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Superfund Records Center
SITE: Industri-plex
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May 11, 2009

Mr. Joseph F. LeMay, P.E.
Project Coordinator
US Environmental Protection Agency, Region 1
Office of Site Remediation and Restoration
MA Superfund Section
One Congress Street, Suite 1100, (HBO)
Boston, MA 02114-2023

Subject: Industri-plex Operable Unit 2 Superfund Site
Woburn, Massachusetts
Baseflow 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 Baseflow Surface Water Monitoring Report No. 1.

This report covers the period from March 11, 2009 thru April 30, 2009, and is submitted on behalf of the Settling Defendants.

Please contact me if you have any questions.

Sincerely,

Bruce Thompson
Project Coordinator

Enclosure

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

Baseflow Surface Water Monitoring Monthly Report No. 1
(March-April 2009)

Industri-plex Superfund Site
Operable Unit 2
Woburn, Massachusetts

ROUX

IPS1194.0001M007.137/RCV

In accordance with the Surface Water Monitoring Plan (SWMP), this Baseflow Surface Water Monitoring Report has been prepared to summarize the surface water monitoring and maintenance activities performed and the data developed during the reporting period (March 11-April 30, 2009) and to provide a brief discussion of the data. Flowlink® data for the reporting period are provided on the attached compact disc.

Monitoring and Maintenance Activities Performed During Reporting Period

1. Set-up of the SWMP monitoring stations was completed during the reporting period. Much of the monitoring and sampling equipment was already in place, particularly at the five "early action" stations in the Halls Brook Holding Area (HBHA). The following activities were performed during the reporting period to complete set-up:

    - Post-storm re-surveying of the Isco 750 area-velocity module sensor and cross-sectional profiles at the five "early action" monitoring stations[1]
    - Outfitted secondary (backup) Isco samplers and "rosettes" at all ten SWMP monitoring stations
    - Inspected existing piezometers at the Multiple Source Groundwater Response Plan (MSGRP) Remedial Investigation (RI) monitoring stations[2]
    - Installed new piezometers at the Atlantic Avenue Drainway (AAD; SW-2-IP), Boston Edison Company right-of-way (BECO ROW; SW-3-IP), and Salem Street (SW-05-TT) monitoring stations[3]
    - Developed all new and existing piezometers
    - Surveyed all new and existing piezometers
    - Inspected the AAD (SW-2-IP), BECO ROW (SW-3-IP), Halls Brook (SW-01-TT), HBHA Pond Outlet (SW-02-TT), HBHA Wetland Outlet (SW-04-TT), Salem Street (SW-05-TT) and Montvale Avenue (SW-06-TT) monitoring stations with EPA oversight personnel
    - Cleared debris obstructing flow downstream of the Montvale Avenue monitoring station
    - Internal quality control (QC) inspection of all ten stations to review station set-up
    - Relocated the solar panel at the Montvale Avenue monitoring station to an area with greater solar exposure

[1] This activity was requested by EPA.
[2] No piezometer was installed at the Mishawum Road station (SW-04-TT).
[3] The existing piezometer at the Salem Street station had to be replaced.

- Surveyed the cross-sectional profile for the new Montvale Avenue monitoring station following relocation of the Isco 750 area-velocity module sensor approximately 15 feet downstream to improve access[4]

- Re-programmed eight of the ten SWMP monitoring stations using MSGRP RI rating curve inputs. The AAD and BECO ROW stations, which were already programmed for the "early action" sampling, remained programmed using area-velocity inputs, pursuant to the SWMP.

2. Regular weekly operation and maintenance (O&M) activities were performed at the ten surface water monitoring stations on April 17 and April 23-24, 2009, and included the following:

   - inspected instrumentation and tubing
   - cleared debris around station instrumentation
   - cleaned sample intake and staff gauge
   - cleaned the Isco 750 area-velocity module sensor and the In-Situ® MP Troll® 9500 water quality meter sensors
   - checked calibration of the In-Situ® MP Troll® 9500 water quality meter sensors and re-calibrated as needed
   - collected manual stage measurements
   - checked station power levels
   - inspected rain gages and cleaned as needed
   - downloaded flow and water quality data stored in the Isco units

   Copies of the O&M/inspection forms for SWMP O&M activities performed during this reporting period are attached.

3. Monthly O&M activities were performed on April 23-24, 2009, and included the following:

   - collected manual velocity measurements
   - cleaned solar panels

   In addition, groundwater and surface water elevations were measured at nine of the ten monitoring stations at the time of monthly O&M.[5] In future months, this activity will be performed in conjunction with monthly baseflow sampling in accordance with the SWMP.

[4] EPA approved this change in location.
[5] There is no piezometer at the Mishawum Road station (SW-04-TT).

4. The first SWMP monthly baseflow sampling event was conducted on April 17, 2009. Manual gauging of stream flow at nine of the ten SWMP monitoring stations was also performed at this time, in accordance with the SWMP.[6]

Data Generated During Reporting Period

Water quality parameters recorded at the time of baseflow sampling on April 17, 2009 are provided in **Table 1**, along with the water quality measurements made during all previous "early action" baseflow sampling events. Analytical results for the baseflow samples collected during the reporting period are not yet available. However, validated analytical laboratory results for baseflow sampling events conducted during "early action" sampling and other previous sampling programs at the site (i.e., the Groundwater and Surface Water Investigation Plan [GSIP] and the MSGRP RI) are provided in **Table 2**. This table will include SWMP results in future monthly Baseflow Surface Water Monitoring Reports. Groundwater and surface water elevation data and manual stream flow gauging data will likewise be included in future monthly Baseflow Surface Water Monitoring Reports.

Data Analysis

Laboratory analytical data for benzene, total arsenic, dissolved arsenic, and ammonia developed during previous sampling programs (e.g. MSGRP, GISP), are summarized in the attached baseflow box-whisker plots for the five "early action" monitoring stations. These plots, which will be populated with SWMP data in future monthly Baseflow Surface Water Monitoring Reports, will provide a means for comparing each month's SWMP baseflow data with previous months' data and data from previous sampling programs.

In the baseflow box-whisker plots, the center line marks the median of the sample results. The length of the box shows the range within which the central fifty percent of the values fall, with the box edges (called hinges) at the first and third quartiles (i.e., the values that, along with the mean, divide the distribution of the data into four groups having equal frequencies). The "whiskers" show the full range of values reported for each monitoring station.

[6] Flow at the BECO ROW station was insufficient for manual measurement.

Table 1
Baseflow Water Quality Parameters
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Sample ID	Location Desctription	Date	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Surface Water Monitoring Plan								
SW-01-TT	Halls Brook	04/17/09	13.0	15.7	6.9	34.0	965.5	3.7
SW-02-TT	HBHA Pond Outlet	04/17/09	12.5	10.4	6.8	74.0	959.5	22.5
SW-03-TT	Aberjona	04/17/09	13.5	11.1	6.6	36.0	967.8	7.8
SW-04-TT	HBHA Wetland Outlet	04/17/09	11.9	10.7	6.9	-10.0	1289.0	3.3
SW-05-TT	Salem St	04/17/09	10.7	10.7	7.0	54.0	1154.0	5.1
SW-06-TT	Montvale Ave	04/17/09	8.7	10.5	7.0	145.0	1212.0	3.3
SW-07-TT	Swanton St	04/17/09	9.3	11.2	6.9	60.0	1145.0	2.6
SW-08-TT	USGS / Mystic Ave	04/17/09	9.9	10.9	6.9	177.0	1074.0	5.2
SW-2-IP	AAD	04/17/09	17.3	13.2	7.4	55.0	785.7	0.3
SW-3-IP	BECO ROW	04/17/09	16.4	11.7	6.8	-70.0	908.3	4.7

Table 1
Baseflow Water Quality Parameters
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Sample ID	Location Desctription	Date	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
Remedial Design "Early Action"								
SW-01-TT	Halls Brook	08/21/08	17.3	8.3	7.1	250.2	832.3	9.1
		09/18/08	14.3	8.6	7.1	176.7	755.9	6.3
		10/09/08	15.1	7.5	6.9	169.7	899.5	15.6
		11/05/08	9.7	7.1	6.8	508.3	2774.0	27.5
		12/09/08	2.2	9.0	6.8	483.9	3056.0	47.3
		01/20/09	0.4	12.4	7.0	81.0	1362.0	24.7
		02/02/09	1.7	7.8	6.9	-287.4	1184.0	8.1
		03/18/09	7.1	ERR	ERR	10.3	ERR	44.5
		04/01/09	7.1	ERR	ERR	6.7	ERR	388.4
SW-02-TT	HBHA Pond Outlet	08/21/08	23.7	7.4	6.8	264.5	880.3	6.2
		09/18/08	17.4	6.3	6.8	178.9	728.0	5.7
		10/09/08	16.5	7.9	6.8	192.2	888.2	5.4
		11/05/08	8.6	7.1	6.7	466.9	854.0	30.2
		12/09/08	1.7	10.3	6.5	504.2	780.0	13.5
		01/20/09	0.9	13.9	6.8	139.0	11.8	9.2
		02/02/09	1.2	NM	6.4	336.6	1176.0	14.8
		03/18/09	7.1	11.3	6.5	451.4	11.7	24.2
		04/01/09	7.1	10.0	6.5	479.3	948.0	16.8
SW-04-TT	HBHA Wetland Outlet	08/21/08	20.2	9.8	6.8	224.0	883.1	8.4
		09/18/08	16.8	7.0	6.8	81.7	727.8	9.6
		10/09/08	18.0	8.0	6.8	138.4	920.0	8.1
		11/05/08	8.7	2.7	6.7	243.7	916.0	0.0
		12/09/08	1.4	8.8	6.0	350.9	778.0	0.0
		01/20/09	0.2	4.6	6.0	346.1	1172.0	0.0
		02/02/09	0.8	4.5	8.0	335.5	1394.0	0.0
		03/18/09	10.6	14.2	7.8	222.8	1063.0	0.2
		04/01/09	6.8	10.7	7.8	226.0	844.0	0.0
SW-2-IP	AAD	08/21/08	23.8	9.0	7.1	222.8	613.7	3.6
		09/18/08	15.6	9.5	6.9	149.2	233.9	47.2
		10/09/08	17.5	9.1	7.1	188.3	497.2	1.6
		11/05/08	13.3	10.8	7.4	431.8	2.0	7.5
		12/09/08	-0.6	9.9	6.5	443.7	512.0	1.8
		01/20/09	0.1	6.4	6.8	160.0	1161.0	177.5
		02/02/09	-0.8	NM	6.6	466.6	1464.0	2.0
		03/18/09	8.9	1.9	7.0	249.4	1418.0	23.0
		04/01/09	5.6	2.0	7.0	352.5	1286.0	2.3

