FINAL

SEMIANNUAL GROUNDWATER SAMPLING REPORT FOR INSTALLATION RESTORATION PROGRAM SITES 4, 7, AND 9

NEW YORK AIR NATIONAL GUARD
(106TH RESCUE WING)
FRANCIS S. GABRESKI INTERNATIONAL AIRPORT

WESTHAMPTON BEACH, NEW YORK

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Prepared by
Science Applications International Corporation
Oak Ridge, Tennessee

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

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ACRONYMS

ANG	Air National Guard
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
DERP	Defense Environmental Restoration Program
DO	dissolved oxygen
DoD	U.S. Department of Defense
DPT	direct-push technology
EPA	U.S. Environmental Protection Agency
IRP	Installation Restoration Program
LTM	Long Term Monitoring Program
MCL	maximum contaminant level
NGB/A7OR	National Guard Bureau Operations Restoration Branch
NTU	nephelometric turbidity unit
NYSDEC	New York State Department of Environmental Conservation
ORP	oxidation-reduction potential
PVC	polyvinyl chloride
RI	remedial investigation
SVOC	semivolatile organic compound
TAL	target analyte list
VOC	volatile organic compound

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1.0 INTRODUCTION

In 1984, the Defense Environmental Restoration Program (DERP) was established to promote and coordinate efforts for the evaluation and cleanup of contamination at U.S. Department of Defense (DoD) installations. In 1987, DERP became part of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and the Superfund Amendments and Reauthorization Act of 1986. The Installation Restoration Program (IRP) was established under DERP to identify, investigate, and cleanup contamination at DoD installations. IRP is focused on cleanup of contamination associated with past DoD activities to ensure that threats to public health are eliminated and to restore natural resources for future use following applicable, relevant, and appropriate federal, state, and local cleanup standards. Within the Air National Guard (ANG), the National Guard Bureau Operations Restoration Branch (NGB/A7OR) manages IRP and related activities.

SAIC Engineering of New York, P.C., a wholly owned subsidiary of Science Applications International Corporation, has been retained by ANG to conduct long-term monitoring for IRP Site 7 and remedial action operations for IRP Sites 4 and 9 at the New York Air National Guard 106th Rescue Wing, located at Francis S. Gabreski International Airport, Westhampton Beach, New York (Figure 1). The remedial action is being conducted under NGB Contract No. DAHA92-01-D-0008, Delivery Orders 0141 and 0143.

This report presents the results of the performance monitoring event conducted in January 2010 at IRP Sites 4 and 9, and the closure monitoring events conducted in October 2009 and January 2010 at IRP Site 7. The historical analytical data are compared against these recent data to determine if significant changes in groundwater conditions have occurred. IRP Sites 4 and 9 are discussed together due to their close proximity and the identified migration pathway from Site 4 to Site 9.

1.1 OVERVIEW

1.1.1 IRP Sites 4 and 9 Activities

A sampling event was conducted at IRP Sites 4 and 9 in July 2009 to represent baseline conditions immediately prior to the startup of the air biosparge system in late July. The first performance monitoring event was conducted in January 2010. The next event scheduled for July 2010 will be the second performance monitoring event under the long term monitoring (LTM) plan.

A total of eight monitoring wells were sampled during the January 2010 monitoring event, four of which are located at Site 4 (SW-06, SW-10, SW-07 and SDW-23A) and four at Site 9 (06MW02A, 06MW03A, MW09-GW02, and SW-09). Table 1 provides the construction details for the wells included in the monitoring program for IRP Sites 4 and 9.

Groundwater samples were collected using low-flow purging techniques in accordance with the Final Remedial Action Work Plan (SAIC 2008) and submitted for laboratory analysis of volatile organic compounds (VOCs). Also, biological activity parameters nitrate, nitrite, sulfate, and methane were analyzed for both Sites 4 and 9. Additionally, field parameters (conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, temperature, and turbidity) were measured and recorded during the sampling event.

1.1.2 IRP Site 7 Activities

Two sampling events were conducted at IRP Site 7 in October 2009 and January of 2010 as part of the quarterly closure monitoring requirements. A total of seven monitoring wells were sampled during both monitoring events (MW-11, MW-23, MW-24R, MW-103, MW-105, MW-106R and MW-107C). Table 1 provides the construction details for the wells included in the monitoring program for IRP Site 7.

Groundwater samples were collected using low-flow purging techniques in accordance with the Final Remedial Action Work Plan (SAIC 2008) and submitted for laboratory analysis of VOCs, semivolatile organic compounds (SVOCs), and target analyte list (TAL) metals. Field parameters (conductivity, DO, ORP, pH, temperature, and turbidity) were also measured and recorded during the sampling events.

1.2 FIELD CHANGES

During the performance monitoring events, field conditions required the following deviations from the Final Remedial Action Work Plan (SAIC 2008).

1. Although specified for sampling under the monitoring plan for Sites 4 and 9, monitoring well MW09-GW04 could not be sampled as planned because the pump became lodged inside the well and could not be retrieved.

2. Although the work plan specifies that the turbidity is not to exceed 10 nephelometric turbidity units (NTUs) at the time of sample collection, this limit could not always be obtained. As a corrective action, it was decided that sample collection would proceed at a well if the turbidity did not decline further after approximately one hour of continuous purging.

3. During the October 2009 sampling event for Site 7, the water quality meter would not calibrate for dissolved oxygen. Therefore, the dissolved oxygen values for wells MW-24R, MW-23, and MW-107C may be erroneous. A replacement meter was immediately ordered.

4. During the January 2010 sampling event for Site 4, the water quality meter would not calibrate for dissolved oxygen and turbidity. Therefore, the dissolved oxygen and turbidity values for wells SDW-23A, 06MW02A, 06MW03A, and MW09GW02 may be erroneous. A replacement meter was immediately ordered.

2.0 GROUNDWATER SAMPLING RESULTS

The following sections present the results of the groundwater performance monitoring events conducted in October 2009 and January 2010 at IRP Sites 4 and 9, and Site 7. The analytical results were compared against the New York State Department of Environmental Conservation (NYSDEC) class GA groundwater standards and the U.S. Environmental Protection Agency (EPA) National Primary and Secondary Drinking Water Standards maximum contaminant levels (MCLs). Appendix A contains the laboratory analytical data packages for the October 2009 and January 2010 sampling events. Appendix B presents the monitoring well purge logs for the October 2009 and January 2010 sampling events. Appendix C presents the data quality summary report for the data.

2.1 INSTALLATION RESTORATION PROGRAM SITES 4 AND 9

2.1.1 Water Level Measurements

Contemporaneous water level measurements were collected from 26 monitoring wells in August 2008 (Table 2). The potentiometric map for shallow groundwater at Sites 4 and 9 is shown in Figure 2 and is representative of conditions prior to startup of the air biosparge system. The groundwater flow direction at the sites was determined to be east to southeast. The field measurements collected during the sampling events at Sites 4 and 9 in January 2010 are presented in Table 5.

2.1.2 Analytical Results

A total of 8 monitoring wells were sampled at IRP Sites 4 and 9 in January 2010. Tables 3 and 4 summarize the analytes detected at IRP Sites 4 and 9, respectively, from 2008 through the current sampling event in 2010.

VOCs

The following eleven VOCs were detected above the NYSDEC water quality standards in samples collected in 2010 at IRP Sites 4 and 9:

- (1-Methylpropyl)-benzene was detected in 5 of 8 samples above the NYSDEC action level of 5 µg/L, ranging in concentration from 5.3 to 12 µg/L. No MCL is established for this analyte.
- 1-Methyl-4-1(1-methylethyl)-benzene was detected in 5 of 8 samples above the NYSDEC action level of 5 µg/L, ranging in concentration from5.2 to12 µg/L. No MCL is established for this analyte.
- 1,2,4-Trimethybenzene was detected in 6 of 8 samples above the NYSDEC action level of 5 µg/L, ranging in concentration from 15 to 11,000 µg/L. No MCL is established for this analyte.
- 1,3,5-Trimethylbenzene was detected in 6 of 8 samples above the NYSDEC action level of 5 µg/L, ranging in concentration from179 to 380 µg/L. No MCL is established for this analyte.
- Butylbenzene was detected in 3 of 8 samples above the NYSDEC action level of 5 µg/L, ranging in concentration from 7.1 to 15 µg/L. No MCL is established for this analyte.
- Cumene (isopropylbenzene) was detected in 5 of 7 samples above the NYSDEC action level of 5 µg/L, ranging in concentration from 34 to 150 µg/L. No MCL is established for this analyte.

- Ethylbenzene was detected in 6 of 8 samples above the NYSDEC action level of 5 μg/L, ranging in concentration from 14 to 1,400 μg/L. One of these detections also exceeded the MCL of 700 μg/L.

- Propylbenzene was detected in 5 of 8 samples above the NYSDEC action level of 5 μg/L, ranging in concentration from 31 to 70 μg/L. No MCL is established for this analyte.

- Toluene was detected in 3 of 8 samples above the NYSDEC action level of 5 μg/L, ranging in concentration from 13 to 300 μg/L. None of these detections exceeded the MCL of 1,000 μg/L.

- Xylenes (total) were detected in 6 of 8 samples above the NYSDEC action level of 5 μg/L, ranging in concentration from 51 to 5,104 μg/L. None of these detections exceeded the MCL of 10,000 μg/L.

Monitoring wells SW-06 and SW-07 at Site 4 and 06MW03A, MW09-GW02, and SW-09 at Site 9 typically exhibited the highest VOC concentrations (Figure 3).

BTEX concentrations were used to delineate the current extent of the plume boundary at IRP Sites 4 and 9, as shown in Figure 5. The historical plume boundary from the 2008 sampling event is also presented in Figure 4 to provide a basis of comparison. The 1- and 5-μg/L plume boundaries based on the current data only indicated minor changes relative to the 2008 sampling event. The 1,000-μg/L plume has decreased in size due to lower concentrations in wells SDW-23A, MW09-GW02, and 06MW2A from 4,434 to 5 μg/L, from 3,884 to 582 μg/L and from 1,762 to 65 μg/L, respectively. The primary changes in BTEX plume configuration occurred as a result of decreases in ethylbenzene and total xylenes concentrations at well SDW-23A , MW09-GW02, and 06MW2A between the 2009 and 2010 sampling events.

2.1.3 Field Measurements

The field measurements collected during the sampling events at Sites 4 and 9 in January 2010 are presented in Table 5.

2.1.4 Geochemical Parameters

As BTEX compounds are oxidized by microorganisms, biodegradation processes consume electron acceptors (i.e., oxygen, nitrate, sulfate), which can result in the observation of nitrate reduction, sulfate reduction, and methanogenesis (Wiedemeier et al, 1995). Groundwater conditions in the source area can become strongly anaerobic if the oxidation of BTEX via microbial processes is significant enough to deplete the available oxygen and nitrate. The geochemical parameters nitrate, nitrite, sulfate, and methane were included in the analytical suite January 2010 performance monitoring event in order to evaluate subsurface conditions and their suitability to support biodegradative processes. These parameters, as well as the field measurements of DO and ORP collected during the performance monitoring event, are discussed below.

DO

DO measurements were collected at only 6 of 8 wells during the performance monitoring event due to calibration issues with the water quality meter. At these wells, the DO concentrations ranged between 0 mg/L (SW-06, SW-09 and MW09-GW02) and 8.89 mg/L (SW-10), with an average of 2.87 mg/L. DO levels were above the aerobic threshold of 0.5 mg/L at 3 of the 6 wells measured; SDW-23A (6.47 mg/L), SW-07 (1.83 mg/L), and SW-10 (8.89 mg/L). While SW-07 is tangential to the upgradient side of the air biosparge treatment area, the wells with the two highest DO measurements (SW-10 and SDW-23A) are located within to downgradient of the active treatment area, indicating that the system is bolstering DO levels at the site which is supportive of BTEX degradation processes.

ORP

The ORP results for January 2010 at IRP Sites 4 and 9 ranged between -49 mV (SW-07) and 304 mV (SW-10), with an average result of 21 mV. ORP measurements at 7 of 8 wells were less than 50 mV, which is indicative of anaerobic, and typically sulfate reducing, conditions. ORP and DO measurements generally correlated well, with low ORP results noted at wells with low DO levels. At well SW-10 which exhibited a highly positive ORP, DO measurements also were elevated, and indicate of aerobic conditions. Although the majority of wells exhibited negative ORPs, overall these results represented an increase relative to the preceding sampling events at each of these wells, indicating that the air biosparge system may be influencing a trend towards aerobic conditions at the site as a whole.

Nitrate/Nitrite

Nitrate was detected at 2 of the 5 wells where it was collected, SW-07 (276 µg/L) and SW-10 (1,870 µg/L). Nitrite was not detected at any of the five wells at which it was analyzed. The detections at SW-07 and SW-10 indicate that nitrate reduction is not occurring at these locations, as dissolved oxygen concentrations are sufficient to support biodegradative processes.

Sulfate

Sulfate was detected at all 5 wells at which it was analyzed, ranging in concentration from 1,810 µg/L (SW-09) to 5,060 µg/L (SW-07), with an average of 3,200 µg/L. These concentrations indicate that sulfate reduction is not occurring at these locations, and that the primary electron acceptors utilized at the site are dissolved oxygen and nitrate.

Methane

Methane was detected at 4 of the 5 wells, ranging in concentration from 2 µg/L (SW-06) to 93.1 µg/L (SW-09) in the wells at which it was detected. Since concentrations were generally lower than historical levels, the methane currently observed is likely residual in nature and not indicative of active methanogenesis.

2.2 INSTALLATION RESTORATION PROGRAM SITE 7

A total of seven monitoring wells were sampled at IRP Site 7 in October 2009 and January 2010. Table 6 summarizes the VOCs, SVOCs and metals detected during the 2009 and 2010 closure sampling events.

2.2.1 Analytical Results

VOCs

The following VOC was detected above the NYSDEC water quality standards in samples collected in October 2009 and January 2010 at IRP Site 7:

- 1,2,4-trimethylbenzene was detected above the NYSDEC action level of 5 µg/L at MW-103 in January 2010 at a concentration of 6.4 µg/L. No MCL is established for this analyte.

No VOCs were detected above the NYSDEC action levels at MW-103 during the previous sampling event in October 2009. NYSDEC action level exceedances were not observed at the other six Site 7 monitoring wells during the October 2009 and January 2010 sampling events.

SVOCs

The following SVOCs were detected above the NYSDEC water quality standards in samples collected in January 2010 at IRP Site 7:

- 2,4-Dinitrophenol was detected above the NYSDEC action level of 1 µg/L at MW-103 in January 2010 at a estimated concentration of 7.5 µg/L. No MCL is established for this analyte.

No SVOCs were detected above the NYSDEC action levels at MW-103 during the previous sampling event in October 2009. NYSDEC action level exceedances were not observed at the other six Site 7 monitoring wells during the October 2009 and January 2010 sampling events.

Metals

No metals were detected above the NYSDEC water quality standards in samples collected in October 2009 and January 2010 at IRP Site 7:

2.2.2 Field Measurements

Table 7 presents the field measurements collected during the October 2009 and January 2010 sampling events at IRP Site 7.

3.0 CONCLUSIONS

3.1 INSTALLATION RESTORATION PROGRAM SITES 4 AND 9

The air biosparge system startup occurred in July 2009 after the baseline performance monitoring event. A total of 50 sparge points at Site 4 (38 points) and Site 9 (12 points) were installed in the areas of the groundwater plume where the BTEX concentration exceeded the 1,000 µg/L threshold. The system runs continuously, injecting air to increase dissolved oxygen concentrations in the subsurface and stimulate aerobic bioremediation of the residual contamination. This active treatment will reduce the contaminant mass in the source areas, which will in turn decrease the flux of contaminants out of the source area and allow natural attenuation processes (i.e., biodegradation, dispersion, dilution, etc.) to effectively reduce the contamination throughout the lower concentration areas of the plume. The sampling event in January 2010 was the first event to evaluate the performance of the air biosparge system.

VOC concentrations in groundwater at Sites 4 and 9 have changed significantly since the installation of the air biosparge system. Five out of the eight wells have experienced decreases in their VOC concentrations. Wells SDW-23A (from 4,434 to 5 µg/L BTEX), MW09-GW02 (from 3,884 to 582 µg/L BTEX), 06MW2A (from 1,762 to 65 µg/L BTEX), and 06MW03A (from 3,403 to 1494 µg/L BTEX) experienced a significant decline in VOC concentrations relative to the baseline event. These wells are all within or adjacent to the air biosparge treatment area with the exception of 06MW03A, which is located downgradient of the air biosparge points. Well SW-10 experienced a slight decrease and is located outside of the treatment area. SW-06, and SW-07 concentrations remained relatively stable. Geochemical parameters collected at the Sites 4 and 9 wells indicate that operation of the system has resulted in a trend towards increasing ORP and DO levels relative to historical sampling results, which is conducive to establishing conditions favorable to the aerobic biodegradation of BTEX compounds.

The current groundwater data indicates that the BTEX plume delineated by the 1- and 5-µg/L contour boundaries indicate minor changes relative to 2008. The primary changes in BTEX plume configuration occurred as a result of decreases in ethylbenzene and total xylenes concentrations between the 2009 and 2010 sampling events. Based on the detection of contaminants in the southernmost well MW09-GW05, the Air National Guard is planning to install additional monitoring wells to further delineate the horizontal extent of groundwater contamination to the east, south, and southeast of the existing plume boundary. New monitoring wells would be installed using direct push methods and Geoprobe® pre-packed well screens constructed of 0.75-in. Schedule 40 polyvinyl chloride with 0.010-in. machine slot screens. The proposed monitoring wells would be screened across the interval(s) of highest contaminant concentration as based upon data from adjacent wells.

3.2 INSTALLATION RESTORATION PROGRAM AT SITE 7

The two quarterly sampling events conducted as part of the closure monitoring requirements at IRP Site 7 indicated that the only analytes detected above NYSDEC action levels was one VOC (1,2,4-trimethylbenzene) and one SVOC (2,4-dinitrophenol). No metals were detected above screening criteria. The VOC and SVOC action level exceedances occurred only at one site well (MW-103) and at low concentrations only marginally above the NYSDEC criteria of 5 and 1 µg/L, respectively.

The current data from the October 2009 and January 2010 sampling events are consistent with the previous monitoring history for this site. Historically, analytes at concentrations above the NYSDEC action levels has only occurred sporadically at Site 7 and at concentrations that do not pose significant risk to human health.

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TABLES

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Table 1. Well Construction Details

Monitoring Well Identification	Top of Casing Elevation (ft AMSL)	Total Depth of Well (ft BTOC)	Screened Interval (ft BTOC)	Well Diameter (in.)	Casing	Sampling Method
IRP Site 4 Wells						
MW04-GW01	45.25	35.3	25.3 - 35.3	0.75	PVC	Bladder pump
SW-05	42.58	39.46	26.0 - 36.0	2	PVC	Bladder pump
SW-06	39.08	32.6	20.0 - 30.0	2	PVC	Bladder pump
SW-06A	36.56	50.08	39.7 - 49.7	2	PVC	Bladder pump
SW-06B	36.43	40.08	29.7 - 39.7	2	PVC	Bladder pump
SW-07	46.69	37.41	25.0 - 35.0	2	PVC	Bladder pump
SW-10	43.54	37.40	24.5 - 34.5	2	PVC	Bladder pump
SDW-16	48.49	39.70	29.7 - 39.7	1	PVC	Not scheduled for 2008 sampling
SDW-21	45.94	39.07	27.2 - 36.8	1	PVC	Not scheduled for 2008 sampling
SDW-22	45.90	63.56	58.1 - 63.1	1	PVC	Not scheduled for 2008 sampling
SDW-23	40.60	32.88	21.1 - 31.1	1	PVC	Not sampled in 2008 – casing plugged
SDW-23A	38.86	45.1	35.1 - 45.1	0.75	PVC	Bladder pump
SDW-24	40.12	32.41	20.8 - 30.8	1	PVC	Not sampled in 2008 – casing damaged
SDW-24A	38.24	45.3	35.3 - 45.3	0.75	PVC	Bladder pump
IRP Site 7 Wells						
MW-11	47.46	39.57	32.9 - 39.57	3	PVC	Bladder pump
MW-23	43.87	39.95	33.0 - 39.95	4	PVC	Bladder pump
MW-24	45.99	38.61	33.0 - 38.61	4	PVC	Not sampled in 2008 – casing plugged
MW-24R	NM	51.60	31.6 - 51.6	0.75	PVC	Bladder pump
MW-103	44.97	43.50	28.5 - 43.5	1.7	Conduit	Bladder pump
MW-104	50.11	116.00	101.0 - 116.0	1.7	Conduit	Not sampled in 2008 – casing plugged
MW-105	50.33	68.30	48.3 - 68.3	1.7	Conduit	Bladder pump
MW-106	49.01	53.30	38.3 - 53.3	1.7	Conduit	Not sampled in 2008 – not found
MW-106R	NM	57.28	31.4 - 51.4	0.75	PVC	Bladder pump
MW-107C	49.38	53.00	33.0 - 53.0	1.7	Conduit	Bladder pump
IRP Site 9 Wells						
06MW02	35.87	33.00	23.0 - 33.0	1	PVC	Bladder pump
06MW02A	35.30	45.2	35.2 - 45.2	0.75	PVC	Bladder pump
06MW02B	35.22	55.4	45.4 - 55.4	0.75	PVC	Bladder pump
06MW02C	35.56	64.9	54.9 - 64.9	0.75	PVC	Bladder pump
06MW03	25.53	47.5	5.0 - 35.0	1	PVC	Bladder pump
06MW03A	24.48	44.6	34.6 - 44.6	0.75	PVC	Bladder pump
06MW03B	25.00	54.6	44.6 - 54.6	0.75	PVC	Bladder pump
06MW03C	25.17	63.7	53.7 - 63.7	0.75	PVC	Bladder pump
MW09-GW01	39.40	35.3	25.3 - 35.3	0.75	PVC	Bladder pump
MW09-GW02	39.56	45.3	35.3 - 45.3	0.75	PVC	Bladder pump
MW09-GW03	33.21	45.2	25.2 - 45.2	0.75	PVC	Bladder pump
MW09-GW04	21.65	35.25	5.25 - 35.25	0.75	PVC	Bladder pump
MW09-GW05	22.79	45.0	35.0 - 45.0	0.75	PVC	Bladder pump

Table 1. Well Construction Details (continued)

Monitoring Well Identification	Top of Casing Elevation (ft AMSL)	Total Depth (ft BTOC)	Screened Interval (ft BTOC)	Well Diameter (in.)	Casing	Sampling Method
MW09-GW06	22.34	55.4	45.4 - 55.4	0.75	PVC	Bladder pump
MW09-GW07	22.09	65.2	55.2 - 65.2	0.75	PVC	Bladder pump
SW-08	36.98	52.45	40.0 – 50.0	2	PVC	Bladder pump
SW-09	35.25	52.12	40.0 - 50.0	2	PVC	Bladder pump

AMSL = Above mean sea level.
BTOC = Below top of casing.
IRP = Installation Restoration Program.
NM = Not measured.
PVC = Polyvinyl chloride.

