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Submitted to:

Florida Department of Environmental Protection, Central District

FOURTH BIENNIAL TECHNICAL REPORT ON WATER QUALITY

J.E.D. SOLID WASTE MANAGEMENT FACILITY

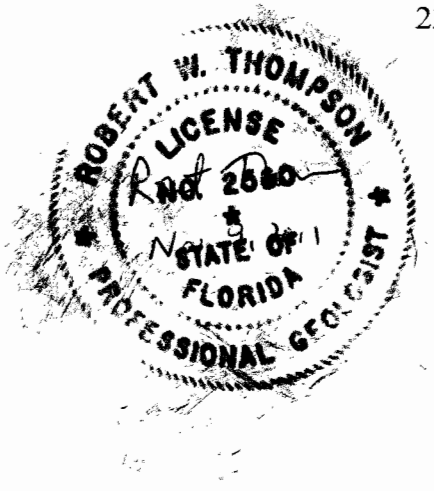
Osceola County, Florida

Prepared for:

Omni Waste of Osceola County, LLC
1501 Omni Way
St. Cloud, Florida 34773

Prepared by:
Geo-Services and Consulting, LLC
23110 State Road 54, No. 159
Lutz, Florida 33549
(813) 418-2007

November 2011



APPENDIX A

LAB REPORTS FOR 10TH THROUGH 14TH

SEMI-ANNUAL SAMPLING EVENTS

INSERTED SEPARATELY

(5-PARTS)

Geo-Services and Consulting, LLC
23110 State Road 54, Number 159
Lutz, Florida 33549
(813) 418-2007

November 9, 2011

Mr. F. Thomas Lubozynski, P.E.
Waste Program Administrator
Solid and Hazardous Waste Program
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Re: Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility, Osceola County, Florida
Permit No. SC49-0199726-004 and SO49-0199726-005

Dear Mr. Lubozynski:

Submitted herewith is the Fourth Biennial Technical Report on Water Quality for the J.E.D. Solid Waste Management (JED) Facility located in Osceola County, Florida. This report is being submitted as required for compliance with Specific Condition 14 and the conditions contained within Exhibit I, Monitoring Plan Implementation Schedule (MPIS) of the above referenced permit. This report satisfies the biennial technical reporting compliance requirements as described in Exhibit I of the permit.

As noted in the permit, one hard copy of the report along with an electronic copy of the report on a CD is being submitted to FDEP. The CD with a pdf copy of the entire report is attached to the inside of the front cover of the report. If you have any questions or need additional information, please do not hesitate to contact the undersigned at (813) 418-2007.

Sincerely,

Robert Thompson
Florida P.G. #2560

Attachments

Copy: Michael Kaiser, WSI
R. Shawn McCash, WSI
Kirk Wills, WSI

Submitted to:

Florida Department of Environmental Protection,
Central District

FOURTH BIENNIAL TECHNICAL REPORT ON WATER QUALITY

J.E.D. SOLID WASTE MANAGEMENT FACILITY

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Prepared for:

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23110 State Road 54, No. 159
Lutz, Florida 33549
(813) 418-2007

Nov. 9, 2011

November 2011

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APPENDICES

1. INTRODUCTION

1.1 Terms of Reference

On behalf of Omni Waste of Osceola County, LLC (Omni), Geo-Services and Consulting, LLC (GS&C) has prepared this fourth biennial technical report on water quality (BTRWQ) for the J.E.D. Solid Waste Management (JED) facility. This BTRWQ summarizes and interprets the water quality monitoring performed in accordance with the Water Quality Monitoring Plan (Plan) prepared as part of the JED facility permit application. The requirements for executing the Plan were presented in Exhibit 1 - Monitoring Plan Implementation Schedule (MPIS) of the current Permit (Permit Number SO49-0199726-015) that authorizes the development of Phases 1 through 3 at the JED facility issued by the Florida Department of Environmental Protection (FDEP) on March 22, 2007. It is noted that this permit was modified by Permit Numbers SC49-0199726-006 and SO49-0199726-007, issued by FDEP on April 4, 2008 for the vertical expansion of the JED facility, and by Permit Number SO49-0199726-11 issued by FDEP on June 22, 2009 which updated the electronic data submittal requirements. In addition to these Permit modifications, the MPIS was revised on April 6, 2009 updating the sampling locations and schedule.

This fourth BTRWQ was prepared by Mr. Robert Thompson, P.G. of GS&C.

1.2 Overview

The Plan and Exhibit I (MPIS) describe a water quality monitoring program at the JED facility that has as its intent to: (i) measure and report groundwater and surface water conditions for the monitoring network; (ii) monitor the groundwater flow direction; (iii) monitor the groundwater and surface water quality on a semi-annual basis; and (iv) monitor leachate on an annual basis. To date, in addition to the initial background (baseline) events for Phase 1, 2, and 3 monitoring well networks, fourteen (14) semi-annual water quality monitoring events have been completed. This report includes the summary and interpretation of water quality data collected from the following water quality monitoring events;

(i) Tenth Semi-Annual event performed in May 2009,
(ii) Eleventh Semi-Annual event performed in November 2009,
(iii) Twelfth Semi-Annual event performed in May 2010,
(iv) Thirteenth Semi-Annual event performed in November 2010, and
(v) Fourteenth Semi-Annual event performed in May 2011.

The first BTRWQ was submitted to the FDEP in November 2006 after completion of the fourth semi-annual monitoring event. The second BTRWQ was submitted to the FDEP in September 2008 after completion of the eighth semi-annual monitoring event. The third BTRWQ was submitted to the FDEP in December 2010 after completion of the twelfth semi-annual monitoring event. The third BTRWQ was a comprehensive technical report which included all water quality data collected from the baseline events up to and including the 12th semi-annual monitoring event. The format of this fourth BTRWQ is consistent with the previously submitted BTRWQ's and contains a summary for semi-annual monitoring events ten through fourteen.

1.3 Project Background

The JED facility is located in eastern Osceola County, Florida, west of highway U.S. 441, and approximately 6.5 miles south of Holopaw. The facility includes a Class I landfill which is linked to highway U.S. 441 by a 2.86-mile access road. The JED facility comprises a total of approximately 2,179 acres. The landfill footprint at build-out will be approximately 360 acres and consist of 23 landfill cells that will provide available waste capacity for a period of approximately 30 years. The FDEP issued a permit to construct and operate the Phase 1 development of the JED facility in October 2003. Phase 1 development includes four landfill cells (Cells 1 through 4) located in the northern part of the landfill and covering approximately 54 acres. As part of Phase 1, forty-five (45) groundwater monitoring wells were installed in fifteen (15) clusters (MW-1 through MW-15 A, B and C) around the perimeter of the Phase 1 development area. The baseline water quality report for the Phase 1 monitoring well network was submitted to FDEP in May 2004. All components of the Phase 1 development have been constructed.

The FDEP issued a permit to construct and operate Phases 2 and 3 at the JED facility in March 2007. The development of Phases 2 and 3 includes six cells (Cells 5 through 10) with a total footprint of approximately 72 acres. As part of Phases 2 and 3 development, and as approved by FDEP, six (6) existing Phase 1 monitoring wells (MW-14 A, B, and C, and MW-15 A, B, and C), and ten (10) piezometers were decommissioned. The wells and piezometers were decommissioned for construction of future cells and a storm water retention basin located within Phases 2 and 3. The decommissioning of the monitoring wells and piezometers was discussed in the Phase 2 and 3 baseline water quality report. For the development of Phases 2 and 3, twenty four (24) additional groundwater monitoring wells were installed in eight (8) well clusters (MW-16 through MW-23 A, B and C) around the perimeter of the Phase 2 and 3 development areas in September 2007. The baseline water quality report for the Phase 2 and 3 monitoring well network was submitted to FDEP in January 2008.

The FDEP issued a permit to construct and operate Phases 1 through 3 with vertical expansion at the JED facility in April 2008. In April 2009, the MPIS for the semi-annual water quality monitoring well network and sampling schedule were updated for Phases 1, 2 and 3. The modification included a reduction of the Phase 3 monitoring wells required to be sampled semi-annually until such time that waste placement commences in one of the Phase 3 cells and the sampling schedule was modified for the B-zone (intermediate) and C-zone (deep). These monitoring wells are now sampled on an alternating annual basis. At the time of this report, Cell 7 has been constructed and waste placement within the cell commenced on November 1, 2011. Cell 1 was completed in January 2004, Cell 4 was completed in May 2005, Cell 2 was completed in April 2006, Cell 3 was completed in October 2006, Cell 5 was completed in October 2007, Cell 6 was completed in July 2008, and Cell 7 was completed in August 2010. For monitoring purposes, the JED facility was assigned Water Assurance Compliance System (WACS) facility identification number 89544.

1.4 Objective of Report

The objective of this fourth BTRWQ is to summarize and interpret the water quality monitoring results and water level measurements collected at the JED facility, as required by the MPIS of the current FDEP permit.

1.5 Report Organization

To facilitate review, the remainder of this fourth BTRWQ is organized in accordance with the requirements presented in the MPIS, which are as follows:

- Section 2 presents a summary of the monitoring well construction details;
- Section 3 describes the water quality monitoring sampling and analysis procedures;
- Section 4 presents tabular displays of the field measured parameters;
- Section 5 includes tabular displays of water quality data of detected monitoring parameters exceeding regulatory levels;
- Section 6 presents trend analyses and graphical displays of monitoring parameters exceeding regulatory levels;

- Section 7 addresses the requirement for comparison of wells completed in different hydrologic zones;

- Section 8 provides comparisons of water quality between background wells and detection wells;

- Section 9 presents correlations between related parameters such as total dissolved solids and specific conductance;

- Section 10 presents a discussion of erratic and/or poorly correlated data;

- Section 11 presents an interpretation of groundwater contour maps and an evaluation of groundwater flow rates including hydrographs for all monitoring wells; and

- Section 12 provides a discussion on the adequacy of water quality monitoring frequency and sampling locations based on site conditions and the available data.

2. MONITORING WELL DETAILS

2.1 Well Layout and Construction

For the Phase 1 development, forty five (45) groundwater monitoring wells were installed in fifteen (15) clusters (MW-1 through MW-15) around the perimeter of the Phase 1 development area. Monitoring well clusters were located such that the spacing between well clusters was no greater than 500 ft, in accordance with the FDEP permit requirements. For development of Phases 2 and 3, twenty four (24) groundwater monitoring wells were installed in eight (8) clusters (MW-16 through MW-23) around the perimeter of the Phase 2 and 3 development areas. In accordance with the FDEP permit requirements, the monitoring well clusters were located such that the spacing between detection well clusters (MW-16 through MW-21) was approximately 500 feet, and the spacing between background well clusters (MW-22 and MW-23) was approximately 800 feet. Each monitoring well cluster consisted of three (3) groundwater monitoring wells installed (i) across the water table to monitor the upper limit of the surficial aquifer (identified as A-zone [shallow] wells); (ii) within the lower limit of the upper surficial aquifer above the intermediate clay layer (identified as C-zone [deep] wells); and (iii) at an intermediate depth between the shallow and deep wells (identified as B-zone [intermediate] wells).

A layout depicting the location of groundwater monitoring wells installed for Phases 1, 2 and 3, and the piezometers installed as part of the hydrogeologic investigation are shown on Figures 2-1A and 2-1B. As shown, groundwater monitoring well clusters MW-1 through MW-13 and MW-23 were installed along the top outer edge of the landfill perimeter berm. The ground surface at the location of the wells in the perimeter berm is at approximately Elevation 92 feet with respect to National Geodetic Vertical Datum of 1929 (NGVD, 1929). Groundwater monitoring well clusters MW-16 and MW-17 were installed along the outer edge of the landfill perimeter berm that serves as the initial storm water berm. The ground surface at these two well locations is at approximately Elevation 85 feet (NGVD, 1929). Groundwater monitoring well clusters MW-18 through MW-22 were installed along the interim Phase 3 storm water berm at the southern limit of the Phase 3 development at approximately Elevation 84 feet (NGVD, 1929). The location of each well (latitude and longitude, and elevation [NGVD, 1929]) was surveyed by professional land surveyors licensed in the State of Florida.

Wells were constructed with 2-in diameter threaded schedule 40 PVC casing. The well screens were 10-ft in length with #6-slot (0.006-in.) machine slotted PVC screen. A 30/45 graded silica sand was placed around the screen to a height of 2 to 3 ft above the

top of the screen. A seal of 30/65 graded fine silica sand was placed above the sand filter around the screen. The remaining annular space from the top of the fine sand filter seal to the existing ground surface was grouted using a tremmie pipe with a cement/bentonite mixture containing no more than 5 percent bentonite by dry weight. The PVC well casings were extended approximately 2.5 to 3 ft above the existing ground surface. Surface completion consisted of an aluminum casing with a lockable cover set in a concrete pad. Each well was provided with a well cap, padlock, and an identification label. A summary of the monitoring well construction details is presented in Table 2-1.

Table 2-1 (1 of 3)

Summary of Monitoring Well Construction Details
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well Designation	Latitude (NAD 1983)	Longitude (NAD 1983)	WACS ID	Date Installed	Top of Casing Elevation, TOC (feet)	Total Depth (feet BTOC)	Screen Setting				Sand Pack (feet BTOC)	Fine-Grained Sand Seal (feet BTOC)
							(feet BTOC)		(feet Elevation)			
							Top	Bottom	Top	Bottom		
MW-1A	28 03 48.55	81 05 59.88	19900	9-Dec-03	95.1	23.0	13.0	23.0	82.1	72.1	10.6	8.2
MW-2A	28 03 51.99	81 05 59.90	19903	10-Dec-03	95.2	22.6	12.6	22.6	82.6	72.6	10.3	8.9
MW-3A	28 03 55.34	81 05 59.91	19906	11-Dec-03	94.6	22.8	12.8	22.8	81.9	71.9	10.4	9.0
MW-4A	28 03 58.97	81 05 59.92	19909	12-Dec-03	95.5	23.1	13.1	23.1	82.4	72.4	10.8	9.4
MW-5A	28 04 02.92	81 05 59.95	19912	24-Nov-03	95.3	22.5	12.5	22.5	82.8	72.8	10.1	9.1
MW-6A	28 04 06.50	81 05 59.15	19915	25-Nov-03	94.7	22.6	12.6	22.6	82.2	72.2	10.6	8.6
MW-7A	28 04 07.13	81 05 54.78	19918	26-Nov-03	95.5	23.3	13.3	23.3	82.2	72.2	10.3	9.3
MW-8A	28 04 06.20	81 05 50.64	19921	5-Dec-03	94.7	22.5	12.5	22.5	82.2	72.2	10.2	8.6
MW-9A	28 04 04.34	81 05 46.60	19924	4-Dec-03	94.7	22.4	12.4	22.4	82.3	72.3	10.0	8.6
MW-10A	28 04 00.07	81 05 44.77	19927	3-Dec-03	96.3	22.1	12.1	22.1	84.1	74.1	9.8	7.6
MW-11A	28 03 55.43	81 05 43.27	19930	3-Dec-03	93.6	22.8	12.8	22.8	80.7	70.7	10.5	9.1
MW-12A	28 03 52.08	81 05 43.26	19933	2-Dec-03	95.1	23.0	13.0	23.0	82.1	72.1	10.7	9.3
MW-13A	28 03 48.67	81 05 43.25	19936	8-Dec-03	95.2	22.5	12.5	22.5	82.7	72.7	10.2	7.7
MW-14A	Monitoring Well Abandoned 10 July 2007											
MW-15A	Monitoring Well Abandoned 10 July 2007											
MW-16A	28 03 44.55	81 05 40.22	22342	21-Sep-07	88.69	18.63	8.1	18.1	80.6	70.6	6.1	5.1
MW-17A	28 03 42.38	81 05 35.42	22345	22-Sep-07	88.86	19.88	9.4	19.4	79.5	69.5	7.4	6.4
MW-18A	28 03 37.21	81 05 35.16	22348	11-Sep-07	87.56	17.70	7.2	17.2	80.4	70.4	5.2	4.2
MW-19A	28 03 33.40	81 05 39.60	22351	11-Sep-07	87.54	17.65	7.2	17.2	80.4	70.4	5.2	4.2
MW-20A	28 03 31.82	81 05 45.45	22354	19-Sep-07	87.12	17.93	7.4	17.4	79.7	69.7	5.4	4.4
MW-21A	28 03 32.10	81 05 52.48	22357	14-Sep-07	87.20	18.04	7.5	17.5	79.7	69.7	5.5	4.5
MW-22A	28 03 32.35	81 05 59.48	22360	14-Sep-07	87.71	18.00	7.5	17.5	80.2	70.2	5.5	4.5
MW-23A	28 03 42.41	81 05 59.79	22363	25-Sep-07	97.90	27.75	17.3	27.3	80.7	70.7	15.3	14.3

Table 2-1 (2 of 3)

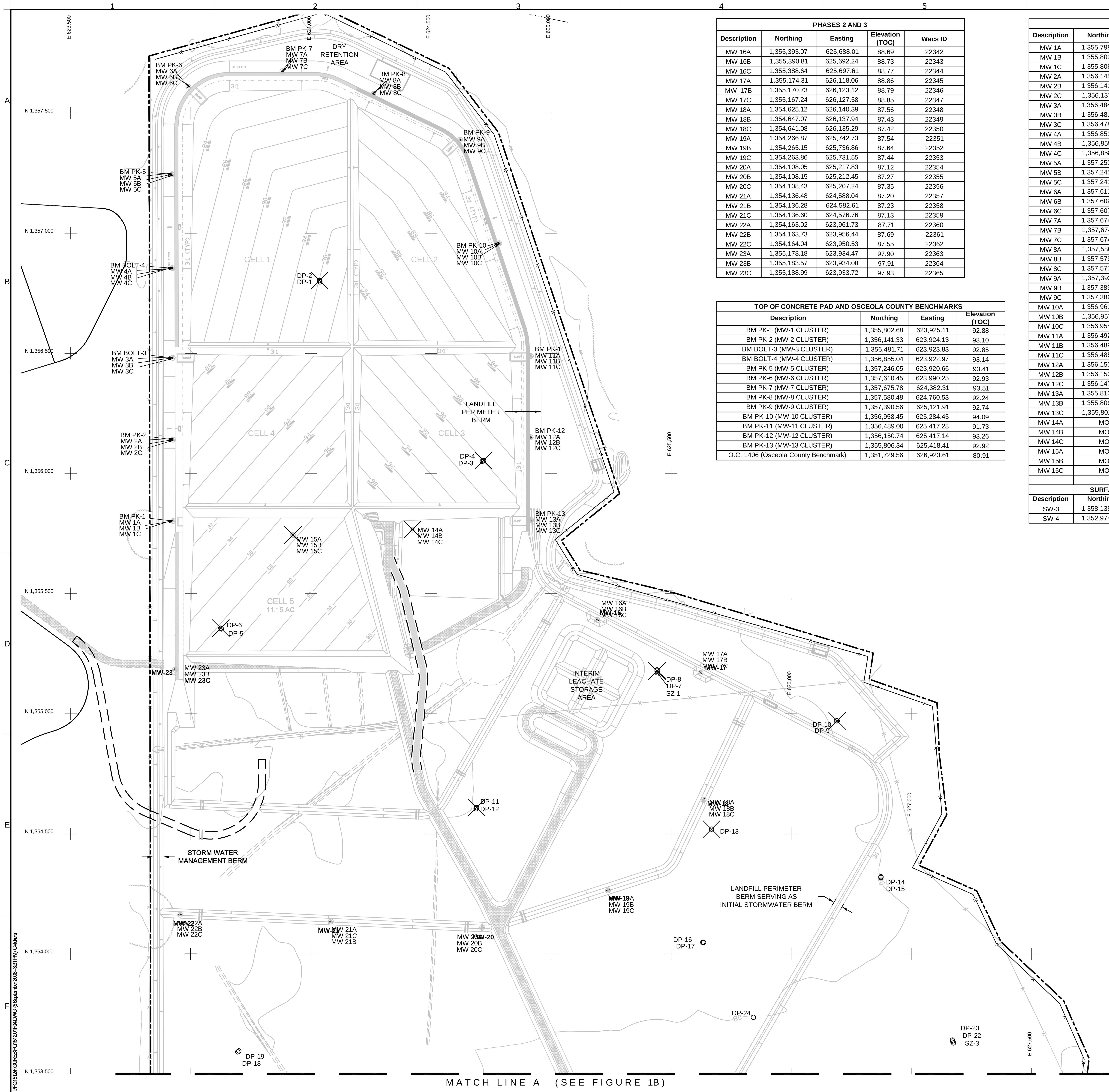
Summary of Monitoring Well Construction Details
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well Designation	Latitude (NAD 1983)	Longitude (NAD 1983)	WACS ID	Date Installed	Top of Casing Elevation, TOC (feet)	Total Depth (feet BTOC)	Screen Setting				Sand Pack (feet BTOC)	Fine-Grained Sand Seal (feet BTOC)
							(feet BTOC)		(feet Elevation)			
							Top	Bottom	Top	Bottom		
MW-1B	28 03 48.59	81 05 59.89	19901	9-Dec-03	95.0	47.9	37.9	47.9	57.1	47.1	35.6	33.1
MW-2B	28 03 51.94	81 05 59.90	19904	10-Dec-03	95.2	48.3	38.3	48.3	56.9	46.9	36.0	34.6
MW-3B	28 03 55.31	81 05 59.91	19907	11-Dec-03	94.7	47.6	37.6	47.6	57.1	47.1	35.3	33.9
MW-4B	28 03 59.01	81 05 59.92	19910	12-Dec-03	95.2	47.4	37.4	47.4	57.8	47.8	35.1	33.5
MW-5B	28 04 02.88	81 05 59.95	19913	24-Nov-03	95.3	47.1	37.1	47.1	58.2	48.2	34.4	32.7
MW-6B	28 04 06.48	81 05 59.18	19916	25-Nov-03	94.6	47.4	37.4	47.4	57.2	47.2	34.9	33.5
MW-7B	28 04 07.13	81 05 54.81	19919	26-Nov-03	95.3	47.5	37.5	47.5	57.8	47.8	34.5	33.5
MW-8B	28 04 06.19	81 05 50.60	19922	5-Dec-03	94.6	49.6	39.6	49.6	55.0	45.0	37.1	35.6
MW-9B	28 04 04.31	81 05 46.56	19925	4-Dec-03	94.6	49.1	39.1	49.1	55.5	45.5	36.8	35.3
MW-10B	28 04 00.04	81 05 44.75	19928	3-Dec-03	96.2	48.3	38.3	48.3	58.0	48.0	35.9	33.9
MW-11B	28 03 55.40	81 05 43.27	19931	2-Dec-03	93.6	47.9	37.9	47.9	55.7	45.7	35.5	34.0
MW-12B	28 03 52.05	81 05 43.27	19934	1-Dec-03	95.0	49.0	39.0	49.0	56.1	46.1	36.6	35.1
MW-13B	28 03 48.64	81 05 43.24	19937	8-Dec-03	95.1	47.2	37.2	47.2	58.0	48.0	34.8	33.4
MW-14B	Monitoring Well Abandoned 10 July 2007											
MW-15B	Monitoring Well Abandoned 10 July 2007											
MW-16B	28 03 44.52	81 05 40.17	22343	21-Sep-07	88.73	38.09	27.6	37.6	61.1	51.1	25.6	24.6
MW-17B	28 03 42.35	81 05 35.36	22346	20-Sep-07	88.79	40.18	29.7	39.7	59.1	49.1	27.7	26.7
MW-18B	28 03 37.16	81 05 35.19	22349	11-Sep-07	87.43	37.80	27.3	37.3	60.1	50.1	25.3	24.3
MW-19B	28 03 33.38	81 05 39.66	22352	11-Sep-07	87.64	37.73	27.2	37.2	60.4	50.4	25.2	24.2
MW-20B	28 03 31.82	81 05 45.51	22355	19-Sep-07	87.27	37.76	27.3	37.3	60.0	50.0	25.3	24.3
MW-21B	28 03 32.09	81 05 52.55	22358	17-Sep-07	87.23	37.63	27.1	37.1	60.1	50.1	25.1	24.1
MW-22B	28 03 32.36	81 05 59.54	22361	14-Sep-07	87.69	37.96	27.5	37.5	60.2	50.2	25.5	24.5
MW-23B	28 03 42.46	81 05 59.79	22364	25-Sep-07	97.91	42.75	32.3	42.3	65.7	55.7	30.3	29.3

Table 2-1 (3 of 3)

Summary of Monitoring Well Construction Details
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well Designation	Latitude (NAD 1983)	Longitude (NAD 1983)	WACS ID	Date Installed	Top of Casing Elevation, TOC (feet)	Total Depth (feet BTOC)	Screen Setting				Sand Pack (feet BTOC)	Fine-Grained Sand Seal (feet BTOC)
							(feet BTOC)		(feet Elevation)			
							Top	Bottom	Top	Bottom		
MW-1C	28 03 48.63	81 05 59.88	19902	9-Dec-03	95.2	75.2	65.2	75.2	30.0	20.0	62.9	61.4
MW-2C	28 03 51.90	81 05 59.89	19905	10-Dec-03	95.3	68.4	58.4	68.4	36.9	26.9	56.1	53.7
MW-3C	28 03 55.28	81 05 59.91	19908	11-Dec-03	94.7	68.7	58.7	68.7	36.0	26.0	56.3	54.8
MW-4C	28 03 59.04	81 05 59.92	19911	12-Dec-03	95.4	72.5	62.5	72.5	32.9	22.9	61.2	59.6
MW-5C	28 04 02.83	81 05 59.95	19914	24-Nov-03	95.4	73.0	63.0	73.0	32.4	22.4	60.7	58.7
MW-6C	28 04 06.46	81 05 59.22	19917	25-Nov-03	94.6	73.2	63.2	73.2	31.4	21.4	60.2	57.7
MW-7C	28 04 07.13	81 05 54.86	19920	25-Nov-03	94.9	73.3	63.3	73.3	31.6	21.6	60.3	59.3
MW-8C	28 04 06.17	81 05 50.55	19923	5-Dec-03	94.5	73.9	63.9	73.9	30.6	20.6	61.6	59.8
MW-9C	28 04 04.29	81 05 46.53	19926	4-Dec-03	94.5	73.8	63.8	73.8	30.8	20.8	61.4	59.4
MW-10C	28 04 00.01	81 05 44.74	19929	3-Dec-03	96.4	73.7	63.7	73.7	32.7	22.7	61.4	60.0
MW-11C	28 03 55.36	81 05 43.26	19932	2-Dec-03	93.7	73.4	63.4	73.4	30.3	20.3	61.0	59.6
MW-12C	28 03 52.01	81 05 43.26	19935	1-Dec-03	95.1	73.6	63.6	73.6	31.5	21.5	60.2	58.7
MW-13C	28 03 48.60	81 05 43.25	19938	8-Dec-03	95.0	73.0	63.0	73.0	32.1	22.1	60.7	58.2
MW-14C	Monitoring Well Abandoned 10 July 2007											
MW-15C	Monitoring Well Abandoned 10 July 2007											
MW-16C	28 03 44.50	81 05 40.11	22344	21-Sep-07	88.8	67.7	57.2	67.2	31.6	21.6	55.2	54.2
MW-17C	28 03 42.31	81 05 35.31	22347	20-Sep-07	88.9	67.3	56.8	66.8	32.0	22.0	54.8	53.8
MW-18C	28 03 37.10	81 05 35.22	22350	12-Sep-07	87.4	67.2	56.7	66.7	30.8	20.8	54.7	53.7
MW-19C	28 03 33.37	81 05 39.72	22353	10-Sep-07	87.4	66.7	56.2	66.2	31.2	21.2	54.2	53.2
MW-20C	28 03 31.82	81 05 45.57	22356	18-Sep-07	87.4	66.8	56.3	66.3	31.1	21.1	54.3	53.3
MW-21C	28 03 32.10	81 05 52.61	22359	17-Sep-07	87.1	62.6	52.1	62.1	35.1	25.1	50.1	49.1
MW-22C	28 03 32.36	81 05 59.60	22362	13-Sep-07	87.6	67.3	56.8	66.8	30.8	20.8	54.8	53.8
MW-23C	28 03 42.51	81 05 59.80	22365	24-Sep-07	97.9	67.1	56.6	66.6	41.4	31.4	54.6	53.6

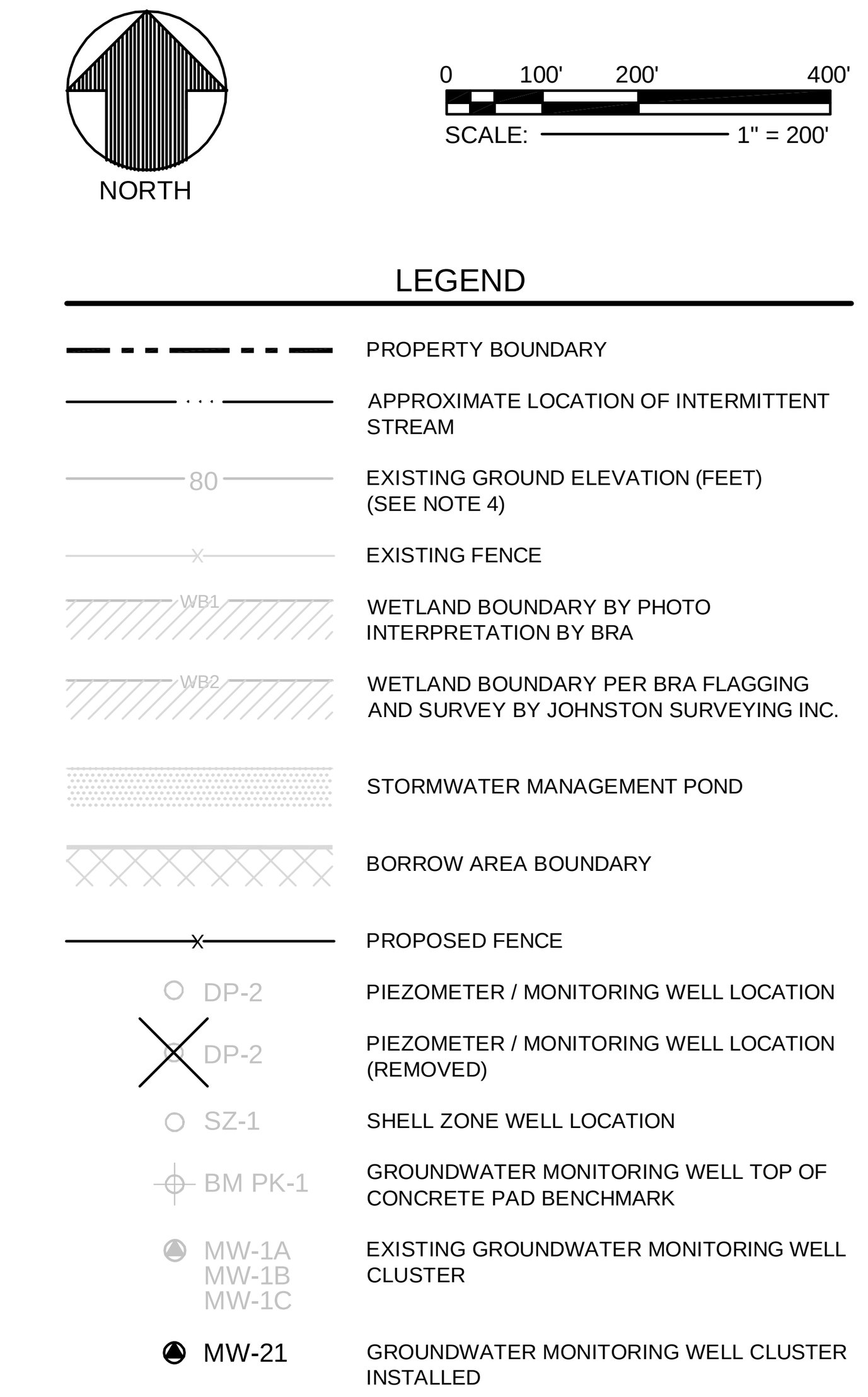


PHASES 2 AND 3				
Description	Northing	Easting	Elevation (TOC)	Wacs ID
MW 16A	1,355,393.07	625,688.01	88.69	22342
MW 16B	1,355,390.81	625,692.24	88.73	22343
MW 16C	1,355,388.64	625,697.61	88.77	22344
MW 17A	1,355,174.31	626,118.06	88.86	22345
MW 17B	1,355,170.73	626,123.12	88.79	22346
MW 17C	1,355,167.24	626,127.58	88.85	22347
MW 18A	1,354,625.12	626,140.39	87.56	22348
MW 18B	1,354,647.07	626,137.94	87.43	22349
MW 18C	1,354,641.08	626,135.29	87.42	22350
MW 19A	1,354,266.87	625,742.73	87.54	22351
MW 19B	1,354,265.15	625,736.86	87.64	22352
MW 19C	1,354,263.86	625,731.55	87.44	22353
MW 20A	1,354,108.05	625,217.83	87.12	22354
MW 20B	1,354,108.15	625,212.45	87.27	22355
MW 20C	1,354,108.43	625,207.24	87.35	22356
MW 21A	1,354,136.48	624,588.04	87.20	22357
MW 21B	1,354,136.28	624,582.61	87.23	22358
MW 21C	1,354,136.60	624,576.76	87.13	22359
MW 22A	1,354,163.02	623,961.73	87.71	22360
MW 22B	1,354,163.73	623,956.44	87.69	22361
MW 22C	1,354,164.04	623,950.53	87.55	22362
MW 23A	1,355,178.18	623,934.47	97.90	22363
MW 23B	1,355,183.57	623,934.08	97.91	22364
MW 23C	1,355,188.99	623,933.72	97.93	22365

TOP OF CONCRETE PAD AND OSCEOLA COUNTY BENCHMARKS			
Description	Northing	Easting	Elevation (TOC)
BM PK-1 (MW-1 CLUSTER)	1,355,802.68	623,925.11	92.88
BM PK-2 (MW-2 CLUSTER)	1,356,141.33	623,924.13	93.10
BM BOLT-3 (MW-3 CLUSTER)	1,356,481.71	623,923.83	92.85
BM BOLT-4 (MW-4 CLUSTER)	1,356,855.04	623,922.97	93.14
BM PK-5 (MW-5 CLUSTER)	1,357,246.05	623,920.66	93.41
BM PK-6 (MW-6 CLUSTER)	1,357,610.45	623,990.25	92.93
BM PK-7 (MW-7 CLUSTER)	1,357,675.78	624,382.31	93.51
BM PK-8 (MW-8 CLUSTER)	1,357,580.48	624,760.53	92.24
BM PK-9 (MW-9 CLUSTER)	1,357,390.56	625,121.91	92.74
BM PK-10 (MW-10 CLUSTER)	1,356,958.45	625,284.45	94.09
BM PK-11 (MW-11 CLUSTER)	1,356,489.00	625,417.28	91.73
BM PK-12 (MW-12 CLUSTER)	1,356,150.74	625,417.14	93.26
BM PK-13 (MW-13 CLUSTER)	1,355,806.34	625,418.41	92.92
O.C. 1406 (Osceola County Benchmark)	1,351,729.56	626,923.61	80.91

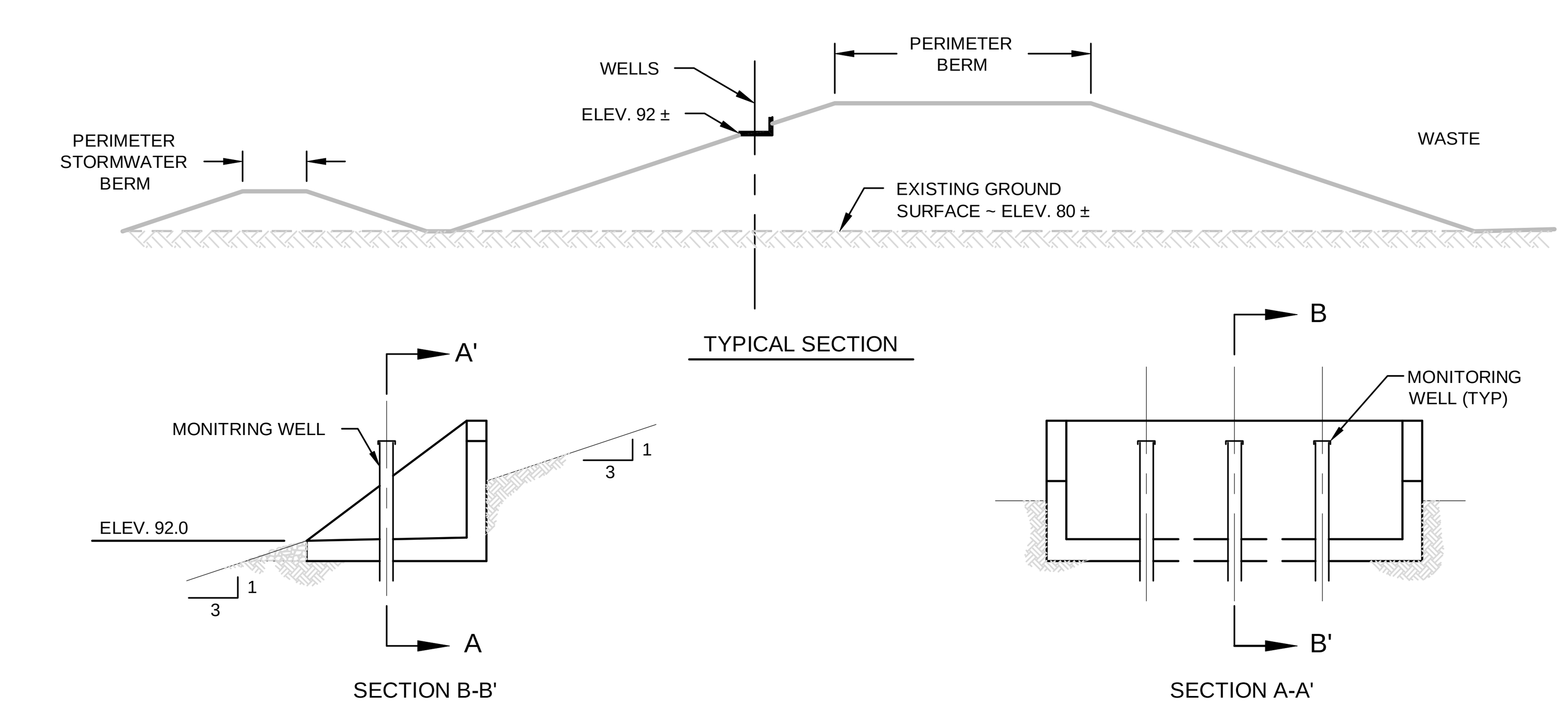
PHASE I				
Description	Northing	Easting	Elevation (TOC)	Wacs ID
MW 1A	1,355,798.49	623,926.46	95.12	19900
MW 1B	1,355,802.59	623,926.20	95.00	19901
MW 1C	1,355,806.37	623,926.66	95.18	19902
MW 2A	1,356,145.78	623,925.58	95.21	19903
MW 2B	1,356,141.26	623,925.71	95.17	19904
MW 2C	1,356,137.51	623,925.87	95.32	19905
MW 3A	1,356,484.95	623,925.16	94.64	19906
MW 3B	1,356,481.57	623,925.19	94.68	19907
MW 3C	1,356,478.10	623,925.17	94.66	19908
MW 4A	1,356,851.54	623,924.06	95.48	19909
MW 4B	1,356,855.01	623,924.07	95.18	19910
MW 4C	1,356,858.61	623,924.22	95.39	19911
MW 5A	1,357,250.20	623,921.86	95.32	19912
MW 5B	1,357,245.88	623,922.02	95.30	19913
MW 5C	1,357,241.29	623,922.25	95.39	19914
MW 6A	1,357,611.54	623,994.19	94.72	19915
MW 6B	1,357,609.34	623,990.94	94.60	19916
MW 6C	1,357,607.07	623,987.86	94.58	19917
MW 7A	1,357,674.42	624,385.52	95.48	19918
MW 7B	1,357,674.51	624,382.31	95.27	19919
MW 7C	1,357,674.43	624,378.32	94.93	19920
MW 8A	1,357,580.31	624,756.36	94.67	19921
MW 8B	1,357,579.19	624,759.97	94.58	19922
MW 8C	1,357,577.70	624,764.25	94.50	19923
MW 9A	1,357,392.41	625,117.91	94.66	19924
MW 9B	1,357,389.45	625,121.09	94.63	19925
MW 9C	1,357,386.99	625,123.87	94.54	19926
MW 10A	1,356,961.53	625,281.78	96.25	19927
MW 10B	1,356,957.91	625,283.13	96.23	19928
MW 10C	1,356,954.76	625,284.09	96.36	19929
MW 11A	1,356,492.64	625,415.70	93.56	19930
MW 11B	1,356,489.00	625,415.84	93.59	19931
MW 11C	1,356,485.39	625,415.96	93.65	19932
MW 12A	1,356,153.77	625,415.64	95.10	19933
MW 12B	1,356,150.78	625,415.56	95.01	19934
MW 12C	1,356,147.27	625,415.63	95.10	19935
MW 13A	1,355,810.14	625,416.90	95.19	19936
MW 13B	1,355,806.36	625,417.25	95.12	19937
MW 13C	1,355,802.61	625,417.08	95.04	19938
MW 14A	MONITONING WELL ABANDONED 10 JULY 2007			
MW 14B	MONITONING WELL ABANDONED 10 JULY 2007			
MW 14C	MONITONING WELL ABANDONED 10 JULY 2007			
MW 15A	MONITONING WELL ABANDONED 10 JULY 2007			
MW 15B	MONITONING WELL ABANDONED 10 JULY 2007			
MW 15C	MONITONING WELL ABANDONED 10 JULY 2007			

SURFACE WATER MONITORING SITES				
Description	Northing	Easting	Elevation	Wacs ID
SW-3	1,358,138.00	623,814.00	-	19945
SW-4	1,352,974.10	631,682.40	-	19946



NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. PROPOSED GRADING IS SHOWN IN THE BACKGROUND TO ILLUSTRATE MONITORING WELL LOCATIONS RELATIVE TO LANDFILL.



