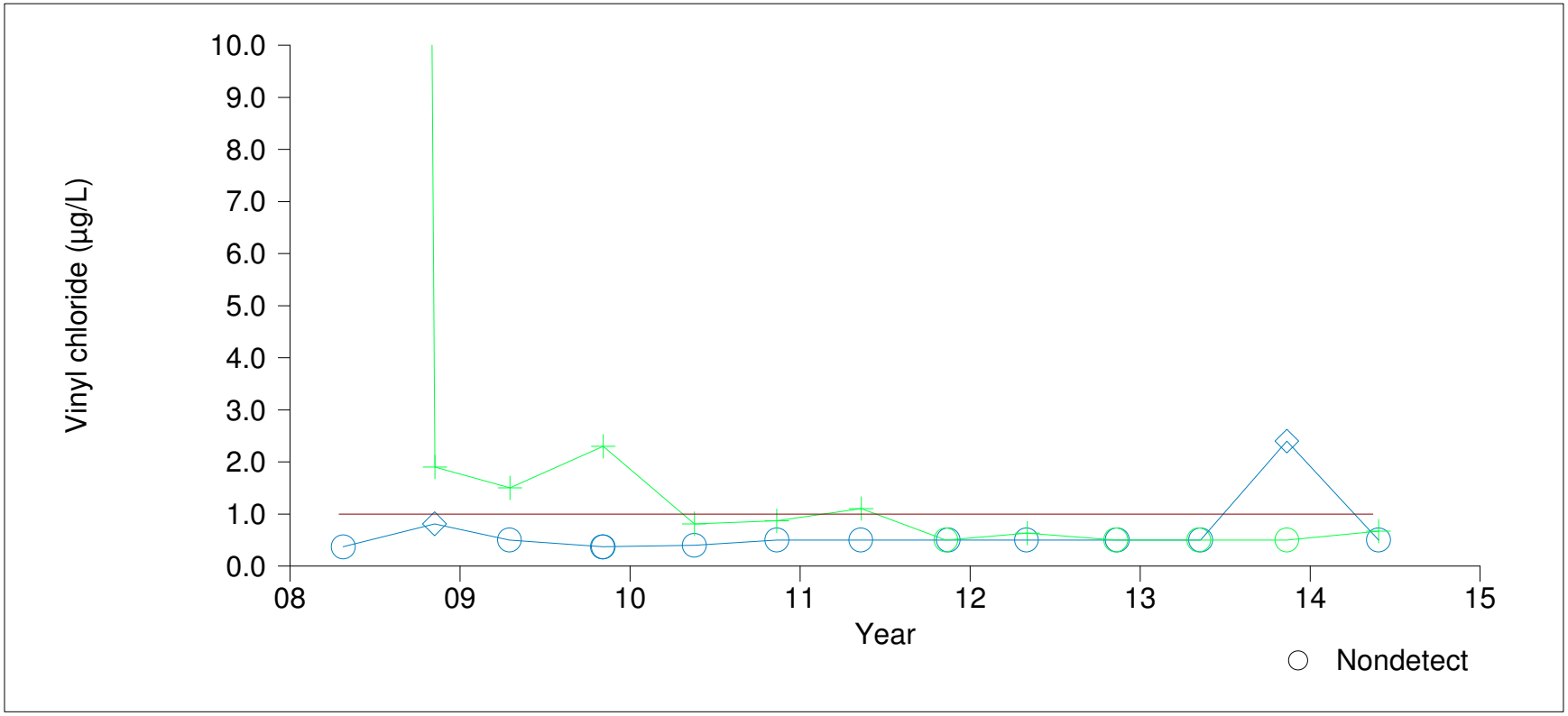
Time Series Plot for Vinyl chloride, Zone 1-2



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Time Series Plot for Vinyl chloride, Zone 4



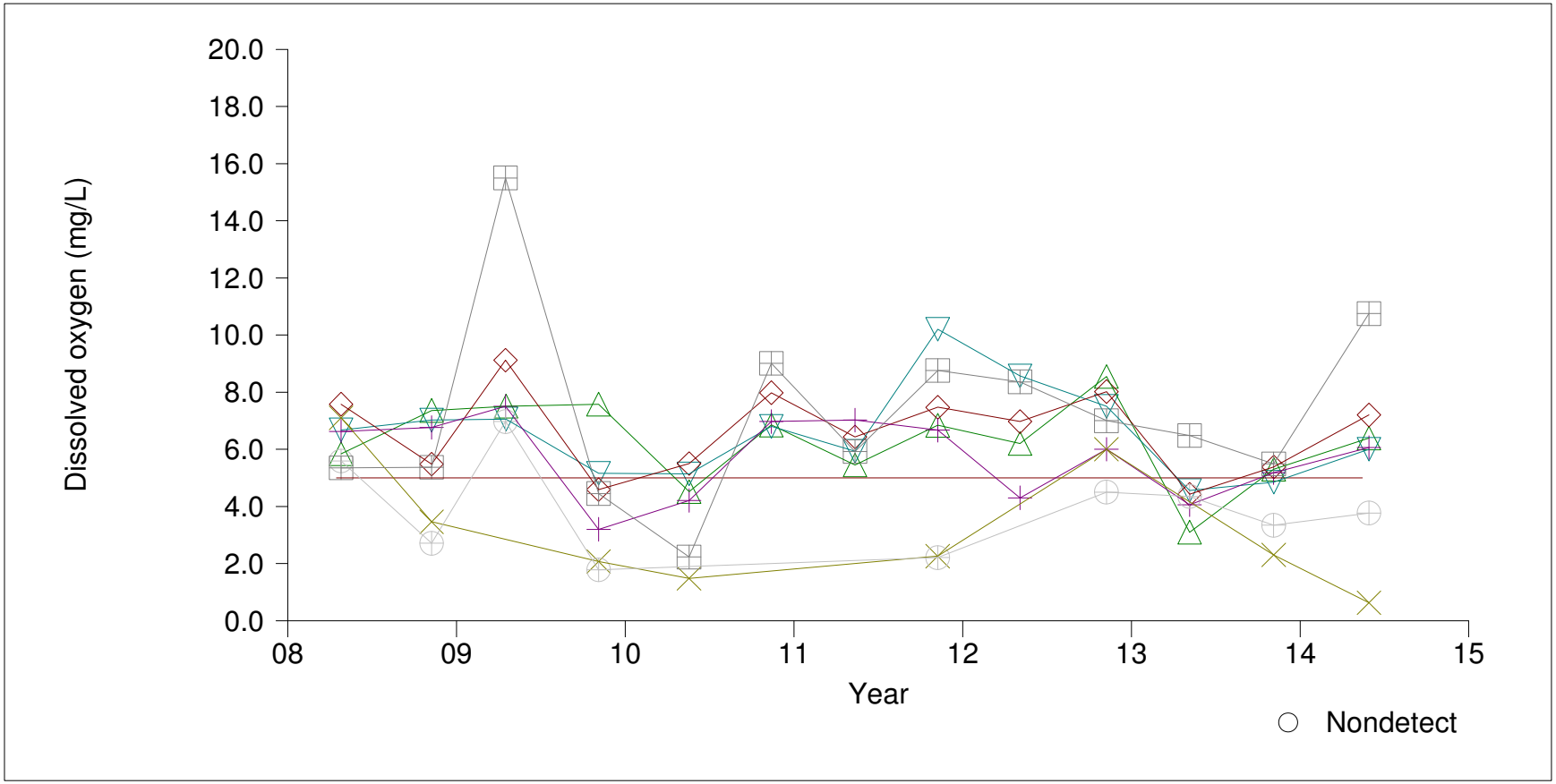
Offscale Points

B-5 on 4/23/2008 was 250 µg/L

Prepared by: HDR Enginering, Inc.

