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January 14, 2011

Mr. Joseph F. LeMay
Remedial Project Manager
US EPA – New England
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Mail Code: OSSR07-4
Boston, MA 02109- 3912

**Subject: Industri-plex Operable Unit 2 Superfund Site
Woburn, Massachusetts
Quarterly Storm Flow Surface Water Monitoring Report**

Dear Mr. LeMay:

Pursuant to Paragraph 34 of the Consent Decree (CD)(Civil Action No.1:08-cv-10325) and Section V.A.5 of the Remedial Design / Remedial Action (RD/RA) Statement of Work (SOW) for the above referenced site, enclosed please find the Quarterly Storm Flow Surface Water Monitoring Report No. 7.

This report covers the period from September 1, 2010 through November 30, 2010, and is submitted on behalf of the Settling Defendants. Also included is a CD containing the Flowlink® data covering the reporting period.

Please contact me if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Bruce Thompson", written in a cursive style.

Bruce Thompson

Enclosure

cc: Jen McWeeney - MassDEP
Settling Defendants
Larry McTiernan – Roux Associates

**Quarterly Storm Flow Surface Water
Monitoring Report No. 7
(September 2010 – November 2010)**

Industri-plex Superfund Site
Operable Unit 2
Woburn, Massachusetts

Disclaimer: This document is a DRAFT document prepared by the Settling Defendants under a government Consent Decree. This document has not undergone formal review by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP). The opinions, findings, and conclusions expressed are those of the author and not those of the EPA or the MassDEP.

In accordance with the Surface Water Monitoring Plan (SWMP), this Quarterly Storm Flow Surface Water Monitoring Report has been prepared to summarize the sampling activities performed and the data developed for one storm event that occurred during the reporting period (September 1, 2010 through November 30, 2010) and to provide a brief discussion of the data. Sampling locations are shown in **Figures 1 and 2**.

Storm Sampling and Related Activities Occurring During the Reporting Period

Storm sampling was conducted for one storm event occurring during the reporting period. This storm occurred from October 5-7, 2010.

To date, twelve storms have been sampled during the SWMP, ranging in precipitation from 0.93” to 8.38” as shown in the table below.

Date(s)	Total Precipitation (inches)	
	HBHA Pond Stations ¹	Reading Station ²
June 18-19, 2009	0.93 - 1.12	1.18
July 1-2, 2009	1.39 - 1.80	1.82
July 7-8, 2009	2.32 - 2.81	2.10
July 23-24, 2009	2.23 - 3.06	2.66
November 14-15, 2009	2.68 - 3.43	3.21
December 2-3, 2009	0.98 - 1.24	1.33
January 25-26, 2010	0.93 - 1.06	1.01
February 24-25, 2010	2.33 - 3.19	5.33
February 25-27, 2010 ³	1.57 - 2.04	
March 13-16, 2010	6.81 - 8.38	8.18 ⁴
August 24-25, 2010	2.52 – 2.82	3.15
October 5-7, 2010	1.00 – 1.43	Not Available

¹ Range shown indicates precipitation totals for the entire storm event recorded by the rain gauges at the four stations proximal to the HBHA Pond (SW-2-IP, SW-3-IP, SW-01-TT, and SW-02-TT).

² Precipitation data is from the NOAA National Climatic Data Center, specifically from the NOAA Rainfall Data Station in Reading, MA (Station Index No. 19-6783-2).

³ The February 24-25 and February 25-27 storm events are considered discrete storm events by the Settling Defendants because there was roughly a 12-hour interval between the two storms during which there was no precipitation as measured on the site rain gauges.

⁴ The March 13-16, 2010 storm was the largest recorded storm (in terms of cumulative rainfall) at the Reading weather station since 1962, when records first became available.

Storm sampling was conducted in substantial accordance with the SWMP and included automated collection of aliquots over the duration of the storm and associated runoff event. Aliquots were inspected after the end of the storm event and composited in equal volumes into a single “storm sample” for each station. Grab samples for benzene analysis were collected manually as soon as possible following the onset of the storm, and measurements of surface water and groundwater elevations using staff gauges and piezometers, respectively, were made when safe to do so. Station-specific storm statistics including “indicator” flows,⁵ flow at termination of sampling,⁶ flow-pacing intervals, the number of aliquots expected at sample termination based on the flow pacing interval used, the total number of sample aliquots collected, and the number of aliquots “successfully” collected⁷ are shown for the storm event in **Table 1**. Flows given in **Table 1** were calculated as follows:

- for Stations SW-04-TT and SW-08-TT, using the rating curves presented in the Quarterly Storm Flow Surface Water Monitoring Report No. 2
- for Stations SW-2-IP, SW-01-TT, SW-02-TT, SW-03-TT, and SW-05-TT through SW-07-TT, using the rating curves presented in the Quarterly Storm Flow Surface Water Monitoring Report No. 5
- for Station SW-3-IP, using stream level and velocity

Charts showing rainfall and the surface water velocity, level, and flow (i.e., hydrographs) recorded at each station for the storm event sampled during this reporting period are provided in **Appendix A**. In each hydrograph, the aliquots collected are indicated by downward triangles.⁸ In addition, flows at 50% and 75% of the falling limb, where applicable, are noted on the hydrographs.

⁵ Indicator flows include pre-storm baseflow, peak flow, and flows at 50% and 75% of the falling limb of the storm hydrograph (i.e., the points at which flow has decreased 50% and 75% of the difference between peak flow and pre-storm baseflow).

⁶ In accordance with Quarterly Storm Flow Surface Water Monitoring Report No. 2, sampling is terminated when flow has reached levels between 50% and 75% of the falling limb, unless otherwise noted.

⁷ “Successful collection” of an aliquot is defined in Section 3.1 of the SWMP QAPP.

⁸ Not all of the triangles shown are necessarily aliquots included in the composite storm samples. Due to software limitations, triangles also identify times when grab samples were collected, sampler is initiated as part of troubleshooting activities and no sample is collected, or times when pump-head tubing was calibrated.

Modifications to SWMP Protocols during Reporting Period

Minor equipment malfunctions and logistical difficulties were experienced during the storm event sampled during the reporting period. The “Storm Narrative” included in **Appendix A** lists minor variances from SWMP sampling protocols associated with these equipment malfunctions and logistical difficulties.

Post-Storm Maintenance and Monitoring

Following the October 5-7, 2010 storm event, all sample and pump-head tubing was replaced, suction volumes were recalibrated, and post-storm surveying was conducted in accordance with the SWMP. Post-storm surveying included surveying of the area-velocity sensors at eight of the ten stations to determine if any sensor elevations changed by more than 0.1 feet from the “baseline” sensor elevation as a result of storm-related scouring, sensor washout, etc.⁹ As shown in **Table 2**, during the October 5-7 storm event, the sensor elevation at Station SW-08-TT changed by more than 0.1 feet from the baseline sensor elevation. The sensor was subsequently adjusted to be equivalent to the elevation of the weir. The entire cross-sectional profile for this station was not performed, however, because hydraulic control is provided by the fixed weir.

It is noted that Roux Associates is no longer surveying the entire cross-section for Station SW-06-TT. This cross-section was surveyed for seven of the previous storm events, and although the results indicate that the station profile is highly dynamic, the changes observed do not significantly affect data collection.

On three other occasions during the reporting period, sampling was triggered at one or more stations but was terminated shortly thereafter due to insufficient precipitation. These events occurred on the following dates:

- September 3-4, 2010
- September 16-17, 2010
- October 1-2, 2010

⁹ Post-storm surveying was not performed at Stations SW-2-IP and SW-04-TT because the sensors at these stations are mounted to permanent structures.

In accordance with the SWMP, on all of these occasions, all sample and pump-head tubing was replaced, suction volumes were recalibrated, and Isco programming was reset at each station that was activated. In addition, any bottles that had been filled with sample aliquots were decontaminated and placed back into the rosette.

Data Generated During the Reporting Period

1. Storm hydrologic data (including precipitation, peak stage, peak velocity, peak flow, and runoff at 75% of the falling limb) for the storm event sampled during the reporting period are shown in **Tables 3a through 3j** along with the storm hydrologic data recorded during all previous SWMP storm sampling events.
2. The ranges of water quality parameters recorded for the storm event sampled during the reporting period are provided in **Tables 4a through 4j** along with the water quality measurements recorded during all previous SWMP and, where applicable, “Early Action” storm sampling events.
3. Analytical results for composite samples collected during the storm event sampled during the reporting period¹⁰ are provided in **Tables 5a through 5j** along with validated analytical laboratory results for storm samples collected during the SWMP. Where applicable, Early Action sampling events and other previous sampling programs at the site (i.e., the Groundwater and Surface Water Investigation Plan [GSIP] and the Multiple Source Groundwater Response Plan [MSGRP]) are also included on the tables.
4. Groundwater and surface water elevation data collected during storm events are provided in **Table 6**.

Data Analysis

Data trends – Benzene, total arsenic, dissolved arsenic, and ammonia concentrations observed in samples collected during the SWMP and previous sampling programs (GSIP, MSGRP, and Early Action) are summarized in box-whisker plots in **Appendix B**. The “boxes” indicate the range within which the central 50% of the results fall (the box edges mark the first and third quartiles and the line dividing the box in two marks the median value), while the “whiskers” show the full range of values reported.¹¹ Since at least two values are required to construct a “box,” cases where an analyte was detected in only one sample during a particular sampling program are shown as diamonds.

¹⁰ These results have not yet been validated.

¹¹ Any statistical outliers have not been determined or identified.

Based on storm analytical data collected during the GSIP, MSGRP, Early Action, and SWMP¹² sampling programs, the following is noted:

- Benzene has never been detected in any of the storm samples with exceptions at Stations SW-02-TT and SW-04-TT. Moreover, the maximum concentrations of benzene detected in the storm samples collected at Stations SW-02-TT and SW-04-TT are 9.1 micrograms per liter ($\mu\text{g/L}$) (November 16, 2009) and 2.2 $\mu\text{g/L}$ (December 4, 2009), respectively. Both of these concentrations are well below the “point of compliance”¹³ benzene Surface Water Performance Standard of 46 $\mu\text{g/L}$.
- Dissolved arsenic has never been detected in any of the storm samples collected at Station SW-01-TT, and with the exception of one sample collected at Station SW-02-TT (27.4 $\mu\text{g/L}$ on May 15, 2002), dissolved arsenic concentrations detected in storm samples from all other stations have consistently been at least an order of magnitude below the applicable “point of compliance”¹³ Surface Water Performance Standard of 150 $\mu\text{g/L}$.

These observations are consistent with those noted in previous reports.

Based on the groundwater and surface water elevations measured during the MSGRP and SWMP, the following is noted:

- At six of the nine stations gauged (SW-2-IP, SW-01-TT, and SW-05-TT through SW-08-TT), surface water elevations were predominantly higher than groundwater elevations during storm events. At two of the stations (SW-3-IP and SW-02-TT), surface water elevations were always lower than groundwater elevations.
- The remaining station (SW-03-TT) exhibited variable trends.

These observations are also consistent with those noted in previous reports, except that SW-06-TT had previously exhibited variable trends.

¹² The SWMP sampling events include precipitation totals ranging from 0.93” to 8.38”.

¹³ As stated on page 12 of the Statement of Work: These surface water cleanup standards must be met at the completion of the remedial action at the point of compliance, which is defined as the discharge point of the secondary treatment cell within the northern portion of the HBHA Pond.

TABLES

(Note: the data presented in Tables 3, 4, 5 and 6 are cumulative;
values shown supersede previously reported data.)

Table 1
Storm Statistics - October 5-7, 2010
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station	Pre-Storm Baseflow (cfs)	Peak Flow (cfs)	50% Falling Limb		75% Falling Limb		Flow at Termination of Sampling (cfs)	Total Runoff at Termination of Sampling (cf)	Flow Pacing (cf)	Expected Number of Aliquots ¹	Total Aliquots Collected ²	Aliquots Successfully Collected ³	Notes
			Flow (cfs)	Total Runoff (cf)	Flow (cfs)	Total Runoff (cf)							
SW-2-IP	0.23	7.59	3.91	75,220	2.07	85,542	1.34	165,273	10,000	9 - 10	23	16	a
SW-3-IP	0.00	58.21	29.10	322,353	14.55	333,573	12.23	224,171	3,500	93 - 96	49	48	b
SW-01-TT	1.92	63.84	32.88	1,314,499	17.40	1,750,473	18.28	1,726,864	40,000	34 - 45	48	48	a
SW-02-TT	2.90	22.90	12.90	1,545,386	7.90	2,003,471	10.95	1,710,790	40,000	40 - 51	40	42	
SW-04-TT	1.21	8.94	5.08	654,519	3.14	815,921	4.51	704,356	40,000	17 - 21	17	17	
SW-03-TT	16.31	56.83	36.57	3,973,523	26.44	5,684,397	32.51	4,740,223	55,000	73 - 104	56	56	c
SW-05-TT	0.49	481.69	241.09	18,038,920	120.79	22,194,190	126.07	22,007,060	239,957	76 - 93	87	88	c
SW-06-TT	4.38	51.39	27.88	3,067,492	16.13	3,830,906	24.29	3,309,040	160,016	20 - 25	20	21	
SW-07-TT	13.28	180.65	96.97	4,236,189	55.13	8,128,067	66.02	7,443,095	299,979	15 - 28	23	23	
SW-08-TT	39.30	160.04	99.67	5,117,707	69.48	10,897,600	75.46	7,602,099	399,972	14 - 28	20	20	d

- Notes:**
- For Stations SW-2-IP, SW-01-TT through SW-08-TT, flows shown are based on the rating curves reported in both the Quarterly Storm Flow Surface Water Monitoring Report No. 2 and No. 5.
 - Flows shown for station SW-3-IP were estimated based on level and velocity.

in = inches
cfs = cubic feet per second

- 1 Expected Number of Aliquots = [(total runoff at 50% falling limb / flow pacing)+1] to [(total runoff at 75% falling limb / flow pacing)+1]; total runoff values at 50% and 75% are calculated from the onset of precipitation, not the onset of sampling.
- 2 Total aliquots collected are based on the Isco unit's site report.
- 3 Aliquots Successfully Collected represent aliquots collected as defined in the SWMP QAPP (Sec. 3.1); as reported on field compositing form.

- a. Number of aliquots collected is higher than expected due to delays in ending the program.
- b. Number of aliquots is lower than expected due to sampler limitations (i.e., duration of sample sequence)
- c. A/V sensor malfunction; therefore, flows are not representative.
- d. Flow and runoff low due to power failures at onset of storm.

Table 2
Post-Storm Survey Results for the Area-Velocity Sensors
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station Number	Station Location ¹	10/13/2010		
		Baseline Sensor Elevation ^{3,4}	Post-Storm Sensor Elevation ⁴	Δ from Baseline Sensor Elevation
SW-3-IP	BECO Right-of-Way	51.51	51.56	0.05
SW-01-TT	Halls Brook	55.09	55.08	-0.01
SW-02-TT	HBHA Pond Outlet	50.32	50.42	0.10
SW-03-TT	Aberjona River @ Mishawum Rd.	47.86	47.90	0.04
SW-05-TT	Aberjona River @ Salem Street	94.15	94.23	0.08
SW-06-TT	Aberjona River @ Montvale Avenue	93.58	93.67	0.09
SW-07-TT	Aberjona River @ Swanton Street	89.98	89.96	-0.02
SW-08-TT	Aberjona River @ USGS Gaging Station ²	91.32	91.14	-0.18

- Notes:
1. Stations SW-2-IP and SW-04-TT are not shown because sensors are fixed to permanent structures.
 2. After each storm, the sensor is adjusted to be equivalent to the elevation of the adjacent weir crest.
 3. Baseline elevation is the sensor elevation used to calibrate the depth reading of the Isco 750 area-velocity sensor and is adjusted after significant (i.e., >0.1 feet) elevation changes.
 4. Elevations for stations SW-3-IP, and SW-01-TT through SW-03-TT reference the horizontal Datum MA (83) and the vertical datum NGVD 29. The remaining stations are relative to station-specific benchmarks and, therefore, are not comparable between stations.

**Table 3a
Storm Hydrologic Data for SW-2-IP (AAD)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-2-IP	06/18/09 - 06/19/10	0.93	0.67	1.85	9.05	379,752
	07/01/09 - 07/02/09	1.40	1.12	3.25	26.32	1,129,314
	07/07/09 - 07/08/09	2.32	1.62	3.59	41.07	626,764
	07/23/09 - 07/24/09	2.23	1.05	3.30	24.94	1,145,352
	11/14/09 - 11/15/09	2.68	0.73	3.39	13.41	561,036
	12/02/09 - 12/03/09	0.98	0.68	3.32	12.14	117,380
	01/25/10 - 01/26/10	0.93	1.03	3.46	23.29	206,424
	02/24/10 - 02/25/10	2.33	0.72	3.45	13.08	865,202
	02/25/10 - 02/27/10	1.55	0.97	3.62	21.13	892,338
	03/13/10 - 03/15/10	6.81	1.24	4.31	31.23	4,397,245
	08/24/10 - 08/25/10	2.52	0.89	4.28	14.20	189,710
10/05/10 - 10/07/10	1.21	0.58	3.90	7.59	85,542	

Notes:

- Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the crest of the weir.
- Prior to the 11/14/09-11/15/09 storm event, flows shown are based on stage and velocity measurement
- Between the 11/14/09-11/15/09 and 03/13/10-03/15/10 storm events, flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Flows are currently based on the station-specific rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation totals shown may not match precipitation totals shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

AAD = Atlantic Avenue Drainway

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

**Table 3b
Storm Hydrologic Data for SW-3-IP (BECO ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-3-IP	06/18/09 - 06/19/10	0.94	0.77	1.30	4.63	104,821
	07/01/09 - 07/02/09	1.46	1.39	1.75	14.97	170,540
	07/07/09 - 07/08/09	2.35	2.07	2.30	35.13	111,560
	07/23/09 - 07/24/09	2.37	2.19	1.82	12.14	193,146
	11/14/09 - 11/15/09	2.69	2.31	1.94	17.77	70,258
	12/02/09 - 12/03/09	1.09	1.55	1.67	15.60	115,886
	01/25/10 - 01/26/10	0.99	2.26	1.41	13.38	220,112
	02/24/10 - 02/25/10	2.46	2.47	1.06	6.79	182,862
	02/25/10 - 02/27/10	1.76	2.98	0.49	13.85	309,043
	03/13/10 - 03/15/10	7.86	5.01	1.08	22.84	2,024,234
	08/24/10 - 08/25/10	2.82	3.83	1.84	70.75	486,913
10/05/10 - 10/06/10	1.00	2.83	1.78	58.21	333,573	

Notes:

- Stage is relative to sensor elevation.
- Flows shown are estimated based on stage and velocity.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

BECO ROW = Boston Edison Company Right-of-Way

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

Shaded values indicate readings where runoff was above maximum height of the culvert.

**Table 3c
Storm Hydrologic Data for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-01-TT	06/18/09 - 06/19/10	1.07	1.59	2.27	13.92	974,772
	07/01/09 - 07/02/09	1.80	2.09	3.76	21.67	1,665,930
	07/07/09 - 07/08/09	2.87	2.25	4.36	25.42	2,251,596
	07/23/09 - 07/24/09	3.06	2.69	3.27	33.08	3,940,374
	11/14/09 - 11/15/09	3.43	2.84	3.88	107.18	2,320,731
	12/02/09 - 12/03/09	1.41	2.71	3.53	87.04	2,947,106
	01/25/10 - 01/26/10	1.05	2.85	3.93	107.50	4,838,601
	02/24/10 - 02/25/10	2.90	3.15	4.00	169.00	10,436,540
	02/25/10 - 02/27/10	2.04	3.20	2.21	181.97	3,659,139
	03/13/10 - 03/15/10	8.38	3.08	7.48	153.24	32,133,750
	08/24/10 - 08/25/10	ERR	2.87	4.79	111.20	3,762,774
	10/05/10 - 10/06/10	1.43	2.54	2.90	63.84	1,750,473

Notes:

- Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 11/14/09-11/15/09 storm event, flows shown are based on stage and velocity measurement
- Between the 11/14/09-11/15/09 and 03/13/10-03/15/10 storm events, flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Flows are currently based on the station-specific rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge)

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

**Table 3d
Storm Hydrologic Data for SW-02-TT (HBHA Pond Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-02-TT	06/18/09 - 06/19/10	1.12	1.87	0.78	17.67	1,743,147
	07/01/09 - 07/02/09	ERR	2.42	1.43	26.85	3,248,161
	07/07/09 - 07/08/09	ERR	2.78	1.84	32.84	4,415,681
	07/23/09 - 07/24/09	2.54	3.27	1.55	40.94	3,948,374
	11/14/09 - 11/15/09	2.94	3.71	ERR	79.99	5,920,126
	12/02/09 - 12/03/09	1.24	2.96	ERR	41.92	3,394,551
	01/25/10 - 01/26/10	0.98	3.61	1.50	74.06	5,251,652
	02/24/10 - 02/25/10	3.19	3.84	1.34	88.54	6,647,138
	02/25/10 - 02/27/10	1.97	4.20	1.42	114.25	6,842,911
	03/13/10 - 03/15/10	8.31	5.49	1.43	237.12	37,113,610
	08/24/10 - 08/25/10	2.79	3.28	1.75	53.09	3,419,919
10/05/10 - 10/07/10	1.17	2.43	1.38	22.90	2,003,471	

Notes:

- Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 11/14/09-11/15/09 storm event, flows shown are based on stage and velocity measurement
- Between the 11/14/09-11/15/09 and 03/13/10-03/15/10 storm events, flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Flows are currently based on the station-specific rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation totals shown may not match precipitation totals shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

HBHA = Halls Brook Holding Area

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

ERR = Equipment malfunction

**Table 3e
Storm Hydrologic Data for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-04-TT	06/18/09 - 06/19/10	0.95	1.43	3.92	10.42	1,550,883
	07/01/09 - 07/02/09	1.60	1.78	5.12	13.23	2,281,206
	07/07/09 - 07/08/09	2.48	2.20	5.55	17.60	2,441,779
	07/23/09 - 07/24/09	2.40	2.57	6.84	21.02	2,370,051
	11/14/09 - 11/15/09	2.94	2.58	6.97	50.51	3,459,359
	12/02/09 - 12/03/09	1.35	1.87	5.25	21.76	1,869,111
	01/25/10 - 01/26/10	0.95	2.71	6.66	57.46	3,939,638
	02/24/10 - 02/25/10	2.98	2.96	6.92	72.48	5,284,940
	02/25/10 - 02/27/10	1.85	3.27	8.16	92.78	5,751,879
	03/13/10 - 03/16/10	7.70	3.11	8.04	162.16	18,979,040
	08/24/10 - 08/25/10	2.86	3.86	1.30	137.81	8,286,751
10/05/10 - 10/06/10	1.13	1.25	5.90	8.94	815,921	

Notes:

- Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 11/14/09-11/15/09 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. Furthermore, runoff was above the maximum height of the culvert. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 3f
Storm Hydrologic Data for SW-03-TT (Aberjona)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-03-TT	06/18/09 - 06/19/10	0.91	1.58	1.78	14.37	1,239,944
	07/01/09 - 07/02/09	1.64	2.44	2.55	27.96	2,294,982
	07/07/09 - 07/08/09	2.53	3.10	3.03	38.39	2,499,196
	07/23/09 - 07/24/09	2.53	3.43	2.76	43.52	4,066,986
	11/14/09 - 11/15/09	2.80	3.64	2.74	46.86	4,274,335
	12/02/09 - 12/03/09	ERR	3.08	2.98	37.94	2,400,252
	01/25/10 - 01/26/10	0.96	3.53	3.07	45.05	3,783,233
	02/24/10 - 02/25/10	2.92	3.80 ⁴	2.93	55.79	5,938,676
	02/25/10 - 02/27/10	1.76	4.80	3.06	71.68	3,903,065
	03/13/10 - 03/16/10	7.12	5.55	3.15	382.71	61,346,400
	08/24/10 - 08/25/10	2.74	3.58	3.17	52.40	5,071,928
10/05/10 - 10/06/10	1.18	3.86	2.53	56.83	5,684,397	

Notes:

- Prior to the 02/25/10-02/27/10 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 02/25/10-02/27/10 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

4 Peak value is estimated due to inaccurate stage readings (and therefore flow) prior to A/V sensor re-calibration.

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge)

Shaded values indicate readings where runoff and flow may not be accurate (i.e., A/V sensor malfunction, A/V sensor dislodged). Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual

**Table 3g
Storm Hydrologic Data for SW-05-TT (Salem Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)	
SW-05-TT	06/18/09 - 06/19/10	Data Loss due to Isco Failure					
	07/01/09 - 07/02/09	1.87	2.45	2.24	72.72	9,737,499	
	07/07/09 - 07/08/09	1.35	2.83	2.76	92.22	11,053,420	
	07/23/09 - 07/24/09	3.28	3.05	3.23	102.98	11,611,000	
	11/14/09 - 11/15/09	3.04	3.26	2.84	113.84	15,373,510	
	12/02/09 - 12/03/09	1.18	2.67	1.92	83.63	9,801,157	
	01/25/10 - 01/26/10	0.77	3.12	2.90	106.88	12,692,700	
	02/24/10 - 02/27/10	5.43	3.79	3.88	164.51	45,198,860	
	03/13/10 - 03/15/10	9.46	4.41	6.64	195.83	58,039,680	
	08/24/10 - 08/25/10	4.02	3.56	2.27	151.81	9,853,621	
10/05/10 - 10/07/10	1.39	4.97	1.73	481.69	22,194,190		

Notes:

- Prior to the 08/24/10-08/25/10 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 08/24/10-08/25/10 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

Shaded values indicate readings where runoff and flow may not be accurate (i.e., flows were restricted by height of adjacent bridge, A/V sensor malfunction).