Table 1
Baseflow Water Quality Parameters
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Sample ID	Location Desctription	Date	Temperature (°C)	Dissolved Oxygen (mg/l)	pH (s.u.)	ORP (mV)	Specific Conductance (µS/cm)	Turbidity (NTU)
SW-3-IP	BECO ROW	08/21/08	19.7	9.6	7.5	210.4	906.2	5.2
		09/18/08	NS	NS	NS	NS	NS	NS
		10/09/08	17.4	5.9	7.1	179.4	697.0	4.2
		11/05/08	NS	NS	NS	NS	NS	NS
		12/09/08	NS	NS	NS	NS	NS	NS
		01/20/09	NS	NS	NS	NS	NS	NS
		02/02/09	5.2	9.0	6.8	-17.0	800.7	1.4
		03/18/09	10.5	3.7	7.1	162.4	193.0	58.2
		04/01/09	4.1	2.3	6.8	110.2	ERR	21.3

Notes:
AAD = Atlantic Avenue Drainway
BECO ROW = Boston Edison Company right-of-way
B = Baseflow
S = Storm Event (indicated by gray shading)
cfs = cubic feet per second
cf = cubic feet
-- = Not applicable
°C = Degrees Celsius
µS/cm = microSiemens per centimeter
mg/l = milligrams per liter
s.u. = standard units
mV = milliVolts
NTU = Nephelometric Turbidity Units
NS = Not Sampled
NM = Non-measurable; insufficient flow and/or due to equipment limitations
ERR = Equipment error; ice buildup, sensor drift, stage below sensor(s), struck by debris, and/or buildup on sensor
1 For baseflow events, flow rate is recorded at the time of sampling

Table 2a
Baseflow Laboratory Analytical Results for SW-01-TT (Halls Brook)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Sample ID	Location Description	Date	Flow (cfs)	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	Halls Brook	08/29/00	TBD	--	0.0036J	0.0031U	--	--	8	--	--	--	--	--
		10/05/00	TBD	--	0.0025U	0.0025U	--	--	5U	--	--	--	--	--
		04/05/01	TBD	--	0.0035U	0.0035U	--	--	5U	--	--	--	--	--
Multiple Source Groundwater Response Plan														
SW-01-TT	Halls Brook	07/14/01	TBD	--	0.0037UJ	0.0012UJ	1.25	0.567	4.1	--	--	--	--	--
		08/23/01	TBD	--	0.009U	0.0052U	1.1J	0.153J	6.8	--	--	--	--	--
		09/18/01	TBD	--	0.0022J	0.0012U	0.457	0.134U	1.6J	--	--	--	--	--
		10/22/01	TBD	--	0.003U	0.003U	0.378	0.218	4U	--	--	--	--	--
		11/19/01	TBD	--	0.003U	0.003U	0.285J	0.114	1J	--	--	--	--	--
		12/17/01	TBD	--	0.003U	0.0034J	0.591J	0.105J	10.4	--	--	--	--	--
		01/04/02	TBD	--	0.003U	0.003U	0.847	0.22U	4	--	--	--	--	--
		02/15/02	TBD	--	0.0024U	0.0024U	1.05	0.342	11J	--	--	--	--	--
		03/12/02	TBD	--	0.0017U	0.0017U	0.725	0.395	2.4J	--	--	--	--	--
		04/17/02	TBD	--	0.002U	0.002U	1.17J	0.499	5.7	--	--	--	--	--
		05/08/02	TBD	--	0.002U	0.002U	1.16	0.538	3.4J	--	--	--	--	--
		06/20/02	TBD	--	0.002U	0.002U	1.65	0.868	6.4J	--	--	--	--	--
		07/16/02	TBD	--	0.0038	0.0013U	1.21	0.0742U	7.2	--	--	--	--	--
		08/06/02	TBD	--	0.0032	0.0014J	0.915	0.075U	3.2J	--	--	--	--	--
		09/10/02	TBD	--	0.0023UJ	0.0013U	0.732	0.105U	3.4J	--	--	--	--	--
		10/25/02	TBD	--	0.003U	0.003U	0.373	0.152	2UJ	--	--	--	--	--
Remedial Design "Early Action"														
SW-01-TT	Halls Brook	08/21/08	Pre-Startup	0.5U	0.005J	0.005J	--	--	5U	3.51	0.13	1.2	2.6	0.3U
		09/18/08	Pre-Startup	0.5U	0.005U	0.005U	--	--	5U	3.13	0.06	1.1	3.7	0.57
		10/09/08	Pre-Startup	0.5U	0.005U	0.005U	--	--	5U	3.98	0.08	1	4.8	0.82
		11/05/08	~5	0.5U	0.005U	0.005U	--	--	6	2.58	0.04J	0.81	4	1.4
		12/09/08	6.78	0.5U	0.003U	0.003U	--	--	8.1	3.96	0.01J	7.6	5	1
		01/20/09	Down	0.5U	0.003U	0.003U	--	--	7.9	3.24	0.034J	1	3.6	0.36
		02/02/09	7.28	0.5U	0.003U	0.003U	--	--	5U	2.89	0.06	1.1	3.5	0.61
		03/18/09	9.95	0.5U	0.003U	0.003U	--	--	5U	2.75	0.05U	1.1	3.8	1
		04/01/09	9.15	0.5U	0.003U	0.003U	--	--	12	2.09	0.05U	0.86	3.2	1.1
Surface Water Monitoring Plan														
SW-01-TT	Halls Brook	TBP	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
cfs = cubic feet per second
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
TBP = To Be Provided

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

Sample ID	Location Description	Date	Flow (cfs)	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-4	HBHA Pond Outlet	08/29/00	TBD	--	0.0211	0.0031U	1.15	--	5U	--	--	--	--	--
		10/05/00	TBD	--	0.0131	0.0025U	0.966	--	5U	--	--	--	--	--
		04/05/01	TBD	--	0.0069J	0.0112J	1.05	--	5U	--	--	--	--	--
Multiple Source Groundwater Response Plan														
SW-02-TT	HBHA Pond Outlet	07/14/01	TBD	--	0.0217	0.0096J	2.28	1.12	4.3	--	--	--	--	--
		08/23/01	TBD	--	0.0209	0.0058U	1.6J	0.349	4.6	--	--	--	--	--
		09/18/01	TBD	--	0.0173	0.0045	1.1	0.114U	5.6J	--	--	--	--	--
		10/22/01	TBD	--	0.0312	0.0032J	2.23	0.159	5.6	--	--	--	--	--
		11/19/01	TBD	--	0.0431	0.004J	3.51J	0.0472	12.8J	--	--	--	--	--
		12/17/01	TBD	--	0.0235	0.0045J	2.82J	0.0992J	9.6	--	--	--	--	--
		01/04/02	TBD	--	0.0118	0.0055J	1.53	0.193U	1.6	--	--	--	--	--
		02/15/02	TBD	--	0.0119	0.005	1.79	0.309	4J	--	--	--	--	--
		03/12/02	TBD	--	0.0205	0.0079	2.21	0.548	5.8J	--	--	--	--	--
		04/17/02	TBD	--	0.0113	0.0061	1.41J	0.706	3.2	--	--	--	--	--
		05/08/02	TBD	--	0.0122	0.008	1.66	0.952	3J	--	--	--	--	--
		06/20/02	TBD	--	0.0136U	0.0065U	1.85	0.676	4.4J	--	--	--	--	--
		07/16/02	TBD	--	0.0232	0.0031	1.84	0.042U	4.4	--	--	--	--	--
		08/06/02	TBD	--	0.0281	0.0044	1.91	0.0509U	6.6J	--	--	--	--	--
		09/10/02	TBD	--	0.0168	0.0024UJ	1.36	0.0407U	2.8J	--	--	--	--	--
		10/18/02	TBD	--	0.0774	0.0083	6.52	0.297	23.6	--	--	--	--	--
Remedial Design "Early Action"														
SW-02-TT	HBHA Pond Outlet	08/21/08	Pre-Startup	0.5U	0.029	0.006	--	--	5U	7.73	0.1	0.76	8.2	0.47
		09/18/08	Pre-Startup	0.5U	0.021	0.005U	--	--	5U	6.01	0.08	0.82	6.8	0.79
		10/09/08	Pre-Startup	0.5U	0.019	0.0048J	--	--	5U	5.39	0.07	0.81	6.2	0.81
		11/05/08	8.44	0.5U	0.02	0.005	--	--	5U	5.52J	0.05U	0.57	6.3	0.78
		12/09/08	~6	0.34J	0.017	0.009	--	--	5U	5.51	0.01J	0.88	6	0.49
		01/20/09	Down	0.5U	0.009	0.004	--	--	5U	4.11	0.027J	0.99	4.6	0.49
		02/02/09	~5	0.28J	0.015	0.011	--	--	5U	3.93	0.07	0.98	4.4	0.47
		03/18/09	Down	0.9	0.015	0.01	--	--	5U	4.6	0.05U	0.96	5.6	1
		04/01/09	~6	0.7	0.014	0.007	--	--	5U	3.51	0.05U	0.79	4.7	1.2
Surface Water Monitoring Plan														
SW-02-TT	HBHA Pond Outlet	TBP	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
HBHA = Halls Brook Holding Area
Highlighted/italicized data indicates not validated
cfs = cubic feet per second
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.
NM = Non-measurable; insufficient flow and/or due to equipment limitations
TBD = To Be Determined
TBP = To Be Provided