TOMOKA FARMS ROAD LANDFILL

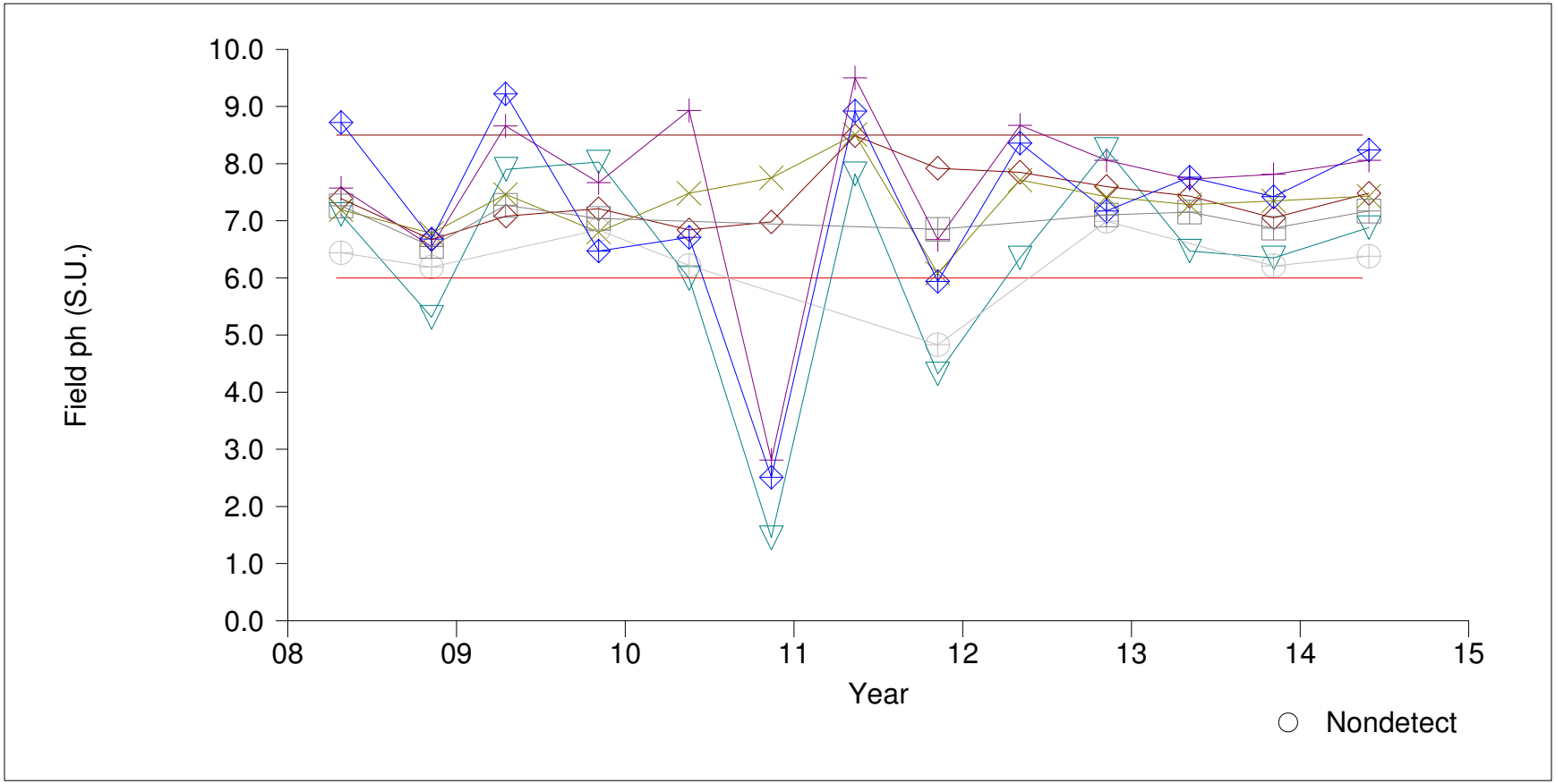
Time Series Plot for Surface Water Dissolved oxygen



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

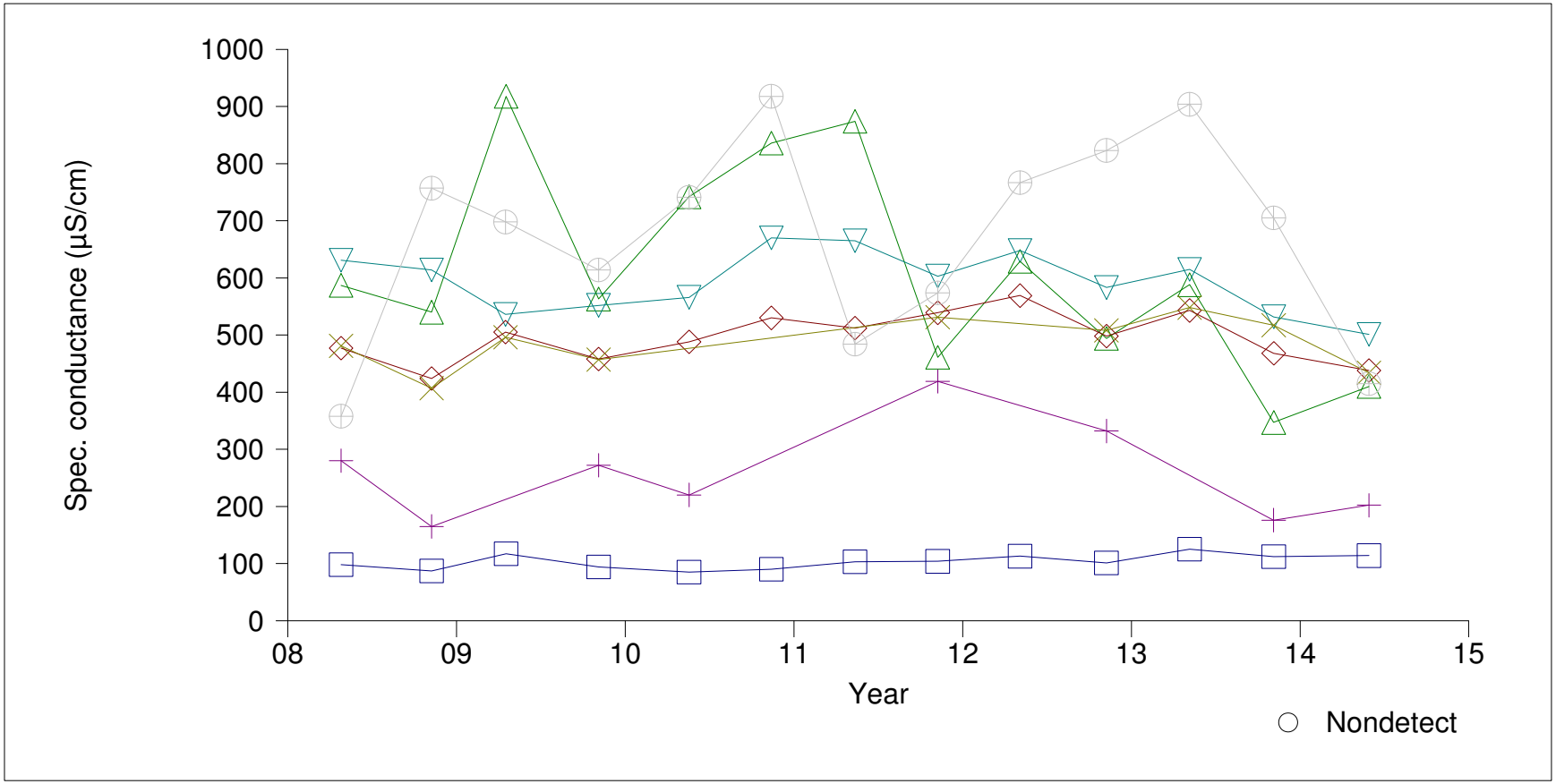
Time Series Plot for Surface Water Field pH