Table 2. Water Level Measurements – August 2008

Monitoring Well Identification	TOC Elevation (ft AMSL)	August 2008	
		Depth to Water (ft BTOC)	Groundwater Elevation (ft AMSL)
IRP Site 4			
MW04-GW01	45.25	32.21	13.04
SW-05	42.58	29.99	12.59
SW-06	39.08	26.38	12.70
SW-6A	36.56	23.86	12.70
SW-6B	36.43	23.74	12.69
SW-07	46.69	31.71	14.98
SW-10	43.54	30.78	12.76
SDW-23A	38.86	26.41	12.45
SDW-24A	38.24	25.12	13.12
IRP Site 9			
06MW02	35.87	24.09	11.78
06MW02A	35.30	23.55	11.75
06MW02B	35.22	23.46	11.76
06MW02C	35.56	23.80	11.76
06MW03	25.53	14.08	11.45
06MW03A	24.48	13.05	11.43
06MW03B	25.00	13.56	11.44
06MW03C	25.17	13.71	11.46
MW09-GW01	39.40	27.35	12.05
MW09-GW02	39.56	27.51	12.05
MW09-GW03	33.21	21.55	11.66
MW09-GW04	21.65	10.36	11.29
MW09-GW05	22.79	11.50	11.29
MW09-GW06	22.34	11.04	11.30
MW09-GW07	22.09	10.82	11.27
SW-08	35.18	23.58	11.60
SW-09	33.36	21.72	11.64

AMSL = Above mean sea level.
BTOC= Below Top of Casing
IRP = Installation Restoration Program.
TOC = Top of casing.

Table 3. Volatile Organic Compound Detections and Biological Activity Parameters at IRP Site 4, 2008 – 2010 Events

Media			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station			MW04-GW01	MW04-GW01	SDW-23A	SDW-23A	SDW-23A
Sample Id			MW04GW0101DUP	MW04GW0101	SDW-23A01	SDW-23A02	SDW-23A03
Depth (ft)			25.3 - 35.3	25.3 - 35.3	35.1 - 45.1	35.1 - 45.1	35.1 - 45.1
Date			08/07/08	08/07/08	08/07/08	07/30/09	01/21/10
Sample Type			FD	GR	GR	GR	GR
Analyte (Concentration in µg/L)	NYSDEC[a]	MCL[b]					
Organics Volatile							
(1,1-Dimethylethyl)benzene	5		<1	<1	<1	2.1	<1
(1-Methylpropyl)benzene	5		3.4	3.9	6.9	14	<1
1,2,4-Trimethylbenzene	5		64	64	710	810	0.98
1,3,5-Trimethylbenzene	5		29	29	230	270	<1
1-Methyl-4-(1-methylethyl)benzene	5		12	13	18	12	<1
Acetone			<5 U	<5 U	<5 U	<5	<5
Butylbenzene	5		2.9	2.9	<1	17	<1
Cumene	5		9	9.1	43	89	<1
Cyclohexane			27	26	350	330	<1
Ethylbenzene	5	700	5.9	6.8	1000	950	2.2
Methylcyclohexane			88 J	89 J	300	320	<1
Naphthalene			4.7	6.3	290	280	1.6
Propylbenzene	5		11	11	54	110	<1
Toluene	5	1000	<1 U	<1 U	2	26	<1
Xylene, -o	5		4.7	4.7	30	140	<1
Xylene, m+p	5		35	38	3400	3100	2.5
Caprolactam			NR	NR	NR	NR	NR
Biological Activity Parameters							
Nitrate	10000	10000	NR	NR	NR	NR	NR
Nitrite	1000	1000	NR	NR	NR	NR	NR
Sulfate	250000		NR	NR	NR	NR	NR
Methane			NR	NR	NR	NR	NR

Yellow highlighted values represent concentrations exceeding criteria.
Green highlighted wells were sampled during this semiannual period.
All units are in µg/L.
BTOC=Below Top of Casing
FD = Field duplicate.
IRP = Installation Restoration Program.
GR = Grab sample.
J = Detected at an estimated concentration.
MCL = Maximum contaminant level.
NA = Not applicable.
NR = Not reported.
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Table 3. Volatile Organic Compound Detections and Biological Activity Parameters at IRP Site 4, 2008 – 2010 Events

Media			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station			SDW-24A	SW-6A	SW-6B	SW05	SW06	SW06
Sample Id			SDW-24A01	SW-6A01	SW-6B01	SW0501	SW0601	SW0602
Depth (ft)			35.3 - 45.3	39.7 - 49.7	29.7 - 39.7	26.0 - 36.0	20.0 - 30.0	20.0 - 30.0
Date			08/07/08	07/30/08	07/30/08	07/26/08	07/26/08	07/29/09
Sample Type			GR	GR	GR	GR	GR	GR
Analyte (Concentration in µg/L)	NYSDEC[a]	MCL[b]						
Organics Volatile								
(1,1-Dimethylethyl)benzene	5		<1	<1	<1	NR	NR	2.7
(1-Methylpropyl)benzene	5		<1	<1	0.64	NR	NR	11
1,2,4-Trimethylbenzene	5		<1 U	<1 U	16	NR	NR	470
1,3,5-Trimethylbenzene	5		<1 U	<1 U	4.5	NR	NR	180
1-Methyl-4-(1-methylethyl)benzene	5		<1	<1	0.63	NR	NR	13
Acetone			<5 U	<5 U	<5 U	NR	NR	42
Butylbenzene	5		<1	<1	<1	NR	NR	13
Cumene	5		<1 U	<1 U	2.1	NR	NR	76
Cyclohexane			<1 U	<1 U	3.2	NR	NR	140
Ethylbenzene	5	700	<1 U	<1 U	17	<5 U	560	400
Methylcyclohexane			<1 U	<1 U	5.3	NR	NR	120
Naphthalene			<1 U	<1 U	21	NR	NR	140
Propylbenzene	5		<1	<1	3.4	NR	NR	79
Toluene	5	1000	<1 U	<1 U	7.6	<1 U	640	180
Xylene, -o	5		<1 U	<1 U	21	<1 U	880	590
Xylene, m+p	5		<1 U	<1 U	46	<2 U	2100	1600
Caprolactam			NR	12	<11	NR	NR	NR
Biological Activity Parameters								
Nitrate	10000	10000	NR	2580	<100	NR	NR	NR
Nitrite	1000	1000	NR	260	<50	NR	NR	NR
Sulfate	250000		NR	24000	19000	NR	NR	NR
Methane			NR	<5	<5	NR	NR	NR

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Table 3. Volatile Organic Compound Detections and Biological Activity Parameters at IRP Site 4, 2008 – 2010 Events

Media			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station			SW06	SW07	SW07	SW10	SW10	SW10
Sample Id			SW0603	SW0701	SW0703	SW1001	SW1002	SW1003
Depth (ft)			20.0 - 30.0	25.0 - 35.0	25.0 - 35.0	24.5 - 34.5	24.5 - 34.5	24.5 - 34.5
Date			01/25/10	07/29/08	01/25/10	07/30/08	07/30/09	01/25/10
Sample Type			GR	GR	GR	GR	GR	GR
Analyte (Concentration in µg/L)	NYSDEC[a]	MCL[b]						
Organics Volatile								
(1,1-Dimethylethyl)benzene	5		2.4	NR	<1 U	NR	<1	<1 U
(1-Methylpropyl)benzene	5		11	NR	7	NR	<1	<1 U
1,2,4-Trimethylbenzene	5		650	NR	300	NR	<1	<1 U
1,3,5-Trimethylbenzene	5		270	NR	79	NR	<1	<1 U
1-Methyl-4-(1-methylethyl)benzene	5		12	NR	6.1	NR	<1	<1 U
Acetone			<5 U	NR	<5 U	NR	<5	<5 U
Butylbenzene	5		14	NR	4.4	NR	<1	<1 U
Cumene	5		74	NR	53	NR	<1	<1 U
Cyclohexane			130	NR	72	NR	<1	<1 U
Ethylbenzene	5	700	600	38	67	40	<1	<1 U
Methylcyclohexane			250	NR	94	NR	<1	<1 U
Naphthalene			140	NR	25	NR	<1	<1 U
Propylbenzene	5		76	NR	58	NR	<1	<1 U
Toluene	5	1000	300	<1 U	<1 U	<1 U	<1	<1 U
Xylene, -o	5		900	43	75	9.4	<1	<1 U
Xylene, m+p	5		2300	190	250	27	<2	<2 U
Caprolactam			NR	NR	NR	NR	NR	NR
Biological Activity Parameters								
Nitrate	10000	10000	<100	265	276	1140	NR	1870
Nitrite	1000	1000	<50	<50	<50	<50	NR	<50
Sulfate	250000		2430	4270	5060	4220	NR	4860
Methane			2	6.8	2.9	<5	NR	<1.7

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IRP = Installation Restoration Program.

GR = Grab sample.

J = Detected at an estimated concentration.

MCL = Maximum contaminant level.

NA = Not applicable.

NR = Not reported.

NYSDEC = New York State Department of Environmental Conservation.

Table 4. Volatile Organic Compound Detections and Biological Activities Parameters at IRP Site 9, 2008 to 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				06MW02	06MW02A	06MW02A	06MW02B	06MW02C	06MW03	06MW03A	06MW03A
Sample Id				06MW0201	06MW2A01	06MW02A03	06MW2B01	06MW02C01	06MW0301	06MW03A01	06MW03A03
Screened Interval				23.0 - 33.0	35.2 - 45.2	35.2 - 45.2	45.4 - 55.4	54.9 - 64.9	5.0 - 35.0	34.6 - 44.6	34.6 - 44.6
Date				10/02/08	08/06/08	01/20/10	08/06/08	08/06/08	10/02/08	07/31/08	01/21/10
Sample Type				GR	GR	GR	GR	GR	GR	GR	GR
Analyte (Concentration in µg/L)	Units	NYSDEC[a]	MCL[b]								
Organics - Volatile											
(1,1-Dimethylethyl)benzene	ug/L	5		<1	2.4	<1	<1	<1	<1	2.3	1.5
(1-Methylpropyl)benzene	ug/L	5		<1	9	1.3	<1	0.82	<1	9.1	6.7
1,2,4-Trichlorobenzene	ug/L	5	70	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5		<1	260	15	<1	<1	84	620	380
1,3,5-Trimethylbenzene	ug/L	5		<1	66	4.5	<1	<1	26	240	140
1-Methyl-4-(1-methylethyl)benzene	ug/L	5		<1	7.6	0.64	<1	<1	7.6	9	8
2-Methoxy-2-methylpropane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1
Butylbenzene	ug/L	5		<1	<1	<1	<1	<1	<1	9.7	7.1
Carbon disulfide	ug/L	60		<1	1.2	<1	<1	<1	<1	<1	<1
Cumene	ug/L	5		<1	64	3.3	<1	<1	13	82	59
Cyclohexane	ug/L			<1	56	4.1	<1	<1	22	160	94
Ethylbenzene	ug/L	5	700	<1	440	14	<1	<1	28	600	290
Methylcyclohexane	ug/L			<1	99	4.2	<1	<1	36	280	120
Naphthalene	ug/L			<1	120	16	<1	<1	16	230	160
Propylbenzene	ug/L	5		<1	55	1.7	<1	<1	8.8	66	55
Styrene	ug/L	5	100	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5	5	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	ug/L	5	1000	<1	2.4	<1	<1	<1	<1	1.3	2.7
Trichloroethene	ug/L	5	5	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5		<1	20	<1	<1	<1	<1	1.5	1.4
Xylene, m+p	ug/L	5		<1	1300	51	<1	<1	150	2800	1200
cis-1,2-Dichloroethene	ug/L	5	70	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Biphenyl	ug/L	5		NR	NR	NR	NR	NR	<11	3.4	NR
2-Methylnaphthalene	ug/L			NR	NR	NR	NR	NR	<11	50	NR
Caprolactam	ug/L			NR	NR	NR	NR	NR	<11	19	NR
Naphthalene	ug/L			NR	NR	NR	NR	NR	<11	140	NR
Biological Activity Parameters											
Nitrate	ug/L	10000	10000	NR	NR	NR	NR	NR	NR	<100	<100
Nitrite	ug/L	1000	1000	NR	NR	NR	NR	NR	NR	<50	<50
Sulfate	ug/L	250000		NR	NR	NR	NR	NR	NR	1650	1840
Methane	ug/L			NR	NR	NR	NR	NR	NR	283.86	14.2

Table 4. Volatile Organic Compound Detections and Biological Activities Parameters at IRP Site 9, 2008 to 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				06MW03B	06MW03C	06MW03C	MW09-GW01	MW09-GW02	MW09-GW02	MW09GW03
Sample Id				06MW03B01	06MW03CDUP	06MW03C01	MW09GW0101	MW09GW0201	MW09GW0203	MW09GW0301DUP
Screened Interval				44.6 - 54.6	53.7 - 63.7	53.7 - 63.7	25.3 - 35.3	35.3 - 45.3	35.3 - 45.3	25.2 - 45.2
Date				08/01/08	08/01/08	08/01/08	08/06/08	08/06/08	01/20/10	08/06/08
Sample Type				GR	FD	GR	GR	GR	GR	FD
Analyte (Concentration in µg/L)	Units	NYSDEC[a]	MCL[b]							
Organics - Volatile										
(1,1-Dimethylethyl)benzene	ug/L	5		0.52	<1	<1	<1	<1	1.2	1.2
(1-Methylpropyl)benzene	ug/L	5		1.2	1	1.4	<1	20	5.3	10
1,2,4-Trichlorobenzene	ug/L	5	70	<1	<1	0.61	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5		<1	<1	<1	<1	840	170	<1
1,3,5-Trimethylbenzene	ug/L	5		<1	<1	<1	<1	300	65	1.5
1-Methyl-4-(1-methylethyl)benzene	ug/L	5		<1	<1	<1	<1	58	5.2	<1
2-Methoxy-2-methylpropane	ug/L			<1	0.7	0.78	<1	<1	<1	<1
Butylbenzene	ug/L	5		<1	<1	0.51	<1	<1	4	<1
Carbon disulfide	ug/L	60		<1	<1	<1	<1	<1	<1	<1
Cumene	ug/L	5		2.6	<1	<1	<1	110	34	64
Cyclohexane	ug/L			<1	<1	<1	<1	210	29	<1
Ethylbenzene	ug/L	5	700	<1	<1	<1	<1	760	130	<1
Methylcyclohexane	ug/L			<1	<1	<1	<1	270	49	<1
Naphthalene	ug/L			<1	<1	<1	<1	250	55	91
Propylbenzene	ug/L	5		<1	<1	<1	<1	110	31	0.59
Styrene	ug/L	5	100	<1	<1	<1	<1	NR	<1	<1
Tetrachloroethene	ug/L	5	5	0.97	1.1	1.3	<1	NR	<1	<1
Toluene	ug/L	5	1000	<1	<1	<1	<1	5.1	0.51	<1
Trichloroethene	ug/L	5	5	<1	1	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5		<1	<1	<1	<1	19	1.2	<1
Xylene, m+p	ug/L	5		<1	<1	<1	<1	3100	440	1.6
cis-1,2-Dichloroethene	ug/L	5	70	1.4	0.61	0.73	<1	<1	<1	<1
1,1-Biphenyl	ug/L	5		<10	<11	<11	NR	NR	NR	NR
2-Methylnaphthalene	ug/L			<10	<11	<11	NR	NR	NR	NR
Caprolactam	ug/L			10	15	15	NR	NR	NR	NR
Naphthalene	ug/L			<10	<11	<11	NR	NR	NR	NR
Biological Activity Parameters										
Nitrate	ug/L	10000	10000	196	NR	<100	NR	NR	NR	NR
Nitrite	ug/L	1000	1000	NR	NR	<50	NR	NR	NR	NR
Sulfate	ug/L	250000		15000	NR	13000	NR	NR	NR	NR
Methane	ug/L			43.8	NR	6.55	NR	NR	NR	NR

Table 4. Volatile Organic Compound Detections and Biological Activities Parameters at IRP Site 9, 2008 to 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW09GW03	MW09GW04	MW09GW05	MW09GW05	MW09GW05	MW09GW06	MW09GW06
Sample Id				MW09GW0301	MW09GW0401	MW09GW0501	MW09GW0502DUP	MW09GW0502	MW09GW0601DUP	MW09GW0601
Screened Interval				25.2 - 45.2	5.3 - 35.3	35.0 - 45.0	35.0 - 45.0	35.0 - 45.0	45.4 - 55.4	45.4 - 55.4
Date				08/06/08	07/31/08	08/06/08	07/31/09	07/31/09	08/05/08	08/05/08
Sample Type				GR	GR	GR	FD	GR	FD	GR
Analyte (Concentration in µg/L)	Units	NYSDEC[a]	MCL[b]							
Organics - Volatile										
(1,1-Dimethylethyl)benzene	ug/L	5		1	<1	<1	3.2	2.7	<1	0.56
(1-Methylpropyl)benzene	ug/L	5		9.2	<1	12	15	14	2.1	2.2
1,2,4-Trichlorobenzene	ug/L	5	70	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5		<1	0.59	630	660	740	<1	<1
1,3,5-Trimethylbenzene	ug/L	5		<1	<1	200	240	270	<1	<1
1-Methyl-4-(1-methylethyl)benzene	ug/L	5		<1	<1	38	15	14	<1	<1
2-Methoxy-2-methylpropane	ug/L			<1	<1	<1	<1	<1	<1	<1
Butylbenzene	ug/L	5		1.3	<1	<1	17	16	<1	<1
Carbon disulfide	ug/L	60		<1	<1	<1	<1	<1	<1	<1
Cumene	ug/L	5		56	<1	93	110	100	<1	<1
Cyclohexane	ug/L			<1	4.1	280	240	220	<1	<1
Ethylbenzene	ug/L	5	700	<1	2.5	660	700	770	<1	<1
Methylcyclohexane	ug/L			<1	5.4	270	260	270	<1	<1
Naphthalene	ug/L			79	0.81	230	210	290	<1	<1
Propylbenzene	ug/L	5		0.53	<1	86	110	96	<1	<1
Styrene	ug/L	5	100	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5	5	<1	<1	<1	<1	<1	<1	<1
Toluene	ug/L	5	1000	<1	<1	2.1	6.4	6.3	<1	<1
Trichloroethene	ug/L	5	5	<1	<1	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5		<1	<1	3.3	3.4	3.9	<1	<1
Xylene, m+p	ug/L	5		<1	4.9	2900	2600	3000	<1	<1
cis-1,2-Dichloroethene	ug/L	5	70	<1	<1	<1	<1	<1	2.2	2.6
1,1-Biphenyl	ug/L	5		NR	NR	NR	NR	NR	NR	NR
2-Methylnaphthalene	ug/L			NR	NR	NR	NR	NR	NR	NR
Caprolactam	ug/L			NR	NR	NR	NR	NR	NR	NR
Naphthalene	ug/L			NR	NR	NR	NR	NR	NR	NR
Biological Activity Parameters										
Nitrate	ug/L	10000	10000	NR	NR	NR	NR	NR	NR	NR
Nitrite	ug/L	1000	1000	NR	NR	NR	NR	NR	NR	NR
Sulfate	ug/L	250000		NR	NR	NR	NR	NR	NR	NR
Methane	ug/L			NR	NR	NR	NR	NR	NR	NR

