Panther Technologies, Inc.

TECHNICAL MEMORANDUM

To: **Doug Ronk, P.G. – Arrowhead Contracting, Inc.**
CC: **Peter J. Palko, P.E., CHMM - Panther**

From: **Kevin D. Dyson, P.E.**
Date: **June 17, 2010**
Re: **Results of ISCO Pilot Testing Activities and Full-Scale ISCO Treatment Area Workplan Modifications**

The purpose of this Technical Memorandum is to summarize the results of the recently completed In-Situ Chemical Oxidation (ISCO) pilot study at the Lawrence Aviation, Inc. (LAI) Superfund Site in Port Jefferson, New York. As a component of the Technical Specifications dated July 2009 within Solicitation Number RFP-3380-234-001-CN, **Panther Technologies, Inc.** (**Panther**) completed injections of a nominal 1.5% potassium permanganate solution into ISCO-IW-05 to evaluate the accuracy of dosing parameters during scale-up from the laboratory Treatability Study (TS) to Pilot scale injections for use in scaling up to full-scale injections.

BACKGROUND

The Site (EPA ID #NYD002041531) encompasses approximately 126 acres and consists of the LAI Facility and the LAI Outlying Parcels. The Long Island Railroad and Sheep Pasture Road form the northern border of the Site, to the east are various residential single family houses, to the west are additional single family houses and a Garden Waste Disposal Facility, and to the south is a wooded area beyond which is a residential area with single family houses. The Village of Port Jefferson and Port Jefferson Harbor, an embayment of Long Island Sound, lie approximately one mile to the north. The northeastern and eastern portions of the property are referred to as the Outlying Parcels. These areas are mostly wooded areas and include a few small residential single family houses and three access roads.

The LAI Facility, approximately 42 acres in size, is a former active manufacturer of titanium sheeting for the aeronautics industry. The LAI Facility consists of ten buildings located on the southwestern portion of the property. An abandoned, unlined earthen lagoon which formerly received liquid wastes lies west of the buildings and a former drum crushing area is situated south of the buildings.

Chlorinated volatile organic compounds (CVOCs) in groundwater within the known primary source area are encountered at a maximum concentration of approximately 1,100 ug/l total CVOCs in MPW-07. Of this 1,100 ug/l, the primary contaminant of concern (COC) is trichloroethene (TCE) with lesser quantities of tetrachloroethene (PCE) and daughter products cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC). CVOCs are encountered at approximately 28.44 feet above mean sea level (ft MSL) (201 feet below ground surface (BGS)) and extend down approximately 20-feet to 8.44 ft MSL (221 ft BGS) where the concentrations are just above the United States Environmental Protection Agency (USEPA) maximum contaminant level (MCL) of 1.0 ug/l for TCE.

During recent well drilling activities, **Panther** installed a series of new monitoring wells designated MW-ISCO-01 to MW-ISCO-05 with 10-foot screen intervals from approximately 207 – 217-feet bgs.

As shown on Figure 1, these wells have been placed in the core of the known source area (MW-ISCO-04), sidegradient of the source area (MW-ISCO-03 and MW-ISCO-05) and downgradient of the source area (MW-ISCO-01 and MW-ISCO-02). MW-ISCO-04 was installed as a replacement for MPW-07.

The purpose of the Pilot Study (PS) program described herein was to evaluate the scale-up parameters utilized to transition from the TS (reported under separate cover) to a Full Scale Injection Program across the ISCO Treatment Area. As shown on Figure 1, the ISCO Treatment Area is 120-feet x 168-feet from approximately 200 – 220-feet BGS. In addition to the five (5) ISCO monitoring wells installed, thirteen (13) injection wells (designated IW-ISCO-01 to IW-ISCO-13) were installed with stainless steel screens from 200 – 220-feet bgs and Sch. 40 PVC risers from 200-feet to the surface to facilitate remediation of the ISCO Treatment Area.

Prior to and following injection activities, Pre and Post Pilot Monitoring and Injection well sampling was completed in accordance with USEPA Low Flow Sampling Procedures and the approved site Quality Assurance Project Plan (QAPP). The samples were analyzed for the following parameters to determine not only influence of the injections, but also the effects of injections on the COCs:

- VOCs by USEPA SOM 01.2 methods;
- TAL Metals by ILM 05.4;
- Total Organic Carbon by SM5310B;
- Total Suspended Solids by SM2540D;
- Total Dissolved Solids by SM2540C;
- Chlorides and Sulfates by MCAWW Method 300.0; and
- Alkalinity by Method SM2320B.