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

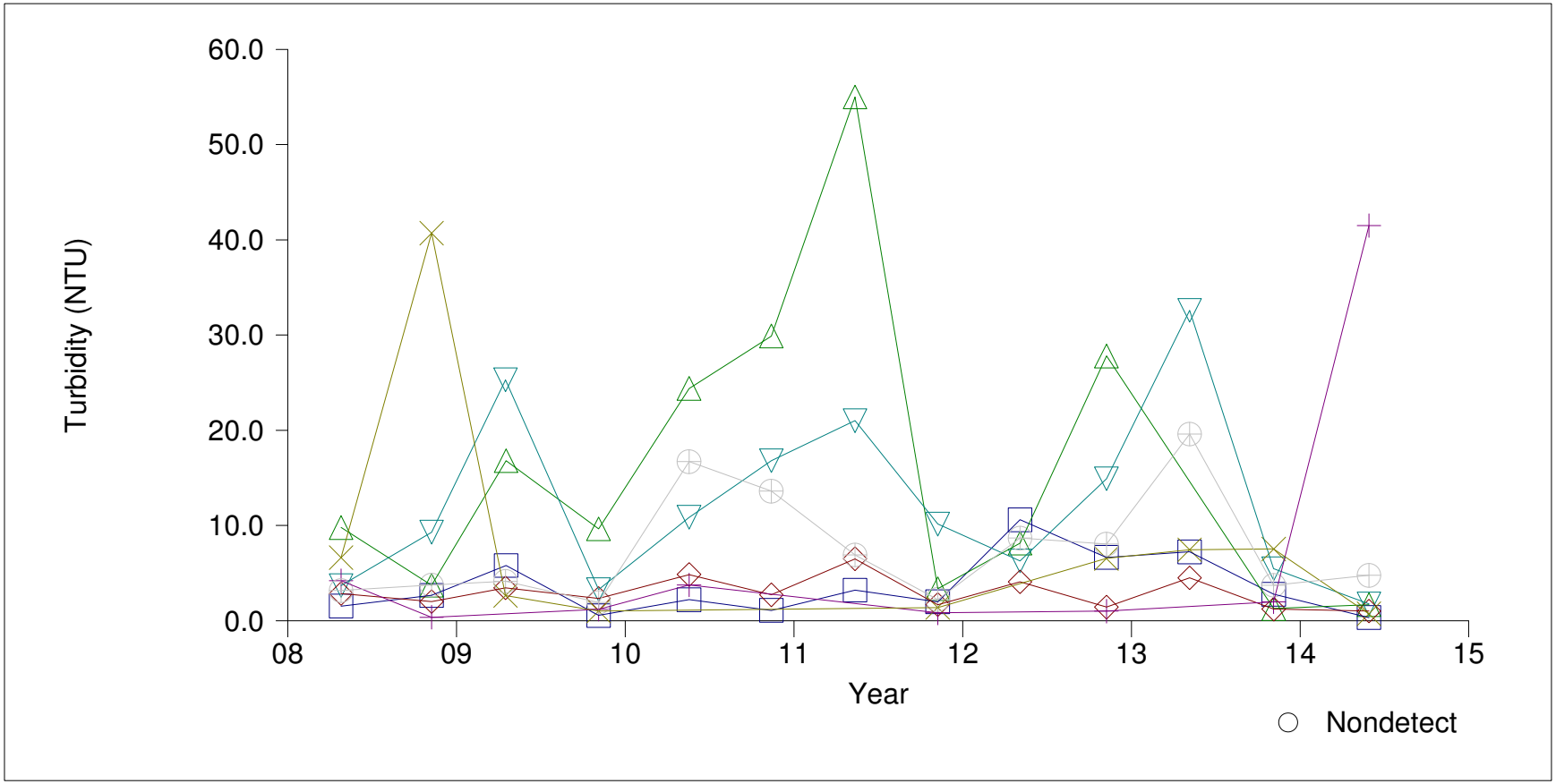
Time Series Plot for Surface Water Specific Conductance