TYPICAL MONITORING WELL SURFACE COMPLETION DETAIL FOR WELLS INSTALLED ON LANDFILL PERIMETER BERM

NOT TO SCALE

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
14055 RIVEREDGE DRIVE, SUITE 300
TAMPA, FLORIDA 33637 USA
PH: 813.558.0990 - FX: 813.558.9726
AUTHORIZATION NUMBER 4321

WSI Waste Services Of Florida Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
PH: 407.841.3720 - FX: 407.841.3730

TITLE: GROUNDWATER MONITORING NETWORK

PROJECT: SECOND BIENNIAL TECHNICAL REPORT ON WATER QUALITY

SITE: J.E.D. SOLID WASTE DISPOSAL FACILITY

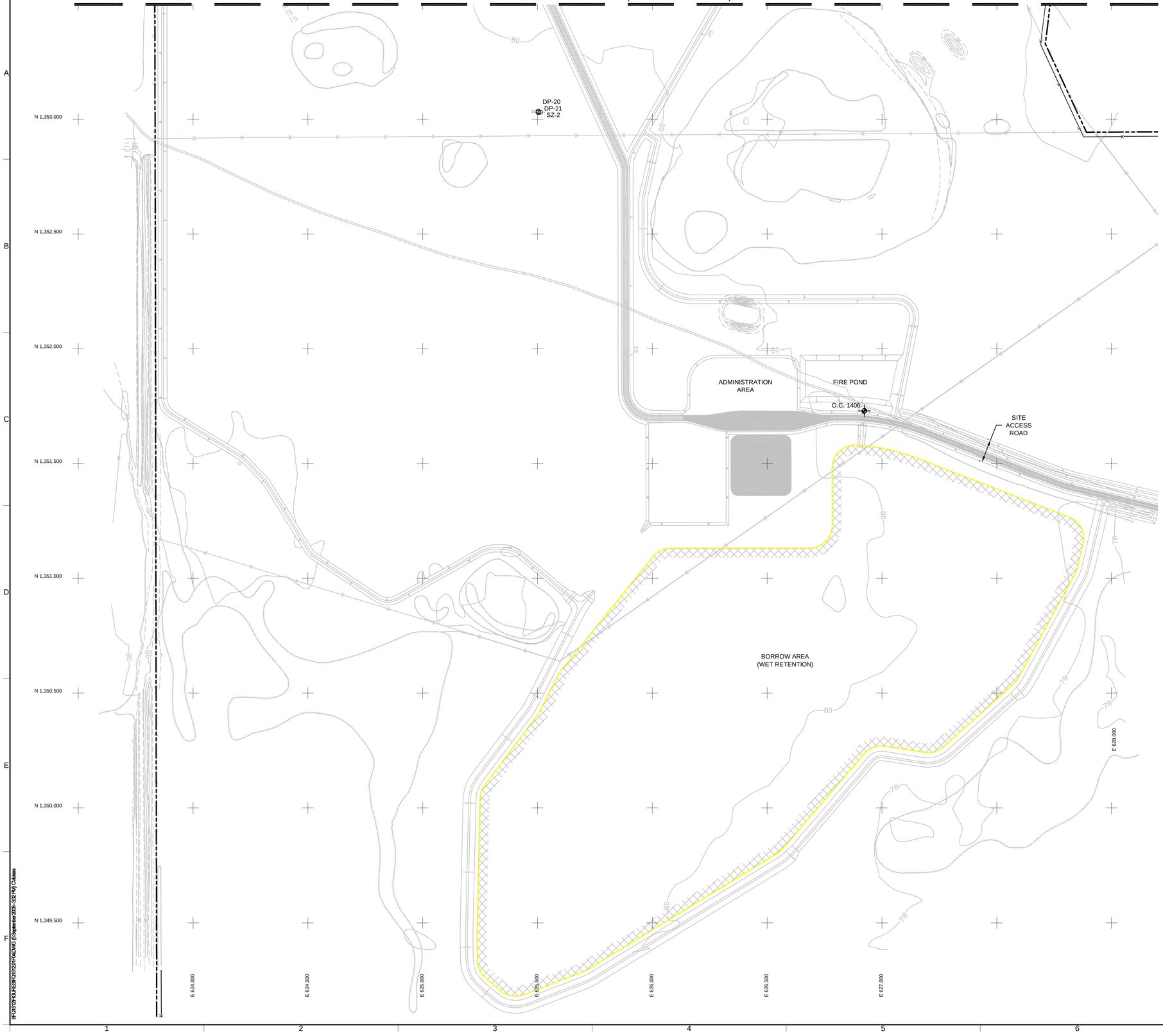
SIGNATURE

DATE

DON STRICKLAND - LICENSE NO. 1565

DESIGN BY: AG		DATE:	SEPTEMBER 2008
DRAWN BY: JWO		PROJECT NO.:	FQ1512
CHECKED BY: JE		FILE:	FQ1512.01F04
REVIEWED BY: KEW		FIGURE NO.:	2-1A
APPROVED BY: DS			

MATCH LINE A (SEE FIGURE 1A)



NORTH

0 100' 200' 400'

SCALE: 1" = 200'

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- EXISTING GROUND ELEVATION (FEET)
- EXISTING FENCE
- WETLAND BOUNDARY BY PHOTO INTERPRETATION BY BRA
- WETLAND BOUNDARY PER BRA FLAGGING AND SURVEY BY JOHNSTON SURVEYING INC.
- STORMWATER MANAGEMENT POND
- BORROW AREA BOUNDARY
- PROPOSED FENCE
- DP-2 — PIEZOMETER / MONITORING WELL LOCATION
- SZ-2 — SHELL ZONE WELL LOCATION
- O.C. 1406 BM PK-1 — SURVEY BENCHMARK

NOTES:

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)(FEET).
3. PROPOSED GRADING IS SHOWN IN THE BACKGROUND TO ILLUSTRATE MONITORING WELL LOCATIONS RELATIVE TO LAYOUT.

REV	DATE	DESCRIPTION	DRN	APP

Geosyntec consultants
14055 RIVEREDGE DRIVE, SUITE 300
TAMPA, FLORIDA 33637 USA
PH: 813.558.0990 - FX: 813.558.9726
AUTHORIZATION NUMBER 4321

WSI Waste Services Of Florida, Inc.
1501 OMNI WAY
ST. CLOUD, FLORIDA 34773
PH: 407.841.3720 - FX: 407.841.3730

TITLE: GROUNDWATER MONITORING NETWORK

PROJECT: SECOND BIENNIAL TECHNICAL REPORT ON WATER QUALITY

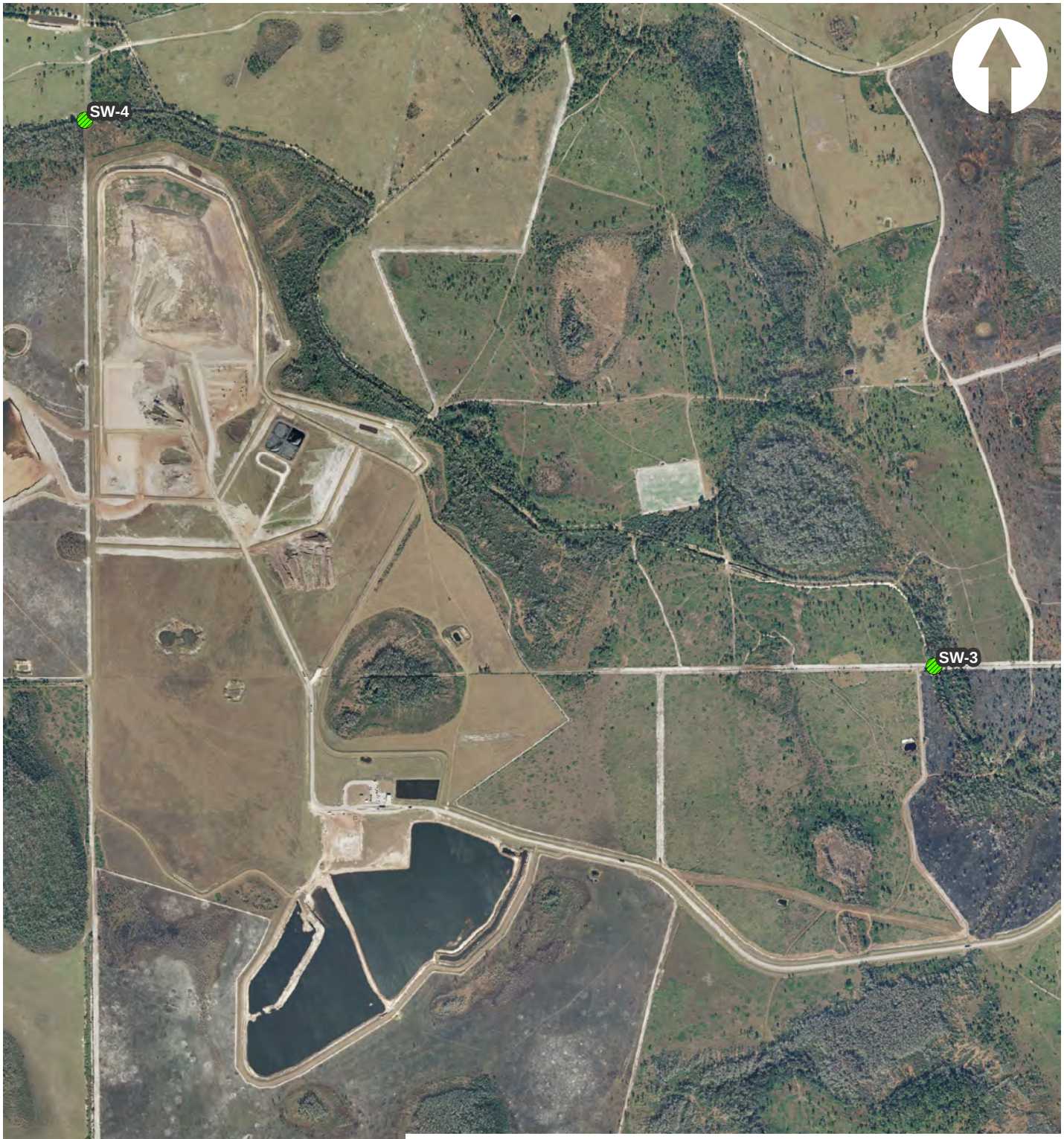
SITE: J.E.D. SOLID WASTE DISPOSAL FACILITY

DESIGN BY:	AG	DATE:	SEPTEMBER 2008
DRAWN BY:	JWO	PROJECT NO.:	FQ1512
CHECKED BY:	JE	FILE:	FQ1512.01F04
REVIEWED BY:	KEW	FIGURE NO.:	2-1B
APPROVED BY:	DS		

SIGNATURE

DATE

DON STRICKLAND - LICENSE NO. 1565



Legend

Monitor Water Monitoring Location

NOTES:

AERIAL PHOTOGRAPH ACQUIRED FROM LABINS (2009).

600 300 0 600 1,200 1,800 2,400 Feet

BIENNIAL WATER QUALITY MONITORING REPORT
2010
SURFACE WATER QUALITY MONITORING POINTS

WASTE SERVICES OF FLORIDA, INC.
J.E.D. SOLID WASTE
1501 OMNI WAY
ST. CLOUD, FLORIDA

EPS
ENVIRONMENTAL PLANNING SPECIALISTS, INC.
ENVIRONMENTAL CONSULTANTS

TAMPA, FL | NOVEMBER 2010

FIGURE
2-1C

I:\gis\WS\JED\Maps\wq_2010\fig2_1c_nov_10_r0.mxd

3. WATER QUALITY MONITORING

3.1 Groundwater Sampling

3.1.1 Sampling Locations and Procedures

Starting with the tenth semi-annual monitoring event, twenty-six (26) of the Phase 1 development area wells and seven (7) of the Phase 2 and 3 development area wells were sampled (total of 33 wells) in accordance with the current MPIS. Specifically groundwater sample collection performed during this biennial reporting period was completed in accordance with the following;

- Tenth and Twelfth Semi-Annual Monitoring Events – MW-1A through MW-13A, MW-16A, MW-19A, MW-23A, MW-1B through MW-13B, MW-16B, MW-19B, MW-23B and MW-16C,

- Eleventh and Thirteenth Semi-Annual Monitoring Events - MW-1A through MW-13A, MW-16A, MW-19A, MW-23A, MW-16B, MW-1C through MW-13C, MW-16C, MW-19C and MW-23C, and

- Fourteenth Semi-Annual Monitoring Event – MW-1A through MW-3A, MW-6A through MW-13A, MW-16A, MW-19A, MW-23A, MW-1B through MW-13B, MW-16B, MW-19B, MW-23B and MW-16C.

Monitoring wells MW-4A and MW-5A were effectively dry and as a result were not sampled during the fourteenth semi-annual event.

Low-flow sampling techniques were used for groundwater sample collection. Except for the turbidity considerations as described in Section 6.2.8, all groundwater sampling was performed in accordance with the current applicable FDEP Standard Operating Procedures (SOP's, December 2008) for groundwater sampling. Additionally for quality control (QC) purposes, sample duplicates and equipment blanks were collected and analyzed for each semi-annual monitoring event.

In general, peristaltic pumps were used to purge and sample the A-zone (shallow), some of B-zone (intermediate), and some of the C-zone (deep) groundwater monitoring wells. A stainless steel submersible pump was used to purge and sample the remainder of the wells, primarily the B-zone (intermediate) and C-zone (deep) groundwater wells. New tubing (silicone and/or polyethylene) was used at each monitoring well.

During the purging process, a multi-parameter water quality meter with flow-through cell was used to monitor the following field parameters: pH; temperature; specific conductance; oxidation-reduction potential (ORP); and dissolved oxygen. Turbidity levels were measured using a separate turbidity meter. Field parameters were recorded on sample collection forms. When the field parameters stabilized within the acceptable tolerances required by the FDEP SOP, well purging was considered complete and groundwater samples were collected. For wells where the turbidity was not less than 20 nephelometric turbidity units (NTU), turbidity stability was established by purging at least 5 well volumes and observing variations in the turbidity measurements. For these wells, once the turbidity had stabilized and all other parameters conformed to the guidance set forth in the FDEP SOP's, samples were collected. A non-filtered and field-filtered (1-micron) metals sample was collected for each monitoring well where turbidity measurements exceeded 20 NTUs.

For monitoring wells where peristaltic pumps were used, volatile organic compound (VOC) sample vials were filled by removing the down well sample tubing, disconnecting the tubing from the water quality meter flow through cell, and reversing the flow direction on the peristaltic pump. For the monitoring wells that were purged and sampled with a submersible pump, all sample aliquots were filled directly from the down-well tubing.

The calibration of the water quality monitoring instruments was checked on a daily basis, and re-calibrated as necessary. Samples were placed in coolers and packed with bagged ice for transport to the analytical laboratory. Chain-of-Custody forms were completed and accompanied the samples to the analytical laboratory. Trip blank samples accompanied all sample coolers with VOC samples. Temperature blanks were packed in each sample cooler. Security seals were affixed to every cooler shipped.

3.1.2 Sample Analyses

Columbia Analytical Services, Inc. (CAS) Jacksonville, Florida performed the laboratory analyses for all monitoring events completed during this biennial reporting period. All laboratory analyses were performed in accordance with the National Environmental Laboratory Accreditation Conference (NELAC) standards. CAS holds certification from the Florida Department of Health (FDOH) for the analytical test methods used for this project and is certified in the State of Florida for analysis of environmental samples.

Groundwater samples were analyzed for total ammonia as nitrogen (N), chlorides, nitrate, total dissolved solids (TDS), iron, mercury, sodium, and the 40 CFR, Part 258 Appendix I parameters. The same analyses were performed for each of the semi-annual monitoring

events. Other required parameters (i.e., pH; temperature; specific conductance; turbidity; ORP; and dissolved oxygen) were field measured during collection of the groundwater samples during each monitoring event.

3.2 Surface Water Sampling

3.2.1 Sampling Locations and Procedures

Two (2) surface water sampling locations established during the initial hydrogeological investigation were selected by FDEP for routine water quality monitoring. As stated in the Permit, surface water samples are collected only when there is flow in Bull Creek. The latitude and longitude of the two surface water monitoring locations (SW-3 and SW-4) is included in Table 3-1, and the locations are shown in Figure 2-1C.

Collection of surface water samples commenced at the downstream monitoring location (SW-3) followed by the upstream monitoring location (SW-4). Bull Creek was visually observed to be flowing during the tenth and twelfth semi-annual monitoring events only. Surface water samples were collected from the approximate center of Bull Creek. A multi-parameter water quality meter was used to measure field parameters including temperature, pH, dissolved oxygen, specific conductance, and ORP at each sampling location. Turbidity levels were measured using a separate turbidity meter. Surface water samples were collected in accordance with the applicable FDEP surface water sampling SOP's.

3.2.2 Sample Analyses

Surface water samples were analyzed by CAS for unionized ammonia, total hardness as $CaCO_3$, total organic carbon, chloride, nitrate, total dissolved solids (TDS), total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD), total nitrogen as N, nitrate as N, total phosphates as P, chlorophyll-A, iron, mercury, fecal coliform, and the 40 CFR, Part 258 Appendix I parameters. Other required parameters (pH; temperature; specific conductance; turbidity; ORP; and dissolved oxygen) were measured in the field during collection of the surface water samples.

3.3 Leachate Sampling

3.3.1 Sampling Locations and Procedures

In accordance with the Permit requirements, a leachate sample is collected from each active disposal cell on an annual basis. To date, Cells 1 trough 7 have been constructed. Cells 1

through 6 have received waste. Currently, Cell 7 has been certified, but placement of waste had not commenced until recently (November 1, 2011). Leachate samples were collected from locations L-1 through L-6 during the eleventh (November 2009) and thirteenth (November 2010) semi-annual monitoring events. Leachate samples are collected from each fully operational cell. The latitude and longitude of the leachate monitoring sites (L-1 through L-6) is included in Table 3-2 and the locations are shown on Figure 2-1A.

The leachate samples were collected from a sampling port on the primary leachate sump piping using the dedicated leachate sump pump. A multi-parameter water quality meter was used to measure field parameters including: temperature; pH; dissolved oxygen; specific conductance; and ORP. A separate meter was used to measure turbidity. The leachate samples were collected in accordance with the applicable FDEP SOPs.

3.3.2 Sample Analyses

Leachate samples collected from each disposal cell were analyzed by CAS for total ammonia-N, bicarbonate, chlorides, nitrate, total dissolved solids (TDS), iron, mercury, sodium and the 40 CFR, Part 258 Appendix II parameters. Other required parameters (i.e., pH; temperature; specific conductance; turbidity; ORP; and dissolved oxygen) were field measured during collection of the leachate samples.

Table 3-1

Surface Water Monitoring Geographic Locations
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Surface Water Monitoring Location	WACS ID	Latitude (NAD 1983)	Longitude (NAD 1983)
SW - 3	19945	28 03 20.63973	81 04 33.16311
SW - 4	19946	28 04 11.71727	81 06 01.16679

Table 3-2

Leachate Sampling Sites Geographic Locations
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Leachate Sampling Site Location	WACS ID	Latitude (NAD 1983)	Longitude (NAD 1983)
L - 1	19947	28 04 06.29227	81 05 40.08305
L - 2	19948	28 04 04.14722	81 05 46.75141
L - 3	19949	28 03 55.34894	81 05 43.54716
L - 4	19950	28 03 55.33060	81 05 59.59289
L - 5	22369	28 03 48.63809	81 05 59.56476
L - 6	22370	28 03 47.07045	81 05 43.48708

4. FIELD-MEASURED PARAMETERS

4.1 Overview

As discussed previously in Section 3 of this report, field parameters; pH, turbidity, specific conductance, temperature, ORP, and dissolved oxygen were measured and recorded for each water quality (groundwater, surface water, and leachate) sample collected during the various monitoring events.

4.2 Groundwater

A summary of the final field-measured parameters for groundwater for semi-annual monitoring events ten through fourteen is presented in Tables 4-1 through 4-5. Field-measured parameters exceeding or not within the acceptable levels of the secondary drinking water standard (SDWS) for that parameter have been highlighted in orange. The two field-measured parameters with SDWS criteria are pH (between 6.5 and 8.5 standard units) and turbidity (< 20 NTU). The field-measured parameters exceeding the SDWS are discussed in Section 6 of this report.

4.3 Surface Water

A summary of the field-measured parameters collected at the two surface water locations during the tenth and twelfth monitoring events is presented in Table 4-6. Field-measured parameters exceeding or not within the acceptable levels of the Class III surface water standards for that parameter have been highlighted in orange. Table 4-6 also includes the Class III standard criteria for each field measured parameter. The field-measured parameters exceeding the Class III surface water standards are discussed in Section 6 of this report.

4.4 Leachate

A summary of the field-measured parameters for leachate samples collected on an annual basis since the tenth semi-annual event is presented in Table 4-7. There are no regulatory requirements for field measured parameters for the leachate samples.

Table 4-1
Groundwater Field Measured Parameter - pH
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (pH)	11th Event Nov-09 (pH)	12th Event May-10 (pH)	13th Event Nov-10 (pH)	14th Event May-11 (pH)
MW-1A	B	4.73	4.5	4.63	4.76	4.56
MW-2A	B	4.82	4.5	4.65	4.75	4.53
MW-3A	B	4.93	4.8	5.01	4.90	4.88
MW-4A	B	4.53	4.7	4.59	4.80	NA
MW-5A	B	4.42	4.5	4.39	3.91	NA
MW-6A	B	4.99	4.7	4.87	4.80	4.70
MW-7A	D	5.31	4.8	4.60	4.94	5.02
MW-8A	D	4.94	4.3	4.20	4.36	4.46
MW-9A	D	4.80	4.8	4.86	4.92	4.71
MW-10A	D	5.22	4.6	4.67	4.97	4.81
MW-11A	D	5.55	5.1	4.86	5.26	5.02
MW-12A	D	5.37	4.2	4.36	4.39	5.34
MW-13A	D	5.34	5.1	5.01	5.25	5.21
MW-14A	D	NA	NA	NA	NA	NA
MW-15A	D	NA	NA	NA	NA	NA
MW-16A	D	5.45	4.9	4.67	4.87	5.18
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	5.85	5.4	5.81	6.01	6.03
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	4.41	4.6	5.04	5.34	5.29
MW-1B	B	5.00	NA	4.61	NA	4.39
MW-2B	B	4.92	NA	4.60	NA	4.50
MW-3B	B	4.76	NA	4.81	NA	4.73
MW-4B	B	4.32	NA	4.15	NA	4.61
MW-5B	B	4.70	NA	4.31	NA	4.03
MW-6B	B	5.13	NA	4.85	NA	4.80
MW-7B	D	5.03	NA	4.66	NA	4.55
MW-8B	D	5.30	NA	4.95	NA	4.87
MW-9B	D	5.01	NA	4.73	NA	4.45
MW-10B	D	5.14	NA	4.19	NA	4.39
MW-11B	D	5.21	NA	4.94	NA	5.02
MW-12B	D	5.02	NA	4.82	NA	4.76
MW-13B	D	4.98	NA	4.80	NA	4.72
MW-14B	D	NA	NA	NA	NA	NA
MW-15B	D	NA	NA	NA	NA	NA
MW-16B	D	5.16	4.8	4.78	4.91	4.51
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	5.14	NA	4.80	NA	4.90
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	4.69	NA	4.56	NA	4.72

Table 4-1
Groundwater Field Measured Parameter - pH
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (pH)	11th Event Nov-09 (pH)	12th Event May-10 (pH)	13th Event Nov-10 (pH)	14th Event May-11 (pH)
MW-1C	B	NA	4.9	NA	5.43	NA
MW-2C	B	NA	4.8	NA	4.9	NA
MW-3C	B	NA	4.7	NA	5.27	NA
MW-4C	B	NA	5.3	NA	5.64	NA
MW-5C	B	NA	5.1	NA	5.06	NA
MW-6C	B	NA	4.8	NA	4.94	NA
MW-7C	D	NA	5.1	NA	5.25	NA
MW-8C	D	NA	4.8	NA	4.91	NA
MW-9C	D	NA	5.9	NA	5.58	NA
MW-10C	D	NA	4.7	NA	5.05	NA
MW-11C	D	NA	5.2	NA	5.27	NA
MW-12C	D	NA	4.8	NA	4.9	NA
MW-13C	D	NA	4.7	NA	4.91	NA
MW-14C	D	NA	NA	NA	NA	NA
MW-15C	D	NA	NA	NA	NA	NA
MW-16C	D	5.23	5.0	4.89	5.08	4.82
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	5.3	NA	5.40	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	5.1	NA	5.65	NA

Notes:
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
MW-14A, 14B, 14C and MW-15A, 15B, 15C were decommissioned on 10 July 2007
Highlighted values exceed Secondary Drinking Water Standard for pH (6.5 - 8.5 Standard Units)

Table 4-2
Groundwater Field Measured Parameter - Temperature
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (^oC)	11th Event Nov-09 (^oC)	12th Event May-10 (^oC)	13th Event Nov-10 (^oC)	14th Event May-11 (^oC)
MW-1A	B	25.57	26.9	25.48	23.50	27.00
MW-2A	B	25.25	28.1	24.13	21.52	25.39
MW-3A	B	24.92	27.1	25.57	28.32	27.55
MW-4A	B	23.84	26.8	23.33	25.22	NA
MW-5A	B	26.38	26.6	23.45	25.00	NA
MW-6A	B	24.92	26.7	23.99	27.60	25.60
MW-7A	D	24.45	25.7	24.67	25.93	23.35
MW-8A	D	25.47	25.5	24.77	25.35	24.30
MW-9A	D	25.79	28.4	25.01	26.10	24.88
MW-10A	D	26.29	27.3	25.55	26.01	25.54
MW-11A	D	26.43	28.7	25.89	27.35	26.20
MW-12A	D	24.60	27.2	23.44	27.27	25.64
MW-13A	D	23.72	26.6	24.70	25.56	24.62
MW-14A	D	NA	NA	NA	NA	NA
MW-15A	D	NA	NA	NA	NA	NA
MW-16A	D	23.00	27.4	24.56	27.32	5.18
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	26.10	27.5	23.48	27.04	25.41
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	30.42	26.5	23.13	25.73	25.19
MW-1B	B	24.81	NA	25.51	NA	27.25
MW-2B	B	24.30	NA	24.41	NA	25.11
MW-3B	B	24.90	NA	25.45	NA	27.14
MW-4B	B	24.36	NA	24.39	NA	26.24
MW-5B	B	25.50	NA	24.60	NA	24.02
MW-6B	B	24.43	NA	24.58	NA	26.32
MW-7B	D	24.30	NA	24.29	NA	24.45
MW-8B	D	24.93	NA	24.89	NA	24.54
MW-9B	D	25.41	NA	25.50	NA	24.89
MW-10B	D	25.06	NA	25.92	NA	25.53
MW-11B	D	25.23	NA	25.35	NA	25.40
MW-12B	D	24.66	NA	24.35	NA	24.83
MW-13B	D	24.19	NA	24.80	NA	24.67
MW-14B	D	NA	NA	NA	NA	NA
MW-15B	D	NA	NA	NA	NA	NA
MW-16B	D	23.56	24.8	23.73	24.86	23.78
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	26.49	NA	24.47	NA	24.40
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	24.87	NA	24.32	NA	24.55

Table 4-2
Groundwater Field Measured Parameter - Temperature
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (^{o}C)	11th Event Nov-09 (^{o}C)	12th Event May-10 (^{o}C)	13th Event Nov-10 (^{o}C)	14th Event May-11 (^{o}C)
MW-1C	B	NA	23.9	NA	24.13	NA
MW-2C	B	NA	26.2	NA	22.48	NA
MW-3C	B	NA	26.2	NA	26.24	NA
MW-4C	B	NA	24.5	NA	24.62	NA
MW-5C	B	NA	24.9	NA	23.61	NA
MW-6C	B	NA	25.9	NA	25.52	NA
MW-7C	D	NA	25.0	NA	24.90	NA
MW-8C	D	NA	24.5	NA	24.59	NA
MW-9C	D	NA	26.8	NA	25.30	NA
MW-10C	D	NA	26.7	NA	24.93	NA
MW-11C	D	NA	26.8	NA	25.98	NA
MW-12C	D	NA	25.9	NA	25.72	NA
MW-13C	D	NA	24.8	NA	24.37	NA
MW-14C	D	NA	NA	NA	NA	NA
MW-15C	D	NA	NA	NA	NA	NA
MW-16C	D	23.55	24.1	23.70	25.73	25.26
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	26.5	NA	25.60	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	24.2	NA	24.15	NA

Notes:
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
MW-14A, 14B, 14C and MW-15A, 15B, 15C were decommissioned on 10 July 2007

Table 4-3
Groundwater Field Measured Parameter - Specific Conductance
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mS/cm)	11th Event Nov-09 (mS/cm)	12th Event May-10 (mS/cm)	13th Event Nov-10 (mS/cm)	14th Event May-11 (mS/cm)
MW-1A	B	0.143	0.154	0.172	0.188	0.205
MW-2A	B	0.190	0.206	0.174	0.181	0.219
MW-3A	B	0.491	0.727	0.550	0.559	0.321
MW-4A	B	0.318	0.294	0.350	0.302	NA
MW-5A	B	0.320	0.274	0.326	0.391	NA
MW-6A	B	0.247	0.288	0.309	0.362	0.633
MW-7A	D	0.188	0.185	0.179	0.200	0.208
MW-8A	D	0.273	0.333	0.360	0.396	0.390
MW-9A	D	0.168	0.221	0.209	0.225	0.189
MW-10A	D	0.156	0.143	0.177	0.143	0.156
MW-11A	D	0.208	0.441	0.529	0.371	0.264
MW-12A	D	0.206	0.125	0.149	0.152	0.275
MW-13A	D	0.155	0.132	0.156	0.150	0.162
MW-14A	D	NA	NA	NA	NA	NA
MW-15A	D	NA	NA	NA	NA	NA
MW-16A	D	0.115	0.072	0.038	0.055	0.058
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	0.307	0.275	0.572	0.724	0.728
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	0.493	0.218	0.200	0.259	0.353
MW-1B	B	0.046	NA	0.051	NA	0.091
MW-2B	B	0.062	NA	0.068	NA	0.063
MW-3B	B	0.155	NA	0.096	NA	0.093
MW-4B	B	0.485	NA	0.449	NA	0.166
MW-5B	B	0.066	NA	0.155	NA	0.126
MW-6B	B	0.056	NA	0.067	NA	0.080
MW-7B	D	0.109	NA	0.147	NA	0.179
MW-8B	D	0.064	NA	0.068	NA	0.066
MW-9B	D	0.092	NA	0.153	NA	0.249
MW-10B	D	0.084	NA	0.224	NA	0.341
MW-11B	D	0.099	NA	0.101	NA	0.096
MW-12B	D	0.101	NA	0.113	NA	0.111
MW-13B	D	0.068	NA	0.083	NA	0.087
MW-14B	D	NA	NA	NA	NA	NA
MW-15B	D	NA	NA	NA	NA	NA
MW-16B	D	0.084	0.080	0.078	0.061	0.051
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	0.129	NA	0.145	NA	0.158
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	0.085	NA	0.085	NA	0.107

Table 4-3
Groundwater Field Measured Parameter - Specific Conductance
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mS/cm)	11th Event Nov-09 (mS/cm)	12th Event May-10 (mS/cm)	13th Event Nov-10 (mS/cm)	14th Event May-11 (mS/cm)
MW-1C	B	NA	0.068	NA	0.082	NA
MW-2C	B	NA	0.049	NA	0.045	NA
MW-3C	B	NA	0.060	NA	0.076	NA
MW-4C	B	NA	0.128	NA	0.117	NA
MW-5C	B	NA	0.097	NA	0.082	NA
MW-6C	B	NA	0.050	NA	0.051	NA
MW-7C	D	NA	0.067	NA	0.075	NA
MW-8C	D	NA	0.062	NA	0.068	NA
MW-9C	D	NA	0.196	NA	0.133	NA
MW-10C	D	NA	0.064	NA	0.066	NA
MW-11C	D	NA	0.114	NA	0.118	NA
MW-12C	D	NA	0.061	NA	0.057	NA
MW-13C	D	NA	0.069	NA	0.070	NA
MW-14C	D	NA	NA	NA	NA	NA
MW-15C	D	NA	NA	NA	NA	NA
MW-16C	D	0.108	0.109	0.111	0.117	0.114
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	0.121	NA	0.119	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	0.105	NA	0.108	NA

Notes:
NA = Not Analyzed
mS/cm = millisiemens per centimeter
Well type: (B) Background well (D) Detection well
MW-14A, 14B, 14C and MW-15A, 15B, 15C were decommissioned on 10 July 2007

Table 4-4
Groundwater Field Measured Parameter - Turbidity
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (NTUs)	11th Event Nov-09 (NTUs)	12th Event May-10 (NTUs)	13th Event Nov-10 (NTUs)	14th Event May-11 (NTUs)
MW-1A	B	0	0.5	0.1	0.6	0.0
MW-2A	B	0.1	3.0	1.2	0.8	0.0
MW-3A	B	0	0.4	0.3	0.5	0.0
MW-4A	B	0.1	2.1	0.3	0.6	NA
MW-5A	B	3.7	12.0	7.4	1.6	NA
MW-6A	B	0	0.4	4.1	0.4	0.0
MW-7A	D	0	0.0	0.3	0.3	0.0
MW-8A	D	0	1.1	1.7	1.1	1.2
MW-9A	D	1.1	8.9	6.5	9.6	5.4
MW-10A	D	1.9	19.0	11.2	12.3	3.9
MW-11A	D	1.1	9.8	1.8	4.0	14.0
MW-12A	D	0	0.1	0.0	0.7	0.0
MW-13A	D	7.1	3.6	2.4	3.8	0.3
MW-14A	D	NA	NA	NA	NA	NA
MW-15A	D	NA	NA	NA	NA	NA
MW-16A	D	11.8	6.1	4.2	3.4	15.9
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	71	55.0	56.5	38.6	39.1
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	13	1.8	18.2	45	55.9
MW-1B	B	0	NA	0.5	NA	0.0
MW-2B	B	2	NA	3.8	NA	3.3
MW-3B	B	1	NA	1.2	NA	0.5
MW-4B	B	0.2	NA	0.3	NA	0.2
MW-5B	B	0.2	NA	0.3	NA	0.0
MW-6B	B	5.5	NA	3.0	NA	0.0
MW-7B	D	17.1	NA	1.2	NA	0.0
MW-8B	D	20	NA	16.4	NA	16.5
MW-9B	D	14	NA	6.6	NA	0.7
MW-10B	D	0.9	NA	0.3	NA	0.5
MW-11B	D	8.5	NA	9.9	NA	6.3
MW-12B	D	4	NA	3.1	NA	2.9
MW-13B	D	17.9	NA	16.9	NA	15.0
MW-14B	D	NA	NA	NA	NA	NA
MW-15B	D	NA	NA	NA	NA	NA
MW-16B	D	16.8	70.8	15.0	17.3	7.8
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	17.6	NA	18.0	NA	6.1
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	0.5	NA	2.1	NA	0.0

Table 4-4
Groundwater Field Measured Parameter - Turbidity
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (NTUs)	11th Event Nov-09 (NTUs)	12th Event May-10 (NTUs)	13th Event Nov-10 (NTUs)	14th Event May-11 (NTUs)
MW-1C	B	NA	6.0	NA	6.5	NA
MW-2C	B	NA	0.6	NA	0.8	NA
MW-3C	B	NA	1.8	NA	1.5	NA
MW-4C	B	NA	41.0	NA	16.8	NA
MW-5C	B	NA	2.7	NA	0.9	NA
MW-6C	B	NA	2.7	NA	3.4	NA
MW-7C	D	NA	1.2	NA	1.7	NA
MW-8C	D	NA	1.6	NA	1.2	NA
MW-9C	D	NA	8.8	NA	3.9	NA
MW-10C	D	NA	14.2	NA	6.6	NA
MW-11C	D	NA	1.0	NA	0.6	NA
MW-12C	D	NA	0.6	NA	1	NA
MW-13C	D	NA	3.1	NA	3.1	NA
MW-14C	D	NA	NA	NA	NA	NA
MW-15C	D	NA	NA	NA	NA	NA
MW-16C	D	4.1	13.7	4.8	2.4	2.7
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	70.8	NA	46.5	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	17.7	NA	16.7	NA

Notes:
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
MW-14A, 14B, 14C and MW-15A, 15B, 15C were decommissioned on 10 July 2007
NTU = Nephalometric Turbidity Units
Highlighted values exceed Secondary Drinking Water Standard for turbidity (20 NTUs)

Table 4-5
Groundwater Field Measured Parameter - Dissolved Oxygen
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mg/L)	11th Event Nov-09 (mg/L)	12th Event May-10 (mg/L)	13th Event Nov-10 (mg/L)	14th Event May-11 (mg/L)
MW-1A	B	0.23	0.6	0.44	0.57	0.41
MW-2A	B	0.21	0.7	0.40	0.75	0.59
MW-3A	B	0.3	0.5	0.44	0.58	0.54
MW-4A	B	0.23	0.6	0.54	0.86	NA
MW-5A	B	0.39	0.4	0.51	0.59	NA
MW-6A	B	0.33	0.4	0.46	0.53	0.28
MW-7A	D	0.59	0.4	0.46	0.37	0.20
MW-8A	D	0.4	0.5	0.42	0.54	0.25
MW-9A	D	0.54	0.7	0.43	0.39	0.34
MW-10A	D	0.22	0.5	0.59	0.50	0.52
MW-11A	D	0.16	0.5	0.73	0.55	0.63
MW-12A	D	0.17	0.5	0.69	0.51	0.80
MW-13A	D	0.35	0.3	0.35	0.45	0.34
MW-14A	D	NA	NA	NA	NA	NA
MW-15A	D	NA	NA	NA	NA	NA
MW-16A	D	0.34	1.6	2.43	0.50	0.20
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	0.13	0.6	0.32	0.44	0.25
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	0.25	0.6	0.53	0.71	0.31
MW-1B	B	0.08	NA	0.26	NA	0.35
MW-2B	B	0.05	NA	0.14	NA	0.38
MW-3B	B	0.19	NA	0.14	NA	0.52
MW-4B	B	0.11	NA	0.23	NA	0.30
MW-5B	B	0.33	NA	0.30	NA	0.54
MW-6B	B	0.2	NA	0.51	NA	0.33
MW-7B	D	0.41	NA	0.23	NA	0.34
MW-8B	D	0.2	NA	0.13	NA	0.11
MW-9B	D	0.36	NA	0.59	NA	0.37
MW-10B	D	0.12	NA	0.32	NA	0.58
MW-11B	D	0.12	NA	0.19	NA	0.49
MW-12B	D	0.08	NA	0.26	NA	0.24
MW-13B	D	0.13	NA	0.19	NA	0.37
MW-14B	D	NA	NA	NA	NA	NA
MW-15B	D	NA	NA	NA	NA	NA
MW-16B	D	0.08	0.5	0.22	0.27	0.12
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	0.06	NA	0.29	NA	0.38
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	0.11	NA	0.41	NA	0.35

Table 4-5
Groundwater Field Measured Parameter - Dissolved Oxygen
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mg/L)	11th Event Nov-09 (mg/L)	12th Event May-10 (mg/L)	13th Event Nov-10 (mg/L)	14th Event May-11 (mg/L)
MW-1C	B	NA	0.5	NA	0.46	NA
MW-2C	B	NA	0.3	NA	0.39	NA
MW-3C	B	NA	0.3	NA	0.35	NA
MW-4C	B	NA	0.3	NA	0.18	NA
MW-5C	B	NA	0.6	NA	0.28	NA
MW-6C	B	NA	0.4	NA	0.35	NA
MW-7C	D	NA	0.5	NA	0.35	NA
MW-8C	D	NA	0.4	NA	0.45	NA
MW-9C	D	NA	0.3	NA	0.22	NA
MW-10C	D	NA	0.6	NA	0.30	NA
MW-11C	D	NA	0.3	NA	0.53	NA
MW-12C	D	NA	0.5	NA	0.61	NA
MW-13C	D	NA	0.4	NA	0.41	NA
MW-14C	D	NA	NA	NA	NA	NA
MW-15C	D	NA	NA	NA	NA	NA
MW-16C	D	0.09	0.6	0.27	0.40	NA
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	0.5	NA	0.15	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	0.5	NA	0.21	NA

Notes:
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
MW-14A, 14B, 14C and MW-15A, 15B, 15C were decommissioned on 10 July 2007
mg/L = milligrams per liter

Table 4-6
Surface Water Field Measured Parameters
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Parameter Monitored	Class III Standard Criteria	Units	10th Event May-09	11th Event Nov-09	12th Event May-10	13th Event Nov-10	14th Event May-11
SW-3							
Dissolved Oxygen	>5	mg/L	2.16	No Sample	2.45	No Sample	No Sample
pH	6.0 - 8.5	pH units	5.64	No Sample	5.18	No Sample	No Sample
Temperature	--	degrees C	23.43	No Sample	22.44	No Sample	No Sample
Specific Conductance	not 50% above background or 1275	µS/cm	116	No Sample	50	No Sample	No Sample
Turbidity	< 29 plus background	NTU	0.6	No Sample	0	No Sample	No Sample
SW-4							
Dissolved Oxygen	>5	mg/L	1.98	No Sample	1.5	No Sample	No Sample
pH	6.0 - 8.5	pH units	5.88	No Sample	4.58	No Sample	No Sample
Temperature	--	degrees C	24.08	No Sample	23.39	No Sample	No Sample
Specific Conductance	not 50% above background or 1275	µS/cm	107	No Sample	44	No Sample	No Sample
Turbidity	< 29 plus background	NTU	2.2	No Sample	0	No Sample	No Sample

Notes:

1. Shaded values exceed Class III Standard Criteria

2. "--" indicates that no criteria has been established.

3. "*" indicates that measurements were taken at the time of sampling but forms were lost.

4. Per the Permit requirements, surface water samples are to be collected only of flow is observed in Bull Creek.

No samples were collected when no flow was observed.

Table 4-7
Leachate Field Measured Parameters
Fourth Biennial Technical Report on Water Quality
J.E.D Solid Waste Management Facility

Parameter	Regulatory Level	Unit	Nov 2009 Event					
			L-1	L-2	L-3	L-4	L-5	L-6
Temperature	-	^{o}C	31.23	29.98	31.03	38.86	39.09	31.7
pH	-	Std Units	7.2	6.6	6.6	6.8	6.4	6.4
Conductivity	-	mS/cm	23.4	13.4	12	17.3	9.8	7.8
Turbidity	-	NTU	0.8	1.6	37	0.9	22.8	68.8
Oxidation/Reduction Potential (ORP)	-	mV	-34.7	-260.6	-168.5	-255.8	-161.7	-238.3
Dissolved Oxygen (DO)	-	mg/L	2.2	0.17	0.56	0.13	0.33	0.4

Parameter	Regulatory Level	Unit	Nov 2010 Event					
			L-1	L-2	L-3	L-4	L-5	L-6
Temperature	-	^{o}C	30.74	32.09	27.53	37.77	33.68	30.52
pH	-	Std Units	7.13	6.77	6.97	7.31	7.02	7.39
Conductivity	-	mS/cm	23.9	15.9	16.9	19.4	16.3	16.8
Turbidity	-	NTU	3.4	0.8	6.2	8.5	2.1	2.1
Oxidation/Reduction Potential (ORP)	-	mV	-146.9	-42.4	-203.6	-65.4	-42.2	-56.9
Dissolved Oxygen (DO)	-	mg/L	1.2	2.6	0.48	0.33	3.02	5.37

Notes:
^{o}C = Degrees Celsius
Std Units = Standard Units
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Units
mV = Millivolts
mg/L = milligrams per liter

5. DETECTED PARAMETERS

5.1 Overview

In accordance with the MPIS of the current FDEP permit and Rule 62-701.510(9)(b) F.A.C., the biennial technical report is to include: (i) tabular displays of any monitoring parameter that has been detected; and (ii) graphical displays of any key leachate indicator parameter detected such as; pH, specific conductance, TDS, TOC, sulfate, chloride, sodium, and iron. The laboratory analytical test results for semi-annual monitoring events ten through fourteen (i.e., Phases 1, 2 and 3 wells) were used to create the tabular and graphical displays. Copies of the analytical laboratory reports have been provided on a compact disk (CD) included in Appendix A.