Table 2c
Baseflow Laboratory Analytical Results for SW-04-TT (HBHA Wetland Outlet)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Sample ID	Location Description	Date	Flow (cfs)	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	HBHA Wetland Outlet	08/29/00	TBD	--	0.0235	0.0031U	2.77	--	8.5	--	--	--	--	--
		10/05/00	TBD	--	0.0126	0.0123	1.54	--	5U	--	--	--	--	--
		04/05/01	TBD	--	0.0035U	0.0038J	0.883	--	5U	--	--	--	--	--
Multiple Source Groundwater Response Plan														
SW-04-TT	HBHA Wetland Outlet	07/14/01	TBD	--	0.023	0.0101J	3.09	1.6	4.5	--	--	--	--	--
		08/23/01	TBD	--	0.0501	0.014	6.14J	0.616	20.4	--	--	--	--	--
		09/18/01	TBD	--	0.0246	0.005	3.3	0.14U	54.4J	--	--	--	--	--
		10/22/01	TBD	--	0.0193	0.0031J	2.72	0.121	6.4	--	--	--	--	--
		11/19/01	TBD	--	0.0649	0.005J	9.66J	0.0666	109J	--	--	--	--	--
		12/17/01	TBD	--	0.171	0.0049J	27.9J	0.109J	85	--	--	--	--	--
		01/04/02	TBD	--	0.0242	0.0044J	3.84	0.361	9	--	--	--	--	--
		02/15/02	TBD	--	0.0251	0.0037J	3.9	0.409	8.2J	--	--	--	--	--
		03/12/02	TBD	--	0.0166	0.006	2.1	0.626	4.8J	--	--	--	--	--
		04/17/02	TBD	--	0.0135	0.0077U	1.88J	0.741	5.2	--	--	--	--	--
		05/08/02	TBD	--	0.0086	0.0082	1.28	1.2	5.3J	--	--	--	--	--
		06/20/02	TBD	--	0.0238	0.0093U	3.73	1.34	4J	--	--	--	--	--
		07/16/02	TBD	--	0.0396	0.0062	4.52	0.0484U	12.6	--	--	--	--	--
		08/06/02	TBD	--	0.0368	0.009	3.8	0.0791U	13.6J	--	--	--	--	--
		09/10/02	TBD	--	0.0314	0.0052U	3.64	0.0356U	9.2J	--	--	--	--	--
		10/25/02	TBD	--	0.0207	0.0045J	2.76	0.447	8.6J	--	--	--	--	--
Remedial Design "Early Action"														
SW-04-TT	HBHA Wetland Outlet	08/21/08	Pre-Startup	0.5U	0.025	0.007	--	--	5U	6.92	0.12	0.8	7.3	0.38
		09/18/08	Pre-Startup	0.5U	0.022	0.005J	--	--	5U	5.29	0.09	0.8	5.7	0.41
		10/09/08	Pre-Startup	0.5U	0.02	0.003J	--	--	5U	5.18	0.09	0.95	5.7	0.52
		11/05/08	Down	0.5U	0.018	0.006	--	--	5U	6.22J	0.047J	0.65	7.2	0.98
		12/09/08	TBD	0.5U	0.023	0.007	--	--	5U	5.36	0.01J	0.8	6	0.64
		01/20/09	10.01	0.5U	0.02	0.008	--	--	5.3	4.44	0.05U	0.94	5.1	0.66
		02/02/09	9.21	0.5U	0.013	0.008	--	--	5U	3.71	0.029J	0.92	4.4	0.69
		03/18/09	8.98	0.5U	0.012	0.005	--	--	5U	4.08	0.05U	0.95	5	0.92
		04/01/09	9.06	0.46J	0.012	0.006	--	--	5U	3.72	0.05U	0.74	4.5	0.78
Surface Water Monitoring Plan														
SW-04-TT	HBHA Wetland Outlet	TBP	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
HBHA = Halls Brook Holding Area
Highlighted/italicized data indicates not validated
cfs = cubic feet per second
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
TBP = To Be Provided

Table 2d
Baseflow Laboratory Analytical Results for SW-2-IP (Atlantic Avenue Drainway)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

Sample ID	Location Description	Date	Flow (cfs)	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (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	AAD	08/29/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/05/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		04/05/01	TBD	--	0.0098B	0.0068B	10.8	--	--	--	--	--
Remedial Design "Early Action"												
SW-2-IP	AAD	08/21/08	Pre-Startup	0.5U	0.007	0.005U	5U	0.088	0.05J	0.24	0.4	0.31
		09/18/08	Pre-Startup	0.5U	0.005U	0.005U	5U	0.075J	0.05U	0.15	0.47	0.47
		10/09/08	Pre-Startup	0.5U	0.005U	0.005U	5U	0.0618J	0.034J	0.32	0.35	0.35
		11/05/08	0.02	0.5U	0.0028J	0.005U	5U	0.0623J	0.05U	0.4	0.86	0.86
		12/09/08	0.79	0.5U	0.003U	0.003U	5U	0.402	0.02U	0.52	0.71	0.31
		01/20/09	Down	0.5U	0.003U	0.003U	5U	1.74	0.05U	0.57	2	0.3U
		02/02/09	Down	0.5U	0.003U	0.003U	5U	1.13	0.044J	0.62	1.9	0.77
		03/18/09	1.57	0.5U	0.003U	0.003U	5U	0.328	0.05U	1.1	0.8	0.47
		04/01/09	NM	0.5U	0.003U	0.003U	5U	0.403	0.05U	0.89	0.87	0.47
Surface Water Monitoring Plan												
SW-2-IP	AAD	TBP	--	--	--	--	--	--	--	--	--	--

Notes:

AAD = Atlantic Avenue Drainway
Highlighted/italicized data indicates not validated
cfs = cubic feet per second
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 = Compound detected in laboratory blank
NS = Not Sampled
NM = Non-measurable; insufficient flow and/or due to equipment limitations
TBD = To Be Determined
TBP = To Be Provided

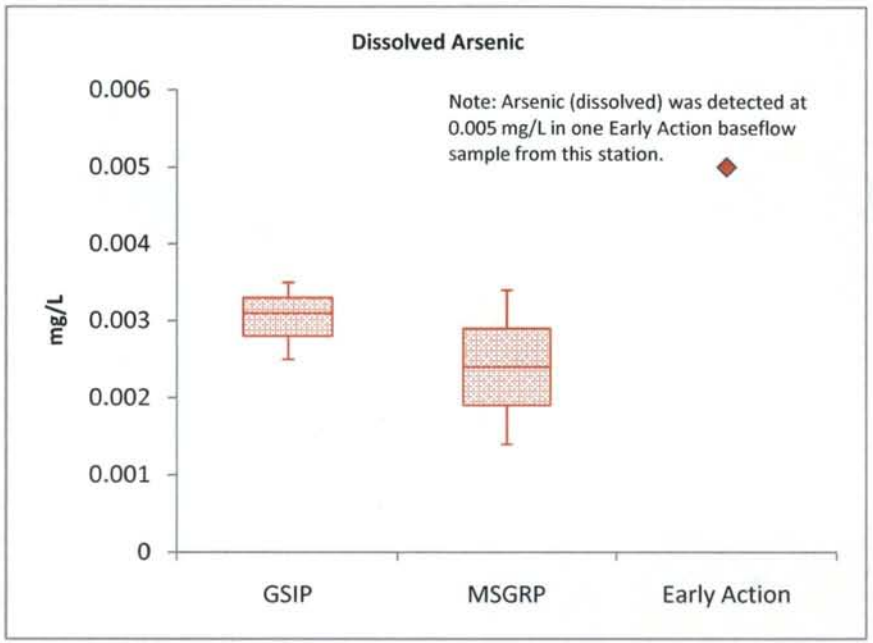
Table 2e
Baseflow Laboratory Analytical Results for SW-3-IP (Boston Edison Co. ROW)
Industri-Plex Superfund Site Operable Unit 2
Woburn, Massachusetts

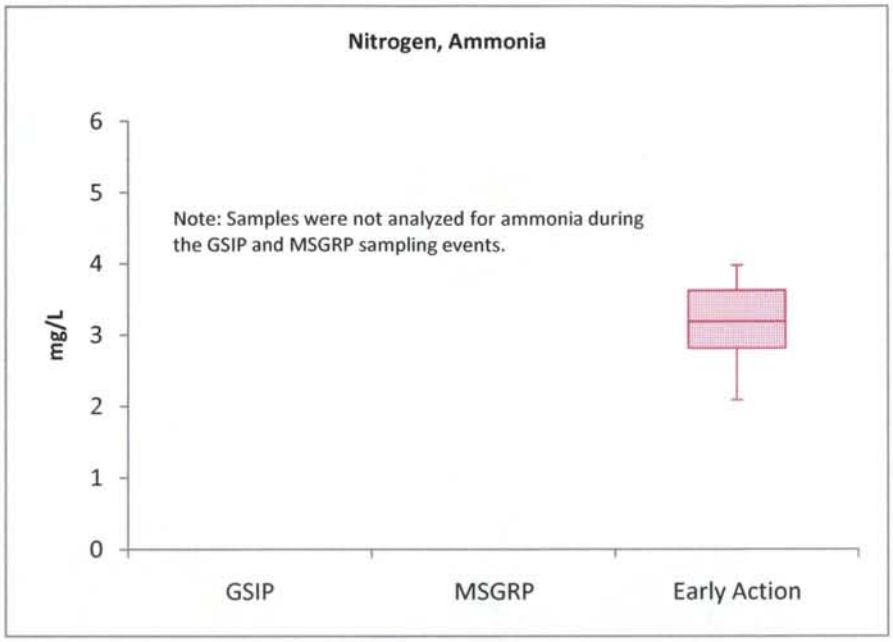
Sample ID	Location Description	Date	Flow (cfs)	Benzene (µg/l)	Total Arsenic (mg/l)	Dissolved Arsenic (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TKN (mg/l)	Total Organic Nitrogen (mg/l)
Groundwater & Surface Water Investigation Plan												
SW-3	BECO ROW	08/29/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/05/00	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		04/05/01	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Remedial Design "Early Action"												
SW-3-IP	BECO ROW	08/21/08	Pre-Startup	--	--	--	--	23.5	--	--	--	--
		09/18/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		10/09/08	Pre-Startup	0.5U	0.0028J	0.0047J	84	12.3	0.15	1.1	13	0.7
		11/05/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		12/09/08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		01/20/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
		02/02/09	Down	0.43J	0.22	0.029	650	15.7	0.11	1.2	16	0.3
		03/18/09	0.11	3.5	0.144	0.029	93	22.6	0.036J	1.3	24	1.4
		04/01/09	NM	3.2	0.087	0.055	35	25.5	0.034J	1.1	26	0.5
Surface Water Monitoring Plan												
SW-3-IP	BECO ROW	TBP	--	--	--	--	--	--	--	--	--	--

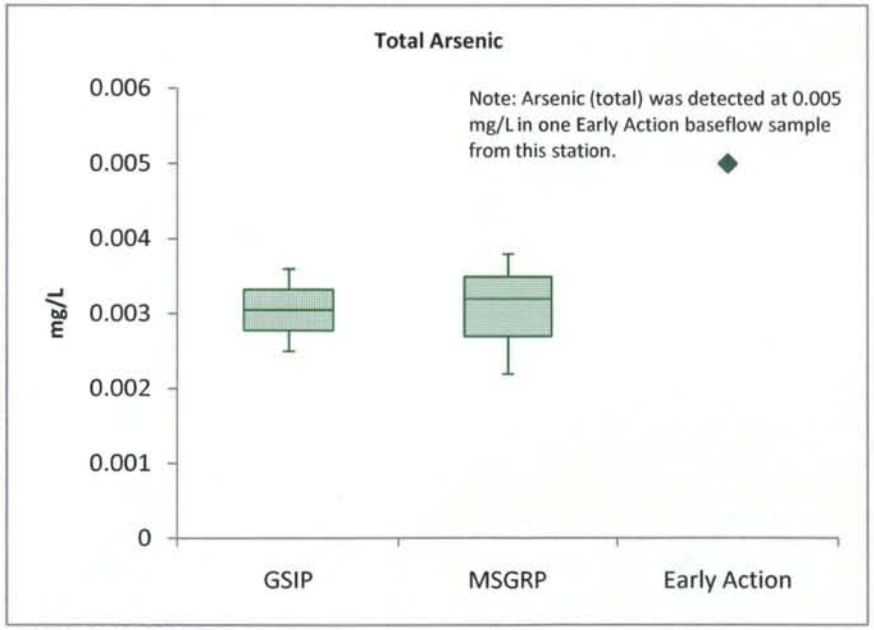
Notes:

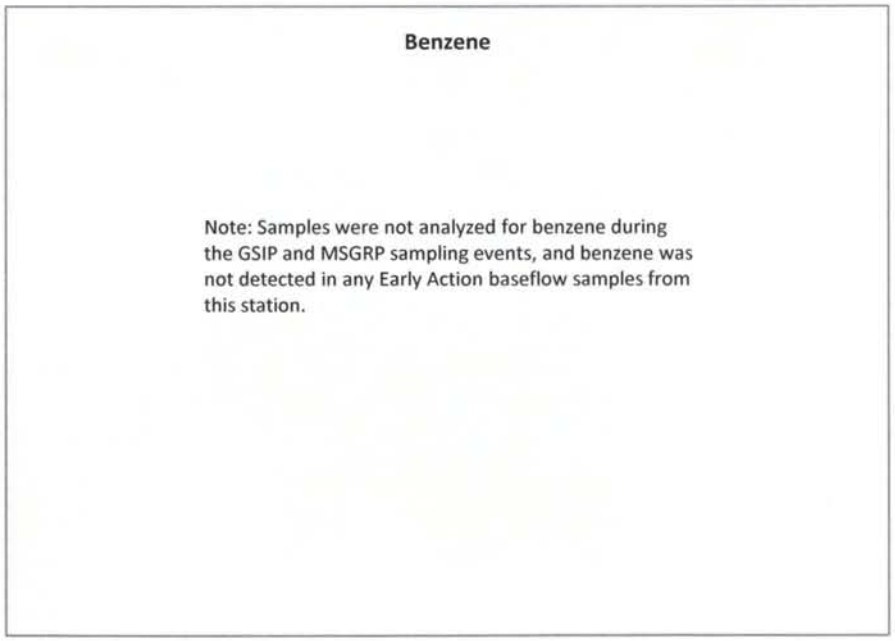
BECO ROW = Boston Edison Company Right-of-Way
Highlighted/italicized data indicates not validated
cfs = cubic feet per second
µg/l = micrograms per liter
mg/l = milligrams per liter
TSS = Total Suspended Solids
TKN = Total Kjeldahl Nitrogen
-- = Sample not analyzed for this compound
U = Compound or sample 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 = Compound detected in laboratory blank
NS = Not Sampled
NM = Non-measurable; insufficient flow and/or due to equipment limitations
TBD = To Be Determined
TBP = To Be Provided

SW-01-TT

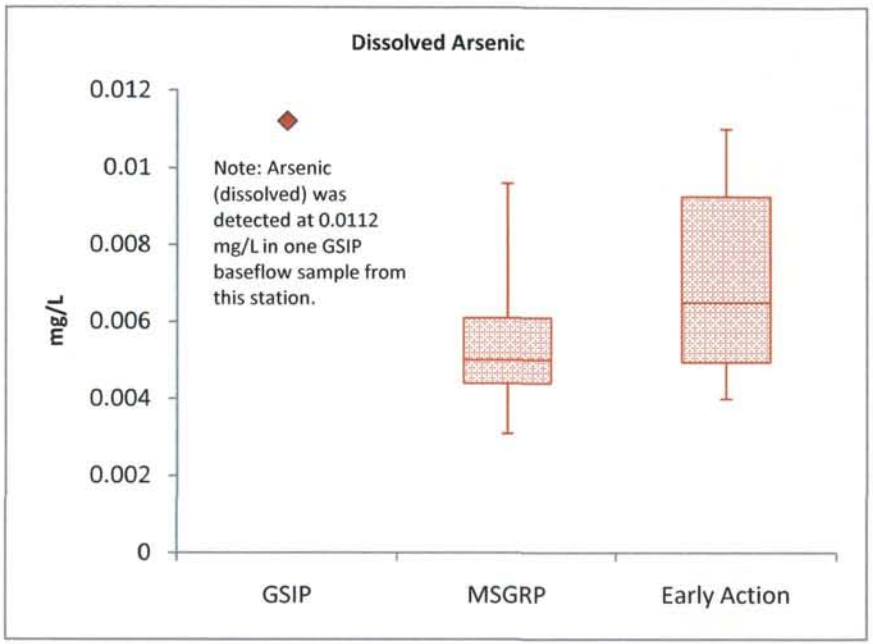

Dissolved Arsenic
Note: Arsenic (dissolved) was detected at 0.005 mg/L in one Early Action baseflow sample from this station.
mg/L
0.006
0.005
0.004
0.003
0.002
0.001
0
GSIP
MSGRP
Early Action

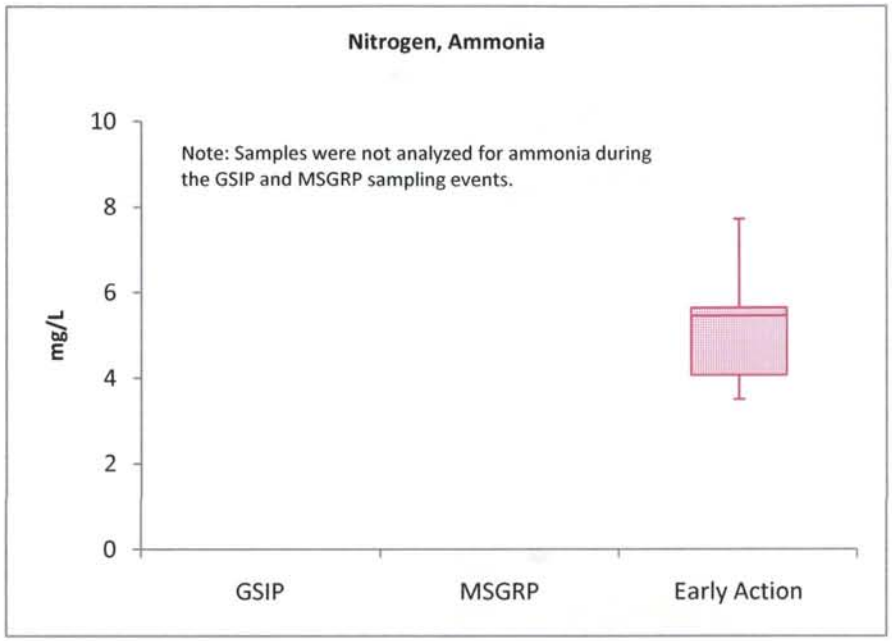

Nitrogen, Ammonia
Note: Samples were not analyzed for ammonia during the GSIP and MSGRP sampling events.
mg/L
6
5
4
3
2
1
0
GSIP
MSGRP
Early Action

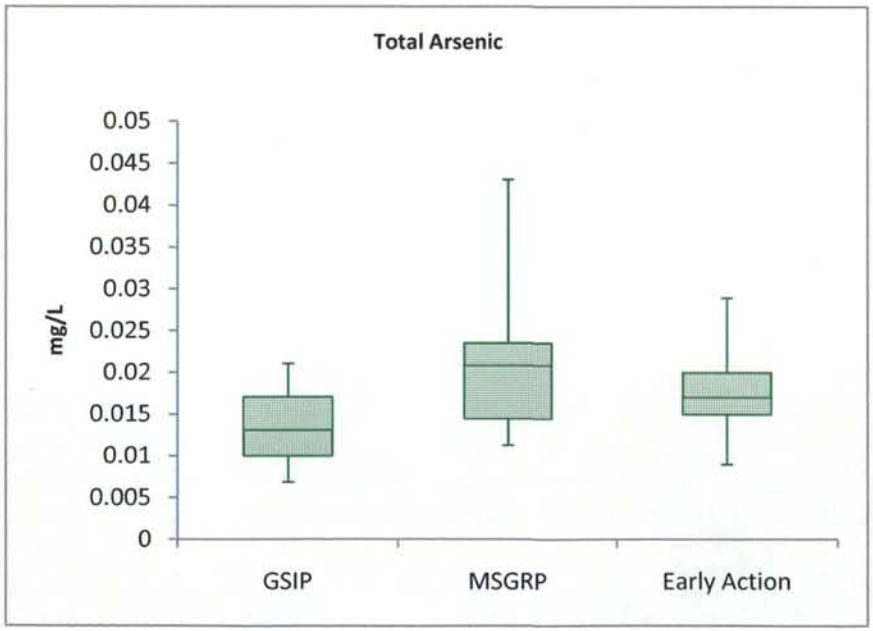

Total Arsenic
Note: Arsenic (total) was detected at 0.005 mg/L in one Early Action baseflow sample from this station.
mg/L
0.006
0.005
0.004
0.003
0.002
0.001
0
GSIP
MSGRP
Early Action

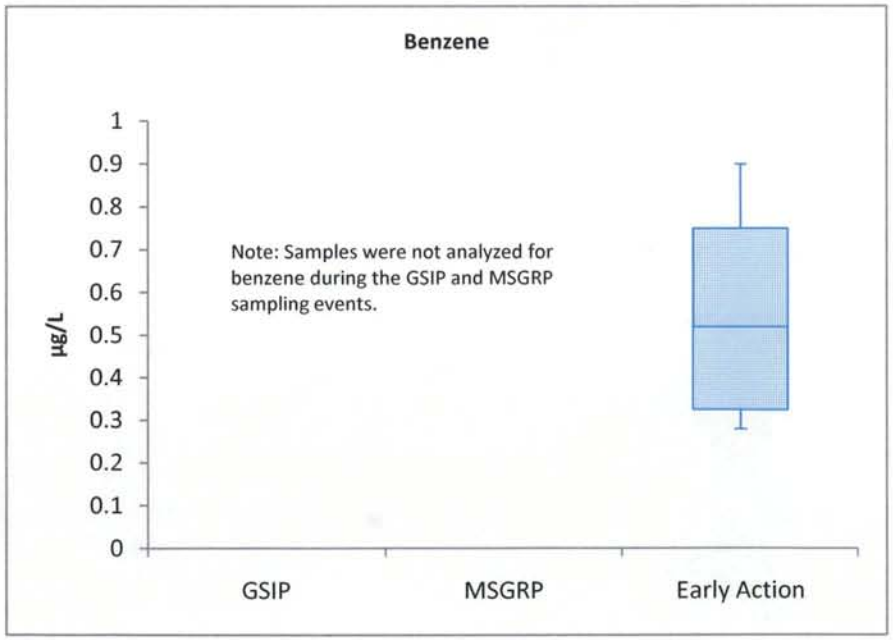

Benzene
Note: Samples were not analyzed for benzene during the GSIP and MSGRP sampling events, and benzene was not detected in any Early Action baseflow samples from this station.