Table 4. Volatile Organic Compound Detections and Biological Activities Parameters at IRP Site 9, 2008 to 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW09GW06	MW09GW07	SW-08	SW-08	SW-09	SW-09	SW-09	SW-09
Sample Id				MW09GW0602	MW09GW0701	SW-0801	SW-0802	SW-0901	SW-0902	SW-0903DUP	SW-0903
Screened Interval				45.4 - 55.4	55.2 - 65.2	40.0 - 50.0	40.0 - 50.0	40.0 - 50.0	40.0 - 50.0	40.0 - 50.0	40.0 - 50.0
Date				07/30/09	07/31/08	07/29/08	07/29/09	07/25/08	07/29/09	01/21/10	01/21/10
Sample Type				GR	GR	GR	GR	GR	GR	FD	GR
Analyte (Concentration in µg/L)	Units	NYSDEC[a]	MCL[b]								
Organics - Volatile											
(1,1-Dimethylethyl)benzene	ug/L	5		0.44	0.52	NR	2.3	NR	<1	2.4	2.1
(1-Methylpropyl)benzene	ug/L	5		1.7	2.4	NR	13	NR	12	12	11
1,2,4-Trichlorobenzene	ug/L	5	70	<1	<1	NR	<1	NR	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5		1	<1	NR	830	NR	640	1100	570
1,3,5-Trimethylbenzene	ug/L	5		<1	<1	NR	310	NR	230	370	200
1-Methyl-4-(1-methylethyl)benzene	ug/L	5		<1	<1	NR	11	NR	12	11	11
2-Methoxy-2-methylpropane	ug/L			<1	<1	NR	<1	NR	<1	<1	<1
Butylbenzene	ug/L	5		<1	<1	NR	18	NR	13	15	14
Carbon disulfide	ug/L	60		<1	<1	NR	<1	NR	<1	<1	<1
Cumene	ug/L	5		11	<1	NR	98	NR	100	150	93
Cyclohexane	ug/L			<1	<1	NR	260	NR	280	420	230
Ethylbenzene	ug/L	5	700	4.7	<1	1100	930	310	850	1400	820
Methylcyclohexane	ug/L			<1	<1	NR	300	NR	260	370	200
Naphthalene	ug/L			<1	<1	NR	280	NR	200	390	200
Propylbenzene	ug/L	5		2.4	<1	NR	100	NR	96	170	96
Styrene	ug/L	5	100	<1	<1	NR	<1	NR	<1	0.64	0.61
Tetrachloroethene	ug/L	5	5	<1	1.2	NR	<1	NR	<1	<1	<1
Toluene	ug/L	5	1000	<1	<1	1.4	4.3	1.9	6.8	18	13
Trichloroethene	ug/L	5	5	<1	<1	NR	<1	NR	<1	<1	<1
Xylene, -o	ug/L	5		<1	<1	1.5	13	0.85	3.7	3.5	3.1
Xylene, m+p	ug/L	5		3.5	<1	3400	3100	1100	3000	5100	2800
cis-1,2-Dichloroethene	ug/L	5	70	1.4	2.3	NR	<1	NR	<1	<1	<1
1,1-Biphenyl	ug/L	5		NR	NR	NR	NR	NR	NR	NR	NR
2-Methylnaphthalene	ug/L			NR	NR	NR	NR	NR	NR	NR	NR
Caprolactam	ug/L			NR	NR	NR	NR	NR	NR	NR	NR
Naphthalene	ug/L			NR	NR	NR	NR	NR	NR	NR	NR
Biological Activity Parameters											
Nitrate	ug/L	10000	10000	NR	NR	<100	NR	NR	NR	NR	<100
Nitrite	ug/L	1000	1000	NR	NR	<100	NR	NR	NR	NR	<50
Sulfate	ug/L	250000		NR	NR	1460	NR	NR	NR	NR	1810
Methane	ug/L			NR	NR	354.86	NR	NR	NR	NR	93.1

Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW04-GW01	MW04-GW01	SDW-23A	SDW-23A	SDW-23A	SDW-24A
Sample Id				MW04GW0101DUP	MW04GW0101	SDW-23A01	SDW-23A02	SDW-23A03	SDW-24A01
Depth (ft)				25.3 - 35.3	25.3 - 35.3	35.1 - 45.1	35.1 - 45.1	35.1 - 45.1	35.3 - 45.3
Date				08/07/08	08/07/08	08/07/08	07/30/09	01/21/10	08/07/08
Sample Type				FD	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC[a]	MCL[b]						
				Site 4					
Breathing Zone	ppm			NR	0	0	NR	0	0
Conductivity	mS/cm			NR	0.075	0.076	0.153	0.126	0.087
Dissolved Oxygen	ug/L			NR	6220	800	140	6470	6310
ORP	mV			NR	-25	-85	-75	0	-35
Temperature	C			NR	17.3	16.6	19.6	7.99	17.1
Turbidity	NTU			NR	10.1	205	71	641	24.1
pH	STD UN			NR	6.03	6.27	7.37	5.7	6.09

Green highlighted wells were sampled during this semiannual period.

BTOC=Below Top of Casing

FD = Field duplicate.

IRP = Installation Restoration Program.

GR = Grab sample.

MCL = Maximum contaminant level.

NA = Not applicable.

NR = Not reported.

NYSDEC = New York State Department of Environmental Conservation.

Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				SW-6A	SW-6B	SW05	SW06	SW06	SW06	SW07
Sample Id				SW-6A01	SW-6B01	SW0501	SW0601	SW0602	SW0603	SW0701
Depth (ft)				39.7 - 49.7	29.7 - 39.7	26.0 - 36.0	20.0 - 30.0	20.0 - 30.0	20.0 - 30.0	25.0 - 35.0
Date				07/30/08	07/30/08	07/26/08	07/26/08	07/29/09	01/25/10	07/29/08
Sample Type				GR	GR	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC[a]	MCL[b]							
Breathing Zone	ppm			0	0	0	0	0	0	0
Conductivity	mS/cm			0.428	0.309	0.084	0.041	0.05	0.042	0.072
Dissolved Oxygen	ug/L			730	4200	8190	350	2660	0	1930
ORP	mV			175	-60	15	-9	-86	-9	-43
Temperature	C			14.8	14.3	15.8	16.1	18.13	13.2	15.2
Turbidity	NTU			9.2	305	26.9	68.7	109	9.7	35.9
pH	STD UN			6.29	6.24	5.91	5.28	4.4	5.73	5.79

Green highlighted wells were sampled during this semianr
BTOC=Below Top of Casing
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GR = Grab sample.
MCL = Maximum contaminant level.
NA = Not applicable.
NR = Not reported.
NYSDEC = New York State Department of Environmenta

Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				SW07	SW10	SW10	SW10	06MW02	06MW02A	06MW02A
Sample Id				SW0703	SW1001	SW1002	SW1003	06MW0201	06MW2A01	06MW02A03
Depth (ft)				25.0 - 35.0	24.5 - 34.5	24.5 - 34.5	24.5 - 34.5	23.0 - 33.0	35.2 - 45.2	35.2 - 45.2
Date				01/25/10	07/30/08	07/30/09	01/25/10	10/02/08	08/06/08	01/20/10
Sample Type				GR	GR	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC[a]	MCL[b]							
								Site 9		
Breathing Zone	ppm			0	0	0	0	0	0	0
Conductivity	mS/cm			0.034	0.063	0.072	0.052	0.033	0.246	0.104
Dissolved Oxygen	ug/L			1830	5420	5990	8890	9170	470	NR
ORP	mV			-49	137	211	304	129	85	-14
Temperature	C			13.8	15	20.56	12.5	18.4	17.1	10.72
Turbidity	NTU			7.2	9.82	67	3.1	174	72.6	NR
pH	STD UN			5.95	5.12	4.53	4.87	5.8	6.47	5.28

Green highlighted wells were sampled during this semianr

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GR = Grab sample.

MCL = Maximum contaminant level.

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NR = Not reported.

NYSDEC = New York State Department of Environmenta

Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				06MW02B	06MW02C	06MW03	06MW03A	06MW03A	06MW03B
Sample Id				06MW2B01	06MW02C01	06MW0301	06MW03A01	06MW03A03	06MW03B01
Depth (ft)				45.4 - 55.4	54.9 - 64.9	5.0 - 35.0	34.6 - 44.6	34.6 - 44.6	44.6 - 54.6
Date				08/06/08	08/06/08	10/02/08	07/31/08	01/21/10	08/01/08
Sample Type				GR	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC[a]	MCL[b]						
Breathing Zone	ppm			0	0	0	0	0	0
Conductivity	mS/cm			0.345	0.485	0.052	0.174	0.122	0.252
Dissolved Oxygen	ug/L			560	870	870	480	NR	610
ORP	mV			-40	-6	75	-123	-30	-99
Temperature	C			18.3	20.9	18	16.1	8.9	16.6
Turbidity	NTU			101	72.5	145	17.1	NR	7.8
pH	STD UN			6.04	6	5.8	6.5	7.37	6.39

Green highlighted wells were sampled during this semianr
BTOC=Below Top of Casing
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GR = Grab sample.
MCL = Maximum contaminant level.
NA = Not applicable.
NR = Not reported.
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Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				06MW03C	06MW03C	MW09-GW01	MW09-GW02	MW09-GW02
Sample Id				06MW03CDUP	06MW03C01	MW09GW0101	MW09GW0201	MW09GW0203
Depth (ft)				53.7 - 63.7	53.7 - 63.7	25.3 - 35.3	35.3 - 45.3	35.3 - 45.3
Date				08/01/08	08/01/08	08/06/08	08/06/08	01/20/10
Sample Type				FD	GR	GR	GR	GR
Analyte	Units	NYSDEC[a]	MCL[b]					
Breathing Zone	ppm			0	0	0	0	0
Conductivity	mS/cm			0.341	0.341	1.5	0.11	0.118
Dissolved Oxygen	ug/L			980	980	2520	510	0
ORP	mV			-73	-73	83	-77	-16
Temperature	C			18.7	18.7	20.1	18.4	NR
Turbidity	NTU			68.3	68.3	141	93.7	NR
pH	STD UN			6.3	6.3	5.55	6.09	5.44

Green highlighted wells were sampled during this semianı

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GR = Grab sample.

MCL = Maximum contaminant level.

NA = Not applicable.

NR = Not reported.

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Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Station				**MW09GW03**	**MW09GW03**	**MW09GW04**	**MW09GW05**	**MW09GW05**
Sample Id				**MW09GW0301DUP**	**MW09GW0301**	**MW09GW0401**	**MW09GW0501**	**MW09GW0502DUP**
Depth (ft)				**25.2 - 45.2**	**25.2 - 45.2**	**5.3 - 35.3**	**35.0 - 45.0**	**35.0 - 45.0**
Date				**08/06/08**	**08/06/08**	**07/31/08**	**08/06/08**	**07/31/09**
Sample Type				**FD**	**GR**	**GR**	**GR**	**FD**
Analyte	**Units**	**NYSDEC**[a]	**MCL**[b]					
Breathing Zone	ppm			NR	NR	0	0	NR
Conductivity	mS/cm			NR	NR	0.065	0.159	0.191
Dissolved Oxygen	ug/L			NR	NR	3230	590	110
ORP	mV			NR	NR	108	-130	NR
Temperature	C			NR	NR	18.5	17.4	18.1
Turbidity	NTU			NR	NR	22.6	98.9	87.2
pH	STD UN			NR	NR	5.4	6.43	7.41

Green highlighted wells were sampled during this semianı

BTOC=Below Top of Casing

FD = Field duplicate.

IRP = Installation Restoration Program.

GR = Grab sample.

MCL = Maximum contaminant level.

NA = Not applicable.

NR = Not reported.

NYSDEC = New York State Department of Environmentɑ

Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Station				**MW09GW05**	**MW09GW06**	**MW09GW06**	**MW09GW06**	**MW09GW07**	**SW-08**
Sample Id				**MW09GW0502**	**MW09GW0601DUP**	**MW09GW0601**	**MW09GW0602**	**MW09GW0701**	**SW-0801**
Depth (ft)				**35.0 - 45.0**	**45.4 - 55.4**	**45.4 - 55.4**	**45.4 - 55.4**	**55.2 - 65.2**	**40.0 - 50.0**
Date				**07/31/09**	**08/05/08**	**08/05/08**	**07/30/09**	**07/31/08**	**07/29/08**
Sample Type				**GR**	**FD**	**GR**	**GR**	**GR**	**GR**
Analyte	**Units**	**NYSDEC**[a]	**MCL**[b]						
Breathing Zone	ppm			NR	0	0	0	0	0
Conductivity	mS/cm			0.191	0.344	0.344	0.261	0.296	0.155
Dissolved Oxygen	ug/L			110	4610	4610	4260	940	440
ORP	mV			NR	71	71	89	57	-109
Temperature	C			18.1	22.6	22.6	25.15	18.7	16.2
Turbidity	NTU			87.2	7.2	7.2	22.8	9.8	9.7
pH	STD UN			7.41	5.82	5.82	5.7	5.95	6.41

Green highlighted wells were sampled during this semianr
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GR = Grab sample.
MCL = Maximum contaminant level.
NA = Not applicable.
NR = Not reported.
NYSDEC = New York State Department of Environmenta

Table 5. Field Measurements for IRP Sites 4 and 9, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				SW-08	SW-09	SW-09	SW-09	SW-09
Sample Id				SW-0802	SW-0901	SW-0902	SW-0903DUP	SW-0903
Depth (ft)				40.0 - 50.0	40.0 - 50.0	40.0 - 50.0	40.0 - 50.0	40.0 - 50.0
Date				07/29/09	07/25/08	07/29/09	01/21/10	01/21/10
Sample Type				GR	GR	GR	FD	GR
Analyte	Units	NYSDEC[a]	MCL[b]					
Breathing Zone	ppm			0	0	0	0	0
Conductivity	mS/cm			0.109	0.19	0.206	0.135	0.135
Dissolved Oxygen	ug/L			2830	1000	2700	0	0
ORP	mV			-113	-117	-116	-16	-64
Temperature	C			17.16	14	18.48	11.5	11.5
Turbidity	NTU			34	17.5	66.7	2	2
pH	STD UN			5.98	6.36	5.75	7.2	7.2

Green highlighted wells were sampled during this semianr

BTOC=Below Top of Casing

FD = Field duplicate.

IRP = Installation Restoration Program.

GR = Grab sample.

MCL = Maximum contaminant level.

NA = Not applicable.

NR = Not reported.

NYSDEC = New York State Department of Environmenta

Table 6. Semivolatile and Volatile Organic Compounds and Metals Detections at IRP Site 7, 2008 – 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-103	MW-103	MW-103	MW-103	MW-103	MW-103	MW-105	MW-105	MW-105
Sample Id				MW-10301	MW-10302	MW-10303	MW-10304	MW-10305	MW-10306	MW-10501D	MW-10501	MW-10502
Depth (ft)				28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3
Date				07/28/08	01/07/09	05/07/09	07/29/09	10/22/09	01/24/10	07/28/08	07/28/08	01/07/09
Sample Type				GR	GR	GR	GR	GR	GR	FD	GR	GR
Analyte	Units	NYSDEC	MCL									
Metals												
Aluminum	ug/L			14.9	<200	<200	8.38	11.9	15.4	10.9	13.3	10.5
Barium	ug/L	1000.00	2000.00	13.1	<10	<10	9.96	4.72	6.52	9.84	9.92	4.6
Beryllium	ug/L		4.00	<1	0.87	<1	<1	<1	<1	<1	<1	<1
Cadmium	ug/L	5.00	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Calcium	ug/L			4190	1750	1890	2280	2050	2650	3470	3330	2330
Chromium	ug/L	50.00	100.00	<5	<5	<5	7.31	<5	<5	<5	<5	0.89
Copper	ug/L	200.00	1300.00	<5	<5	<5	<5	<5	8.57	<5	<5	<5
Iron	ug/L	300.00		233	84.7	<100	179	38.7	91	<54.3	<37.8	24.4
Lead	ug/L	25.00	15.00	<3	2.26	<3	1.94	2.88	<3	<3	<3	1.78
Magnesium	ug/L			1070	792	693	1060	993	1100	614	646	538
Manganese	ug/L	300.00		86.4	<10	10.2	9.29	3.72	24.7	<4	<4.56	4.82
Mercury	ug/L	0.70	2.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel	ug/L	100.00		<10	<10	<10	3.6	<10	<10	<10	<10	<10
Potassium	ug/L			535	607	848	490	523	543	484	473	502
Selenium	ug/L	10.00	50.00	<5	4.08	5.56	2.67	<5	<5	<5	<5	<5
Sodium	ug/L	20000.00		3830	3920	3250	6560	4300	4710	2510	2580	2700
Vanadium	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	ug/L			52.5	12.9	12.3	10.1	<10.5	26	46.8	43.2	5.64
Organics - Semivolatile and Volatile												
(1-Methylpropyl)benzene	ug/L	5.00		<1	<1	<1	<1	0.73	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	5.00	70.00	<1	<1	<1	<1	<5	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5.00		3.1	<1	5.1	4.4	<5	6.4	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	5.00		1.1	<1	1.6	1.3	<5	2.3	<1	<1	<1
Butylbenzene	ug/L	5.00		<1	<1	<1	<1	<5	0.7	<1	<1	<1
Chloroform	ug/L	7.00		<1	<1	<1	<1	0.37	<1	<1	<1	<1
Cumene	ug/L	5.00		<1	<1	<1	<1	<5	0.7	<1	<1	<1
Ethylbenzene	ug/L	5.00	700.00	1.2	<1	2.7	0.6	<5	1.4	<1	<1	<1
Naphthalene	ug/L			4.8	<1	2.2	3.4	<5	5.5	<1	<1	<1
Propylbenzene	ug/L	5.00		0.69	<1	0.78	0.6	<5	0.9	<1	<1	<1
Tetrachloroethene	ug/L	5.00	5.00	<1	<1	<1	<1	<5	<1	<1	<1	<1
Toluene	ug/L	5.00	1000.00	<1	<1	6.9	<1	<5	<1	<1	<1	<1
Xylene, -o	ug/L	5.00		3.2	<1	3.4	1.4	<5	3.4	<1	<1	<1
Xylene, m+p	ug/L	5.00		2.2	<1	9.8	1.4	<10	3.5	<1	<1	<1
2,4-Dinitrophenol	ug/L	1.00		<21	<22	<24	<11	<11	7.5	<21	<22	<22
2-Methylnaphthalene	ug/L			<10	<11	<12	3	<11	2.4	<10	<11	<11
Benzoic acid	ug/L			<10	<11	<12	<11	<11	9.6	<10	<11	<11
Bis(2-ethylhexyl)phthalate	ug/L	5.00	6.00	<10	<11	<12	<11	<11	<11	<10	<11	<11
Caprolactam	ug/L			<10	<11	<12	<11	<11	<11	<10	<11	<11
Diethyl phthalate	ug/L			<10	<11	<12	<11	<11	<11	<10	<11	<11
Naphthalene	ug/L			<10	<11	<12	3	<11	3.6	<10	<11	<11