Table 3h
Storm Hydrologic Data for SW-06-TT (Montvale Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-06-TT	06/18/09 - 06/19/10	0.94	2.78	1.40	30.67	4,222,181
	07/01/09 - 07/02/09	ERR	3.86	2.10	52.56	5,950,627
	07/07/09 - 07/08/09	ERR	3.99	2.19	55.19	6,953,697
	07/23/09 - 07/24/09	1.73	4.52	2.47	65.74	8,013,981
	11/14/09 - 11/15/09	ERR	4.86	2.62	72.64	11,251,110
	12/02/09 - 12/03/09	0.63	3.83	2.08	52.00	6,724,578
	01/25/10 - 01/26/10	0.66	4.65	2.52	68.34	9,435,577
	02/24/10 - 02/27/10	4.55	5.77	2.76	94.72	37,094,130
	03/13/10 - 03/15/10	6.39	7.58	2.60 ⁴	130.77	37,783,890
	08/24/10 - 08/25/10	3.12	4.85	2.11	148.42	8,579,670
10/05/10 - 10/06/10	1.09	3.46	1.40	51.39	3,830,906	

Notes:

- Prior to the 08/24/10-08/25/10 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 08/24/10-08/25/10 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

4 Due to sand blocking sensor, Peak Velocity is inaccurate.

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge)

Table 3i
Storm Hydrologic Data for SW-07-TT (Swanton Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)	
SW-07-TT	06/18/09 - 06/19/10	1.04	2.15	4.11	82.67	7,087,030	
	07/01/09 - 07/02/09	1.70	3.83	5.40	200.44	16,890,270	
	07/07/09 - 07/08/09	0.77	3.32	4.49	164.87	26,349,860	
	07/23/09 - 07/24/09	Data Loss due to Isco Failure					
	11/14/09 - 11/15/09	2.64	3.78	5.04	197.26	22,935,700	
	12/02/09 - 12/03/09	1.10	3.38	4.25	168.71	34,081,250	
	01/25/10 - 01/26/10	0.96	4.48	4.75	245.97	27,218,250	
	02/24/10 - 02/27/10	4.85	6.13	6.49	378.86	91,809,740	
	03/13/10 - 03/16/10	9.44	10.86	7.81	713.66	166,586,400 ⁴	
	08/24/10 - 08/25/10	3.64	1.46 ⁵	ERR	12.63	2,081,686	
10/05/10 - 10/06/10	1.43	3.51	4.47	180.65	8,128,067		

Notes:

- Prior to the 08/24/10-08/25/10 storm event, stage is relative to sensor elevation; subsequent stage measurements are relative to the stream bottom.
- Prior to the 08/24/10-08/25/10 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report; subsequent flows are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.

- 1 Dates shown indicate time period over which precipitation was observed.
- 2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.
- 3 Due to "noise," Peak Velocity value is approximated.
- 4 Due to 750 Module malfunction, total runoff is inaccurate.
- 5 Due to 750 area-velocity sensor connection corrosion, peak stage (and therefore flow and total runoff) is inaccurate.

in = inches
ft = feet
ft/s = feet per second
cfs = cubic feet per second
cf = cubic feet

ERR = Equipment malfunction (sensor connection corrosion)

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 3j
Storm Hydrologic Data for SW-08-TT (USGS / Mystic Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station	Date ¹	Precipitation ² (in)	Peak Stage (ft)	Peak Velocity ³ (ft/s)	Peak Flow (cfs)	Total Runoff at 75% Falling Limb (cf)
SW-08-TT	06/18/09 - 06/19/10	0.55	3.08	1.05	202.28	39,070,400
	07/01/09 - 07/02/09	ERR	4.12	2.12	315.40	104,879,300
	07/07/09 - 07/08/09	ERR	3.62	1.96	261.03	75,114,590
	07/23/09 - 07/24/09	2.22	4.05	2.65	306.76	41,933,140
	11/14/09 - 11/15/09	2.20	12.43 ⁴	ERR	293.00	43,714,260
	12/02/09 - 12/03/09	0.99	2.04	1.69	198.42	23,195,820 ⁵
	01/25/10 - 01/26/10	0.92	2.69	2.35	369.63	57,302,170
	02/24/10 - 02/27/10	4.11	3.75	2.59	723.42	286,944,800
	03/13/10 - 03/16/10	6.05	7.00	3.34	1879.80	395,188,500 ⁵
	08/24/10 - 08/25/10	ERR	12.61 ⁴	ERR	343.00	24,433,290 ⁵
10/06/10 - 10/06/10	ERR	1.87	0.76	160.04	10,897,600 ⁵	

Notes:

- Prior to the 11/14/09-11/15/09 storm event, stage is relative to sensor elevation; stage measurements between the 11/14/10-11/15/10 and 08/24/10-08/25/10 storm events are relative to the crest of the weir.
- Prior to the 11/14/09-11/15/09 storm event, flows shown are based on the rating curves reported by TTNUS in the MSGRP RI Report.
- Flow estimates reported between the 11/14/09-11/15/09 and 08/24/10-08/25/10 storm events are based on the station specific rating curve reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.

1 Dates shown indicate time period over which precipitation was observed.

2 Precipitation total shown may not match precipitation total shown in hydrograph because hydrograph totals may include contributions from subsequent rain events during the falling limb.

3 Due to "noise," Peak Velocity value is approximated.

4 Stage is Mean Sea Level (there is a 10.02 foot offset); flow estimates are obtained from USGS station 01102500 - Aberjona River at Winchester, MA

5 Due to power failures, flow is inaccurate.

in = inches

ft = feet

ft/s = feet per second

cfs = cubic feet per second

cf = cubic feet

ERR = Equipment malfunction (e.g., obstructed rain gauge, AV sensor dislodged, power failure)

Shaded values indicate readings where the A/V sensor became dislodged. Values shown for peak velocity represent the highest reading recorded prior to A/V sensor dislodgement. In addition, Peak Stage and therefore subsequent Peak Flow and Total Runoff at 75% Falling Limb may not represent actual conditions.

Table 4a
Ranges of Storm Flow Water Quality Parameters for SW-2-IP (AAD)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-2-IP	12/14/08 - 12/14/08	0.4 - 1.3	10.7 - 11.5	6.5 - 6.5	470.3 - 480.1	240 - 242	3.6 - 4.4
Surface Water Monitoring Plan							
SW-2-IP	06/18/09 - 06/20/09	17.6 - 21.8	4.3 - 6.8	6.8 - 7.1	395.1 - 470.1	174 - 536	3.7 - 19.2
	07/01/09 - 07/03/09	16.8 - 18.8	4.0 - 7.9	6.7 - 6.9	379.0 - 489.0	74 - 546	2.1 - 19.2
	07/07/09 - 07/09/09	17.3 - 19.8	4.1 - 9.0	6.7 - 7.2	371.3 - 476.1	60 - 518	2.1 - 75.9
	07/23/09 - 07/25/09	17.8 - 24.9	4.6 - 9.1	6.6 - 7.0	366.8 - 428.3	46 - 430	2.7 - 17.2
	11/14/09 - 11/15/09	9.1 - 11.0	8.0 - 11.0	6.8 - 7.1	387.4 - 424.5	74 - 600	4.1 - 29.1
	12/03/09 - 12/03/09	7.2 - 11.0	10.0 - 11.0	6.9 - 7.1	481.5 - 512.9	66 - 336	4.1 - 24.0
	01/25/10 - 01/26/10	0.0 - 3.1	9.5 - 11.4	6.8 - 6.9	476.0 - 616.6	584 - 2,162	5.7 - 65.6
	02/24/10 - 02/25/10	0.5 - 2.9	9.8 - 13.1	7.0 - 7.3	7.2 - 121.0	314 - 586	3.7 - 76.2
	02/25/10 - 02/26/10	2.0 - 4.5	10.5 - 11.6	7.0 - 7.2	100.1 - 138.2	248 - 518	8.1 - 56.3
	03/13/10 - 03/16/10	4.0 - 5.7	9.6 - 11.7	7.0 - 7.5	84.9 - 382.4	184 - 1,464	4.5 - 35.2
	08/25/10 - 08/25/10	18.3 - 19.3	5.2 - 9.0	6.2 - 6.7	195.1 - 223.8	30 - 454	1.2 - 13.3
	10/06/10 - 10/07/10	13.0 - 14.5	7.5 - 11.0	6.7 - 7.0	490.6 - 532.8	88 - 450	0.0 - 0.3

Notes:

- AAD = Atlantic Avenue Drainway
- °C = Degrees Celsius
- mg/l = milligrams per liter
- s.u. = standard units
- mV = milliVolts
- µS/cm = microSiemens per centimeter
- NTU = Nephelometric Turbidity Units

Note: the pending software revision to Flowlink 5™ referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5™ are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4b
Ranges of Storm Flow Water Quality Parameters for SW-3-IP (BECO ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-3-IP	12/11/08 - 12/13/08	-1.6 - 6.5	NM - 12.5	NM - 4.3	-323.1 - 507.8	-20 - 586	NM - 19.6
Surface Water Monitoring Plan							
SW-3-IP	06/18/09 - 06/19/09	16.4 - 20.4	2.1 - 3.9	6.4 - 6.7	441.2 - 522.3	22 - 86	5.9 - 31.6
	07/01/09 - 07/03/09						
	07/07/09 - 07/09/09	Data rejected					
	07/24/09 - 07/24/09	Data rejected					
	11/14/09 - 11/14/09	10.6 - 10.7	9.8 - 10.4	6.3 - 6.7	86.0 - 112.1	16 - 128	10.6 - 60.2
	12/03/09 - 12/03/09	10.0 - 14.4	6.8 - 8.5	6.3 - 6.8	298.6 - 332.5	12 - 84	43.3 - 102.3
	01/25/10 - 01/25/10	Data rejected	9.3 - 11.0	Data rejected	61.7 - 128.0	Data rejected	38.3 - 183.2
	02/24/10 - 02/24/10	0.9 - 5.0	7.5 - 13.3	6.4 - 7.2	-41.9 - 99.5	84 - 1,050	28.1 - 126.2
	02/25/10 - 02/25/10	4.5 - 5.0	4.1 - 12.3	6.2 - 6.7	49.4 - 93.6	64 - 1,086	4.2 - 38.7
	03/13/10 - 03/15/10	3.5 - 7.1	8.7 - 11.3	6.5 - 7.3	16.9 - 160.6	36 - 602	12.7 - 39.8
	08/25/10 - 08/25/10	18.2 - 18.6	8.6 - 9.1	6.1 - 6.3	192.9 - 203.2	8 - 14	7.3 - 27.8
	10/05/10 - 10/06/10	13.2 - 16.0	5.1 - 11.8	5.6 - 7.3	98.8 - 310.6	4 - 236	6.2 - 11.0

Notes:

BECO ROW = Boston Edison Company right-of-way

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

NM = Not measured (e.g., insufficient flow and/or due to equipment limitations)

Water quality parameter data for 7/1-2/09, 7/7-8/09 and 7/23-24/09 storms were reviewed and rejected due to problems associated with the dry conditions that existed prior to the storms.

Temperature, pH and Specific Conductance data for 1/25/10 storm were reviewed and rejected due to suspected icing of the sensors.

Note: the pending software revision to Flowlink 5™ referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5™ are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

**Table 4c
Ranges of Storm Flow Water Quality Parameters for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-01-TT	12/11/08 - 12/14/08	1.2 - 4.6	9.8 - 12.2	6.4 - 6.7	503.4 - 556.6	784 - 1,854	22.6 - 2874.0
Surface Water Monitoring Plan							
SW-01-TT	06/18/09 - 06/19/09	15.4 - 17.3	5.6 - 8.5	6.7 - 6.9	190.1 - 225.9	276 - 650	Data unrecoverable
	07/01/09 - 07/03/09	15.3 - 17.0	Data unrecoverable	6.6 - 6.9	403.5 - 564.0	170 - 660	20.7 - 364.6
	07/07/09 - 07/09/09	15.1 - 17.8	Data unrecoverable	6.6 - 7.1	382.4 - 535.8	94 - 516	7.6 - 113.0
	07/24/09 - 07/26/09	16.8 - 20.5	Data unrecoverable	6.3 - 6.9	392.5 - 471.7	158 - 548	5.3 - 147.3
	11/14/09 - 11/16/09	9.7 - 10.0	7.9 - 9.2	6.5 - 6.8	449.8 - 476.0	154 - 268	33.2 - 372.8
	12/03/09 - 12/04/09	8.1 - 11.7	6.6 - 8.7	6.7 - 6.9	481.3 - 498.3	150 - 396	58.4 - 430.1
	01/25/10 - 01/26/10	0.7 - 3.3	10.7 - 11.2	6.8 - 7.0	Data unrecoverable	190 - 552	17.4 - 265.1
	02/24/10 - 02/25/10	1.0 - 1.9	9.5 - 10.9	6.6 - 7.0	598.6 - 650.4	278 - 1,032	31.0 - 383.9
	02/25/10 - 02/26/10	1.8 - 3.9	9.3 - 10.2	6.6 - 6.8	614.0 - 726.4	190 - 368	23.4 - 375.3
	03/13/10 - 03/16/10	3.1 - 6.6	9.1 - 10.8	6.6 - 7.1	407.9 - 511.8	134 - 390	6.2 - 551.0
	08/25/10 - 08/25/10	18.4 - 18.7	6.0 - 7.9	6.2 - 6.5	565.1 - 601.7	128 - 220	9.3 - 104.7
	10/06/10 - 10/07/10	14.1 - 14.9	6.1 - 9.0	6.5 - 6.8	528.9 - 567.5	146 - 542	14.0 - 69.9

Notes:

HBHA = Halls Brook Holding Area

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

Turbidity data for 7/1-2/09 and dissolved oxygen data for 7/1-2/09, 7/7-8/09 and 7/23-24/09 storms unrecoverable due to Isco 6712 transmission errors.

ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

Water quality data for temperature, dissolved oxygen and specific conductance collected prior to 3/14/10 3:25 am rejected due to equipment malfunction (i.e., apparent In-Situ troll sensor damage).

Water quality ranges for temperature, specific conductivity and turbidity represent data collected through first rosette only during 8/25/10 storm. Remaining data is unrecoverable.

Note: the pending software revision to Flowlink 5™ referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5™ are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4d
Ranges of Storm Flow Water Quality Parameters for SW-02-TT (HBHA Pond Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-02-TT	12/14/08 - 12/14/08	1.5 - 2.3	10.0 - 10.2	6.3 - 6.4	524.3 - 527.3	416 - 470	22.6 - 23.3
Surface Water Monitoring Plan							
SW-02-TT	06/18/09 - 06/20/09	16.2 - 21.0	5.4 - 6.8	6.1 - 6.3	360.7 - 423.3	474 - 750	6.8 - 18.5
	07/01/09 - 07/03/09	16.0 - 17.7	3.4 - 5.7	6.3 - 6.5	248.1 - 532.9	484 - 890	7.2 - 55.1
	07/07/09 - 07/09/09	15.8 - 17.4	1.2 - 6.2	6.0 - 6.1	190.8 - 499.4	282 - 902	10.4 - 33.8
	07/24/09 - 07/26/09	17.2 - 20.1	2.6 - 7.5	6.3 - 6.6	182.3 - 471.8	234 - 964	4.4 - 65.6
	11/14/09 - 11/15/09	9.3 - 11.2	5.8 - 7.6	6.3 - 6.6	270.0 - 481.3	248 - 880	13.4 - 63.3
	12/03/09 - 12/04/09	6.4 - 10.8	7.7 - 8.8	6.4 - 6.5	412.2 - 495.2	402 - 788	14.3 - 42.3
	01/25/10 - 01/26/10	1.3 - 3.8	5.9 - 9.8	6.4 - 6.5	Data unrecoverable	552 - 1,700	15.9 - 70.9
	02/24/10 - 02/25/10	1.5 - 4.4	6.0 - 10.5	6.2 - 6.5	186.3 - 283.9	346 - 1,548	17.1 - 61.0
	02/25/10 - 02/27/10	2.1 - 3.8	9.9 - 10.4	6.1 - 6.3	257.5 - 291.2	242 - 390	12.5 - 29.3
	03/13/10 - 03/16/10	3.6 - 6.2	8.5 - 10.0	6.1 - 6.7	237.9 - 310.3	168 - 882	7.5 - 24.0
	08/25/10 - 08/26/10	Data rejected					
	10/06/10 - 10/07/10	13.9 - 15.0	5.3 - 7.7	6.5 - 6.8	219.9 - 433.4	494.0 - 790.0	8.7 - 50.5

Notes:

HBHA = Halls Brook Holding Area

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

Water quality data from 8/25-8/26/10 storm rejected due to communication errors between the In-Situ troll and the Isco 6712.

Note: the pending software revision to Flowlink 5™ referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5™ are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1. Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4e
Ranges of Storm Flow Water Quality Parameters for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"							
SW-04-TT	12/14/08 - 12/14/08	1.8 - 2.2	9.7 - 9.8	5.9 - 5.9	373.6 - 374.1	390 - 428	0.0 - 0.0
Surface Water Monitoring Plan							
SW-04-TT	06/18/09 - 06/19/09	16.7 - 21.9	5.1 - 7.9	6.5 - 6.7	218.0 - 317.2	358 - 754	13.0 - 131.6
	07/01/09 - 07/03/09	16.1 - 18.2	4.6 - 7.8	6.4 - 6.8	237.0 - 347.6	242 - 802	6.8 - 752.3
	07/07/09 - 07/09/09	15.7 - 19.3	4.9 - 9.4	6.1 - 6.9	231.7 - 418.4	38 - 728	7.4 - 93.5
	07/24/09 - 07/26/09	Data rejected					
	11/14/09 - 11/15/09	10.5 - 11.6	6.5 - 9.9	6.5 - 6.8	177.8 - 331.6	72 - 424	7.4 - 29.7
	12/03/09 - 12/04/09	9.7 - 10.7	6.7 - 7.7	6.9 - 6.9	251.7 - 321.8	416 - 612	9.0 - 17.6
	01/25/10 - 01/26/10	1.7 - 5.5	8.1 - 10.7	6.6 - 6.7	117.2 - 273.5	620 - 1,232	19.9 - 114.2
	02/24/10 - 02/25/10	2.1 - 3.9	9.3 - 11.7	6.6 - 6.8	126.2 - 284.4	364 - 1,278	9.6 - 63.8
	02/25/10 - 02/27/10	3.2 - 4.4	10.4 - 11.3	6.5 - 6.6	293.0 - 319.5	250 - 352	6.0 - 17.1
	03/13/10 - 03/16/10	4.4 - 6.9	9.8 - 12.5	6.5 - 7.0	284.2 - 406.1	150 - 1,014	6.0 - 25.1
	08/25/10 - 08/26/10	18.2 - 18.7	4.5 - 8.4	6.6 - 6.9	128.8 - 277.4	288 - 620	0.8 - 4.7
	10/06/10 - 10/07/10	13.7 - 15.1	4.5 - 10.2	6.6 - 6.8	135.4 - 236.0	136 - 612	6.8 - 33.8

Notes:

HBHA = Halls Brook Holding Area

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

Water quality data from 7/24-7/26/09 storm rejected due to communication errors between the In-Situ troll and the Isco 6712.

Note: the pending software revision to Flowlink 5TM referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5TM are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4f
Ranges of Storm Flow Water Quality Parameters for SW-03-TT (Aberjona)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-03-TT	06/19/09 - 06/20/09	16.9 - 19.6	4.1 - 5.4	6.1 - 6.3	315.0 - 410.3	256 - 688	9.3 - 20.8
	07/01/09 - 07/03/09	16.3 - 18.1	5.4 - 8.3	6.5 - 6.7	391.4 - 549.0	226 - 824	5.0 - 208.9
	07/07/09 - 07/09/09	15.5 - 18.1	5.4 - 9.5	5.8 - 6.5	412.5 - 550.0	46 - 582	5.8 - 175.0
	07/24/09 - 07/26/09	17.9 - 21.4	4.1 - 8.6	6.6 - 6.8	425.9 - 509.3	148 - 782	1.3 - 32.4
	11/14/09 - 11/15/09	10.2 - 11.4	6.4 - 9.3	6.1 - 6.7	469.6 - 512.6	88 - 494	3.0 - 319.8
	12/03/09 - 12/04/09	8.8 - 11.6	3.5 - 4.0	6.5 - 6.8	233.0 - 286.0	192 - 666	6.7 - 391.0
	01/24/10 - 01/26/10	0.8 - 5.4	11.1 - 12.4	6.6 - 6.8	Data unrecoverable	448 - 1,088	9.9 - 184.2
	02/24/10 - 02/25/10	1.2 - 2.8	9.0 - 9.6	6.5 - 6.7	246.7 - 325.4	490 - 956	17.3 - 198.9
	02/25/10 - 02/26/10	2.4 - 4.2	8.4 - 8.9	6.5 - 6.5	313.8 - 345.9	290 - 438	14.7 - 82.9
	03/13/10 - 03/16/10	4.0 - 6.2	10.8 - 12.1	6.8 - 7.0	280.7 - 339.6	226 - 992	8.3 - 46.3
	08/25/10 - 08/26/10	18.3 - 19.7	5.9 - 8.9	6.2 - 6.7	112.1 - 154.9	86 - 514	11.3 - 56.2
10/06/10 - 10/07/10	14.2 - 15.3	5.2 - 9.7	6.3 - 6.7	145.2 - 210.6	96 - 540	21.2 - 218.3	

Notes:

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

Note: the pending software revision to Flowlink 5™ referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5™ are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4g
Ranges of Storm Flow Water Quality Parameters for SW-05-TT (Salem Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)	
Surface Water Monitoring Plan								
SW-05-TT	06/18/09 - 06/18/09	Data lost due to Isco 6712 malfunction						
	07/01/09 - 07/02/09	16.5 - 17.9	3.3 - 6.7	6.3 - 6.7	441.6 - 530.5	402 - 1,072	7.7 - 63.3	
	07/07/09 - 07/09/09	16.5 - 17.6	4.0 - 6.5	6.1 - 6.4	507.5 - 544.2	292 - 670	12.3 - 45.7	
	07/24/09 - 07/26/09	17.6 - 24.0	2.5 - 7.3	6.2 - 6.6	441.1 - 496.7	264 - 1,022	3.9 - 52.4	
	11/14/09 - 11/16/09	Data rejected						
	12/03/09 - 12/04/09	Data rejected						
	01/25/10 - 01/26/10	0.5 - 3.1	9.2 - 11.0	6.7 - 6.9	209.7 - 305.1	586 - 1,150	5.2 - 491.8	
	02/24/10 - 02/27/10	0.9 - 4.2	8.9 - 12.3	6.4 - 6.8	339.6 - 494.7	320 - 2,056	7.7 - 488.2	
	03/13/10 - 03/17/10	4.0 - 6.2	8.6 - 10.7	6.4 - 7.0	306.2 - 438.4	218 - 1,160	5.5 - 33.5	
	08/25/10 - 08/26/10	17.9 - 18.6	3.7 - 6.6	6.1 - 6.5	516.3 - 536.2	204 - 484	1.3 - 391.1	
10/06/10 - 10/07/10	13.4 - 14.8	5.9 - 9.2	6.5 - 7.0	468.5 - 527.8	192 - 712	4.6 - 223.0		

Notes:

HBHA = Halls Brook Holding Area

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

Water quality data from 11/14-11/16/09 and 12/3-12/4/09 storms rejected due to communication errors between the In-Situ troll and the Isco 6712.

Note: the pending software revision to Flowlink 5TM referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5TM are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4h
Ranges of Storm Flow Water Quality Parameters for SW-06-TT (Montvale Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-06-TT	06/19/09 - 06/20/09	16.5 - 18.3	7.0 - 7.3	6.7 - 6.8	429.8 - 454.7	Data unrecoverable	58.0 - 129.9
	07/01/09 - 07/03/09	16.1 - 17.7	5.8 - 7.5	6.4 - 6.8	401.0 - 525.8	338 - 772	14.6 - 374.0
	07/07/09 - 07/09/09	16.0 - 18.5	6.7 - 8.4	6.5 - 7.0	374.5 - 523.4	178 - 654	8.2 - 111.2
	07/24/09 - 07/26/09	17.4 - 21.5	5.7 - 7.7	6.5 - 6.8	456.6 - 514.1	174 - 418	0.2 - 399.0
	11/14/09 - 11/17/09	8.3 - 11.9	5.7 - 6.7	6.6 - 6.8	453.7 - 487.7	346 - 548	5.9 - 730.9
	12/03/09 - 12/04/09	8.4 - 12.0	8.0 - 10.6	6.7 - 6.9	467.3 - 483.2	246 - 476	5.5 - 64.0
	01/25/10 - 01/27/10	Data unrecoverable	1.0 - 3.8	6.8 - 7.0	369.1 - 429.1	512 - 1,788	Data unrecoverable
	02/24/10 - 02/28/10	1.4 - 4.4	9.8 - 11.6	6.8 - 7.0	59.1 - 138.9	200 - 954	6.1 - 238.9
	03/13/10 - 03/17/10	4.5 - 7.7	9.7 - 17.1 ²	6.5 - 7.2	54.9 - 213.3	96 - 962	2.4 - 349.4
	08/25/10 - 08/26/10	18.1 - 18.6	3.2 - 3.7	6.5 - 6.7	541.8 - 575.7	264 - 574	7.7 - 16.4
10/06/10 - 10/07/10	13.2 - 14.8	6.7 - 9.0	6.5 - 6.8	499.3 - 551.9	256 - 776	155.2 - 346.6	

Notes:

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = milliVolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

Specific conductance data for 6/18-19/09 storm unrecoverable due Isco 6712 transmission errors.