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

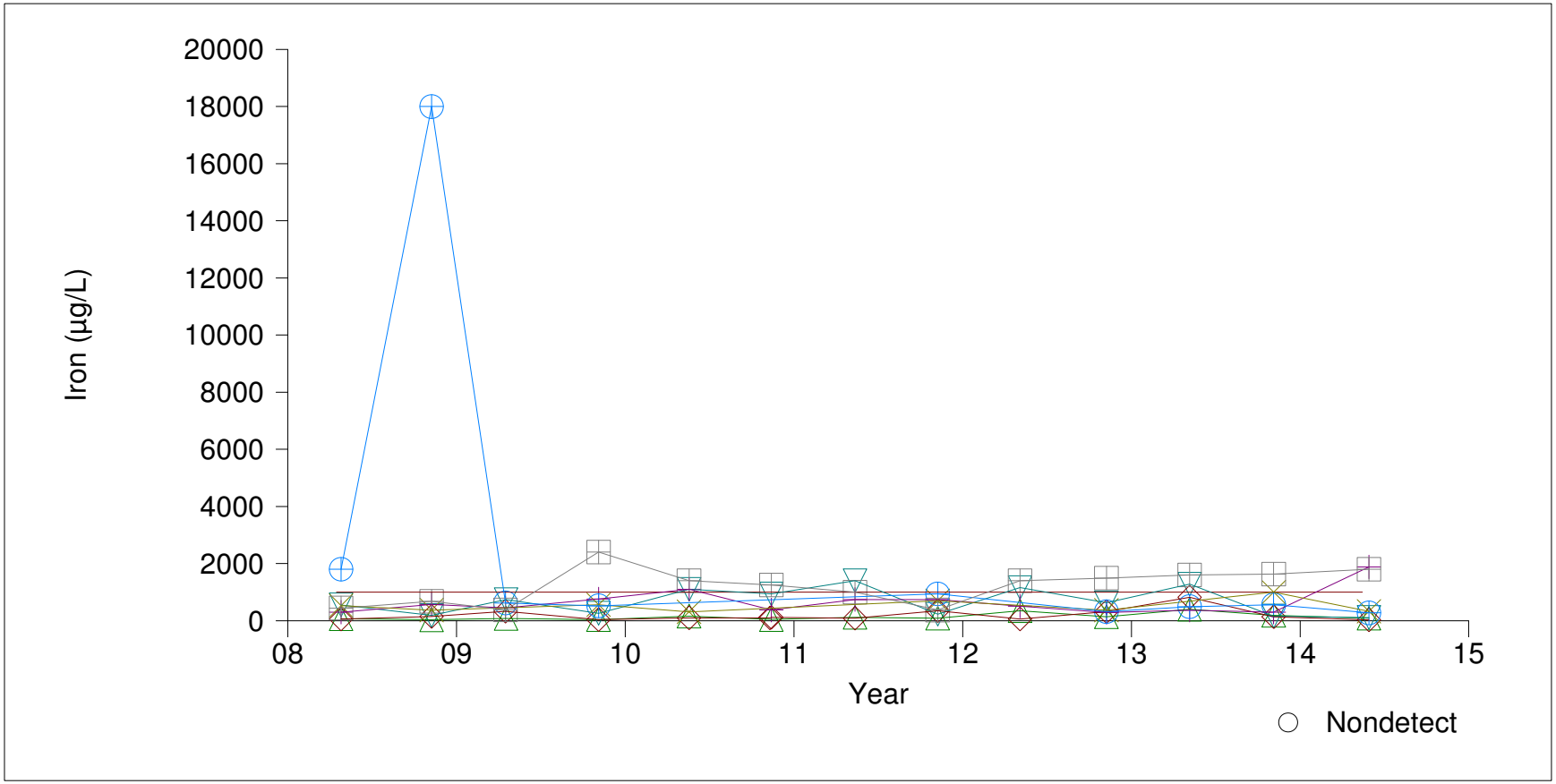
Time Series Plot for Surface Water Turbidity