5.2 Groundwater

Analytical laboratory results have been summarized to show all parameters reported above the practical quantitative limit (PQL). The tables showing all parameters detected above the PQL's but below the Groundwater Cleanup Target Levels (GCTL's) are included in Appendix B. Sample data for parameters detected above the PQL, but within the regulatory guidelines are shaded green. Tables showing detected parameters exceeding GCTL's as provided in Chapter 62-777 F.A.C. are presented in the orange shaded cells and are included in this Section. These parameters are discussed further in Section 6 of this report. Parameters which exceeded the GCTL's at a minimum of one well location for the period covered by this Technical Report are arsenic, ammonia-N, benzene, iron, total dissolved solids (TDS), and vinyl chloride. The analytical data for these parameters has been summarized in Tables 5-1 through 5-6.

5.3 Surface Water

Table 5-7 (SW-3) and Table 5-8 (SW-4) summarizes the parameters that have been detected in the surface water samples collected during performance of the tenth and twelfth semi-annual monitoring events and compares them to the Class III surface water quality standards (SWQS) contained in Rule 62-302.530 F.A.C. Graphical displays of the surface water data for pH, dissolved oxygen and iron are shown on Figure 6-9.

Iron was the only parameter reported above the Class III SWQS. As shown in Tables 5-7 and 5-8, the reported iron concentrations detected in SW-3 and SW-4 are comparable. The iron exceedance at the up-gradient monitoring station, SW-4 was encountered during the performance of the twelfth semi-annual monitoring event performed in May 2010.

The iron exceedances in the down-gradient monitoring station, SW-3 were encountered during the performance of the tenth and twelfth semi-annual monitoring events in May 2009 and May 2010, respectively. The iron concentrations detected at SW-3 and SW-4 for these monitoring events are of the same magnitude and similar to the iron concentration detected at SW-4 during the background (baseline) sampling event for Phase 1. Based on this historical data, it doesn't appear as though the operation of the JED facility is the cause of the iron concentrations exceeding the SWQS. The highest iron detection at either monitoring station in Bull Creek was recorded prior to any waste being accepted at the JED facility (i.e., Baseline Event SW-4, 1100 µg/L).

5.4 Leachate

The leachate analytical laboratory results have been summarized in Table 5-9 and show all parameters reported above the practical quantitative limit for the samples collected in November 2009 and 2010. No parameter detected in the leachate samples has exceeded the regulatory levels established in 40 Code of Federal Regulations (CFR) Part 261.24 (Hazardous Waste Toxicity Characteristic).

Table 5-1
Arsenic Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.95		1.25		2.01		1.95		1.56	
MW-2A	B	1.24		1.14		0.87		0.63		1.14	
MW-3A	B	0.68		2.26		1.58		0.45	I	0.40	U
MW-4A	B	1.39		1.56		1.41		0.82		NA	
MW-5A	B	1.72		1.76		1.75		0.54		NA	
MW-6A	B	3.38		0.68		0.99		0.83		0.91	
MW-7A	D	6.98		1.68		1.74		1.31		1.06	
MW-8A	D	0.53		1.12		1.04		0.54		0.59	
MW-9A	D	2.42		1.51		1.67		1.69		1.45	
MW-10A	D	1.57		1.81		1.12		1.53		1.85	
MW-11A	D	12.7		16.1		6.34		11.2		4.37	
MW-12A	D	6.79		1.97		1.22		1.60		5.27	
MW-13A	D	17.5		16.4		16.1		19.7		21.30	
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.4	I	0.2	U	0.2	I	0.40	U	0.74	
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	3.98		2.61		8.72		7.69		8.14	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.35	I	0.49	I	0.65		1.42		1.22	
MW-1B	B	0.2	U	NA		0.14	U	NA		0.40	U
MW-2B	B	0.2	U	NA		0.14	U	NA		0.40	U
MW-3B	B	0.33	I	NA		0.14	U	NA		0.40	U
MW-4B	B	1.12		NA		1.32		NA		0.07	
MW-5B	B	0.49	I	NA		0.85		NA		0.40	U
MW-6B	B	0.79		NA		0.46	I	NA		0.64	
MW-7B	D	1.76		NA		0.83		NA		0.56	
MW-8B	D	0.24	I	NA		0.55		NA		0.40	U
MW-9B	D	0.38	I	NA		0.69		NA		0.52	
MW-10B	D	0.2	U	NA		0.66		NA		0.85	
MW-11B	D	0.57		NA		0.76		NA		1.13	
MW-12B	D	0.46	I	NA		0.15	I	NA		0.40	U
MW-13B	D	0.32	I	NA		0.14	U	NA		0.40	U
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.26	I	0.37	I	0.34	I	0.40	U	0.47	I
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.51		NA		0.28	I	NA		0.40	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.2	U	NA		0.22	I	NA		0.40	U
MW-1C	B	NA		0.28	I	NA		0.40	U	NA	
MW-2C	B	NA		0.2	U	NA		0.40	U	NA	
MW-3C	B	NA		0.42	I	NA		0.40	U	NA	
MW-4C	B	NA		0.26	I	NA		0.40	U	NA	
MW-5C	B	NA		0.26	I	NA		0.40	U	NA	
MW-6C	B	NA		0.21	I	NA		0.40	U	NA	
MW-7C	D	NA		0.33	I	NA		0.40	U	NA	
MW-8C	D	NA		0.24	I	NA		0.40	U	NA	
MW-9C	D	NA		0.27	I	NA		0.40	U	NA	
MW-10C	D	NA		0.63		NA		0.40	U	NA	
MW-11C	D	NA		0.29	I	NA		0.40	U	NA	
MW-12C	D	NA		0.2	U	NA		0.40	U	NA	
MW-13C	D	NA		0.29	I	NA		0.40	U	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.2	U	0.56		0.14	U	0.40	U	0.40	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.36	I	NA		1.62		NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.27	I	NA		0.40	U	NA	

Notes:

µg/L=micrograms per liter

U = Not detected at value represented

I = Value is estimated to be between method detection limit and practical quantitation limit.

NA = Not Analyzed

Well type: (B) Background well (D) Detection well

Constituent detections are shown in shaded cells (green color)

Constituent detections exceeding the GCTL of 10µg/L are shown in shaded cells (orange color)

Table 5-2
Ammonia (as N) Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mg/L)		11th Event Nov-09 (mg/L)		12th Event May-10 (mg/L)		13th Event Nov-10 (mg/L)		14th Event May-11 (mg/L)	
MW-1A	B	1.7		1.2		3.68		4.72		3.84	
MW-2A	B	1.3		0.87		0.67		1.65		3.20	
MW-3A	B	6.4		8.7		6.82		7.23		5.14	
MW-4A	B	5.8		10		6.5	J	12.70		NA	
MW-5A	B	13		9.6		7.6		5.80		NA	
MW-6A	B	1.3		1.6		1.9		3.24		4.70	
MW-7A	D	2.2		3.5		4.4		4.51		3.34	
MW-8A	D	3.1		4.9		5.2		6.50		6.17	
MW-9A	D	6.8		11		9.8		13.20		10.20	
MW-10A	D	8.4		7.1		7.5	J	7.19		7.21	
MW-11A	D	4.7		6.6		4.8		6.71		3.53	
MW-12A	D	1.2		0.31		0.3		0.3		1.5	
MW-13A	D	1.5		1.2		1.1		1.3		1.3	
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.29		0.05		0.005	U	0.1		0.3	
MW-17A	D	NA		NA		NA					
MW-18A	D	NA		NA		NA					
MW-19A	D	7.3		4.6		15.3		21.60		21.60	
MW-20A	D	NA		NA		NA					
MW-21A	D	NA		NA		NA					
MW-22A	B	NA		NA		NA					
MW-23A	B	1.2		1.4		2.2		9.90		10.50	
MW-1B	B	0.085		NA		0.055		NA		0.161	
MW-2B	B	0.16		NA		0.069		NA		0.1	
MW-3B	B	0.17		NA		0.086		NA		0.1	
MW-4B	B	2.3		NA		2.7		NA		0.2	
MW-5B	B	0.17		NA		0.22		NA		0.3	
MW-6B	B	0.19		NA		0.069		NA		0.2	
MW-7B	D	0.16		NA		0.12		NA		0.2	
MW-8B	D	0.14		NA		0.056		NA		0.1	
MW-9B	D	0.2		NA		0.13		NA		0.2	
MW-10B	D	0.12		NA		0.2		NA		0.4	
MW-11B	D	0.083		NA		0.006	U	NA		0.1	
MW-12B	D	0.16		NA		0.063		NA		0.1	
MW-13B	D	0.15		NA		0.049		NA		0.1	
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.25		0.2		0.119		0.2		0.1	
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.13		NA		0.043		NA		0.1	
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.12		NA		0.025		NA		0.1	
MW-1C	B	NA		0.065		NA		0.073		NA	
MW-2C	B	NA		0.055		NA		0.1		NA	
MW-3C	B	NA		0.053		NA		0.1		NA	
MW-4C	B	NA		0.089		NA		0.1		NA	
MW-5C	B	NA		0.064		NA		0.1		NA	
MW-6C	B	NA		0.09		NA		0.1		NA	
MW-7C	D	NA		0.06		NA		0.1		NA	
MW-8C	D	NA		0.08		NA		0.1		NA	
MW-9C	D	NA		0.3		NA		0.2		NA	
MW-10C	D	NA		0.09		NA		0.1		NA	
MW-11C	D	NA		0.04	I	NA		0.1		NA	
MW-12C	D	NA		0.06		NA		0.1		NA	
MW-13C	D	NA		0.08		NA		0.1		NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.15		0.1		0.088		0.1		0.1	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.05		NA		0.1		NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.074		NA		0.134		NA	

Notes:

µg/L=micrograms per liter

U = Not detected at value represented

I = Value is estimated to be between method detection limit and practical quantitation limit.

J = estimated value (see lab report case narrative)

NA = Not Analyzed

Well type: (B) Background well (D) Detection well

Constituent detections are shown in shaded cells (green color)

Constituent detections exceeding the GCTL of 2.8 mg/L are shown in shaded cells (orange color)

Table 5-3
Benzene Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.52	U	0.56	I	5.6		6.1		7.78	
MW-2A	B	0.52	U	0.52	U	0.066	U	0.21	U	0.21	U
MW-3A	B	0.52	U	0.75	I	1.2		6.65		0.21	U
MW-4A	B	0.52	U	0.52	U	0.066	U	0.21	U	NA	
MW-5A	B	0.65	I	0.52	U	0.33	U	0.21	U	NA	
MW-6A	B	0.52	U	0.58	I	0.41	I	0.94	I	0.37	I
MW-7A	D	0.52	U	0.52	U	0.066	U	0.21	U	0.21	U
MW-8A	D	0.52	U	1.3		1.6		1.30		1.00	
MW-9A	D	2.5		9.6		11.0		11.5		9.44	
MW-10A	D	0.96	I	2.9		3.3		2.74		0.79	I
MW-11A	D	0.62	I	2.9		8.0		5.65		0.73	I
MW-12A	D	0.52	U	0.52	U	2.0		2.19		2.69	
MW-13A	D	0.65	I	0.9	I	1.2		1.31		1.28	
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.52	U	0.52	U	0.066	U	0.21	U	0.21	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.52	U	0.52	U	0.33	U	0.84	U	1.05	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.52	U	0.52	U	0.066	U	0.42	U	0.56	I
MW-1B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-2B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-3B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-4B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-5B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-6B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-7B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-8B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-9B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-10B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-11B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-12B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-13B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.52	U	0.52	U	0.066	U	0.21	U	0.21	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.52	U	NA		0.066	U	NA		0.21	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.52	U	NA		0.066	U	NA		0.21	U
MW-1C	B	NA		0.52	U	NA		0.21	U	NA	
MW-2C	B	NA		0.52	U	NA		0.21	U	NA	
MW-3C	B	NA		0.52	U	NA		0.21	U	NA	
MW-4C	B	NA		0.52	U	NA		0.21	U	NA	
MW-5C	B	NA		0.52	U	NA		0.21	U	NA	
MW-6C	B	NA		0.52	U	NA		0.21	U	NA	
MW-7C	D	NA		0.52	U	NA		0.21	U	NA	
MW-8C	D	NA		0.52	U	NA		0.21	U	NA	
MW-9C	D	NA		0.52	U	NA		0.21	U	NA	
MW-10C	D	NA		0.52	U	NA		0.21	U	NA	
MW-11C	D	NA		0.52	U	NA		0.21	U	NA	
MW-12C	D	NA		0.52	U	NA		0.21	U	NA	
MW-13C	D	NA		0.52	U	NA		0.21	U	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.52	U	0.52	U	0.066	U	0.21	U	0.21	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.52	U	NA		0.21	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.52	U	NA		0.21	U	NA	

Notes:

µg/L=micrograms per liter

U = Not detected at value represented

I = Value is estimated to be between method detection limit and practical quantitation limit.

NA = Not Analyzed

Well type: (B) Background well (D) Detection well

Constituent detections are shown in shaded cells (green color)

Constituent detections exceeding the GCTL of 1 µg/L are shown in shaded cells (orange color)

Table 5-4
Iron Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 mg/L	11th Event Nov-09 mg/L	12th Event May-10 mg/L	13th Event Nov-10 mg/L	14th Event May-11 mg/L
MW-1A	B	1.34	1.9	3.14	3.11	2.58
MW-2A	B	11.1	16.4	9.89	15.00	9.86
MW-3A	B	2.21	4.4	2.45	16.9	0.90
MW-4A	B	1.69	1.85	1.27	1.12	NA
MW-5A	B	0.293	0.334	0.19	1.15	NA
MW-6A	B	5.46	10.2	11.8	16.90	27.50
MW-7A	D	2.76	7.8	6.68	9.14	10.10
MW-8A	D	3.45	2.51	3.13	3.65	4.21
MW-9A	D	1.38	0.65	0.79	1.05	1.42
MW-10A	D	1.57	0.676	0.59	0.62	1.65
MW-11A	D	16.8	13.3	13.8	13.7	2.17
MW-12A	D	27.9	1.24	1.71	1.95	29.0
MW-13A	D	17.8	14.1	15.0	16.4	20.5
MW-14A	D	MW-14A and MW-15A Abandoned July 2007				
MW-15A	D					
MW-16A	D	1.35	0.131	0.18	1.15	0.37
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	3.32	4.33	10.3	11.6	13.3
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	5.64	2.95	2.37	2.12	2.0
MW-1B	B	0.214	NA	0.23	NA	0.37
MW-2B	B	0.875	NA	0.95	NA	0.97
MW-3B	B	1.83	NA	0.91	NA	0.80
MW-4B	B	7.56	NA	3.05	NA	1.42
MW-5B	B	0.29	NA	0.66	NA	0.74
MW-6B	B	0.965	NA	1.00	NA	0.80
MW-7B	D	1.52	NA	1.92	NA	2.41
MW-8B	D	0.859	NA	0.85	NA	0.95
MW-9B	D	0.998	NA	1.9	NA	3.34
MW-10B	D	0.538	NA	1.65	NA	3.38
MW-11B	D	0.565	NA	0.56	NA	0.50
MW-12B	D	1.13	NA	1.14	NA	1.18
MW-13B	D	0.868	NA	0.84	NA	1.11
MW-14B	D	MW-14B and MW-15B Abandoned July 2007				
MW-15B	D					
MW-16B	D	1.78	1.45	1.3	1.01	0.93
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	0.873	NA	0.8	NA	1.01
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	0.51	NA	0.49	NA	0.61
MW-1C	B	NA	0.412	NA	0.42	NA
MW-2C	B	NA	0.489	NA	0.49	NA
MW-3C	B	NA	0.683	NA	0.85	NA
MW-4C	B	NA	0.984	NA	0.72	NA
MW-5C	B	NA	0.834	NA	0.95	NA
MW-6C	B	NA	0.479	NA	0.77	NA
MW-7C	D	NA	0.624	NA	0.72	NA
MW-8C	D	NA	0.745	NA	0.97	NA
MW-9C	D	NA	0.69	NA	0.67	NA
MW-10C	D	NA	0.845	NA	0.84	NA
MW-11C	D	NA	0.496	NA	0.51	NA
MW-12C	D	NA	0.617	NA	0.62	NA
MW-13C	D	NA	0.533	NA	0.54	NA
MW-14C	D	MW-14C and MW-15C Abandoned July 2007				
MW-15C	D					
MW-16C	D	1.14	1.42	0.93	0.84	0.86
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	1.11	NA	1.09	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	0.495	NA	0.56	NA

Notes:

µg/L=micrograms per liter

U = Not detected at value represented

I = Value is estimated to be between method detection limit and practical quantitation limit.

NA = Not Analyzed

Well type: (B) Background well (D) Detection well

Constituent detections are shown in shaded cells (green color)

Constituent detections exceeding the GCTL 0f 0.3 mg/L are shown in shaded cells (orange color)

Table 5-5
Total Dissolved Solids Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)	11th Event Nov-09 (µg/L)	12th Event May-10 (µg/L)	13th Event Nov-10 (µg/L)	14th Event May-11 (µg/L)
MW-1A	B	61	66	73	80	83
MW-2A	B	75	87	85	80	101
MW-3A	B	250	380	280	245	140
MW-4A	B	150	140	150	121	NA
MW-5A	B	210	290	330	242	NA
MW-6A	B	120	110	120	115	286
MW-7A	D	94	58	89	80	111
MW-8A	D	140	150	160	165	199
MW-9A	D	100	140	140	159	151
MW-10A	D	120	130	120	93	157
MW-11A	D	170	210	260	232	192
MW-12A	D	130	72	78	69	169
MW-13A	D	120	110	110	95	117
MW-14A	D	MW-14A and MW-15A Abandoned July 2007				
MW-15A	D					
MW-16A	D	72	47	16	39	51
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	340	350	860	972	1020
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	200	220	117	214	234
MW-1B	B	25	NA	34	NA	34
MW-2B	B	37	NA	27	NA	49
MW-3B	B	82	NA	57	NA	54
MW-4B	B	280	NA	220	NA	88
MW-5B	B	51	NA	89	NA	54
MW-6B	B	49	NA	49	NA	50
MW-7B	D	75	NA	91	NA	108
MW-8B	D	100	NA	67	NA	82
MW-9B	D	95	NA	89	NA	156
MW-10B	D	50	NA	97	NA	195
MW-11B	D	63	NA	52	NA	62
MW-12B	D	74	NA	59	NA	76
MW-13B	D	49	NA	56	NA	56
MW-14B	D	MW-14B and MW-15B Abandoned July 2007				
MW-15B	D					
MW-16B	D	58	59	44	34	46
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	80	NA	87	NA	93
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	46	NA	45	NA	69
MW-1C	B	NA	45	NA	48	NA
MW-2C	B	NA	31	NA	24	NA
MW-3C	B	NA	37	NA	37	NA
MW-4C	B	NA	88	NA	70	NA
MW-5C	B	NA	55	NA	44	NA
MW-6C	B	NA	34	NA	47	NA
MW-7C	D	NA	37	NA	48	NA
MW-8C	D	NA	35	NA	44	NA
MW-9C	D	NA	93	NA	83	NA
MW-10C	D	NA	43	NA	42	NA
MW-11C	D	NA	62	NA	63	NA
MW-12C	D	NA	33	NA	27	NA
MW-13C	D	NA	40	NA	32	NA
MW-14C	D	MW-14C and MW-15C Abandoned July 2007				
MW-15C	D					
MW-16C	D	65	71	69	65	81
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	82	NA	79	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	69	NA	66	NA

Notes:

µg/L=micrograms per liter

U = Not detected at value represented

I = Value is estimated to be between method detection limit and practical quantitation limit.

NA = Not Analyzed

Well type: (B) Background well (D) Detection well

Constituent detections are shown in shaded cells (green color)

Constituent detections exceeding the GCTL of 500 mg/L are shown in shaded cells (orange color)

Table 5-6
Vinyl Chloride Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.25	U	0.25	U	3.7		0.22	U	0.36	U
MW-2A	B	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-3A	B	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-4A	B	0.25	U	0.25	U	0.16	U	0.22	U	NA	
MW-5A	B	0.25	U	0.25	U	0.8	U	0.22	U	NA	
MW-6A	B	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-7A	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-8A	D	0.25	U	0.25	U	0.41	I	0.22	U	0.36	U
MW-9A	D	1.1		1.4		1.9		1.45		1.25	
MW-10A	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-11A	D	0.25	U	1.1		1.7		1.38		0.36	U
MW-12A	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-13A	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.25	U	0.25	U	0.8	U	0.88	U	0.18	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.25	U	0.25	U	0.16	U	0.44	U	0.72	U
MW-1B	B	0.25	U	NA		0.16	U	NA		0.36	U
MW-2B	B	0.25	U	NA		0.16	U	NA		0.36	U
MW-3B	B	0.25	U	NA		0.16	U	NA		0.36	U
MW-4B	B	0.25	U	NA		0.16	U	NA		0.36	U
MW-5B	B	0.25	U	NA		0.16	U	NA		0.22	U
MW-6B	B	0.25	U	NA		0.16	U	NA		0.36	I
MW-7B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-8B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-9B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-10B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-11B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-12B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-13B	D	0.25	U	NA		0.16	U	NA		0.36	U
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.25	U	NA		0.16	U	NA		NA	
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.25	U	NA		0.16	U	NA		0.36	U
MW-1C	B	NA		0.25	U	NA		0.22	U	NA	
MW-2C	B	NA		0.25	U	NA		0.22	U	NA	
MW-3C	B	NA		0.25	U	NA		0.22	U	NA	
MW-4C	B	NA		0.25	U	NA		0.22	U	NA	
MW-5C	B	NA		0.25	U	NA		0.22	U	NA	
MW-6C	B	NA		0.25	U	NA		0.22	U	NA	
MW-7C	D	NA		0.25	U	NA		0.22	U	NA	
MW-8C	D	NA		0.25	U	NA		0.22	U	NA	
MW-9C	D	NA		0.25	U	NA		0.22	U	NA	
MW-10C	D	NA		0.25	U	NA		0.22	U	NA	
MW-11C	D	NA		0.25	U	NA		0.22	U	NA	
MW-12C	D	NA		0.25	U	NA		0.22	U	NA	
MW-13C	D	NA		0.25	U	NA		0.22	U	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.25	U	0.25	U	0.16	U	0.22	U	0.36	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.25	U	NA		0.22	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.25	U	NA		0.22	U	NA	

Notes:

µg/L=micrograms per liter

U = Not detected at value represented

I = Value is estimated to be between method detection limit and practical quantitation limit.

NA = Not Analyzed

Well type: (B) Background well (D) Detection well

Constituent detections are shown in shaded cells (green color)

Constituent detections exceeding the GCTL 1 µg/L are shown in shaded cells (orange color)

Table 5-7
Surface Water Detections (SW - 3)
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Parameter Monitored	Class III Standard Criteria	Units	10th Event May-09	11th Event Nov-09	12th Event May-10	13th Event Nov-10	14th Event May-11
Ammonia (as N)	--	mg/L	NA	NA	NA	NS	NS
Arsenic	50	ug/L	1.4	NA	0.47	NS	NS
B.O.D.	--	mg/L	NA	NA	NA	NS	NS
Barium	--	ug/L	14.1	NA	7.1	NS	NS
Chloride	--	mg/L	NA	NA	NA	NS	NS
Chlorophyll-a	--	mg/m^3	NA	NA	NA	NS	NS
Chromium	--	ug/L	NA	NA	NA	NS	NS
COD	--	mg/L	160	NA	120	NS	NS
Fecal Coliform	800	#/100mL	48	NA	16	NS	NS
Hardness as $CaCO_3$	--	mg/L	22.4	NA	9.7	NS	NS
Iron	1000	ug/L	1060	NA	1050	NS	NS
Nitrate-N	--	mg/L	NA	NA	NA	NS	NS
Nitrogen, Total as N	--	mg/L	1.6	NA	1.2	NS	NS
Organic Carbon, Total	--	mg/L	34	NA	29	NS	NS
Phosphates, Total	--	mg/L	NA	NA	NA	NS	NS
Sodium	--	mg/L	NA	NA	NA	NS	NS
Total Dissolved Solids	--	mg/L	130	NA	78	NS	NS
Total Suspended Solids	--	mg/L	NA	NA	NA	NS	NS
Vanadium	--	ug/L	NA	NA	NA	NS	NS
Zinc	--	ug/L	NA	NA	NA	NS	NS

Notes:
1. Shaded values exceed Class III Standard Criteria
2. "--" indicates that no criteria has been established
3. NA = not analyzed.
4. ND = not detected
5. NS = no sample

Table 5-8
Surface Water Detections (SW - 4)
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

	Class III Standard Criteria	Units	10th Event May-09	11th Event Nov-09	12th Event May-10	13th Event Nov-10	14th Event May-11
Ammonia (as N)	--	mg/L	NA	NA	NA	NS	NS
Arsenic	50	ug/L	1.27	NA	0.55	NS	NS
B.O.D.	--	mg/L	NA	NA	NA	NS	NS
Barium	--	ug/L	12.7	NA	5.7	NS	NS
Chloride	--	mg/L	NA	NA	NA	NS	NS
Chlorophyll-a	--	mg/m^3	NA	NA	NA	NS	NS
Chromium	--	ug/L	NA	NA	NA	NS	NS
COD	--	mg/L	94	NA	97	NS	NS
Fecal Coliform	800	#/100mL	600	NA	200	NS	NS
Hardness as $CaCO_3$	--	mg/L	21.3	NA	6.2	NS	NS
Iron	1000	ug/L	947	NA	1060	NS	NS
Nitrate-N	--	mg/L	NA	NA	NA	NS	NS
Nitrogen, Total as N	--	mg/L	1.5	NA	1.5	NS	NS
Organic Carbon, Total	--	mg/L	25	NA	30	NS	NS
Phosphates, Total	--	mg/L	NA	NA	NA	NS	NS
Sodium	--	mg/L	NA	NA	NA	NS	NS
Total Dissolved Solids	--	mg/L	97	NA	68	NS	NS
Vanadium	--	ug/L	NA	NA	NA	NS	NS
Zinc	--	ug/L	NA	NA	NA	NS	NS

Notes:
1. Shaded values exceed Class III Standard Criteria
2. "--" indicates that no criteria has been established
3. NA = not analyzed.
4. ND = not detected
5. NS = no sample

Table 5-9
Leachate Detections
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Parameter	Regulatory Level	Unit	Nov 2009 Event						Nov 2010 Event					
			L-1	L-2	L-3	L-4	L-5	L-6	L-1	L-2	L-3	L-4	L-5	L-6
1,4-Dichlorobenzene	7,500	ug/L	9.3 i	7.6 i	7.1 i	5 i	6.9 i	3.7 i	10	14	13.6	6.5 i	9.2 i	5.6 i
2-Butanone (MEK)	200,000	ug/L	210	5.6 u	5.6 u	72 i	190	12,000	832	1150	38 u	660	871	38 u
4-Methylphenol	-	ug/L	0.86 u	0.86 u	0.86 u	53	0.86 u	3,200	290	29 u	97	1800	7.5 i	28 i
4-Methyl-2-pentanone (MIBK)	-	ug/L	3.7 u	3.7 u	3.7 u	3.7 u	3.7 u	98 i	9.6 i	16.0 i	6.5 u	52.3 i	20.1 i	6.5 u
Acetone	-	ug/L	190 i	24 u	24 u	78 i	83 i	6,400	687	1250	82.3 i	879	512	56 u
Alkalinity, Total (as Ca CO_3)	-	mg/L	3,900	1,800	3,300	1,300	1,900	1,900	NA	NA	NA	NA	NA	NA
Ammonia-N	-	mg/L	1,200	680	440	1,200	330	400	1,090	816	798	1,150	696	904
Antimony	-	ug/L	30	23	11 i	54	10 i	12 i	40 i	12 i	23	58	7 i	22
Arsenic	5,000	ug/L	56.4	71.2	27.7	71.2	21.9	40.4	138	200	43.5	178	56	73
Barium	100,000	ug/L	472	341	180	332	142	203	471	350	332	271	178	430
Benzene	500	ug/L	5.6 i	8.8 i	11	7.1 i	9 i	8.4 i	5.8 i	8.7 i	10.4	6.6 i	7.1 i	6.1 i
Beryllium	-	ug/L	4 i	6 i	2 u	3 i	2 u	ND	2.9 i	3.2 i	1.3 i	2.5 i	1.7 i	1.6 i
bis(2-chloroethoxy)methane	-	ug/L	1.1 u	1.1 u	1.1 u	1.1 u	1.2 u	9.9 i	9.6 u	40 u	9.6 u	39 u	10 u	11 u
Cadmium	1,000	ug/L	5.1	0.12 u	0.12 u	4.7 i	0.12 u	0.12 u	1.7 i	1.0 u	1.7 i	1.0 u	1.0 u	4.3
Chloride	-	mg/L	4,700	2,900	2,400	2,600	1,600	1,500	4,470	2,970	3,180	2,490	2,770	2,740
Chromium	5,000	ug/L	483	340	95	700	106	71	545	515	363	548	262	467
Cobalt	-	ug/L	38	9 i	16	40	15	12	37	13	33	33	30	29.2
Copper	-	ug/L	75	13 i	8 i	29	10 i	23	57	13	13	57	12	30
Cyanide, Total	-	mg/L	19	6.9 i	5.7 i	9 i	9.7 i	6 i	33	30	33	36	40	25
Ethylbenzene	-	ug/L	34	34	48	35	41	30	37.3	39.7	51.2	32.3	50.8	29.9
Ethylene dichloride	-	ug/L	1.5 u	1.5 u	1.5 u	1.5 u	1.5 u	1.5 u	1.8 u	1.8 u	1.8 u	1.8 u	1.8 u	1.8 u
Iron	-	ug/L	7,340	4,230	3,220	1,920	3,900	6,010	6,770	2,580	4,550	4,110	3,680	3,030
Lead	5,000	ug/L	33	10 i	6 i	26	7 i	11	31	11	11.9	23	6 i	26.9
Nickel	-	ug/L	440	97	134	219	124	244	596	132	250	197	224	298
Total Dissolved Solids	-	mg/L	9,700	6,800	5,700	11,000	4,400	5,600	14,700	10,400	11,600	11,000	9,280	11,200
Selenium	1,000	ug/L	72	28	31	153	33	29	120	87	83	113	56	140
Sodium	-	mg/L	2,470	1,220	1,270	1,420	897	892	2,430	1,410	1,880	1,440	1550	1610
Sulfide	-	mg/L	15 u	15 u	7.6 u	15 u	7.6 u	5.3 i	24 i	22 i	18 i	24 i	22 i	8 i
Toluene	-	ug/L	13	13	23	29	21	350	6.7 i	29.3	21	29.5	35.6	51.5
Vanadium	-	ug/L	596	514	231	847	225	242	514	753	606	571	419	807
Xylenes, total	-	ug/L	56	69	83	52	79	66	51.4	60.6	82.5	62.3	101.5	47.7
Zinc	-	ug/L	40 u	40 u	40 u	40 u	40 u	380	114	34	67	290	58	73

Maximum concentration of contaminants for the toxicity characteristic listed in 40 CFR 261.24.

u = Not detected at MDL listed.

i = Value is estimated to be between method detection limit and practical quantitation limit.

Only thise parameters with detections above the Method Reporting Limit are shown.

NA = not analyzed

6. TREND ANALYSES

6.1 Overview

Section 4 presented a summary of the field-measured parameters and Section 5 provided a summary of the detected parameters as compared to the regulatory criteria for groundwater, surface water, and leachate samples collected during this biennial reporting period. The Permit requires that a trend analyses be completed for any monitoring parameters detected. For this report, only those field measured or detected parameters exceeding the regulatory criteria are addressed. The tables for all parameters detected but at concentrations below the regulatory criteria have been included in Appendix B. The subsequent sections present discussions of the visual trends for the parameters detected exceeding regulatory criteria for groundwater, surface water, and leachate samples.

6.2 Groundwater

Trend analyses have been completed for those parameters that exceeded the GCTL at a minimum of one well location for this biennial reporting period. These parameters include: arsenic; iron; ammonia-N; total dissolved solids (TDS); benzene; and vinyl chloride. The results are discussed below for each parameter with respect to either the GCTL or secondary drinking water standards (SDWS), whichever is applicable.

6.2.1 Arsenic

Figure 6-1 shows that the GCTL for arsenic (10 micrograms per liter [µg/L]) was exceeded in samples collected from MW-11A and MW-13A. Arsenic was detected above the GCTL (10 µg/L) in the sample from MW-11A (17 µg/L) which was collected during the baseline monitoring event (prior to placement of waste). During this biennial reporting period arsenic concentrations detected in monitoring well MW-11A have ranged from 4.37 to 12.7 µg/L. Figure 6-1 shows that the concentration of arsenic in samples from MW-11A was below the GCTL during the twelfth and fourteenth semi-annual monitoring events.

Arsenic has been consistently detected in MW-13A since the second semi-annual monitoring event performed in November 2005. The reported concentrations of arsenic in samples collected from MW-13A have ranged from 16.1 to 21.3 µg/L during this biennial reporting period and are consistent with the concentrations reported for the entire period of record. Review of the data indicates no significant trends are evident.

The presence of soluble (ferrous) iron is an excellent predictor of arsenic concentrations. Figure 9-2 shows the correlation plot between iron and arsenic. The correlation coefficient of 0.73 indicates a positive correlation between the two analytes. The positive correlation observed in Figure 9-2 has also been observed at many other landfills statewide. A review of FDEP's data base for C&D landfills shows similar correlations at virtually every site that has arsenic impacts. This behavior is not surprising when considering the local aquifer geochemistry and the analytes in question. One of the primary solubility controls as it relates to the presence of arsenic is iron (ferric) hydroxides (FeOH(x)) in the aquifer. These oxy-hydroxides have a strong affinity for arsenic and, even at relatively low levels, serve to render arsenic insoluble in groundwater systems. However, under low oxygen (reducing) conditions, the oxidized (ferric) form is reduced to the soluble ferrous form. Arsenic levels go up because arsenic is solubilized during the iron reduction process.

This is likely what has happened in shallow groundwater at the JED facility. Each of the arsenic exceedances occurred when iron was higher than 10 mg/L. No arsenic exceedances occur under any other conditions except for MW-2C in the baseline event for Phase 1. However, MW-2C has not had an arsenic detection in the past twelve monitoring events. The fact that the levels in MW-11A have not changed appreciably since before waste was placed and that the biochemical conditions are favorable for arsenic dissolution suggest that the arsenic exceedances encountered at the JED facility are naturally occurring.

6.2.2 Ammonia (as N)

Figure 6-2 shows the monitoring wells where the GCTL for ammonia (2.8 milligrams per liter [mg/L]) was exceeded in samples collected during at least one monitoring event during the biennial reporting period for thirteen (13) monitoring wells (MW-1A, 2A, 3A, 4A, 5A, 7A, 8A, 9A, 10A, 11A, 19A and 23A). Ammonia was detected in all of the Phase 1 wells during the baseline sampling event. There appears to be a slight upward visual trend for ammonia in all of the wells listed above except for MW-1A and 9A which appear to be stable. Overall, the ammonia concentrations above the GCTL have been reported in an increased number of wells and in concentrations that appear to be increasing slightly over time but appear to be stable this biennial reporting period.

It is suspected that a primary source of ammonia reported in groundwater is related to previous activity at the site and or land use in the adjacent area. Prior to construction of the landfill, the property was used as a sod farm. Any number of nitrogen-based

compounds that can easily be converted to ammonia or can be applied in an ammonia form were likely used to fertilize the grass to achieve optimum growth. Though nitrate has not been consistently detected in groundwater, the use of nitrate fertilizer is likely masked by the reducing groundwater conditions at and in the vicinity of the landfill. Under reducing conditions, nitrate undergoes a denitrification process whereby nitrogen gas is released to the atmosphere. In addition to the sod farming activities discussed above, the adjacent property was and continues to be used for cattle grazing, which may provide an additional ammonia source. Cattle manure contains between 2 and 2.5 percent organic nitrogen (Singer and Munns, 1991), which if converted to an inorganic form may serve as another potential groundwater ammonia source.

Other geochemical parameters that are currently monitored in groundwater were evaluated to determine if other constituent levels in groundwater provide evidence of a landfill operations-derived release. Leachate generated in landfills can generally be characterized as reducing, with a high concentration of organic material, and various ions. The following four groups of constituents are generally found in landfill leachate, and if present at elevated levels, may be indicative of leachate migration to groundwater (Christensen, et al, 2001). The four groups include:

- dissolved organic matter
- inorganic macro-components – Ca, Mg, Na, K, ammonia, Fe, Mn, Cl, sulfate, and bicarbonate;
- heavy metals – Cd, Cr, Cu, Pb, Ni, and Zn; and
- xenobiotic organic compounds – aromatic hydrocarbons, phenols, and chlorinated aliphatics.

Although other constituents may be present in leachate from landfills, they are likely to be present at very low concentrations and are generally viewed as having a secondary importance (Christensen, et al 2001). Select metals have been infrequently detected previously in "A" zone groundwater. However; subsequent groundwater monitoring events indicated that these detections were not representative of "A" zone groundwater and/or not associated with landfill operations.

Chloride levels in "A" zone groundwater were evaluated for evidence of landfill impacts to groundwater. Chloride and sodium are inorganic constituents that are generally present at elevated levels in leachate and have been widely used as tracers for landfill impacts to groundwater. Table B-5 included in Appendix B of this report provides a summary of chloride concentrations reported this biennial reporting period. The average reported concentrations of chloride for the A-zone monitoring wells has increased gradually since the completion of the Phase 1 baseline monitoring event and the reported

chloride concentrations during this reporting period have ranged from 1.79 milligrams per liter (mg/L) to 154 mg/L. If leachate were impacting groundwater, the chloride concentrations would be expected to increase proportionally with the increased chloride levels detected in the leachate samples. The reported chloride concentrations in leachate samples collected this biennial reporting period ranged from 1,500 to 4,700 mg/L. The increase in the number of wells where ammonia has been detected above the GCTL and the increase in concentrations may be attributable to the migration of landfill gas as seen with the detections of several volatile organic compounds. The ammonia detections will be addressed as part of the gas migration investigation mentioned in Section 6.2.3.

6.2.3 Benzene

Figure 6-3 shows the monitoring wells where the GCTL for benzene (1 µg/L) was exceeded in at least one monitoring event during the biennial reporting period for eight (8) monitoring wells (MW-1A, 3A, 8A, 9A, 10A, 11A, 12A, and 13A). Benzene has been detected in MW-9A since the sixth semi-annual monitoring event and the number of wells where benzene has been detected at levels exceeding the GCTL has increased. An upward trend for this reporting period is apparent in groundwater samples from monitoring wells MW-1A, 9A and 12A. Reported benzene concentrations above the GCTL are limited to the A-zone (shallow) monitoring wells.

It was originally thought that the prior detections of benzene were attributable to residual contamination from the erosion caused by surface water run-off from the landfill in the vicinity of MW-9A, but as benzene has been detected in more wells around the Phase 1 area it appears that this is not the primary cause. It is more likely that the elevated benzene (and other volatile organic compounds [VOCs]) detections may be attributable to landfill gas migration. As a result of this, Omni has initiated several investigations and corrective measures related to landfill gas migration. The most recent included augmentation of the existing methane gas recovery system with two "test" supplemental gas recovery wells which was documented in a correspondence dated June 2011. It is anticipated that the addition of these two supplemental gas recovery wells within the sump areas at Cells 2 and 5 will help mitigate the methane migration issues which will result in a reduction of VOCs in groundwater samples collected at MW-1A and MW-9A during subsequent semi-annual monitoring events. Finally, Omni intends to design and install a perimeter soil gas extraction system at the perimeter berm of Cells 1 through 7.

6.2.4 Iron

As shown in Figure 6-4, the GCTL for iron (0.3 mg/L) was exceeded in almost every sample collected during this biennial reporting period. The reported concentrations are

consistent with period of record data and appear to be relatively stable this reporting period. The source of the iron is likely naturally occurring. There appears to be no general trend in iron concentrations in the monitoring wells at the site. There is no substantial difference between the total and dissolved iron concentrations for samples with turbidity levels greater than 20 NTU.

6.2.5 Total Dissolved Solids (TDS)

The GCTL for TDS (500 mg/L) was exceeded in one monitoring well, MW-19A, during this biennial reporting period. Figure 6-5 shows that beginning with the twelfth event there appears to be an increasing trend in the TDS concentration in samples from MW-19A. However, based on the distance of MW-19A from the landfill cells and no other monitoring wells showing an exceedence this reporting period, it is likely the elevated TDS concentration is not a result of landfill operations.

6.2.6 Vinyl Chloride

Figure 6-6 shows the monitoring wells where the GCTL for vinyl chloride (1 µg/L) was exceeded in at least one monitoring event during the biennial reporting period in three (3) monitoring wells (MW-1A, 9A, and 11A). Like benzene, vinyl chloride has been detected in MW-9A since the sixth semi-annual monitoring event and the number of wells where vinyl chloride has been detected and in levels exceeding the GCTL has increased. Vinyl chloride had not been detected in any wells prior to the sixth monitoring event (February 2007). Like benzene it is anticipated that the incorporation of the supplemental methane gas recovery system at the perimeter berm area will result in reductions of vinyl chloride in groundwater samples collected in the future.

6.2.7 pH

A plot of the final field measured pH for each groundwater monitoring well in the network for each sampling event compared with the secondary drinking water standard (SDWS) for pH (between 6.5 and 8.5 standard units) is presented in Figure 6-7. The pH values have been relatively consistent over the monitoring period. Figure 6-7 shows that the measured pH typically ranges between 4 and 6 standard units. All pH measurements are below the lower limit of the SDWS of 6.5 standard units. These results can be attributable to the shallow nature of some monitoring wells and groundwater levels. The median pH for precipitation in Florida is 4.77 (Florida Geological Survey, 1992). The data obtained from the monitoring wells appear to be consistent with what would be expected in shallow groundwater from this environment.

6.2.8 Turbidity

Figure 6-8 shows the final field-measured turbidity for each monitoring well sampled this reporting period that exceeded the secondary drinking water standard (SDWS) for turbidity of 20 NTUs.

Overall, the turbidity levels have improved since the background (Baseline) events for Phase 1 (MW-1 thorough MW-15) and the Phase 2 and 3 monitoring well networks (MW-16 thorough MW-23). The number of wells requiring the collection of a filtered metals sample has decreased dramatically from twenty-nine (29) wells during the initial background event to five (5) monitoring wells (MW-19A, MW-23A, MW-16B, MW-4C and MW-23C) during this reporting period.

6.3 Surface Water

6.3.1 pH

A plot of the field-measured pH for each surface water monitoring location in the network for each sampling event compared with the Class III surface water quality standard (SWQS) for pH (between 6.0 and 8.5 standard units) is presented in Figure 6-9. The pH values have been relatively consistent over the monitoring period. Figure 6-9 shows that the measured pH values for the biennial reporting period have ranged from 4.58 to 5.88 standard units. The pH values have been below the SWQS acceptable pH range of approximately 6.0 to 8.5 standard units since the January 2004 baseline event. The median pH for precipitation in Florida is 4.77 (Florida Geological Survey, 1992). The pH data obtained from the monitoring wells appears to be consistent with that of the surface water samples. The low pH values detected from the surface water samples are consistent with the environmental conditions in the region.