SW-02-TT (GSIP SW-4)

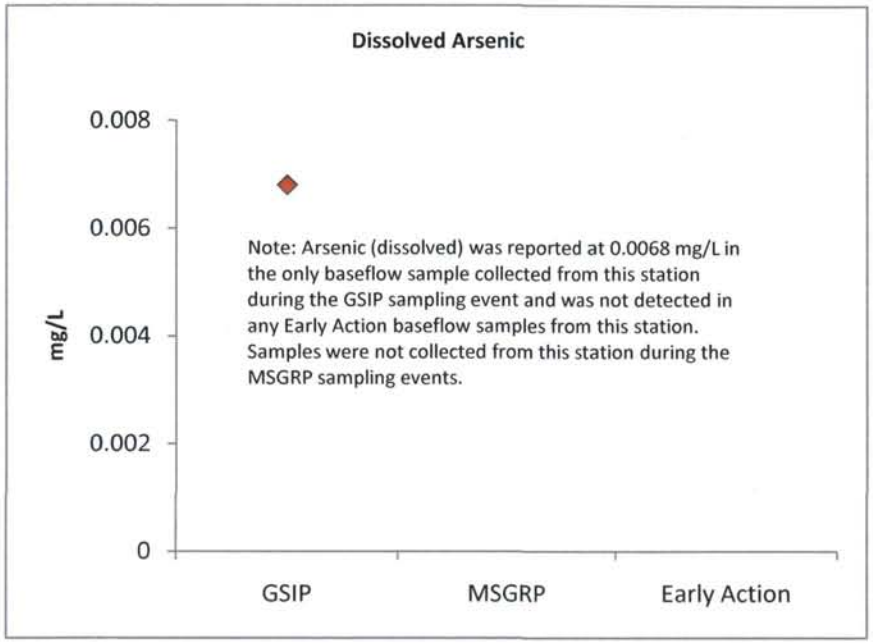


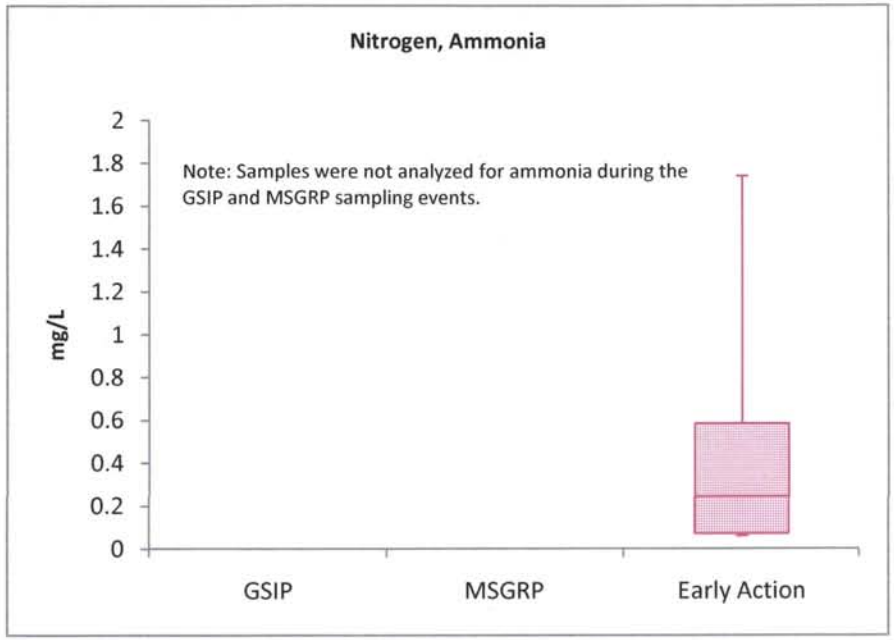


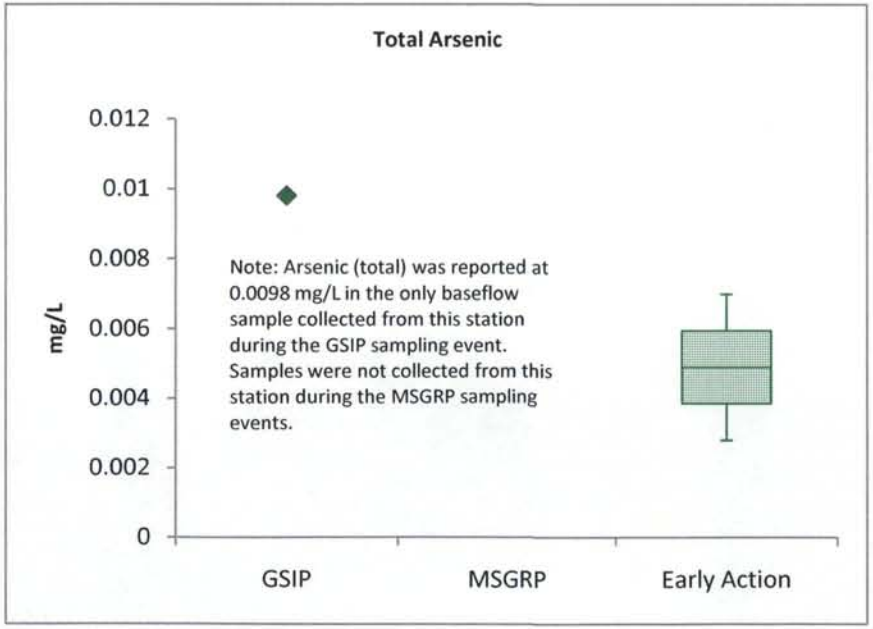


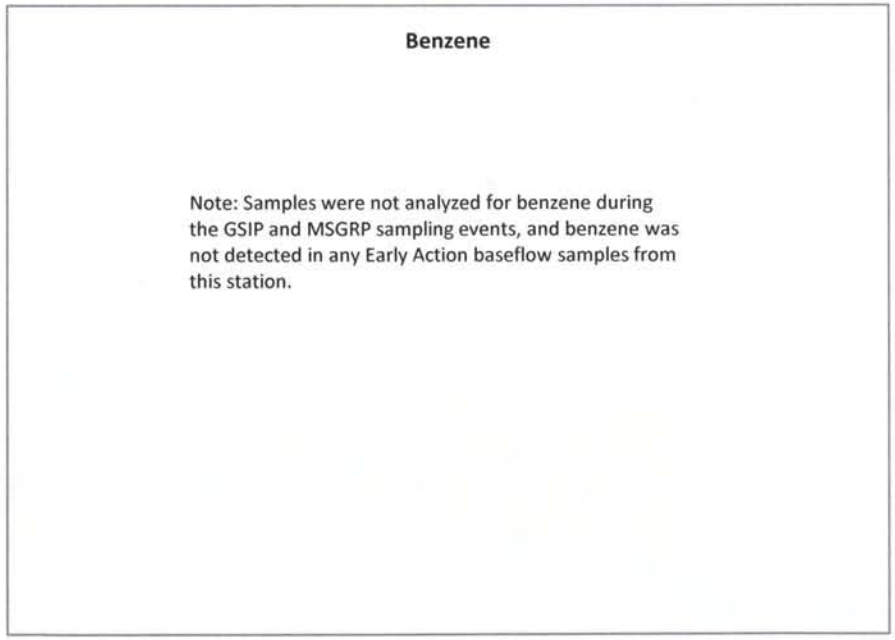


SW-2-IP

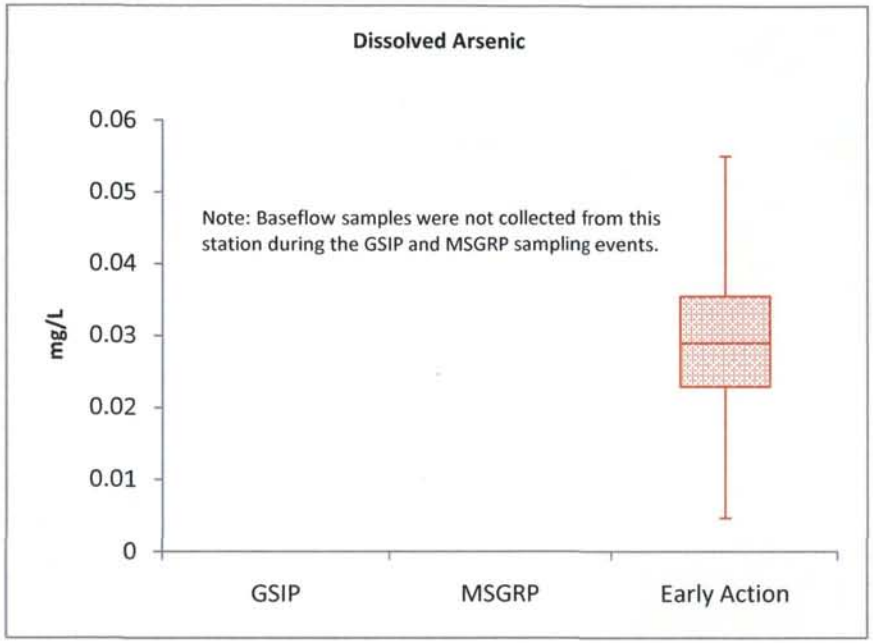

Dissolved Arsenic
0.008
0.006
0.004
0.002
0
mg/L
Note: Arsenic (dissolved) was reported at 0.0068 mg/L in the only baseflow sample collected from this station during the GSIP sampling event and was not detected in any Early Action baseflow samples from this station. Samples were not collected from this station during the MSGRP sampling events.
GSIP
MSGRP
Early Action

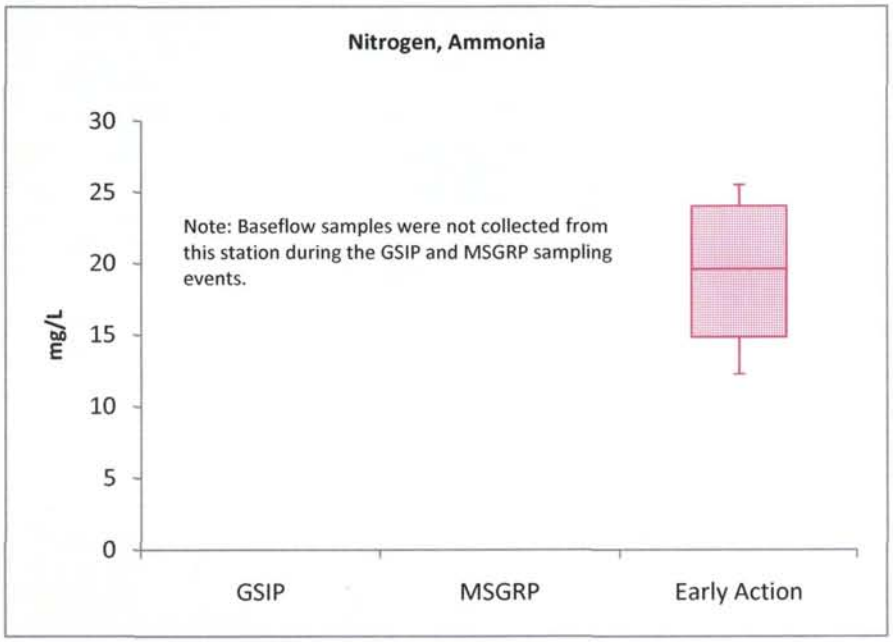

Nitrogen, Ammonia
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
mg/L
Note: Samples were not analyzed for ammonia during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action