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

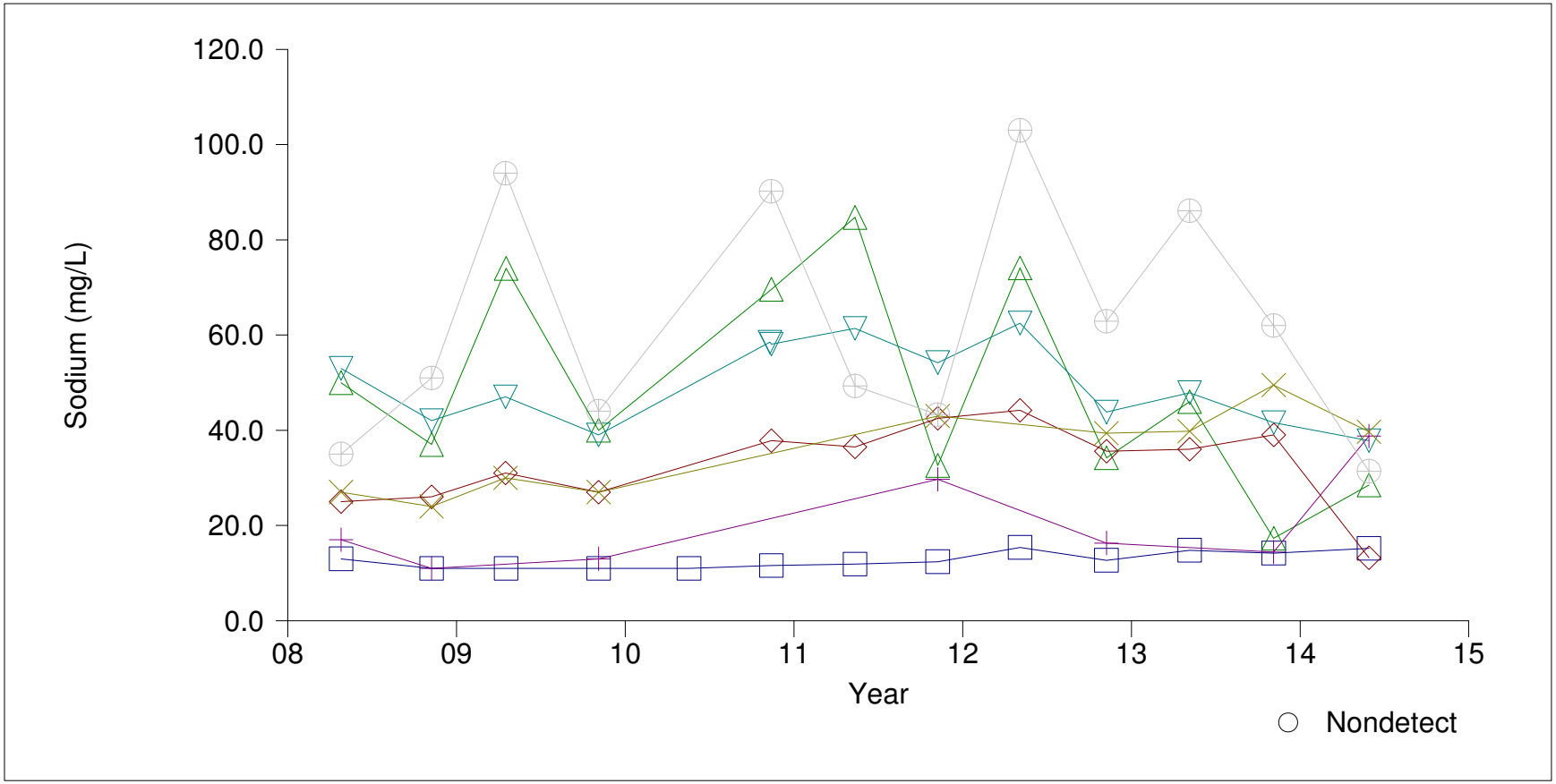
Time Series Plot for Surface Water Iron



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

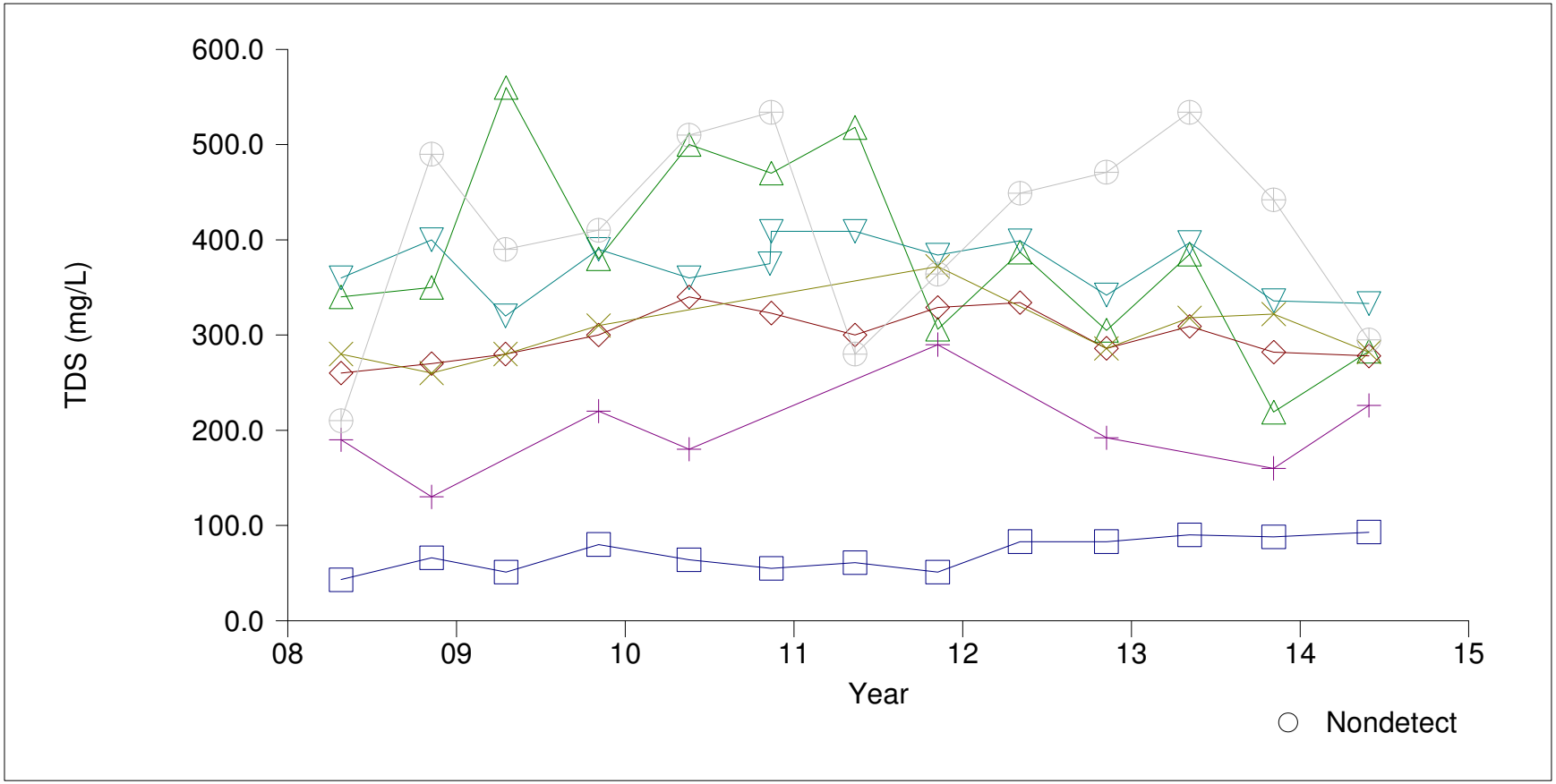
Time Series Plot for Surface Water Sodium



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

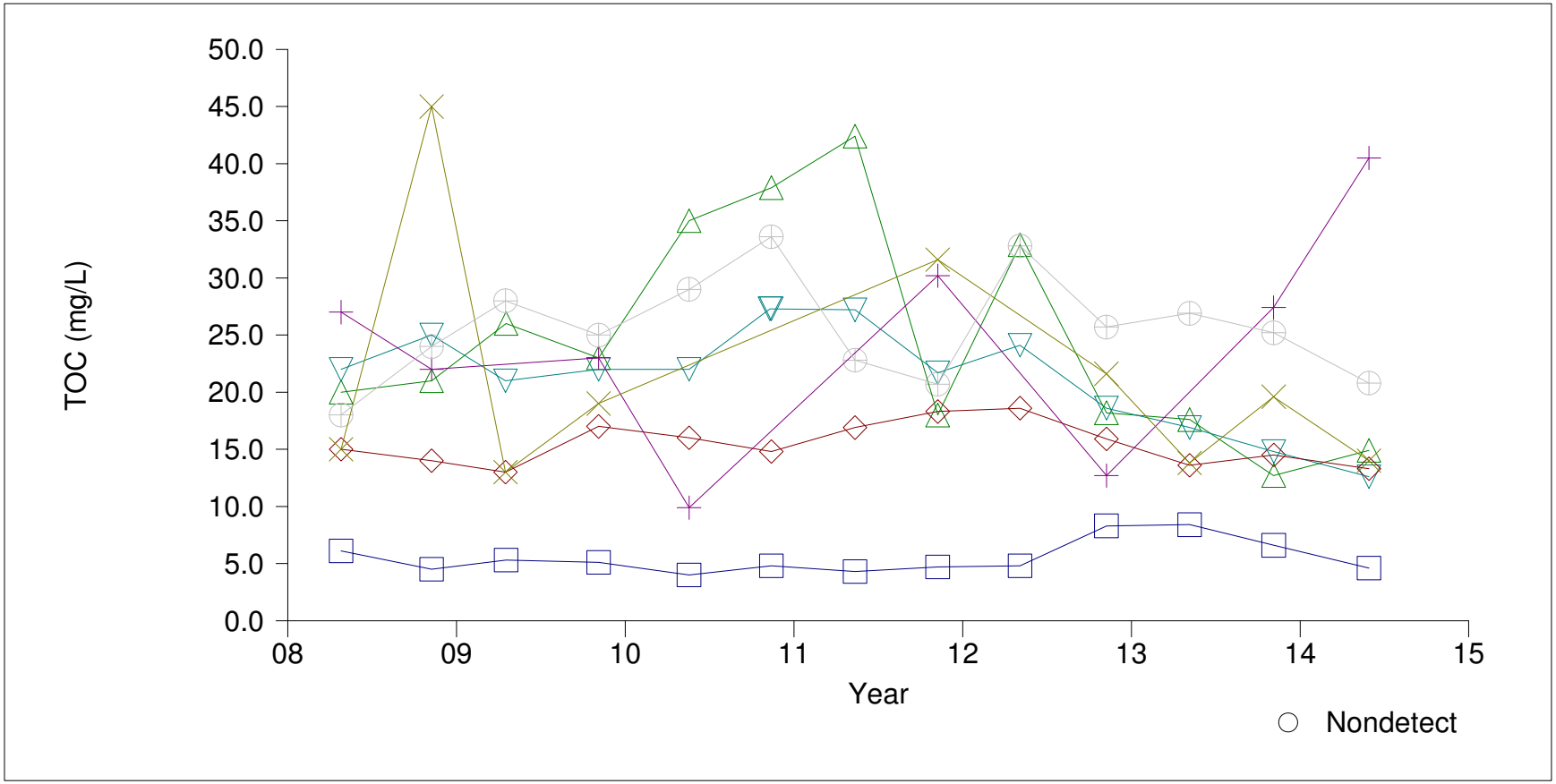
Time Series Plot for Surface Water Total Dissolved Solids (TDS)