At the time of preparation of this memo, the results have been submitted for data validation and as soon as the data validation report is received, that report will be submitted as an addendum to this Technical Memorandum. Finally, field monitoring for typical parameters such as pH, temp, dissolved oxygen (DO), oxidation-reduction potential (ORP) and depth to water measurements were also collected throughout the injection program within nearby wells to determine real-time injection influence.

FIELD ACTIVITIES

Following installation and development of the ISCO Monitoring Wells (MW-ISCO-01 to MW-ISCO-05) and ISCO Injection Wells (IW-ISCO-01 to IW-ISCO-13), four (4) wells were purged and sampled in accordance with the above described procedures as part of a Pre-Pilot sampling event. These wells included MW-ISCO-01, MW-ISCO-04, IW-ISCO-05 and IW-ISCO-06. Additionally, to ensure the accuracy of the sample analysis, a blind duplicate labeled as IW-ISCO-16 was collected as a duplicate of MW-ISCO-01. Appendix A contains the well purging records and the results of the analyses are summarized on Tables 1 and 2 for the Pre-Pilot sampling event. Blanks for this event are summarized on Table 5 and the full analytical package is included in Appendix B.

Immediately after baseline sampling of the wells was completed, **Panther** mobilized the necessary frac tanks, injection trailer, lined containment area, health and safety equipment along with potassium permanganate that was previously delivered to the site to begin mixing and injections into IW-ISCO-

05. **Panther** also installed downhole dataloggers to log water elevations, temperature and conductivity during injections to aid in evaluation of injection influence into MW-ISCO-4, MW-ISCO-05 and IW-ISCO-06 prior to start of injections to allow for a baseline static water level elevation. Finally, just prior to startup, a baseline round of field parameters was also collected as a comparison to potential geochemical shifts that may be noted during and following injections into IW-ISCO-05. The field parameter data was recorded on field logs and is included as Appendix C.

The site was setup to include two (2) batches of a nominal 1.5 – 1.75% potassium permanganate (KMnO4) solution for injection into IW-ISCO-05. Approximately 16,500 gallons of potable water as measured on a cold water totalizer was added to each tank followed by one (1) 2,000 lb supersack of KMnO4. The tanks were aggressively aerated during both mixing and injection activities to maintain a homogeneously mixed solution and prevent incomplete mixing of the KMnO4. A wellhead containing two (2) flowrate and totalizing flowmeters, pressure and vacuum gauges, flow adjusting gate valves and a relief vent was installed onto IW-ISCO-05 and injections commenced following a brief clean water injection test.

A total of 33,580 gallons of KMnO4 solution were injected over the four (4) day injection duration (approximately 2,350 minutes total injections) resulting in an average flowrate of approximately 14-gallons per minute (gpm) into IW-ISCO-05. As shown in Appendix C, daily monitoring of six (6) wells including MW-ISCO-01, MW-ISCO-04, MW-ISCO-05, IW-ISCO-04, IW-ISCO-06 and IW-ISCO-07 was completed by collecting and analyzing water from within the well screen with a calibrated Horiba U-22 multi-parameter water quality meter. Following completion of injections, all systems were rinsed with clean water to inject all residual KMnO4 within the mixing and injection systems prior to breakdown and final decontamination.

Post-Pilot groundwater sampling was conducted on the same four (4) wells sampled as a component of the Pre-Pilot groundwater sampling event including MW-ISCO-01, MW-ISCO-04, IW-ISCO-05 and IW-ISCO-06. All four (4) wells were purged and sampled in accordance with the above described procedures. Additionally, to ensure the accuracy of the sample analysis, a blind duplicate labeled as IW-ISCO-16 was collected as a duplicate of MW-ISCO-04. Appendix D contains the well purging records for the Post-Pilot Testing sampling event and the results of the analyses are summarized on Tables 3 and 4 with blanks summarized on Table 5, and the full analytical package contained in Appendix E.