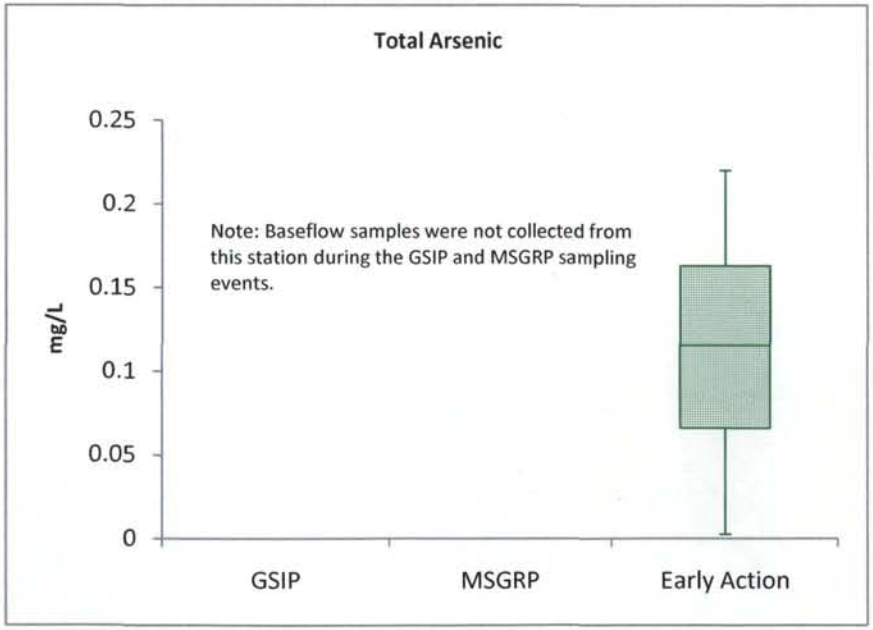

Total Arsenic
0.012
0.01
0.008
0.006
0.004
0.002
0
mg/L
Note: Arsenic (total) was reported at 0.0098 mg/L in the only baseflow sample collected from this station during the GSIP sampling event. Samples were not collected from this station during the MSGRP sampling events.
GSIP
MSGRP
Early Action

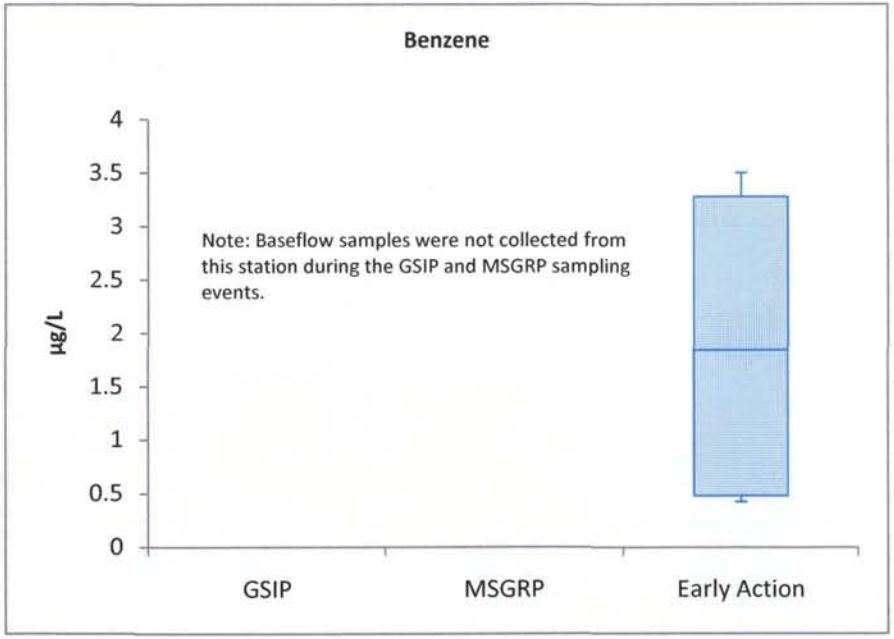

Benzene
Note: Samples were not analyzed for benzene during the GSIP and MSGRP sampling events, and benzene was not detected in any Early Action baseflow samples from this station.

SW-3-IP

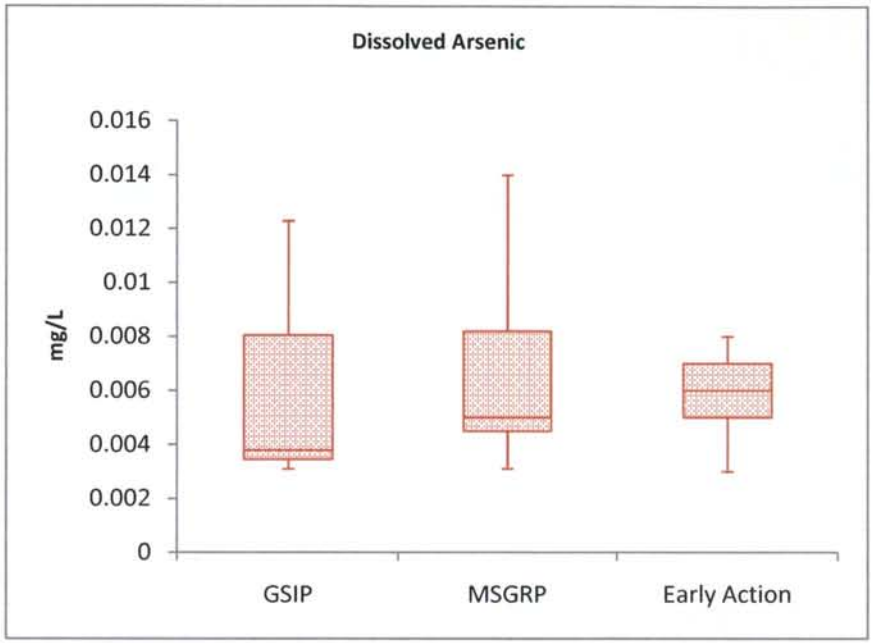

Dissolved Arsenic
0.06
0.05
0.04
0.03
0.02
0.01
0
mg/L
Note: Baseflow samples were not collected from this station during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action

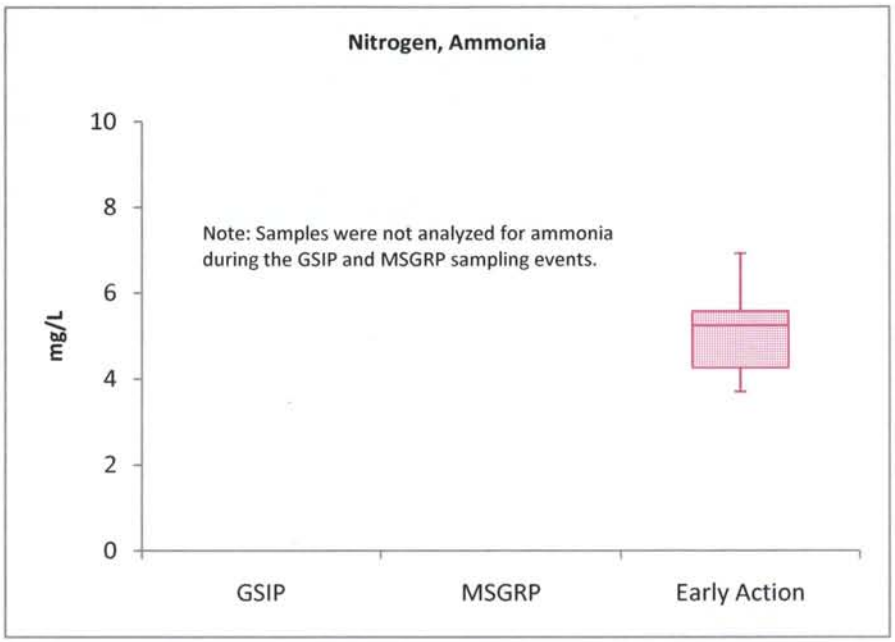

Nitrogen, Ammonia
30
25
20
15
10
5
0
mg/L
Note: Baseflow samples were not collected from this station during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action

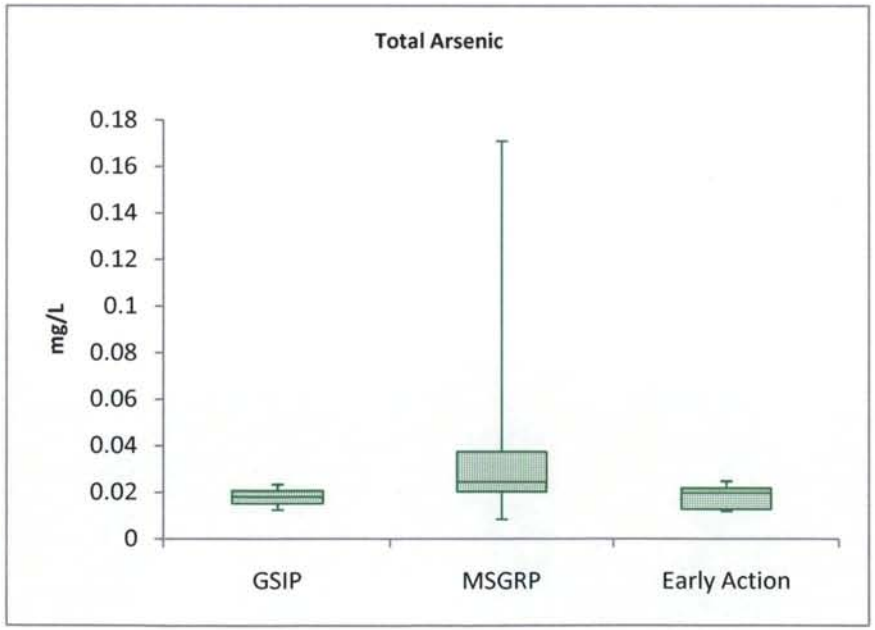

Total Arsenic
0.25
0.2
0.15
0.1
0.05
0
mg/L
Note: Baseflow samples were not collected from this station during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action