Table 6. Semivolatile and Volatile Organic Compounds and Metals Detections at IRP Site 7, 2008 – 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-105	MW-105	MW-105	MW-105	MW-105	MW-106R	MW-106R	MW-106R	MW-106R
Sample Id				MW-10503DUP	MW-10503	MW-10504	MW-10505	MW-10506	MW-106R01DUP	MW-106R01	MW-106R02	MW-106R03
Depth (ft)				48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	31.4 - 51.4	31.4 - 51.4	31.4 - 51.4	31.4 - 51.4
Date				05/06/09	05/06/09	07/28/09	10/21/09	01/23/10	10/01/08	10/01/08	01/05/09	05/04/09
Sample Type				FD	GR	GR	GR	GR	FD	GR	GR	GR
Analyte	Units	NYSDEC	MCL									
Metals												
Aluminum	ug/L			<200	<200	7.01	11.3	16.5	62.4	50.7	56.6	<200
Barium	ug/L	1000.00	2000.00	10.4	<10	10.3	<10	4.94	7.52	8.08	5.64	<10
Beryllium	ug/L		4.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	ug/L	5.00	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Calcium	ug/L			3260	3130	2770	2340	2300	1010	993	1020	1480
Chromium	ug/L	50.00	100.00	<5	<5	0.692	<5	<5	1.32	1.03	1.06	<5
Copper	ug/L	200.00	1300.00	<5	<5	<5	<5	<5	1.94	<5	2.36	<5
Iron	ug/L	300.00		<100	<100	53.2	45.6	67.8	129	99.3	133	<100
Lead	ug/L	25.00	15.00	<3	<3	<3	2.3	<3	<3	<3	2.4	<3
Magnesium	ug/L			515	512	584	556	522	771	742	823	834
Manganese	ug/L	300.00		<10	<10	3.5	3.43	4.62	25.4	25.5	19.4	16.2
Mercury	ug/L	0.70	2.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel	ug/L	100.00		<10	<10	<10	<10	<10	<10	<10	<10	<10
Potassium	ug/L			615	599	401	426	455	453	466	432	<500
Selenium	ug/L	10.00	50.00	5.28	<5	2.75	2.4	2.5	<5	2.28	<5	5.24
Sodium	ug/L	20000.00		2670	2610	3910	2710	2410	3690	3880	3890	4280
Vanadium	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	ug/L			<10	<10	19.6	<7.72	19.4	8.67	8.62	11	<10
Organics - Semivolatile and Volatile												
(1-Methylpropyl)benzene	ug/L	5.00		<1	<1	<1	1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	5.00	70.00	<1	<1	<1	2.8	<1	<1	<1	0.56	<1
1,2,4-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<5	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<5	<1	<1	<1	<1	<1
Butylbenzene	ug/L	5.00		<1	<1	<1	0.63	<1	<1	<1	<1	<1
Chloroform	ug/L	7.00		<1	<1	<1	<5	<1	<1	<1	0.53	<1
Cumene	ug/L	5.00		<1	<1	<1	<5	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	5.00	700.00	<1	<1	<1	<5	<1	<1	<1	<1	<1
Naphthalene	ug/L			<1	<1	<1	<5	<1	<1	<1	1.8	<1
Propylbenzene	ug/L	5.00		<1	<1	<1	<5	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5.00	5.00	<1	<1	<1	<5	<1	<1	<1	<1	<1
Toluene	ug/L	5.00	1000.00	<1	<1	<1	<5	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5.00		<1	<1	<1	<5	<1	<1	<1	<1	<1
Xylene, m+p	ug/L	5.00		<1	<1	<2	<10	<2	<1	<1	<1	<1
2,4-Dinitrophenol	ug/L	1.00		<25	<25	<11	<11	<11	<22	<22	<22	<25
2-Methylnaphthalene	ug/L			<12	<12	<11	<11	<11	<11	<11	<11	<12
Benzoic acid	ug/L			<38	<38	<11	<11	<11	<11	<11	<11	<38
Bis(2-ethylhexyl)phthalate	ug/L	5.00	6.00	<12	<12	<11	<11	<11	<11	4.5	36	<12
Caprolactam	ug/L			<38	<38	<11	<11	<11	<11	<11	14	<38
Diethyl phthalate	ug/L			<12	<12	<11	<11	<11	<11	<11	<11	<12
Naphthalene	ug/L			<12	<12	<11	<11	<11	<11	<11	<11	1.8

Table 6. Semivolatile and Volatile Organic Compounds and Metals Detections at IRP Site 7, 2008 – 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-106R	MW-106R	MW-106R	MW-107C	MW-107C	MW-107C	MW-107C	MW-107C	MW-107C
Sample Id				MW-106R04	MW-106R05	MW-106R06	MW-107C01	MW-107C02	MW-107C03	MW-107C04	MW-107C05	MW-107C06
Depth (ft)				31.4 - 51.4	31.4 - 51.4	31.4 - 51.4	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0
Date				07/27/09	10/19/09	01/22/10	07/29/08	01/07/09	05/06/09	07/28/09	10/21/09	01/23/10
Sample Type				GR	GR	GR	GR	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC	MCL									
Metals												
Aluminum	ug/L			45	34.2	26.8	90.9	246	<200	102	53.4	60.8
Barium	ug/L	1000.00	2000.00	9.56	4.73	6.36	14.6	10.3	16.8	16.5	12.8	9.54
Beryllium	ug/L		4.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	ug/L	5.00	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Calcium	ug/L			1570	1160	1260	1910	1670	1830	2890	2050	2170
Chromium	ug/L	50.00	100.00	0.932	<5	<5	<5	0.825	<5	1.03	2.3	<5
Copper	ug/L	200.00	1300.00	<5	<5	<5	<5	4.27	<5	<5	2.6	<5
Iron	ug/L	300.00		148	53.1	29.8	<114	388	<100	178	49.1	78.2
Lead	ug/L	25.00	15.00	26.5	2.04	<3	<3	2.08	<3	2.49	2.66	<3
Magnesium	ug/L			800	728	906	627	601	620	653	701	600
Manganese	ug/L	300.00		14.8	23.2	11.6	27.5	35.3	25.9	28.8	26.7	21.4
Mercury	ug/L	0.70	2.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel	ug/L	100.00		<10	<10	<10	<10	<10	<10	<10	<10	5.6
Potassium	ug/L			373	380	490	407	379	<500	300	382	345
Selenium	ug/L	10.00	50.00	3.56	<5	<5	<5	2.47	5.49	<5	2.36	<5
Sodium	ug/L	20000.00		4720	3920	4660	3350	3350	3700	3650	3690	3160
Vanadium	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	ug/L			9.06	4.96	19.9	42.7	10.3	<10	9.65	15.5	20.7
Organics - Semivolatile and Volatile												
(1-Methylpropyl)benzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	5.00	70.00	<1	<1	<1	<1	0.76	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Butylbenzene	ug/L	5.00		<1	<1	<1	<1	0.63	<1	<1	<1	<1
Chloroform	ug/L	7.00		0.5	0.74	0.9	<1	<1	<1	<1	<1	<1
Cumene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	5.00	700.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L			<1	<1	<1	<1	0.67	<1	<1	<1	<1
Propylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5.00	5.00	<1	<1	<1	<1	1.8	<1	<1	<1	<1
Toluene	ug/L	5.00	1000.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, m+p	ug/L	5.00		<2	<2	<2	<1	<1	<1	<2	<2	<2
2,4-Dinitrophenol	ug/L	1.00		<11	<12	<11	<22	<22	<25	<11	<11	<11
2-Methylnaphthalene	ug/L			<11	<12	<11	<11	<11	<12	<11	<11	<11
Benzoic acid	ug/L			<11	<12	<11	<11	<11	<38	<11	<11	<11
Bis(2-ethylhexyl)phthalate	ug/L	5.00	6.00	<11	<12	<11	<11	<11	<12	<11	<11	<11
Caprolactam	ug/L			<11	<12	<11	<11	<11	<38	<11	<11	<11
Diethyl phthalate	ug/L			<11	<12	<11	<11	<11	<12	<11	<11	<11
Naphthalene	ug/L			<11	<12	<11	<11	<11	<12	<11	<11	<11

Table 6. Semivolatile and Volatile Organic Compounds and Metals Detections at IRP Site 7, 2008 – 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-23	MW-23
Sample Id				MW-1101	MW-1102	MW-1103	MW-1104	MW-1105	MW-1106DUP	MW-1106	MW-2301	MW-2302
Depth (ft)				32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	33.0 - 40.0	33.0 - 40.0
Date				07/30/08	01/08/09	05/07/09	07/28/09	10/22/09	01/24/10	01/24/10	07/27/08	01/06/09
Sample Type				GR	GR	GR	GR	GR	FD	GR	GR	GR
Analyte	Units	NYSDEC	MCL									
Metals												
Aluminum	ug/L			55.6	94.7	<200	175	89.6	110	116	73.8	23.6
Barium	ug/L	1000.00	2000.00	8.92	10.8	14	30.5	13.9	19.6	20.7	8.82	5.1
Beryllium	ug/L		4.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	ug/L	5.00	5.00	<1	<1	<1	0.512	<1	0.34	0.32	<1	<1
Calcium	ug/L			1150	1060	1440	1620	1190	1230	1270	1980	1200
Chromium	ug/L	50.00	100.00	0.77	<5	<5	<5	<5	<5	<5	0.945	2.28
Copper	ug/L	200.00	1300.00	<5	1.87	<5	<5	2.12	<5	<5	<5	<5
Iron	ug/L	300.00		<33.1	<100	<100	42.5	33.6	200	24.5	236	19.9
Lead	ug/L	25.00	15.00	<3	2.4	<3	<3	4.08	<3	<3	<3	1.83
Magnesium	ug/L			753	816	738	864	933	868	877	871	776
Manganese	ug/L	300.00		30.1	32.1	35.1	52.2	46.5	50.2	51.6	21	21.7
Mercury	ug/L	0.70	2.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.07
Nickel	ug/L	100.00		<10	<10	<10	<10	<10	<10	<10	<10	<10
Potassium	ug/L			370	438	653	437	426	419	453	377	468
Selenium	ug/L	10.00	50.00	<5	2.38	6.16	<5	<5	<5	<5	<5	3.64
Sodium	ug/L	20000.00		4090	4540	5340	7020	7420	7020	7100	3670	4420
Vanadium	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	ug/L			49.2	15.4	15.6	17	<9.84	20.4	23.6	49.5	7.29
Organics - Semivolatile and Volatile												
(1-Methylpropyl)benzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	5.00	70.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Butylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	7.00		<1	<1	<1	<1	<1	<1	<1	0.96	1
Cumene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	5.00	700.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L			<1	1.3	<1	<1	<1	<1	<1	<1	<1
Propylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5.00	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	ug/L	5.00	1000.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, m+p	ug/L	5.00		<1	<1	<2	<2	<2	<2	<2	<1	<1
2,4-Dinitrophenol	ug/L	1.00		<26	<22	<24	<11	<11	<11	<11	<21	<22
2-Methylnaphthalene	ug/L			<13	<11	<12	<11	<11	<11	<11	<11	<11
Benzoic acid	ug/L			<13	<11	<12	<11	<11	<11	<11	<11	<11
Bis(2-ethylhexyl)phthalate	ug/L	5.00	6.00	<13	<11	<12	<11	<11	<11	<11	<11	<11
Caprolactam	ug/L			<13	<11	<12	<11	<11	<11	<11	<11	<11
Diethyl phthalate	ug/L			<13	<11	<12	<11	<11	<11	<11	<11	<11
Naphthalene	ug/L			<13	<11	<12	<11	<11	<11	<11	<11	<11

Table 6. Semivolatile and Volatile Organic Compounds and Metals Detections at IRP Site 7, 2008 – 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-23	MW-23	MW-23	MW-23	MW-23	MW-24R	MW-24R	MW-24R	MW-24R
Sample Id				MW-2303	MW-2304	MW-2305DUP	MW-2305	MW-2306	MW-24R01	MW-24R02DUP	MW-24R02	MW-24R03
Depth (ft)				33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	31.6 - 51.6	31.6 - 51.6	31.6 - 51.6	31.6 - 51.6
Date				05/05/09	07/28/09	10/20/09	10/20/09	01/23/10	10/02/08	01/06/09	01/06/09	05/05/09
Sample Type				GR	GR	FD	GR	GR	GR	FD	GR	GR
Analyte	Units	NYSDEC	MCL									
Metals												
Aluminum	ug/L			<200	13.1	14.5	<200	18.3	19.2	34.4	40.7	<200
Barium	ug/L	1000.00	2000.00	<10	11.6	<10	<10	5.4	<10	<10	<10	<10
Beryllium	ug/L		4.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	ug/L	5.00	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Calcium	ug/L			1950	2520	1890	1820	1650	3280	3690	3210	4420
Chromium	ug/L	50.00	100.00	<5	5.02	2.78	1.08	<5	<5	<5	0.79	<5
Copper	ug/L	200.00	1300.00	<5	3.77	2.32	2.58	<5	3.53	<5	<5	<5
Iron	ug/L	300.00		<100	96.6	48.4	21.2	31.2	50.5	72.1	76.8	<100
Lead	ug/L	25.00	15.00	<3	1.83	<3	<3	<3	<3	<3	<3	<3
Magnesium	ug/L			896	935	685	662	780	881	1060	945	693
Manganese	ug/L	300.00		22.9	17	15.1	14.5	20.7	26.5	5.92	5.7	<10
Mercury	ug/L	0.70	2.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.1	<0.2	<0.2
Nickel	ug/L	100.00		<10	<10	<10	<10	<10	<10	<10	<10	<10
Potassium	ug/L			<500	415	361	414	416	383	423	431	<500
Selenium	ug/L	10.00	50.00	<5	<5	<5	<5	<5	<5	<5	2.48	5.04
Sodium	ug/L	20000.00		4060	4800	2750	2680	4970	1510	2150	2080	2820
Vanadium	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
Zinc	ug/L			<10	9.66	6.64	7.58	14.8	9.32	8.14	7.16	<10
Organics - Semivolatile and Volatile												
(1-Methylpropyl)benzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	5.00	70.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Butylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	7.00		<1	0.8	<1	<1	0.8	<1	<1	<1	<1
Cumene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	5.00	700.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L			<1	<1	<1	<1	<1	<1	1.2	1.3	<1
Propylbenzene	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	5.00	5.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	ug/L	5.00	1000.00	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, -o	ug/L	5.00		<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylene, m+p	ug/L	5.00		<1	<2	<2	<2	<2	<1	<1	<1	<1
2,4-Dinitrophenol	ug/L	1.00		<25	<11	<11	<11	<11	<23	<22	<23	<25
2-Methylnaphthalene	ug/L			<13	<11	<11	<11	<11	<11	<11	<11	<12
Benzoic acid	ug/L			<38	<11	<11	<11	<11	<11	<11	<11	<38
Bis(2-ethylhexyl)phthalate	ug/L	5.00	6.00	<13	<11	<11	<11	<11	<11	36	57	<12
Caprolactam	ug/L			<38	<11	<11	<11	<11	<11	34	57	<38
Diethyl phthalate	ug/L			<13	<11	<11	<11	<11	<11	<11	1.6	<12
Naphthalene	ug/L			<13	<11	<11	<11	<11	<11	<11	<11	<12

Table 6. Semivolatile and Volatile Organic Compounds and Metals Detections at IRP Site 7, 2008 – 2010 Events

Media				Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-24R	MW-24R	MW-24R	MW-24R
Sample Id				MW-24R04DUP	MW-24R04	MW-24R05	MW-24R06
Depth (ft)				31.6 - 51.6	31.6 - 51.6	31.6 - 51.6	31.6 - 51.6
Date				07/27/09	07/27/09	10/20/09	01/22/10
Sample Type				FD	GR	GR	GR
Analyte	Units	NYSDEC	MCL				
Metals							
Aluminum	ug/L			760	174	32.3	18.3
Barium	ug/L	1000.00	2000.00	12.3	7.65	<10	<10
Beryllium	ug/L		4.00	<1	<1	<1	<1
Cadmium	ug/L	5.00	5.00	<1	<1	<1	<1
Calcium	ug/L			4420	4220	3490	4040
Chromium	ug/L	50.00	100.00	10.1	5.39	1.31	<5
Copper	ug/L	200.00	1300.00	5.22	3.76	<5	<5
Iron	ug/L	300.00		2410	976	110	38.1
Lead	ug/L	25.00	15.00	3.04	<3	<3	<3
Magnesium	ug/L			1230	1160	717	1120
Manganese	ug/L	300.00		87.9	58.5	2.33	1.44
Mercury	ug/L	0.70	2.00	0.16	<0.2	<0.2	<0.2
Nickel	ug/L	100.00		<10	<10	<10	<10
Potassium	ug/L			448	340	397	441
Selenium	ug/L	10.00	50.00	2.68	<5	<5	<5
Sodium	ug/L	20000.00		3440	2740	2170	2310
Vanadium	ug/L			4	<10	<10	<10
Zinc	ug/L			14.8	13.7	6.67	12.7
Organics - Semivolatile and Volatile							
(1-Methylpropyl)benzene	ug/L	5.00		<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	5.00	70.00	<1	<1	<1	<1
1,2,4-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	5.00		<1	<1	<1	<1
Butylbenzene	ug/L	5.00		<1	<1	<1	<1
Chloroform	ug/L	7.00		<1	<1	<1	<1
Cumene	ug/L	5.00		<1	<1	<1	<1
Ethylbenzene	ug/L	5.00	700.00	<1	<1	<1	<1
Naphthalene	ug/L			<1	<1	<1	<1
Propylbenzene	ug/L	5.00		<1	<1	<1	<1
Tetrachloroethene	ug/L	5.00	5.00	<1	<1	<1	<1
Toluene	ug/L	5.00	1000.00	<1	<1	<1	<1
Xylene, -o	ug/L	5.00		<1	<1	<1	<1
Xylene, m+p	ug/L	5.00		<2	<2	<2	<2
2,4-Dinitrophenol	ug/L	1.00		<11	<11	<13	<11
2-Methylnaphthalene	ug/L			<11	<11	<13	<11
Benzoic acid	ug/L			<11	<11	<13	<11
Bis(2-ethylhexyl)phthalate	ug/L	5.00	6.00	<11	<11	<13	<11
Caprolactam	ug/L			<11	<11	<13	<11
Diethyl phthalate	ug/L			<11	<11	<13	<11
Naphthalene	ug/L			<11	<11	<13	<11

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-103	MW-103	MW-103	MW-103	MW-103	MW-103	MW-105
Sample Id				MW-10301	MW-10302	MW-10303	MW-10304	MW-10305	MW-10306	MW-10501D
Depth (ft)				28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	28.5 - 43.5	48.3 - 68.3
Date				07/28/08	01/07/09	05/07/09	07/29/09	10/22/09	01/24/10	07/28/08
Sample Type				GR	GR	GR	GR	GR	GR	FD
Analyte	Units	NYSDEC	MCL							
Conductivity	mS/cm			0.067	NR	0.044	0.031	0.062	0.051	NR
Dissolved Oxygen	ug/L			10020	NR	10450	9070	9740	16530	NR
ORP	mV			97	NR	156	70	199	118	NR
Temperature	C			15.9	NR	13.27	19.4	15.8	12.8	NR
Turbidity	NTU			10	NR	10.4	80.1	0	0	NR
pH	STD UN			5.22	NR	5.76	5.8	5.56	5.42	NR

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-105	MW-105	MW-105	MW-105	MW-105	MW-105	MW-105
Sample Id				MW-10501	MW-10502	MW-10503DUP	MW-10503	MW-10504	MW-10505	MW-10506
Depth (ft)				48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3	48.3 - 68.3
Date				07/28/08	01/07/09	05/06/09	05/06/09	07/28/09	10/21/09	01/23/10
Sample Type				GR	GR	FD	GR	GR	GR	GR
Analyte	Units	NYSDEC	MCL							
Conductivity	mS/cm			0.045	0.049	0.04	0.04	0.043	0.053	0.029
Dissolved Oxygen	ug/L			10850	11710	11060	11060	10520	8820	11390
ORP	mV			231	295	182	182	243	NR	294
Temperature	C			14.4	11.4	13.29	13.29	19.9	15.6	12
Turbidity	NTU			55.8	1	9.3	9.3	3.1	0.2	0
pH	STD UN			5.36	4.86	5.83	5.83	4.87	6.17	5.63

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-106R	MW-106R	MW-106R	MW-106R	MW-106R	MW-106R
Sample Id				MW-106R01DUP	MW-106R01	MW-106R02	MW-106R03	MW-106R04	MW-106R05
Depth (ft)				31.4 - 51.4	31.4 - 51.4	31.4 - 51.4	31.4 - 51.4	31.4 - 51.4	31.4 - 51.4
Date				10/01/08	10/01/08	01/05/09	05/04/09	07/27/09	10/19/09
Sample Type				FD	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC	MCL						
Conductivity	mS/cm			0.002	0.002	0.063	0.051	0.043	0.047
Dissolved Oxygen	ug/L			10810	10810	10450	10700	8940	8410
ORP	mV			215	215	286	237	225	270
Temperature	C			17	17	7.7	12.4	21.6	13.31
Turbidity	NTU			185	185	64.4	9.8	211	0
pH	STD UN			5.34	5.34	4.53	5.4	5.06	3.7