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

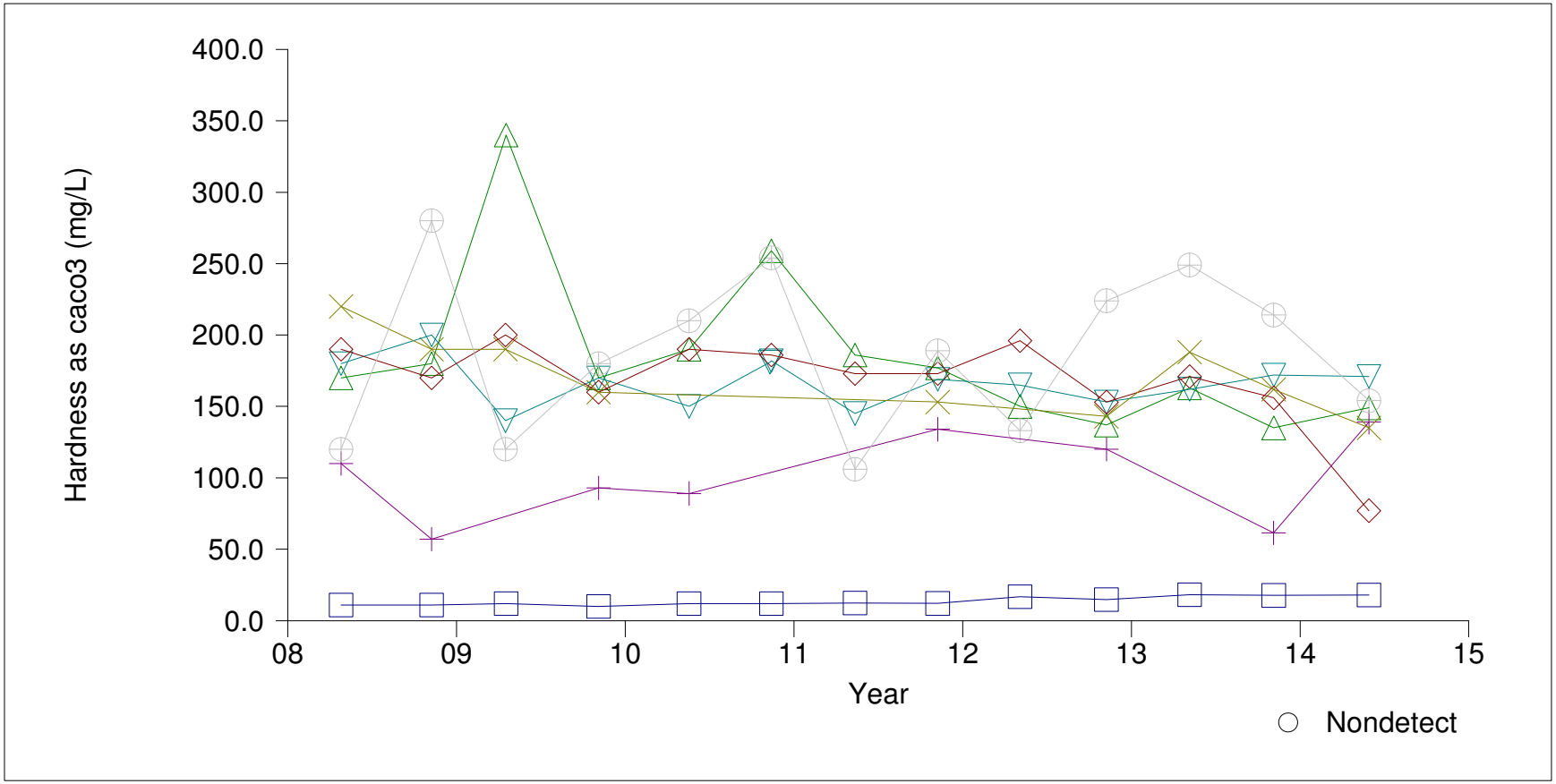
Time Series Plot for Surface Water Total Organic Carbon (TOC)



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

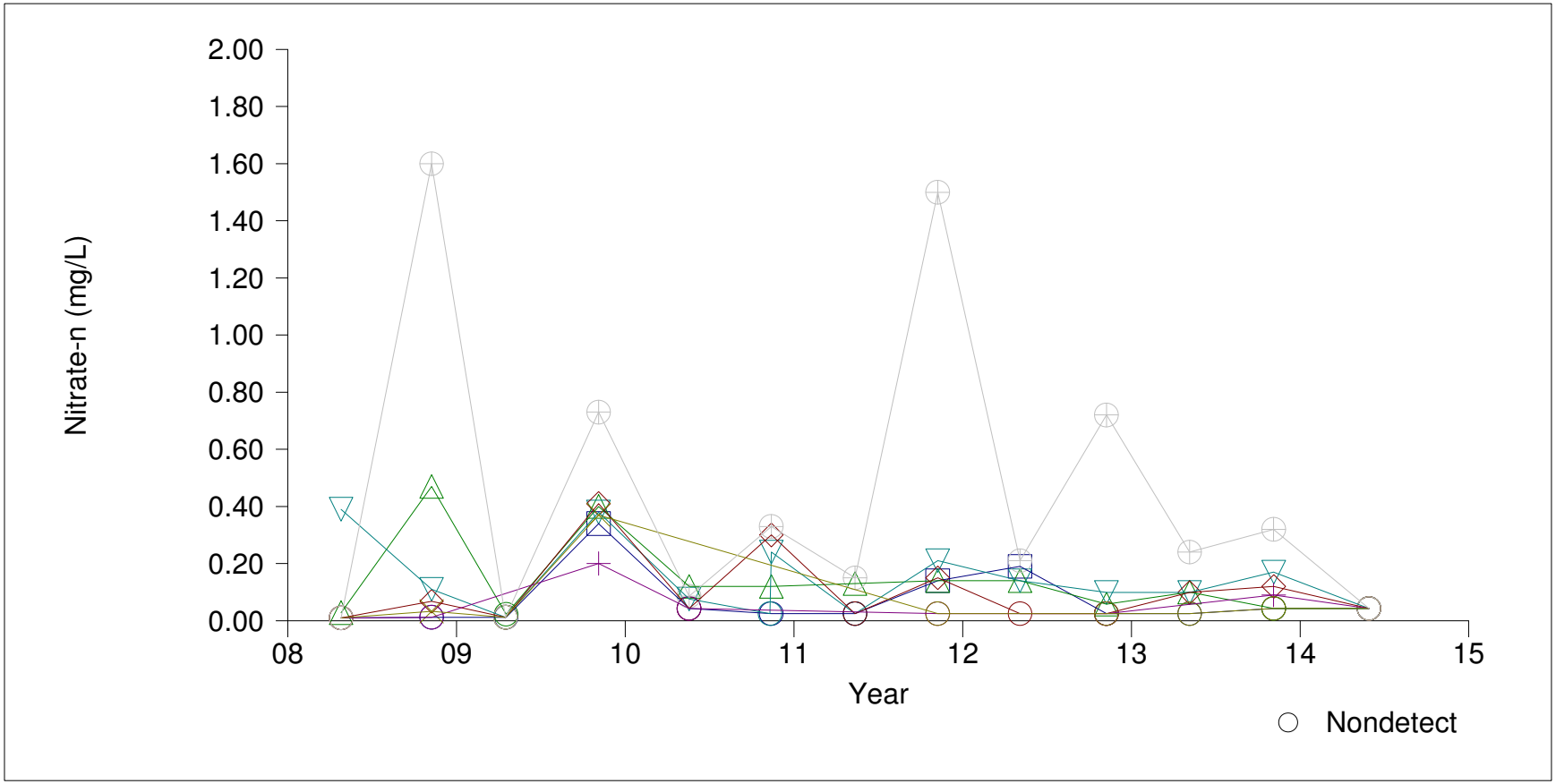
Time Series Plot for Surface Water Hardness