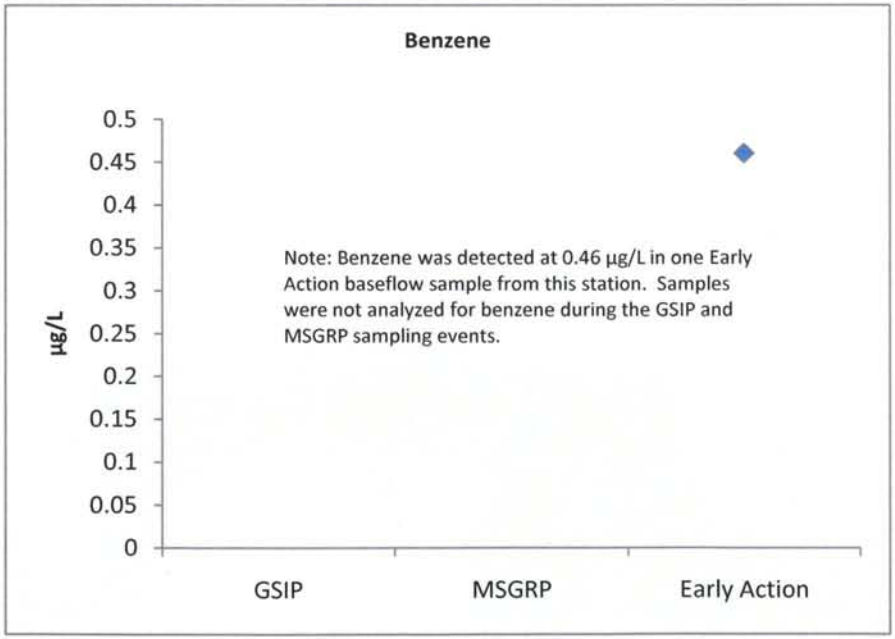

Benzene
4
3.5
3
2.5
2
1.5
1
0.5
0
µg/L
Note: Baseflow samples were not collected from this station during the GSIP and MSGRP sampling events.
GSIP
MSGRP
Early Action

SW-04-TT (GSIP SW-9)









OPERATION MAINTENANCE INSPECTION SHEET

SW-2-IP

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: 47344

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.1	7.3	s.u.
DO	2.20	2.40	mg/l
ORP	323.7	226.8	mV
Turb.	2.0	117.7	NTU
Temp.	14.4	15.8	C
Sp. Cond.	827.0	1,000	mS/cm

Re-calibrated?	Y / (N)
Batteries Replaced?	Y / (N)

Signal Strength: 51 %

Spectrum Strength: ERROR %

Piezometer gauging: 3.29 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: .52 ft

Stage reading from ISCO: .514 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.16 V

Voltage reading from batteries: 12.73 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

Rev. 04/17/09

Inspector: Glenn + Rich
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Cage/housing locked and secure?	Y / N

In-Situ S/N: 47347

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.0	7.3	s.u.
DO	4.80	6.40	mg/l
ORP	195.6	21.5	mV
Turb.	27.3	1.3	NTU
Temp.	15.4	18.7	C
Sp. Cond.	412.0	4,000	mS/cm

Re-calibrated?	Y / N
Batteries Replaced?	Y / N

Signal Strength: 28 %

Spectrum Strength: 89 %

Piezometer gauging: ____ ft

Manual stage reading (with ruler) from bottom of A/V sensor: ____ ft

Stage reading from staff gauge: .38 ft

Stage reading from ISCO: .310 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.70 V

Voltage reading from batteries: 13.45 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: ____ cf

ISCO stream velocity reading: ____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

Rev. 04/17/09

OPERATION MAINTENANCE INSPECTION SHEET

SW-01-TT

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) N
Sample Intake cleaned?	(Y) N
Sample Intake upright?	(Y) N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) N
Cage/housing locked and secure?	(Y) N

In-Situ S/N: 48312

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	5.7	5.9	s.u.
DO	4.00	3.00	mg/l
ORP	189.7	256.8	mV
Turb.	384.9	125.6	NTU
Temp.	13.0	21.3	C
Sp. Cond.	92.00	698.0	mS/cm

Re-calibrated?	Y (N)
Batteries Replaced?	Y / (N)

Signal Strength: 11 %

Spectrum Strength: ERROR %

Piezometer gauging: 5.41 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 1.26 ft

Stage reading from ISCO: 1.301 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.61 V

Voltage reading from batteries: 13.49 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? **Y / N**

Notes:

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OPERATION MAINTENANCE INSPECTION SHEET

SW-02-TT

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Cage/housing locked and secure?	Y / N

In-Situ S/N: 47353

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	6.5	7.0	s.u.
DO	8.70	8.70	mg/l
ORP	493.1	363.9	mV
Turb.	40.1	106.0	NTU
Temp.	11.4	19.5	C
Sp. Cond.	1006	7381	mS/cm

Re-calibrated?	Y / N
Batteries Replaced?	Y / N

Signal Strength: 24 %

Spectrum Strength: 62 %

Piezometer gauging: 4.68 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 1.29 ft

Stage reading from ISCO: 1.309 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.45 V

Voltage reading from batteries: 13.26 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

Rev 04/17/09

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: ~~47351~~

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	6.9	7.25	s.u.
DO	7.20	10.49	mg/l
ORP	182.7	238	mV
Turb.	6.4	110.7	NTU
Temp.	11.8	20.73	C
Sp. Cond.	.899	7253	mS/cm

Re-calibrated?	Y / (N)
Batteries Replaced?	Y / (N)

Signal Strength: 22 %

Spectrum Strength: 55 %

Piezometer gauging: 3.08 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 0.75 ft

Stage reading from ISCO: 1.217 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.27 V

Voltage reading from batteries: 13.22 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

Rev. 04/17/09

OPERATION MAINTENANCE INSPECTION SHEET

SW-04-TT

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Cage/housing locked and secure?	Y N

In-Situ S/N: 47352

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.90	8.10	s.u.
DO	9.50	18.1	mg/l
ORP	219.9	183.6	mV
Turb.	.2	2.0	NTU
Temp.	13.6	18.60	C
Sp. Cond.	936.0	6951	mS/cm

Re-calibrated?	Y / N
Batteries Replaced?	Y / N

Signal Strength: 22 %

Spectrum Strength: 56 %

Piezometer gauging: NA ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 1.00 ft

Stage reading from ISCO: .822 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.66 V

Voltage reading from batteries: 12.70 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? **Y / N**

Notes:

Rev 04/17/09

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Cage/housing locked and secure?	Y / N

In-Situ S/N: 47339

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.3	7.56	s.u.
DO	10.1	11.81	mg/l
ORP	460.5	250	mV
Turb.	9.9	122.1	NTU
Temp.	11.6	16.26	C
Sp. Cond.	2455	8112	mS/cm

Re-calibrated?	Y / N
Batteries Replaced?	Y / N ← NEW

Signal Strength: 0 %

Spectrum Strength: 99 %

Piezometer gauging: 2.61 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 1.91 ft

Stage reading from ISCO: 1.973 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.75 V

Voltage reading from batteries: 13.60 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

Rev. 04/17/09

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Cage/housing locked and secure?	Y / N

In-Situ S/N: 47482

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.8	7.88	s.u.
DO	21.9	20.58	mg/l
ORP	235.2	200	mV
Turb.	7.5	55.4	NTU
Temp.	9.5	14.36	C
Sp. Cond.	.899	79.64	mS/cm

Re-calibrated?	Y / N
Batteries Replaced?	Y / N

Signal Strength: 2 %

Spectrum Strength: = ERROR %

Piezometer gauging: 3.55 ft

Manual stage reading (with ruler) from bottom of A/V sensor: ____ ft

Stage reading from staff gauge: 2.10 ft

Stage reading from ISCO: 1.828 ft

Stage reading reset to (on ISCO if necessary): ____ ft

Voltage reading from solar panels: 12.70 V

Voltage reading from batteries: 12.66 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: ____ cf

ISCO stream velocity reading: ____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:
STAFF Has Settled into Sand + Silt

Rev. 04/17/09

Inspector: Glenn + Rich
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: 47341

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.80	8.05	s.u.
DO	13.1	11.78	mg/l
ORP	371.5	187	mV
Turb.	7.7	34.7	NTU
Temp.	8.9	9.57	C
Sp. Cond.	2524	9767	mS/cm

Re-calibrated?	Y / (N)
Batteries Replaced?	Y / (N)

Signal Strength: 36 %

Spectrum Strength: 45 %

Piezometer gauging: 2.39 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 1.21 ft

Stage reading from ISCO: 2.269 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 12.60 V

Voltage reading from batteries: 12.55 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

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OPERATION MAINTENANCE INSPECTION SHEET

SW-08-TT

Inspector: GLENN + RICH
Date: 4-17-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	Y / N

In-Situ S/N: 47340

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH		~~8.04~~ 8.02	s.u.
DO		9.60	mg/l
ORP		317	mV
Turb.		88.3	NTU
Temp.		8.94	C
Sp. Cond.		9969	mS/cm

Re-calibrated?	Y / (N)
Batteries Replaced?	Y / (N)

Signal Strength: 0 %

Spectrum Strength: 48 %

Piezometer gauging: 3.24 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 2.96 ft

Stage reading from ISCO: 3.109 ft

Stage reading reset to (on ISCO if necessary): ~~3.109~~ ft

Voltage reading from solar panels: 12.70 V

Voltage reading from batteries: 12.62 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: _____ cf

ISCO stream velocity reading: _____ cf

Color of Dessicant: **blue / clear / pink**

Dessicant replaced? Y / N

Notes:

Rev 04/17/09

OPERATION MAINTENANCE INSPECTION SHEET

SW-2-IP

Inspector: Glenn Rich
Date: 4-23-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Bubbler stone inspected and tubing connected?	Y / N / NA
Cage/housing locked and secure?	Y / N

Calibration check of In-Situ Troll: 47344

	BEFORE		AFTER
pH 7	7.1	s.u.	8.3
DO	2.60	mg/l	2.90
ORP	369.0	mV	417.7
Turb.	28	NTU	2.1
Sp. Cond.	784.0	mS/cm	790.0
Re-calibrated?	Y / N		
	TEMP = 12.79		13.0

Manual stage reading from bottom of A/V sensor: .60 ft

Stage reading from ISCO: 0.589 ft

Voltage reading from solar panels: 13.59 V

Voltage reading from battery: 13.39 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual stream velocity reading: .73

Color of Dessicant: **blue / white / pink**

Notes: PIEZOMETER = 2.98 COPPER COLOR

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IPOU2
WOBURN, MA

OPERATION MAINTENANCE INSPECTION SHEET

SW-3-IP

Inspector: GLENN + RICH
Date: 4-23-09

Weekly O&M

Cable/Tubing inspected?	Y / N	
Tubing need replacement?	Y / N	NEXT WEEK
Debris cleared from in-stream Equipment?	Y / N	
Sample Intake cleaned?	Y / N	
Staff Gauge cleaned?	Y / N	
A/V Sensor cleaned?	Y / N	
In-Situ Troll cleaned?	Y / N	
Rain gauge cleaned and inspected?	Y / N	
Bubbler stone inspected and tubing connected?	Y / N / NA	
Cage/housing locked and secure?	Y / N	