PILOT TESTING RESULTS AND ANALYSIS COMPARISON

Overall the results of the Pilot Test indicated a successful test of oxidants and the delivery system on its capability to reduce the COCs in targeted wells in addition to influence downgradient wells as far as MW-ISCO-01, roughly 130-feet downgradient of the injection well. Decreases in COC concentrations, specifically in tricholorethene (TCE) along with hydraulic and geochemical monitoring results are detailed further below:

- Downgradient monitoring well MW-ISCO-01, roughly 130-feet from the PS injection well realized a 90% reduction in TCE, from 240-ug/l to 23-ug/l. Additionally, MW-ISCO-01 also noted nominal increases in potassium and manganese (both components of KMnO4) and increases in measured oxidation-reduction potentials (ORPs). All of these factors indicate that

MW-ISCO-01 was directly influenced by the injection testing, while only limited increases in TAL metals were observed including a slight increase in chromium from 1.6-ug/l to 8.1-ug/l.

- Downgradient monitoring location IW-ISCO-06, roughly 30-feet from the injection well, also noted significant influence during injections. Concentrations of TCE decreased from 270-ug/l to 28-ug/l, or a 90% decrease from Pre to Post-Pilot analysis. Additionally, IW-ISCO-06 was directly influenced by the injections indicated by the deep purple color within the well in addition to residual permanganate concentrations as measured on the colorimeter of up to 200 mg/l. Additionally, increases of potassium were noted in the TAL metal analysis, while IW-ISCO-06 also noted significant increases in ORP. Finally, additional TAL metal increases were noted including increases in chromium and thallium to 146-ug/l and 212-ug/l, respectively. These results appear anomalous, however, when compared to TAL metal data from other wells, including the source injection well IW-ISCO-05 which did not exhibit the TAL metal increases that IW-ISCO-06 noted. Finally, these increases were significantly less than those noted during previous Treatability Testing completed by CDM during the permanganate feasibility testing indicating that any incremental rise in metals concentrations may sorb quickly to site soils during transport.

- Sidegradient monitoring well MW-ISCO-04 noted lower decreases in TCE concentrations with Pre to Post Pilot results indicating a lower 23% reduction, but it did note some similar increases to other wells under the influence of the injections. Increases in potassium, ORP and residual permanganate concentrations were all noted, however, residual chromium concentrations were also noted in the Pre-Pilot testing indicating that residual chromium is already present within the groundwater matrix. The lower reduction is likely due to groundwater velocities moving downgradient are higher than cross gradient and the PS tested was limited in duration.

- Monitoring of the source injection well (IW-ISCO-05) noted significant shifts in geochemical conditions, as expected. Increases in both potassium and manganese were noted along with increases in ORP and residual potassium permanganate. TCE concentrations decreased approximately 90% from 1,000-ug/l to 100-ug/l and with a longer duration of monitoring, would have like decreased further based on the residual potassium permanganate within the well. Finally, TAL metals noted increases in chromium from non-detect (50-ug/l MDL) to 53-ug/l while no increases above the MDL were noted in other metals such as thallium, selenium, etc.

- The final component of monitoring at the site included hydraulic measurements via downhole dataloggers in MW-ISCO-04, MW-ISCO-05 and IW-ISCO-06. As shown on the logging charts within Appendix F, hydraulic influence was noted as far as 30-feet from the injection well (MW-ISCO-04, MW-ISCO-05 and IW-ISCO-06) even with the relatively high groundwater flow velocities and short test duration.

Quality Assurance Review

At the time of drafting this Technical Memo, third party validation of the analytical results was ongoing. The final validation report will be submitted as an addendum to this Memo following receipt of the results.

Deviations from the Pilot Study Workplan

The only deviation from the approved Pilot Study Workplan (PSWP) was injection of potassium permanganate at a slightly higher flow rate than those proposed since field conditions and well capabilities deemed higher flowrates achievable. The PWSP proposed approximately 10 – 12 gpm, while the actual average injection rate was approximately 14-gpm. The slight increase in injection flowrates did not have any impact on the implementation of the Pilot Testing program.

FULL SCALE ISCO TREATMENT AREA INJECTIONS

Based on the extensive data collection and positive indicators and geochemical results from Pilot Testing, **Panther** recommends proceeding to full-scale with limited changes to the injection program. All dosing quantities as specified in the Pilot Study Workplan have been scaled up for the full-scale injection program and are discussed further below. A general outline of the full-scale injection program including Baseline groundwater monitoring, ISCO Treatment Area injections, Field and Laboratory Monitoring and Pre-Final/Final groundwater sampling are discussed further below.