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-106R	MW-107C	MW-107C	MW-107C	MW-107C	MW-107C	MW-107C
Sample Id				MW-106R06	MW-107C01	MW-107C02	MW-107C03	MW-107C04	MW-107C05	MW-107C06
Depth (ft)				31.4 - 51.4	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0	33.0 - 53.0
Date				01/22/10	07/29/08	01/07/09	05/06/09	07/28/09	10/21/09	01/23/10
Sample Type				GR	GR	GR	GR	GR	GR	GR
Analyte	Units	NYSDEC	MCL							
Conductivity	mS/cm			0.046	0.044	0.055	0.044	0.048	0.048	0.035
Dissolved Oxygen	ug/L			10470	10690	11320	10940	9890	1850	9770
ORP	mV			295	237	298	223	285	258	289
Temperature	C			6.9	14.9	10.7	12.79	16.6	13.07	5.6
Turbidity	NTU			9.9	9.2	6	14.7	10.1	1.9	0
pH	STD UN			5.27	5.28	4.52	5.35	4.44	4.2	5.15

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11
Sample Id				MW-1101	MW-1102	MW-1103	MW-1104	MW-1105	MW-1106DUP	MW-1106
Depth (ft)				32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6	32.9 - 39.6
Date				07/30/08	01/08/09	05/07/09	07/28/09	10/22/09	01/24/10	01/24/10
Sample Type				GR	GR	GR	GR	GR	FD	GR
Analyte	Units	NYSDEC	MCL							
Conductivity	mS/cm			0.049	0.058	0.055	0.877	0.082	0.06	0.06
Dissolved Oxygen	ug/L			10550	9920	9630	10390	9380	14950	14950
ORP	mV			259	278	247	86	322	304	304
Temperature	C			16.2	13	14.1	16.05	16	11.8	11.8
Turbidity	NTU			5.2	0	9.9	66.7	0	0	0
pH	STD UN			4.82	4.65	5.12	5.95	3.76	4.42	4.42

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-23	MW-23	MW-23	MW-23	MW-23	MW-23	MW-23
Sample Id				MW-2301	MW-2302	MW-2303	MW-2304	MW-2305DUP	MW-2305	MW-2306
Depth (ft)				33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	33.0 - 40.0	33.0 - 40.0
Date				07/27/08	01/06/09	05/05/09	07/28/09	10/20/09	10/20/09	01/23/10
Sample Type				GR	GR	GR	GR	FD	GR	GR
Analyte	Units	NYSDEC	MCL							
Conductivity	mS/cm			0.045	0.054	0.051	0.975	0.036	0.036	0.043
Dissolved Oxygen	ug/L			11350	11270	11100	11320	6070	6070	11410
ORP	mV			220	241	220	27	222	222	275
Temperature	C			15	11	13.2	18.06	14.87	14.87	12.1
Turbidity	NTU			27.6	0	13	56	0	0	0
pH	STD UN			5.26	5.06	5.74	5.98	5.1	5.1	5.94

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Station				MW-24R	MW-24R	MW-24R	MW-24R	MW-24R	MW-24R
Sample Id				MW-24R01	MW-24R02DUP	MW-24R02	MW-24R03	MW-24R04DUP	MW-24R04
Depth (ft)				31.6 - 51.6	31.6 - 51.6	31.6 - 51.6	31.6 - 51.6	31.6 - 51.6	31.6 - 51.6
Date				10/02/08	01/06/09	01/06/09	05/05/09	07/27/09	07/27/09
Sample Type				GR	FD	GR	GR	FD	GR
Analyte	Units	NYSDEC	MCL						
Conductivity	mS/cm			0	NR	0.077	0.057	0.049	0.049
Dissolved Oxygen	ug/L			10490	NR	10200	10850	11060	11060
ORP	mV			180	NR	253	170	202	202
Temperature	C			16.7	NR	6	12.37	18	18
Turbidity	NTU			20.1	NR	8	15.3	312	312
pH	STD UN			6.88	NR	5.64	6.15	5.44	5.44

Table 7. Field Measurements for IRP Site 7, 2008 – 2010

Media				Groundwater	Groundwater
Station				MW-24R	MW-24R
Sample Id				MW-24R05	MW-24R06
Depth (ft)				31.6 - 51.6	31.6 - 51.6
Date				10/20/09	01/22/10
Sample Type				GR	GR
Analyte	Units	NYSDEC	MCL		
Conductivity	mS/cm			0.052	0.045
Dissolved Oxygen	ug/L			710	10360
ORP	mV			224	218
Temperature	C			13.56	9.8
Turbidity	NTU			0	9.7
pH	STD UN			5.15	6.47

FIGURES

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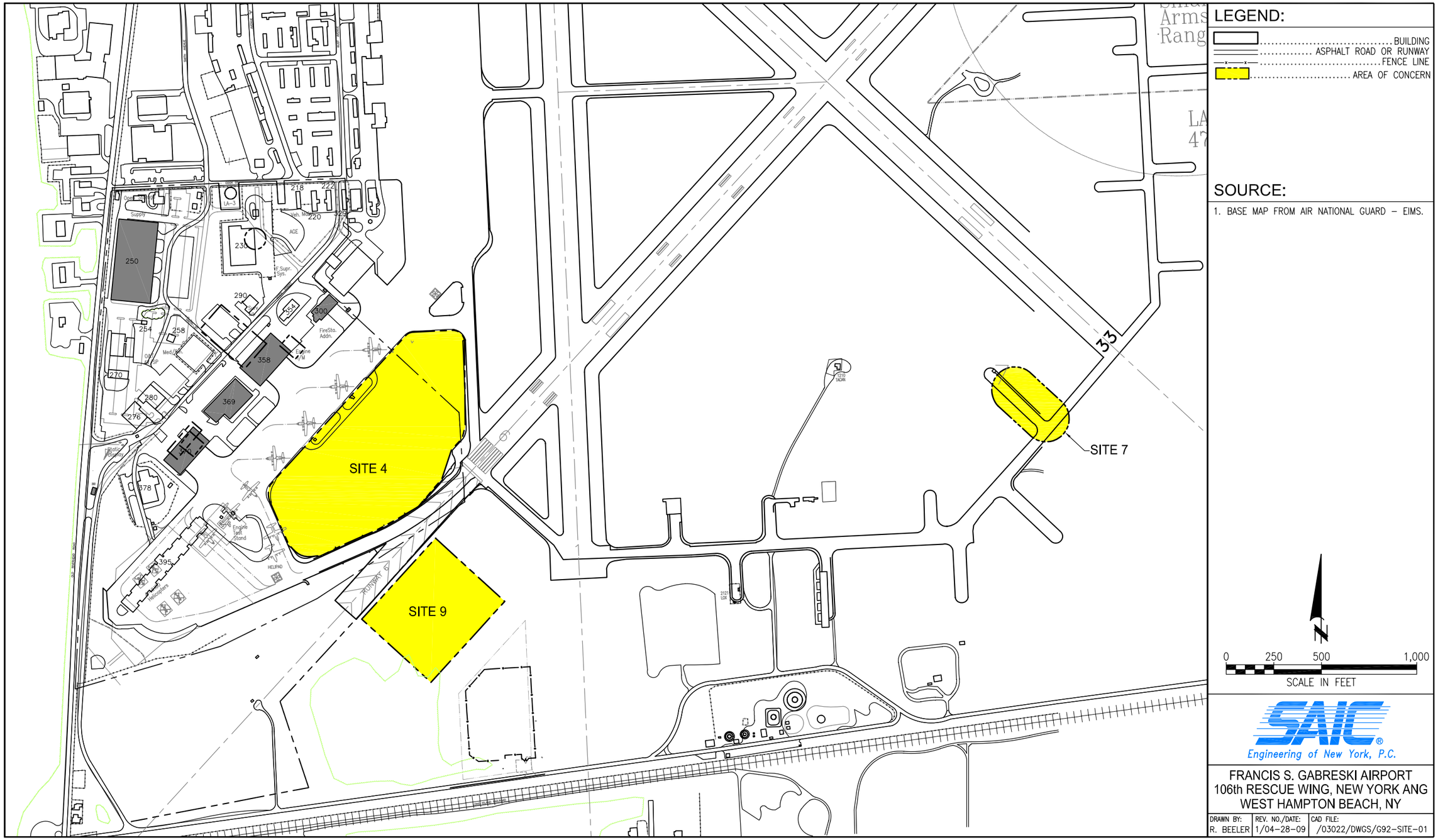


Figure 1. IRP Sites 4, 7, and 9 Location Map

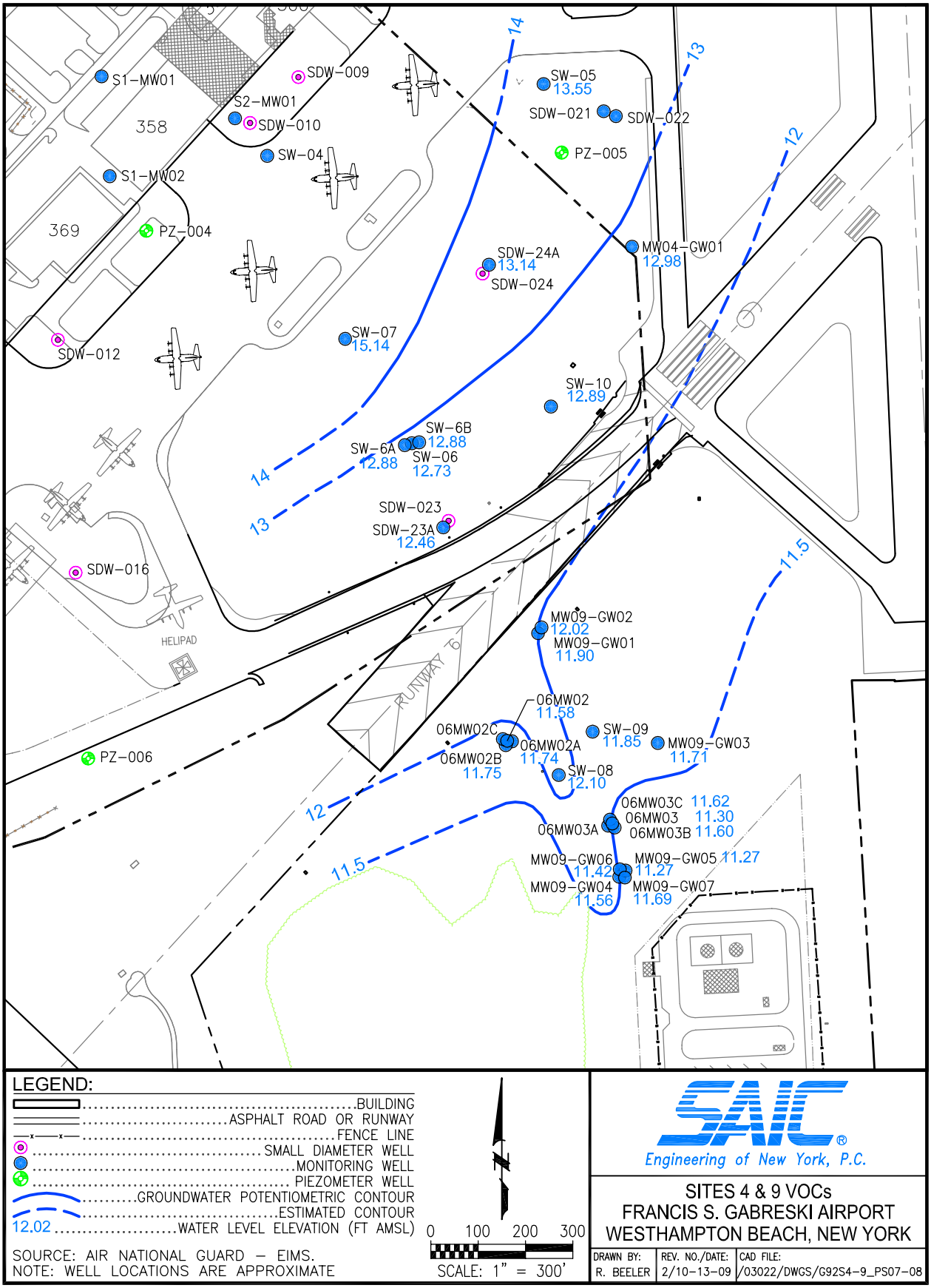


Figure 2. Potentiometric Map for IRP Sites 4 and 9 - August 2008

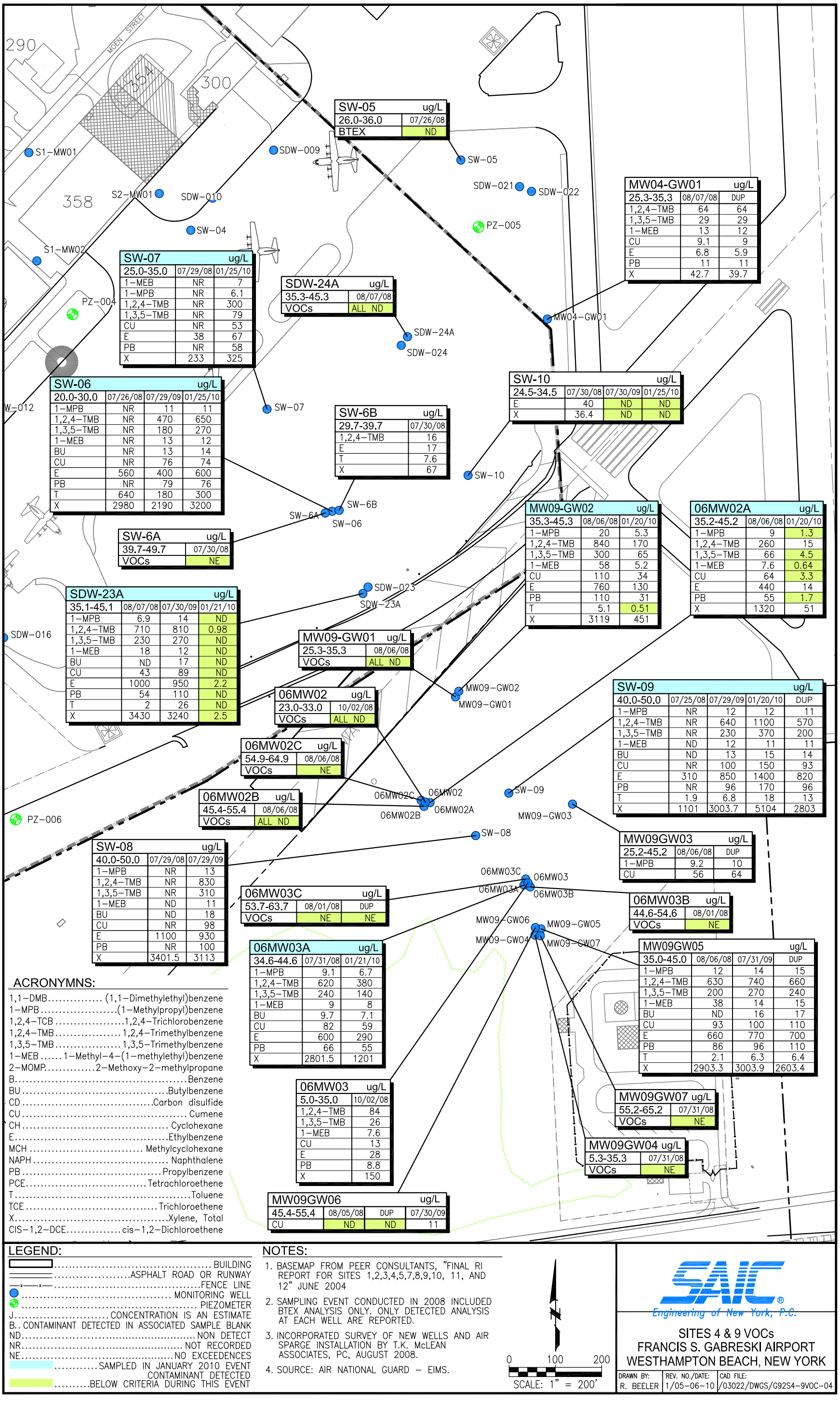


Figure 3. VOCs Detected Above NYSDEC Criteria at IRP Sites 4 and 9, 2008-2010

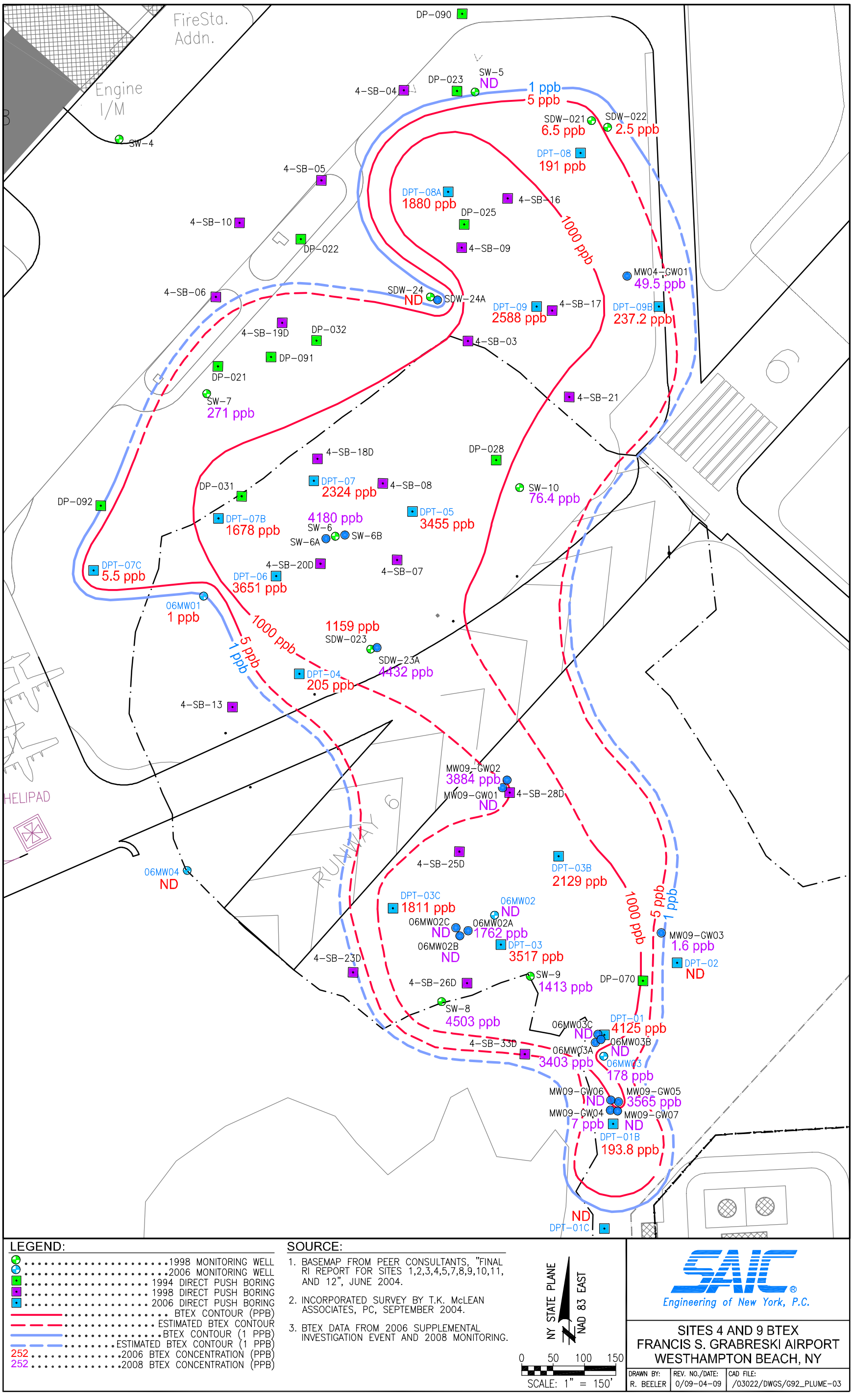


Figure 4. Extent of BTEX Contamination in Groundwater at IRP Sites 4 and 9- July 2008