Calibration check of In-Situ Troll: 47347

BEFORE → pH 7	6.7	s.u.	6.6
DO	3.70	mg/l	4.10
ORP	219.9	mV	235
Turb.	41.4	NTU	5.6
Sp. Cond.	390.0	mS/cm	304.0
Re-calibrated?	Y / N		
	TEMP 9.7		11.1

Manual stage reading from bottom of A/V sensor: _____ ft

Stage reading from ISCO: .606 ft

Voltage reading from solar panels: 13.78 V

Voltage reading from battery: 13.59 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual stream velocity reading: NEG POND WATER BLOWING INTO CULVERT

Color of Dessicant: **blue / white / pink**

Notes:

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IPOU2
WOBURN, MA

OPERATION MAINTENANCE INSPECTION SHEET

SW-01-TT

Inspector: Glenn Reed
Date: 4-23-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Bubbler stone inspected and tubing connected?	Y / N / NA
Cage/housing locked and secure?	Y / N

Calibration check of In-Situ Troll: 48312

pH 7	5.6	s.u.	6.9
DO	3.70	mg/l	4.20
ORP	518.7	mV	2.3
Turb.	72.8	NTU	10.2
Sp. Cond.	63.00	mS/cm	1693
Re-calibrated?	Y / N		
	TEMP 13.1		13.4

Manual stage reading from bottom of A/V sensor: 1.70 ft

Stage reading from ISCO: 1.557 ft

Voltage reading from solar panels: 13.73 V

Voltage reading from battery: 13.33 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual stream velocity reading: .95

Color of Dessicant: ~~blue / white / pink~~

Notes: DESSICANT NEED TO BE CHANGED = COPPER COLOR
PIEZOMETER = 4.92

Rev. 10.23.08

IPOU2
WOBURN, MA

OPERATION MAINTENANCE INSPECTION SHEET

SW02-TT

Inspector: GLENN BICH
Date: 4-23-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Bubbler stone inspected and tubing connected?	Y / N / (NA)
Cage/housing locked and secure?	(Y) / N

Calibration check of In-Situ Troll: 47353

	BEFORE		AFTER
pH 7	6.5	s.u.	6.4
DO	8.30	mg/l	10.0
ORP	503.9	mV	88.9
Turb.	16.5	NTU	11.0
Sp. Cond.	674.0	mS/cm	475.0
Re-calibrated?	(Y) / N		
	TEMP 11.5		11.7

Manual stage reading from bottom of A/V sensor: _____ ft

Stage reading from ISCO: 1.763 ft

TERMINAL BROKE NOT CONNECTED ON ARRIVAL → Voltage reading from solar panels: NOW 12.55 V — NEW TERMINAL ALL GOOD

Voltage reading from battery: 12.40 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	(Y) / N
Solar panels cleaned and inspected?	(Y) / N

Manual stream velocity reading: .38 CFS

Color of Dessicant: (blue) / white / pink

Notes: PIEZOMETER = 4.25

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OPERATION MAINTENANCE INSPECTION SHEET

SW-03-TT

Inspector: GLENN RICH
Date: 4-24-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: 17351

AFTER CALIBRATION

Calibration check of In-Situ Troll:

	Before Check	During Check	
pH	6.9	7.1	s.u.
DO	6.10	7.20	mg/l
ORP	480.7	28.7	mV
Turb.	11.4	5.0	NTU
Temp.	9.9	9.3	C
Sp. Cond.	6310	2938	mS/cm

Re-calibrated?	(Y) / N
Batteries Replaced?	Y / (N)

Signal Strength: 18 %

Spectrum Strength: 0 %

Piezometer gauging: 2.88 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: .93 ft

Stage reading from ISCO: 1.386 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.50 V

Voltage reading from batteries: 12.48 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	(Y) / N
Solar panels cleaned and inspected?	(Y) / N

Manual (Marsh-McBirney) stream velocity reading: .55 cf

ISCO stream velocity reading: 11.21 cf

Color of Dessicant: (blue) / clear / pink

Dessicant replaced? Y / (N)

Notes:

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IPOU2
WOBURN, MA

OPERATION MAINTENANCE INSPECTION SHEET

SW-04-TT

Inspector: Glenn Rich
Date: 4-23-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Bubbler stone inspected and tubing connected?	Y / N / (NA)
Cage/housing locked and secure?	(Y) / N

Calibration check of In-Situ Troll: 47352

	BEFORE		AFTER
pH 7	7.8	s.u.	8.2
DO	3.10	mg/l	20.0
ORP	215.0	mV	15.6
Turb.	0.3	NTU	0.2
Sp. Cond.	613.0	mS/cm	509.0
Re-calibrated?	Y / N		
	TEMP 12.4		13.5

Manual stage reading from bottom of A/V sensor: 1.54 ft

Stage reading from ISCO: 1.193 ft

Voltage reading from solar panels: 14.02 V

Voltage reading from battery: 13.67 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	(Y) / N
Solar panels cleaned and inspected?	(Y) / N

Manual stream velocity reading: 8.87

Color of Dessicant: (blue) / white / pink

Notes:

Rev. 10/23/08

OPERATION MAINTENANCE INSPECTION SHEET

SW-05-TT

Inspector: GLEAN RICH
Date: 4-24-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: 47339

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.2	6.6	s.u.
DO	8.00	9.50	mg/l
ORP	489.7	85.9	mV
Turb.	10.4	8.7	NTU
Temp.	14.0	14.6	C
Sp. Cond.	2034	740.6	mS/cm

Re-calibrated?	(Y) / N
Batteries Replaced?	Y / (N)

Signal Strength: 17 %

Spectrum Strength: ERROR %

Piezometer gauging: 2.48 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: _____ ft

Stage reading from ISCO: 2.117 ft

Stage reading reset to (on ISCO if necessary): N/O ft

Voltage reading from solar panels: 13.~~25~~ 52 V

Voltage reading from batteries: 13.25 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	(Y) / N
Solar panels cleaned and inspected?	(Y) / N

Manual (Marsh-McBirney) stream velocity reading: .56 cf

ISCO stream velocity reading: .51 cf

Color of Dessicant: blue / clear / (pink)

Dessicant replaced? Y / (N)

Notes:

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Inspector: GLENN RICH
Date: 4-24-09

Weekly O&M

Cable/Tubing inspected?	Y / N
Tubing need replacement?	Y / N
Debris cleared from in-stream Equipment?	Y / N
Sample Intake cleaned?	Y / N
Sample Intake upright?	Y / N
Staff Gauge cleaned?	Y / N
A/V Sensor cleaned?	Y / N
In-Situ Troll cleaned?	Y / N
Rain gauge cleaned and inspected?	Y / N
Cage/housing locked and secure?	Y / N

In-Situ S/N: 47482

AFTER CALIBRATION

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.9	6.8	s.u.
DO	18.8	24.5	mg/l
ORP	428.3	4.1	mV
Turb.	10.0	27.7	NTU
Temp.	11.8	13.3	C
Sp. Cond.	733.0	588.0	mS/cm

Re-calibrated?	Y / N
Batteries Replaced?	Y / N

Signal Strength: 1 %

Spectrum Strength: ERROR %

Piezometer gauging: 3.29 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 2.36 ft

Stage reading from ISCO: 2.093 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 12.40 V

Voltage reading from batteries: 12.34 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	Y / N
Solar panels cleaned and inspected?	Y / N

Manual (Marsh-McBirney) stream velocity reading: .86 cf

ISCO stream velocity reading: .98 cf

Color of Dessicant: blue / clear / pink

Dessicant replaced? Y / N

Notes:

Rev. 04/17/09

OPERATION MAINTENANCE INSPECTION SHEET

SW-07-TT

Inspector: GLENN RICH
Date: 4-24-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: 47341 AFTER CALIBRATION

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.8	6.8	s.u.
DO	11.5	16.9	mg/l
ORP	411.3	59.4	mV
Turb.	6.7	1.1	NTU
Temp.	10.6	11.0	C
Sp. Cond.	1360	1038	mS/cm

Re-calibrated?	(Y) / N
Batteries Replaced?	Y / (N)

Signal Strength: 38 %

Spectrum Strength: 0 %

Piezometer gauging: 2.18 ft

Manual stage reading (with ruler) from bottom of A/V sensor: 0 ft

Stage reading from staff gauge: 1.40 ft

Stage reading from ISCO: 2.502 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 13.65 V

Voltage reading from batteries: 13.26 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	(Y) / N
Solar panels cleaned and inspected?	(Y) / N

Manual (Marsh-McBirney) stream velocity reading: 2.52 cf

ISCO stream velocity reading: 2.33 cf

Color of Dessicant: **blue / clear / (pink)**

Dessicant replaced? Y / (N)

Notes:

Rev. 04/17/09

Inspector: GLENN RICH
Date: 4-24-09

Weekly O&M

Cable/Tubing inspected?	(Y) / N
Tubing need replacement?	Y / (N)
Debris cleared from in-stream Equipment?	(Y) / N
Sample Intake cleaned?	(Y) / N
Sample Intake upright?	(Y) / N
Staff Gauge cleaned?	(Y) / N
A/V Sensor cleaned?	(Y) / N
In-Situ Troll cleaned?	(Y) / N
Rain gauge cleaned and inspected?	(Y) / N
Cage/housing locked and secure?	(Y) / N

In-Situ S/N: 47340

Calibration check of In-Situ Troll:

	Before Check	*During Check*	
pH	7.9	7.4	s.u.
DO	7.50	11.7	mg/l
ORP	465.6	13.2	mV
Turb.	109.1	16.7	NTU
Temp.	10.8	11.0	C
Sp. Cond.	2280	1775	mS/cm

Re-calibrated?	(Y) / N
Batteries Replaced?	Y / (N)

Signal Strength: 0 %

Spectrum Strength: ~~[illegible]~~ 87 %

Piezometer gauging: 2.99 ft

Manual stage reading (with ruler) from bottom of A/V sensor: _____ ft

Stage reading from staff gauge: 3.20 ft

Stage reading from ISCO: 3.065 ft

Stage reading reset to (on ISCO if necessary): NO ft

Voltage reading from solar panels: 12.48 V — LOOSE CONNECTIONS

Voltage reading from batteries: 12.47 V

Monthly O&M

In-Situ Troll calibrated (refer to cal sheet)?	(Y) / N
Solar panels cleaned and inspected?	(Y) / N

Manual (Marsh-McBirney) stream velocity reading: .56 cf

ISCO stream velocity reading: .17 cf

Color of Dessicant: (blue) / clear / pink

Dessicant replaced? Y / (N)

Notes:

Rev. 04/17/09

SDMS TARGET SHEET

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