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

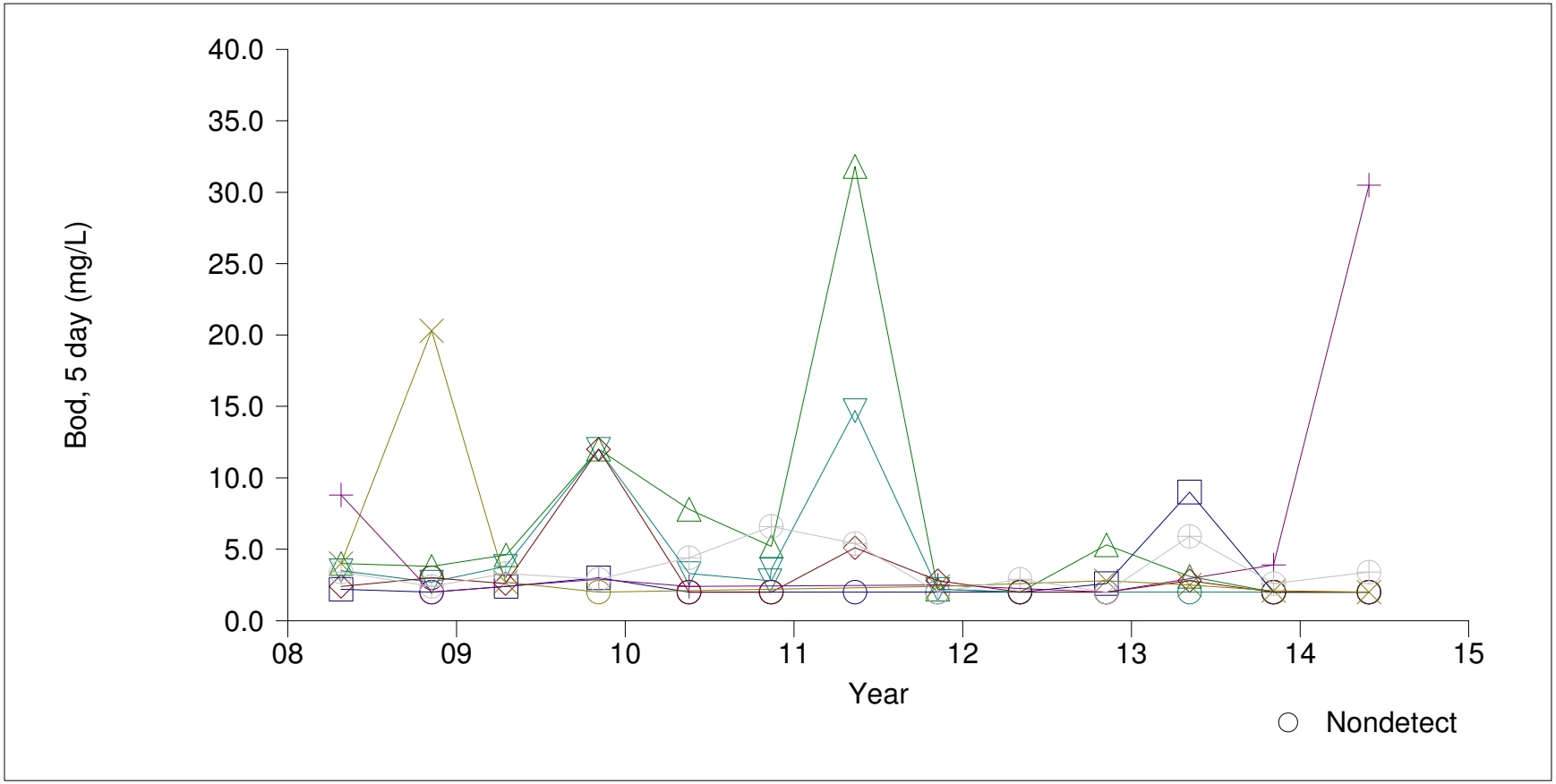
Time Series Plot for Surface Water Nitrate-N