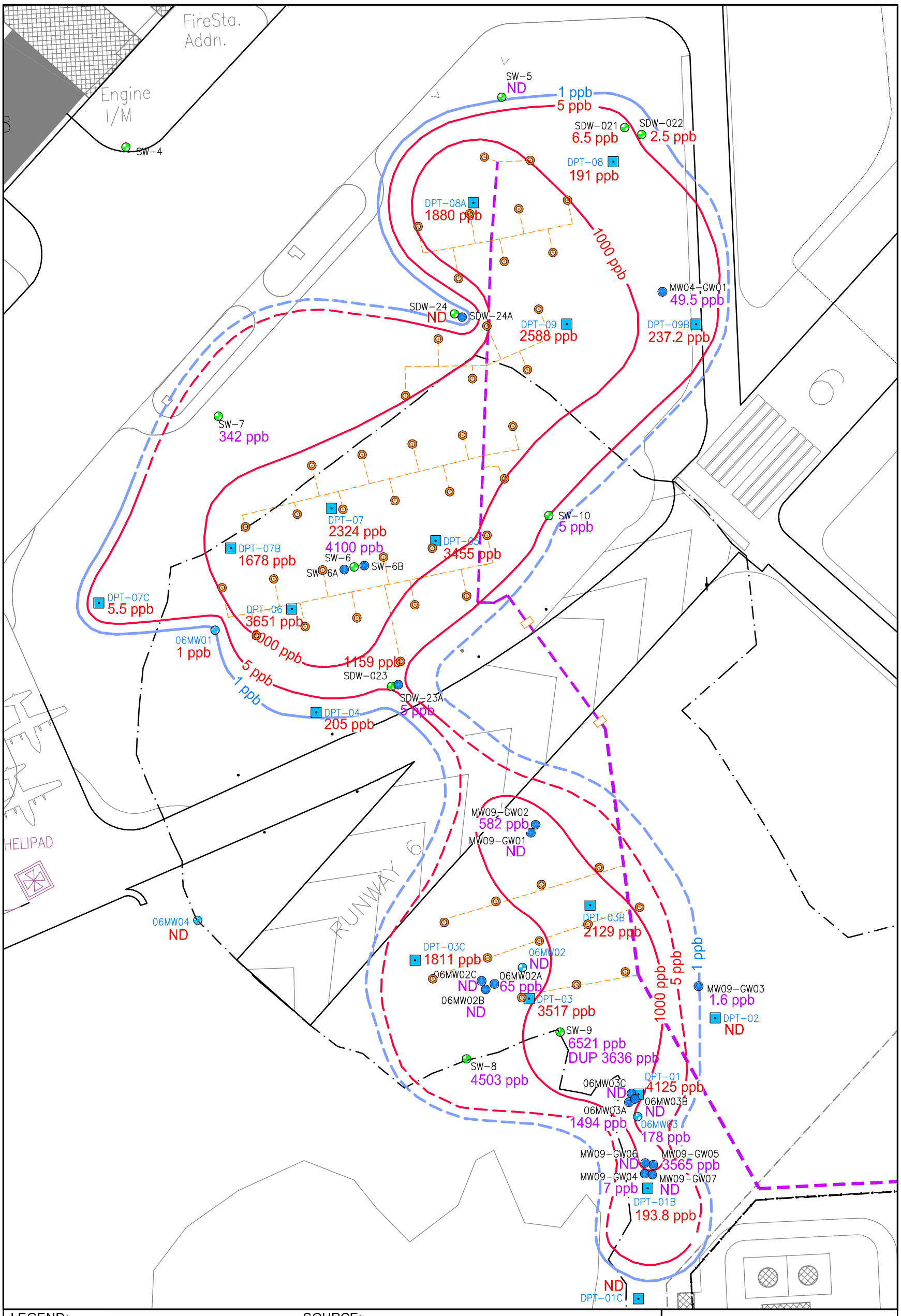
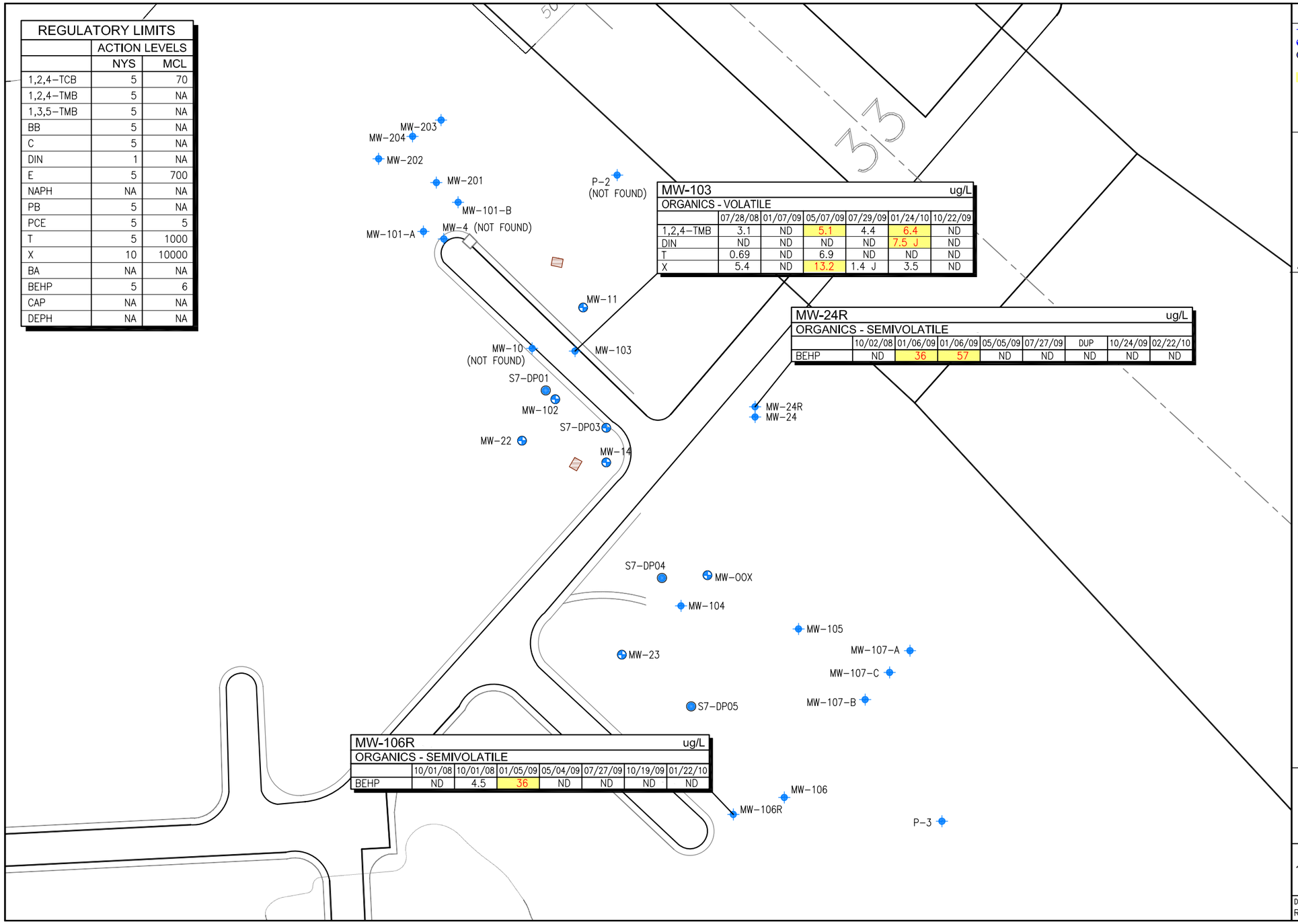


Figure 5. VOCs/SVOCs Detected Above NYSDEC Criteria at IRP Site 7 – 2004, 2008, and 2009

REGULATORY LIMITS		
	ACTION LEVELS	
	NYS	MCL
1,2,4–TCB	5	70
1,2,4–TMB	5	NA
1,3,5–TMB	5	NA
BB	5	NA
C	5	NA
DIN	1	NA
E	5	700
NAPH	NA	NA
PB	5	NA
PCE	5	5
T	5	1000
X	10	10000
BA	NA	NA
BEHP	5	6
CAP	NA	NA
DEPH	NA	NA



MW-103 ug/L

ORGANICS - VOLATILE

	07/28/08	01/07/09	05/07/09	07/29/09	01/24/10	10/22/09
1,2,4–TMB	3.1	ND	5.1	4.4	6.4	ND
DIN	ND	ND	ND	ND	7.5 J	ND
T	0.69	ND	6.9	ND	ND	ND
X	5.4	ND	13.2	1.4 J	3.5	ND

MW-24R ug/L

ORGANICS - SEMIVOLATILE

	10/02/08	01/06/09	01/06/09	05/05/09	07/27/09	DUP	10/24/09	02/22/10
BEHP	ND	36	57	ND	ND	ND	ND	ND

MW-106R ug/L

ORGANICS - SEMIVOLATILE

	10/01/08	10/01/08	01/05/09	05/04/09	07/27/09	10/19/09	01/22/10
BEHP	ND	4.5	36	ND	ND	ND	ND

LEGEND:

- ..... EXISTING PIEZOMETER (APPROXIMATE)
- ..... EXISTING RI MONITORING WELL
- ..... DIRECT PUSH BORING
- CONCENTRATION
- 13.2 ..... EXCEEDS REGULATORY LIMITS

NOTES:

1. BASE MAP FROM AIR NATIONAL GUARD – EIMS.
2. WELL LOCATIONS FROM PEER CONSULTANTS, PC PROJECT: 1566–053 – MAY, 2002.
3. ONLY DATA FOR CHEMICALS THAT WERE DETECTED IN AT LEAST ONE WELL ARE SHOWN.

ABBREVIATIONS:

NYS..... NEW YORK STATE, CLASS GA GROUNDWATER, NYSDEC TAGM #4046
MCL ..... FEDERAL DRINKING WATER MAXIMUM CONTAMINANT LEVEL
ND..... NOT DETECTED
NR..... NOT REPORTED
NA..... NOT AVAILABLE
J ..... CONCENTRATION IS AN ESTIMATE
1,2,4–TCB..... 1,2,4–Trichlorobenzene
1,2,4–TMB..... 1,2,4–Trimethylbenzene
1,3,5–TMB..... 1,3,5–Trimethylbenzene
BB..... Butylbenzene
C ..... Chloroform
E ..... Ethylbenzene
NAPH..... Naphthalene
PB..... Propylbenzene
PCE ..... Tetrachloroethene
T..... Toulene
X ..... Xylene, Total
BA..... Benzoic acid
BEHP..... Bis(2–ethylhexyl)phthalate
CAP..... Caprolactam
DEPH..... Diethyl phthalate
DIN 2,4–Dinitrophenol

N

0 50 100 150 300

SCALE: 1" = 150'

SAIC® Engineering of New York, P.C.

FRANCIS S. GABRESKI AIRPORT
106TH RESCUE WING, NEW YORK ANG
WESTHAMPTON BEACH, NEW YORK

DRAWN BY:	REV. NO./DATE:	CAD FILE:
R. BEELER	0/03–22–10	/03022/DWGS/G92S7–CHRT–03

Figure 6. VOCs/SVOCs Detected Above NYSDEC Criteria at IRP Site 7 – 2004, 2008, and 2009

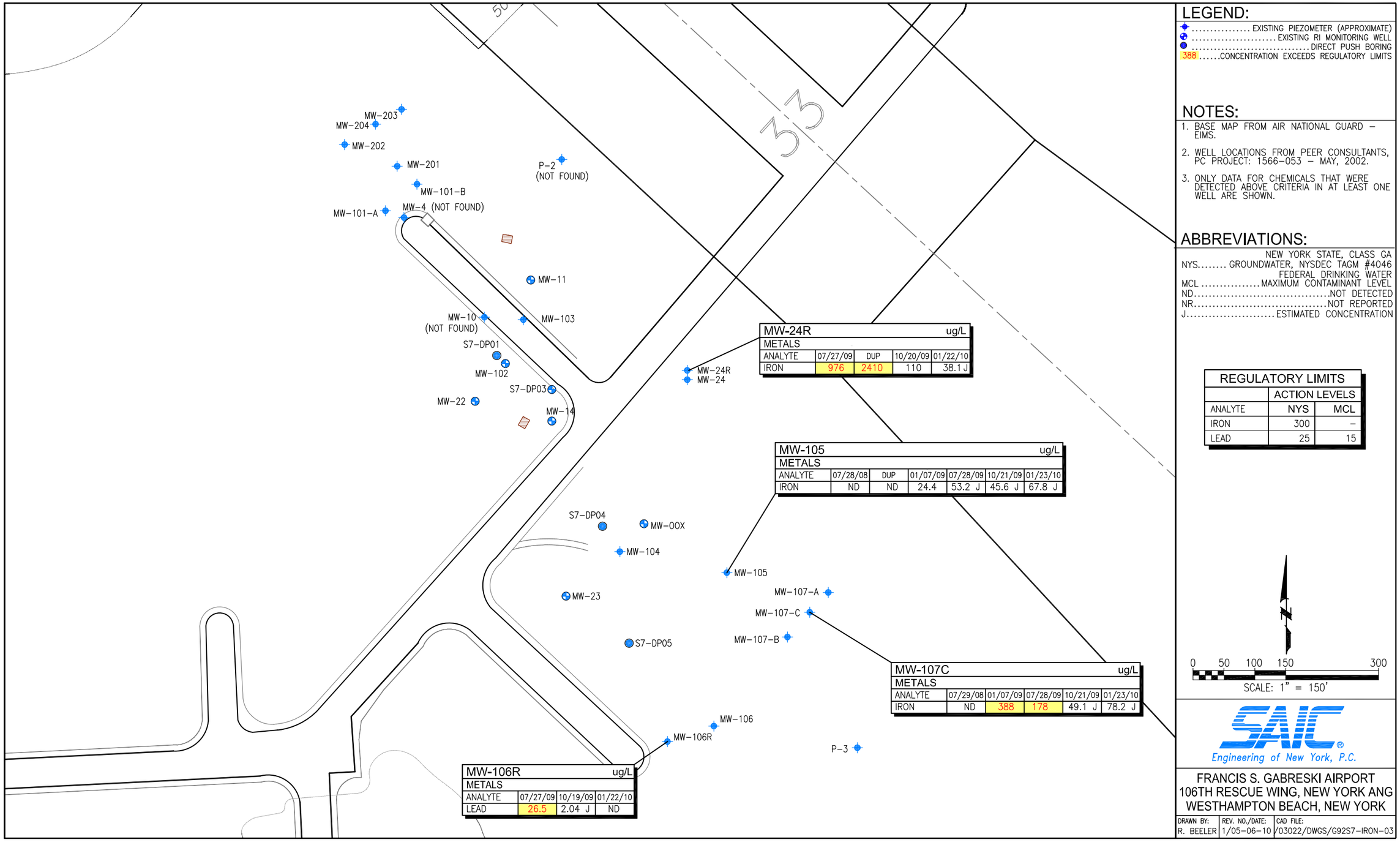


Figure 7. Metals Detected Above NYSDEC Criteria at IRP Site 7, 2008-2010

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APPENDIX A – ANALYTICAL LABORATORY DATA PACKAGES

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APPENDIX B – MONITORING WELL PURGE LOGS

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GROUND WATER MICRO PURGE LOG

WELL ID: SW06

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1000	0.01	100	37	12.0	5.51	0.046	8.03	17.5	24.68	
1010	1.000		10	13.1	5.67	0.043	0.00	19.6		
1020	2.000		2	13.1	5.71	0.043	0.00	17.5		
1030	3.000		2	13.1	5.72	0.043	0.00	16.9		
1040	4.000		-1	13.1	5.70	0.043	0.00	15.6		
1050	5.000		-7	13.2	5.73	0.042	0.00	10.3		
1100	6.000		-8	13.2	5.73	0.042	0.00	9.7		
1110	7.000		-8	13.2	5.73	0.042	0.00	9.8		
1120	8.000		-9	13.2	5.73	0.042	0.00	9.7		
		Well stabilized @ 1120, total of 8.0L purged								

RECORDED BY: _____ (Signature)

QA CHECKED BY: M P 1/29/10 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: SW07

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1210	0.01	100	50	12.8	5.44	0.034	6.85	10.2	30.00	
1220	1.00		33	13.5	5.44	0.033	3.29	9.6		
1230	2.00		-14	13.8	5.72	0.032	2.45	8.4		
1240	3.00		-36	13.8	5.85	0.032	1.89	7.6		
1250	4.00		-46	13.8	5.93	0.033	1.88	7.3		
1300	5.00		-47	13.8	5.95	0.034	1.85	7.2		
1310	6.00		-50	13.8	5.93	0.034	1.83	7.3		
1320	7.00		-49	13.8	5.94	0.033	1.82	7.1		
1330	8.00	↓	-49	13.8	5.95	0.034	1.83	7.2	↓	
		Well stabilized @ 1330, total of						8.00L	purged	

RECORDED BY: [signature] (Signature)

QA CHECKED BY: [signature] 1/20/10 (Signature)

B-4

GROUND WATER MICRO PURGE LOG

WELL ID: SW10

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0810	0.01	60	265	11.5	4.98	0.074	11.84	7.5	29.10	
0820	0.600	60	278	12.3	4.98	0.059	9.29	8.3	29.10	
0830	1.200	60	287	12.5	4.93	0.056	9.23	12.3	29.10	
0840	1.800	60	296	12.5	4.91	0.054	9.00	12.9	29.10	
0850	2.400	60	303	12.5	4.88	0.052	8.88	7.8	29.10	
0900	3.000	60	303	12.5	4.88	0.052	8.90	4.2	29.10	
0910	3.600	60	304	12.5	4.87	0.052	8.88	2.7	29.10	
0920	4.200	60	304	12.5	4.87	0.052	8.89	3.1	29.10	
		Well stabilized @ 0930, total of 4.2L purged								

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: SDW23A

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO* (mg/L)	TURBIDITY* (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0850	0.01	42	136	6.50	4.25	0.011	9.94	883.0	24.80	Calibration Errors
0900	0.420	↓	108	7.02	4.67	0.129	7.53	821.0	24.80	Replacement
0910	0.840	↓	45	8.34	5.34	0.119	5.67	688.0	24.80	Equipt. Ordered.
0920	1.260	↓	15	8.03	5.56	0.121	6.25	658.0	24.80	MDP 11/27/10
0930	1.680	↓	10	7.87	5.59	0.123	6.37	660.0	24.80	
0940	2.100	↓	3	8.00	5.64	0.125	6.45	630.0	24.80	
0950	2.520	↓	2	7.87	5.66	0.125	6.49	650.0	24.80	
1000	2.940	↓	0	7.91	5.67	0.124	6.51	647.0	24.80	
1010	3.360	↓	-1	8.04	5.68	0.125	6.49	651.0	24.80	
1020	3.780	↓	0	7.99	5.70	0.126	6.47	641.0	24.80	
			Well Stabilized @ 1020, total of 3.8L purged							

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: 06MW02A

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO* (mg/L)	TURBIDITY* (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1120	0.01	50	81	11.37	5.06	0.118	12.53	999	21.83	*Calibration error
1125	0.250	↓	68	11.57	5.06	0.113	8.25	999	↓	Replacement meter ordered 1-29-10
1130	0.500	↓	28	11.51	5.15	0.105	0.00	999	↓	Equipment ordered
1135	0.750	↓	6	11.59	5.19	0.105	0.00	712	↓	
1140	1.000	↓	-6	11.84	5.23	0.104	0.00	527	↓	
1145	1.250	↓	-8	10.73	5.25	0.104	0.00	467	↓	
1150	1.500	↓	-13	10.71	5.25	0.104	0.00	463	↓	
1155	1.750	↓	-13	10.63	5.25	0.104	0.00	458	↓	
1200	2.000	↓	-14	10.60	5.25	0.104	0.00	456	↓	
1205	2.250	↓	-14	10.58	5.27	0.104	0.00	455	↓	
1210	2.500	↓	-14	10.65	5.28	0.104	0.00	456	↓	
1215	2.750	↓	-14	10.72	5.28	0.104	0.00	455	↓	
1220	3.000	↓	-14	10.72	5.28	0.104	0.00	455	↓	
				well	stabilized	@	1220		3.0 L	total vol

RECORDED BY: _____ (Signature)

QA CHECKED BY: MM 1/29/10 (Signature)

B-7

GROUND WATER MICRO PURGE LOG

WELL ID: 06MW03A

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO * (mg/L)	TURBIDITY * (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1128	0.01	50	36	9.4	6.54	0.231	13.31	15.8	11.37	Calibration Error
1140	0.500	↓	-22	9.7	7.53	0.003	11.78	25.6	11.37	Replacement
1150	1.000	↓	-24	9.8	7.46	0.131	9.83	27.3	11.37	Equipt. Ordered.
1200	1.500	↓	-26	9.4	7.39	0.126	8.04	36.3	11.37	
1210	2.000	↓	-27	9.4	7.37	0.124	8.27	46.0	11.37	
1220	2.500	↓	-28	9.3	7.37	0.123	8.15	49.5	11.37	
1230	3.000	↓	-30	8.9	7.37	0.122	8.47	64.6	11.37	
1240	3.500	↓	-30	8.9	7.37	0.122	8.48	69.3	↓	
1250	4.000	↓	-30	8.9	7.37	0.122	8.46	69.6	↓	
			Well Stabilized @ 1250, total of 4.04 purged							

RECORDED BY: Jeff Jin (Signature)

QA CHECKED BY: MPJ 1/29/10 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW09GW02