Baseline Groundwater Monitoring

Prior to implementation of the full-scale injections, groundwater samples from MW-ISCO-01, MW-ISCO-02, MW-ISCO-03, MW-ISCO-04 and MW-ISCO-05 (Compliance Network) will be low-flow purged and collected in accordance with the project QAPP. Purging will continue at the low flow rate (200 – 500 ml/min) to maintain less than 0.3-foot drawdown until three consecutive readings have stabilized for the following parameters:

- +/- 0.1 pH;
- +/- 3% for specific conductance;
- +/- 10 mV for redox potential; and
- +/- 10% for dissolved oxygen.

Following stabilization of the purge water, the groundwater will be sampled for the full-scale "Baseline" analysis within the wells described above for parameters including:

- TAL VOC – SOM 01.2;
- TAL Metals – ILM5.4;
- Chloride – 325.1/352.2;
- Sulfates – 375.4;
- Total Dissolved Solids – 160.1;
- Total Suspended Solids – 160.2;
- Alkalinity- 310.2; and
- TOC – 415.1/415.2.

Full-Scale Potassium Permanganate Injections – ISCO Treatment Area

In support of full-scale injections within the ISCO Treatment Area, **Panther** will mobilize a high flow injection trailer equipped with magnetic drive pumps and/or larger double diaphragm chemically resistant positive displacement pumps, 21,000-gallon stainless steel frac tanks and secondary containment, off-road forklifts, piping and miscellaneous valves, fittings, meters, generators, air compressors, etc. to facilitate installation of the batching and injection system. Consistent with injections during the pilot study, specialized 2-inch diameter wellheads will be installed on IW-ISCO-01 to IW-ISCO-10 to facilitate injections that are connected to the injection pumps via clear PVC braided hose rated for >100-psi. The injection trailer will be connected to the frac tanks also via clear PVC braided hose rated for >100 psi. Because of significant downgradient migration of potassium permanganate during Pilot Testing activities with influence noted in MW-ISCO-01 from injections at IW-ISCO-05, injections along the western boundary (IW-ISCO-11 – IW-ISCO-13) will not occur initially. ISCO monitoring wells will be monitored daily during injection to evaluate for water level increases, changes in geochemical conditions and field parameters similar to the procedures used during Pilot Testing to determine influence from upgradient wells during source area injections.

Following setup of the mixing and injection systems, supersack quantities of potassium permanganate (KMnO4) that have already been delivered to the site will be used for mixing of the injectant solution. A nominal 1.5% potassium permanganate solution will be mixed within the frac tanks and injected into ten (10) ISCO injection wells at approximately 8 - 10-gallons per minute (GPM) per well. During mixing, the 2,000 lb supersacks of permanganate will be loaded into stainless steel frac tanks containing approximately 16,000 gallons of potable water to mix batches of 1.5%. All frac tanks utilized onsite will have bottom mounted stainless steel screens to facilitate aeration of the permanganate during mixing and also potentially be setup for recirculation of liquids to facilitate additional mixing. This aggressive aeration and mixing will provide for complete mixing without solids settling in the base of the tanks.

During mixing activities, the nominal 1.5% injection solution will be mixed by adding one (1) 2,000 lb supersack of KMnO4 to approximately 16,000 gallons of water within the frac tank. A total of twenty-one (21) tanks will be mixed for injection of the design quantity of approximately 42,000 lbs of KMnO4 for a total injection of approximately 336,000 gallons of 1.5% KMnO4 into injection wells IW-ISCO-1 to IW-ISCO-10. This is the equivalent of injecting 33,600 gallons per well during the full-scale injection program, nearly identical to the scaled up Pilot Testing volume injected into IW-ISCO-05 recently completed. At a rate of 8 - 10 GPM per well, a total of up to 10-days are anticipated to be necessary to complete the injections.