Temperature data for 1/25-1/27/10 storm unrecoverable to apparent In-Situ troll sensor damage.

Note: the pending software revision to Flowlink 5TM referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5TM are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

- 1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.
- 2 Recorded values are suspect (possible sensor drift).

Table 4i
Ranges of Storm Flow Water Quality Parameters for SW-07-TT (Swanton Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-07-TT	06/19/09 - 06/19/09	16.5 - 17.9	6.6 - 7.9	6.5 - 6.8	458.5 - 489.9	432 - 1,402	4.6 - 17.3
	07/01/09 - 07/02/09	16.4 - 17.7	6.3 - 7.8	5.6 - 5.9	449.1 - 494.8	58 - 928	4.4 - 63.9
	07/07/09 - 07/09/09	16.2 - 18.0	6.3 - 7.7	6.4 - 6.9	389.6 - 503.9	258 - 1,056	1.5 - 28.2
	07/24/09 - 07/26/09	17.9 - 20.9	6.0 - 6.7	6.5 - 6.8	482.7 - 506.6	496 - 726	1.4 - 17.4
	11/14/09 - 11/16/09	9.8 - 10.8	6.9 - 8.4	7.2 - 7.3	63.6 - 95.3	718 - 1,120	3.6 - 49.2
	12/03/09 - 12/04/09	Data rejected					
	01/25/10 - 01/27/10	2.1 - 4.8	8.8 - 9.8	6.7 - 7.0	Data unrecoverable	366 - 1,470	15.8 - 262.3
	02/24/10 - 02/27/10	2.7 - 5.1	9.6 - 11.6	6.5 - 7.1	349.4 - 586.2	282 - 1,658	7.0 - 217.7
	03/13/10 - 03/17/10	4.8 - 7.2	9.5 - 11.3	6.5 - 7.1	437.9 - 551.2	136 - 1,026	11.4 - 66.2
	08/25/10 - 08/27/10	18.2 - 18.6	6.6 - 8.9	6.4 - 6.6	538.0 - 578.1	108 - 500	7.5 - 45.3
10/06/10 - 10/07/10	13.5 - 14.9	7.6 - 10.6	7.0 - 7.4	459.6 - 508.7	136 - 718	11.0 - 93.7	

Notes:

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

Water quality data from 12/3-12/4/09 storm reviewed and rejected due to communication errors between the In-Situ troll and the Isco 6712.

ORP data for 1/25-1/26/10 storm unrecoverable due to communication errors between the In-Situ troll and the Isco 6712.

Note: the pending software revision to Flowlink 5™ referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5™ are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

Table 4j
Ranges of Storm Flow Water Quality Parameters for SW-08-TT (USGS / Mystic Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan							
SW-08-TT	06/18/09 - 06/20/09	16.9 - 18.7	5.7 - 7.1	6.4 - 6.6	470.9 - 525.3	490 - 976	14.6 - 38.3
	07/01/09 - 07/03/09	16.8 - 18.3	4.4 - 8.7	6.8 - 7.1	443.1 - 509.7	358 - 938	33.1 - 128.3
	07/07/09 - 07/11/09	17.7 - 20.9	5.3 - 8.0	7.0 - 7.3	361.4 - 508.1	506 - 1,002	4.4 - 39.7
	07/24/09 - 07/26/09	18.2 - 22.6	1.8 - 8.1	7.0 - 7.8	360.3 - 488.8	352 - 1,044	3.3 - 155.4
	11/14/09 - 11/16/09	9.3 - 11.5	2.7 - 10.5	6.9 - 7.2	387.3 - 463.5	184 - 942	4.3 - 329.2
	12/03/09 - 12/05/09	8.3 - 11.7	9.6 - 11.5	7.0 - 7.3	454.3 - 462.7	190 - 534	18.2 - 30.6
	01/25/10 - 01/27/10	1.5 - 3.9	11.0 - 11.8	6.9 - 7.2	169.8 - 284.1	398 - 1,040	7.8 - 178.7
	02/24/10 - 02/28/10	2.3 - 4.4	10.1 - 14.3	6.9 - 7.2	60.4 - 500.7	310 - 1,132	11.0 - 352.0
	03/13/10 - 03/17/10	4.5 - 7.6	9.5 - 11.5	6.8 - 7.2	601.7 - 999.0 ²	84 - 1,016	9.9 - 513.1
	08/25/10 - 08/25/10	18.3 - 18.8	7.7 - 9.0	6.6 - 6.8	286.9 - 371.2	106 - 302	10.9 - 81.4
10/06/10 - 10/07/10	13.8 - 14.7	9.9 - 16.4	7.0 - 7.3	492.5 - 554.7	166 - 638	6.7 - 46.2	

Notes:

USGS = United States Geological Survey

°C = Degrees Celsius

mg/l = milligrams per liter

s.u. = standard units

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units

Note: the pending software revision to Flowlink 5TM referenced in past storm reports has been implemented, but did not result in the reporting of correct turbidity values. However, according to representatives at Isco, the turbidity values reported in Flowlink 5TM are being magnified by a factor of one thousand. Therefore, the values reported have been corrected accordingly.

1 Dates shown indicate time period over which sample aliquots used in composite storm samples were collected; ranges of parameters reported are for same time period.

2 Highest value recorded prior to ORP sensor malfunction due to Isco 6712 power failure.

Table 5a
Storm Flow Laboratory Analytical Results for SW-2-IP (Atlantic Avenue Drainway)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-2	09/04/00	--	0.002U	0.002U	--	--	5U	--	--	--	--	--
	09/18/00	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
	10/09/00	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
	10/19/00	--	0.0036B	0.0025U	--	--	12	--	--	--	--	--
	12/18/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/23/01	--	0.0035U	0.0035U	--	--	21.6	--	--	--	--	--
	03/29/01	--	0.0025B	0.0042U	--	--	14	--	--	--	--	--
Remedial Design "Early Action"												
SW-2-IP	12/15/08	--	0.003U	0.003U	--	--	5U	0.229	0.05U	0.22U	0.54	0.31
Surface Water Monitoring Plan												
SW-2-IP	06/20/09	0.5U	0.003	0.003	1.3	0.06	6.3	0.086	0.08	0.27	0.76	0.67
	07/03/06	0.5U	0.003U	0.003U	1.8	0.34	14	0.187	0.05U	0.28	0.68	0.49
	07/09/09	0.5U	0.003U	0.003U	1.7	0.28	7.9	0.123	0.06	0.43	0.5	0.38
	07/26/09	0.5U	0.0028J	0.003U	1.2	0.38	12	0.613	0.028J	0.34	1.2	0.59
	11/16/09	0.5U	0.003U	0.003U	0.94	0.11	5.1	0.072J	0.05U	0.36	0.42	0.42
	12/04/09	0.5U	0.0025J	0.003U	1.2	0.12	10	0.136	0.05U	0.2	0.55	0.41
	01/27/10	0.5U	0.003U	0.003U	1	0.031J	12	0.182	0.05U	0.3	0.44	0.3U
	02/25/10	0.5U	0.003U	0.003U	0.8	0.13	5.8	0.213	0.05U	0.16	0.52	0.31
	03/01/10	0.5U	0.0022J	0.003U	0.64	0.12	6.5	0.181	0.025J	0.15	0.43	0.25J
	03/17/10	0.5U	0.003U	0.003U	0.4	0.12	5U	0.174	0.05U	0.2	0.46	0.3U
	08/26/10	0.5U	0.003U	0.003U	0.26	0.12	5U	0.075	0.05U	0.22	0.31	0.3U
	10/07/10*	0.5U	0.003U	0.003U	0.24	0.14	5U	0.0471J	0.08	0.18	0.29J	0.3U

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated

AAD = Atlantic Avenue Drainway

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated.

B = For organic analytes, compound detected in laboratory blank; for inorganic analytes, analyte below reporting limit, but greater than or equal to 1/2 the laboratory detection limit (value is estimated)

NS = Not Sampled

Table 5b
Storm Flow Laboratory Analytical Results for SW-3-IP (Boston Edison Co. ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-3	09/04/00	--	0.0058B	0.0057B	--	--	5U	--	--	--	--	--
	09/18/00	--	0.0102	0.0037B	--	--	5U	--	--	--	--	--
	10/09/00	--	0.0084B	0.0025U	--	--	5U	--	--	--	--	--
	10/19/00	--	0.0122	0.0093B	--	--	5	--	--	--	--	--
	12/18/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/23/01	--	0.022	0.0106	--	--	35.6	--	--	--	--	--
	03/29/01	--	0.0763	--	--	--	55.6	--	--	--	--	--
Remedial Design "Early Action"												
SW-3-IP	12/15/08	--	0.0024J	0.003U	--	--	15	0.246	0.05U	0.16U	0.59	0.34
Surface Water Monitoring Plan												
SW-3-IP	06/20/09	0.5U	0.024	0.004	1.8	0.06	29	0.759	0.1	0.46	1.2	0.44
	07/03/09	0.5U	0.036	0.004	3.6	0.16	58	1.27	0.05U	0.39	1.8	0.53
	07/09/09	0.5U	0.045	0.003U	5.8	0.046J	60	0.22	0.05U	0.32	0.59	0.37
	07/26/09	0.5U	0.004	0.0028J	0.35	0.05	5U	0.231	0.05U	0.1U	0.34	0.3U
	11/16/09	0.5U	0.05	0.0029J	5.3	0.04J	300	0.412	0.05U	0.19	1.3	0.89
	12/04/09	0.5U	0.042	0.003	3.8	0.042J	30	0.494	0.05U	0.16	0.79	0.3
	01/27/10	0.5U	0.046	0.003U	7.5	0.038J	120	0.27	0.05U	0.11	0.69	0.42
	02/25/10	0.5U	0.014	0.003U	2	0.11	26	1.87	0.05U	0.22	2.1	0.3U
	03/01/10	0.5U	0.007	0.003U	0.95	0.18	9	1.49	0.05U	0.13	1.7	0.21J
	03/17/10	0.5U	0.005	0.003	0.63	0.27	5.1	0.73	0.05U	0.24	0.9	0.3U
	08/26/10	0.5U	0.003	0.003U	0.4	0.046J	5U	0.0608J	0.05U	0.11	0.29J	0.3U
10/07/10*	0.5U	0.004	0.0026J	0.27	0.12	5U	0.574	0.07	0.21	0.75	0.3U	

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated

BECO ROW = Boston Edison Company Right-of-Way

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

B = For organic analytes, compound detected in laboratory blank; for inorganic analytes, analyte below reporting limit, but greater than or equal to 1/2 the laboratory detection limit (value is estimated)

**Table 5c
Storm Flow Laboratory Analytical Results for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-1	09/04/00	--	0.0028B	0.002U	--	--	5U	--	--	--	--	--
	09/18/00	--	0.0044B	0.0025U	--	--	5U	--	--	--	--	--
	10/09/00	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
	10/19/00	--	0.0062B	0.005U	--	--	25.5	--	--	--	--	--
	12/18/00	--	0.0063B	0.0035U	--	--	13.6	--	--	--	--	--
	03/23/01	--	0.0036J	0.0035U	--	--	62.8	--	--	--	--	--
	03/29/01	--	0.0024U	0.0042U	--	--	5.2	--	--	--	--	--
Multiple Source Groundwater Response Plan												
SW-01-TT	04/26/02	--	0.0051	0.002U	2.76	0.327	31.2J	--	--	--	--	--
	05/15/02	--	0.0018J	0.002U	1.23	0.447	25.8J	--	--	--	--	--
	07/25/02	--	0.0036	0.0013U	1.94	0.226J	22.1J	--	--	--	--	--
	08/31/02	--	0.0057U	0.0039UJ	1.65	0.0573U	15.8J	--	--	--	--	--
	09/25/02	--	0.0022J	0.0025U	1.68	0.203	21.4J	--	--	--	--	--
	10/18/02	--	0.0042J	0.003U	2.06	0.0818U	20.4	--	--	--	--	--
Remedial Design "Early Action"												
SW-01-TT	12/15/08	--	0.005	0.003U	--	--	30	0.61	0.05U	0.71	1.8	1.2
Surface Water Monitoring Plan												
SW-01-TT	06/20/09	0.5U	0.003U	0.003U	1.5	0.34	6.9	0.992	0.12	0.96	1.7	0.71
	06/20/09A	--	0.0028J	0.003U	1.6	0.29	20	1.24	0.11	0.54	2	0.76
	07/03/09	0.5U	0.0027J	0.003U	3.1	0.6	16	1.01	0.05	0.49	0.98	0.3U
	07/09/09	0.5U	0.003U	0.003U	1.4	0.51	23	0.667	0.08	0.53	1.5	0.83
	07/26/09	0.5U	0.0027J	0.003U	1.3	0.31	7.3	0.0654J	0.05U	0.1	0.55	0.55
	11/16/09	0.5U	0.008	0.003U	5.6	0.3	130	0.474	0.05U	0.31	1.9	1.4
	12/04/09	0.5U	0.0023J	0.003U	1.7	0.26	21	0.63	0.05U	0.42	1.3	0.67
	01/27/10 [†]	0.5U	0.005	0.003U	3.8	0.18	58	0.486	0.05U	0.38	1.3	0.81
	02/25/10	0.5U	0.0026J	0.003U	1.6	0.2	11	0.459	0.05U	0.32	1	0.54
	03/01/10	0.5U	0.004	0.003U	1.3	0.18	11	0.414	0.05U	0.36	1	0.59
	03/17/10	0.5U	0.003U	0.003U	0.37	0.13	7.8	0.29	0.05U	0.43	0.67	0.38
	08/26/10	0.5U	0.002J	0.003U	0.54	0.13	5U	0.17	0.05U	0.49	0.61	0.44
	10/07/10*	0.5U	0.0029J	0.003U	1.2	0.14	20	0.336	0.05U	0.42	0.99	0.65

Notes:

¹ Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated

[†]The samples collected from Stations SW-01-TT and SW-02-TT during the January 25-26, 2010 storm event do not reflect the laboratory-reported results. Specifically, based on historical analytical results for these stations and the results of a duplicate sample collected from Station SW-01-TT during the January 25-26, 2010 storm event, Roux Associates 1) believes that the sample designated as SW02TT_20100127 is actually the sample collected from Station SW-01-TT and the sample designated as SW01TT_20100127 is actually the sample collected from Station SW-02-TT and 2) has reported the results accordingly.

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated.

B = For organic analytes, compound detected in laboratory blank; for inorganic analytes, analyte below reporting limit, but greater than or equal to 1/2 the laboratory detection limit (value is estimated)

Table 5d
Storm Flow Laboratory Analytical Results for SW-02-TT (HBHA Pond Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-4A	09/18/00	--	0.055	0.0034J	5.66	--	20	--	--	--	--	--
SW-4B	09/18/00	--	0.0452	0.0025U	5.01	--	18.5	--	--	--	--	--
SW-4A	10/09/00	--	0.01	0.0025U	0.8	--	5U	--	--	--	--	--
SW-4	10/19/00	--	0.0305	0.0108	2.52	--	7.5	--	--	--	--	--
	12/18/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/29/01	--	0.006J	0.0071J	0.881UJ	--	7.2	--	--	--	--	--
Multiple Source Groundwater Response Plan												
SW-02-TT	04/26/02	--	0.0217	0.008	2.24	0.56	8.8J	--	--	--	--	--
	05/15/02	--	0.0815	0.0274	5.28	1.28	15.5J	--	--	--	--	--
	07/25/02	--	0.0205	0.0037	2.06	0.138U	6J	--	--	--	--	--
	08/31/02	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/25/02	--	0.037	0.0038J	3.47	0.0391	7.6J	--	--	--	--	--
	10/18/02	--	0.0774	0.0083	6.52	0.297	23.6	--	--	--	--	--
Remedial Design "Early Action"												
SW-02-TT	12/15/08	--	0.012	0.008	--	--	5U	2.95	0.05U	0.58	3.7	0.75
Surface Water Monitoring Plan												
SW-02-TT	06/20/09	0.66	--	--	--	--	--	--	--	--	--	--
	07/03/09	0.5U	0.027	0.011	3.2	1.3	9.2	8.47	0.07	0.51	9.2	0.73
	07/09/09	4.7	0.019	0.009	2.8	1.3	9.5	4.43	0.1	0.68	5	0.57
	07/26/09	1.7	0.015	0.009	1.6	0.67	5U	3.15	0.037J	0.3	4	0.85
	11/16/09	9.1	0.008	0.009	1.3J	1.3J	11J	5.91	0.05U	0.38	6.9	0.99
	12/04/09	3.8	0.021	0.013	2	0.82	5U	5.7	0.05U	0.47	6.1	0.4
	01/27/10 [†]	4.1	0.024	0.007	3.8	0.64	22	7.49	0.05U	0.4	8.5	1
	02/25/10	7.3	0.016	0.006	2.5	0.69	14	6.69	0.05U	0.34	7.2	0.51
	03/01/10	0.28J	0.005	0.004	0.72	0.36	10	1.15	0.025J	0.34	1.7	0.55
	03/17/10	0.37J	0.0026J	0.003U	0.5	0.19	5U	0.912	0.05U	0.42	1.3	0.39
	08/26/10	5	0.041	0.015	5.8	2.1	9.9	8.21	0.05U	0.44	8.4	0.3U
	10/07/10*	0.5U	0.028	0.009	3.3	0.98	7.9	7.87	0.08	0.44	8.4	0.53

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.

* Not yet validated

†The samples collected from Stations SW-01-TT and SW-02-TT during the January 25-26, 2010 storm event do not reflect the laboratory-reported results. Specifically, based on historical analytical results for these stations and the results of a duplicate sample collected from Station SW-01-TT during the January 25-26, 2010 storm event, Roux Associates 1) believes that the sample designated as SW02TT_20100127 is actually the sample collected from Station SW-01-TT and the sample designated as SW01TT_20100127 is actually the sample collected from Station SW-02-TT and 2) has reported the results accordingly.

HBHA = Halls Brook Holding Area

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated.

NS = Not Sampled

**Table 5e
Storm Flow Laboratory Analytical Results for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts**

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-9	09/18/00	--	0.0215	0.0028J	1.73	--	7	--	--	--	--	--
	10/09/00	--	0.0093	0.0025U	1.14	--	5	--	--	--	--	--
	10/19/00	--	0.0194	0.0108	1.9	--	5U	--	--	--	--	--
	12/18/00	--	0.009	0.0039J	1.5	--	5U	--	--	--	--	--
	03/23/01	--	0.0142	0.0086	1.49	--	7.2	--	--	--	--	--
	03/29/01	--	0.0072	0.0042U	1.18UJ	--	14.4	--	--	--	--	--
SW-9A	03/23/01	--	0.0035U	--	--	--	5	--	--	--	--	--
Multiple Source Groundwater Response Plan²												
SW-04-TT	04/26/02	--	0.0121	0.002U	1.93	0.419	TBD	--	--	--	--	--
	05/16/02	--	0.0075	0.002U	1.44	1.475	TBD	--	--	--	--	--
	07/25/02	--	0.0115	0.0037	1.4	0.0608	TBD	--	--	--	--	--
	08/31/02	--	0.0195	0.0019	1.73	0.0208	TBD	--	--	--	--	--
	09/25/02	--	0.0111	0.0038	1.44	0.486	TBD	--	--	--	--	--
	10/18/02	--	0.0294	0.0015	3.31	0.667	TBD	--	--	--	--	--
Remedial Design "Early Action"												
SW-04-TT	12/15/08	--	0.011	0.005	--	--	5.5	2.46	0.05U	0.48	3.1	0.64
Surface Water Monitoring Plan												
SW-04-TT	06/20/09	0.36J	0.016	0.003	--	--	5.5	3.95	0.12	0.58	4.5	0.55
	06/20/09A	--	0.014	0.007	1.9	0.72	14	2.74	0.12	0.53	3.3	0.56
	07/03/09	0.5U	0.02	0.008	--	--	9.5	5.84	0.1	0.71	6.9	1.1
	07/09/09	0.5U	0.016	0.008	--	--	7.3	3.55	0.14	0.55	4.2	0.65
	07/26/09	0.5U	0.011	0.005	--	--	5U	2.38	0.06	0.41	3	0.62
	11/16/09	1.9	0.017	0.008	--	--	5.9	5.79	0.05U	0.4	6.4	0.61
	12/04/09	2.2	0.015	0.007	--	--	5U	5.13	0.028J	0.68	5.4	0.27J
	01/27/10	0.5U	0.015	0.008	--	--	13	7.12	0.032J	0.46	7.7	0.58
	02/25/10	0.5	0.012	0.006	--	--	6.3	6.06	0.05U	0.36	6.4	0.34
	03/01/10	0.5U	0.004	0.0022J	--	--	5U	0.953	0.05U	0.33	1.3	0.35
	03/17/10	0.5U	0.0022J	0.0022J	--	--	5U	0.683	0.05U	0.43	0.95	0.3U
	08/26/10	1.2	0.021	0.011	--	--	5U	7.44	0.034J	0.57	7.8	0.36
	10/07/10*	0.5U	0.017	0.009	--	--	5U	5.78	0.11	0.58	6.1	0.32

Notes:

- Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown.
- As described in the RI/FS, multiple samples were analyzed during the MSGRP storm events. The flow-weighted values for each storm event are shown.

* Not yet validated

HBHA = Halls Brook Holding Area

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated.

TBD = to be determined

Table 5f
Storm Flow Laboratory Analytical Results for SW-03-TT (Aberjona)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-03-TT	04/26/02	--	0.0121	0.002U	1.93	0.307	--	--	--	--	--	--
	05/15/02	--	0.0075	0.002U	1.44	0.404	5UJ	--	--	--	--	--
	07/25/02	--	0.0117	0.0041	1.32	0.143	7J	--	--	--	--	--
	08/31/02	--	0.0195	0.0037UJ	1.73	0.14U	8.8J	--	--	--	--	--
	09/25/02	--	0.0122	0.004J	1.44	0.335	5.2J	--	--	--	--	--
	10/18/02	--	0.0284	0.003U	3.14	0.0721U	17.2	--	--	--	--	--
Surface Water Monitoring Plan												
SW-03-TT	06/20/09	0.5U	0.006	0.005	--	--	6.6	0.312	0.12	0.57	0.83	0.52
	07/03/09	0.5U	0.005	0.003U	--	--	18	0.249	0.08	0.58	1	0.75
	07/09/09	0.5U	0.004	0.003U	--	--	22	0.241	0.09	0.6	0.93	0.69
	07/26/09	0.5U	0.004	0.0029J	--	--	5U	0.256	0.07	0.75	0.75	0.49
	11/16/09	0.5U	0.009	0.003U	--	--	16	0.134	0.05U	0.36	0.69	0.56
	12/04/09	0.5U	0.003U	0.003	--	--	5U	0.248	0.028J	0.55	0.72	0.47
	01/27/10	0.5U	0.009	0.003U	--	--	28	0.315	0.05U	0.48	0.93	0.62
	02/25/10	0.5U	0.013	0.003U	--	--	42	0.292	0.05U	0.4	1	0.71
	03/01/10	0.5U	0.003U	0.003U	--	--	6.7	0.201	0.05U	0.45	0.57	0.37
	03/17/10	0.5U	0.003U	0.003U	--	--	5U	0.105	0.05U	0.47	0.48	0.38
	08/26/10	0.5U	0.05	0.003	--	--	16	0.16	0.05U	0.31	0.82	0.66
10/07/10*	0.5U	0.006	0.003U	--	--	7	0.18	0.09	0.41	0.59	0.41	

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5g
Storm Flow Laboratory Analytical Results for SW-05-TT (Salem Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-05-TT	04/26/02	--	0.015	0.0022J	2.09	0.356	15.7	--	--	--	--	--
	05/15/02	--	0.0233	0.0126	2.21	0.968	8J	--	--	--	--	--
	07/25/02	--	0.0175	0.0023J	1.85	0.129	4.4J	--	--	--	--	--
	08/31/02	--	0.0126	0.0025U	1.16	0.0884U	3J	--	--	--	--	--
	09/25/02	--	0.0115	0.0025U	1.15	0.0607	3.6J	--	--	--	--	--
	10/18/02	--	0.012	0.003U	1.46	0.244	6.8	--	--	--	--	--
Surface Water Monitoring Plan												
SW-05-TT	06/20/09	0.5U	0.01	0.004	--	--	8	0.801	0.13	0.67	1.6	0.8
	07/03/09	0.5U	0.008	0.004	--	--	10	1.13	0.11	0.65	1.8	0.67
	07/09/09	0.5U	0.008	0.007	--	--	5U	1.65	0.18	0.76	2.3	0.65
	07/26/09	0.5U	0.006	0.005	--	--	5U	0.423	0.07	0.7	0.93	0.51
	11/16/09	0.5U	0.01	0.006	--	--	5U	1.94	0.028J	0.56	2.6	0.66
	12/04/09	0.5U	0.007	0.003	--	--	5U	1.67	0.032J	0.7	2	0.33
	01/27/10	0.5U	0.024	0.0021J	--	--	35	2.67	0.05U	0.51	3.5	0.83
	03/01/10	0.5U	0.004	0.0027J	--	--	5.9	1.36	0.05U	0.41	1.8	0.44
	03/17/10	0.5U	0.0022J	0.003	--	--	5U	0.461	0.05U	1.3	0.79	0.33
	08/26/10	0.5U	0.013	0.006	--	--	5.2	2.96	0.06	0.53	3.5	0.54
10/07/10*	0.5U	0.008	0.004	--	--	5U	1.71	0.12	0.55	2.1	0.39	