6.3.2 Dissolved Oxygen

A plot of the field measured DO levels are presented on Figure 6-9. The dissolved oxygen (DO) concentrations in the surface water samples collected at the two monitoring stations (SW-3 and SW-4) were below the SWQS of 5 mg/L during the monitoring events performed in May 2009 and 2010. Historically, nearly all of the DO levels measured during the warmer months were below the SWQS. Potential explanation for the low DO is warmer surface water temperatures and algal blooms consuming DO in greater amounts during the summer months. It is highly unlikely that these are the reflection of any landfill impacts.

6.3.3 Iron

Figure 6-9 shows the iron concentrations in the two surface water locations for this biennial reporting period. The SWQS for iron of 1 mg/L was slightly exceeded in the samples collected during the tenth and twelfth semi-annual monitoring events. The reported concentrations exceeding the SWQS ranged from 1.05 to 1.06 mg/L, which are just above the SWQS. It is important to note that the concentration of iron reported for sample SW-4 (background) collected during the January 2004 baseline event was reported at 1,100 mg/L. No discernable trend is apparent, but review of the period of record data since the baseline event show concentrations of iron in samples from SW-4 have varied from 261 mg/L to 1,100 mg/L.

Figure 6-1
Groundwater Trends - Arsenic
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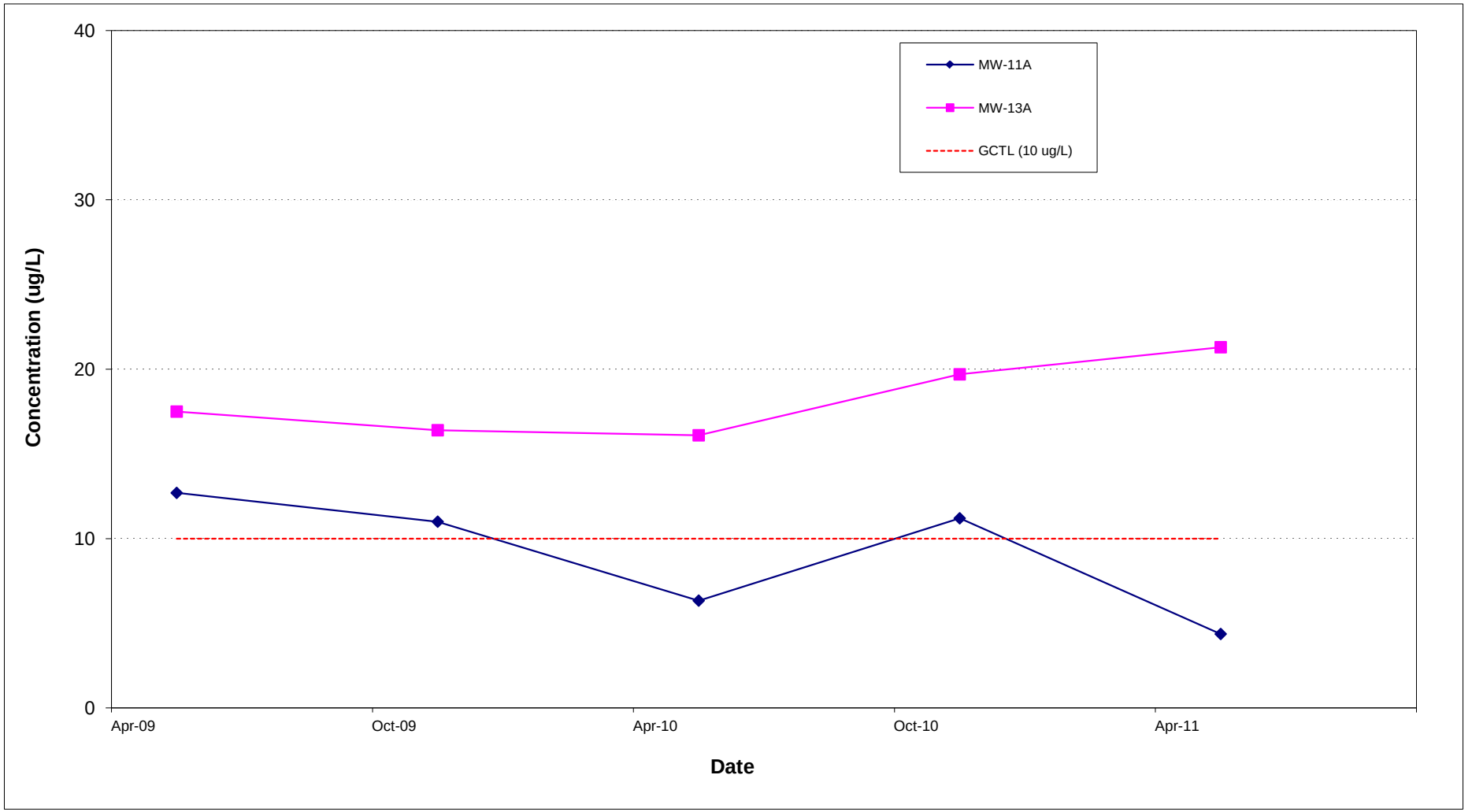
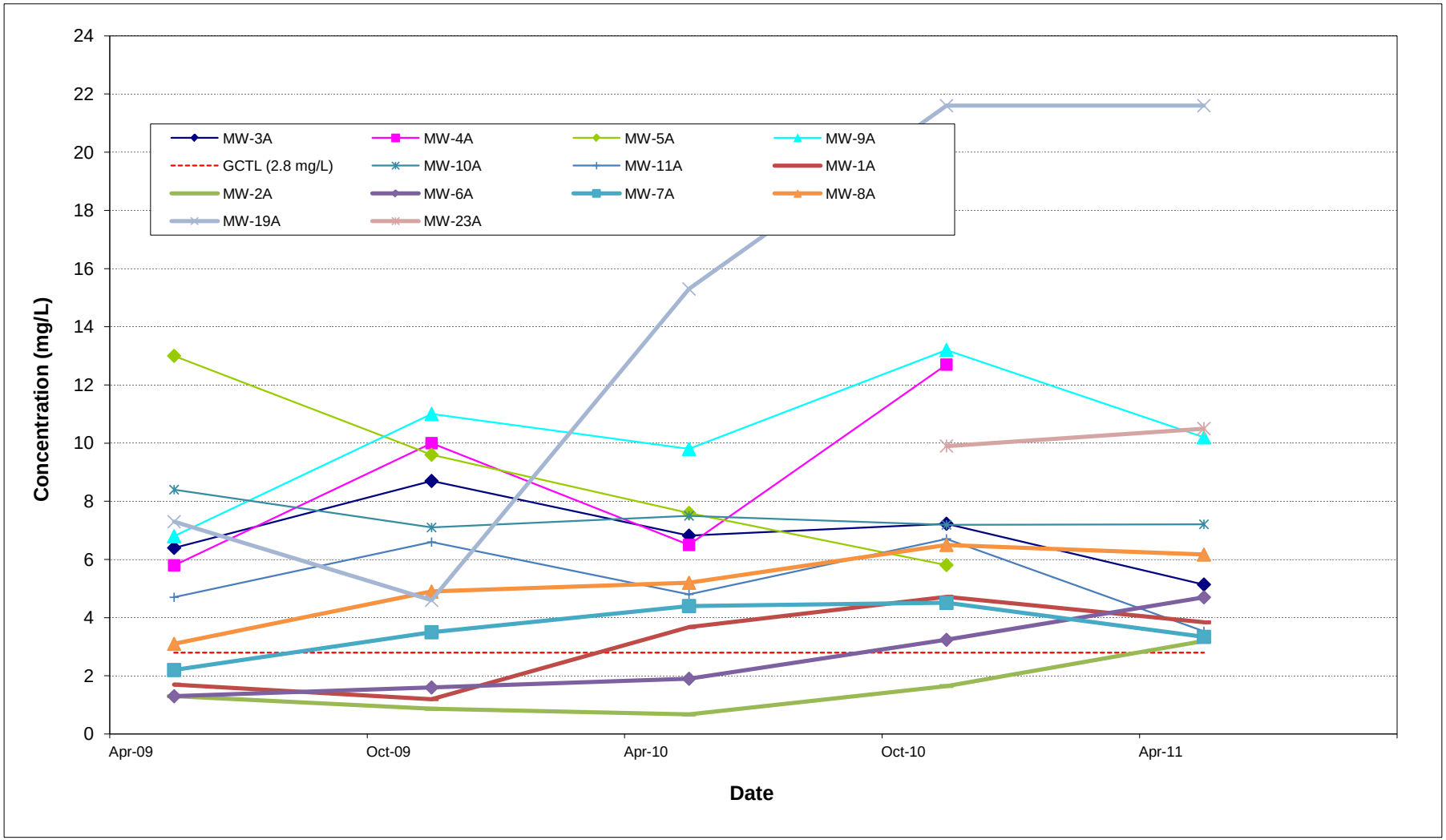


Notes:

GCTL = Groundwater Cleanup Target Level (10 ug/L)

Figure 6-2
Groundwater Trends - Ammonia-N
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility



Notes:

GCTL = Groundwater Cleanup Target Level (2.8 mg/L)

Figure 6-3
Groundwater Trends - Benzene
Fourth Biennial Technical Report on Water Quality
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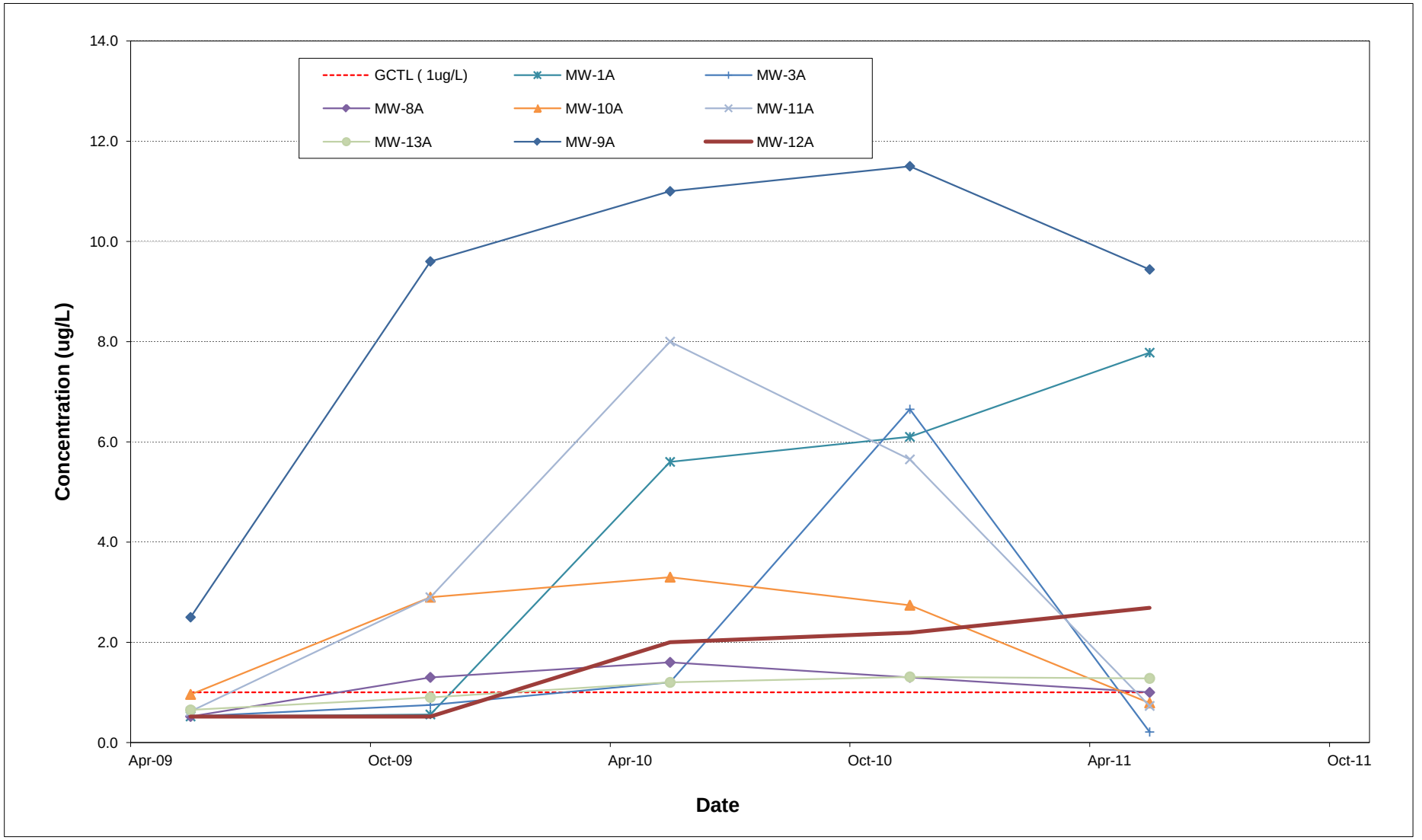

Notes:

GCTL = Groundwater Cleanup Target Level (1 ug/L)

Figure 6-4 (1 of 3)
Groundwater Trends - Iron
Fourth Biennial Technical Report on Water Quality
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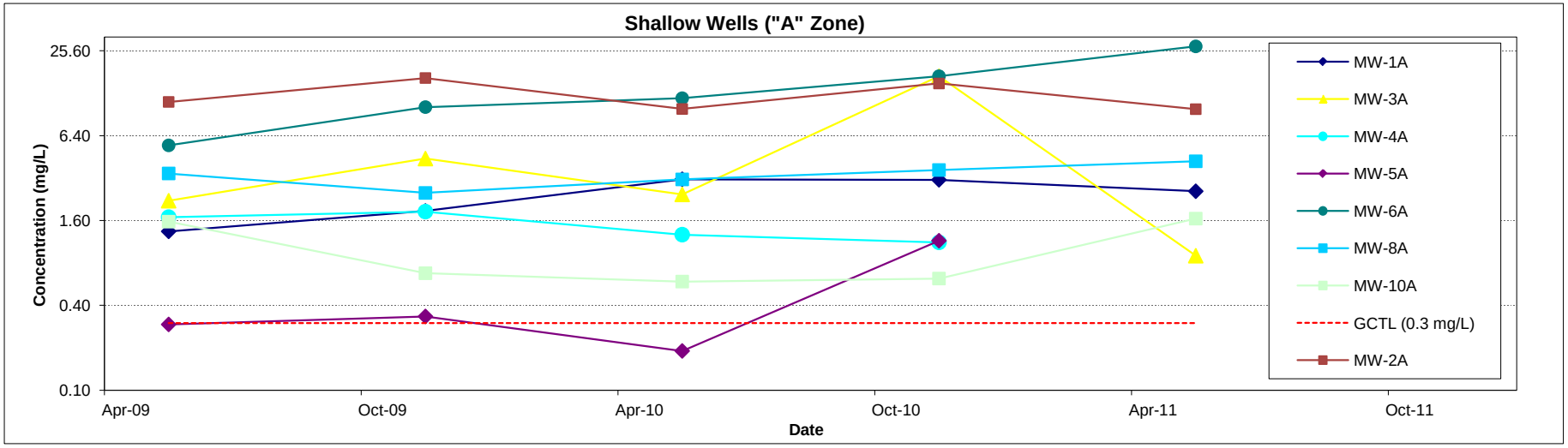

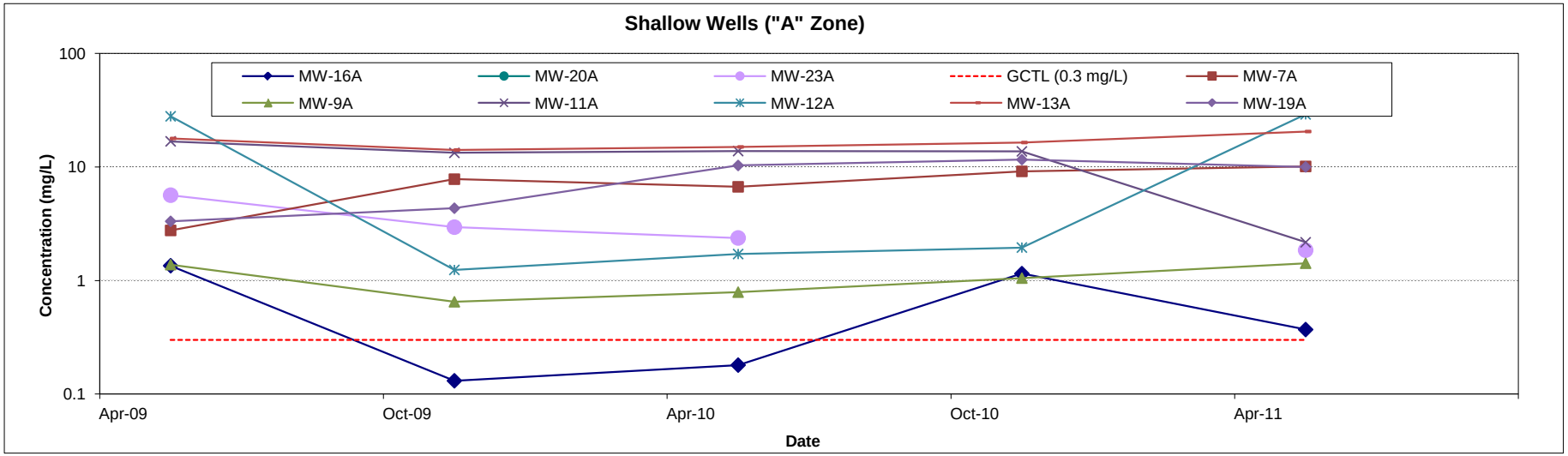

Notes:

GCTL = Groundwater Cleanup Target Level (0.3 mg/L)

Figure 6-4 (2 of 3)
Groundwater Trends - Iron
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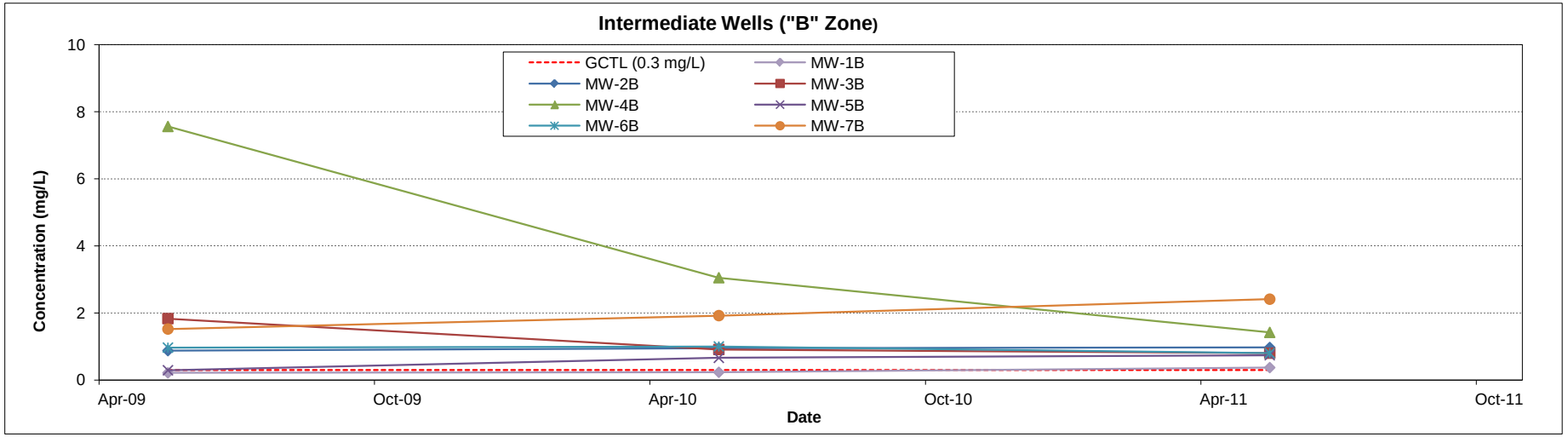

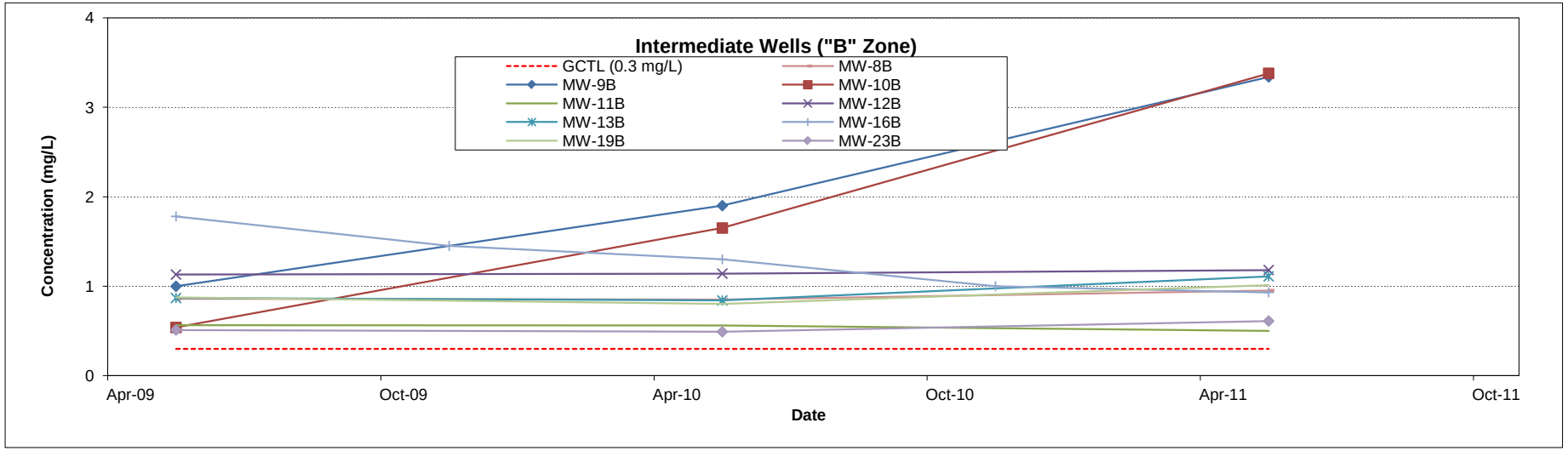

Notes:

GCTL = Groundwater Cleanup Target Level (0.3 mg/L)

Figure 6-4 (3 of 3)
Groundwater Trends - Iron
Fourth Biennial Technical Report on Water Quality
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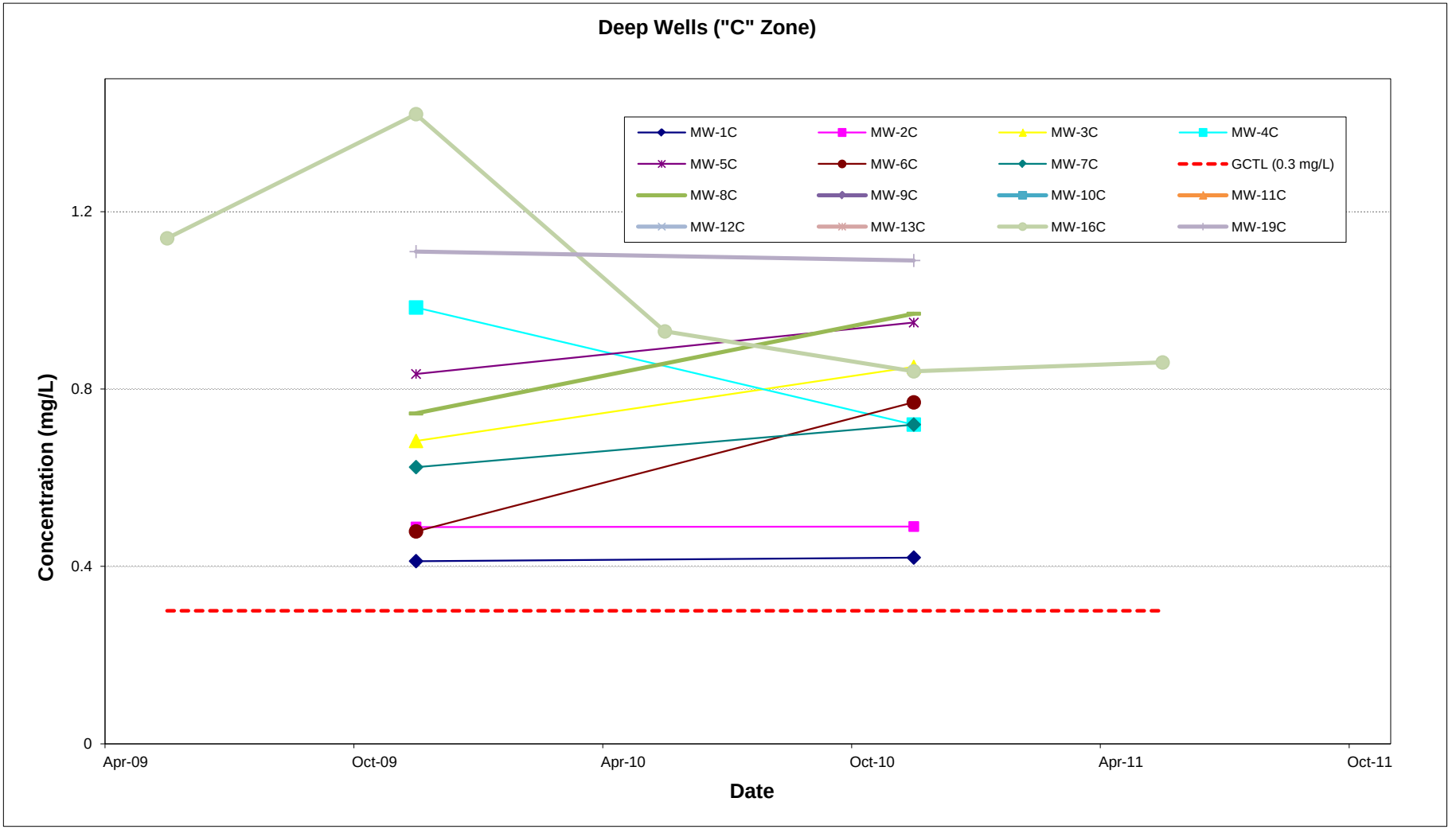

Notes:

GCTL = Groundwater Cleanup Target Level (0.3 mg/L)

Figure 6-5
Groundwater Trends - Total Dissolved Solids
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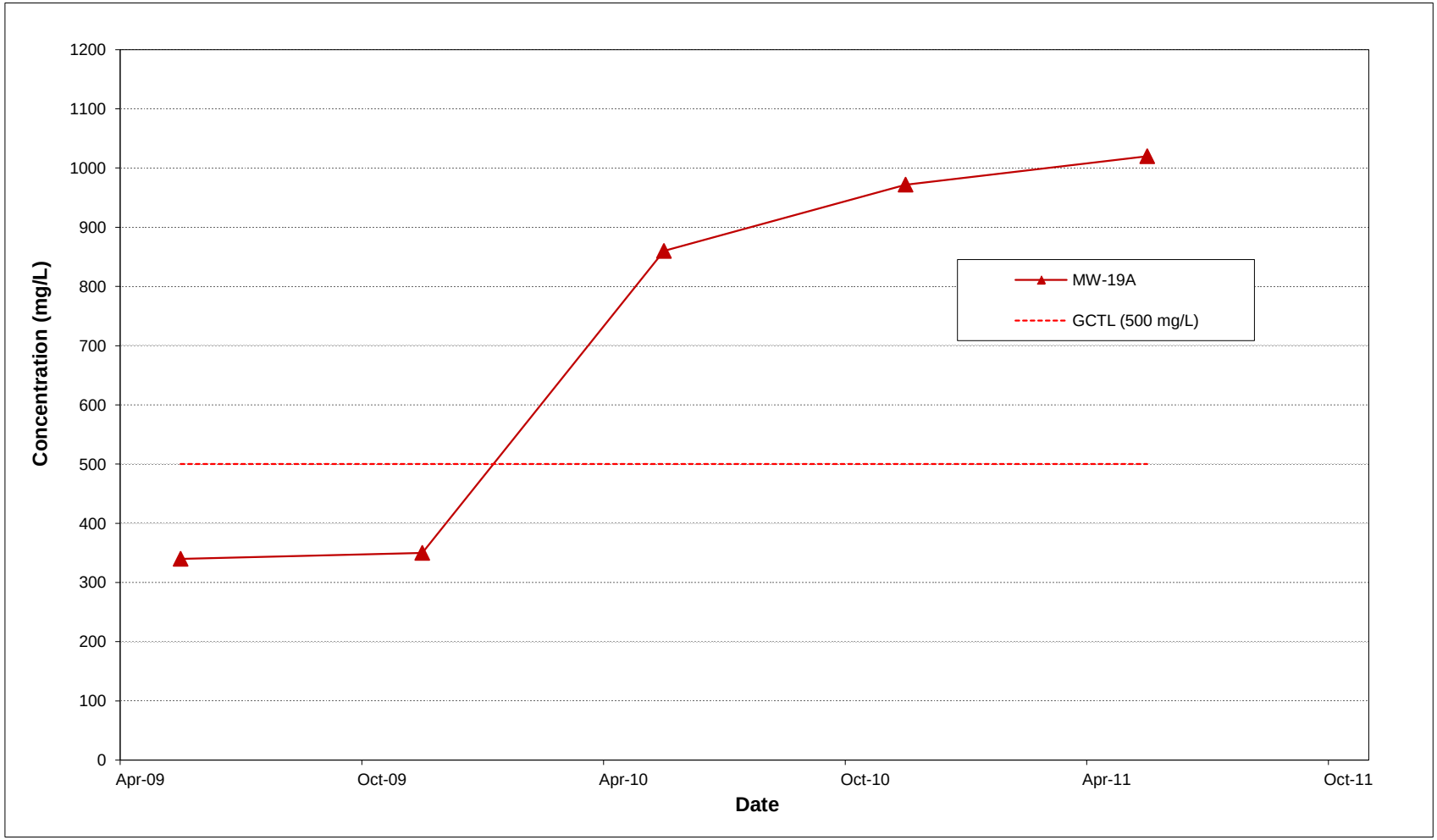

Notes:

GCTL = Groundwater Cleanup Target Level (500 mg/L)

Figure 6-6
Groundwater Trends - Vinyl Chloride
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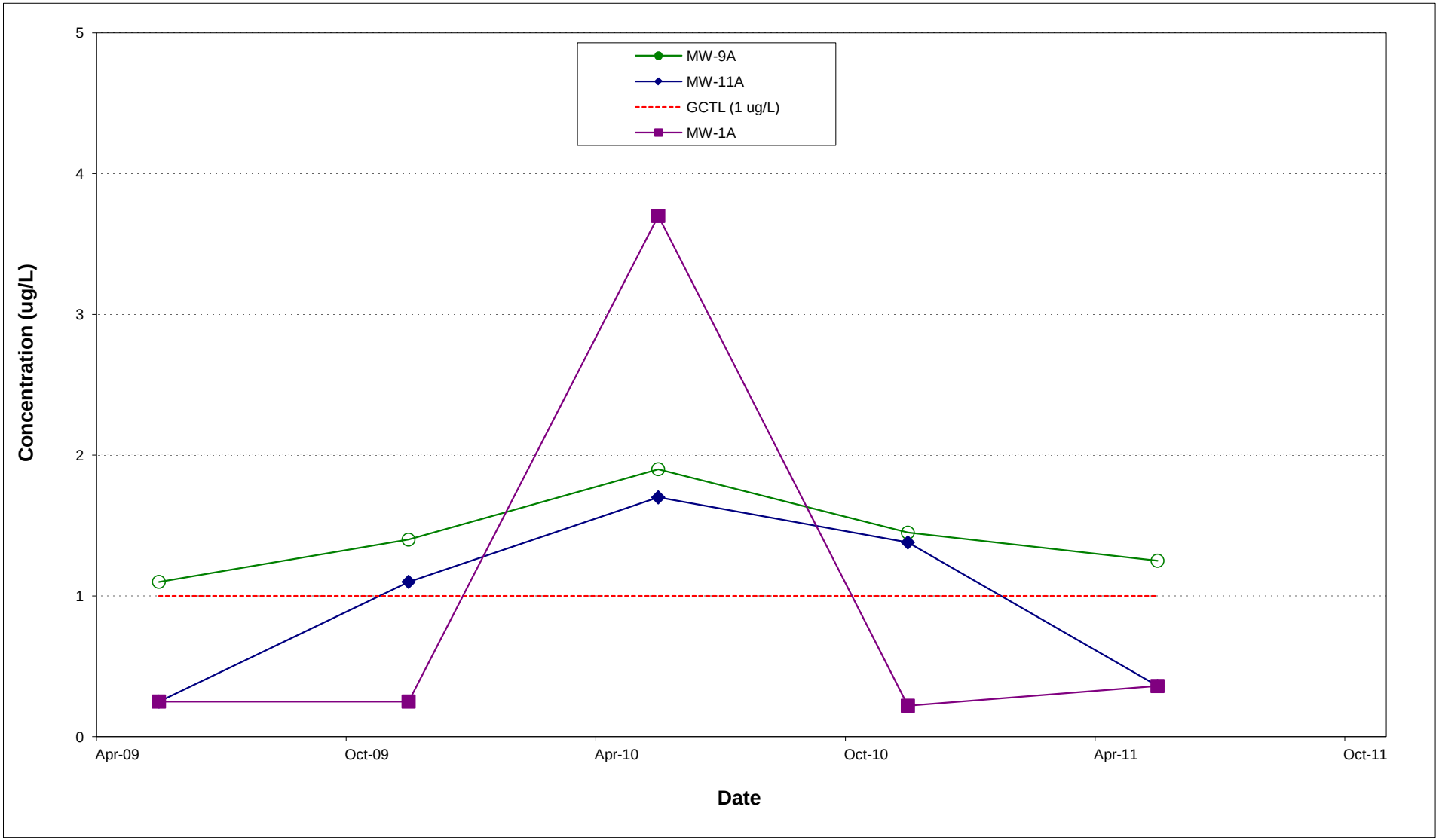

Notes:

GCTL = Groundwater Cleanup Target Level (1 ug/L)

Figure 6-7 (1 of 3)
Groundwater Trends - pH
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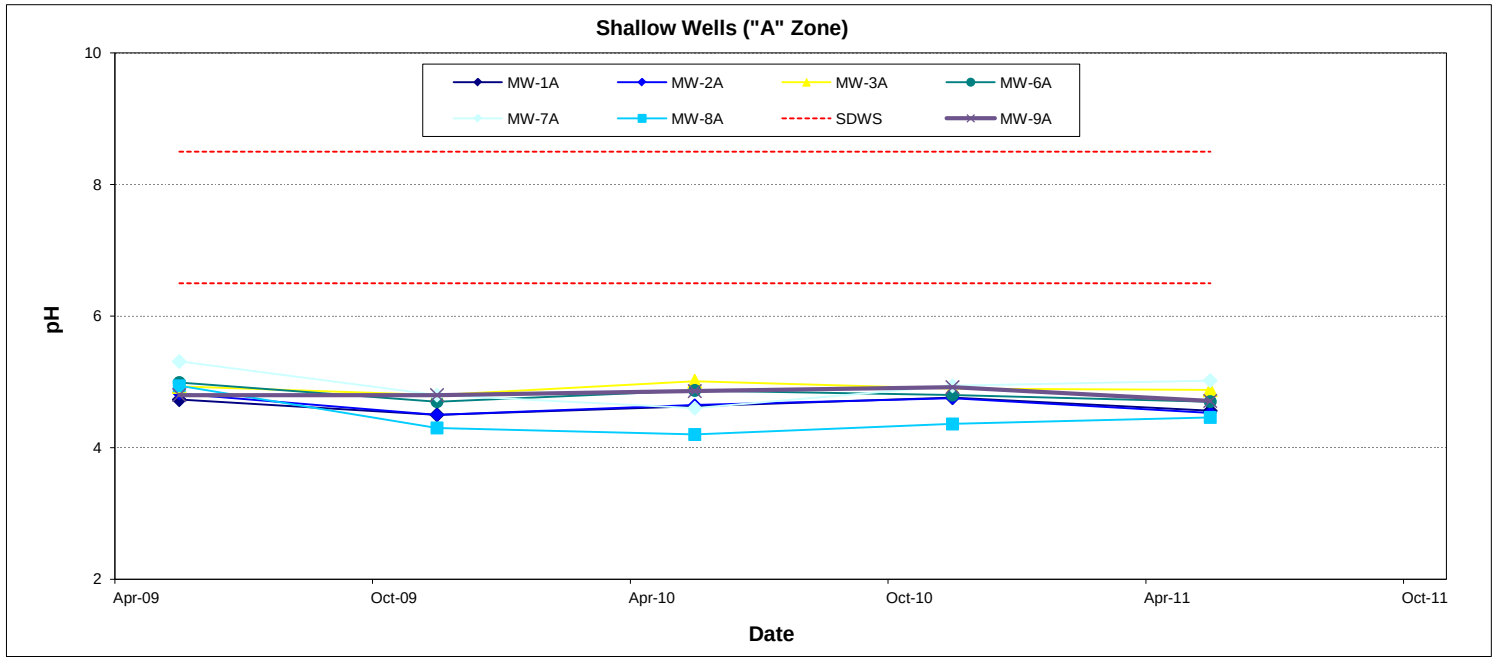

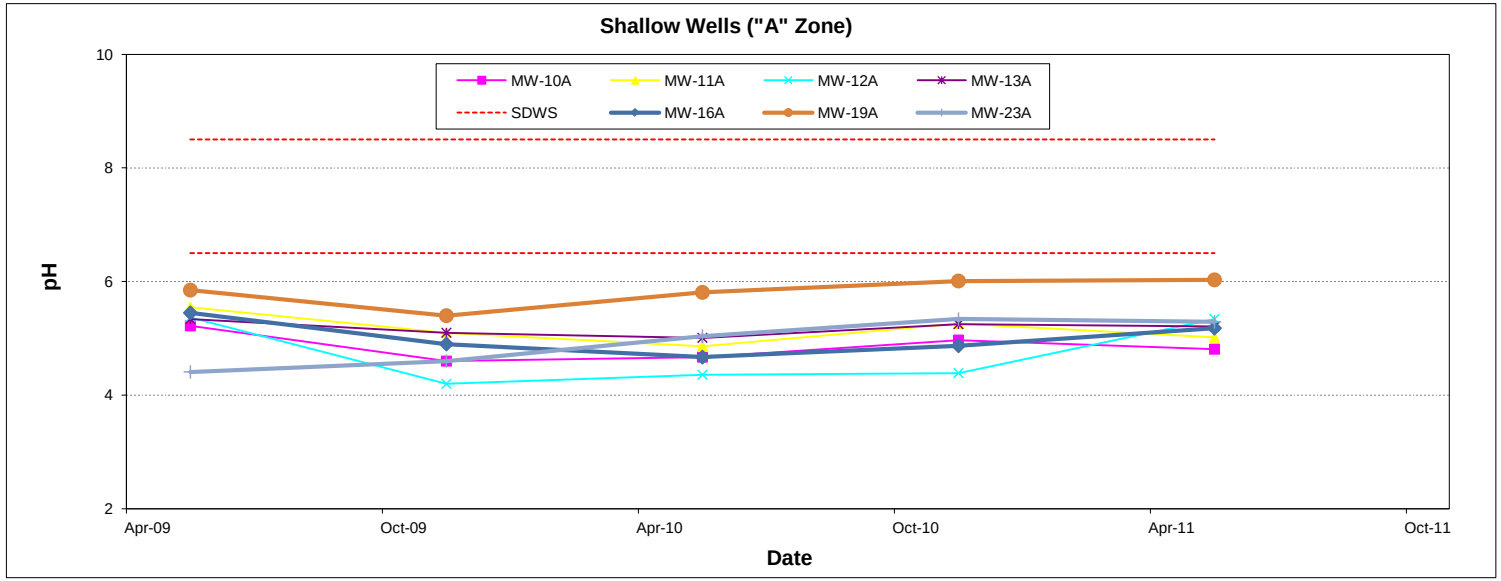

Notes:
SDWS = Secondary Drinking Water Standard (6.5 - 8.5 standard units)

Figure 6-7 (2 of 3)
Groundwater Trends - pH
Fourth Biennial Technical Report on Water Quality
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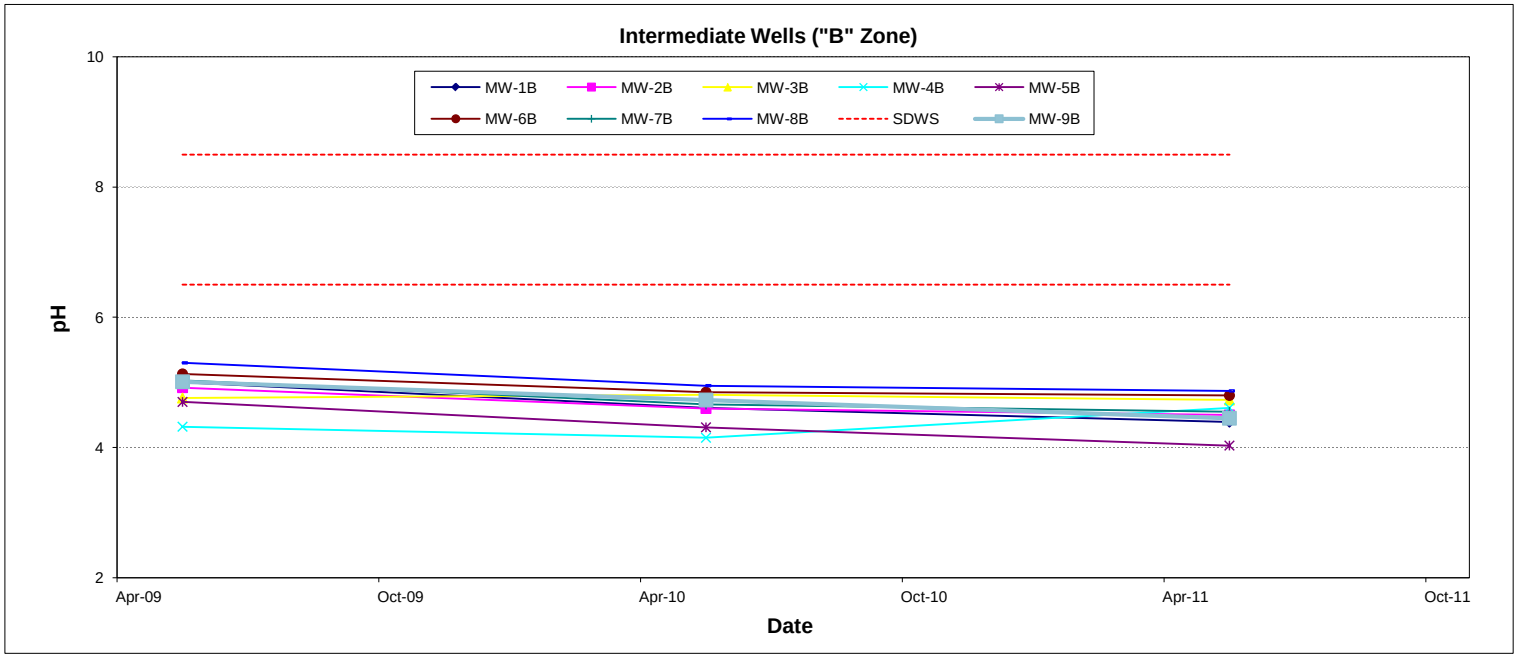