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO* (mg/L)	MDP 1/29/10 TURBIDITY* (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1345	0.01	63	52	10.99	5.25	0.118	10.96	999.0	25.81	Calibration Errors
1355	0.630	↓	27	11.42	5.31	0.118	0.00	733.0	↓	(Reference Equip
1405	1.260	↓	9	11.32	5.25	0.116	0.00	591.0	↓	Calibration Log)
1415	1.890	↓	1	11.54	5.28	0.116	0.00	557.0	↓	New meter ordered MDP 1/29/10
1425	2.520	↓	-10	11.62	5.41	0.117	0.00	449.0	↓	
1435	3.150	↓	-15	11.61	5.43	0.118	0.00	425.0	↓	
1445	3.780	↓	-16	11.59	5.44	0.118	0.00	427.0	↓	
1455	4.410	↓	-16	11.56	5.44	0.118	0.00	426.0	↓	
1505	5.040	↓	-16	11.59	5.44	0.118	0.00	425.0	↓	
1515	5.670	↓	-16	11.56	5.44	0.118	0.00	425.0	↓	
			well Stabilized @ 1515, total of 5.67L purged							

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ 1/29/10 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: SW09

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1350	0.01	100	-43	11.8	7.13	0.134	1.01	2.8	20.08	
1400	1.00	↓	-51	11.6	7.18	0.133	0.00	0.5	20.08	
1410	2.00	↓	-55	11.4	7.19	0.134	0.00	0.9	20.08	
1420	3.00	↓	-59	11.4	7.20	0.135	0.00	1.3	20.08	
1430	4.00	↓	-64	11.7	7.20	0.135	0.00	1.9	20.08	
1440	5.00	↓	-64	11.5	7.20	0.135	0.00	2.1	20.08	
1450	6.00	↓	-64	11.5	7.20	0.135	0.00	2.0	20.08	
			Well	Stabilized @	1450	, total of	6.0L	purged		

RECORDED BY: [signature] (Signature)

QA CHECKED BY: [signature] 1/29/10 (Signature)

B-10

GROUND WATER MICRO PURGE LOG

WELL ID: MW106R

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
145	0.1	49.25	203	15.17	5.92	0.067	12.19	369.0	30.30	
1425	0.49 25		244	14.81	4.64	0.054	10.60	171.0	30.30	
1435	0.98 5		254	14.28	4.08	0.052	9.83	60.6	30.30	
1445	1.47		260	14.19	3.86	0.050	9.17	37.5	30.30	
1455	1.97		265	13.31	3.75	0.048	8.77	14.3	30.30	
1505	2.464		267	13.46	3.75	0.047	8.45	6.6	30.30	
1515	2.957		270	13.35	3.70	0.047	8.40	0.0	30.30	
1525	3.450		270	13.31	3.70	0.047	8.41	0.0	30.30	
				Well stabilized @ 1525, purged 3.450 L total						

RECORDED BY: _____ (Signature)

QA CHECKED BY: M.T. Bo 11/20/2009 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW24R

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	* DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0900	0.01	30	197	12.06	5.82	0.080	*~~1.63~~	82.8	31.58	* DO calibration error
0910	0.300	↓	207	13.39	5.39	0.061	*1.13	25.0	31.58	readings are subject to error
0920	0.600		205	13.59	5.34	0.058	1.11	11.8	31.58	
0930	0.900		206	13.56	5.24	0.060	1.00	0.0	31.58	
0940	1.200		212	13.55	5.18	0.056	0.96	0.0	31.58	
0950	1.500		216	13.59	5.15	0.053	0.87	0.0	31.58	
1000	1.800		220	13.78	5.15	0.052	0.71	0.0	31.58	
1010	2.100		224	13.49	5.18	0.051	0.70	0.0	31.58	
1020	2.400		225	13.55	5.15	0.052	0.71	0.0	31.58	
1030	2.700		224	13.56	5.15	0.052	0.71	0.0	31.58	
			Well Stabilized @ 1030					Purged ~~total~~ @ 2.7L		

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW23

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	*DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1330	0.01	100	172	16.55	6.56	0.040	11.88	180.0	31.90	
1340	~~0.00~~ 1.00	100	203	15.57	5.67	0.034	9.16	83.3	31.90	
1350	~~0.00~~ 2.00	100	212	15.33	5.37	0.035	8.74	34.1	31.90	
1400	~~0.00~~ 3.00	100	211	14.99	5.30	0.036	7.94	12.7	31.90	
1410	~~0.00~~ 4.00	100	217	14.94	5.16	0.036	6.87	3.2	31.9	
1420	~~0.00~~ 5.00	100	221	14.80	5.12	0.036	6.20	0.0	31.9	
1430	6.00	100	222	14.88	5.10	0.036	6.08	0.0	31.9	
1440	7.00	100	221	14.87	5.11	0.036	6.06	0.0	31.9	
1450	8.00	100	222	14.87	5.10	0.036	6.07	0.0	31.9	
			Well stabilized @ 1450, Purged total of 8.0L							

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ 10/20/2020 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW107C

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	*DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0900	0.01	100	229	12.65	4.39	0.052	3.53	17.8	38.36	* DO calibration
0910	0.900	100	231	12.85	4.36	0.055	2.51	10.5	38.36	error
0920	2.00	100	237	13.07	4.27	0.053	2.34	8.0	38.36	
0930	3.00	100	245	12.98	4.18	0.049	2.12	6.8	38.36	
0940	4.00	100	250	12.85	4.19	0.049	1.93	4.6	38.36	
0950	5.00	100	255	13.05	4.18	0.049	1.88	6.9	38.36	
1000	6.00	100	259	13.09	4.20	0.048	1.85	1.5	38.36	
1010	7.00	100	259	13.07	4.19	0.048	1.86	1.4	38.36	
1020	8.00	100	258	13.07	4.20	0.048	1.85	1.9	38.36	
		Well stabilized @ 1020, purged 8.0L total								

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ 11/20/2009 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW105

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1310	0.01	100	166	16.4	8.36	0.061	9.21	11.2	38.80	
1320	1.00	100	193	14.5	7.33	0.059	8.85	6.5	38.80	
1330	2.00	100	210	15.8	6.89	0.048	8.91	10.6	38.80	
1340	3.00	100	221	15.8	6.60	0.046	8.95	17.1	38.80	
1350	4.00	100	226	15.8	6.43	0.046	9.01	19.4	38.80	
1400	5.00	100	232	15.7	6.30	0.046	8.80	1.5	38.80	
1410	6.00	100	237	15.7	6.16	0.054	8.78	0.3	38.80	
1420	7.00	100	231	15.7	6.16	0.053	8.79	0.8	38.80	
1430	8.00	100	237	15.6	6.17	0.053	8.82	0.2	38.80	
			Well stabilized @ 1430, Total of 8.0 L purged							

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ 11/20/2009 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW103

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0900	0.01	100	169	14.8	6.11	0.092	9.71	1.2	31.96	
0910	1.00	100	166	15.1	6.01	0.089	9.78	0.0	31.96	
0920	2.00	100	184	15.6	5.76	0.073	9.79	0.0	31.96	
0930	3.00	100	190	15.2	5.67	0.070	9.70	0.0	31.96	
0940	4.00	100	205	15.4	5.46	0.064	9.83	0.0	31.96	
0950	5.00	100	198	15.7	5.56	0.062	9.76	0.0	31.96	
1000	6.00	100	198	15.8	5.55	0.062	9.76	0.0	31.96	
1010	7.00	100	199	15.8	5.56	0.062	9.74	0.0	31.96	
			well stabilized @ 1010, Total purged						7.0L	

RECORDED BY: Charlotte Jin (Signature)

QA CHECKED BY: M.T. BM 11/20/2009 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW11

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1215	0.01	100	213	16.7	5.36	0.096	12.51	7.2	33.45	
1225	1.00	100	275	15.1	4.20	0.087	9.42	3.5	33.45	
1235	1.84	84	295	15.4	3.96	0.086	9.36	0.0	33.45	
1245	2.68	84	307	15.6	3.86	0.085	9.25	0.0	33.45	
1255	3.52	84	315	15.8	3.81	0.084	9.28	0.0	33.45	
1305	4.36	84	318	15.9	3.80	0.083	9.33	0.0	33.45	
1315	5.20	84	321	16.0	3.77	0.082	9.38	0.0	33.45	
1325	6.04	84	322	16.0	3.76	0.082	9.44	0.0	33.45	
1335	6.88	84	322	16.0	3.76	0.082	9.38	0.0	33.45	
		well stabilized @ 1335, Purged total of							6.88L	

RECORDED BY: Justin Jr (Signature)

QA CHECKED BY: M.T. Bay 11/20/2009 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW106R

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1015	0.01	50	285	5.7	4.79	0.086	12.70	70.6	29.34	
1025	0.500	50	284	6.0	4.90	0.068	11.67	64.0		
1035	1.000	50	277	6.4	5.10	0.054	10.57	29.1		
1045	1.5000	50	275	6.6	5.30	0.048	9.93	15.7		
1055	2.000	50	297	6.9	5.20	0.045	12.01	10.8		
1105	2.500	50	294	6.9	5.27	0.045	10.64	9.4		
1115	3.000	50	295	6.9	5.27	0.046	10.51	9.9		
1125	3.500	50	295	6.9	5.27	0.046	10.47	9.9		
		Well Stabilized @ 1125, total of 3.5L purged								✓

RECORDED BY: _____ (Signature)

QA CHECKED BY: M Pj 1/29/10 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW24R

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1305	0.01	35	234	9.5	6.18	0.042	13.93	256.0	30.65	
1315	0.350	40	218	10.1	6.41	0.044	10.29	168.0	30.65	
1325	0.750	40	216	10.1	6.47	0.045	10.53	88.1	30.65	
1335	1.150	40	217	9.8	6.47	0.045	10.52	48.7	30.65	
1345	1.550	40	217	9.9	6.47	0.045	10.28	30.2	30.65	
1355	1.950	40	217	9.8	6.48	0.045	10.35	9.8	30.65	
1405	2.350	40	218	9.8	6.48	0.045	10.36	9.9	30.65	
1415	2.750	40	218	9.8	6.47	0.045	10.36	9.7	30.65	✓
		Well stabalized @ 1415, total of 2.75L purged								

RECORDED BY: [signature] (Signature)

QA CHECKED BY: M Pf 1/29/10 (Signature)

B-19

GROUND WATER MICRO PURGE LOG

WELL ID: MW23

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1315	0.01	100	280	11.8	5.70	0.041	13.59	0.0	30.95	
1325	1.00		269	12.2	5.94	0.042	11.75	0.0		
1335	2.00		271	11.9	5.89	0.042	11.54	0.0		
1345	3.00		266	11.7	5.98	0.043	11.33	0.0		
1355	4.00		267	12.2	5.98	0.042	11.42	0.0		
1405	5.00		267	12.2	5.98	0.043	11.42	0.0		
1415	6.00		271	12.1	5.94	0.043	11.40	0.0		
1425	7.00		275	12.1	5.95	0.043	11.44	0.0		
1435	8.00		275	12.1	5.94	0.043	11.41	0.0		✓
		Well stabilized @ 1435, total of 8L purged								

RECORDED BY: Matt Lai (Signature)

QA CHECKED BY: MR 1/29/10 (Signature)

B-20

GROUND WATER MICRO PURGE LOG

WELL ID: MW107C

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0840	0.01	63	316	4.4	4.40	0.092	13.18	26.4	37.41	
0850	0.630		294	4.9	4.67	0.044	10.46	12.8		
0900	1.260		282	5.5	4.98	0.034	10.12	1.9		
0910	1.890		286	5.8	5.07	0.034	9.93	5.2		
0920	2.520		289	5.5	5.11	0.034	9.80	0.0		
0930	3.150		289	5.5	5.14	0.035	9.79	0.0		
0940	3.780		289	5.5	5.15	0.035	9.79	0.0		
0950	4.410		289	5.6	5.16	0.035	9.76	0.0		
1000	5.040		289	5.6	5.15	0.035	9.77	0.0		
		Well stabilized @ 1000, total of 5.0L purged								

RECORDED BY: _____ (Signature)

QA CHECKED BY: MM 1/29/10 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW105

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1110	0.01	100	260	11.5	5.86	0.027	13.00	45.4	37.87	
1120	1.000	↓	275	12.2	5.75	0.027	11.80	2.6	↓	
1130	2.00		276	12.0	5.74	0.027	11.73	2.7		
1140	3.00		286	12.0	5.68	0.028	11.63	0.0		
1150	4.00		293	11.9	5.64	0.029	11.42	0.0		
1200	5.00		294	11.9	5.64	0.029	11.40	0.0		
1210	6.00		294	12.0	5.63	0.029	11.39	0.0		
1220	7.00	↓	294	12.0	5.63	0.029	11.39	0.0	↓	
			Well Stabilized @ 1220, Total of 7.0L purged							

RECORDED BY: [signature] (Signature)

QA CHECKED BY: [signature] 1/29/10 (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW103

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
0900	0.01	80	223	11.2	4.36	0.090	17.31	8.0	31.05	
0910	0.800	↓	187	12.2	5.18	0.053	17.31	0.8	↓	
0920	1.600	↓	164	12.7	5.29	0.052	17.19	0.0	↓	
0930	2.400	↓	166	12.8	5.29	0.052	17.06	0.0	↓	
0940	3.200	↓	156	12.8	5.30	0.051	16.75	0.0	↓	
0950	4.000	↓	119	12.8	5.42	0.051	16.60	0.0	↓	
1000	4.800	↓	118	12.8	5.42	0.051	16.58	0.0	↓	
1010	5.600	↓	118	12.7	5.43	0.051	16.52	0.0	↓	
1020	6.400	↓	118	12.8	5.42	0.051	16.53	0.0	↓	
			well stabilized @ 1020, total of 6.4L purged							

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ (Signature)

GROUND WATER MICRO PURGE LOG

WELL ID: MW11

PROJECT NAME: Gabreski ANG Base

DELIVERY ORDER NO: 141 AND 143

TIME	LITERS REMOVED	PURGE RATE (mL/min)	ORP (mv)	TEMP (Celsius)	pH (s.u.)	COND (mS/cm)	DO (mg/L)	TURBIDITY (NTU)	DEPTH TO WATER (FT BTOC)	COMMENTS
1130	0.01	82	274	9.4	4.72	0.060	18.94	7.2	32.54	
1140	0.820	↓	291	11.7	4.46	0.060	15.31	0.0	32.54	
1150	1.640		292	11.7	4.47	0.060	15.28	0.0	32.54	
1200	2.460		295	11.7	4.46	0.060	15.28	0.0	32.54	
1210	3.280		301	11.7	4.43	0.060	15.13	0.0	32.54	
1220	4.100		303	11.8	4.42	0.060	15.01	0.0	32.54	
1230	4.920		304	11.8	4.41	0.060	14.90	0.0	32.54	
1240	5.740		304	11.8	4.42	0.060	14.93	0.0	32.54	
1250	6.560	↓	304	11.8	4.42	0.060	14.95	0.0	32.54	✓
		Well stabilized @ 1250, Total of 6.5 L purged								

RECORDED BY: _____ (Signature)

QA CHECKED BY: _____ 1/29/08 (Signature)

APPENDIX C – DATA QUALITY SUMMARY REPORT

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C1. Purpose of this Report

Environmental data must always be interpreted relative to its known limitations and its intended use. The analytical data review process and this data quality assessment are intended to provide current and future data users assistance throughout the interpretation of this data. The purpose of this Data Quality Summary Report (DQSR) is to describe: (1) quality control (QC) procedures followed to ensure data generated by Science Applications International Corporation (SAIC) during investigations at Gabreski Sites 4, 7, and 9 would meet project requirements; (2) the quality of the data collected; and (3) problems encountered during the course of the study and their solutions.

This appendix provides an assessment of the quality of the analytical information gathered during the course of this investigation and documents that the quality of the data employed for interpretation met project objectives. Evaluation of field and laboratory QC measures will constitute the majority of this assessment; however, references will also be directed toward those quality assurance (QA) procedures that establish data credibility. The primary intent of this assessment is to illustrate that data generated for this investigation can withstand scientific scrutiny, are appropriate for their intended purpose, are technically defensible, and are of known and acceptable sensitivity, precision, and accuracy.

Multiple activities were performed to achieve the desired data quality in this project. As discussed in the report text, decisions were made during the initial planning to define the quality and quantity of data required. Data quality objectives (DQOs) were established to guide the implementation of the field sampling and laboratory analysis. A QA program was established to standardize procedures and to document activities. This program provided a means to detect and correct any deficiencies in the process. Upon receipt by the project team, selected data were subjected to a verification and validation review that identified and qualified problems related to the analysis. These review steps contribute to this final DQSR concluding that data used in the investigations met the criteria and are employed appropriately.

C2. Quality Assurance Program

A Remedial Action Work Plan with a Quality Assurance Project Plan (QAPP) was developed for this project to enumerate the quantity and type of samples to be taken to inspect the various sites, and defines the quantity and type of QA/QC samples to be used to evaluate the quality of the data obtained.

The QAPP established requirements for both field and laboratory QC procedures. In general, field QC duplicates were required for each environmental sample matrix collected at a frequency of 10%. Analytical laboratory QC duplicates, matrix spikes (MSs), laboratory control samples (LCSs), and method blanks were required for every 20 samples or less of each matrix and analyte.

A primary goal of the QA program was to ensure that the quality of results for each environmental measurement was appropriate for its intended use. To this end, standardized field procedures were compiled to guide the investigation. Through the process of readiness review, training, equipment calibration, QC implementation, and detailed documentation, the project has successfully accomplished the goals set by the QA program.

C2.1 Quarterly Progress Reports

The SAIC Project Manager completed a Quarterly Progress Report (QPR) for every quarter during project implementation. The QPRs contain the following information: work completed, problems encountered, corrective actions/solutions, summary of findings, and upcoming work.

C2.2 Laboratory "Definitive" Level Data Reporting

SAIC submitted all groundwater samples to a state-approved laboratory for analyses and shall take sufficient quality assurance/quality control (QA/QC) consistent with united States Environmental Protection Agency level III requirements. Chemtech is ELAP certified in accordance with policy A7O 09-03 DoD Environmental Laboratory Accreditation Program (DoD ELAP).

The project identified requirements for laboratory data reporting and identified Chemtech Consulting Group, Mountainside, New Jersey as the laboratory supporting the work. U.S. Environmental Protection Agency (EPA) "definitive" data have been reported, including the following basic information:

- laboratory case narratives,
- sample results,
- laboratory method blank results,
- laboratory control standard (LCS) results,
- laboratory matrix spike (MS) recoveries,
- laboratory duplicate results,
- initial and continuing calibrations,
- surrogate recoveries, and
- sample analysis dates.

This information from the laboratory, along with field information, provides the basis for subsequent data evaluation relative to sensitivity, precision, accuracy, representativeness, and completeness.

C3. Data Validation

The objective when evaluating the quality of the project data is to determine its usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and the project DQOs.

This project implemented the use of data validation checklists to facilitate laboratory data validation. These checklists were completed by the project-designated validation staff and were reviewed by the project laboratory coordinator. Data validation checklists for each laboratory sample delivery group (SDG) are being retained by SAIC with laboratory data deliverables.

C3.1 Field Data Validation

Field data review/validation was completed by the Project Manager or designee. Field-generated documents such as sampling logs, boring logs, daily health and safety summaries, daily safety inspections, equipment calibration and maintenance logs, and sample management logs were peer reviewed. These logs and all associated field information are stored in the project file maintained by SAIC.

C3.2 Laboratory Data Validation

Analytical data generated for this project have been subjected to a process of data verification, validation, and review. The following describes this systematic process and the evaluation activities performed. Several criteria have been established against which the data are compared and from which a judgment is

rendered regarding the acceptance and qualification of the data. Because it is beyond the scope of this report to cite those criteria, the reader is directed to the following documents for specific detail:

- SAIC Data Management Technical Procedure (TP-DM-300-7), *Data Validation*;
- EPA National Functional Guidelines for Organic Data Review, EPA-540/R-99/008, October 1999; and
- EPA National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, October 2004.

Upon receipt of field and analytical data, verification staff performed a systematic examination of the reports, following standardized data package checklists to ensure the content, presentation, and administrative validity of the data. Discrepancies identified during this process were recorded and documented utilizing the checklists.

As part of the data verification, standardized laboratory electronic data deliverables were subjected to review. This technical evaluation ensured that all contract-specified requirements had been met, and that electronic information conformed to hardcopy data. QA program Nonconformance Reports and corrective action systems were implemented, as required.

During the validation phase of the review and evaluation process, data were subjected to a systematic technical review by examining all field and analytical QC results and laboratory documentation, following appropriate guidelines for laboratory data validation. These data validation guidelines define the technical review criteria, methods for evaluation of the criteria, and actions to be taken resulting from the review of these criteria. The primary objective of this phase was to assess and summarize the quality and reliability of the data for the intended use and to document factors that may affect the usability of the data. Data verification/validation included, but was not necessarily limited to, the following parameters:

- data completeness,
- holding times,
- calibration (initial and continuing),
- method blanks,
- sample results verification,
- surrogate recovery,
- LCS analysis,
- MS recovery,
- duplicate analysis comparison,
- reported detection limits, and
- secondary dilutions.