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5h
Storm Flow Laboratory Analytical Results for SW-06-TT (Montvale Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-06-TT	04/26/02	--	0.0168	0.0034J	3.01	0.595	30.4	--	--	--	--	--
	05/15/02	--	0.0212	0.0118	2.15	0.79	11.5J	--	--	--	--	--
	07/25/02	--	0.0152	0.0025J	1.92	0.116U	8J	--	--	--	--	--
	08/31/02	--	0.0152	0.0025U	1.54	0.0919U	9.2J	--	--	--	--	--
	09/25/02	--	0.0255	0.0038J	2.77	0.211	18.6J	--	--	--	--	--
	10/18/02	--	0.0255	0.0026J	3.4	0.378	27.8	--	--	--	--	--
Surface Water Monitoring Plan												
SW-06-TT	06/20/09	0.5U	0.011	0.004	--	--	9.4	0.993	0.16	0.74	1.5	0.51
	07/03/09	0.5U	0.009	0.0022J	--	--	54	1.2	0.09	1	1.9	0.7
	07/09/09	0.5U	0.009	0.004	--	--	7.5	1.15	0.14	0.82	1.8	0.65
	07/26/09	0.5U	0.007	0.004	--	--	5U	0.695	0.06	0.62	1.2	0.5
	11/16/09	0.5U	0.014	0.003	--	--	18	1.57	0.027J	0.62	2.2	0.63
	12/04/09	0.5U	0.009	0.005	--	--	9.1	1.4	0.039J	1.6	1.9	0.5
	01/27/10	0.5U	0.014	0.0024J	--	--	33	2.34	0.029J	0.6	2.9	0.56
	03/01/10	0.5U	0.0028J	0.003U	--	--	5U	1.11	0.05U	0.51	1.6	0.49
	03/17/10	0.5U	0.007	0.003U	--	--	24	0.243	0.05U	0.81	0.81	0.57
	08/26/10	0.5U	0.012	0.004	--	--	8.1	2.04	0.06	0.58	2.7	0.66
10/07/10*	0.5U	0.008	0.002J	--	--	6.7	1.2	0.13	0.64	1.7	0.5	

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5i
Storm Flow Laboratory Analytical Results for SW-07-TT (Swanton Street)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan												
SW-07-TT	04/26/02	--	0.0117	0.002U	2.52	0.165	33.2	--	--	--	--	--
	05/15/02	--	0.0181	0.0077	1.93J	0.722	9J	--	--	--	--	--
	07/25/02	--	0.0053	0.0014J	0.91	0.0742J	6.1J	--	--	--	--	--
	08/31/02	--	0.0048J	0.0025U	0.777	0.0495U	6J	--	--	--	--	--
	09/25/02	--	0.0072	0.0032	0.88	0.206	4J	--	--	--	--	--
	10/18/02	--	0.0112	0.0036J	1.66	0.224	5.4	--	--	--	--	--
Surface Water Monitoring Plan												
SW-07-TT	06/20/09	0.5U	0.009	0.004	--	--	23	0.573	0.15	0.8	1.2	0.63
	07/03/09	0.5U	0.012	0.003U	--	--	130	0.419	0.08	0.83	1.4	0.98
	07/09/09	0.5U	0.009	0.004	--	--	15	0.949	0.13	0.88	1.75	0.75
	07/24/09	0.5U	0.007	0.0026J	--	--	9.5	0.539	0.07	0.71	1.1	0.56
	11/16/09	0.5U	0.008	0.003	--	--	13	1.13	0.05U	0.62	1.8	0.67
	12/04/09	0.5U	0.006	0.003U	--	--	5	1.08	0.039J	0.85	1.4	0.32
	01/27/10	0.5U	0.012	0.0023J	--	--	44	1.67	0.05U	0.61	2.4	0.73
	03/01/10	0.5U	0.0023J	0.0024J	--	--	5U	1.12	0.05U	0.58	1.4	0.28J
	03/17/10	0.5U	0.003U	0.003U	--	--	8.5	0.265	0.05U	0.8	0.69	0.42
	08/27/10	0.5U	0.013	0.005	--	--	29	1.57	0.08	0.85	2.4	0.83
10/07/10*	0.5U	0.007	0.003U	--	--	18	0.405	0.12	0.74	0.96	0.56	

Notes:

1 Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown

* Not yet validated

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

Table 5j
Storm Flow Laboratory Analytical Results for SW-08-TT (USGS / Mystic Avenue)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

DRAFT

Sample ID	Date ¹	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	Total Iron (mg/l)	Dissolved Iron (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Multiple Source Groundwater Response Plan²												
SW-08-TT	04/26/02	--	0.0082	0.0017	2.279	0.187	TBD	--	--	--	--	--
	05/16/02	--	0.0299	0.0034	8.858	0.317	TBD	--	--	--	--	--
	07/25/02	--	0.0064	0.0014	1.088	0.0066	TBD	--	--	--	--	--
	08/31/02	--	0.0085	0.0014	2.181	0.0021	TBD	--	--	--	--	--
	09/25/02	--	0.0068	0.0022	1.568	0.123	TBD	--	--	--	--	--
	10/18/02	--	0.0041	0.0018	0.806	0.23	TBD	--	--	--	--	--
Surface Water Monitoring Plan												
SW-08-TT	06/20/09	0.5U	0.008	0.004	--	--	18	0.413	0.11	0.79	1	0.59
	07/03/09	0.5U	0.006	0.003U	--	--	29	0.462	0.09	0.82	1.5	1
	07/11/09	0.5U	0.003	0.004	--	--	13	0.229	0.07	0.78	0.98	0.75
	07/26/09	0.5U	0.005	0.0025J	--	--	9.4	0.288	0.05	0.65	1.2	0.91
	11/16/09	0.5U	0.006	0.003	--	--	15	0.548	0.026J	0.55	1.4	0.85
	12/04/09	0.5U	0.004	0.0021J	--	--	5U	0.95	0.031J	0.77J	1.1	0.15J
	01/27/10	0.5U	0.009	0.0026J	--	--	33	1.4	0.03J	0.64	2	0.6
	03/01/10	0.5U	0.003	0.003U	--	--	8.9	0.599	0.05U	0.66	1.1	0.5
	03/17/10	0.5U	0.0022J	0.003U	--	--	17	0.236	0.05U	1.6	0.59	0.35
	08/26/10	0.5U	0.006	0.006	--	--	12	0.322	0.05U	0.44	0.85	0.53
10/07/10*	0.5U	0.006	0.0021J	--	--	7.1	0.249	0.1	0.71	0.81	0.56	

Notes:

- Dates shown are dates on which composite storm samples were prepared; benzene samples are typically collected one or more days before the date shown
- As described in the RI/FS, multiple samples were analyzed during the MSGRP storm events. The flow-weighted values for each storm event are shown

* Not yet validated

µg/l = micrograms per liter

mg/l = milligrams per liter

TSS = Total Suspended Solids

TKN = Total Kjeldahl Nitrogen

-- = Sample not analyzed for this compound

U = Compound or sample not detected; value shown is reporting limit

J = Analyte concentration is below quantitation limit, but greater than or equal to 1/2 the laboratory detection limit. Value is estimated

TBD = to be determined

Table 6
Relative Surface Water and Groundwater Elevations at Time of Storm Sampling
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station ID	Station Description	Date ¹	Surface Water			Groundwater			Gradient
			Measuring Point ² (ft)	Staff Gage Reading (ft)	Surface Water Elevation ³ (ft)	Measuring Point ⁴ (ft)	Depth to Water (ft)	Groundwater Elevation ³ (ft)	
SW-2-IP	AAD	06/19/09	56.36	0.62	56.98	59.18	3.16	56.02	Down
		07/01/09	56.36	NM	NA	59.18	NM	NA	NA
		07/07/09	56.36	1.44	57.80	59.18	NM	NA	NA
		07/24/09	56.36	1.05	57.41	59.18	2.42	56.76	Down
		11/14/09	56.36	1.20	57.56	59.18	2.35	56.83	Down
		12/03/09	56.36	0.92	57.28	59.18	2.54	56.64	Down
		01/25/10	56.36	1.28	57.64	59.18	2.41	56.77	Down
		02/24/10	56.36	0.95	57.31	59.18	2.76	56.42	Down
		02/25/10	56.36	1.00	57.36	59.18	2.21	56.97	Down
		03/13/10	56.36	0.82	57.18	59.18	2.75	56.43	Down
		08/25/10	56.36	1.32	57.68	59.18	1.80	57.38	Down
		10/06/10	56.36	0.66	57.02	59.18	2.78	56.40	Down
SW-3-IP	BECO ROW	06/19/09	51.57	0.40	51.97	55.59	2.47	53.12	Up
		07/01/09	51.49	NM	NA	55.59	NM	NA	NA
		07/07/09	51.49	1.68	53.17	55.59	NM	NA	NA
		07/24/09	51.49	1.70	53.19	55.59	1.53	54.06	Up
		11/14/09	51.49	2.00	53.49	55.59	1.05	54.54	Up
		12/03/09	51.49	1.48	52.97	55.59	1.50	54.09	Up
		01/25/10	51.49	1.70	53.19	55.59	1.50	54.09	Up
		02/24/10	51.49	1.79	53.28	55.59	1.20	54.39	Up
		02/25/10	51.49	1.82	53.31	55.59	0.93	54.66	Up
		03/13/10	51.49	0.88	52.37	55.59	2.05	53.54	Up
		08/25/10	51.49	2.00	53.49	55.59	1.10	54.49	Up
		10/06/10	51.49	0.41	51.90	55.59	2.56	53.03	Up
SW-01-TT	Halls Brook	06/19/09	54.71	1.58	56.29	58.60	5.28	53.32	Down
		07/01/09	54.71	NM	NA	58.60	NM	NA	NA
		07/07/09	54.71	2.48	57.19	58.60	NM	NA	NA
		07/24/09	54.71	2.42	57.13	58.60	4.72	53.88	Down
		11/14/09	54.71	2.45	57.16	58.60	5.07	53.53	Down
		12/03/09	54.71	2.26	56.97	58.60	4.89	53.71	Down
		01/25/10	54.71	2.58	57.29	58.60	5.14	53.46	Down
		02/24/10	54.71	2.48	57.19	58.60	4.95	53.65	Down
		02/25/10	54.71	2.40	57.11	58.60	3.92	54.68	Down
		03/13/10	54.71	1.98	56.69	58.60	5.04	53.56	Down
		08/25/10	54.71	2.85	57.56	58.60	4.30	54.30	Down
		10/06/10	54.71	1.40	56.11	58.60	5.35	53.25	Down
SW-02-TT	HBHA Pond Outlet	06/19/09	50.27	1.58	51.85	56.38	4.47	51.91	Up
		07/01/09	50.27	NM	NA	56.38	NM	NA	NA
		07/07/09	50.27	2.74	53.01	56.38	3.21	53.17	Up
		07/24/09	50.27	2.65	52.92	56.38	3.24	53.14	Up
		11/14/09	50.27	2.88	53.15	56.38	3.15	53.23	Up
		12/03/09	50.27	2.70	52.97	56.38	3.38	53.00	Up
		01/25/10	50.27	1.52	51.79	56.38	3.52	52.86	Up
		02/24/10	50.27	2.62	52.89	56.38	3.38	53.00	Up
		02/25/10	50.27	2.95	53.22	56.38	3.05	53.33	Up
		03/13/10	50.27	1.96	52.23	56.38	4.03	52.35	Up
		08/25/10	50.27	3.20	53.47	56.38	2.85	53.53	Up
		10/06/10	50.27	1.38	51.65	56.38	4.65	51.73	Up
SW-03-TT	Aberjona	06/19/09	48.07	1.28	49.35	52.02	2.59	49.43	Up
		07/01/09	48.07	NM	NA	52.02	NM	NA	NA
		07/07/09	48.07	NM	NA	52.02	NM	NA	NA
		07/24/09	48.07	2.30	50.37	52.02	1.75	50.27	Down
		11/14/09	48.07	2.80	50.87	52.02	1.46	50.56	Down
		12/03/09	48.07	2.02	50.09	52.02	1.91	50.11	Up
		01/25/10	48.07	2.58	50.65	52.02	1.50	50.52	Down
		02/24/10	47.93	2.10	50.03	52.02	2.16	49.86	Down
		02/25/10	47.93	2.60	50.53	52.02	1.36	50.66	Up
		03/13/10	47.93	1.70	49.63	52.02	2.28	49.74	Up
		08/25/10	47.93	2.65	50.58	52.02	1.42	50.60	Up
		10/06/10	47.93	0.96	48.89	52.02	3.50	48.52	Down
SW-05-TT	Salem Street	06/19/09	90.89	5.06	95.95	98.23	2.46	95.77	Down
		07/01/09	90.89	NM	NA	98.23	NM	NA	NA
		07/07/09	90.89	NM	NA	98.23	NM	NA	NA
		07/24/09	94.16	NM	NA	98.23	2.21	96.02	NA
		11/14/09	93.98	3.19	97.17	98.23	1.37	96.86	Down
		12/03/09	93.98	NM	NA	98.23	1.66	96.57	NA
		01/25/10	93.96	2.40	96.36	98.23	1.97	96.26	Down
		02/24/10	93.96	2.38	96.34	98.23	2.05	96.18	Down
		03/13/10	94.58	1.40	95.98	98.23	2.29	95.94	Down
		08/25/10	94.58	2.65	97.23	98.23	1.36	96.87	Down
		10/06/10	94.58	1.08	95.66	98.23	2.91	95.32	Down

Table 6
Relative Surface Water and Groundwater Elevations at Time of Storm Sampling
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Station ID	Station Description	Date ¹	Surface Water			Groundwater			Gradient
			Measuring Point ² (ft)	Staff Gage Reading (ft)	Surface Water Elevation ³ (ft)	Measuring Point ⁴ (ft)	Depth to Water (ft)	Groundwater Elevation ³ (ft)	
SW-06-TT	Montvale Avenue	06/19/09	92.76	2.36	95.12	98.48	3.30	95.18	Up
		07/01/09	92.76	NM	NA	98.48	NM	NA	NA
		07/07/09	92.76	NM	NA	98.48	NM	NA	NA
		07/24/09	92.76	NM	NA	98.48	2.84	95.64	NA
		11/14/09	92.76	4.05	96.81	98.48	NM	NA	NA
		12/03/09	92.27	3.78	96.05	98.48	NM	NA	NA
		01/25/10	92.27	4.14	96.41	98.48	2.30	96.18	Down
		02/24/10	92.32	3.70	96.02	98.48	NM	NA	NA
		03/13/10	92.48	3.26	95.74	98.48	NM	NA	NA
		08/25/10	92.48	4.30	96.78	98.48	1.80	96.68	Down
		10/06/10	92.48	3.03	95.51	98.48	3.30	95.18	Down
		SW-07-TT	Swanton Street	06/19/09	90.03	1.55	91.58	93.87	2.11
07/01/09	90.03			NM	NA	93.87	NM	NA	NA
07/07/09	90.03			NM	NA	93.87	NM	NA	NA
07/24/09	90.11			NM	NA	93.87	1.89	91.98	NA
11/14/09	90.11			3.10	93.21	93.87	0.87	93.00	Down
12/03/09	90.11			2.66	92.77	93.87	1.25	92.62	Down
01/25/10	90.11			2.58	92.69	93.87	1.58	92.29	Down
02/24/10	90.11			2.30	92.41	93.87	1.85	92.02	Down
03/13/10	90.11			1.72	91.83	93.87	2.00	91.87	Up
08/25/10	90.11			3.80	93.91	93.87	NM	NA	NA
10/06/10	90.11	1.84	91.95	93.87	2.14	91.73	Down		
SW-08-TT	USGS / Mystic Avenue	06/19/09	89.49	3.30	92.79	95.28	3.05	92.23	Down
		07/01/09	89.49	NM	NA	95.28	NM	NA	NA
		07/07/09	Unk.	NM	NA	95.28	NM	NA	NA
		07/24/09	89.44	11.65	101.09	95.28	2.43	92.85	Down
		11/14/09	81.29	12.30	93.59	95.28	1.97	93.31	Down
		12/03/09	81.29	12.00	93.29	95.28	2.29	92.99	Down
		01/25/10	81.29	11.82	93.11	95.28	2.57	92.71	Down
		02/24/10	81.29	11.70	92.99	95.28	2.72	92.56	Down
		03/13/10	81.29	10.90	92.19	95.28	2.85	92.43	Up
		08/25/10	81.29	12.60	93.89	95.28	1.93	93.35	Down
10/06/10	81.29	11.05	92.34	95.28	3.41	91.87	Down		

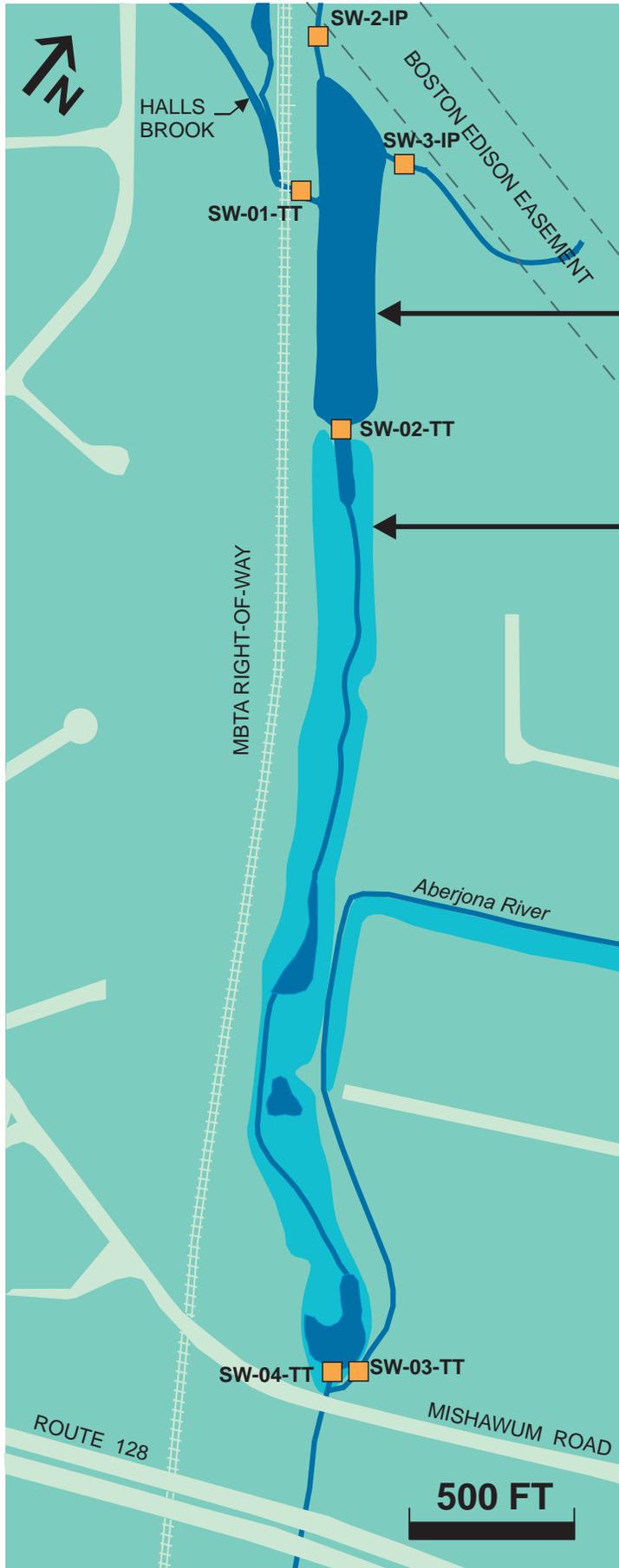
Notes:

- 1 Relative surface water and groundwater elevations were recorded during benzene grab sampling following the onset of the storm.
- 2 Reference point is base of gauge (0.00 feet)
- 3 Elevations for stations SW-2-IP, SW-3-IP, and SW-01-TT through SW-03-TT reference the horizontal Datum MA (83) and the vertical datum NGVD 29. The remaining stations are relative to station-specific benchmarks and, therefore, are not comparable between stations.
- 4 Reference point is top of casing

AAD = Atlantic Avenue Drainway
 BECO ROW = Boston Edison Company right-of-way
 HBHA = Halls Brook Holding Area
 USGS = United States Geological Survey
 NA = Not Applicable
 NM = Not Measured (e.g., unable to access due to high stage, water frozen in piezometer, piezometer full, staff gauge knocked over). During the July 2009 storm events, staff gauges that were knocked over were unable to be reset prior to the subsequent storm, and therefore measurements were not obtained.
 Unk. = Unknown Value

FIGURES

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HBHA POND

HBHA WETLAND

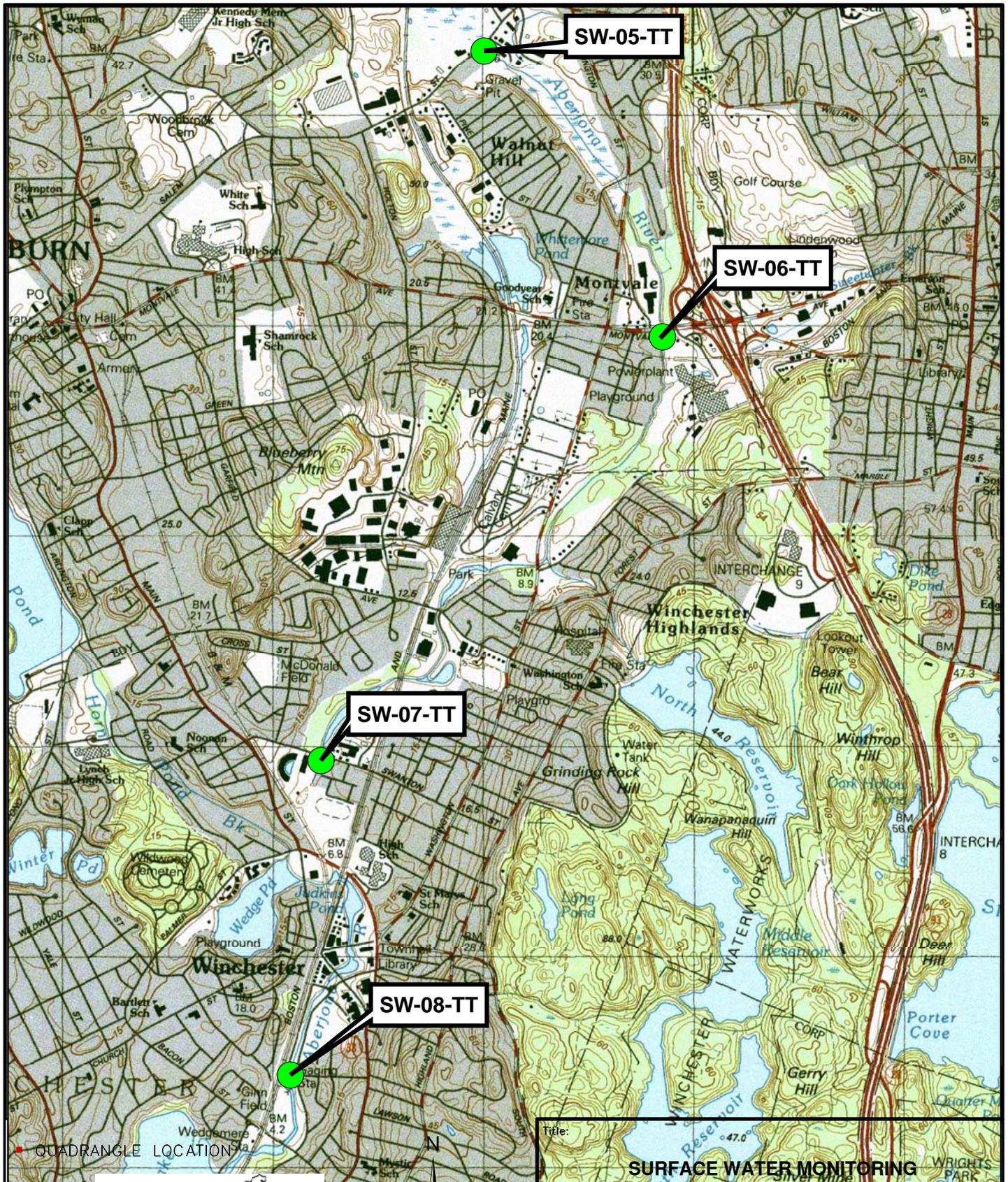
LEGEND

SW-01-TT  APPROXIMATE LOCATION AND DESIGNATION OF SURFACE WATER MONITORING STATION

DRAFT

Title:			SURFACE WATER MONITORING STATIONS NORTH OF ROUTE 128
Prepared for:			
INDUSTRI-PLEX OU 2 SETTLING DEFENDANTS			FIGURE 1
	Compiled by: LM	Date: 7/10/09	
ROUX ASSOCIATES INC. <i>Environmental consulting & Management</i>	Prepared by: CRS	Scale: AS SHOWN	
	Project Mgr.: LM	Office: MA	
	File No.: IPS0114202	Project No.: 119407M07	

T:\GIS\I-PLEX\IPS0114201.mxd



DRAFT

0 1,000 2,000
 Feet

SOURCE:
 USGS, 1987.
 Reading (Massachusetts) Quadrangle
 1:25,000—scale Topographic Map

Title:
SURFACE WATER MONITORING STATIONS SOUTH OF ROUTE 128

Prepared For:
 INDUSTRI-PLEX OU 2 SETTLING DEFENDANTS

 ROUX ASSOCIATES, INC. <i>Environmental Consulting & Management</i>	Compiled By: LM	Date: 7/10/09	FIGURE 2
	Prepared By: CRS	Scale: AS SHOWN	
	Project Mgr.: LM	Office: MA	
	File No.: IPS0114201	Project: 119401M	