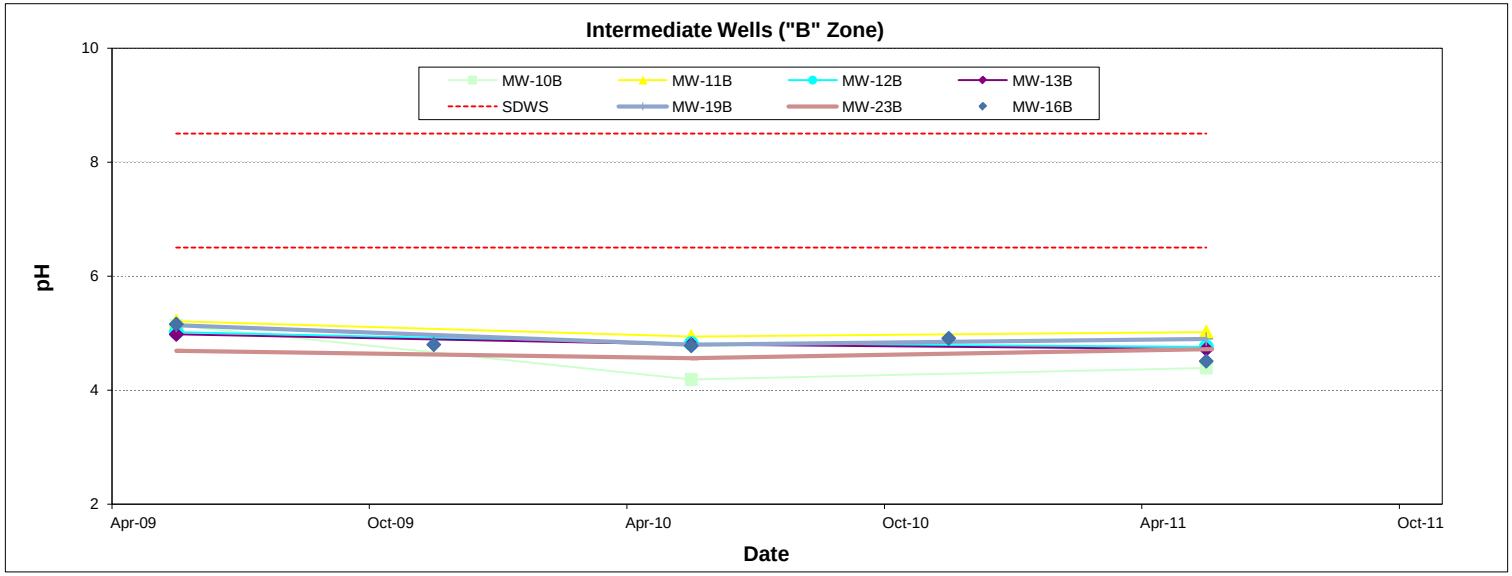

Notes:

SDWS = Secondary Drinking Water Standard (6.5 - 8.5 standard units)

Figure 6-7 (3 of 3)
Groundwater Trends - pH
Fourth Biennial Technical Report on Water Quality
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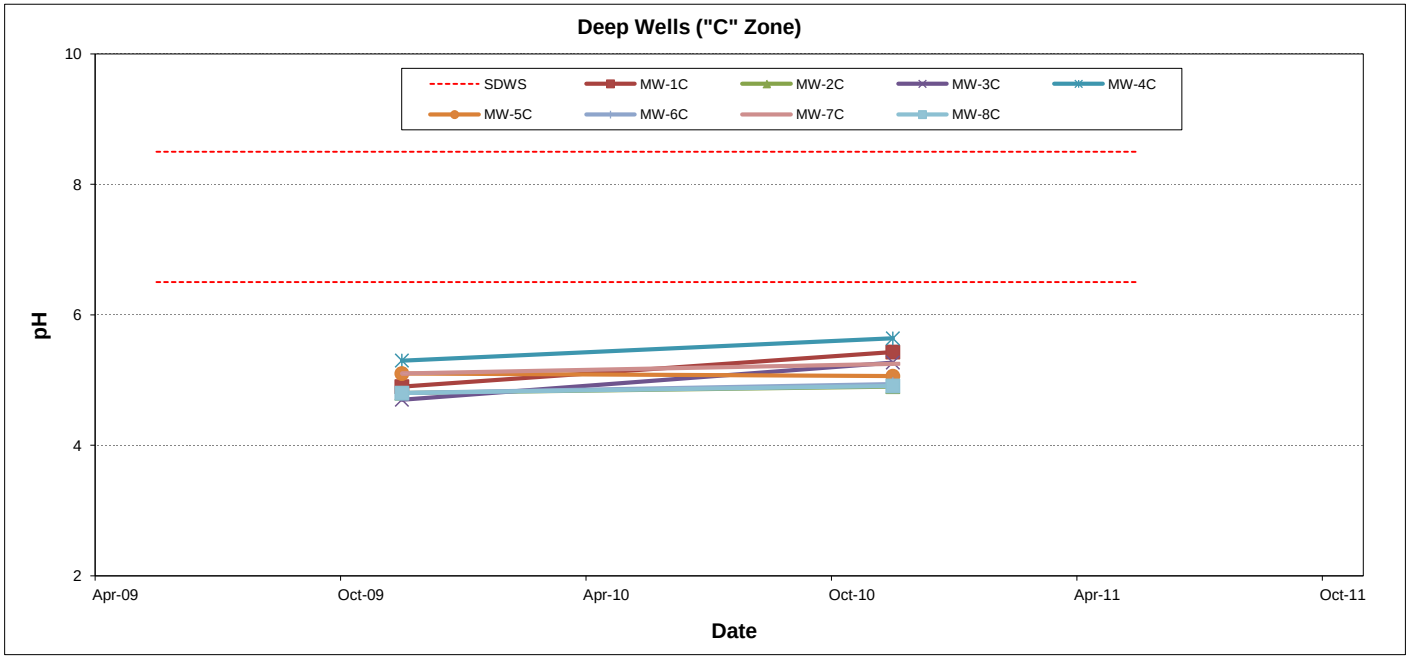

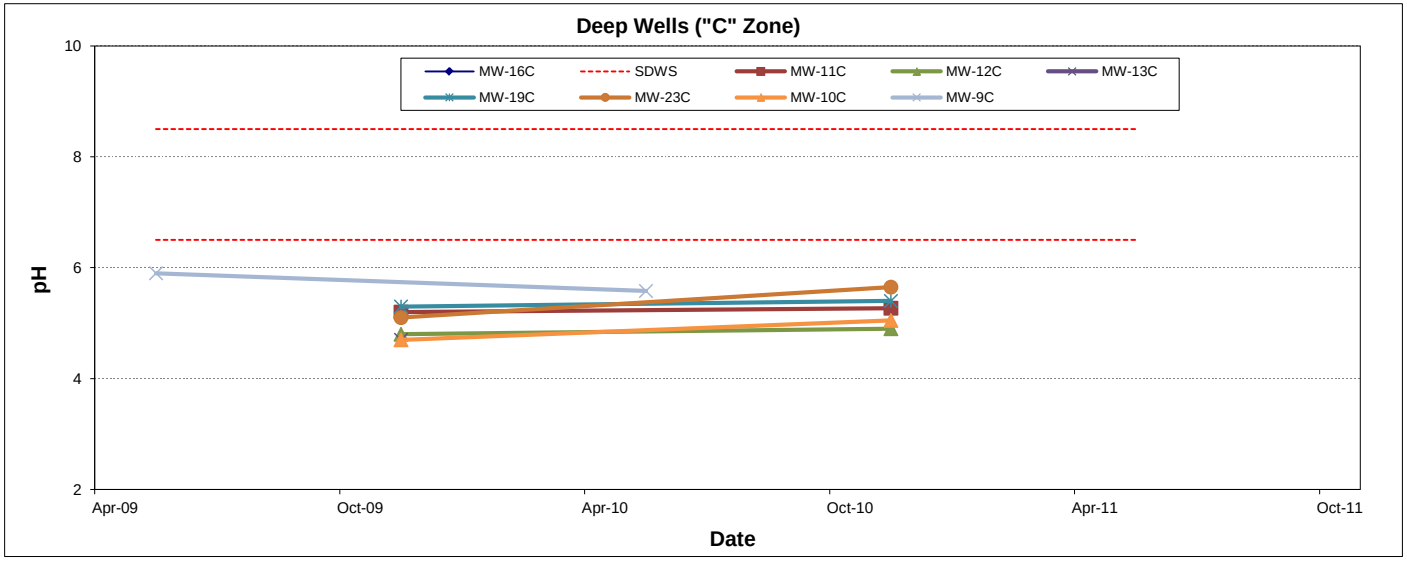

Notes:

SDWS = Secondary Drinking Water Standard (6.5 - 8.5 standard units)

Figure 6-8
Groundwater Trends - Turbidity
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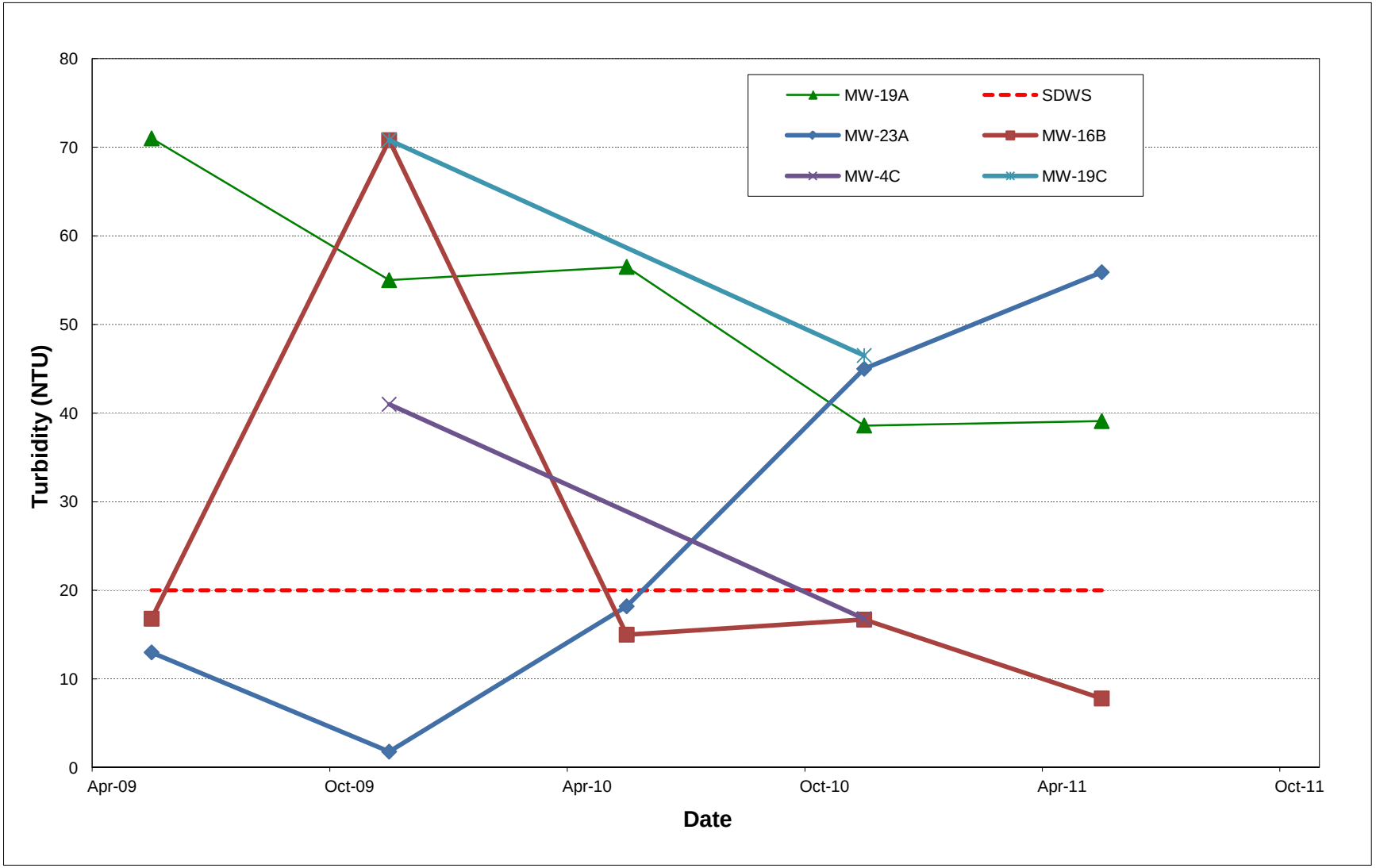

Note:

SDWS = Secondary Drinking Water Standard (Below 20 NTUs)

Figure 6-9
Surface Water Summary Data - pH, DO, and Iron
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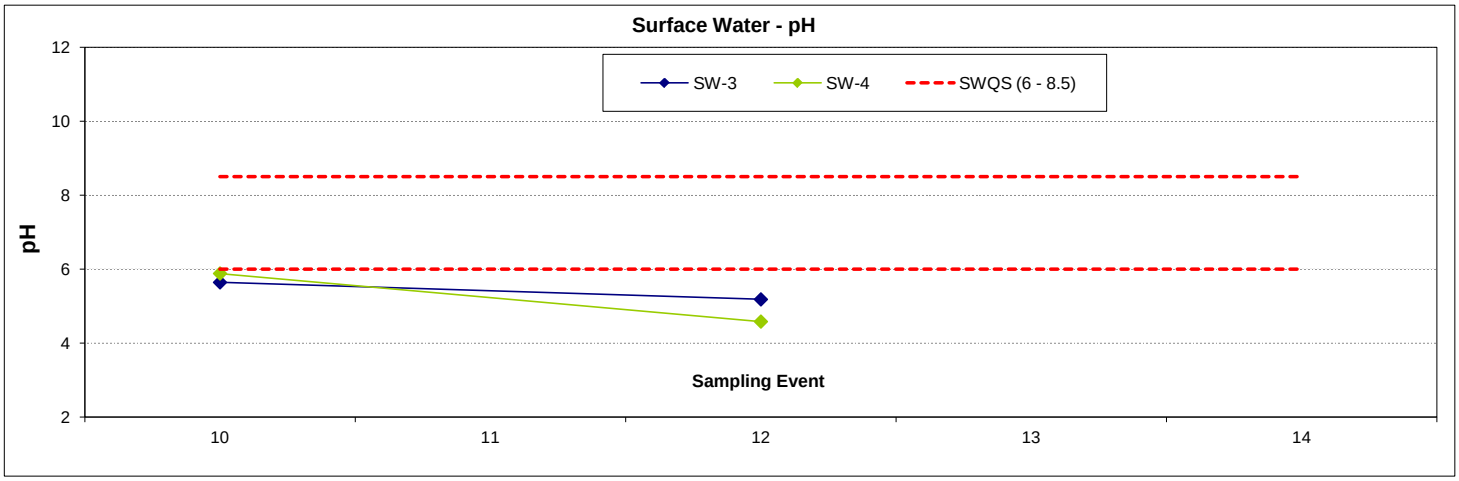

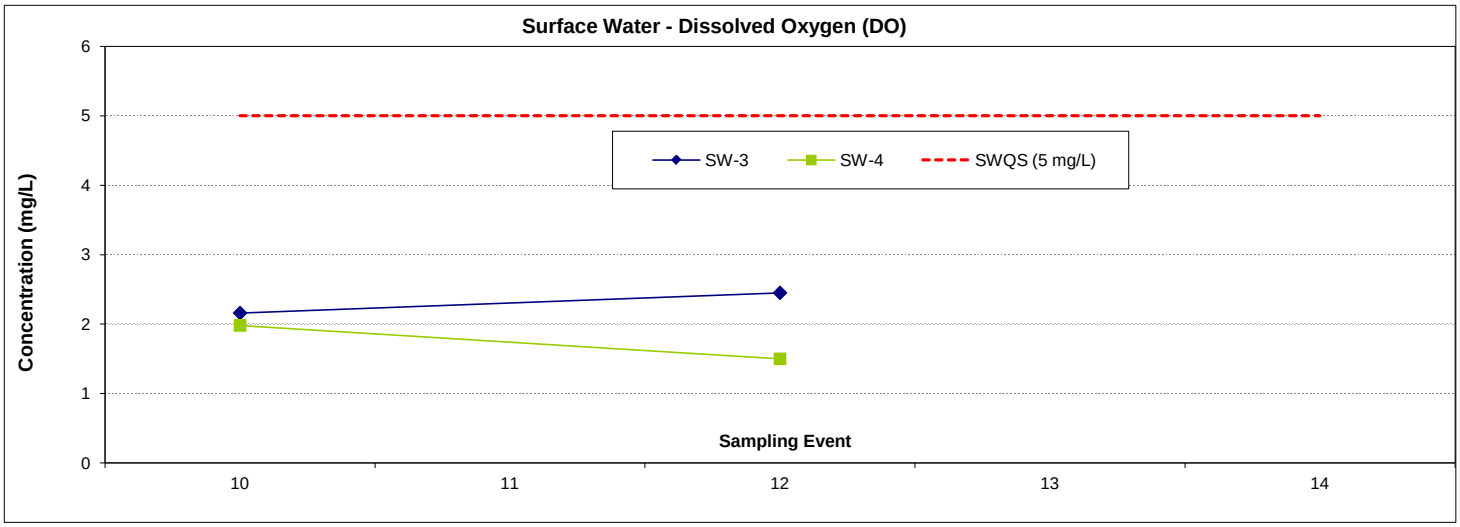

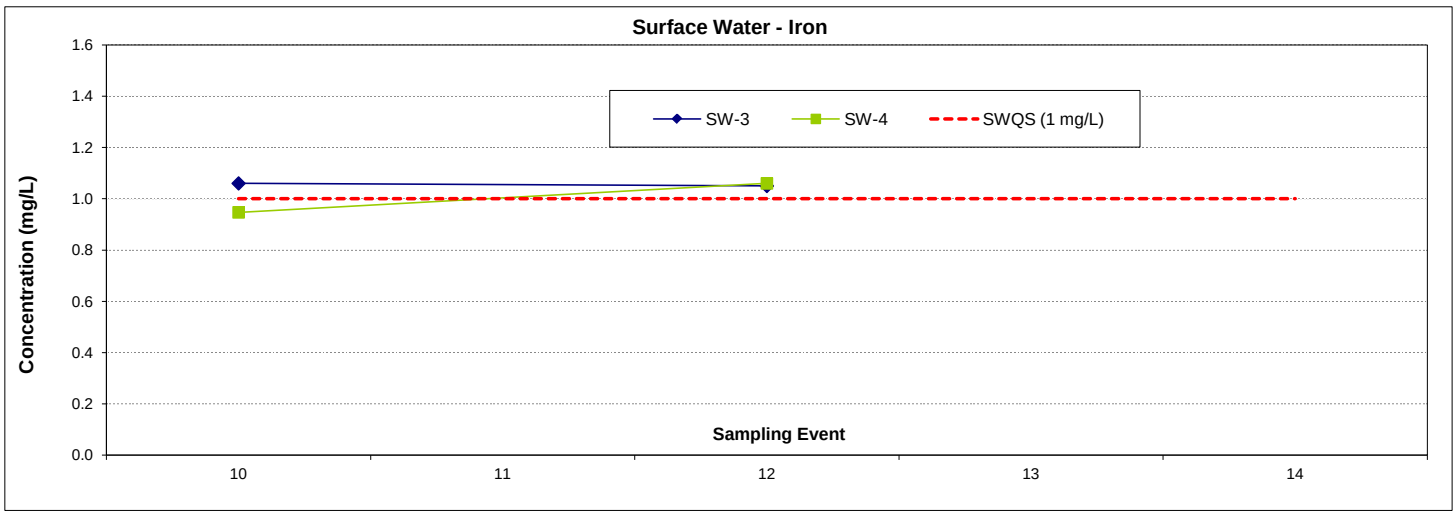

Note:

SWQS = Secondary Water Quality Standard

7. COMPARISON AMONG WELLS IN DIFFERENT HYDROLOGIC ZONES

7.1 Overview

Rule 62-701.510(9)(b)3, F.A.C. requires comparisons among shallow, intermediate, and deep zone wells. The well construction and layout details were described previously in Section 2 of this report. As discussed in Section 5, analytical laboratory results have been summarized to show all parameters reported above the practical quantitative limit (PQL). The tables generated which show all parameters detected above the PQL's have been included in Appendix B. These detection summary tables and the groundwater field measured parameters tables (Tables 4-1 through 4-5) were used to compare water quality among the wells in the different zones at the JED facility.

7.2 Field-Measured Parameters

Based on a review of the field measured parameters recorded during each monitoring event (Tables 4-1 through 4-5) there appears to be no discernable differences between the shallow ("A"), intermediate ("B"), and deep ("C") zones. For the three zones, the pH is relatively consistent and ranges between 4 and 6 standard units. Dissolved oxygen levels are slightly higher in the "A" zone wells, but this is expected due to the shallow nature of these wells. For each well cluster, the conductivity levels are slightly higher in the "A" zones wells as compared to the deeper zones and are fairly consistent between the "B" and "C" zone wells. Turbidity levels have been historically higher in the intermediate and deep zones than the shallow zone. These higher turbidities can be attributed to the subsurface formation properties.

7.3 Detected Parameters

Overall, based on a review of the tables' generated showing all parameters detected above the PQL, there is no significant differences between the three zones ("A", "B", and "C"). A few parameters, such as arsenic, benzene, vinyl chloride, toluene, and ammonia-N were reported above the GCTL in a greater number of samples from the shallow ("A" zone) than the deeper zones ("B" and "C").

8. COMPARISON BETWEEN BACKGROUND AND DETECTION WELLS

8.1 Overview

Rule 62-701.510(9)(b)4, F.A.C. requires comparisons between background water quality and the water quality in detection wells. For the Phases 1 through 3 monitoring network at the JED facility, monitoring well clusters MW-1 through MW-6, and MW-22 and MW-23 have been designated as the background wells and monitoring well clusters MW-7 through MW-21 have been designated as detection wells. The configuration of the monitoring well clusters was discussed in Section 2.

8.2 Statistical Analysis

Four parameters were selected to compare water quality between background wells and detection monitoring wells:

- Chloride
- Iron
- Total Dissolved Solids (TDS)
- pH

These parameters have all been used to document water quality impacts at landfill sites and have the added advantage (from a statistical analysis standpoint) of being "detectable" – that is, each analysis is a quantifiable detection.

The data were tested using the Mann-Whitney test. The Mann-Whitney is a non-parametrical statistical procedure that evaluates whether two populations of data are similar or not. It is the non-parametric "equivalent" of the t-test; a very common statistical procedure. Mann-Whitney is frequently used in water quality applications due to its ability to handle non-normally distributed data (such as most water quality data). In this case, the two populations are the background monitoring wells and the detection monitoring wells.

The analysis involves ranking all of the data from both populations and then summing up the ranks of each. If the populations are similar, the ranks should be very close. A statistic known as the "U" statistic is calculated for each population. If this statistic is greater than 0.05, then it can be stated that the water quality parameter is from the same population in both the background and detection monitoring wells. In other words, there is no statistically significant difference between the background wells and the detection

monitoring wells. The calculated "U" statistic for the current data set for each of the parameters tested is:

- Chloride – P <0.05
- Iron – P> or equal to 0.05
- Total Dissolved Solids – P> or equal to 0.05
- pH – P <0.05

Of these parameters, pH and chloride indicate a statistical difference between the background monitoring wells and the detection monitoring wells. Note that this analysis has a very high "power" due to the large sample size in both populations. This means that the probability of a significant finding that the test may have missed is very low.

9. CORRELATIONS BETWEEN RELATED PARAMETERS

9.1 Overview

Rule 62-701.510(9)(b)5, F.A.C. requires correlations between related parameters such as total dissolved solids and specific conductance. Based upon a technical review of the data and previous biennial technical reports, two sets of parameters were identified that might provide meaningful data when correlated responses are evaluated. These are discussed below.

Figure 9-1 contains a correlation plot for TDS versus specific conductance (SC). This is provided because it is recommended in the rule cited above. The correlation coefficient of 0.82 indicates a positive correlation between these two analytes. This correlation has been well-documented for many years.

Figure 9-2 is a correlation plot between iron and arsenic. The correlation coefficient of 0.73 indicates a positive correlation between these two analytes. Based on experiences at other landfill sites in Florida, in virtually every case, the presence of soluble (ferrous) iron is an excellent predictor of arsenic concentrations. This relationship is based on extensive studies in Florida which show under natural conditions that arsenic is bound by ferric hydroxides. If the ferric hydroxides are exposed to anaerobic conditions, the iron is reduced to its ferrous form and arsenic is released. This appears to be the case at the JED facility. This may become significant if arsenic concentrations are routinely detected above GCTLs.

Figure 9-1
Correlation Between TDS and Specific Conductance
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J.E.D. Solid Waste Management Facility

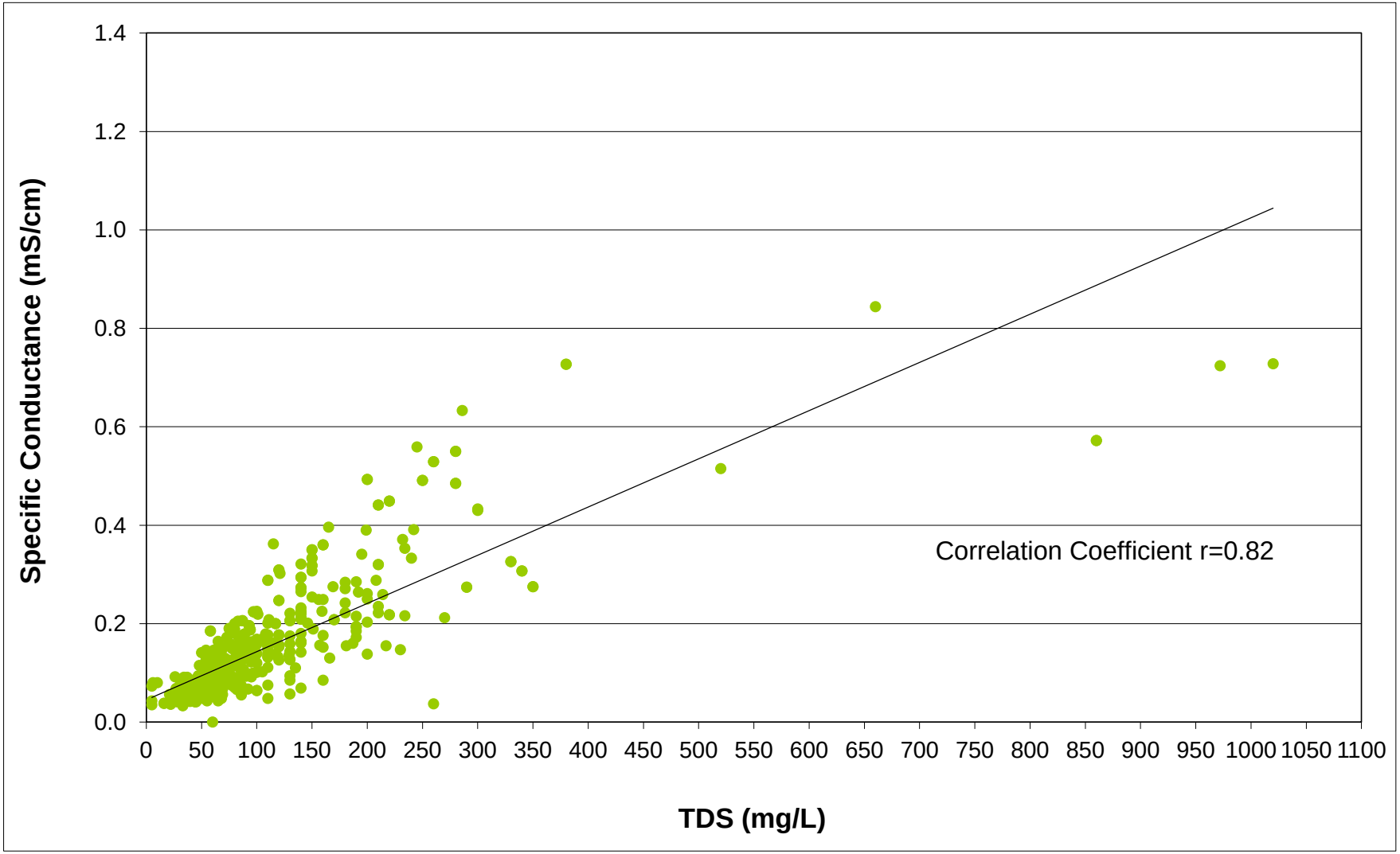

Figure 9-2
Correlation Between Iron and Arsenic
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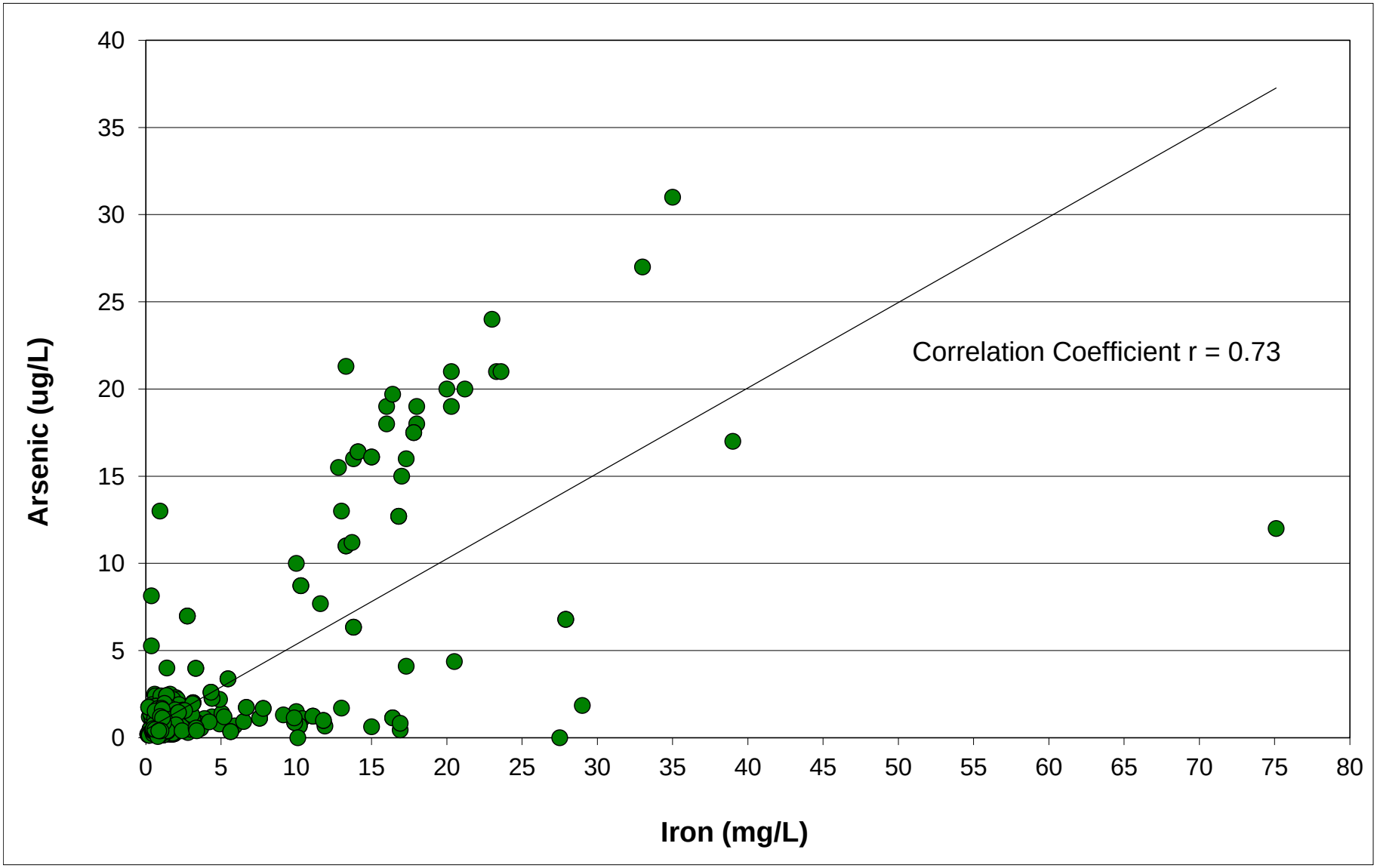

10. DISCUSSION OF ERRATIC OR POORLY CORRELATED DATA

10.1 Overview

Rule 62-701.510(9)(b)5, F.A.C. requires a discussion of erratic and/or poorly correlated data. In an effort to understand the sources of variability in sample data, a limited analysis was conducted to investigate the relationship between contaminant concentrations and sample event parameters, such as seasonal influences or turbidity. While there was some correlation of results within individual sampling events no seasonal influence was noted (i.e. samples collected in the summer were not systematically higher or lower than other seasons). A relationship was noted between turbidity and contaminant concentrations, where the turbidity levels exceeded the SDWS of 20 NTU.

Several parameters have been reported sporadically or in an erratic manner. Erratic data associated with parameters that exceeded the GCTL during any one monitoring event were reviewed in Section 6. Parameters detected above the PQL but below the GCTL are discussed below.

10.2 Detected Analytes

10.2.1 Acetone

Acetone was detected in MW-5A during the 10th semi-annual monitoring event at a concentration of 270 µg/L. This detection is below the GCTL of 700 µg/L and considered anomalous.

10.2.2 Barium

Barium was detected in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the reported concentrations ranged from 1.5 to 197 µg/L. These concentrations are considered insignificant and are below the GCTL of 2 mg/L.

10.2.3 Beryllium

Beryllium was detected in monitoring well MW-19A during the 12^{th}, 13^{th} and 14^{th} semi-annual sampling events. The highest concentration was 1.3 µg/L, which is below the GCTL of 4µg/L.

10.2.4 Cadmium

Cadmium was detected above the method detection limit (MDL) in groundwater samples from three "A" zone and two "B" zone monitoring wells and the concentrations ranged from 0.15 to 3.60 µg/L. These detections are considered insignificant and are below the GCTL of 5 µg/L.

10.2.5 Chloride

Chloride was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the concentrations ranged from 1.79 to 154 mg/L. These detections are considered insignificant and are below the GCTL of 250 mg/L.

10.2.6 Chromium

Chromium was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the concentrations were less than the GCTL of 100 µg/L.

10.2.7 Cobalt

Cobalt was detected above the MDL in multiple groundwater samples ("A" and "B" zone monitoring wells) collected this biennial reporting period and the concentrations were significantly less than the GCTL of 420 µg/L.

10.2.8 Copper

Copper was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the concentrations were significantly less than the GCTL of 1,000 µg/L.

10.2.9 Cis-1,2-Dichloroethene

Cis1,2-dichloroethene was detected above the MDL in groundwater samples collected from MW-9A, 10A and 11A. The reported concentrations ranged from 1.1 to 1.3 µg/L and are well below the GCTL of 70 µg/L.

10.2.10 Ethylbenzene

Ethylbenzene was detected above the MDL in groundwater samples collected this biennial reporting period from monitoring wells MW-1A, 4A, 9A, 19B and 16C. The reported concentrations ranged from 0.19 to 6.74 µg/L and are below the GCTL of 30 µg/L.

10.2.11 Lead

Lead was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the concentrations were less than the GCTL of 100 µg/L.

10.2.12 Nickel

Nickel was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period. The concentrations ranged from 0.2 to 79 µg/L and are below the GCTL of 100µg/L.

10.2.13 Nitrate-N

Nitrate was detected above the MDL in groundwater samples from two "A" zone monitoring wells collected during the tenth semi-annual monitoring event only. The reported concentrations were 0.22 (MW-16A) and 5.6 mg/L (MW-19A) and are below the GCTL of 10 mg/L.

10.2.14 Selenium

Selenium was detected above the MDL in groundwater samples collected from MW-6A, 7A, 9A, 11A, 16A, 19A and 23A this biennial reporting period. The reported concentrations ranged from 0.8 to 12.8 µg/L and are below the GCTL of 50 µg/L.

10.2.15 Sodium

Sodium was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the concentrations ranged from 0.97 to 58.9 mg/L. These detections are not considered significant and are below the GCTL of 160 mg/L.

10.2.16 Toluene

Toluene was detected in shallow monitoring wells MW-1A, 4A, 9A and 10A and in deep well MW-16C. The concentrations are below the GCTL of 40 µg/L and range from 1.3 to 1.8 µg/L in the shallow wells and 1.1 to 1.7 µg/L in MW-16C.

10.2.17 Vanadium

Vanadium was detected above the MDL in multiple groundwater samples ("A", "B" and "C" zone monitoring wells) collected this biennial reporting period and the concentrations ranged from 5 to 39.3 µg/L. These detections are below the GCTL of 49 µg/L.

10.2.18 Xylene

Xylene was detected above the MDL in groundwater samples collected from MW-1A, 9A and 10A. These detections may be attributable to the potential migration of landfill gas as mentioned previously in this report for benzene and vinyl chloride. The detected concentrations were below the GCTL of 20 µg/L.

10.2.19 Other Volatile Organic Compounds

In addition to the other Volatile Organic Compounds (VOCs) listed previously, several additional VOCs have been detected in several wells during the more recent monitoring events. Parameters such as: 1,4-dichlorobenzene; 1,2-dichloropropane; EDC; chlorobenzene; 2-hexanone; chloroform; methylene chloride; and MEK have been detected in several of the A-zone (shallow) monitoring wells where benzene has been detected. It is likely that the detections of these VOCs are potentially related to the migration of gas from the landfill.

11. GROUNDWATER CONTOUR MAP EVALUATION

11.1 Groundwater Level Contour Map

The depth to water in each monitoring well was measured using a water level meter. Additionally, water level measurements were recorded for site piezometers (installed during the hydro-geological investigation, but not part of the water quality monitoring network), and staff gauges located at surface water monitoring locations SW-3 and SW-4 during each monitoring event. The water level measurements were used to calculate the groundwater level elevations for each monitoring well or piezometer. The groundwater and surface water level elevation data from May 2009 through May 2011 are summarized in Table 11-1.

The groundwater level elevations for this biennial reporting period for all monitoring wells and piezometers were plotted over the monitoring period (May 2009 to May 2011). These hydrographs are shown on Figures 11-1 ("A" zone wells), Figure 11-2 ("B" zone wells), Figure 11-3 ("C" zone wells), and Figure 11-4 (piezometers). The hydrographs indicate that, while the water level elevations fluctuate, the relationship between water levels in the monitoring wells is generally consistent and the potentiometric surface has remained relatively constant throughout the period of record. During this biennial reporting period, the overall groundwater elevations recorded for the wells has decreased. The exception would be for monitoring well clusters MW-1, 2, 3, 4, 22, and 23. A borrow area was permitted on the property adjacent to the western limit of development of Phases 1 through 3 at the JED facility. Dewatering of the borrow area has created a temporary change in the ground water flow direction as shown on the recent ground water contour maps provided in Appendix C. The reduction in the water-table is noted throughout much of the biennial reporting period.

To further assess groundwater flow dynamics at the JED facility, water level elevations from the different zones ("A", "B", and "C") for selected monitoring well clusters (i.e., MW-1, MW-5, MW-9, and MW-13) installed around the perimeter of the Phases 1 through 3 development at the site, were plotted over the period from May 2009 to May 2011. These plots are presented in Figures 11-5 and 11-6. The data follows trends observed in the hydrographs presented in Figures 11-1 through 11-4. These plots provide further indication of a consistent flow system with very little change in flow direction under normal conditions.

Copies of groundwater surface maps for the tenth through fourteenth semi-annual monitoring events have been included in Appendix C. The groundwater contours indicate that a groundwater flow divide was located through the approximate center of

the landfill through the thirteenth semi-annual monitoring event (November 2010). This feature is less prominent as shown on the figure for the fourteenth semi-annual monitoring event; however the overall groundwater flow pattern is still evident. The horizontal component of groundwater flow on the east side of this divide is predominately east-northeast towards Bull Creek for all three zones, and the horizontal component on the west side of the divide is towards the west. As with the eastern wells, the deeper zones (western wells) clearly show a westward flow direction. The average horizontal hydraulic gradient in all three zones is approximately 0.0008 ft/ft. A comparison of water levels between the A, B, and C wells shows a similar vertical gradient (0.0008 ft/ft). These gradients are consistent with the regional gradient in the upper surficial aquifer which indicates an interconnected, sluggish flow regime in the saturated zone above the intermediate confining unit.

11.2 Groundwater Flow Rate Calculations

Groundwater flow rates were estimated using site-specific data. To estimate the groundwater flow rate, the average linear velocity of the groundwater unit was calculated using the following equation:

$$\bar{v} = \frac{Ki}{n}$$

where:

$\bar{v}$ = average linear groundwater velocity
K = hydraulic conductivity
i = hydraulic gradient
n = effective porosity (assumed)

The average hydraulic gradient was obtained from the water level maps measured for the twelve semi-annual monitoring events, and an effective porosity of 0.30 was estimated for the soil types found in the shallow aquifer (Freeze and Cherry, 1979). The hydraulic conductivity value was obtained from the slug tests that were reported in "Hydrogeologic Investigation Report and Water Quality Monitoring Plan" submitted to FDEP in April 2002. The average hydraulic conductivity for the upper surficial aquifer "A" and "C" zones was calculated to be approximately 5.83 feet per day. The resultant estimated average annual flow velocity for groundwater flowing north and northeast from the landfill was 5.67 ft/yr.