As an end result of this phase of the review, the data were qualified based on the technical assessment of the validation criteria. Qualifiers were applied to each field and analytical result to indicate the usability of the data for its intended purpose.

C3.3 Definition of Data Qualifiers (Flags)

During the data validation process, all laboratory data were assigned appropriate data validation flags and reason codes. Validation flags are defined as follows:

"U" Indicates the analyte was analyzed for, but not detected above, the level of the associated value.

"J" Indicates the analyte was positively identified; however, the associated numerical value is an approximate concentration of the analyte in the sample.

"UJ" Indicates the analyte was analyzed for, but not detected above, the associated value; however, the reported value is an estimate and demonstrates a decreased knowledge of its accuracy or precision.

"R" Indicates the analyte value reported is unusable. The integrity of the analyte's identification, accuracy, precision, or sensitivity has raised significant questions as to the reality of the information presented.

"=" Indicates the analyte has been validated, the analyte has been positively identified, and the associated concentration value is accurate.

SAIC validation reason codes have been provided in Attachment 1, while copies of validation checklists and qualified data forms are on file with the analytical laboratory deliverable.

C3.4 Data Acceptability

A total of 22 groundwater samples, 3 field duplicate samples, 5 field QC trip blanks, 2 QC field blanks, and 3 QC equipment rinsate blank were collected over the course of this investigation. All of the samples were collected between October 14, 2009 and January 25, 2010. Fourteen groundwater samples were analyzed for volatiles, semivolatiles, and metals; five samples were analyzed for anions, dissolved gasses, and volatiles; and the remaining three samples were analyzed for volatiles only.

A total of 3,975 discrete results were obtained, reviewed, and integrated into the assessment. This total includes all groundwater samples, field duplicates, rinsate blanks, field blanks, and trip blanks. This total does not include field measurements. The project produced acceptable results for 99.5% of the groundwater sample analyses performed.

C4. Data Quality Evaluation

C4.1 Analytical Review

Through data verification and validation processes, analytical accuracy, precision, selectivity, and sensitivity have been evaluated. The following summarizes the review of the data.

Volatiles: Analytical holding times were achieved for all samples. Method and trip blanks were free of contamination. Low level detects were observed for 2-butanone, bromoform, and toluene in one equipment rinsate and methylene chloride in one field blank. No qualification of the data was required, however, because these analytes were not detected in the associated project samples. Initial calibration was acceptable for all analyses, however, continuing calibration percent difference (%D) was not acceptable for one or more instances of the following analytes: 1,2-dibromo-3-chloropropane, acetone, bromomethane, dichlorodifluoromethane, bromoform, trichlorofluoromethane, carbon tetrachloride, chloroethane, tetrachloroethene, and vinyl chloride. Because of this, results for one or more of these analytes were qualified as estimated (J/UJ) for samples collected at wells MW-103, MW-105, MW-106R, MW-107C, MW-11, MW-23, MW-24R, SW06,

SW07, and SW10. All surrogate recoveries were acceptable; however, fifteen results for well MW-105 were qualified as estimated (J/UJ) because the internal standard area counts were outside control limits. All other retention times and internal standard area counts were satisfactory. Results for naphthalene and bromomethane were qualified as estimated (J/UJ) because of high relative percent difference (%RPD) and matrix spike recovery above the control limits, respectively. Due to elevated target analyte levels, one or more results are reported from a dilution for samples collected at well SW06 and SW07. Laboratory control sample (LCS) recoveries were acceptable for all analytes. All the information is considered acceptable for use.

Semivolatiles: Samples collected at wells MW-105, MW-106R, MW-107C, MW-11, MW-23, and MW-24R were prepared outside of holding times causing all results to be qualified as estimated (J/UJ). All other preparation and analytical holding times were achieved. Acetophenone was detected in one laboratory preparation blank resulting in the qualification of detects at a similar level in the field blank (FB005) and equipment rinsate (ER007) to be qualified as undetected (U). No other analytes were detected in the method blanks, field blanks, or equipment rinsates. Initial calibration and continuing calibrations were acceptable for all analytes. All surrogate recoveries were acceptable. Results for five polyaromatic hydrocarbon compounds (PAHs) were qualified as unusable (R) for equipment rinsate samples ER007, however, all other retention times and internal standard area counts were satisfactory. Results for 3,3'-dichlorobenzidine for well MW-107C and benzaldehyde for well MW-103 were qualified as unusable (R) because of matrix spike recoveries less than 10%. All other matrix spike recoveries were acceptable. Results for 3,3'-dichlorobenzidine, 3-nitrobenzenamine, 4-chlorobenzenamine, atrazine, carbazole, n-nitrosodiphenylamine for samples collected at wells MW-103 and MW-11 were qualified as unusable (R) due unacceptable LCS recoveries. Additionally, LCS recoveries were outside recommended ranges for results for one or both analytes benzaldehyde, 2-nitrobenzenamine causing one or both analytes to be qualified as estimated (UJ) for wells MW-103, MW-105, MW-106R, MW-107C, MW-11, MW-23, and MW-24R. Except as noted, all the information is considered acceptable for use.

Metals: Analytical holding times were achieved for all samples. Laboratory method blanks were free of contamination. Zinc results for wells MW-105, MW-103, and MW-11 were qualified as undetected (U) because this analyte was observed at a similar level in the associated field blank. Results for aluminum, iron, manganese, and/or zinc from wells MW-103, MW-105, MW-106R, MW-107C, MW-11, MW-23, and MW-24R were qualified as estimated based on detection of the analyte in the associated equipment rinsate sample. Initial and continuing calibrations were acceptable for all analytes. Results for selenium at wells MW-105 and MW-107C and mercury at wells MW-103, MW-105, MW-106R, MW-107C, MW-24R, MW-11and MW-23 were qualified as estimated (J/UJ) because of matrix spike recoveries outside recommended ranges. All other matrix spike recoveries and lab duplicate RPDs were acceptable. LCS recoveries were within recommended ranges. No problems were noted with serial dilutions. All the information is considered acceptable for use.

Table C-1. Number of analytes validated, (by analysis group) [a]

Analysis group	Validated	Rejected	Total	Percent validated	Percent rejected
Volatiles	1121	0	1475	76.0	0
Semivolatiles	1136	14	1136	100	1.2
Dissolved Gasses	0	0	15	0	0
Metals	368	0	368	100	0.0
Anions	0	0	15	0.0	0
Totals	2625	14	3009	87.2	0.5

[a] Counts for results associated with field replicate samples are included in the summary. Counts for trip blanks, field blanks, and equipment rinsates are not included.

Table C-2 summarizes the qualifications applied to groundwater data.

Table C-2. Summary of Qualified Analytes

Analysis Group	Validation Qualifier[a]	Validation Code[b]	Number Qualified	Total Number of Analyses Validated	Percent Qualified[c]
Volatiles	=		33	1121	2.9
Volatiles	J	H04	1	1121	0.1
Volatiles	J		8	1121	0.7
Volatiles	J	K01	3	1121	0.3
Volatiles	U		985	1121	87.9
Volatiles	UJ	C05	78	1121	7.0
Volatiles	UJ	C05,H01	1	1121	0.1
Volatiles	UJ	K01	12	1121	1.1
Semivolatiles	J		4	1136	0.4
Semivolatiles	R	P02,P08	12	1136	1.1
Semivolatiles	R	H03,P02	1	1136	0.1
Semivolatiles	R	H03	1	1136	0.1
Semivolatiles	U		689	1136	60.7
Semivolatiles	UJ	A01,P02	6	1136	0.5
Semivolatiles	UJ	P02	3	1136	0.3
Semivolatiles	UJ	A01	420	1136	37.0
Metals	=		75	368	20.4
Metals	J	F03,F06	9	368	2.4
Metals	J		61	368	16.6
Metals	J	I01	2	368	0.5
Metals	J	F03,F07	8	368	2.2
Metals	U	F02,F07	1	368	0.3
Metals	U	F02,F06	2	368	0.5
Metals	U		202	368	54.9
Metals	UJ	U02	1	368	0.3
Metals	UJ	I02	7	368	1.9
All Analyses	=		108	2625	4.1
All Analyses	J		96	2625	3.7
All Analyses	U		1879	2625	71.6
All Analyses	UJ		528	2625	20.1
All Analyses	R		14	2625	0.5

[a] Defined in Section C3.3.
[b] Defined in Attachment 1, this Appendix.
[c] Percent qualified is based on the total number of analyses validated, not total number reported.

C4.2 Field Precision

Field duplicate samples were collected to ascertain the contribution to variability (i.e., precision) due to the combination of environmental media, sampling consistency, and analytical precision. Field duplicate samples were collected from the same spatial and temporal conditions as the primary environmental sample.

Three field duplicate pairs were collected during these sampling events. Samples collected from wells MW-11 and MW-23 were analyzed for volatiles, semivolatiles, and metals. The duplicate pair collected at SW-09 was analyzed only for volatiles.

Table C-3 provides a summary of the field duplicate comparisons by analyte for the groundwater samples where concentrations were detected. The table presents both absolute difference and RPD evaluations for field duplicate measurements. RPD was calculated only when the average of both samples was more than 5 times the analyte reporting level. When the average of both samples was between the reporting level and 5 times the analyte reporting level, the absolute difference was evaluated. If both samples were not detected for a given analyte, precision was considered acceptable. In order to review information, this data quality assessment implemented general criteria for comparison of absolute difference measurements and RPDs. RPD criteria were identified as <50 being good, 50 to 90 being fair, 90 to 150 being poor, and >150 being unacceptable. Absolute difference criteria were set at 3 times the analyte reporting level.

All duplicate RPD or absolute difference (D) comparisons for the groundwater pairs fell within acceptable ranges. Overall, the field duplicate comparisons for this data set are acceptable.

Table C-3. Field Duplicates Pairs with Detects for Gabreski Groundwater

Well	Sample No.	Anal. Type	Chemical Name	Reg. Result (µg/L)	Dup. Result (µg/L)	RPD % or (D)	Test
MW-11	MW-1106 MW-1106DUP	Metals	Aluminum	116	110	0.03	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Barium	20.7	19.6	0.1	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Cadmium	0.32	0.34	0.02	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Calcium	1270	1230	0.08	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Iron	24.5	200	1.8	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Magnesium	877	868	0.02	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Manganese	51.6	50.2	2.8	RPD
MW-11	MW-1106 MW-1106DUP	Metals	Potassium	453	419	0.07	(D)
MW-11	MW-1106 MW-1106DUP	Metals	Sodium	7100	7020	1.1	RPD
MW-11	MW-1106 MW-1106DUP	Metals	Zinc	23.6	20.4	0.3	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Aluminum	200	14.5	0.9	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Calcium	1820	1890	0.1	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Chromium	1.08	2.78	0.3	(D)

Table C-3. Field Duplicates Pairs with Detects for Gabreski Groundwater (continued)

Well	Sample No.	Anal. Type	Chemical Name	Reg. Result (µg/L)	Dup. Result (µg/L)	RPD % or (D)	Test
MW-23	MW-2305 MW-2305DUP	Metals	Copper	2.58	2.32	0.05	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Iron	21.2	48.4	0.3	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Magnesium	662	685	0.05	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Manganese	14.5	15.1	0.06	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Potassium	414	361	0.1	(D)
MW-23	MW-2305 MW-2305DUP	Metals	Sodium	2680	2750	2.6	RPD
MW-23	MW-2305 MW-2305DUP	Metals	Zinc	7.58	6.64	0.09	(D)
SW-09	SW-0903 SW-0903DUP	Volatiles	(1,1-Dimethylethyl)benzene	2.1	2.4	0.3	(D)
SW-09	SW-0903 SW-0903DUP	Volatiles	(1-Methylpropyl)benzene	11	12	8.7	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	1,2,4-Trimethylbenzene	570	1100	63.5	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	1,3,5-Trimethylbenzene	200	370	59.6	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	1-Methyl-4-(1-methylethyl)benzene	11	11	0.0	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Butylbenzene	14	15	6.9	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Cumene	93	100	7.3	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Cyclohexane	230	420	58.5	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Ethylbenzene	820	1400	52.3	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Methylcyclohexane	200	370	59.6	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Naphthalene	200	390	64.4	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Propylbenzene	96	110	13.6	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Styrene	0.61	0.64	0.03	(D)
SW-09	SW-0903 SW-0903DUP	Volatiles	Toluene	13	14	7.4	RPD
SW-09	SW-0903 SW-0903DUP	Volatiles	Xylene, -o	3.1	3.5	0.4	(D)
SW-09	SW-0903 SW-0903DUP	Volatiles	Xylene, m+p	2800	5100	58.2	RPD

C4.3 Sensitivity

Determination of minimum detectable values allows the investigation to assess the relative confidence that can be placed in a value in relation to the magnitude or level of analyte concentration observed. The closer a measured value comes to the minimum detectable concentration, the less confidence and more

variation the measurement will have. Project sensitivity goals were expressed as reporting level goals in the QAPP. These levels were achieved or exceeded throughout the analytical process.

C4.4 Representativeness and Comparability

Representativeness expresses the degree to which data accurately reflect the analyte or parameter of interest for the environmental site and is the qualitative term most concerned with the proper design of the sampling program. Factors that affect the representativeness of analytical data include proper preservation, holding times, use of standard sampling and analytical methods, and determination of matrix or analyte interferences. No data points were rejected based on extended holding times and only a few re-analyses were qualified as estimated. Sample preservation, analytical methodologies, and sampling methodologies were documented to be adequate and consistently applied.

Comparability, like representativeness, is a qualitative term relative to a project data set as an individual. These investigations employed appropriate sampling methodologies, site surveillance, use of standard sampling devices, uniform training, documentation of sampling, standard analytical protocols/procedures, QC checks with standard control limits, and universally accepted data reporting units to ensure comparability to other data sets. Through the proper implementation and documentation of these standard practices, the project has established the confidence that the data will be comparable to other project and programmatic information.

C4.5 Completeness

Usable data are defined as those data that pass individual scrutiny during the verification and validation process and are accepted for unrestricted application to the human health risk assessment evaluation or equivalent-type applications. Estimated data are considered acceptable for project objectives. Overall, the project produced valid results for 99.5% of the sample analyses performed and successfully collected all of the projected investigation analyses.

C5. Data Quality Assessment Summary

The overall quality of this information for Gabreski Sites 4, 7, and 9 meets or exceeds the established project objectives. Through proper implementation of the project data verification, validation, and assessment process, 99.5% of the project information has been determined to be acceptable for use. Fourteen results for semivolatile compounds have been qualified as unusable because of low matrix spike or LCS recoveries. The remaining data, as presented, have been qualified as usable and estimated when necessary. Data that have been estimated provide indications of accuracy, precision, or sensitivity being less than desired but adequate for interpretation. Therefore, except as noted, data produced for these investigations demonstrates that it can withstand scientific scrutiny, is appropriate for its intended purpose, is technically defensible, and is of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

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ATTACHMENT 1

SAIC Validation Reason Codes

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DATA VALIDATION REASON CODES

ORGANIC, INORGANIC, AND RADIOLOGICAL ANALYTICAL DATA

Holding Times

A01 Extraction holding times were exceeded.
A02 Extraction holding times were grossly exceeded.
A03 Analysis holding times were exceeded.
A04 Analysis holding times were grossly exceeded.
A05 Samples were not preserved properly.
A06 Professional judgment was used to qualify the data.

GC/MS Tuning

B01 Mass calibration was in error, even after applying expanded criteria.
B02 Mass calibration was not performed every 12 hrs.
B03 Mass calibration did not meet ion abundance criteria.
B04 Professional judgment was used to qualify the data.

Initial/Continuing Calibration – Organics

C01 Initial calibration RRF was <0.05.
C02 Initial calibration RSD was >30%.
C03 Initial calibration sequence was not followed as required.
C04 Continuing calibration RRF was <0.05.
C05 Continuing calibration %D was >25%.
C06 Continuing calibration was not performed at the required frequency.
C07 Resolution criteria were not met.
C08 %D criteria were not met.
C09 RSD criteria were not met.
C10 Retention time of compounds was outside windows.
C11 Compounds were not adequately resolved.
C12 Breakdown of endrin or DDT was >20%.
C13 Combined breakdown of endrin/DDT was >30%.
C14 Professional judgment was used to qualify the data.

Initial/Continuing Calibration – Inorganics

D01 ICV or CCV were not performed for every analyte.
D02 ICV recovery was above the upper control limit.
D03 ICV recovery was below the lower control limit.
D04 CCV recovery was above the upper control limit.
D05 CCV recovery was below the lower control limit.
D06 Standard curve was not established with the minimum number of standards.
D07 Instrument was not calibrated daily or each time the instrument was set up.
D08 Correlation coefficient was <0.995.
D09 Mid range cyanide standard was not distilled.
D10 Professional judgment was used to qualify the data.

ICP and Furnace Requirements

E01 Interference check sample recovery was outside the control limit.
E02 Duplicate injections were outside the control limit.
E03 Post-digestion spike recovery was outside the control limit.
E04 MSA was required but not performed.
E05 MSA correlation coefficient was <0.995.
E06 MSA spikes were not at the correct concentration.
E07 Serial dilution criteria were not met.
E08 Professional judgment was used to qualify the data.

Blanks

F01 Sample data were qualified as a result of the method blank.
F02 Sample data were qualified as a result of the field blank.
F03 Sample data were qualified as a result of the equipment rinsate blank.
F04 Sample data were qualified as a result of the trip blank.
F05 Gross contamination exists.
F06 Concentration of the contaminant was detected at a level below the CRQL.
F07 Concentration of the contaminant was detected at a level less than the action limit, but greater than the CRQL.
F08 Concentration of the contaminant was detected at a level that exceeds the action level.
F09 No laboratory blanks were analyzed.
F10 Blank had a negative value >5 times the IDL.
F11 Blanks were not analyzed at required frequency.
F12 Professional judgment was used to qualify the data.

Surrogate Recovery

G01 Surrogate recovery was above the upper control limit.
G02 Surrogate recovery was below the lower control limit.
G03 Surrogate recovery was <10%.
G04 Surrogate recovery was zero.
G05 Surrogate recovery data was not present.
G06 Professional judgment was used to qualify the data.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

H01 MS/MSD recovery was above the upper control limit.
H02 MS/MSD recovery was below the lower control limit.
H03 MD/MSD recovery was <10%.
H04 MS/MSD pairs exceed the RPD limit.
H05 No action was taken on MS/MSD results.
H06 Professional judgment was used to qualify the data.

Matrix Spike

I01 MS recovery was above the upper control limit.
I02 MS recovery was below the lower control limit.
I03 MS recovery was <30%.
I04 No action was taken on MS data.
I05 Professional judgment was used to qualify the data.
I06 MS samples were not analyzed at the required frequency.

Laboratory Duplicate

J01 Duplicate RPD was outside the control limit.
J02 Duplicate sample results were >5 times the CRDL.
J03 Duplicate sample results were <5 times the CRDL.
J04 Professional judgment was used to qualify the data.
J05 Duplicate samples were not analyzed at the required frequency.

Internal Standard Area Summary

K01 Internal standard area counts were outside the control limits.
K02 Extremely low internal standard area counts or performance was exhibited by a major drop off.
K03 Internal standard retention time varied by more than 30 seconds.
K04 Professional judgment was used to qualify the data.

Pesticide Cleanup Checks

L01 10% recovery was obtained during either check.
L02 Recoveries during either check were >120%.
L03 GPC cleanup recoveries were outside the control limits.
L04 Florisil cartridge cleanup recoveries were outside the control limits.
L05 Professional judgment was used to qualify the data.

Target Compound Identification

M01 Incorrect identifications were made.
M02 Qualitative criteria were not met.
M03 Cross contamination occurred.
M04 Confirmatory analysis was not performed.
M05 No results were provided.
M06 Analysis occurred outside 12-hr GC/MS window.
M07 Professional judgment was used to qualify the data.
M08 The %D between the two pesticide/PCB column checks was >25%.

Compound Quantitation and Reported CRQLs

N01 Quantitation limits were affected by large off-scale peaks.
N02 MDLs reported by the laboratory exceeded corresponding CRQLs.
N03 Professional judgment used to qualify the data.

Tentatively Identified Compounds (TICs)

O01 Compound was suspected laboratory contaminant and was not detected in the blank.
O02 TIC result was not above 10 times the level found in the blank.
O03 Professional judgment was used to qualify analytical data.

Laboratory Control Samples (LCSs)

P01 LCS recovery was above upper control limit.
P02 LCS recovery was below lower control limit.
P03 LCS recovery was <50%.
P04 No action was taken on the LCS data.
P05 LCS was not analyzed at required frequency.
P08 Professional judgment was used to qualify the data.

Field Duplicate

Q01 Field duplicate RPDs were >30% for aqueous samples; >50% for solid samples.
Q03 Duplicate sample results were >5 times the CRDL.
Q04 Duplicate sample results were <5 times the CRDL.