APPENDIX A

Storm Hydrographs including Narrative

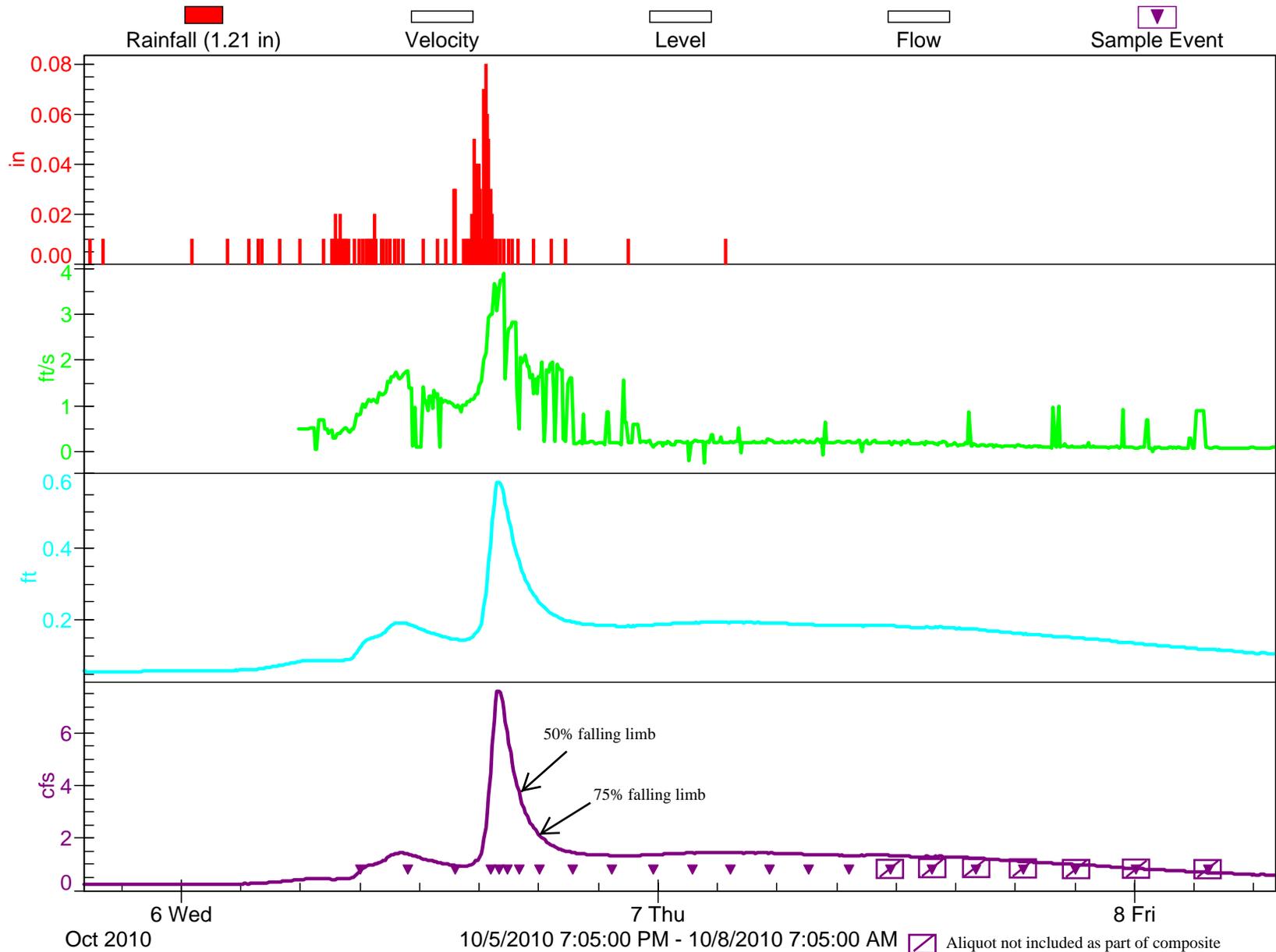
October 5-7, 2010

DRAFT

October 5-7, 2010

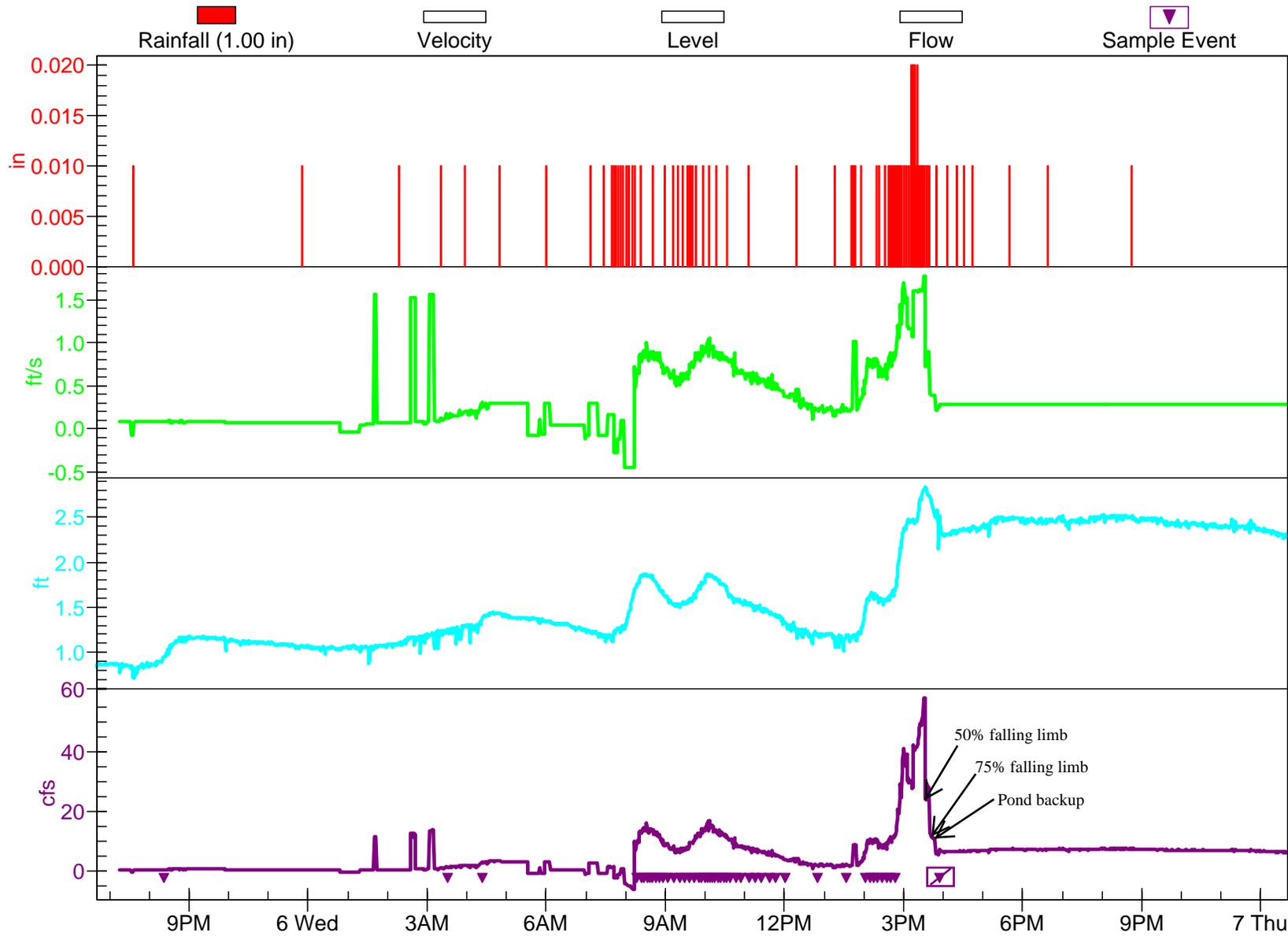
- **SW-2-IP:**
 - Sixteen aliquots were collected after 75% of the falling limb was reached, nine of which were inadvertently included in composite
- **SW-3-IP:**
 - Total number of aliquots collected is lower than anticipated based on flow due to time requirements of Isco pumping process (i.e., pump, purge and rinse cycles)
 - Sampling was terminated before achieving 50% of the falling limb due to delay in changing out rosettes
 - Pond backup began at approximately 3:48 pm on 10/6
- **SW-01-TT:**
 - Six aliquots were collected after 75% of the falling limb was reached, but were not included in the composite
- **SW-02-TT:**
 - Two aliquots included in the composite are not shown on the hydrograph due to software malfunction
- **SW-03-TT:**
 - Due to suspect A/V sensor malfunction, stage (and hence flow) data do not represent actual conditions
 - Aliquots not collected between approximately 4:32 am and 6:33 am on 10/7 due to delay in changing out rosettes
- **SW-05-TT:**
 - Due to A/V sensor malfunction, stage (and hence flow) data do not represent actual conditions
 - Aliquots not collected between approximately 11:55 pm on 10/6 and 1:06 am on 10/7 due to delay in changing out rosettes
 - One aliquot included in the composite is not shown on the hydrograph or the Isco site report due to software malfunction
- **SW-06-TT**
 - One aliquot was included in the composite is not shown on the hydrograph due to software malfunction
- **SW-08-TT:**
 - Initial sampling delayed due to power failure
 - Measured precipitation shown is low due to power failure
 - Approximately 24 hours of flow data lost during the falling limb due to the resetting of the sampler program during subsequent Operation and Maintenance activities immediately following sampling termination, which inadvertently erased stored data

SW-2-IP Flowlink 5



- Stage is relative to the crest of the weir.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

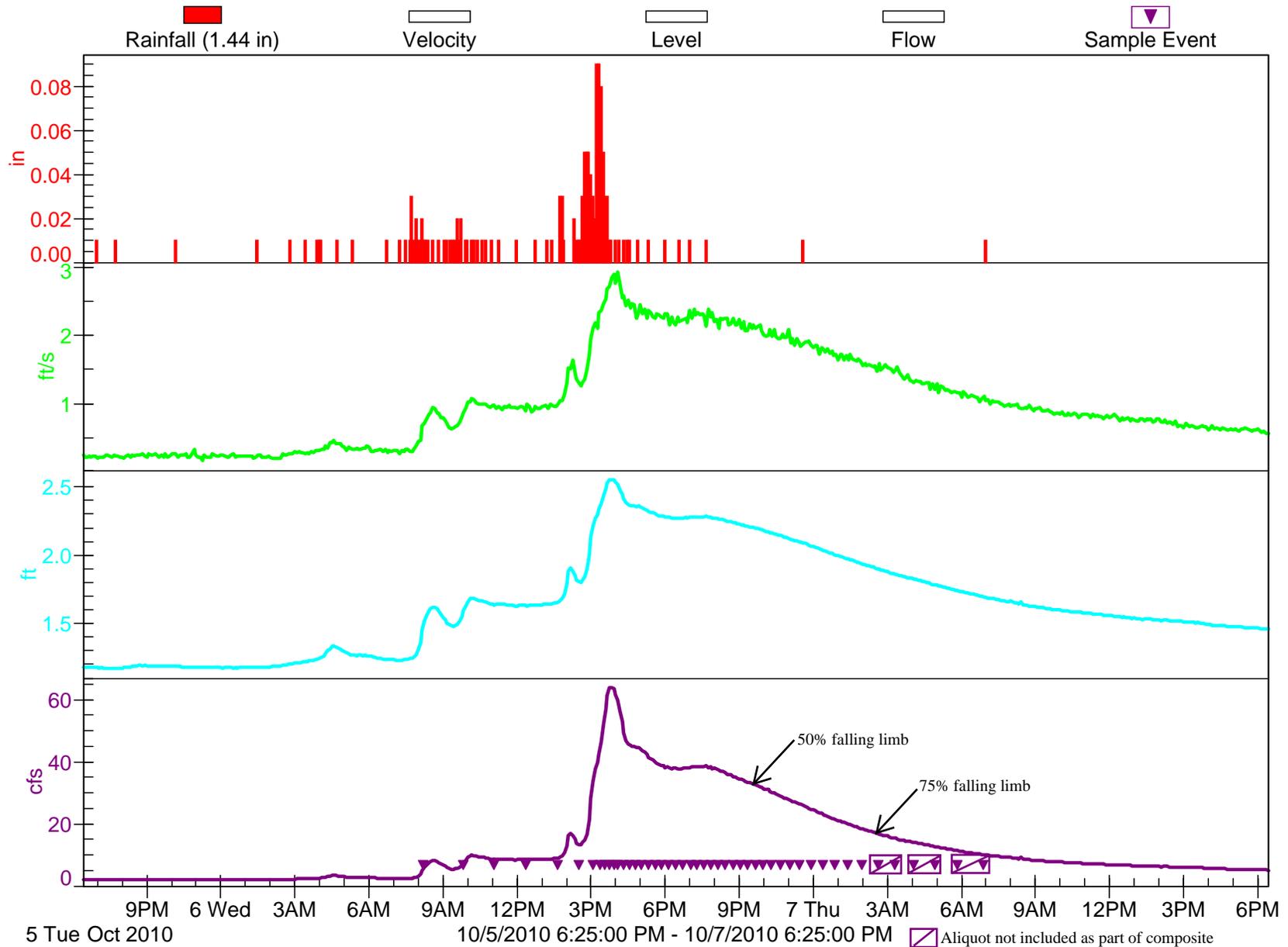
SW-3-IP Flowlink 5



- Stage is relative to the sensor elevation.
- Flow shown was estimated based on level and velocity.
- Sampling terminated when forward velocity no longer detected; hydrograph extended beyond termination of sampling to show pond backup.

SW-01-TT

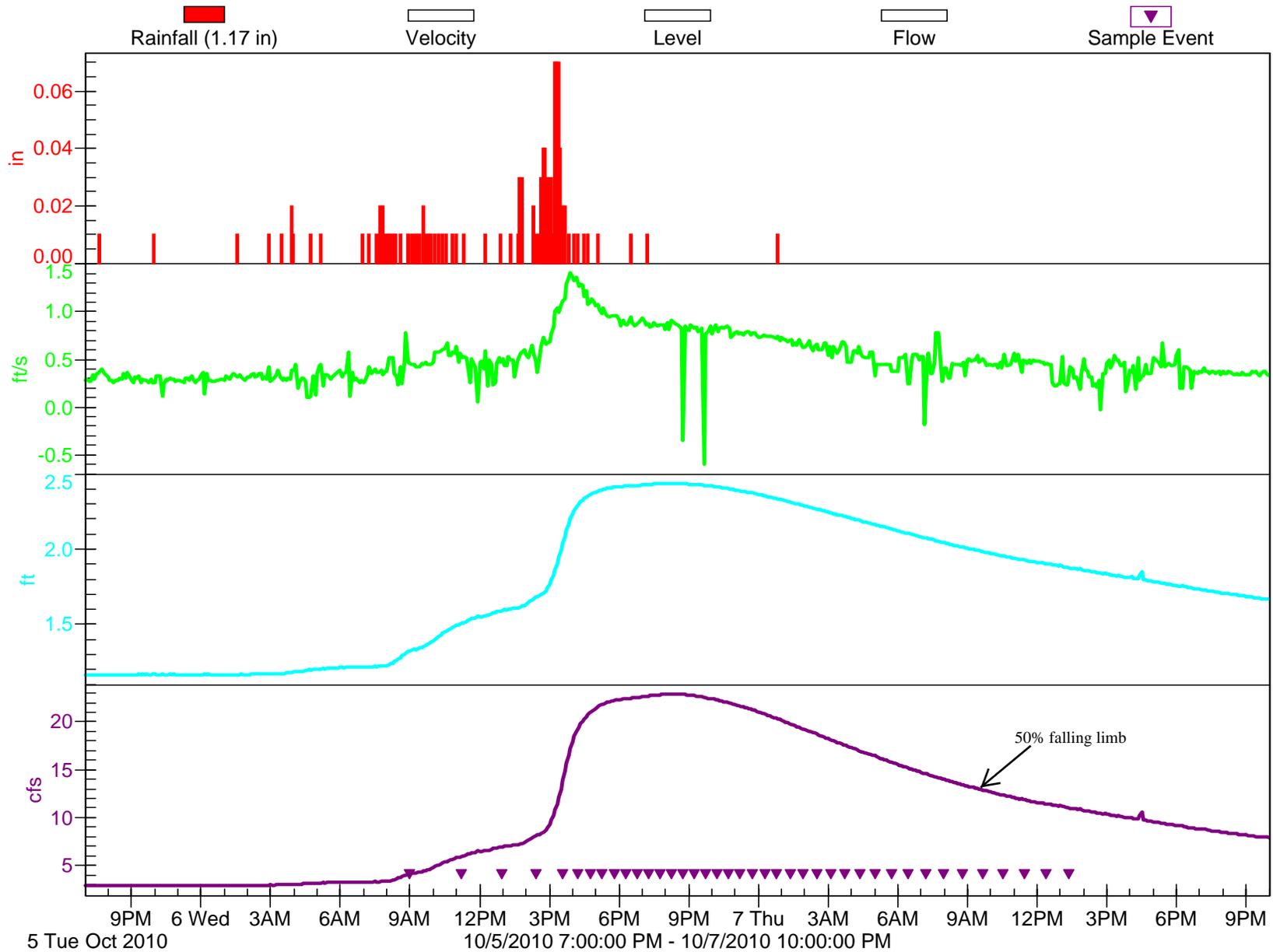
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-02-TT

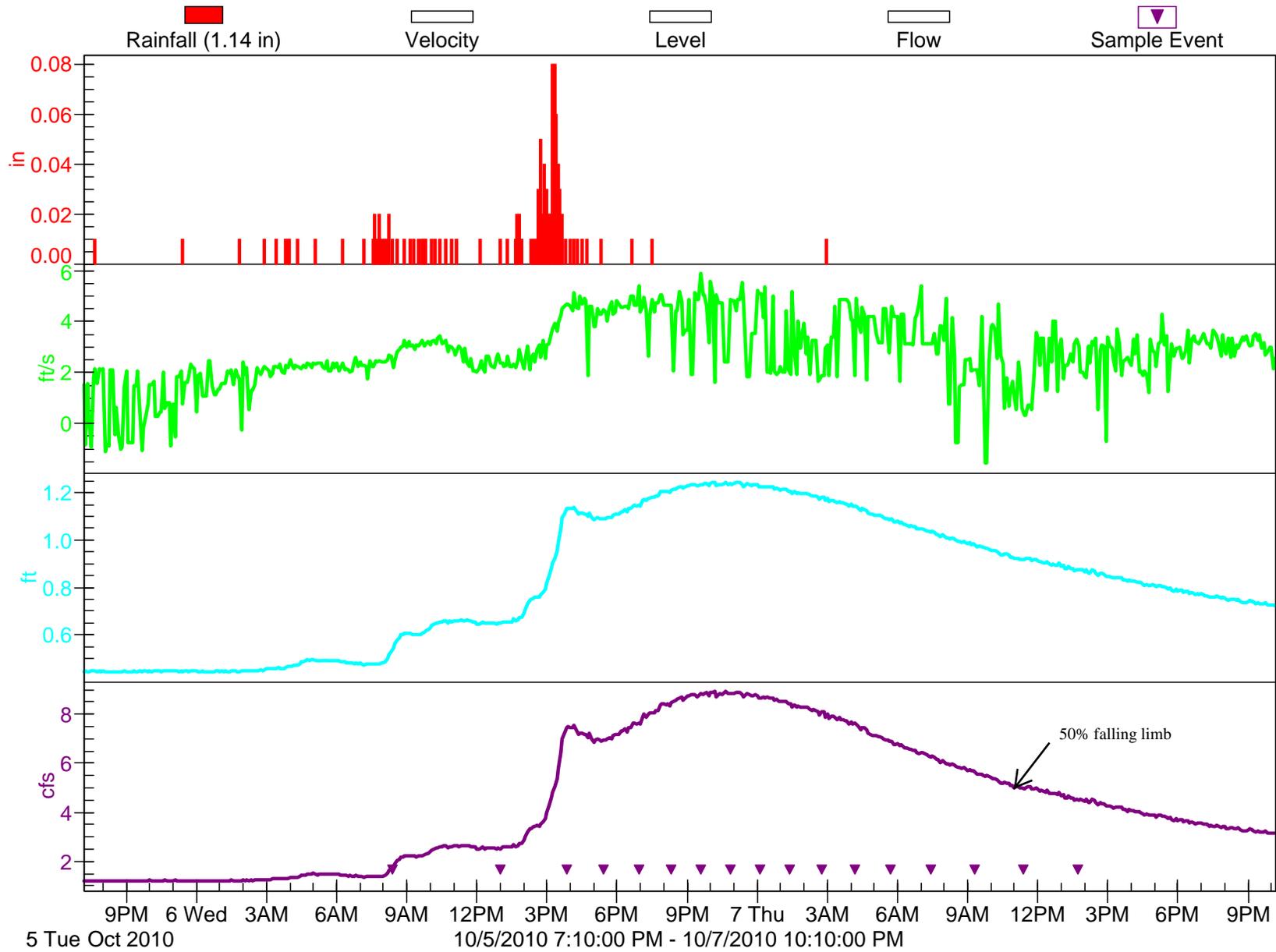
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-04-TT

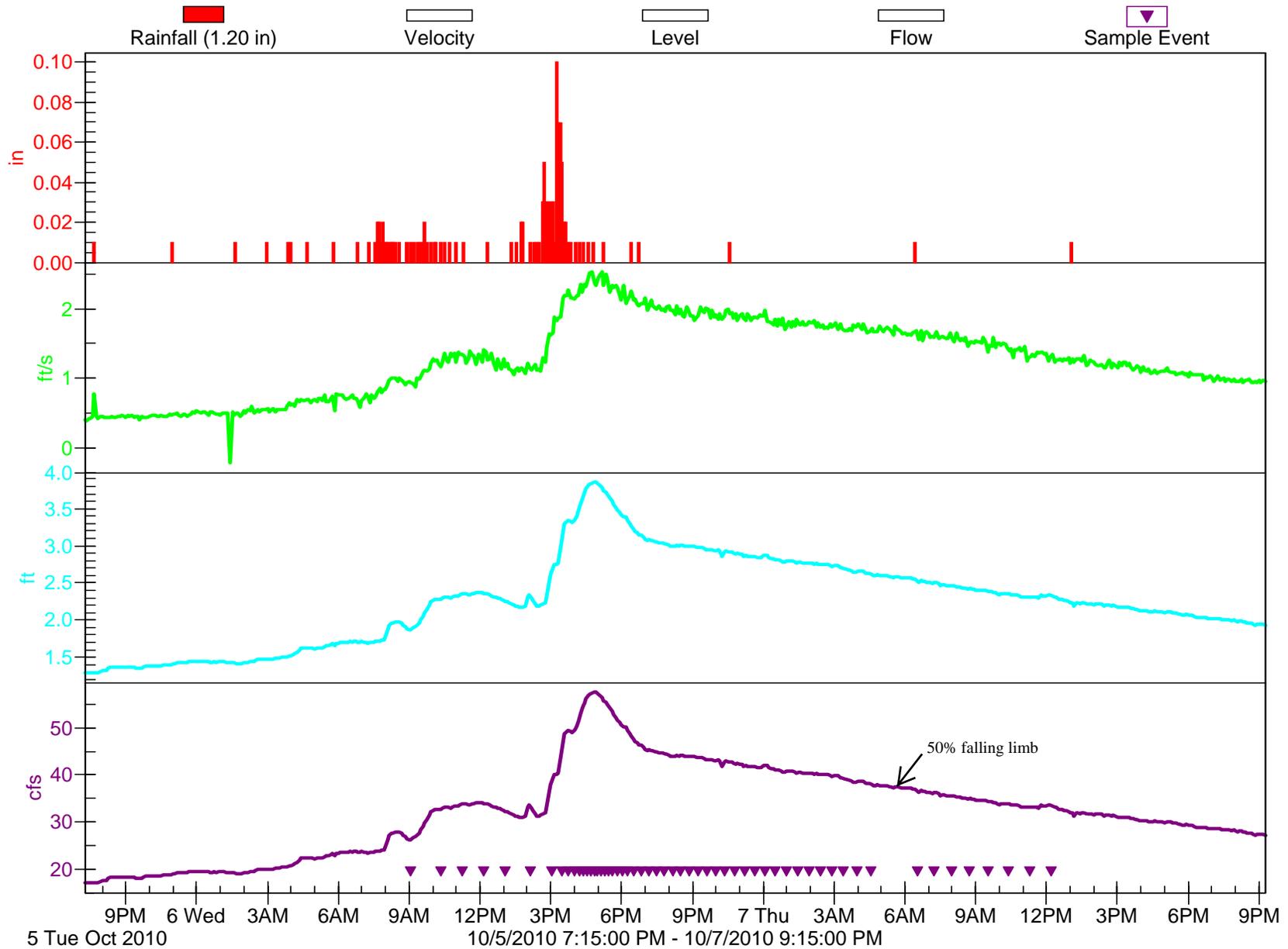
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-03-TT