Table 11-1 (1 of 2)
Groundwater Elevation Measurements
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Well ID	10th Event May-09 (ft, NGVD)	11th Event Nov-09 (ft, NGVD)	12th Event May-10 (ft, NGVD)	13th Event Nov-10 (ft, NGVD)	14th Event May-11 (ft, NGVD)
MW-1A	75.06	74.85	76.78	76.72	76.34
MW-2A	77.34	75.74	76.93	76.43	75.13
MW-3A	78.61	76.61	77.07	76.24	73.43
MW-4A	79.02	77.41	77.65	76.36	dry
MW-5A	79.21	78.33	79.14	77.35	74.95
MW-6A	78.57	77.35	77.91	76.71	75.09
MW-7A	79.46	77.90	77.61	76.83	75.66
MW-8A	79.74	78.11	77.72	76.87	75.92
MW-9A	79.62	78.18	77.71	76.90	76.05
MW-10A	78.80	77.61	77.67	76.90	76.04
MW-11A	78.26	77.28	77.46	76.65	76.05
MW-12A	78.15	77.52	77.69	76.85	76.24
MW-13A	77.74	77.80	78.01	77.02	76.39
MW-14A	Monitoring Well Abandoned 10 July 2007				
MW-15A	Monitoring Well Abandoned 10 July 2007				
MW-16A	78.87	79.58	80.44	78.17	76.47
MW-17A	79.61	79.55	79.82	77.05	76.03
MW-18A	79.58	77.69	78.09	76.98	77.29
MW-19A	79.93	77.79	78.19	77.20	76.81
MW-20A	80.22	78.47	78.58	77.62	77.20
MW-21A	79.89	77.92	78.43	77.77	77.66
MW-22A	76.65	76.79	78.13	77.84	77.90
MW-23A	71.67	74.07	76.43	77.33	77.60
MW-1B	75.03	74.83	76.76	76.73	76.35
MW-2B	77.31	75.72	76.92	76.42	75.14
MW-3B	78.60	76.63	77.08	76.26	73.44
MW-4B	79.00	77.37	77.58	76.35	71.59
MW-5B	78.79	77.79	78.30	76.72	73.76
MW-6B	78.57	77.38	77.92	76.72	75.09
MW-7B	79.39	77.89	77.62	76.83	75.66
MW-8B	79.67	78.05	77.67	76.85	75.91
MW-9B	79.51	78.06	77.67	76.87	76.02
MW-10B	78.86	77.57	77.64	76.86	76.00
MW-11B	78.26	77.21	77.36	76.61	75.98
MW-12B	78.07	77.36	77.57	76.75	76.15
MW-13B	77.76	77.78	78.01	77.02	76.39
MW-14B	Monitoring Well Abandoned 10 July 2007				
MW-15B	Monitoring Well Abandoned 10 July 2007				
MW-16B	78.82	78.74	79.17	77.14	76.42
MW-17B	79.38	79.06	79.30	76.84	76.00
MW-18B	79.55	77.64	78.00	76.95	76.28
MW-19B	79.94	77.81	78.19	77.22	76.82
MW-20B	80.14	78.28	78.51	77.57	77.18
MW-21B	79.86	77.91	78.40	77.78	77.69
MW-22B	76.59	76.74	78.09	77.91	78.01
MW-23B	71.71	74.08	76.46	77.34	77.60
MW-1C	75.10	74.85	76.74	76.72	76.30
MW-2C	77.22	75.74	76.88	76.41	75.07
MW-3C	78.41	76.58	76.98	76.25	73.43
MW-4C	78.75	77.30	77.32	76.39	72.23
MW-5C	78.58	77.44	77.66	76.57	73.84
MW-6C	78.54	77.22	77.63	76.58	74.95
MW-7C	78.87	77.55	77.58	76.73	75.50
MW-8C	79.25	77.73	77.48	76.72	75.79
MW-9C	78.96	77.58	77.51	76.67	75.86
MW-10C	78.47	77.34	77.50	76.71	75.88
MW-11C	78.24	77.18	77.34	76.60	75.97
MW-12C	78.05	77.34	77.52	76.71	76.12
MW-13C	77.79	77.70	77.95	76.95	76.34
MW-14C	Monitoring Well Abandoned 10 July 2007				
MW-15C	Monitoring Well Abandoned 10 July 2007				
MW-16C	78.60	78.41	78.77	77.01	76.35
MW-17C	79.23	78.72	79.00	76.77	75.97
MW-18C	79.56	77.64	78.01	76.91	76.26
MW-19C	79.83	77.76	78.11	77.16	76.75
MW-20C	79.85	78.15	78.32	77.51	77.13
MW-21C	79.66	77.89	78.39	77.79	77.66
MW-22C	77.14	76.77	77.88	77.48	77.24
MW-23C	71.77	74.06	76.44	77.31	77.56

Notes:
NGVD = National Geodetic Vertical Datum of 1929

Table 11-1 (2 of 2)
Groundwater Elevation Measurements
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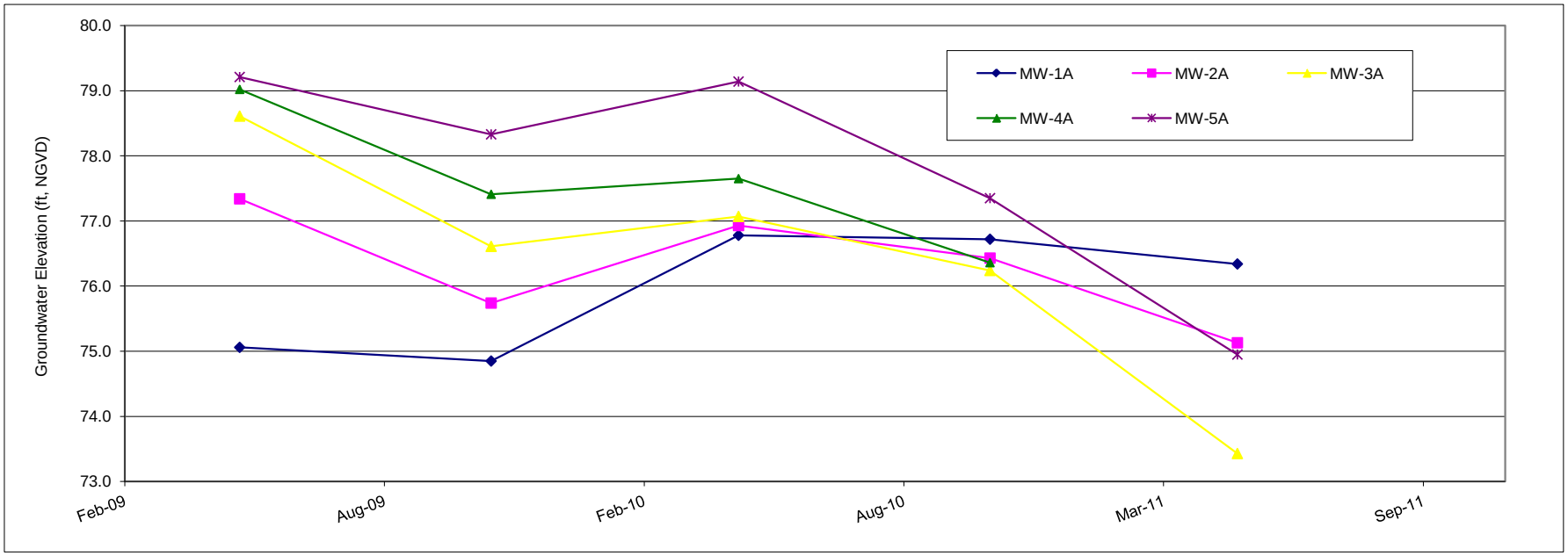
Well ID	10th Event May-09 (ft, NGVD)	11th Event Nov-09 (ft, NGVD)	12th Event May-10 (ft, NGVD)	13th Event Nov-10 (ft, NGVD)	14th Event May-11 (ft, NGVD)
DP-1	Pizometer Abandoned October 3, 2003				
DP-2	Pizometer Abandoned October 3, 2003				
DP-3	Piezometer Abandoned January 16, 2006				
DP-4	Piezometer Abandoned January 16, 2006				
DP-5	Piezometer Abandoned July 10, 2007				
DP-6	Piezometer Abandoned July 10, 2007				
DP-7	Piezometer Abandoned July 10, 2007				
DP-8	Piezometer Abandoned July 10, 2007				
DP-9	Piezometer Abandoned July 10, 2007				
DP-10	Piezometer Abandoned July 10, 2007				
DP-11	Piezometer Abandoned July 10, 2007				
DP-12	Piezometer Abandoned July 10, 2007				
DP-13	Piezometer Abandoned July 10, 2007				
DP-14	78.90	76.15	76.57	75.74	75.38
DP-15	78.76	76.20	76.66	75.76	75.36
DP-16	79.41	77.09	77.34	76.58	76.23
DP-17	79.38	77.06	77.31	76.54	76.18
DP-18	79.18	78.11	78.61	78.01	77.89
DP-19	79.27	78.12	78.64	78.04	77.92
DP-20	80.17	79.15	77.45	77.18	76.76
DP-21	79.94	78.75	77.58	77.16	76.79
DP-22	78.32	75.50	75.93	75.24	75.31
DP-23	78.61	76.12	76.63	75.80	75.65
DP-24	79.22	76.77	76.88	75.80	76.08
SZ-1	Piezometer Abandoned July 10, 2007				
SZ-2	77.74	76.59	77.21	76.49	76.05
SZ-3	77.51	75.87	76.47	75.65	75.23

Notes:
NGVD = National Geodetic Vertical Datum of 1929

Figure 11-1 (1 of 2)
Hydrograph of "A" Groundwater Zone (Shallow) Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility



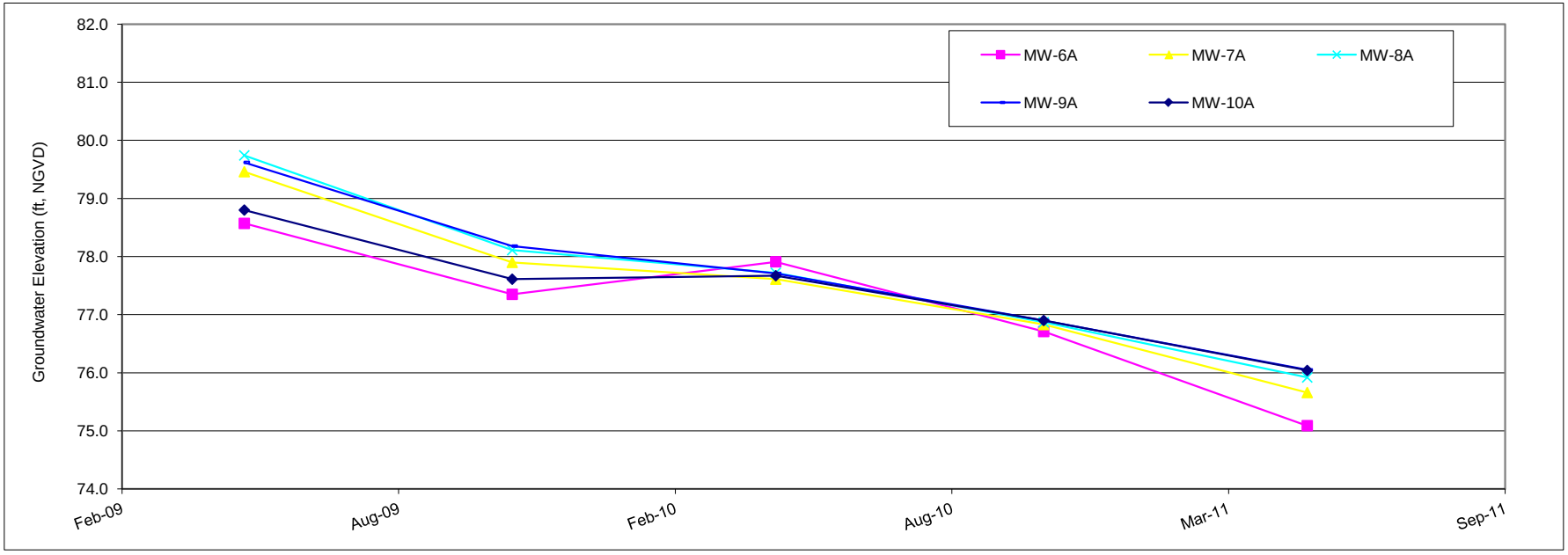


Figure 11-1 (2 of 2)
Hydrograph of "A" Groundwater Zone (Shallow) Monitoring Wells
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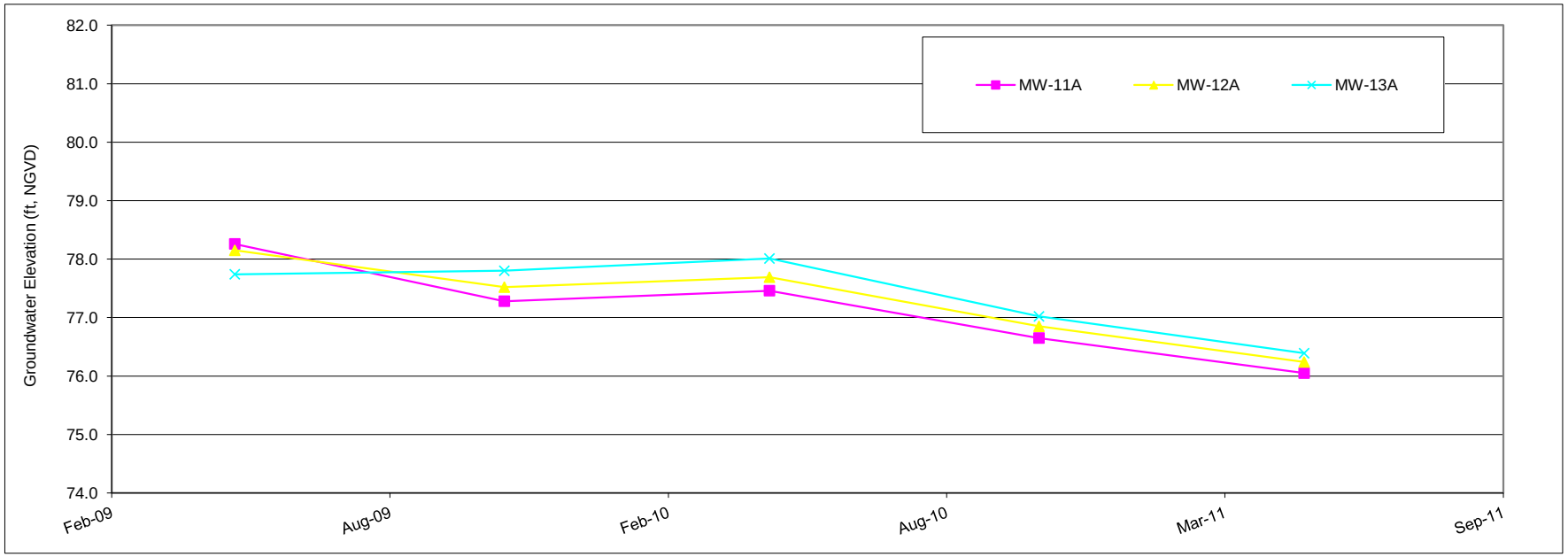

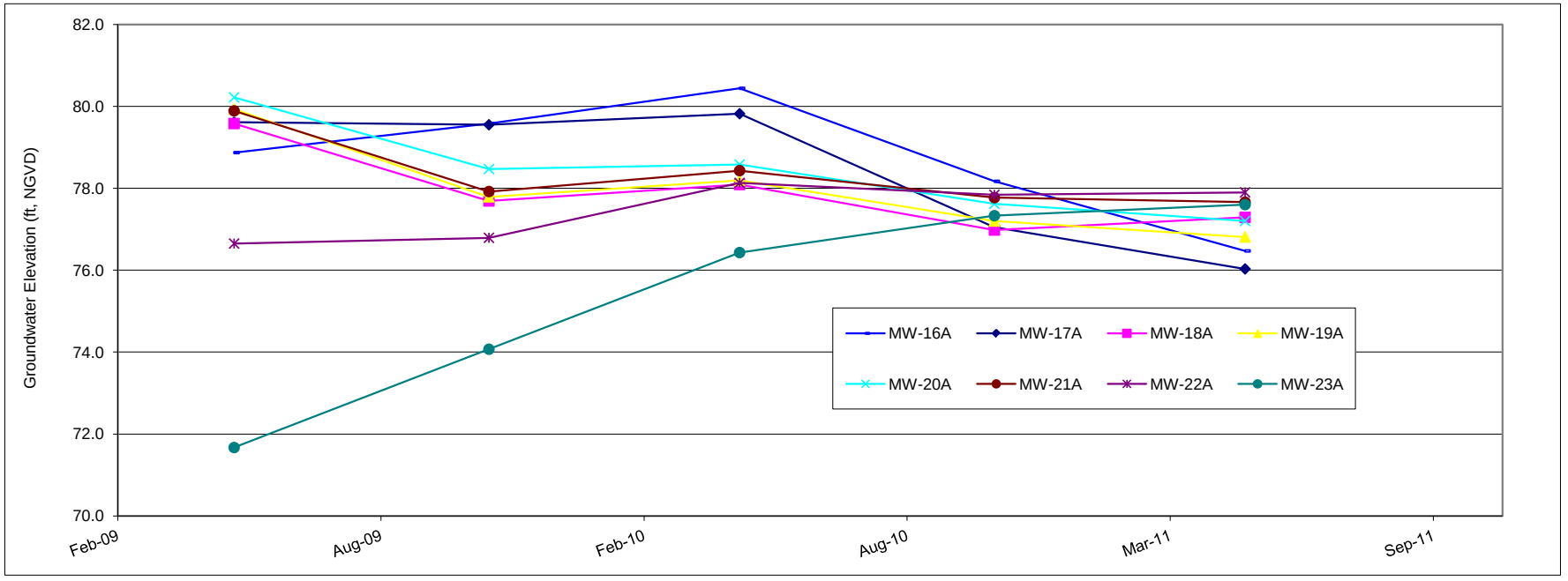

Figure 11-2 (1 of 2)
Hydrograph of "B" Groundwater Zone (Intermediate) Monitoring Wells
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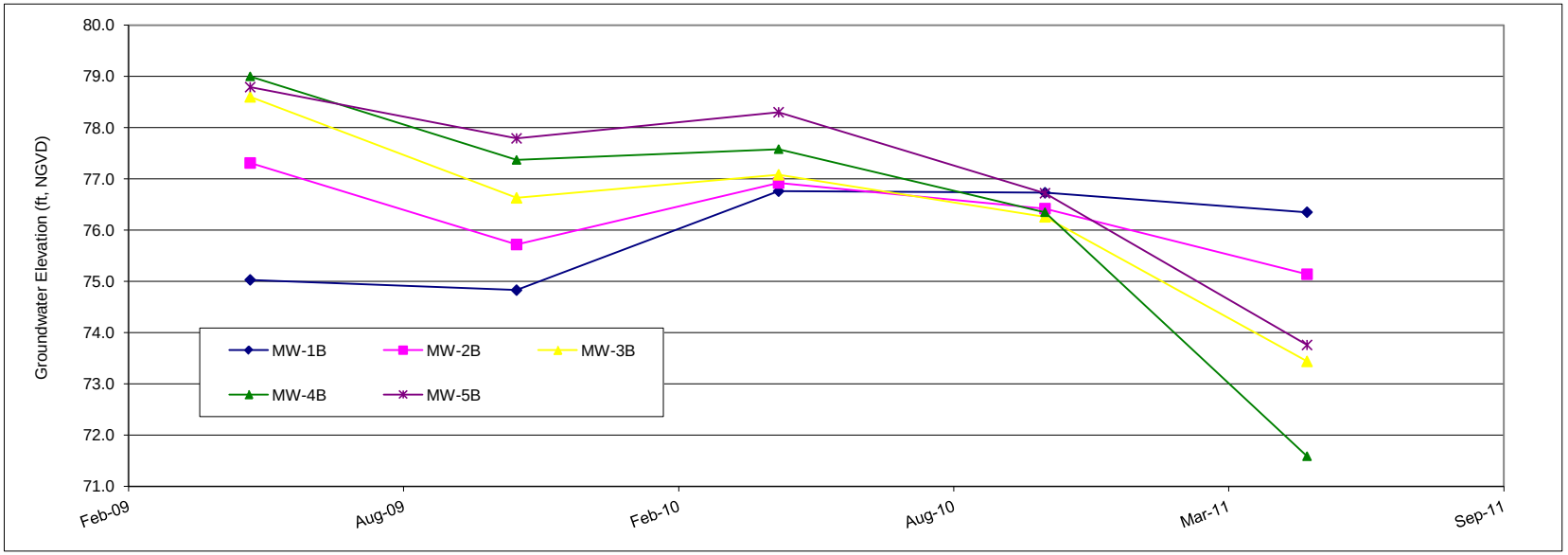

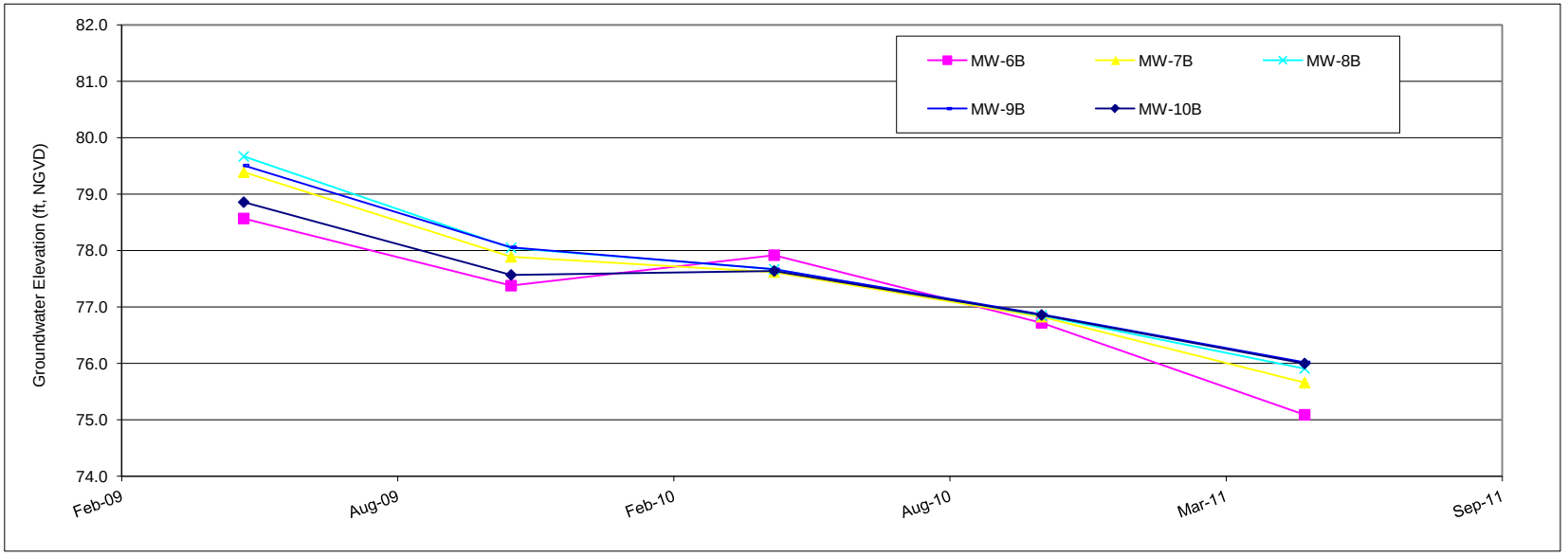

Figure 11-2 (2 of 2)
Hydrograph of "B" Groundwater Zone (Intermediate) Monitoring Wells
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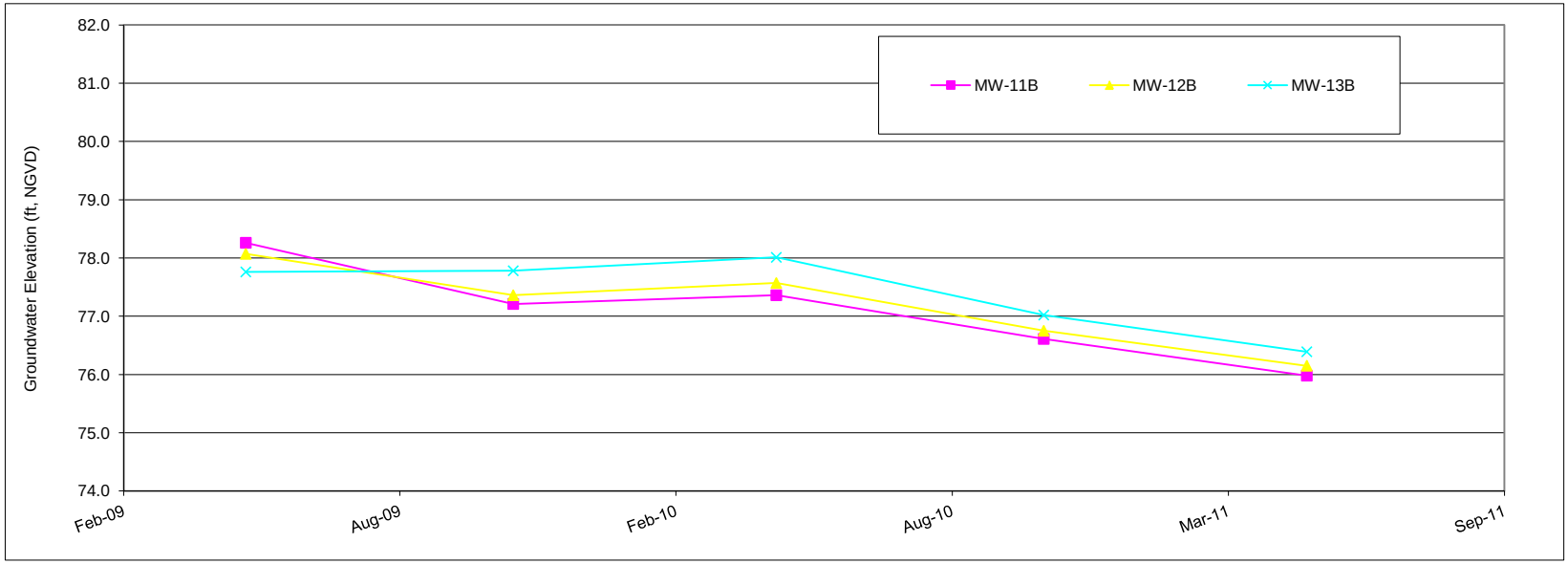

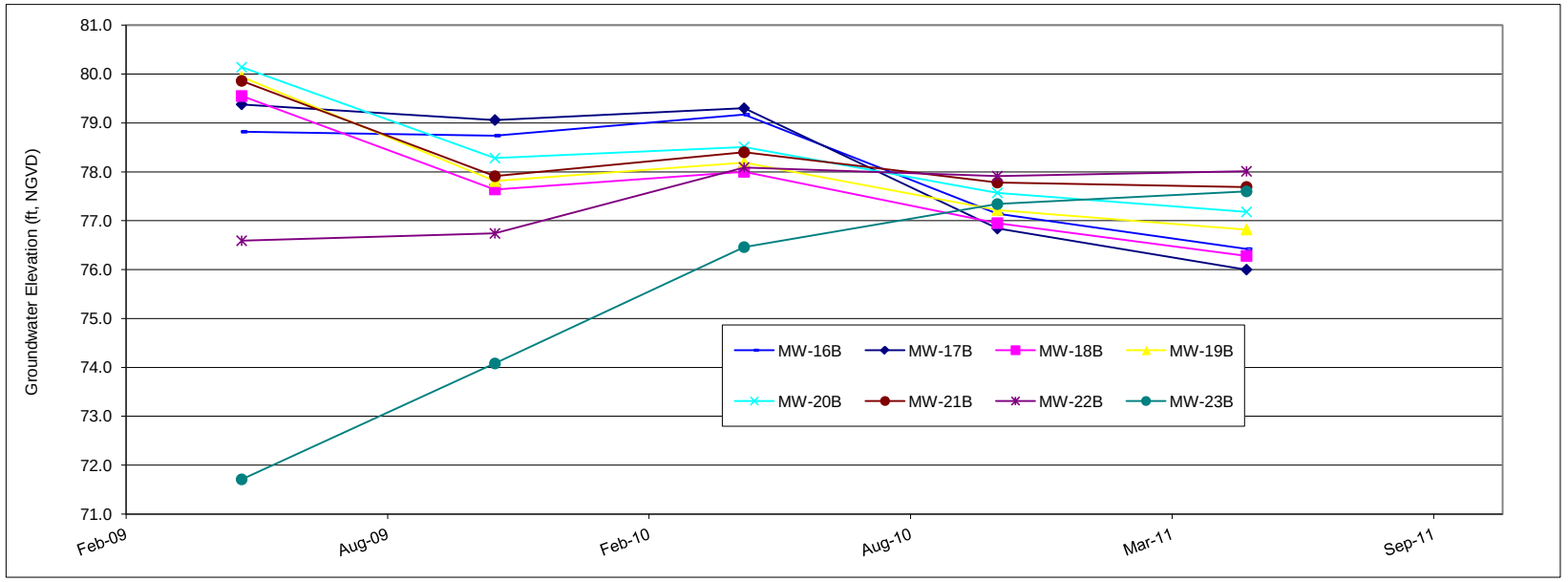

Figure 11-3 (1 of 2)
Hydrograph of "C" Groundwater Zone (Deep) Monitoring Wells
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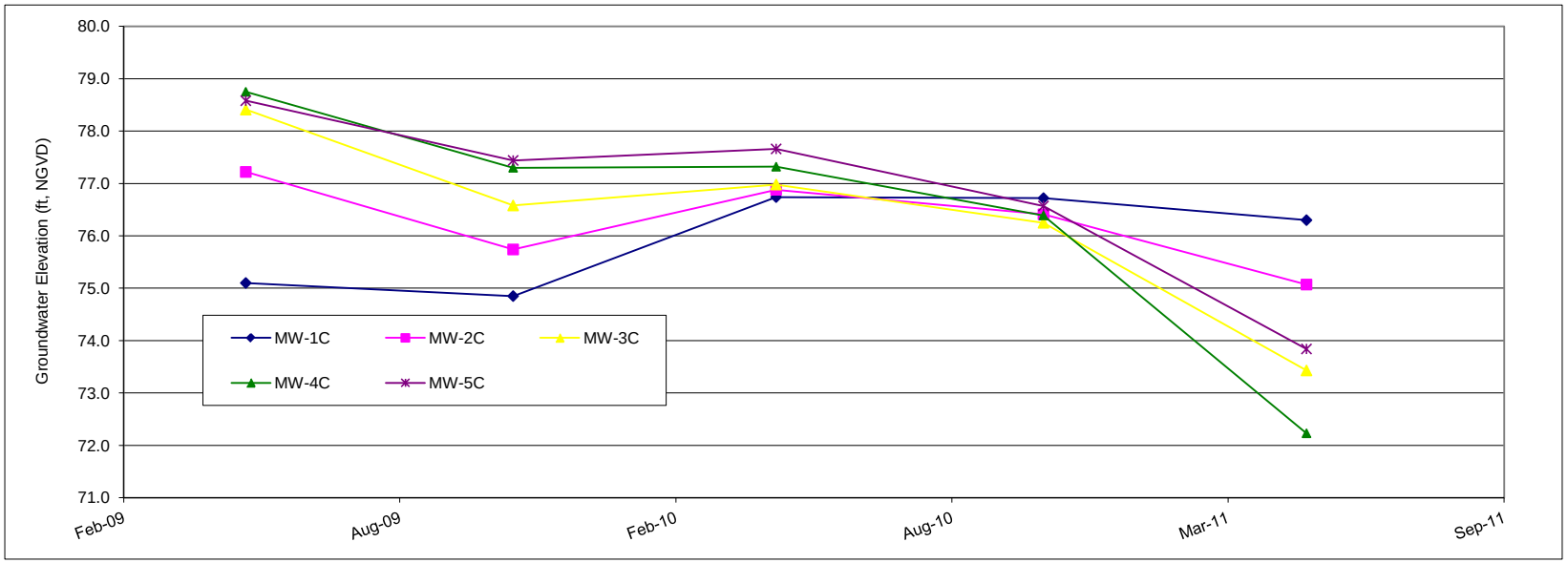

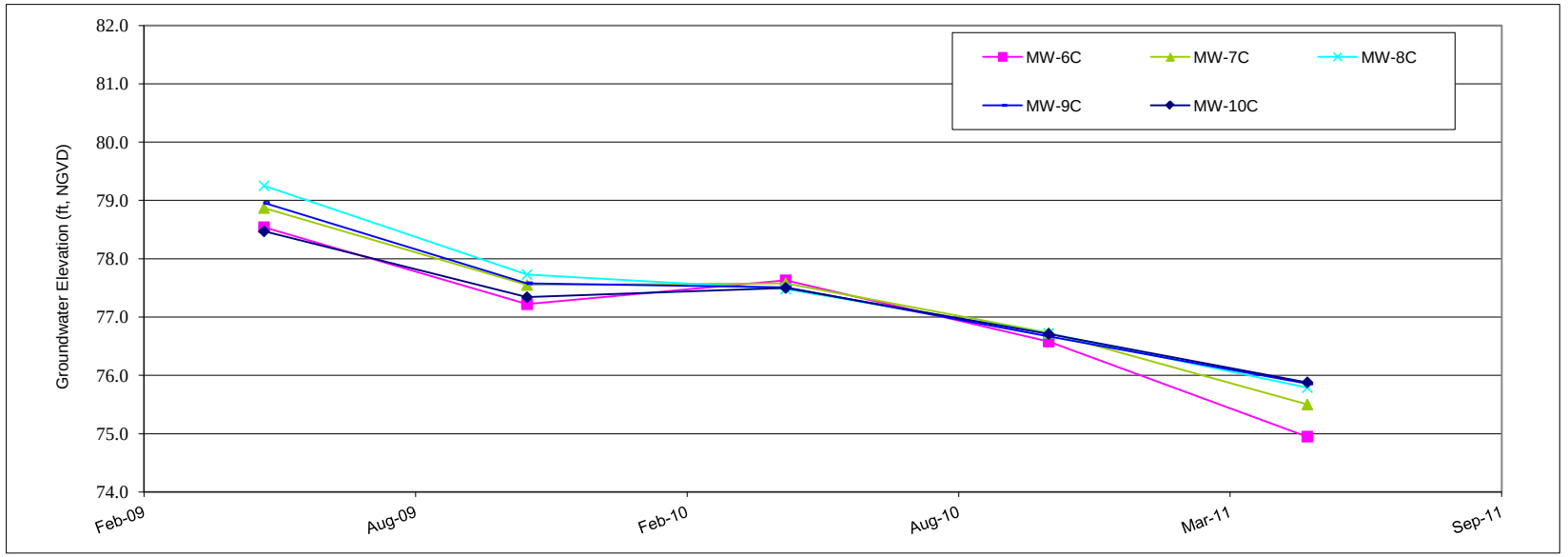

Figure 11-3 (2 of 2)
Hydrograph of "C" Groundwater Zone (Deep) Monitoring Wells
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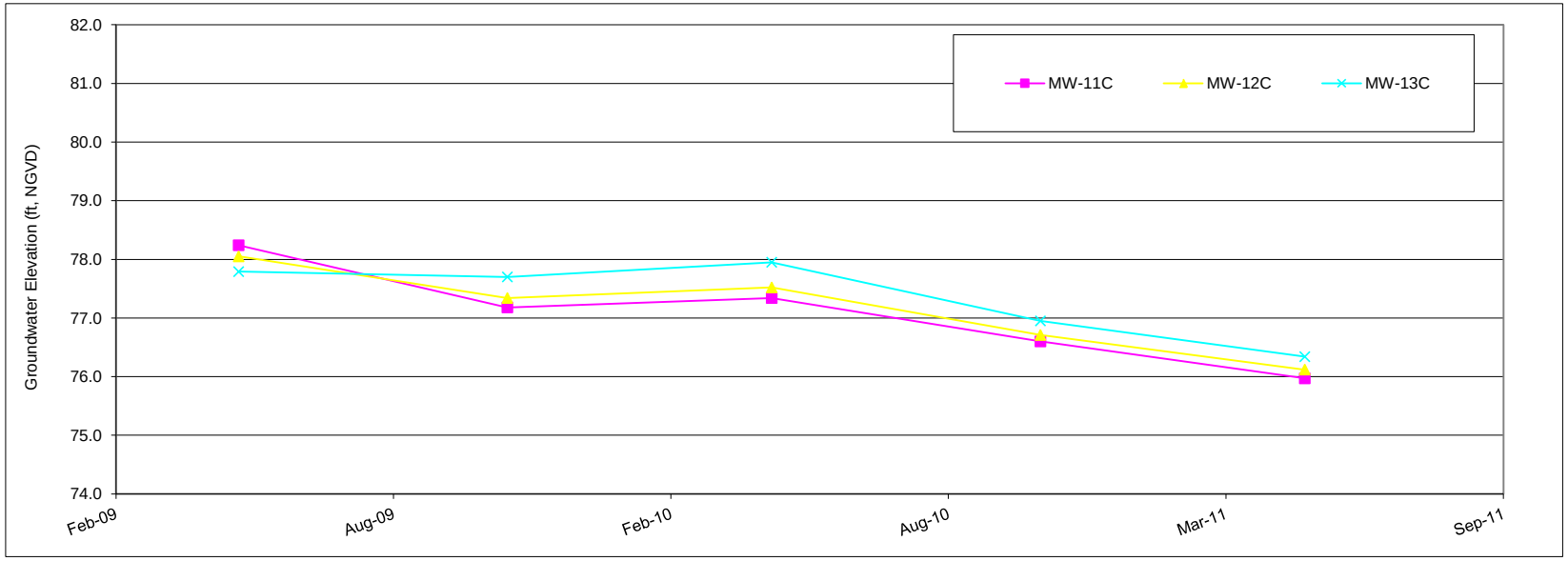

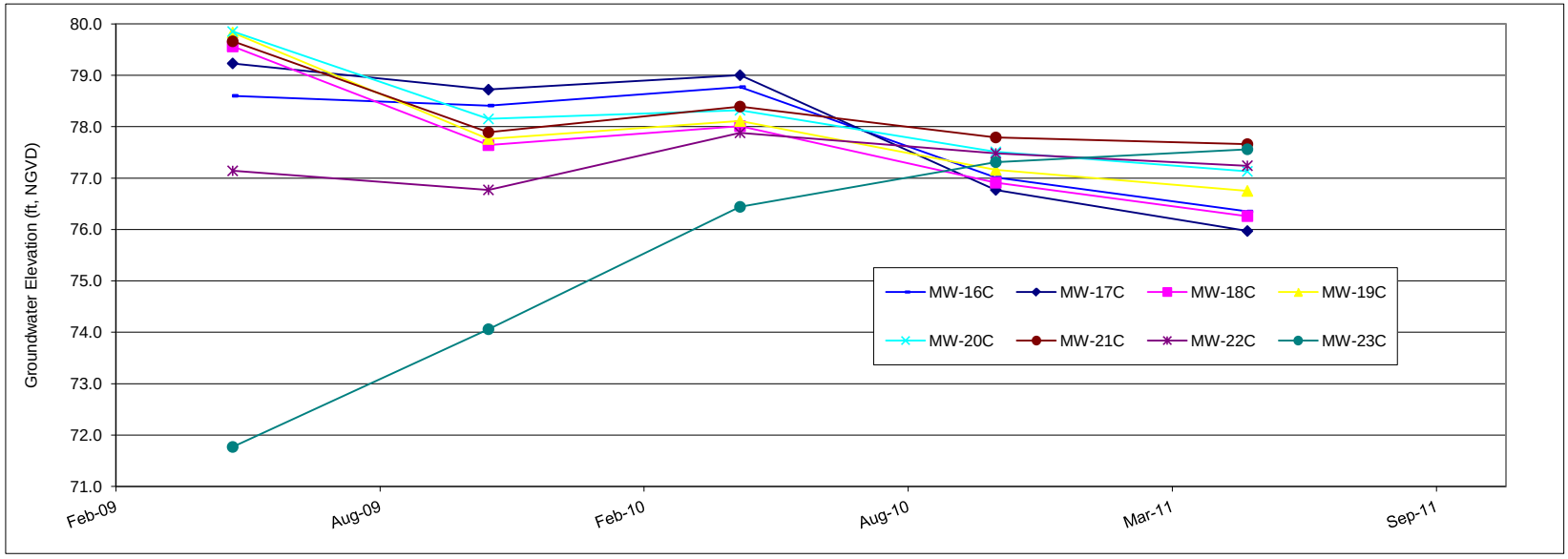

Figure 11-4
Hydrograph for Piezometers
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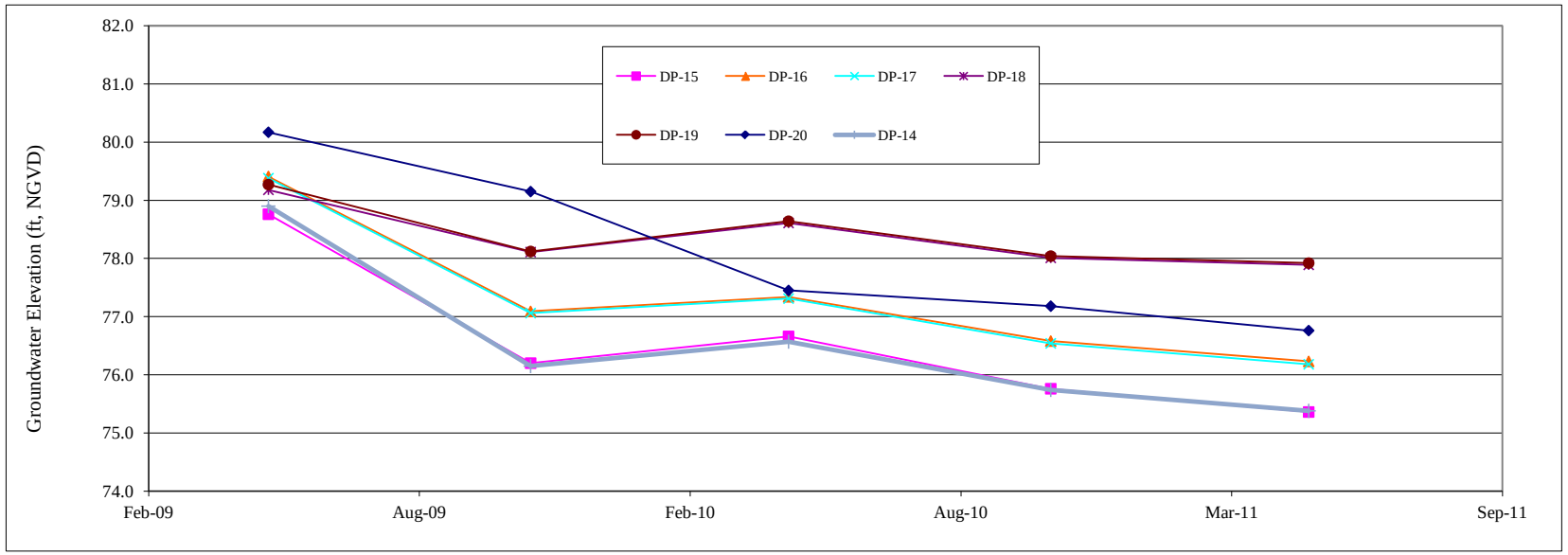