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

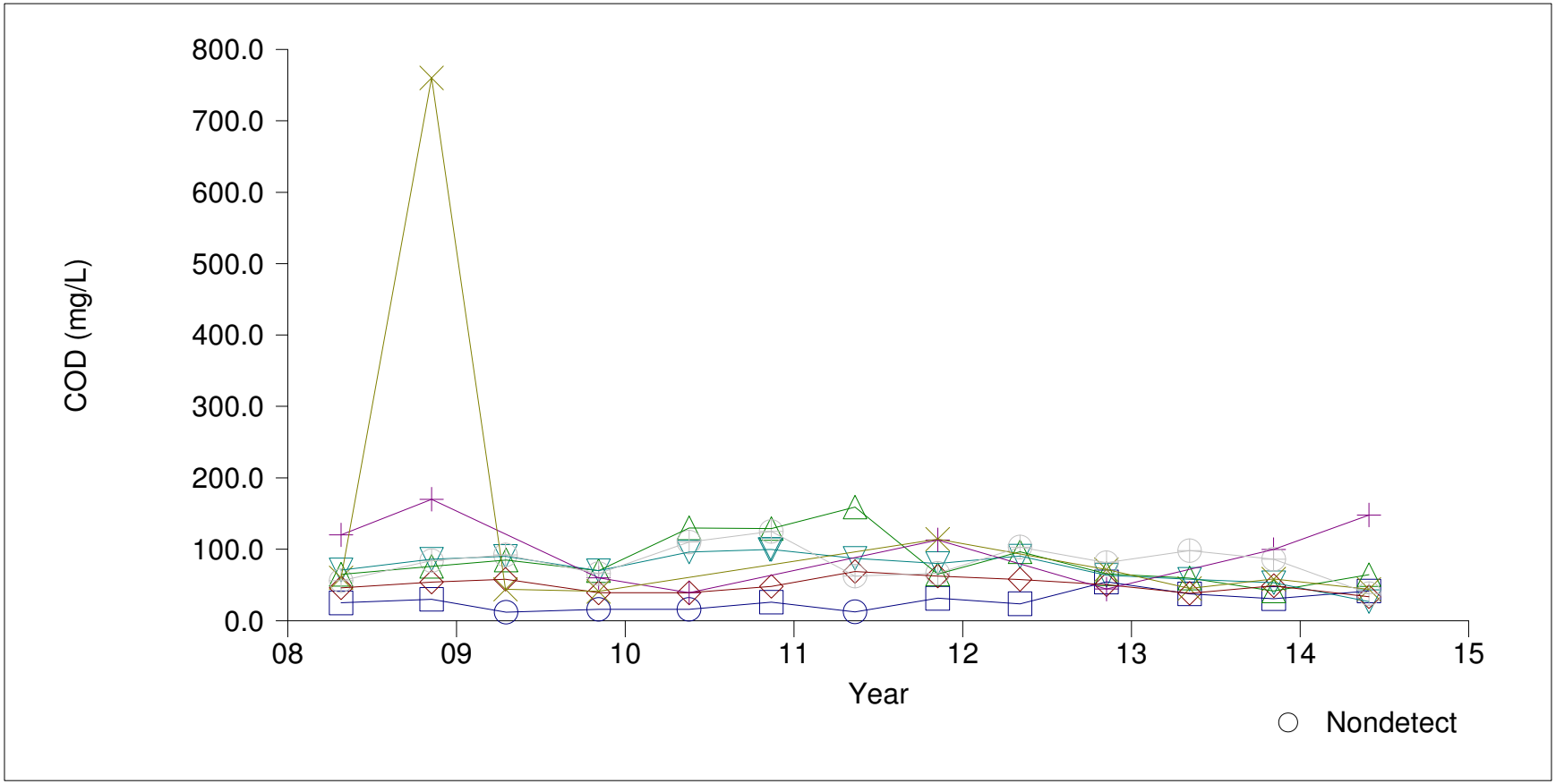
Time Series Plot for Surface Water Bod, 5 day



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

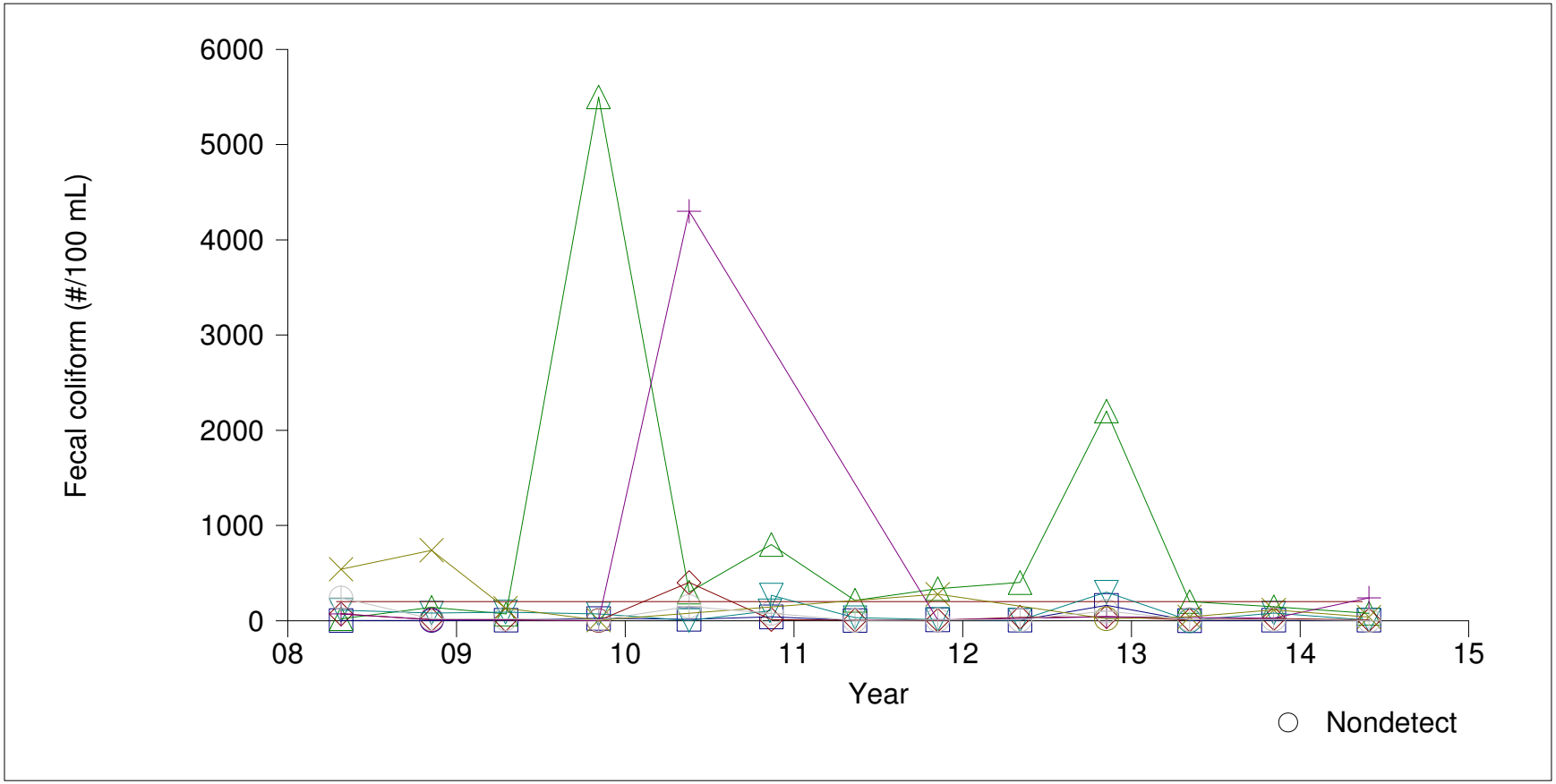
Time Series Plot for Surface Water COD



Prepared by: HDR Engineering, Inc.

TOMOKA FARMS ROAD LANDFILL

Time Series Plot for Surface Water Fecal coliform



Prepared by: HDR Engineering, Inc.