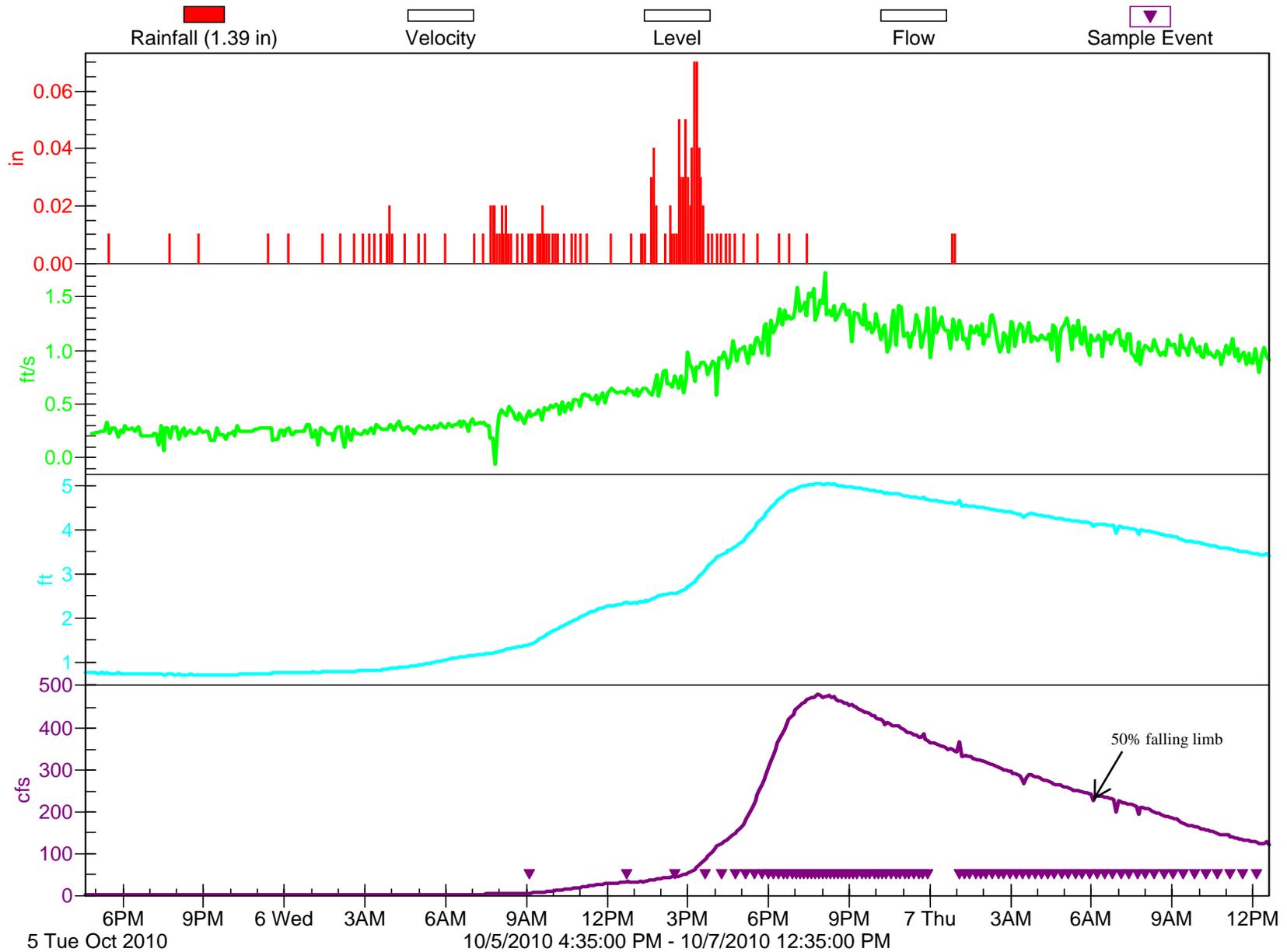
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-05-TT

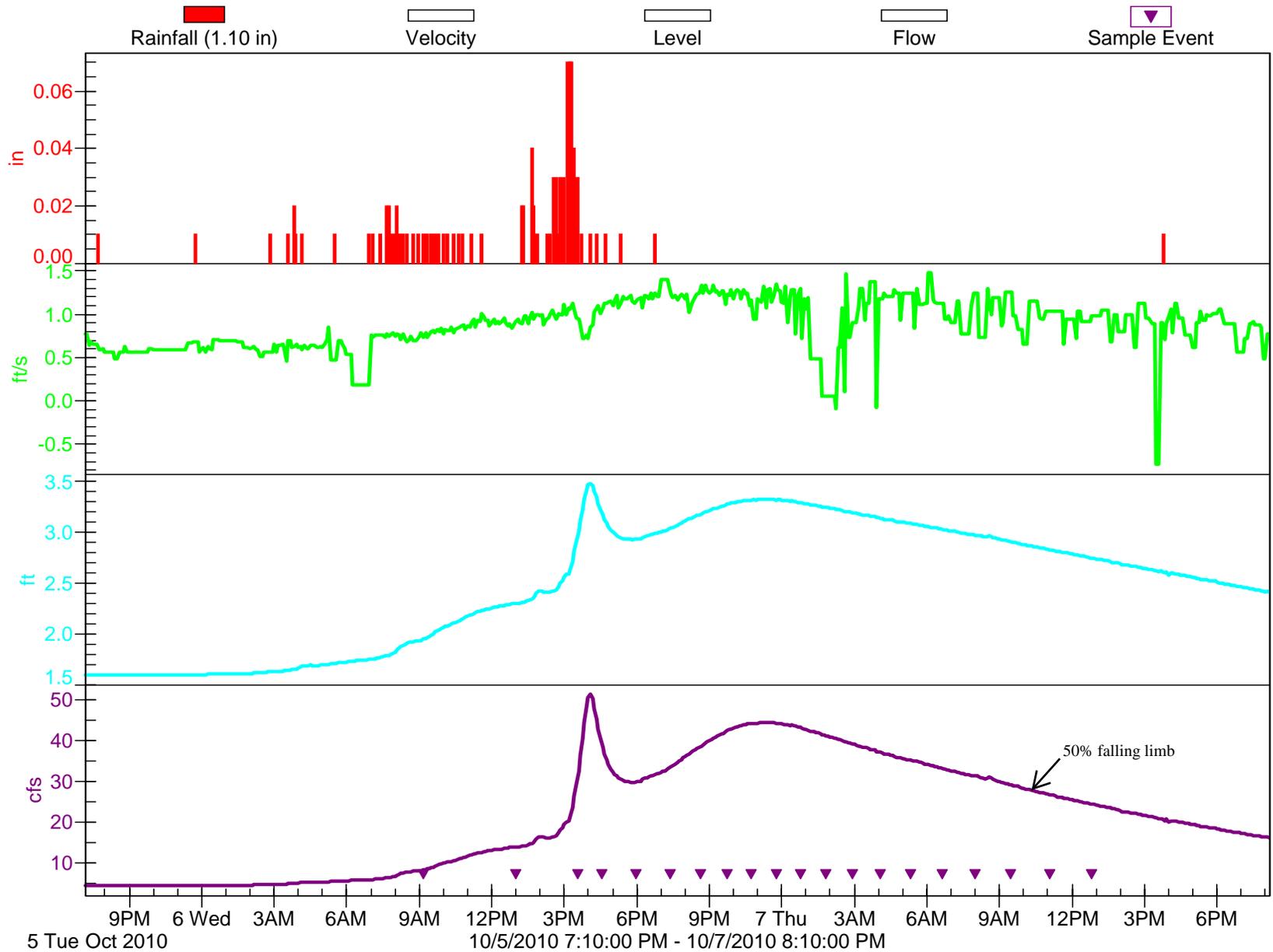
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-06-TT

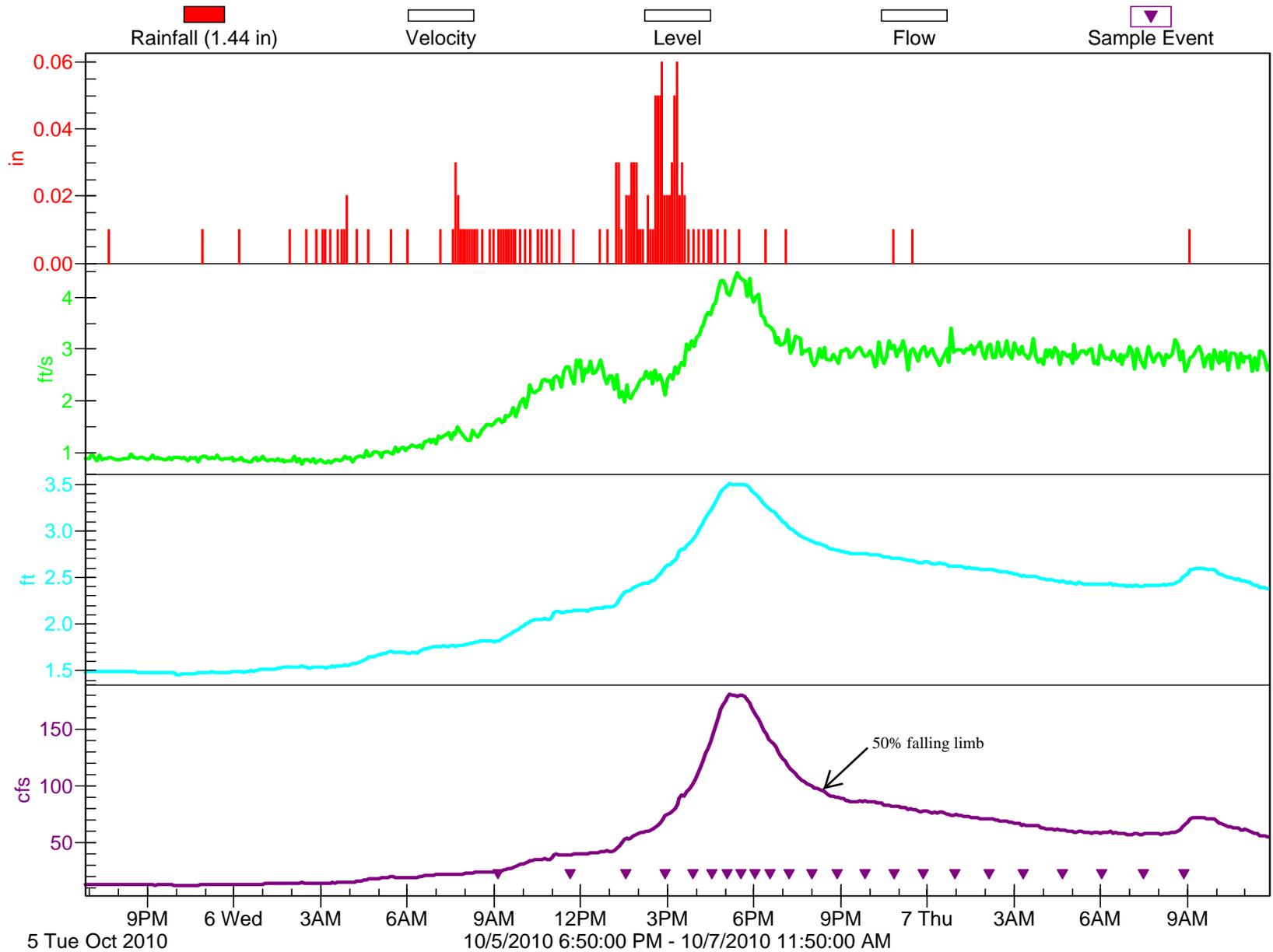
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-07-TT

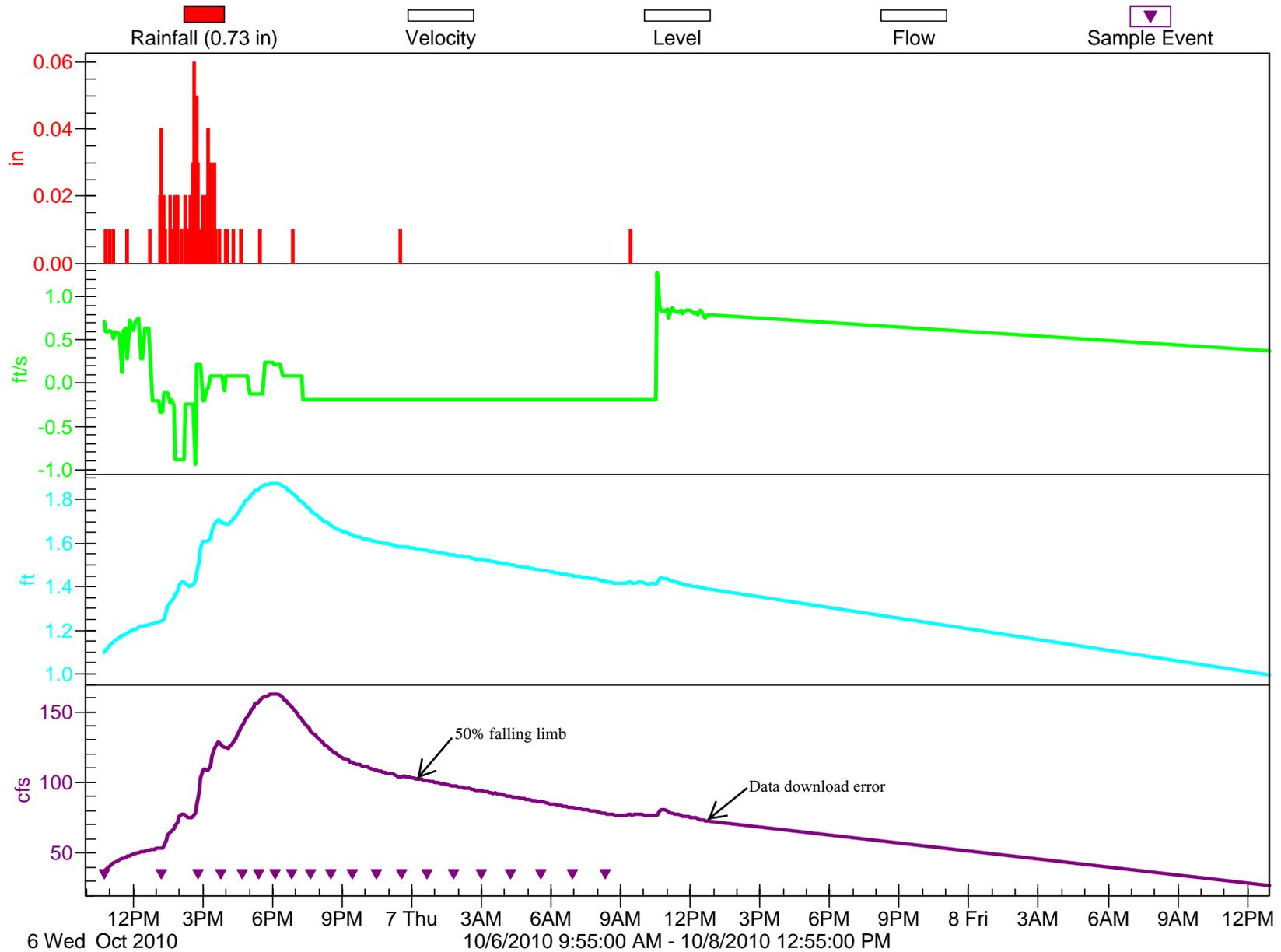
Flowlink 5



- Stage is relative to the stream bottom.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 5.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

SW-08-TT

Flowlink 5

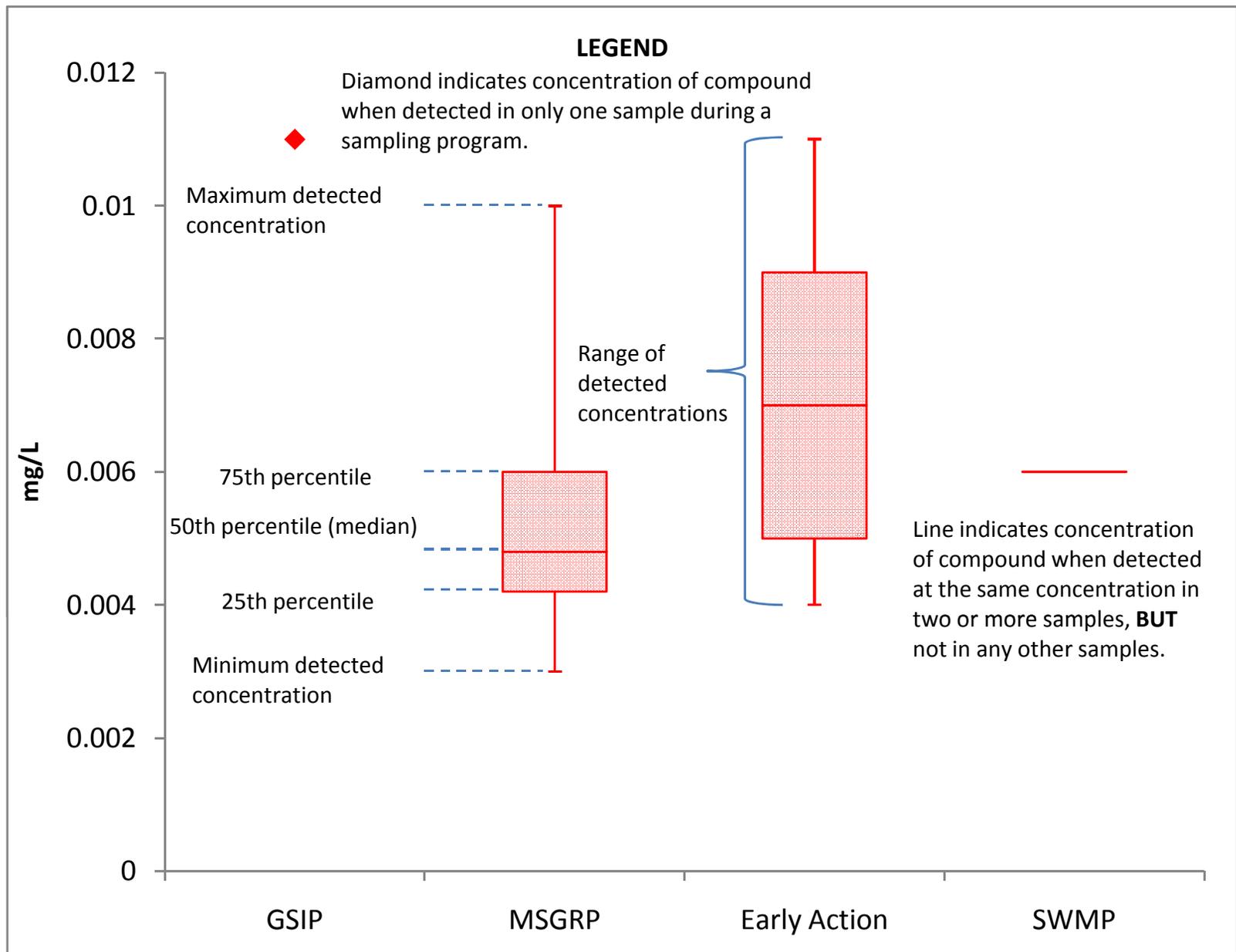


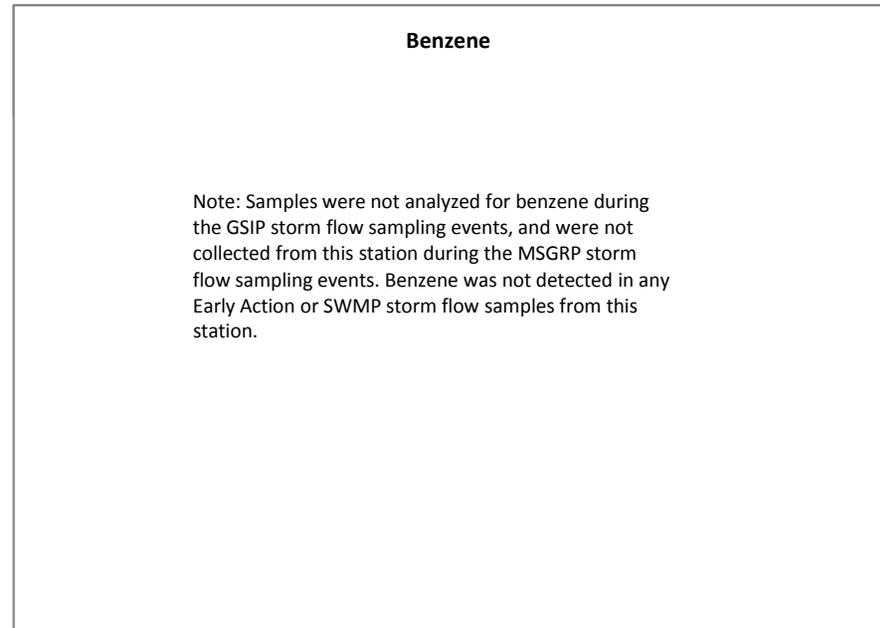
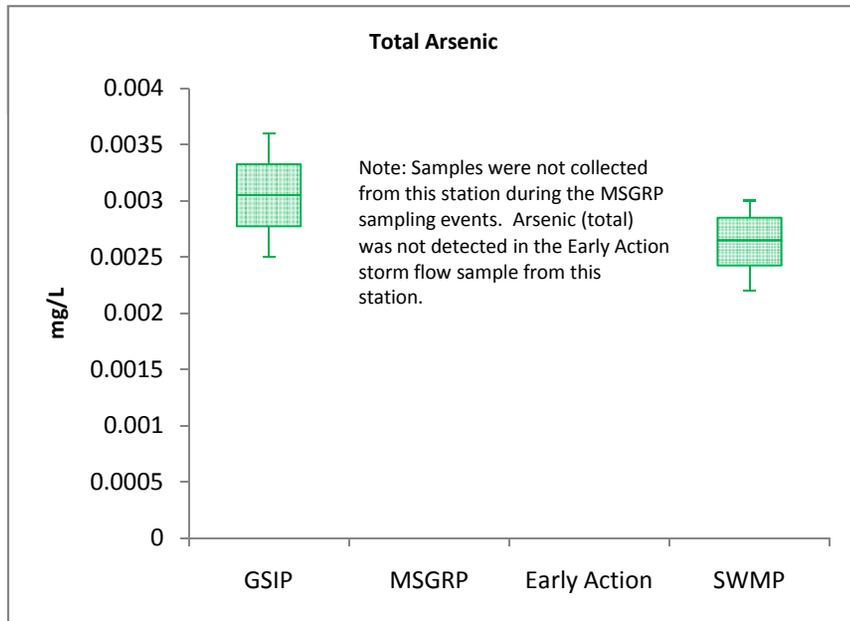
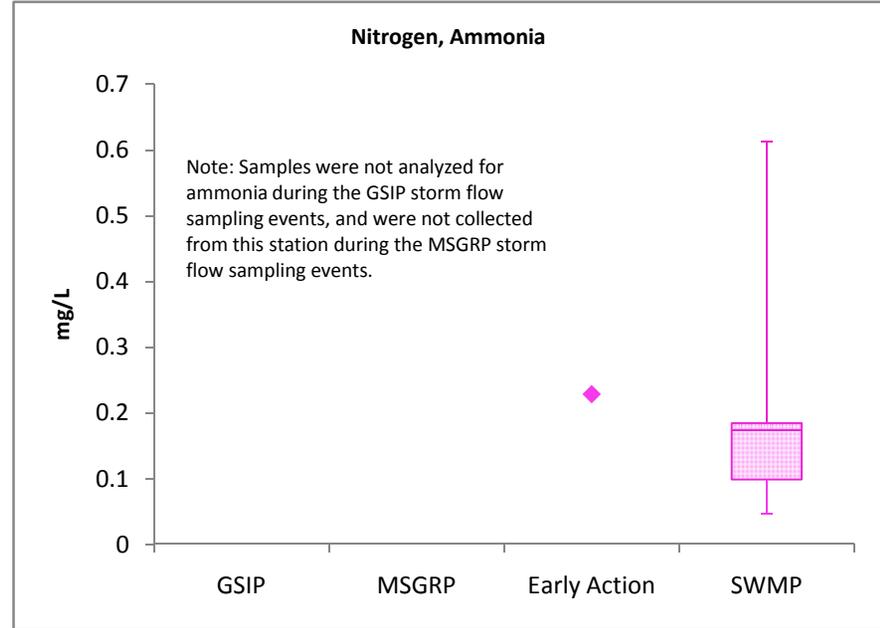
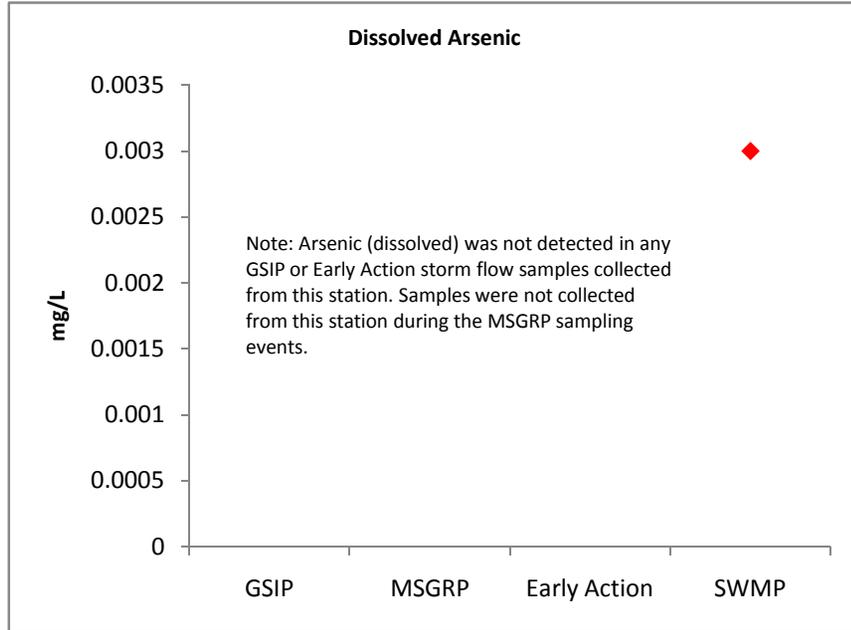
- Stage is relative to the crest of the weir.
- Flows shown are based on the rating curves reported in the Quarterly Storm Flow Surface Water Monitoring Report No. 2.
- Unless otherwise noted, hydrographs are shown through flow at 75% falling limb or termination of sampling.