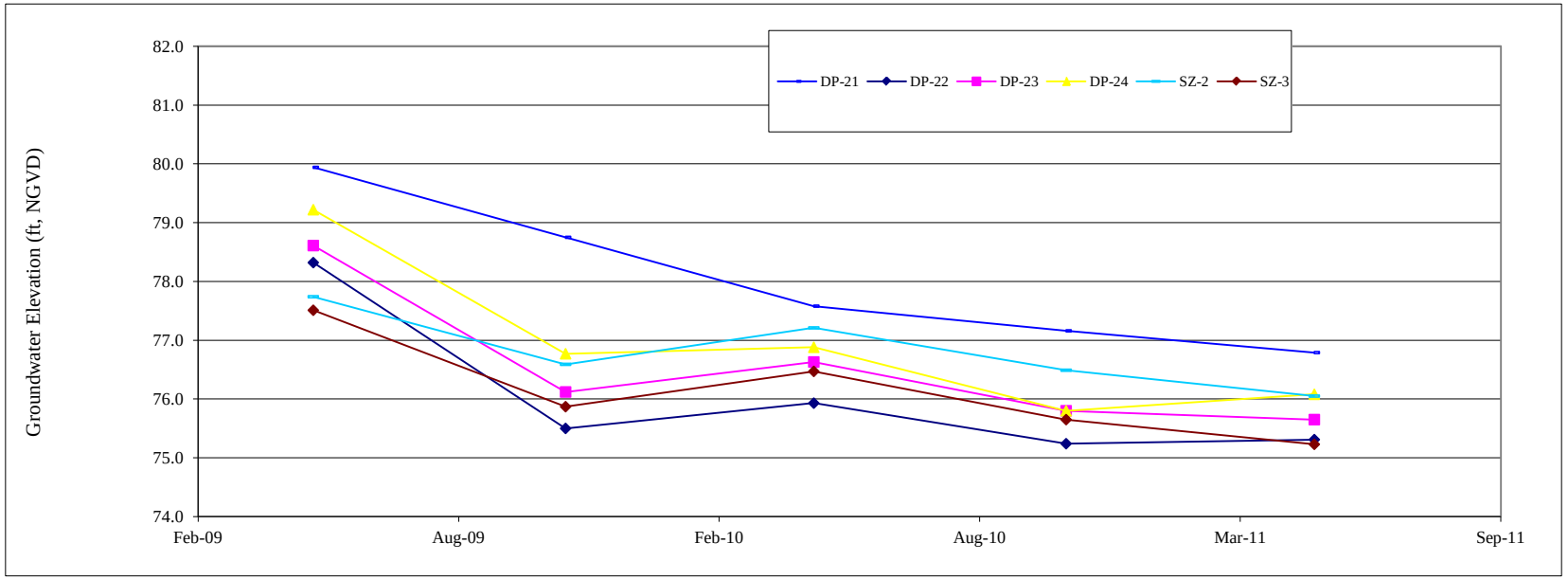

Figure 11-5
Hydrograph of Upgradient Wells (MW-1 and MW-5)
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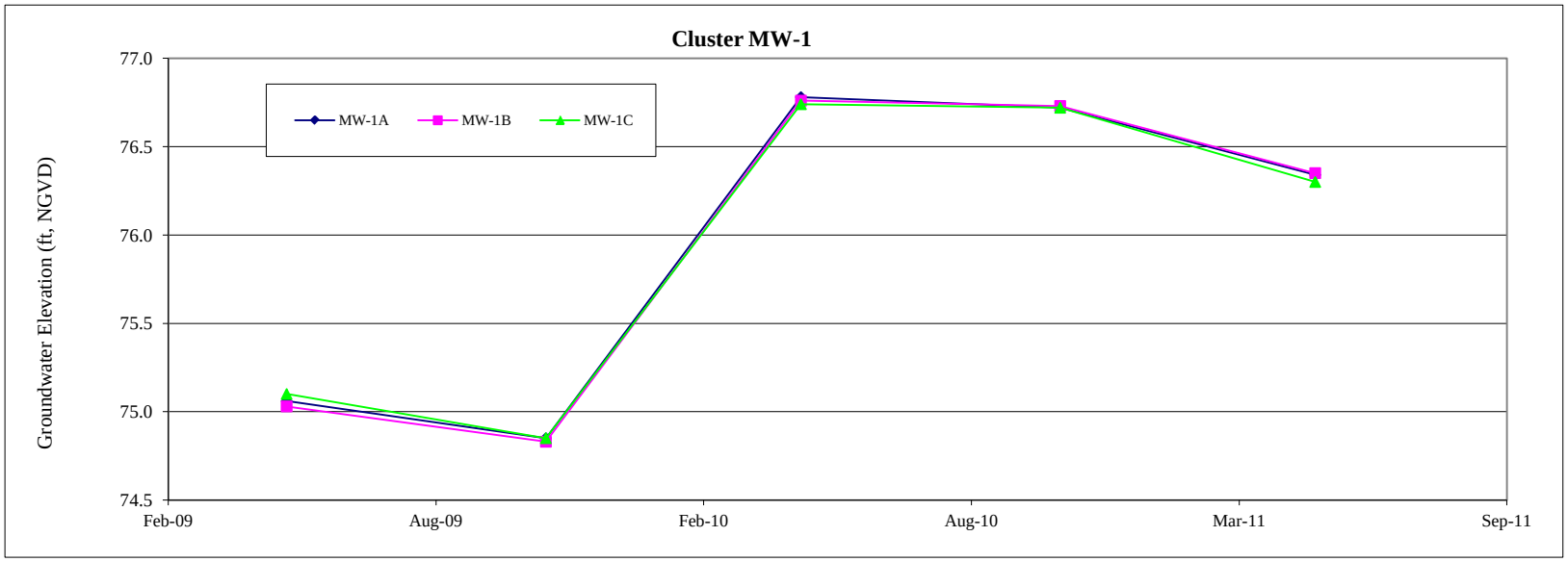
J.E.D. Solid Waste Management Facility



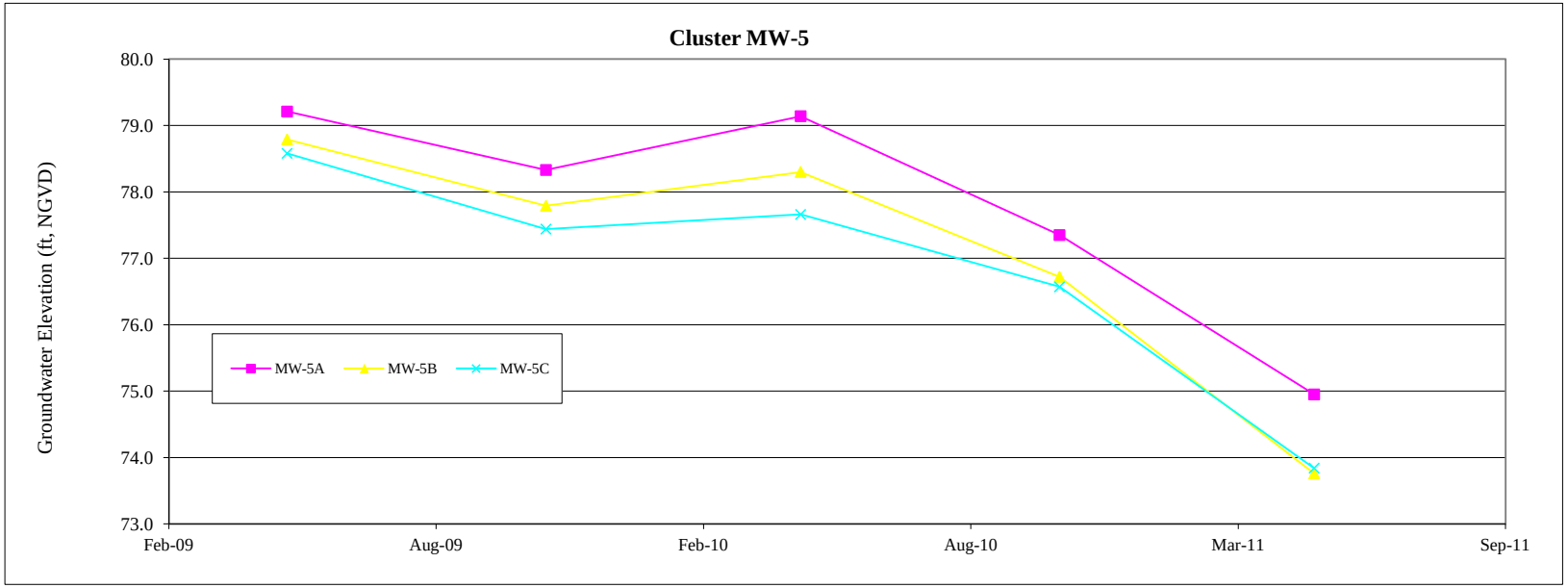
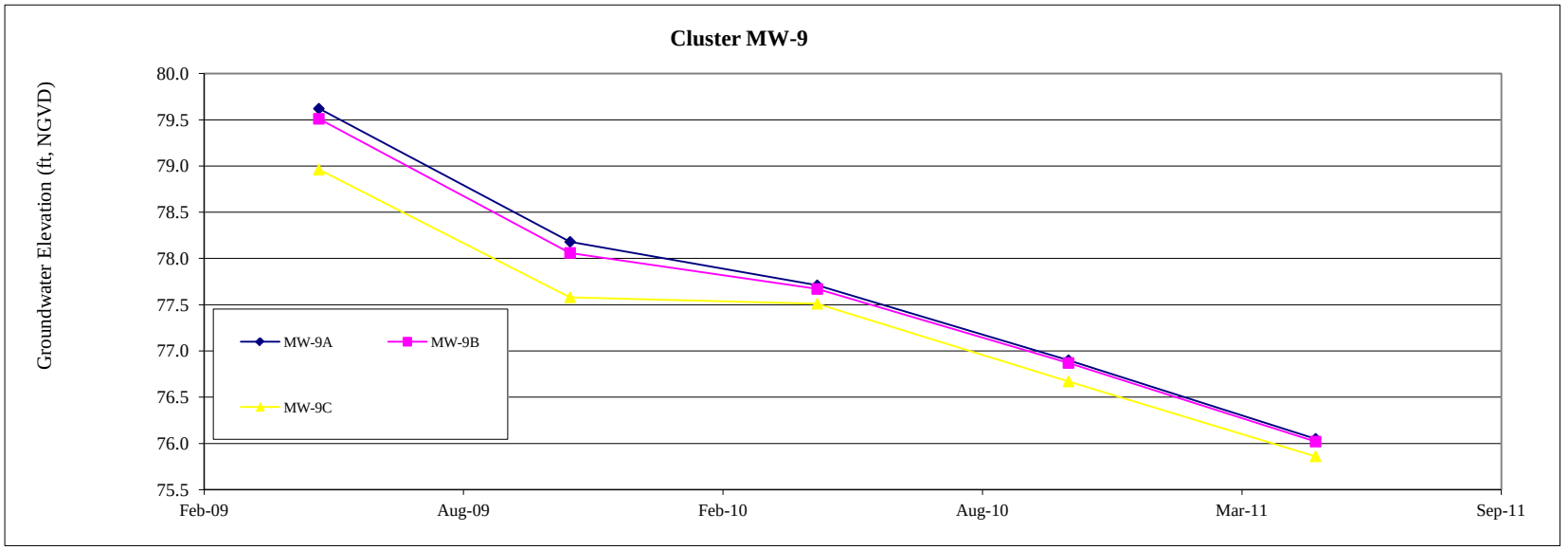
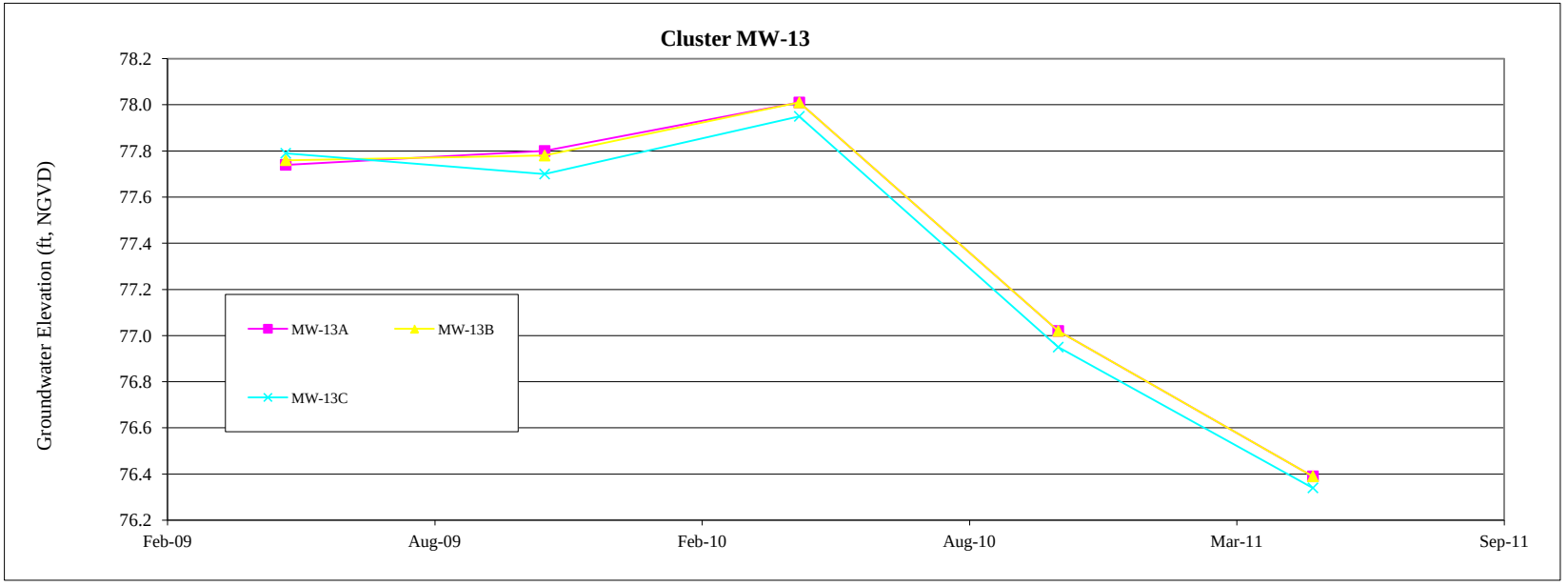


Figure 11-6
Hydrograph of Downgradient Wells (MW-9 and MW-13)
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility





12. EVALUATION OF ADEQUACY OF MONITORING FREQUENCY AND SAMPLING LOCATIONS

For the Phase 1 development, forty five (45) groundwater monitoring wells were installed in fifteen (15) clusters (MW-1 through MW-15) around the perimeter of the Phase 1 development area. For development of Phases 2 and 3, twenty four (24) additional groundwater monitoring wells were installed in eight (8) clusters (MW-16 through MW-23) around the perimeter of the Phases 2 and 3 development areas. Monitoring well clusters were located such that a well cluster was installed adjacent to each cell sump area and between cell sump areas, so that the spacing between well clusters was no greater than 500 ft for detection wells and 800 ft for background wells, in accordance with the FDEP permit requirements. As part of Phases 2 and 3 development, and as approved by FDEP, six (6) existing Phase 1 monitoring wells (MW-14 A, B, and C, and MW-15 A, B, and C), and ten (10) piezometers were decommissioned. The wells and piezometers were decommissioned for construction of future cells, construction of a storm water retention basin located within Phases 2 and 3, and due to the proximity of piezometers to the new network wells installed.

Vertically, three (3) groundwater monitoring wells were installed to monitor: (i) the upper limit of the surficial aquifer below the ground surface identified as A-zone (shallow) wells; (ii) the lower limit of the upper surficial aquifer above the intermediate clay layer identified as C-zone (deep) wells; and (iii) an intermediate depth between the shallow and deep wells identified as B-zone (intermediate) wells. Of the twenty one (21) monitoring well clusters, eight (8) are classified as background wells (clusters MW-1, 2, 3, 4, 5, 6, 22 and 23), thirteen (13) are classified as detection wells (clusters MW-7 through MW-13 and MW-16 through MW-21).

Currently, the A-zone (shallow) monitoring wells in clusters MW-1 through MW-13, 16, 19, and 23 are sampled on a semi-annual basis. The A-zone, B-zone (intermediate) and C-zone (deep) wells at cluster MW-16 are also sampled on a semi-annual basis. The B-zone monitoring wells at the clusters listed above are sampled annually during the May semi-annual monitoring events and the corresponding C-zone monitoring wells are sampled annually during the November semi-annual monitoring events. This monitoring well network encompasses the Phase 1 and 2 development areas where waste placement has commenced and is adequate for monitoring of the groundwater at the JED facility.

The semi-annual monitoring frequency is considered to be adequate for the JED facility. Groundwater flow rates are on the order of 10 feet per year at a maximum (Section 11) due to the lack of a driving hydraulic head. From a purely technical standpoint, a much

longer monitoring frequency could be justified; however, a semi-annual monitoring frequency will be more than sufficient to provide maximum detection efficiency at the site.

Based on the hydrographs for this biennial reporting period, the groundwater elevations are decreasing for many of the wells within the network. The shallow or "A" zone wells were constructed with two feet of the well screen extending up into the landfill perimeter berm (i.e., approximately 2-ft above the original ground surface elevation). With decreasing groundwater elevations being observed, a longer length of the well screens is located within the unsaturated zone creating a potential pathway for gas migration into the shallow monitoring wells. The groundwater elevations will continue to be monitored, and it may be advised to lower the screened interval in the shallow groundwater monitoring wells at some point. In any case, the wells would still be required to meet the requirements of the current rules, which states that the well screens are to be positioned such that the water table can be monitored at all times.

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APPENDIX A

CD CONTAINING LABORATORY REPORTS FOR
10^{TH} – 14^{TH} SEMI-ANNUAL MONITORING EVENTS

APPENDIX B

TABLES SHOWING DETECTED PARAMETERS WITH NO REGULATORY LEVELS EXCEEDED

Table B-1
Acetone Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-2A	B	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-3A	B	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-4A	B	2.4	U	2.4	U	5.6	U	5.6	U	NA	
MW-5A	B	270		2.4	U	5.6	U	5.6	U	NA	
MW-6A	B	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-7A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-8A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-9A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-10A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-11A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-12A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-13A	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	2.4	U	2.4	U	5.6	U	13.4	I	5.6	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	2.4	U	2.4	U	5.6	U	22.4	U	28.0	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		5.6	U	NA		NA	
MW-23A	B	2.4	U	2.4	U	5.6	U	11.2	U	11.2	U
MW-1B	B	2.4	U	NA		5.6	U	NA		5.6	U
MW-2B	B	2.4	U	NA		5.6	U	NA		5.6	U
MW-3B	B	2.4	U	NA		5.6	U	NA		5.6	U
MW-4B	B	2.4	U	NA		6	I	NA		5.6	U
MW-5B	B	2.4	U	NA		5.6	U	NA		5.6	U
MW-6B	B	2.4	U	NA		5.6	U	NA		5.6	U
MW-7B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-8B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-9B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-10B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-11B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-12B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-13B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-17B	D	2.4	U	NA		5.6	U	NA		NA	
MW-18B	D	2.4	U	NA		5.6	U	NA		NA	
MW-19B	D	2.4	U	NA		5.6	U	NA		5.6	U
MW-20B	D	2.4	U	NA		5.6	U	NA		NA	
MW-21B	D	2.4	U	NA		5.6	U	NA		NA	
MW-22B	B	2.4	U	NA		5.6	U	NA		NA	
MW-23B	B	2.4	U	NA		5.6	U	NA		5.6	U
MW-1C	B	NA		2.4	U	NA		5.6	U	NA	
MW-2C	B	NA		2.4	U	NA		5.6	U	NA	
MW-3C	B	NA		2.4	U	NA		5.6	U	NA	
MW-4C	B	NA		2.4	U	NA		5.6	U	NA	
MW-5C	B	NA		2.4	U	NA		5.6	U	NA	
MW-6C	B	NA		2.4	U	NA		5.6	U	NA	
MW-7C	D	NA		2.4	U	NA		5.6	U	NA	
MW-8C	D	NA		2.4	U	NA		5.6	U	NA	
MW-9C	D	NA		2.4	U	NA		5.6	U	NA	
MW-10C	D	NA		2.4	U	NA		5.6	U	NA	
MW-11C	D	NA		2.4	U	NA		5.6	U	NA	
MW-12C	D	NA		2.4	U	NA		5.6	U	NA	
MW-13C	D	NA		2.4	U	NA		5.6	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	2.4	U	2.4	U	5.6	U	5.6	U	5.6	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		2.4	U	NA		5.6	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		2.4	U	NA		5.6	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-2
Barium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	10.1		9.7		14.6		13.2		15.2	
MW-2A	B	46		31.9		15.7		23.5		30.8	
MW-3A	B	45.8		65.6		42.9		46.7		12.7	
MW-4A	B	51.8		25.2		18.6		17.1		NA	
MW-5A	B	3.7		2	U	1.8	U	11.6		NA	
MW-6A	B	56.9		14.8		11.0		16.7		20.8	
MW-7A	D	66.5		15.4		11.8		13.4		11.9	
MW-8A	D	28.1		49.3		41.4		43.3		36.9	
MW-9A	D	9.7		2.4	U	2.9		3.8		4.5	
MW-10A	D	2.4		4		3.1		1.53		3.7	
MW-11A	D	9		25.5		26.4		18.8		11.3	
MW-12A	D	10.4		12		13.4		16.5		15.4	
MW-13A	D	9.7		8.1		8.2		8.7		8.8	
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	14.3		12.3		12.6		15.0		10.1	
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	33		29.4		38.0		34.4		37.5	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	54.8		24		16.4		8.4		11.0	
MW-1B	B	4.6		NA		4.4	U	NA		8.3	
MW-2B	B	10.1		NA		11.1		NA		15.6	
MW-3B	B	28.5		NA		15.1		NA		16.6	
MW-4B	B	66.3		NA		132.0		NA		21.1	
MW-5B	B	9.7		NA		23.0	U	NA		28.6	
MW-6B	B	95.9		NA		19.5		NA		20.4	
MW-7B	D	197		NA		46.4		NA		58.1	
MW-8B	D	42.7		NA		39.8		NA		32.4	
MW-9B	D	29.5		NA		50.6		NA		94.5	
MW-10B	D	15.4		NA		40.1		NA		71.1	
MW-11B	D	20.2		NA		18.3		NA		16.8	
MW-12B	D	33		NA		32.0		NA		32.3	
MW-13B	D	15.8		NA		14.5	U	NA		16.6	
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	31.8		33.7		23		18.9		14.2	
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	37.1		NA		33.8		NA		29.4	
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	10.5		NA		9.4		NA		8.9	
MW-1C	B	NA		13.1		NA		11.1		NA	
MW-2C	B	NA		12.2		NA		11.4		NA	
MW-3C	B	NA		11.5		NA		9.1		NA	
MW-4C	B	NA		8.4		NA		13.5		NA	
MW-5C	B	NA		21.7		NA		19.3		NA	
MW-6C	B	NA		21		NA		25.0		NA	
MW-7C	D	NA		26		NA		26.5		NA	
MW-8C	D	NA		13.9		NA		15.4		NA	
MW-9C	D	NA		45.7		NA		32.3		NA	
MW-10C	D	NA		21.4		NA		20.5		NA	
MW-11C	D	NA		13.5		NA		10.6		NA	
MW-12C	D	NA		17		NA		17.6		NA	
MW-13C	D	NA		18.5	U	NA		19.6		NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	31.8		23.6		17.9		15.3		15.3	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		52.6		NA		49.9		NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		9.9		NA		9.4		NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-3
Beryllium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.2	U	0.2	U	0.3	U	0.2	U	0.4	I
MW-2A	B	0.2	U	0.2	U	0.3	U	0.2	U	0.5	I
MW-3A	B	0.2	U	0.2	U	0.3	U	0.2	U	0.3	I
MW-4A	B	0.2	U	0.2	U	0.3	U	0.2	U	NA	
MW-5A	B	0.2	U	0.2	U	0.3	U	0.2	U	NA	
MW-6A	B	0.2	U	0.2	U	0.3	U	0.2	U	0.4	I
MW-7A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.3	I
MW-8A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.4	I
MW-9A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.3	I
MW-10A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.2	U
MW-11A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.2	U
MW-12A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.2	U
MW-13A	D	0.2	U	0.2	U	0.3	U	0.2	U	0.2	U
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.2	U	0.20	U	0.3	U	0.2	U	0.2	U
MW-17A	D	0.2	U	NA		NA		NA		NA	
MW-18A	D	0.2	U	NA		NA		NA		NA	
MW-19A	D	0.2	U	0.30	I	1.1		1.3		1.2	
MW-20A	D	0.2	U	NA		NA		NA		NA	
MW-21A	D	0.2	U	NA		NA		NA		NA	
MW-22A	B	0.2	U	NA		NA		NA		NA	
MW-23A	B	0.2	U	0.20	U	0.3	U	0.2	U	0.2	U
MW-1B	B	0.2	U	NA		0.3	U	NA		0.3	I
MW-2B	B	0.2	U	NA		0.3	U	NA		0.4	I
MW-3B	B	0.2	U	NA		0.3	I	NA		0.4	I
MW-4B	B	0.2	U	NA		0.3	U	NA		0.4	I
MW-5B	B	0.2	U	NA		0.3	U	NA		0.5	I
MW-6B	B	0.2	U	NA		0.3	U	NA		0.4	I
MW-7B	D	0.2	U	NA		0.3	U	NA		0.4	I
MW-8B	D	0.2	U	NA		0.3	U	NA		0.4	I
MW-9B	D	0.2	U	NA		0.3	U	NA		0.5	I
MW-10B	D	0.2	U	NA		0.3	U	NA		0.2	I
MW-11B	D	0.2	U	NA		0.3	U	NA		0.2	U
MW-12B	D	0.2	U	NA		0.3	U	NA		0.2	U
MW-13B	D	0.2	U	NA		0.3	U	NA		0.2	U
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.2	U	0.3	U	0.3	U	0.2	U	0.2	U
MW-17B	D	0.2	U	NA		NA		NA		NA	
MW-18B	D	0.2	U	NA		NA		NA		NA	
MW-19B	D	0.2	U	NA		0.3	U	NA		0.2	U
MW-20B	D	0.2	U	NA		NA		NA		NA	
MW-21B	D	0.2	U	NA		NA		NA		NA	
MW-22B	B	0.2	U	NA		NA		NA		NA	
MW-23B	B	0.2	U	NA		0.3	U	NA		0.2	U
MW-1C	B	NA		0.2	U	NA		0.2	U	NA	
MW-2C	B	NA		0.2	U	NA		0.2	U	NA	
MW-3C	B	NA		0.2	U	NA		0.2	U	NA	
MW-4C	B	NA		0.2	U	NA		0.2	U	NA	
MW-5C	B	NA		0.2	U	NA		0.2	U	NA	
MW-6C	B	NA		0.2	U	NA		0.2	U	NA	
MW-7C	D	NA		0.2	U	NA		0.2	U	NA	
MW-8C	D	NA		0.2	U	NA		0.2	U	NA	
MW-9C	D	NA		0.2	U	NA		0.2	U	NA	
MW-10C	D	NA		0.2	U	NA		0.2	U	NA	
MW-11C	D	NA		0.2	U	NA		0.2	U	NA	
MW-12C	D	NA		0.2	U	NA		0.2	U	NA	
MW-13C	D	NA		0.2	U	NA		0.2	U	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.2	U	0.2	U	0.3	U	0.2	U	0.2	U
MW-17C	D	NA		0.2	U	NA		NA		NA	
MW-18C	D	NA		0.2	U	NA		NA		NA	
MW-19C	D	NA		0.3	I	NA		0.3	I	NA	
MW-20C	D	NA		0.2	U	NA		NA		NA	
MW-21C	D	NA		0.2	U	NA		NA		NA	
MW-22C	B	NA		0.2	U	NA		NA		NA	
MW-23C	B	NA		0.2	U	NA		0.2	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-4
Cadmium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-2A	B	0.14	I	0.12	U	0.17	U	0.30	U	0.30	U
MW-3A	B	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-4A	B	0.12	U	0.12	U	0.17	U	0.30	U	NA	
MW-5A	B	0.12	U	0.12	U	0.17	U	0.30	U	NA	
MW-6A	B	0.32	I	0.12	U	0.17	U	0.30	U	0.30	U
MW-7A	D	0.81		0.12	U	0.17	U	0.30	U	0.30	U
MW-8A	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-9A	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-10A	D	0.23	I	0.15		0.17	U	3.60		0.30	U
MW-11A	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-12A	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-13A	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.13	I	0.12	U	0.17	U	0.30	U	0.30	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.38	I	0.18	U	0.17	U	0.30	U	0.30	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-1B	B	0.12	U	NA		0.17	U	NA		0.30	U
MW-2B	B	0.12	U	NA		0.17	U	NA		0.30	U
MW-3B	B	0.12	U	NA		0.17	U	NA		0.30	U
MW-4B	B	0.12	U	NA		0.17	U	NA		0.30	U
MW-5B	B	0.12	U	NA		0.17	U	NA		0.30	U
MW-6B	B	0.66		NA		0.17	U	NA		0.30	U
MW-7B	D	0.51		NA		0.17	U	NA		0.30	U
MW-8B	D	0.12	U	NA		0.17	U	NA		0.30	U
MW-9B	D	0.12	U	NA		0.17	U	NA		0.30	U
MW-10B	D	0.12	U	NA		0.17	U	NA		0.30	U
MW-11B	D	0.12	U	NA		0.17	U	NA		0.30	U
MW-12B	D	0.12	U	NA		0.17	U	NA		0.30	U
MW-13B	D	0.12	U	NA		0.17	U	NA		0.30	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.12	U	0.12	U	0.17	U	NA		0.30	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.12	U	NA		0.17	U	NA		0.30	U
MW-1C	B	NA		0.12	U	NA		0.30	U	NA	
MW-2C	B	NA		0.12	U	NA		0.30	U	NA	
MW-3C	B	NA		0.12	U	NA		0.30	U	NA	
MW-4C	B	NA		0.12	U	NA		0.30	U	NA	
MW-5C	B	NA		0.12	U	NA		0.30	U	NA	
MW-6C	B	NA		0.12	U	NA		0.30	U	NA	
MW-7C	D	NA		0.12	U	NA		0.30	U	NA	
MW-8C	D	NA		0.12	U	NA		0.30	U	NA	
MW-9C	D	NA		0.12	U	NA		0.30	U	NA	
MW-10C	D	NA		0.12	U	NA		0.30	U	NA	
MW-11C	D	NA		0.12	U	NA		0.30	U	NA	
MW-12C	D	NA		0.12	U	NA		0.30	U	NA	
MW-13C	D	NA		0.12	U	NA		0.30	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.12	U	0.12	U	0.17	U	0.30	U	0.30	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.12	U	NA		0.30	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.12	U	NA		0.30	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-5
Chloride Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mg/L)		11th Event Nov-09 (mg/L)		12th Event May-10 (mg/L)		13th Event Nov-10 (mg/L)		14th Event May-11 (mg/L)	
MW-1A	B	28		31		30.1		38.6		39.4	
MW-2A	B	44		46		31.6		39.7		44.5	
MW-3A	B	50		69		54.4		99.5		65.8	
MW-4A	B	53		55		63.0		57.5		NA	
MW-5A	B	66		45		30.0		11.9		NA	
MW-6A	B	54		62		51.0		73.1		154	
MW-7A	D	26		31		26.0		28.2		23.3	
MW-8A	D	56		63		76.0		90.8		93.1	
MW-9A	D	25		30		29.0		30.7		24.7	
MW-10A	D	13		8.2		7.9		9.20		10.5	
MW-11A	D	17		79		89.0		53.3		29.2	
MW-12A	D	13		13		16.0		20.8		21.3	
MW-13A	D	10		9.8		11.0		11.0		11.4	
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	5.8		2.2		1.9		1.79		2.49	
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	NA		NA		NA		14.5		13.1	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	110		41		23.3		14.6		37.6	
MW-1B	B	7.8		NA		7.4		NA		17.0	
MW-2B	B	13		NA		12.4		NA		11.7	
MW-3B	B	26		NA		18.3		NA		17.1	
MW-4B	B	49		NA		54.0		NA		31.1	
MW-5B	B	12		NA		32.0		NA		28.5	
MW-6B	B	8.7		NA		9.8		NA		11.9	
MW-7B	D	23		NA		30.0		NA		36.6	
MW-8B	D	10		NA		10.0		NA		10.4	
MW-9B	D	19		NA		33.0		NA		58.2	
MW-10B	D	13		NA		42.0		NA		37.4	
MW-11B	D	18		NA		14.0		NA		15.7	
MW-12B	D	21		NA		21.0		NA		24.1	
MW-13B	D	13		NA		12.0		NA		17.8	
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	15		14		13		7.06		4.68	
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	NA		NA		NA		NA		39.1	
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	18		NA		16.6		NA		11.5	
MW-1C	B	NA		7.6		NA		7.14		NA	
MW-2C	B	NA		7.5		NA		6.29		NA	
MW-3C	B	NA		8.3		NA		7.58		NA	
MW-4C	B	NA		13		NA		8.91		NA	
MW-5C	B	NA		16		NA		14.5		NA	
MW-6C	B	NA		6.3		NA		5.67		NA	
MW-7C	D	NA		8.8		NA		7.67		NA	
MW-8C	D	NA		8.5		NA		10.4		NA	
MW-9C	D	NA		13		NA		11.2		NA	
MW-10C	D	NA		8.2		NA		7.99		NA	
MW-11C	D	NA		18		NA		17.4		NA	
MW-12C	D	NA		9.1		NA		7.92		NA	
MW-13C	D	NA		13		NA		12.0		NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	21		22		21		20.7		21.1	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.031	U	NA		17.5		NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		8.8		NA		7.56		NA	