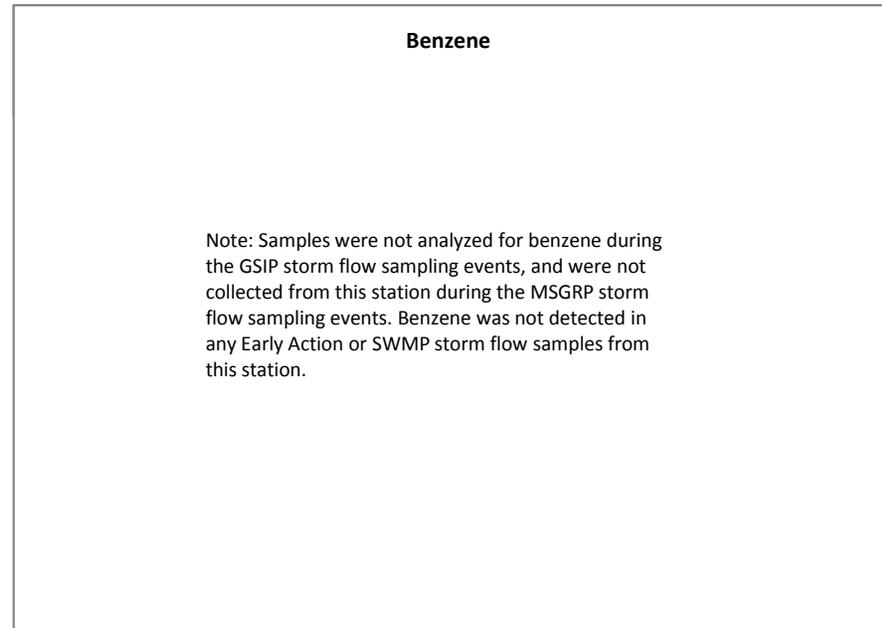
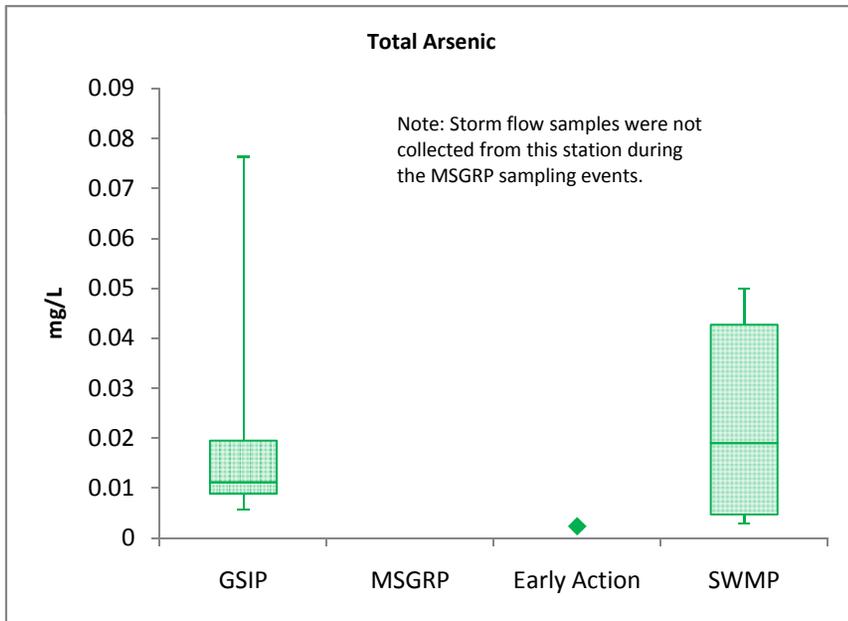
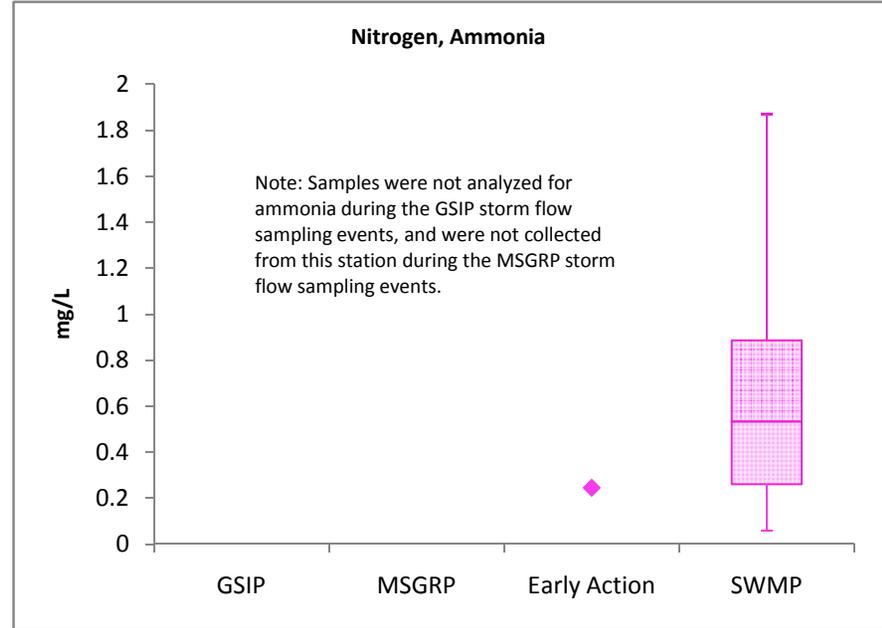
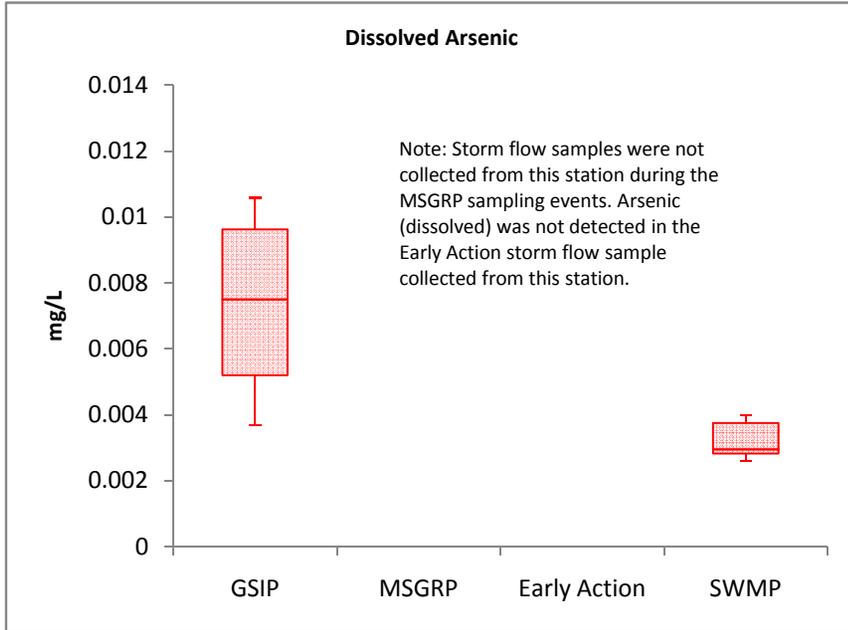
APPENDIX B

Storm Sampling Box-Whisker Plots

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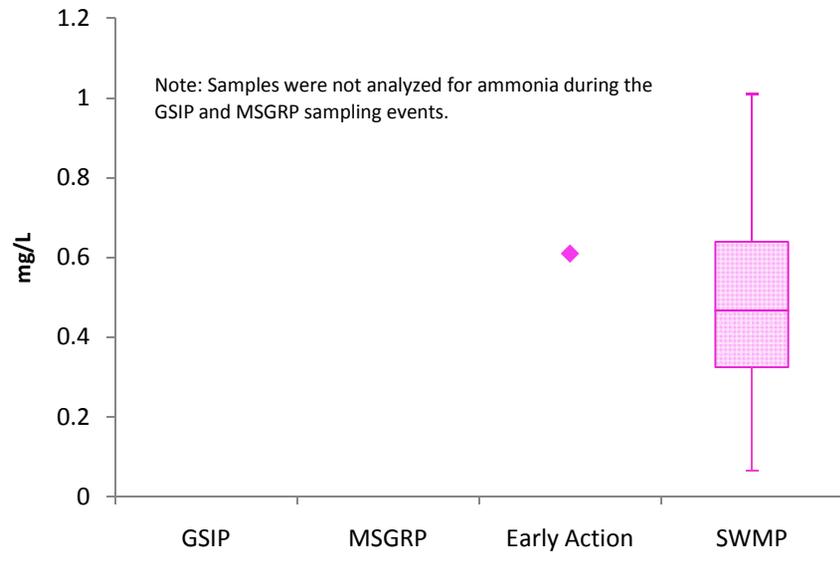


Dissolved Arsenic

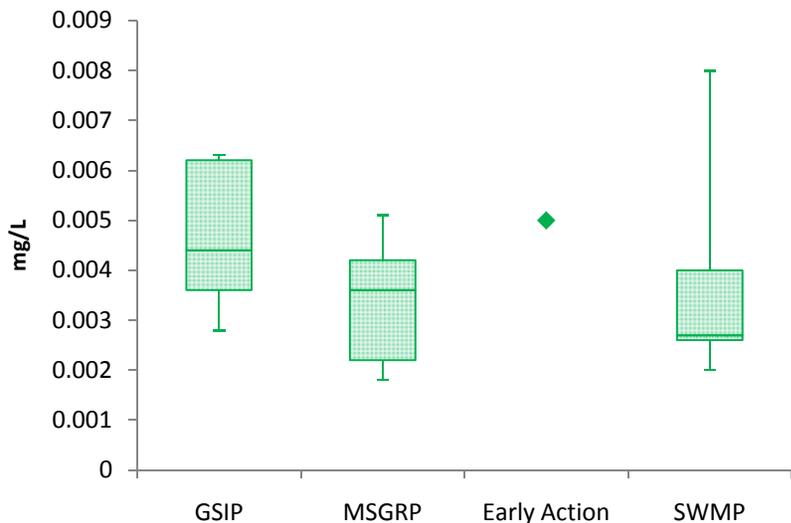
Note: Arsenic (dissolved) was not detected in any GSIP, MSGRP, Early Action or SWMP storm flow samples from this station.

Nitrogen, Ammonia

Note: Samples were not analyzed for ammonia during the GSIP and MSGRP sampling events.

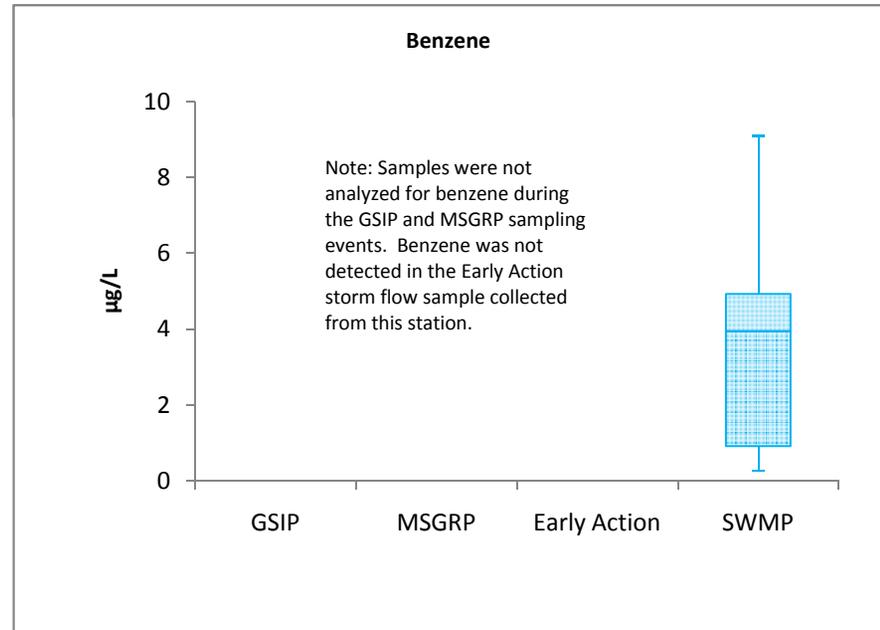
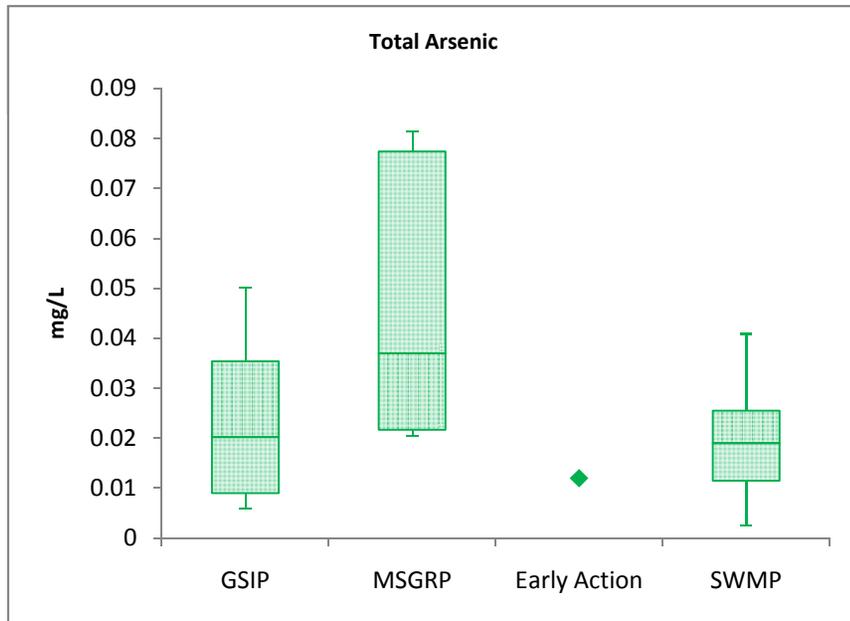
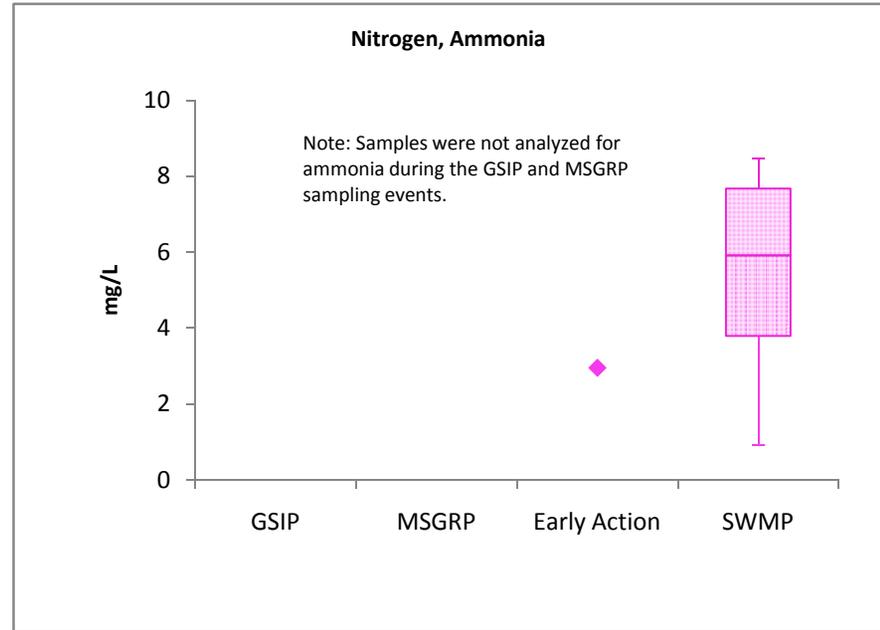
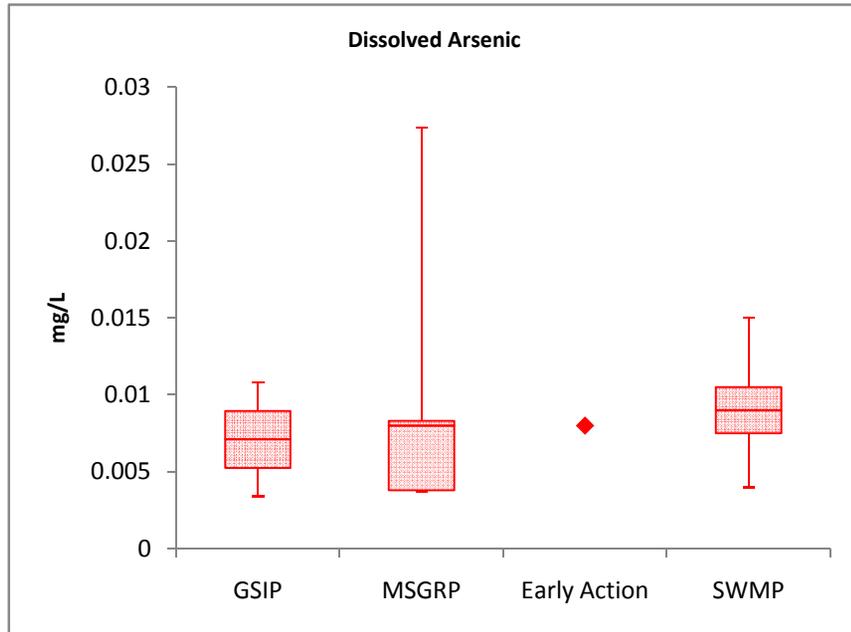


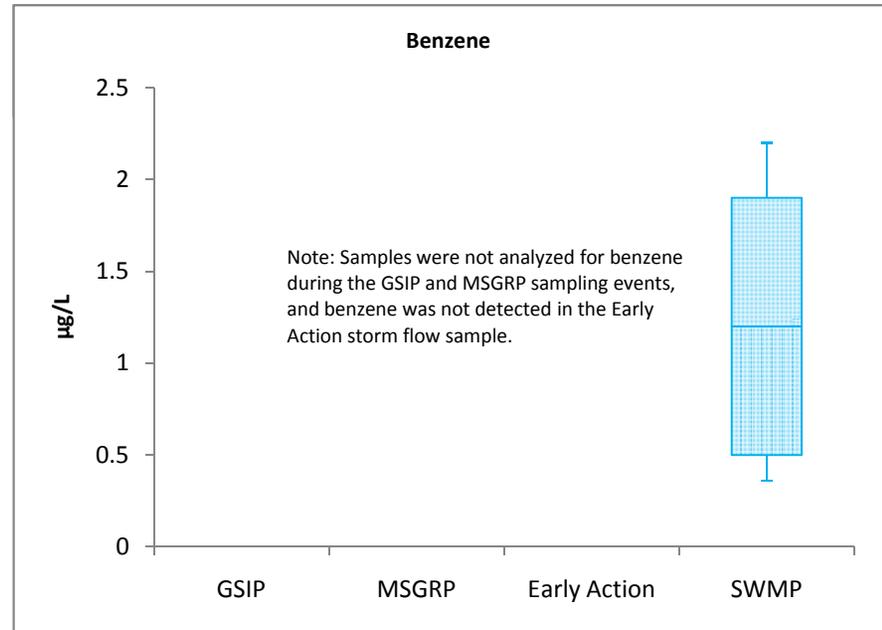
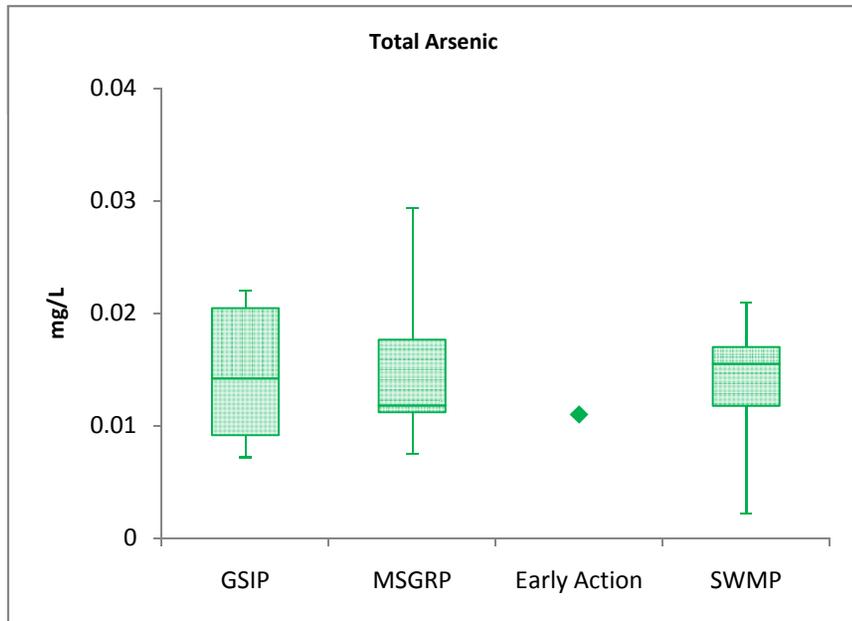
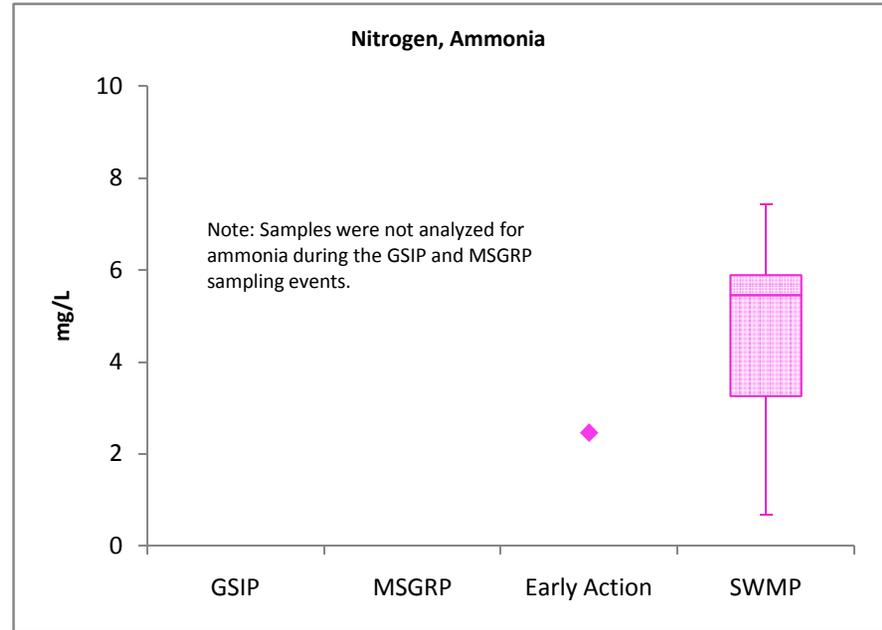
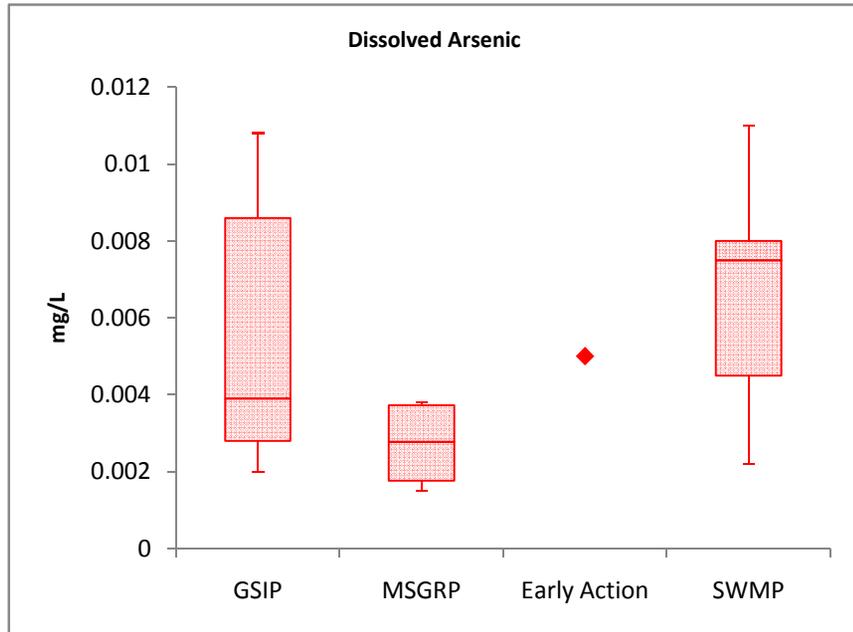
Total Arsenic

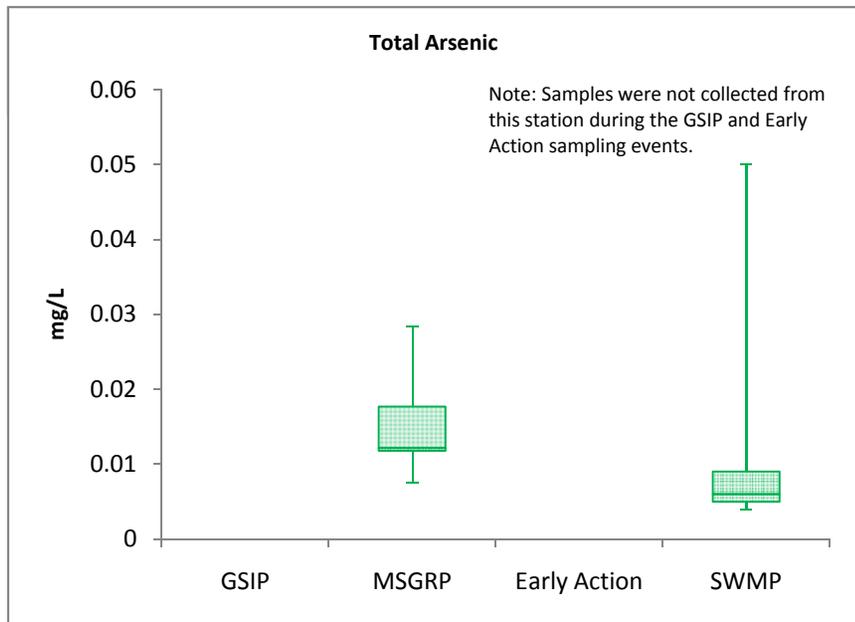
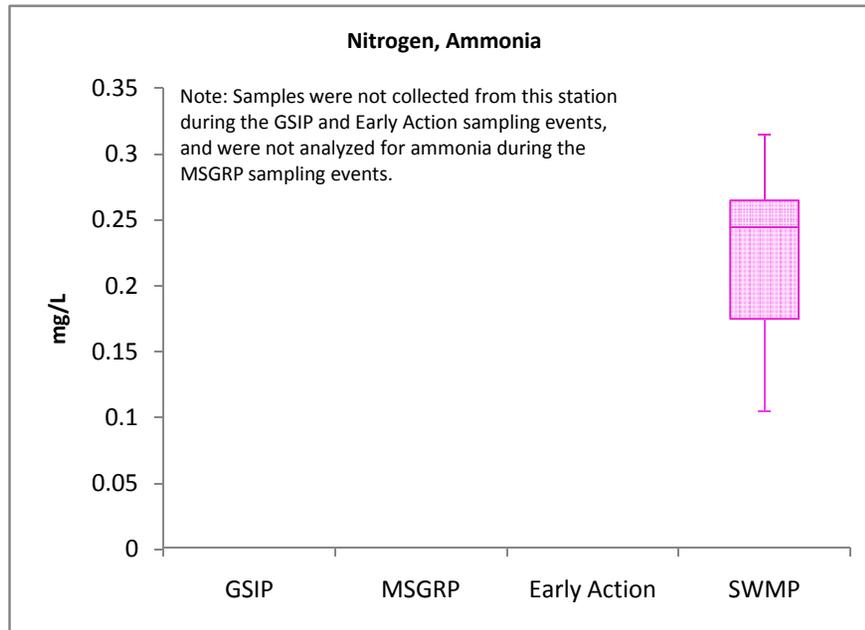
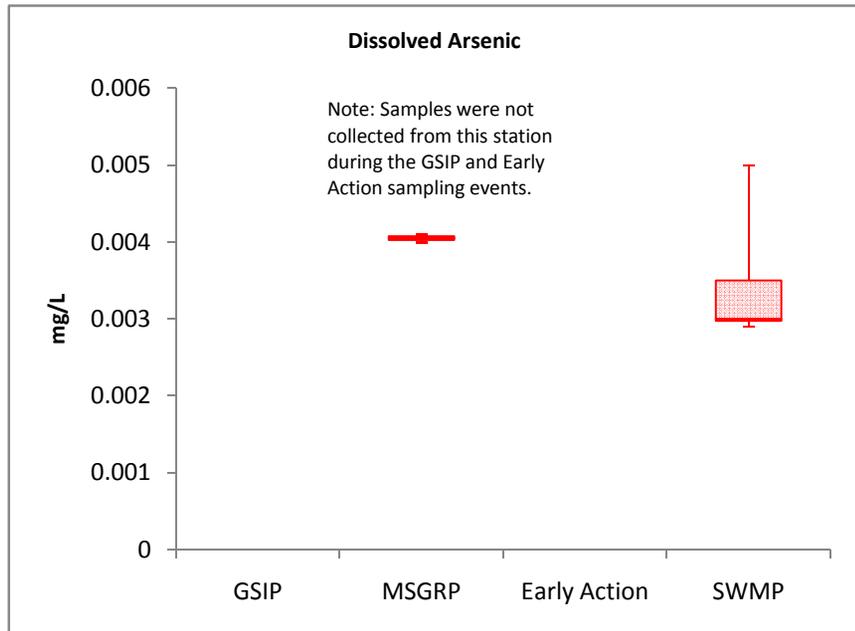


Benzene

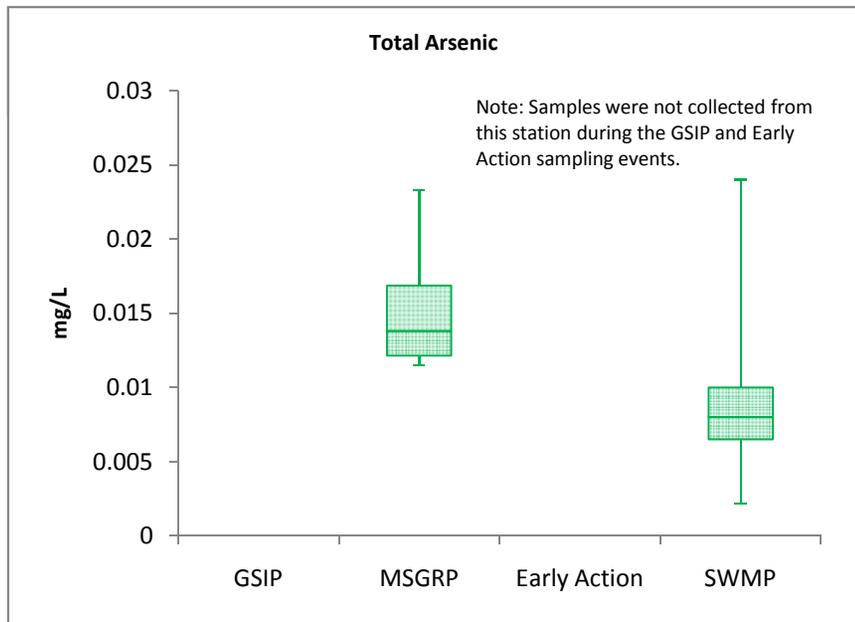
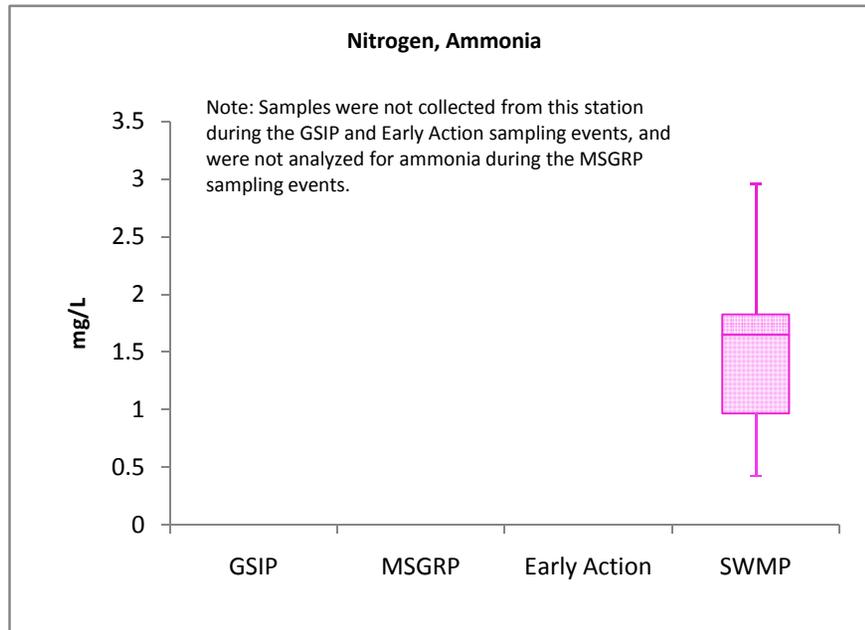
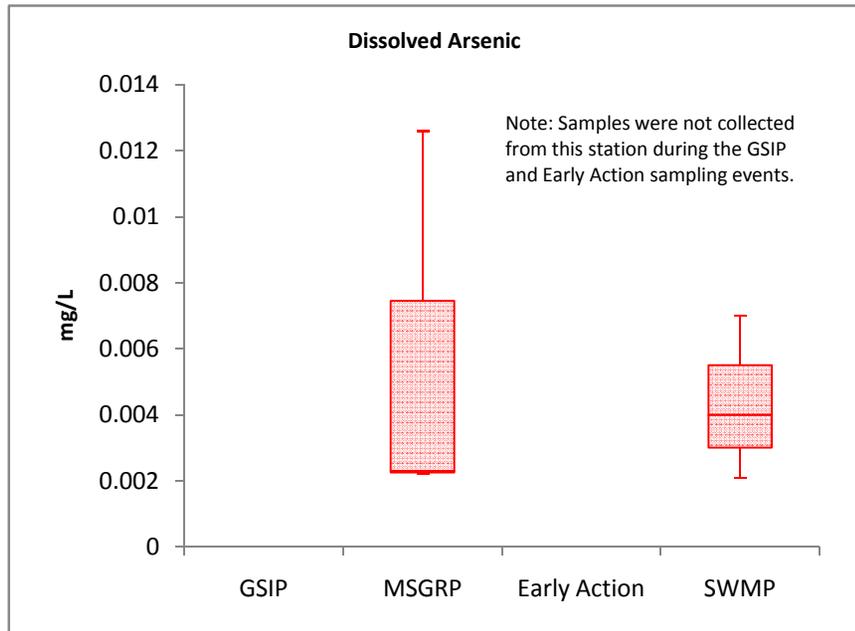
Note: Samples were not analyzed for benzene during the GSIP and MSGRP sampling events, and benzene was not detected in any Early Action or SWMP storm flow samples from this station.



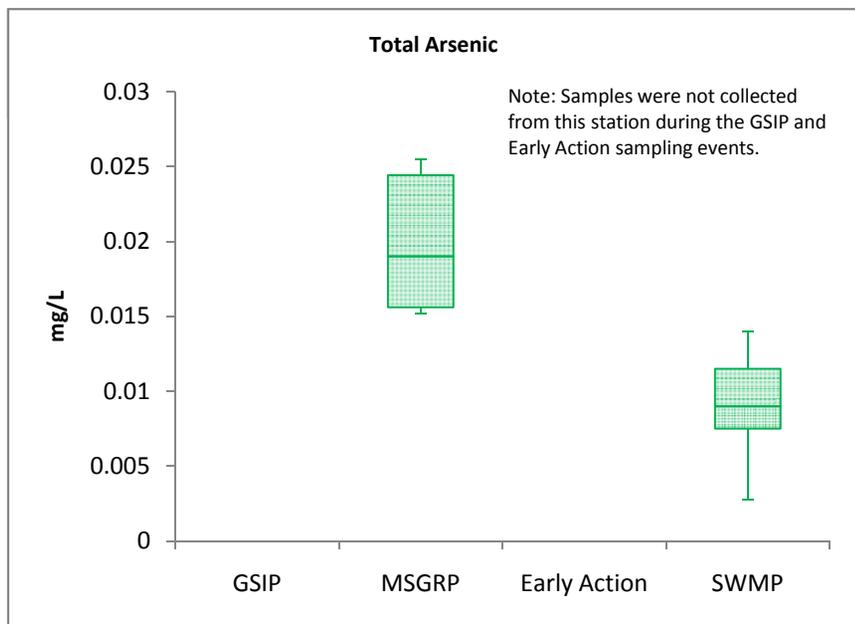
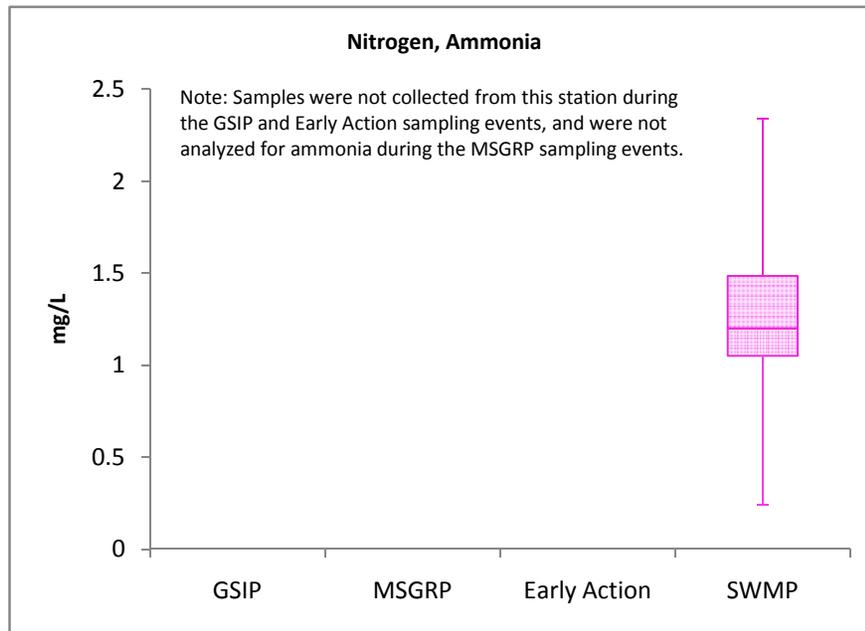
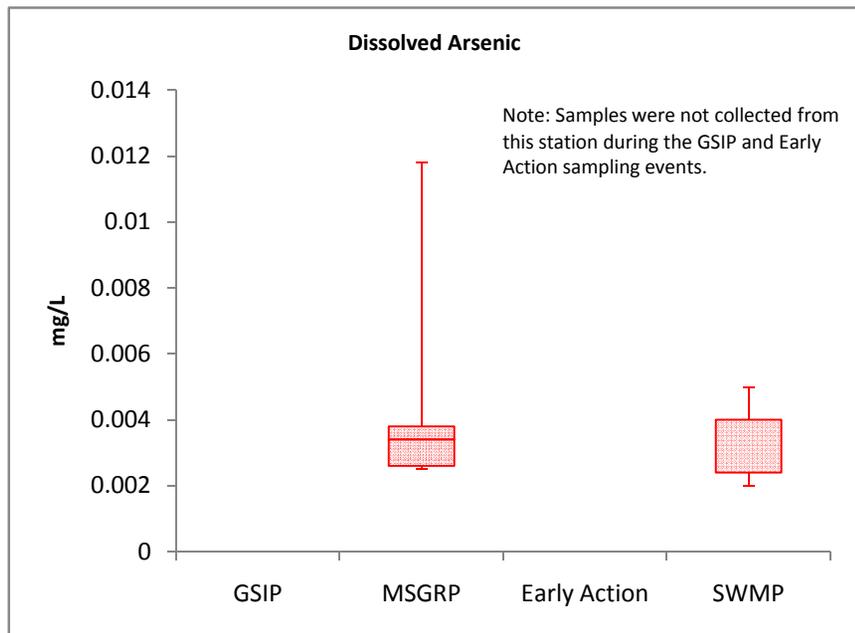




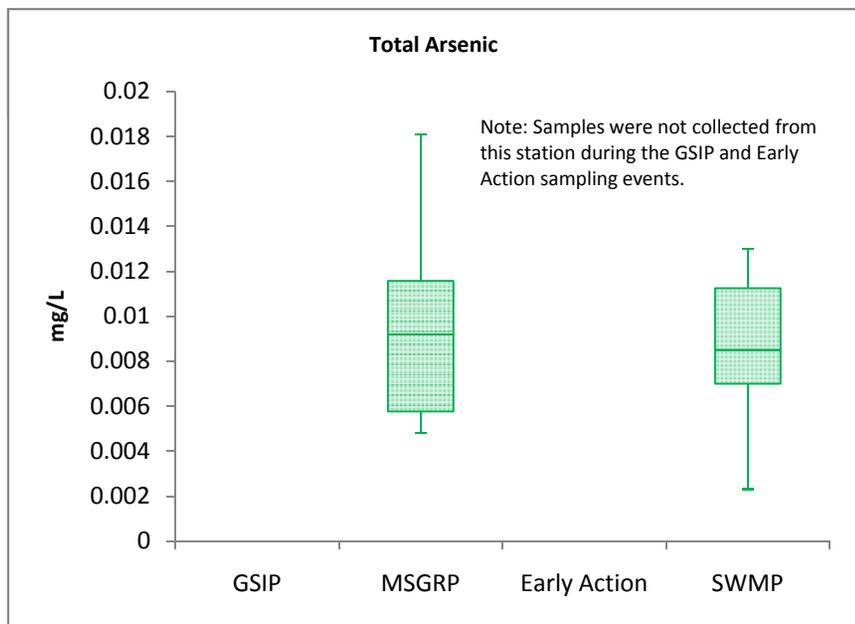
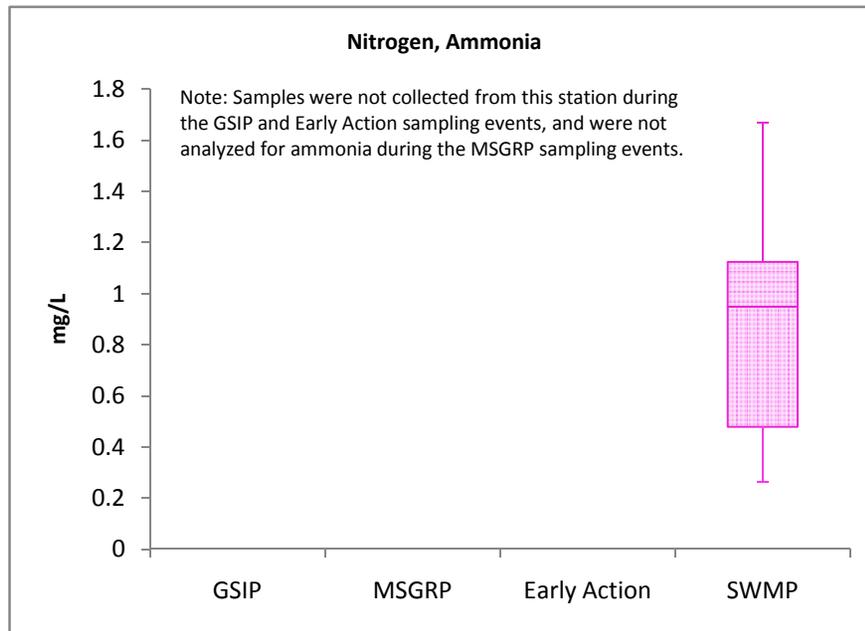
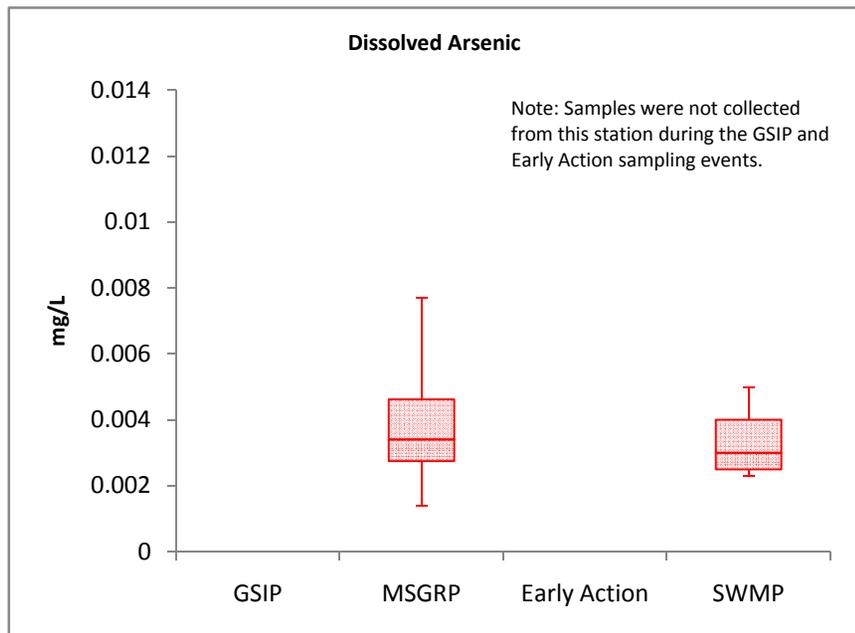
Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples collected from this station.



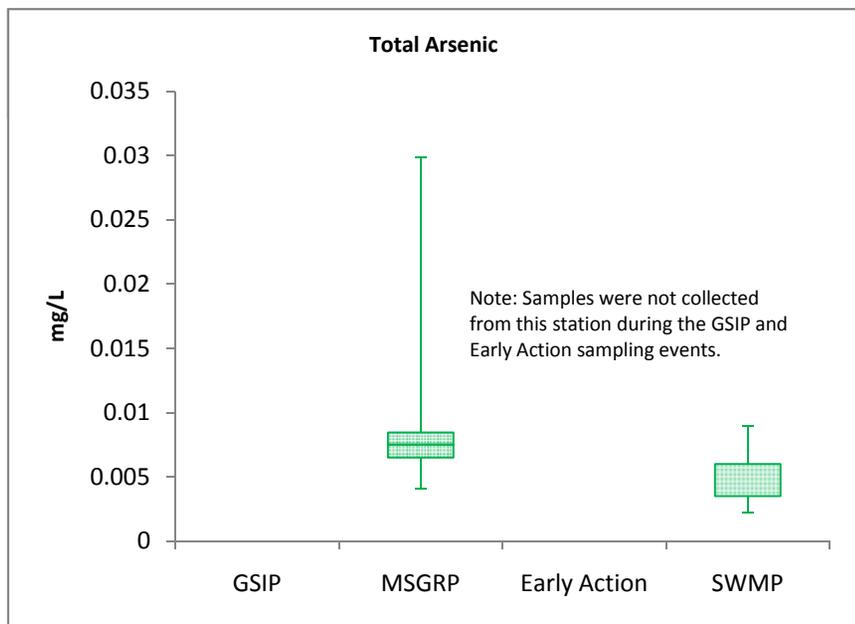
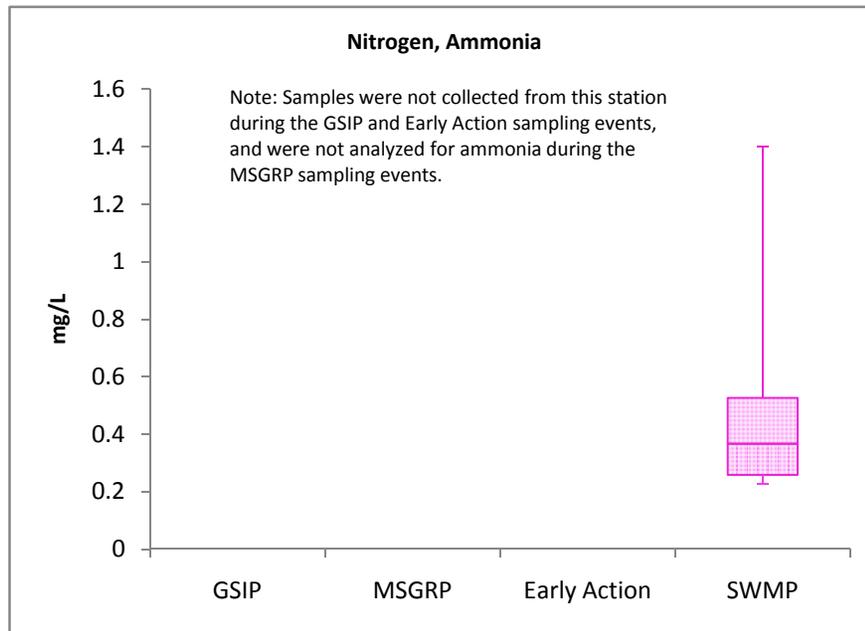
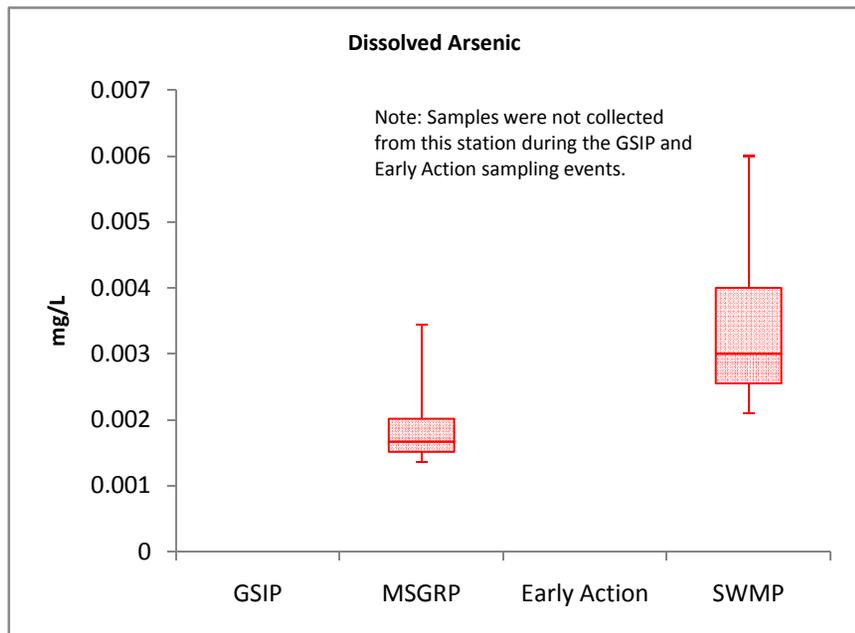
Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.



Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.



Note: Samples were not collected from this station during the GSIP and Early Action sampling events. Samples were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.



Note: Samples were not collected from this station during the GSIP and Early Action sampling events, and were not analyzed for benzene during the MSGRP sampling events. Benzene was not detected in any SWMP storm flow samples from this station.