Notes:
mg/L=milligrams per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-6
Chromium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	2.1		2		1.8	I	2		2	
MW-2A	B	1.4	I	4.5		1.8	I	1.3	I	1.4	I
MW-3A	B	1.4	I	1	I	1.3	I	2.0	I	0.7	I
MW-4A	B	1.5	I	2.4		2.4		1.8	I	NA	
MW-5A	B	4.5		4.6		4.6		1.1	I	NA	
MW-6A	B	5.5		0.8	U	1.8	I	0.9	I	1.0	I
MW-7A	D	6.9		1.3	I	2.1		1.6	I	1.2	I
MW-8A	D	2.5		5.2		1.7	I	1.7	I	2.6	
MW-9A	D	2.2		2	I	2.9		3.6		3.5	
MW-10A	D	2.9		4.2		2.2		3.1		3.8	
MW-11A	D	7.1		2.2		2.2		4.5		3.1	
MW-12A	D	3.1		1.4	I	1.3	I	2.8		2.0	I
MW-13A	D	4.8		3.2		2.5		3.2		3.3	
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	2.7		1.1	I	1.5	I	1	I	2.7	
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	14		14.1		38.8		39.3		42.4	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	2		2.4		3.3		5.3		5.2	
MW-1B	B	1.2	I	NA		0.7	I	NA		0.5	I
MW-2B	B	1	I	NA		0.8	I	NA		1.1	I
MW-3B	B	1	I	NA		0.6	I	NA		0.5	I
MW-4B	B	2.6		NA		0.8	I	NA		0.5	I
MW-5B	B	1.4	I	NA		0.7	I	NA		0.5	I
MW-6B	B	11.3		NA		1.4	I	NA		1.1	I
MW-7B	D	8.4		NA		1.2	I	NA		0.7	I
MW-8B	D	3.1		NA		4.4		NA		2.8	
MW-9B	D	2		NA		1.4	I	NA		0.9	I
MW-10B	D	1.1	I	NA		2.2		NA		1.1	I
MW-11B	D	2.2		NA		2.7		NA		1.7	I
MW-12B	D	1.2	I	NA		1.4	I	NA		1.2	I
MW-13B	D	2		NA		1.4	I	NA		1.1	I
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	1.9	I	0.8	U	1.6	I	1.6	I	1.5	I
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	2.2		NA		2.3		NA		1.0	I
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	1.9	I	NA		4.8		NA		0.7	I
MW-1C	B	NA		0.8	U	NA		0.9	I	NA	
MW-2C	B	NA		0.8	U	NA		0.3	I	NA	
MW-3C	B	NA		0.8	U	NA		0.7	I	NA	
MW-4C	B	NA		2.6		NA		1.8	I	NA	
MW-5C	B	NA		0.8	U	NA		0.5	I	NA	
MW-6C	B	NA		1	I	NA		1	I	NA	
MW-7C	D	NA		0.8	I	NA		1	I	NA	
MW-8C	D	NA		0.8	U	NA		0.9	I	NA	
MW-9C	D	NA		1.3	I	NA		1.4	I	NA	
MW-10C	D	NA		1.5	I	NA		1.5	I	NA	
MW-11C	D	NA		0.9	I	NA		1.3	I	NA	
MW-12C	D	NA		0.8	U	NA		0.5	I	NA	
MW-13C	D	NA		0.8	U	NA		0.6	I	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	1.2	I	1.2	I	1.3	I	0.8	I	0.9	I
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		4.5		NA		3.9		NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		3.3		NA		1.5	I	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-7
Cobalt Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.3	I	0.4	U	0.7	I	0.5	I	0.5	I
MW-2A	B	4.1		5.3	U	2.6	I	3.1		3.1	
MW-3A	B	0.6	I	0.2	U	0.9	I	0.3	U	0.2	I
MW-4A	B	0.2	U	0.4	U	0.3	I	0.2	I	NA	
MW-5A	B	0.2	U	0.2	U	0.2	U	0.5	I	NA	
MW-6A	B	2.8		0.9	U	0.7		1.2		1.6	
MW-7A	D	2.6		1.8		1.5		1.7		1.6	
MW-8A	D	1.5		1.5		2.0	U	2.1		2.1	
MW-9A	D	0.8	I	0.2	U	0.3	U	0.3	I	0.5	I
MW-10A	D	0.3	I	0.2	U	0.2	U	0.3	U	0.2	I
MW-11A	D	0.8	I	1.5	U	1.2		1.0	I	0.3	I
MW-12A	D	0.9	I	0.9	U	1.1	I	1.3		1.2	
MW-13A	D	0.8	I	0.6	U	0.6	I	0.6	I	0.5	I
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.5	I	0.2	U	0.2	U	0.5	I	0.1	I
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.7	I	0.5	U	1.9	I	2.5		2.4	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.4	I	0.2	U	0.2	U	0.3	I	0.5	I
MW-1B	B	0.2	U	NA		0.2	U	NA		0.1	U
MW-2B	B	0.3	I	NA		0.4		NA		0.3	I
MW-3B	B	0.5	I	NA		0.2	U	NA		0.2	I
MW-4B	B	0.9	I	NA		0.4	U	NA		0.2	I
MW-5B	B	0.2	U	NA		0.2	U	NA		0.3	I
MW-6B	B	1		NA		0.2	U	NA		0.1	I
MW-7B	D	1.2		NA		0.4	I	NA		0.4	I
MW-8B	D	0.2	U	NA		0.2	U	NA		0.2	I
MW-9B	D	0.2	I	NA		0.5	I	NA		0.8	I
MW-10B	D	0.3	I	NA		1.0	I	NA		2.4	
MW-11B	D	0.2	U	NA		0.2	I	NA		0.09	I
MW-12B	D	0.2	I	NA		0.2	I	NA		0.2	I
MW-13B	D	0.2	U	NA		0.2	U	NA		0.2	I
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.3	I	0.3	U	0.4	I	0.3	I	0.20	I
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.2	U	NA		0.2	I	NA		0.20	I
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.2	I	NA		0.3	I	NA		0.30	U
MW-1C	B	NA		0.2	I	NA		0.1	U	NA	
MW-2C	B	NA		0.2	U	NA		0.1	U	NA	
MW-3C	B	NA		0.2	U	NA		0.1	U	NA	
MW-4C	B	NA		0.2	U	NA		0.1	U	NA	
MW-5C	B	NA		0.2	U	NA		0.1	U	NA	
MW-6C	B	NA		0.2	U	NA		0.1	U	NA	
MW-7C	D	NA		0.2	U	NA		0.1	U	NA	
MW-8C	D	NA		0.2	U	NA		0.1	U	NA	
MW-9C	D	NA		0.2	U	NA		0.1	U	NA	
MW-10C	D	NA		0.2	I	NA		0.1	I	NA	
MW-11C	D	NA		0.2	U	NA		0.1	U	NA	
MW-12C	D	NA		0.2	U	NA		0.1	U	NA	
MW-13C	D	NA		0.2	U	NA		0.1	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.2	U	0.2	U	0	I	0.1	U	0.08	U
MW-17C	D	NA		NA	I	NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.2	U	NA		0.1	I	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.2	U	NA		0.1	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-8
Copper Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.6	I	0.3	U	0.5	U	1.0	U	1.0	U
MW-2A	B	0.3	U	0.4	I	0.5	U	1.0	U	1.0	U
MW-3A	B	0.3	U	0.3	U	0.5	U	1.0	U	5.0	
MW-4A	B	0.3	U	0.3	U	0.5	U	1.0	U	NA	
MW-5A	B	0.6	I	0.8	U	1.1	U	1.0	U	NA	
MW-6A	B	0.3	U	0.3	U	0.5	U	1.0	U	1.0	U
MW-7A	D	0.3	U	0.3	I	0.5	U	1.0	U	1.0	U
MW-8A	D	0.3	U	3.9	I	0.5	U	1.0	U	1.0	U
MW-9A	D	0.3	U	0.4	U	0.5	U	1.0	U	1.0	I
MW-10A	D	0.3	U	1.1		0.7		1.0	U	1.0	U
MW-11A	D	0.3	U	0.3	U	0.5	U	1.0	U	2.5	
MW-12A	D	0.3	U	0.3	U	0.5	U	1.0	U	1.0	U
MW-13A	D	0.3	U	0.3	U	0.5	U	1.0	U	1.0	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.6	I	0.3	U	0.5	U	1.0	U	1.0	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	6.3		0.3	U	1.1	I	1.0	U	2.1	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.3	U	0.3	I	0.5		1.0	U	1.0	U
MW-1B	B	0.3	U	NA		0.5	U	NA		1.0	U
MW-2B	B	0.3	U	NA		0.5	U	NA		24.5	
MW-3B	B	0.3	U	NA		0.5	U	NA		1.4	I
MW-4B	B	0.3	U	NA		0.5	U	NA		1.4	I
MW-5B	B	0.3	U	NA		0.5	U	NA		1.0	U
MW-6B	B	0.9	I	NA		0.5	U	NA		1.0	U
MW-7B	D	1.3	I	NA		0.5	U	NA		1.0	U
MW-8B	D	0.6	I	NA		0.5	I	NA		1.0	U
MW-9B	D	0.4	I	NA		0.5	I	NA		1.0	U
MW-10B	D	0.3	U	NA		0.5	U	NA		11.5	
MW-11B	D	0.3	U	NA		0.5	U	NA		1.0	U
MW-12B	D	0.3	U	NA		0.5	U	NA		1.0	U
MW-13B	D	0.8	I	NA		0.9	U	NA		3.8	
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.3	U	0.3	U	0.5	U	1.0	U	1.0	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.3	U	NA		1.3	U	NA		1.0	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.3	U	NA		0.5	U	NA		1.0	U
MW-1C	B	NA		0.3	U	NA		1.0	U	NA	
MW-2C	B	NA		0.3	U	NA		1.0	U	NA	
MW-3C	B	NA		0.3	U	NA		1.0	U	NA	
MW-4C	B	NA		1.6		NA		1.0	U	NA	
MW-5C	B	NA		0.3	U	NA		1.0	U	NA	
MW-6C	B	NA		0.3	I	NA		1.0	U	NA	
MW-7C	D	NA		0.3	U	NA		1.0	U	NA	
MW-8C	D	NA		0.3	U	NA		1.0	U	NA	
MW-9C	D	NA		0.3	U	NA		1.0	U	NA	
MW-10C	D	NA		0.3	U	NA		1.0	U	NA	
MW-11C	D	NA		0.3	U	NA		1.0	U	NA	
MW-12C	D	NA		0.3	U	NA		1.0	U	NA	
MW-13C	D	NA		0.3	U	NA		1.0	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.3	U	0.3	U	0.5	U	1.0	U	7.1	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.4	U	NA		1.0	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.3	U	NA		1.0	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-9
cis-1,2-Dichloroethene Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.12	U	0.12	U	0.73	I	0.16	U	0.16	U
MW-2A	B	0.12	U	0.12	U	0.083	U	0.16	U	0.16	U
MW-3A	B	0.12	U	0.12	U	0.083	U	0.16	U	0.16	U
MW-4A	B	0.12	U	0.12	U	0.083	U	0.16	U	NA	
MW-5A	B	0.12	U	0.12	U	0.083	U	0.16	U	NA	
MW-6A	B	0.21	I	0.12	U	0.083	U	0.16	U	0.16	U
MW-7A	D	0.12	U	0.12	U	0.083	U	0.16	U	0.16	U
MW-8A	D	0.12	U	0.12	U	0.083	U	0.16	U	0.16	U
MW-9A	D	1.2		1.1		1.1		0.16	U	0.16	U
MW-10A	D	0.74	I	0.12	U	1.1		0.16	U	0.16	U
MW-11A	D	0.12	U	0.12	U	1.3		0.16	U	0.16	U
MW-12A	D	0.12	U	0.12	U	0.6	I	0.16	U	0.16	U
MW-13A	D	0.54	I	0.32	U	0.3	I	0.16	U	0.16	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.12	U	0.12	U	0.083	U	0.16	U	0.2	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.12	U	0.12	U	0.083	U	0.64	U	0.80	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.12	U	0.12	U	0.083	U	0.32	U	0.32	U
MW-1B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-2B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-3B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-4B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-5B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-6B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-7B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-8B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-9B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-10B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-11B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-12B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-13B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.12	U	0.12	U	0.083	U	0.16	U	0.16	U
MW-17B	D	NA		NA		NA	U	NA		NA	
MW-18B	D	NA		NA		NA	U	NA		NA	
MW-19B	D	0.12	U	NA		0.083	U	NA		0.16	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.12	U	NA		0.083	U	NA		0.16	U
MW-1C	B	NA		0.12	U	NA		0.16	U	NA	
MW-2C	B	NA		0.12	U	NA		0.16	U	NA	
MW-3C	B	NA		0.12	U	NA		0.16	U	NA	
MW-4C	B	NA		0.12	U	NA		0.16	U	NA	
MW-5C	B	NA		0.12	U	NA		0.16	U	NA	
MW-6C	B	NA		0.12	U	NA		0.16	U	NA	
MW-7C	D	NA		0.12	U	NA		0.16	U	NA	
MW-8C	D	NA		0.12	U	NA		0.16	U	NA	
MW-9C	D	NA		0.12	U	NA		0.16	U	NA	
MW-10C	D	NA		0.12	U	NA		0.16	U	NA	
MW-11C	D	NA		0.12	U	NA		0.16	U	NA	
MW-12C	D	NA		0.12	U	NA		0.16	U	NA	
MW-13C	D	NA		0.12	U	NA		0.16	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.12	U	0.12	U	0.083	U	0.16	U	0.16	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.16	U	NA		0.16	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.12	U	NA		0.16	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-10
Ethylbenzene Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.1	U	0.1	U	5.1		6.44		6.74	
MW-2A	B	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-3A	B	0.1	U	0.1	U	0.694	I	4.01		0.21	U
MW-4A	B	0.13	I	0.19		0.52	U	0.21	U	NA	
MW-5A	B	0.1	U	0.1	U	0.52	U	0.21	U	NA	
MW-6A	B	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-7A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-8A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-9A	D	0.1	U	1.3	U	1.8		1.69		0.97	I
MW-10A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-11A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-12A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-13A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.1	U	0.1	U	0.52	U	0.84	U	1.05	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA	U	NA		NA	
MW-23A	B	0.1	U	0.1	U	0.52	U	0.42	U	0.42	U
MW-1B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-2B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-3B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-4B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-5B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-6B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-7B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-8B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-9B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-10B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-11B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-12B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-13B	D	0.1	U	NA		0.52	U	NA		0.21	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.1	U	0.1	U	0.52	U	0.21	U	0.21	U
MW-17B	D	NA		NA		NA	U	NA		NA	
MW-18B	D	NA		NA		NA	U	NA		NA	
MW-19B	D	1.4		NA		1.3		NA		1.27	
MW-20B	D	NA		NA		NA	U	NA		NA	
MW-21B	D	NA		NA		NA	U	NA		NA	
MW-22B	B	NA		NA		NA	U	NA		NA	
MW-23B	B	0.1	U	NA		0.52	U	NA		0.21	U
MW-1C	B	NA		0.1	U	NA		0.21	U	NA	
MW-2C	B	NA		0.1	U	NA		0.21	U	NA	
MW-3C	B	NA		0.1	U	NA		0.21	U	NA	
MW-4C	B	NA		0.1	U	NA		0.21	U	NA	
MW-5C	B	NA		0.1	U	NA		0.21	U	NA	
MW-6C	B	NA		0.1	U	NA		0.21	U	NA	
MW-7C	D	NA		0.1	U	NA		0.21	U	NA	
MW-8C	D	NA		0.1	U	NA		0.21	U	NA	
MW-9C	D	NA		0.1	U	NA		0.21	U	NA	
MW-10C	D	NA		0.1	U	NA		0.21	U	NA	
MW-11C	D	NA		0.1	U	NA		0.21	U	NA	
MW-12C	D	NA		0.1	U	NA		0.21	U	NA	
MW-13C	D	NA		0.1	U	NA		0.21	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.53	I	0.44	U	0.56	I	1.15		1.02	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.1	U	NA		0.21	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.1	U	NA		0.21	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-11
Lead Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.2	U	0.4	I	0.3	U	0.06	I	0.06	U
MW-2A	B	0.2	U	0.2	U	0.3	U	0.06	U	0.06	U
MW-3A	B	0.2	U	0.2	U	1.3		0.1	U	0.4	I
MW-4A	B	0.2	U	0.3	I	0.5	I	0.1	U	NA	
MW-5A	B	1.2		2.1		2.4		0.5	I	NA	
MW-6A	B	0.2	U	0.2	U	0.3	U	0.1	U	0.06	U
MW-7A	D	0.2	U	0.2	U	0.3	U	0.1	U	0.06	U
MW-8A	D	0.2	U	0.2	U	0.3	U	0.1	U	0.1	I
MW-9A	D	0.2	U	0.2	U	0.3	U	0.3	I	0.1	I
MW-10A	D	0.2	I	0.8	I	0.4	I	0.4	I	0.2	I
MW-11A	D	0.2	U	0.2	U	0.3	U	0.1	U	1	I
MW-12A	D	0.2	U	0.2	U	0.3	U	0.1	U	0.6	I
MW-13A	D	0.2	I	0.2	U	0.3	U	0.1	U	0.06	U
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.7	I	0.5	I	0.6	I	0.4	I	0.8	I
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	7.3		3.7		13.5		9.9		14.8	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.4	I	0.2	U	1.2		1.6		0.1	I
MW-1B	B	0.2	U	NA		0.3	U	NA		0.06	U
MW-2B	B	0.2	U	NA		0.3	U	NA		8.6	
MW-3B	B	0.2	U	NA		0.3	U	NA		0.5	I
MW-4B	B	0.2	U	NA		0.3	U	NA		0.06	U
MW-5B	B	0.2	U	NA		0.3	U	NA		0.06	U
MW-6B	B	2.5		NA		0.3	U	NA		0.06	U
MW-7B	D	4.2		NA		0.3	U	NA		0.06	U
MW-8B	D	3.9		NA		3.4		NA		2.1	
MW-9B	D	1	I	NA		0.4	I	NA		0.06	U
MW-10B	D	0.2	U	NA		0.3	U	NA		1.1	
MW-11B	D	0.7	I	NA		0.8	I	NA		0.4	I
MW-12B	D	0.4	I	NA		0.4	I	NA		0.2	I
MW-13B	D	1.6		NA		1.4		NA		1.4	
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	1.5		2.4		1	I	0.9	I	0.3	I
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	2.5		NA		1.8		NA		0.4	I
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.2	U	NA		0.3	U	NA		0.06	U
MW-1C	B	NA		0.2	U	NA		0.1	I	NA	
MW-2C	B	NA		0.2	U	NA		0.06	U	NA	
MW-3C	B	NA		0.2	U	NA		0.1	U	NA	
MW-4C	B	NA		0.2	U	NA		0.2	I	NA	
MW-5C	B	NA		0.2	U	NA		0.1	U	NA	
MW-6C	B	NA		0.2	U	NA		0.1	U	NA	
MW-7C	D	NA		0.4	I	NA		0.3	I	NA	
MW-8C	D	NA		0.2	U	NA		0.1	U	NA	
MW-9C	D	NA		0.2	U	NA		0.1	U	NA	
MW-10C	D	NA		0.3	I	NA		0.2	I	NA	
MW-11C	D	NA		0.2	U	NA		0.1	U	NA	
MW-12C	D	NA		0.2	U	NA		0.1	U	NA	
MW-13C	D	NA		0.2	U	NA		0.1	U	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.2	U	0.4	I	0.3	U	0.1	U	2.8	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.7	I	NA		0.4	I	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.3	I	NA		0.3	I	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-12
Nickel Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.3	U	0.6	U	0.4	I	0.3	I	0.4	I
MW-2A	B	0.5	I	2.6		1.2	U	0.5	I	0.6	I
MW-3A	B	0.7	I	2.3	U	1.0		1.0	I	14.2	
MW-4A	B	1	I	1.1		1.1	I	0.8	I	NA	
MW-5A	B	2		3.4	U	2.2	I	0.8	I	NA	
MW-6A	B	3.8		1.3	U	1.0		1.0	I	1.3	I
MW-7A	D	1.7	I	0.8		1.7		0.7	I	1.2	I
MW-8A	D	2.7		3.6		4.2	U	4.4		6.0	U
MW-9A	D	2.3		0.8	U	1.2		1.7	I	2.3	
MW-10A	D	2.7		1.2		0.6		0.9	I	2.1	
MW-11A	D	0.9	I	2.7	I	1.9		2.0		1.0	I
MW-12A	D	1.4	I	2	I	2.2	I	3.4		1.5	I
MW-13A	D	1.8	I	0.6	U	0.4	I	0.2	U	1.0	I
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	2.3		0.6		0.4		0.6	I	0.8	I
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	2.1		3		4.6		2.1		6.8	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.9	I	0.3	I	0.7		1.3	I	2.2	
MW-1B	B	0.3	I	NA		0.3	U	NA		0.4	I
MW-2B	B	0.3	U	NA		0.5	I	NA		29.5	
MW-3B	B	0.5	I	NA		0.3	I	NA		1.7	I
MW-4B	B	2.5		NA		0.6	I	NA		4.8	
MW-5B	B	0.4	I	NA		0.6	U	NA		6.3	
MW-6B	B	3.8		NA		0.5		NA		0.6	I
MW-7B	D	2.8		NA		0.7	I	NA		1.0	I
MW-8B	D	0.5	I	NA		1.0		NA		0.6	I
MW-9B	D	0.5	I	NA		0.5	I	NA		0.6	I
MW-10B	D	0.4	I	NA		0.4	I	NA		79.0	
MW-11B	D	0.7	I	NA		0.6	I	NA		0.2	I
MW-12B	D	0.8	I	NA		0.6	I	NA		0.7	I
MW-13B	D	0.7	I	NA		0.3	U	NA		4.3	
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.5	I	0.7		1	I	0.8	I	0.4	I
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.6	I	NA		0.4	I	NA		0.3	I
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.7	I	NA		2.1	I	NA		0.2	U
MW-1C	B	NA		0.5	I	NA		0.3	I	NA	
MW-2C	B	NA		0.3	U	NA		0.2	U	NA	
MW-3C	B	NA		0.3	U	NA		0.2	U	NA	
MW-4C	B	NA		1.9		NA		0.4	I	NA	
MW-5C	B	NA		0.3	I	NA		0.2	U	NA	
MW-6C	B	NA		0.3	U	NA		0.2	U	NA	
MW-7C	D	NA		0.4		NA		0.4	I	NA	
MW-8C	D	NA		0.3	U	NA		0.2	U	NA	
MW-9C	D	NA		7.6		NA		4.9		NA	
MW-10C	D	NA		0.5	I	NA		0.2	U	NA	
MW-11C	D	NA		0.5	I	NA		0.3	I	NA	
MW-12C	D	NA		0.3	U	NA		0.2	U	NA	
MW-13C	D	NA		0.3	U	NA		0.2	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.4	I	0.6	I	1	I	0.3	I	21.2	
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		1.3	I	NA		0.5	I	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		1	I	NA		0.5	I	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-13
Nitrate Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-2A	B	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-3A	B	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-4A	B	0.038	U	0.038	U	0.07	U	0.07	U	NA	
MW-5A	B	0.038	U	0.038	U	0.07	U	0.07	U	NA	
MW-6A	B	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-7A	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-8A	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-9A	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-10A	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-11A	D	0.038	U	0.038	U	0.07	U	0.19	I	0.45	
MW-12A	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-13A	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.22		0.17	U	0.19	U	0.07	U	0.04	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	5.6		0.038	U	0.07	U	0.07	U	0.04	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-1B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-2B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-3B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-4B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-5B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-6B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-7B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-8B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-9B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-10B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-11B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-12B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-13B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.038	U	NA		0.07	U	NA		0.04	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.038	U	NA		0.07	U	NA		0.04	U
MW-1C	B	NA		0.038	U	NA		0.07	U	NA	
MW-2C	B	NA		0.038	U	NA		0.07	U	NA	
MW-3C	B	NA		0.038	U	NA		0.07	U	NA	
MW-4C	B	NA		0.038	U	NA		0.07	U	NA	
MW-5C	B	NA		0.038	U	NA		0.07	U	NA	
MW-6C	B	NA		0.038	U	NA		0.07	U	NA	
MW-7C	D	NA		0.038	U	NA		0.07	U	NA	
MW-8C	D	NA		0.038	U	NA		0.07	U	NA	
MW-9C	D	NA		0.038	U	NA		0.07	U	NA	
MW-10C	D	NA		0.038	U	NA		0.07	U	NA	
MW-11C	D	NA		0.038	U	NA		0.07	U	NA	
MW-12C	D	NA		0.038	U	NA		0.07	U	NA	
MW-13C	D	NA		0.038	U	NA		0.07	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.038	U	0.038	U	0.07	U	0.07	U	0.04	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.038	U	NA		0.07	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.038	U	NA		0.07	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-14
Selenium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.8	U	0.8	U	1.0	U	1.0	U	1.0	U
MW-2A	B	0.8	U	0.8	U	1.0	U	1.0	U	1.0	U
MW-3A	B	0.8	U	0.8	U	1.4	U	1.0	U	0.16	I
MW-4A	B	0.8	U	0.8	U	0.9	I	1.0	U	NA	
MW-5A	B	1	I	1	U	1.7	U	1.0	U	NA	
MW-6A	B	5.4		0.8	U	1.6		1.0	U	1.0	U
MW-7A	D	12.8		0.8	U	2.2		1.0	U	1.0	U
MW-8A	D	0.8	U	0.8	U	0.9	U	1.0	U	1.0	U
MW-9A	D	0.8	U	1.4	U	1.7		1.0	U	1.0	U
MW-10A	D	1.2	I	0.8	U	0.9	U	1.0	U	1.1	I
MW-11A	D	2.1		0.8	U	0.9	U	1.0	U	3.3	I
MW-12A	D	1.7	I	0.8	U	0.9	I	1.0	U	1.0	U
MW-13A	D	1.5	I	0.8	U	0.9	I	1.0	U	2.0	I
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	2.4		0.8	U	2.7		1.0	U	1.0	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	9.2		2.1	U	4.9	I	4.9	I	8.0	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	1.3	I	0.8	U	1.3		2.9	I	1.3	I
MW-1B	B	0.8	U	NA		0.9	U	NA		1.0	U
MW-2B	B	0.8	U	NA		0.9	I	NA		1.0	U
MW-3B	B	0.8	U	NA		0.9	I	NA		1.0	U
MW-4B	B	0.8	U	NA		0.9	U	NA		1.0	I
MW-5B	B	0.8	U	NA		0.9	U	NA		1.0	U
MW-6B	B	0.8	U	NA		0.9	U	NA		1.0	U
MW-7B	D	0.8	U	NA		0.9	I	NA		1.0	U
MW-8B	D	0.8	U	NA		1.2	I	NA		1.0	U
MW-9B	D	0.8	U	NA		0.9	U	NA		1.0	U
MW-10B	D	0.8	U	NA		0.9	U	NA		1.0	U
MW-11B	D	0.9	I	NA		0.9	I	NA		1.0	U
MW-12B	D	0.8	U	NA		0.9	U	NA		1.0	U
MW-13B	D	0.8	U	NA		0.9	U	NA		1.0	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.8	U			0.9	I	1.0	U	1.0	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.8	U	NA		7.1	U	NA		1.0	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.8	U	NA		0.90	I	NA		1.0	U
MW-1C	B	NA		0.8	U	NA		1.2	I	NA	
MW-2C	B	NA		0.8	U	NA		1.0	I	NA	
MW-3C	B	NA		0.8	U	NA		1.0	U	NA	
MW-4C	B	NA		0.8	U	NA		1.0	U	NA	
MW-5C	B	NA		0.8	U	NA		1.0	U	NA	
MW-6C	B	NA		0.8	U	NA		1.0	U	NA	
MW-7C	D	NA		0.8	U	NA		1.0	U	NA	
MW-8C	D	NA		0.8	U	NA		1.0	U	NA	
MW-9C	D	NA		0.8	U	NA		1.0	U	NA	
MW-10C	D	NA		0.8	U	NA		1.0	U	NA	
MW-11C	D	NA		0.8	U	NA		1.0	U	NA	
MW-12C	D	NA		0.8	U	NA		1.0	U	NA	
MW-13C	D	NA		0.8	U	NA		1.0	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.8	U	0.8	U	0.9	U	1.0	U	1.0	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.8	U	NA		1.2	I	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.8	U	NA		1.0	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-15
Sodium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (mg/L)	11th Event Nov-09 (mg/L)	12th Event May-10 (mg/L)	13th Event Nov-10 (mg/L)	14th Event May-11 (mg/L)
MW-1A	B	14.8	15.9	12.7	18.2	16.9
MW-2A	B	14.5	11.9	13.5	12.7	11.3
MW-3A	B	27	42.3	28.6	50.9	26.4
MW-4A	B	20.2	15.7	19.9	17.0	NA
MW-5A	B	18.6	26.5	33.6	18.2	NA
MW-6A	B	23.8	23.3	21.7	25.4	58.9
MW-7A	D	18.5	11	12.5	13.6	17.9
MW-8A	D	22.9	26	27.7	31.2	28.5
MW-9A	D	10.4	13.2	13.7	13.9	10.0
MW-10A	D	7.74	8.72	10.1	8.16	10.1
MW-11A	D	11.8	35.3	52.8	37.7	30.2
MW-12A	D	10.1	10.2	10.6	11.6	10.7
MW-13A	D	8.34	7.42	8.4	9.05	7.44
MW-14A	D	Abandoned July 2007				
MW-15A	D					
MW-16A	D	4.04	1.49	1.6	0.97	1.05
MW-17A	D	NA	NA	NA	NA	NA
MW-18A	D	NA	NA	NA	NA	NA
MW-19A	D	14.5	11.4	18.0	21.4	28.5
MW-20A	D	NA	NA	NA	NA	NA
MW-21A	D	NA	NA	NA	NA	NA
MW-22A	B	NA	NA	NA	NA	NA
MW-23A	B	25.6	14.8	12.7	10.2	22.2
MW-1B	B	5.28	NA	6.3	NA	8.88
MW-2B	B	5.76	NA	6.2	NA	4.90
MW-3B	B	10.9	NA	7.6	NA	5.83
MW-4B	B	34.3	NA	26.7	NA	14.5
MW-5B	B	6.32	NA	15.9	NA	6.70
MW-6B	B	5.89	NA	6.3	NA	5.84
MW-7B	D	6.31	NA	12.1	NA	12.1
MW-8B	D	6.45	NA	6.4	NA	5.55
MW-9B	D	10.2	NA	14.5	NA	19.1
MW-10B	D	8.61	NA	20.5	NA	35.9
MW-11B	D	13.2	NA	13.0	NA	11.8
MW-12B	D	8.23	NA	8.9	NA	7.80
MW-13B	D	8.27	NA	9.5	NA	8.76
MW-14B	D	Abandoned July 2007				
MW-15B	D					
MW-16B	D	8.48	7.9	8	6.57	5.56
MW-17B	D	NA	NA	NA	NA	NA
MW-18B	D	NA	NA	NA	NA	NA
MW-19B	D	15.5	NA	17.1	NA	17.7
MW-20B	D	NA	NA	NA	NA	NA
MW-21B	D	NA	NA	NA	NA	NA
MW-22B	B	NA	NA	NA	NA	NA
MW-23B	B	9.79	NA	10.3	NA	12.9
MW-1C	B	NA	4.59	NA	4.54	NA
MW-2C	B	NA	4.84	NA	4.43	NA
MW-3C	B	NA	5.09	NA	4.86	NA
MW-4C	B	NA	8.75	NA	7.19	NA
MW-5C	B	NA	8.53	NA	7.98	NA
MW-6C	B	NA	4.71	NA	5.08	NA
MW-7C	D	NA	5.93	NA	6.22	NA
MW-8C	D	NA	5.59	NA	6.56	NA
MW-9C	D	NA	6.54	NA	6.81	NA
MW-10C	D	NA	6.56	NA	6.88	NA
MW-11C	D	NA	11.4	NA	12.0	NA
MW-12C	D	NA	5.49	NA	5.59	NA
MW-13C	D	NA	7.76	NA	8.08	NA
MW-14C	D	Abandoned July 2007				
MW-15C	D					
MW-16C	D	11.7	11.4	11.8	11.5	10.8
MW-17C	D	NA	NA	NA	NA	NA
MW-18C	D	NA	NA	NA	NA	NA
MW-19C	D	NA	9.43	NA	9.19	NA
MW-20C	D	NA	NA	NA	NA	NA
MW-21C	D	NA	NA	NA	NA	NA
MW-22C	B	NA	NA	NA	NA	NA
MW-23C	B	NA	5.04	NA	4.88	NA

Notes:
mg/L=milligrams per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-16
Toluene Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.52	U	0.52	U	1.8		1.5		1.8	
MW-2A	B	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-3A	B	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-4A	B	0.52	U	0.52	U	1.3		0.63	I	NA	
MW-5A	B	0.52	U	0.52	U	2.4	U	0.19	U	NA	
MW-6A	B	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-7A	D	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-8A	D	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-9A	D	0.57	I	1.4		1.3		1.3		0.78	I
MW-10A	D	0.52	U	1.3		0.47	U	0.33	I	0.19	U
MW-11A	D	0.52	U	0.52	U	0.47	U	0.30	I	0.19	U
MW-12A	D	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-13A	D	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.52	U	0.52	U	2.4	U	0.76	U	0.95	U
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	0.52	U	0.52	U	0.47	U	0.38	U	0.38	U
MW-1B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-2B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-3B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-4B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-5B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-6B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-7B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-8B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-9B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-10B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-11B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-12B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-13B	D	0.52	U	NA		0.47	U	NA		0.19	U
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.52	U	0.52	U	0.47	U	0.19	U	0.19	U
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	0.81	I	NA		0.47	U	NA		0.19	U
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	0.52	U	NA		0.47	U	NA		0.19	U
MW-1C	B	NA		0.52	U	NA		0.19	U	NA	
MW-2C	B	NA		0.52	U	NA		0.19	U	NA	
MW-3C	B	NA		0.52	U	NA		0.19	U	NA	
MW-4C	B	NA		0.52	U	NA		0.19	U	NA	
MW-5C	B	NA		0.52	U	NA		0.19	U	NA	
MW-6C	B	NA		0.52	U	NA		0.19	U	NA	
MW-7C	D	NA		0.52	U	NA		0.19	U	NA	
MW-8C	D	NA		0.52	U	NA		0.19	U	NA	
MW-9C	D	NA		0.52	U	NA		0.19	U	NA	
MW-10C	D	NA		0.52	U	NA		0.19	U	NA	
MW-11C	D	NA		0.52	U	NA		0.19	U	NA	
MW-12C	D	NA		0.52	U	NA		0.19	U	NA	
MW-13C	D	NA		0.52	U	NA		0.19	U	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	1.7		0.81	I	1.1		1.5		0.37	I
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.52	U	NA		0.19	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.52	U	NA		0.19	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-17
Vanadium Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	1.2	U	1.9	I	1.3	I	0.7	I	1.5	I
MW-2A	B	1.2	U	1.6	I	2	I	0.9	I	0.7	I
MW-3A	B	1.2	U	2.3	I	1.5	I	1.2	I	2.2	I
MW-4A	B	1.2	U	3	I	1.6	I	1.8	I	NA	
MW-5A	B	1.8	I	5.1		3.1	I	0.8	I	NA	
MW-6A	B	5.3		1.3	I	1.6	I	1.6	I	1.3	I
MW-7A	D	6.3		1.5	I	1.9	I	0.22	U	2.6	I
MW-8A	D	3.5	I	2.4	I	3.0	I	2.3	I	3.0	I
MW-9A	D	2.5	I	1.4	I	2.2	I	3.7	I	3.8	I
MW-10A	D	4.2	I	2.4	I	1.4	I	2.6	I	6.1	
MW-11A	D	3.7	I	2.1	I	3.8	I	5.4		5.8	
MW-12A	D	1.2	I	2	I	1.5	I	1.4	I	2	I
MW-13A	D	4.3	I	3	I	3.6	I	3.6	I	3.8	I
MW-14A	D	MW-14A and MW-15A Abandoned July 2007									
MW-15A	D										
MW-16A	D	5		7		10		5.7		5.2	
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	15.9		15.3		39.3		35.7		29.6	
MW-20A	D	NA		NA		NA		NA		NA	
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		NA		NA		NA	
MW-23A	B	1.5	I	3.9	I	4.7	I	9.1		5.0	
MW-1B	B	1.2	U	NA		1.2	U	NA		0.5	U
MW-2B	B	1.2	U	NA		1.2	U	NA		1.7	I
MW-3B	B	1.2	U	NA		1.2	U	NA		0.5	U
MW-4B	B	1.2	U	NA		1.4	I	NA		0.6	I
MW-5B	B	1.2	U	NA		1.2	I	NA		0.6	I
MW-6B	B	14.4		NA		2.0	I	NA		1.4	I
MW-7B	D	12.5		NA		1.2	U	NA		0.7	I
MW-8B	D	7.4		NA		8.5		NA		5.5	
MW-9B	D	2.9	I	NA		1.9	I	NA		1.0	I
MW-10B	D	1.2	U	NA		1.2	U	NA		4.0	I
MW-11B	D	3.2	I	NA		3.0	I	NA		2.9	I
MW-12B	D	1.4	I	NA		1.2	I	NA		0.7	I
MW-13B	D	1.6	I	NA		1.8	I	NA		1.1	I
MW-14B	D	MW-14B and MW-15B Abandoned July 2007									
MW-15B	D										
MW-16B	D	1.2	U	1.8	I	1.8	I	1.3	I	1.5	I
MW-17B	D	NA		NA		NA		NA		NA	
MW-18B	D	NA		NA		NA		NA		NA	
MW-19B	D	1.8	I	NA		3.1	I	NA		0.8	I
MW-20B	D	NA		NA		NA		NA		NA	
MW-21B	D	NA		NA		NA		NA		NA	
MW-22B	B	NA		NA		NA		NA		NA	
MW-23B	B	1.2	U	NA		1.2	U	NA		1.4	I
MW-1C	B	NA		2.2	I	NA		1.7	I	NA	
MW-2C	B	NA		1.5	I	NA		1	I	NA	
MW-3C	B	NA		1.8	I	NA		0.9	I	NA	
MW-4C	B	NA		1.6	I	NA		1.7	I	NA	
MW-5C	B	NA		1.9	I	NA		1.1	I	NA	
MW-6C	B	NA		1.2	U	NA		1.4	I	NA	
MW-7C	D	NA		1.2	U	NA		2.4	I	NA	
MW-8C	D	NA		1.4	I	NA		0.5	U	NA	
MW-9C	D	NA		2.8	I	NA		2.6	I	NA	
MW-10C	D	NA		2.2	I	NA		1.8	I	NA	
MW-11C	D	NA		1.2	U	NA		3	I	NA	
MW-12C	D	NA		1.2	U	NA		1.3	I	NA	
MW-13C	D	NA		1.2	U	NA		0.9	I	NA	
MW-14C	D	MW-14C and MW-15C Abandoned July 2007									
MW-15C	D										
MW-16C	D	1.2	U	1.2	U	1.7	I	1.6	I	1.7	I
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		4	I	NA		5.2		NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		1.2	U	NA		1.5	I	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

Table B-18
Xylene Concentrations in Monitoring Wells
Fourth Biennial Technical Report on Water Quality
J.E.D. Solid Waste Management Facility

Well ID	Type	10th Event May-09 (µg/L)		11th Event Nov-09 (µg/L)		12th Event May-10 (µg/L)		13th Event Nov-10 (µg/L)		14th Event May-11 (µg/L)	
MW-1A	B	0.22	U	0.22	U	4.8		8.25		9.84	
MW-2A	B	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-3A	B	0.22	U	0.22	U	0.52	U	5.61	I	0.45	U
MW-4A	B	0.22	U	0.22	U	0.52	U	0.55	U	NA	
MW-5A	B	0.22	U	0.22	U	0.52	U	0.55	U	NA	
MW-6A	B	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-7A	D	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-8A	D	0.22	U	0.22	U	0.303	I	0.55	U	0.18	I
MW-9A	D	0.23	I	5.4	U	14.1		10.78		5.05	
MW-10A	D	0.37	I	0.95		0.52	U	1.13	I	1.00	I
MW-11A	D	0.26	I	0.22	U	0.68	I	0.55	U	0.45	U
MW-12A	D	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-13A	D	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-14A	D	Abandoned July 2007									
MW-15A	D										
MW-16A	D	0.22	U	0.22	U	0.52	U	0.55	U	0.55	U
MW-17A	D	NA		NA		NA		NA		NA	
MW-18A	D	NA		NA		NA		NA		NA	
MW-19A	D	0.22	U	0.22	U	0.52	U	2.2	U	2.25	U
MW-20A	D	NA		NA		NA		NA		0.45	U
MW-21A	D	NA		NA		NA		NA		NA	
MW-22A	B	NA		NA		0.52	U	NA		NA	
MW-23A	B	0.22	U	0.22	U	0.52	U	1.1	U	0.90	U
MW-1B	B	0.22	U	NA		0.52	U	NA	0	0.45	U
MW-2B	B	0.22	U	NA		0.52	U	NA		0.45	U
MW-3B	B	0.22	U	NA		0.52	U	NA		0.45	U
MW-4B	B	0.22	U	NA		0.52	U	NA		0.45	U
MW-5B	B	0.22	U	NA		0.52	U	NA		0.45	U
MW-6B	B	0.22	U	NA		0.52	U	NA		0.45	U
MW-7B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-8B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-9B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-10B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-11B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-12B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-13B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-14B	D	Abandoned July 2007									
MW-15B	D										
MW-16B	D	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-17B	D	NA		NA		NA	U	NA		NA	
MW-18B	D	NA		NA		NA	U	NA		NA	
MW-19B	D	0.22	U	NA		0.52	U	NA		0.45	U
MW-20B	D	NA		NA		NA	U	NA		NA	
MW-21B	D	NA		NA		NA	U	NA		NA	
MW-22B	B	NA		NA		NA	U	NA		NA	
MW-23B	B	0.22	U	NA		0.52	U	NA		0.45	U
MW-1C	B	NA		0.22	U	NA		0.55	U	NA	
MW-2C	B	NA		0.22	U	NA		0.55	U	NA	
MW-3C	B	NA		0.22	U	NA		0.55	U	NA	
MW-4C	B	NA		0.22	U	NA		0.55	U	NA	
MW-5C	B	NA		0.22	U	NA		0.55	U	NA	
MW-6C	B	NA		0.22	U	NA		0.55	U	NA	
MW-7C	D	NA		0.22	U	NA		0.55	U	NA	
MW-8C	D	NA		0.22	U	NA		0.55	U	NA	
MW-9C	D	NA		0.22	U	NA		0.55	U	NA	
MW-10C	D	NA		0.22	U	NA		0.55	U	NA	
MW-11C	D	NA		0.22	U	NA		0.55	U	NA	
MW-12C	D	NA		0.22	U	NA		0.55	U	NA	
MW-13C	D	NA		0.22	U	NA		0.55	U	NA	
MW-14C	D	Abandoned July 2007									
MW-15C	D										
MW-16C	D	0.22	U	0.22	U	0.52	U	0.55	U	0.45	U
MW-17C	D	NA		NA		NA		NA		NA	
MW-18C	D	NA		NA		NA		NA		NA	
MW-19C	D	NA		0.32	U	NA		0.55	U	NA	
MW-20C	D	NA		NA		NA		NA		NA	
MW-21C	D	NA		NA		NA		NA		NA	
MW-22C	B	NA		NA		NA		NA		NA	
MW-23C	B	NA		0.22	U	NA		0.55	U	NA	

Notes:
µg/L=micrograms per liter
U = Not detected at value represented
I = Value is estimated to be between method detection limit and practical quantitation limit.
NA = Not Analyzed
Well type: (B) Background well (D) Detection well
Constituent detections are shown in shaded cells (green color)

APPENDIX C

GROUNDWATER CONTOUR MAPS FOR THE 10th – 14th SEMI-ANNUAL WATER QUALITY EVENTS

10th MONITORING (MAY 2009)
J.E.D. SOLID WASTE MANAGEMENT FACILITY
WACS FACILITY ID 89455
"A"-ZONE (SHALLOW) WELLS - WATER LEVEL CONTOURS
FIGURE 1

NORTH

GROUNDWATER DIVIDE (APPROXIMATE)

MW-6A 78.57
MW-7A 79.46
MW-8A 79.74
MW-9A 79.62
MW-5A 79.21
MW-10A 78.80
MW-4A 79.02
MW-11A 78.26
MW-3A 78.61
MW-2A 77.34
MW-12A 78.15
MW-1A 75.06
MW-13A 77.74
BULL CREEK
MW-23A 71.67
MW-16A 78.87
MW-17A 79.61
MW-18A 79.58
MW-22A 76.65
MW-19A 79.93
DP-14 78.90
MW-21A 79.89
MW-20A 80.22
DP-16 79.41
DP-24 79.22
DP-19 79.27
DP-22 78.32
DP-20 80.17

LEGEND

76.27 MW-7A	MONITORING WELL GROUNDWATER ELEVATION*
75.85 DP-16	PIEZOMETER GROUNDWATER ELEVATION*
80	GROUNDWATER CONTOUR

* WATER LEVEL MEASUREMENTS FROM 26 MAY 2009 SITE WIDE SURVEY

0 500' 1000'

SCALE IN FEET

Geosyntec consultants

TAMPA, FL

DATE:	JULY 2009	FILE NO.	FQ1512.01F05
PROJECT NO.	FQ1512A	FIGURE NO.	1

I:_CADD (PROJECTS)\JJED LANDFILL\CQA\FQ1512\FQ1512.01\FQ1512.01F05.DWG (5 December 2006) cvickers

11th MONITORING (NOVEMBER 2009)
J.E.D. SOLID WASTE MANAGEMENT FACILITY
WACS FACILITY ID 89455
"A"-ZONE (SHALLOW) WELLS - WATER LEVEL CONTOURS
FIGURE 1

NORTH

GROUNDWATER DIVIDE (APPROXIMATE)

MW-6A 77.35
MW-7A 77.90
MW-8A 78.11
MW-9A 78.18
MW-10A 77.61
MW-11A 77.28
MW-12A 77.52
MW-13A 77.80
MW-5A 78.53
MW-4A 77.41
MW-3A 76.61
MW-2A 75.74
MW-1A 74.85
MW-23A 74.07
MW-16A 79.58
MW-17A 79.55
MW-18A 77.69
MW-19A 77.79
DP-16 77.09
DP-14 76.15
DP-24 76.77
DP-22 75.50
MW-22A 76.79
MW-21A 77.92
MW-20A 78.47
DP-19 78.12
DP-20 79.15

BULL CREEK

LEGEND

77.90 MW-7A	MONITORING WELL GROUNDWATER ELEVATION*
77.09 DP-16	PIEZOMETER GROUNDWATER ELEVATION*
80	GROUNDWATER CONTOUR

* WATER LEVEL MEASUREMENTS FROM 3 NOVEMBER 2009 SITE WIDE SURVEY

0 500' 1000'

SCALE IN FEET

MATTHEW J. VISSER * LICENSED PROFESSIONAL GEOLOGIST * FLORIDA
01/29/10

Geosyntec consultants

TAMPA, FL

DATE:	DECEMBER 2009	FILE NO.	FQ1512A.02F01
PROJECT NO.	FQ1512A	FIGURE NO.	1

I:_CADD (PROJECTS)\JJED LANDFILL\CQA\FQ1512\FQ1512A.02\FQ1512A.02F01.DWG (5 December 2006) cvickers

Legend

- Monitor Well Location
- Flow Lines
- Approximate Groundwater Divide May 2010
- Water Level Contours

NOTES:

AERIAL PHOTOGRAPH PROVIDED BY BULLSEYE DESIGN (2009).
WATER LEVEL MEASUREMENTS ACQUIRED 11 MAY 2010.
WACS FACILITY ID 89455

200 100 0 200 400 600 800 Feet

1 in = 600 ft

12th SEMI-ANNUAL MONITORING EVENT
(MAY 2010)
"A"-ZONE (SHALLOW) WELLS-WATER LEVEL CONTOURS

WASTE SERVICES OF FLORIDA, INC.
J.E.D. SOLID WASTE
1501 OMNI WAY
ST. CLOUD, FLORIDA

EPS
Environmental Planning Solutions, Inc.

TAMPA, FL | AUGUST 2010

FIGURE
1

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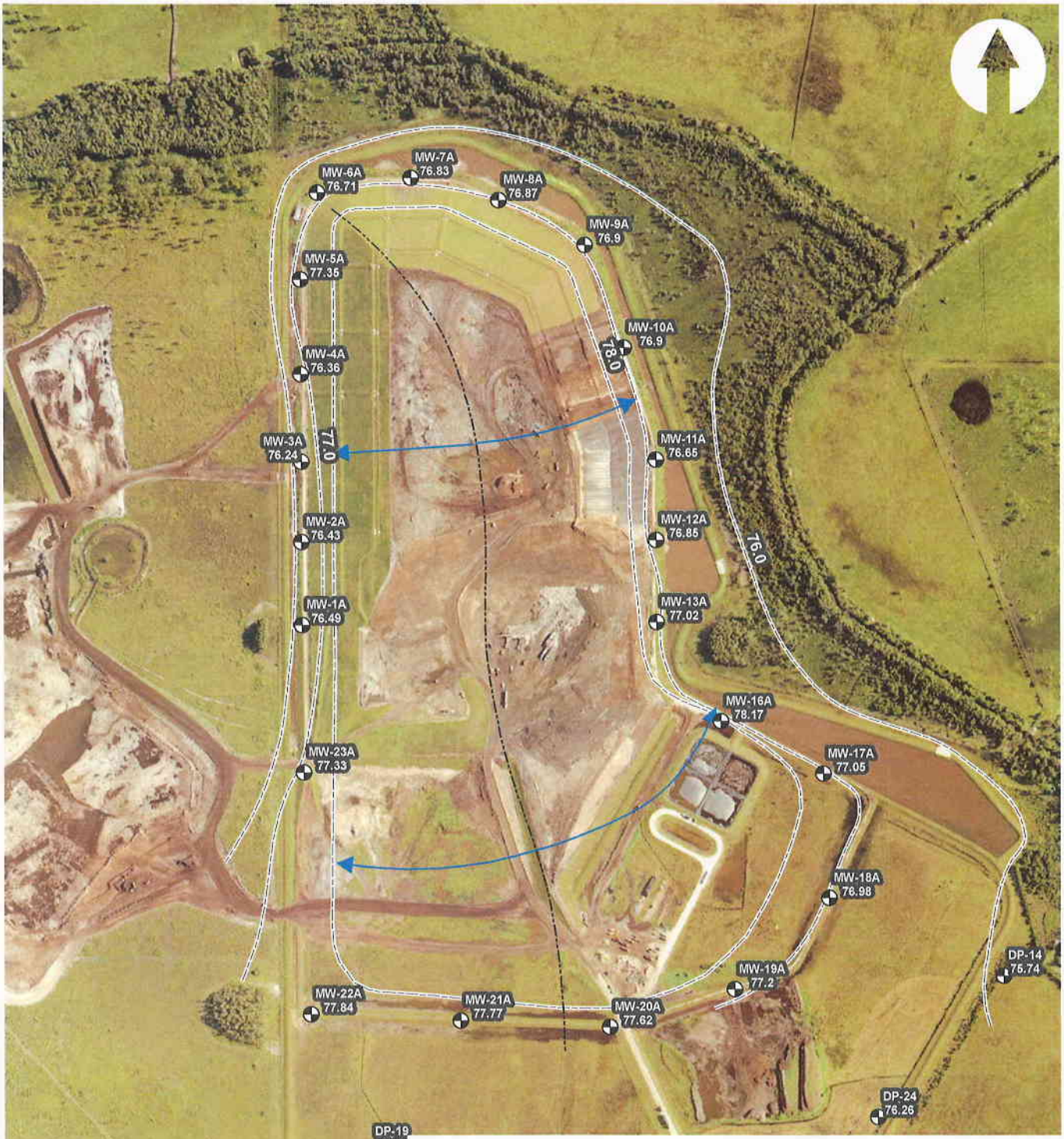
DONALD L. THOMPSON
LICENSE
NO. 1946
STATE OF FLORIDA



Legend

- Monitor Well Location
- Flow Lines
- Approximate Groundwater Divide November 2010
- Water Level Contours

NOTES:

AERIAL PHOTOGRAPH PROVIDED BY BULLSEYE DESIGN (2009).
WATER LEVEL MEASUREMENTS ACQUIRED 11 MAY 2010.
WACS FACILITY ID 68455

200 100 0 200 400 600 800 Feet

1 in = 600 ft

13th SEMI-ANNUAL MONITORING EVENT (NOVEMBER 2010)
"A"-ZONE (SHALLOW) WELLS-WATER LEVEL CONTOURS

WASTE SERVICES OF FLORIDA, INC.
J.E.D. SOLID WASTE
1501 OMNI WAY
ST. CLOUD, FLORIDA

EPS
ENVIRONMENTAL PLANNING SPECIALISTS, INC.

FIGURE
1

TAMPA, FL | NOVEMBER 2010

12/1/2010

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Legend

- Monitor Well Location
- Flow Lines
- Approximate Groundwater Divide May 2011
- Water Level Contours

NOTES:

AERIAL PHOTOGRAPH PROVIDED BY BULLSEYE DESIGN (2009).
WATER LEVEL MEASUREMENTS ACQUIRED 16 MAY 2011.
WACS FACILITY ID 89455

200 100 0 200 400 600 800 Feet
1 in = 600 ft

14th SEMI-ANNUAL MONITORING EVENT
(MAY 2011)
"A"-ZONE (SHALLOW) WELLS-WATER LEVEL CONTOURS

WASTE SERVICES OF FLORIDA, INC.
J.E.D. SOLID WASTE
1501 OMNI WAY
ST. CLOUD, FLORIDA

EPS

TAMPA, FL | JUNE 2011

FIGURE
1

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