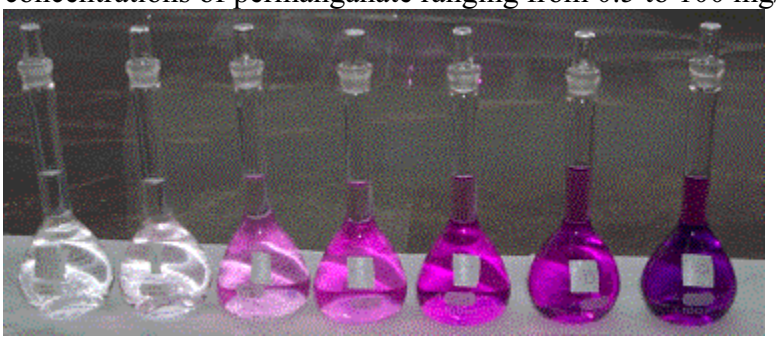
Full-Scale Injection Monitoring

In order to evaluate the effectiveness of the full scale injections, select groundwater monitoring wells will be used to monitor depth-to-water, field parameters and/or groundwater quality prior to, during and after the planned injections. Monitoring wells MW-ISCO-01 - MW-ISCO-05 along with injection wells not initially planned for use during injections (IW-ISCO-11 - IW-ISCO-13) will be used to monitor the groundwater quality within the treatment area. These wells and the parameters to be monitored are identified on Table 6.

Field Parameter Monitoring

The purpose of field parameter monitoring is to allow for real time data collection regarding injection influence and oxidant migration through the subsurface. As an example, conductivity, oxidation-reduction potential (ORP) and colorimetric changes are excellent field parameters that can be analyzed in real time to evaluate the injection influences. The real time evaluation of field parameters will allow tracking and distribution of oxidants within the treatment areas during injection activities.

Additionally, these parameters can be used to track the downgradient effects of injections to allow for control without impacting the future operation of groundwater treatment system. During injection activities, downgradient monitoring and injection wells will be monitored for field parameters to determine the downgradient influence occurs as a result of oxidant injections within the source area. This effective distance will be used to gauge and prevent any potential impacts to EW-01 and EW-02. Along with pH, conductivity and ORP, colorimetric evaluations will be conducted at each monitoring location by collection of groundwater with a clean bailer and observing colorimetric changes from clear to purple and measuring onsite with a handheld HACH DR890 colorimeter. The advantage of permanganate is that its readily discernible pink to purple color in a dissolved solution allow for visual observation of very low concentrations of permanganate in groundwater. The following photograph demonstrates varying concentrations of permanganate ranging from 0.5 to 100 mg/l:



The field parameters to be monitored at each location are further detailed on Table 6.

Post Injection Analytical (Pre-Final) Testing of Monitoring Wells

Approximately one month following implementation of the full-scale injections, groundwater samples from MW-ISCO-01 – MW-ISCO-05 will be low-flow purged and collected in accordance with the project QAPP. Purging will continue at the low flow rate (200 – 500 ml/min) to maintain less than 0.3-foot drawdown until three consecutive readings have stabilized for the following parameters:

- +/- 0.1 pH;
- +/- 3% for specific conductance;
- +/- 10 mV for redox potential; and
- +/- 10% for dissolved oxygen.

Following stabilization of the purge water, the groundwater will be sampled for the "Pre-Final" analysis within the wells described above for parameters including:

- TAL VOC – SOM 01.2;
- TAL Metals – ILM5.4;
- Chloride – 325.1/352.2;

- Sulfates – 375.4;
- Total Dissolved Solids – 160.1;
- Total Suspended Solids – 160.2;
- Alkalinity- 310.2; and
- TOC – 415.1/415.2.

All samples will be collected, analyzed and validated in accordance with the approved site QAPP. In the event that residual permanganate is present in monitoring wells following purging, samples for TAL metals will be quenched with ascorbic acid, similar to quenching within the TS and PS, to prevent interferences from the presence of residual permanganate on the TAL metals analysis method.

This data will be used to evaluate the effectiveness of the injections in treating the five (5) source area ISCO monitoring wells. The data collected from the Pre-Final sampling event will be averaged to confirm that concentrations of TCE in groundwater samples do not exceed the treatment goal of 100-ug/l by more than 50 percent. Finally, approximately 6-months following completion of injections, the "Final" Post Injection groundwater sampling event will be completed. Although this event has no treatment goals or concentration targets associated with the data results, it is expected that even further reductions may be realized by then due to continued ongoing treatment by permanganate that is not fully consumed by the Pre-Final sampling round.

Modifications to the Approved Workplan

This section summarizes the modifications from the approved January 2010 "Final Workplan for Remedial Activities" at the Lawrence Aviation Superfund Site. The approved workplan proposed injection of up to 565,000 gallons of potassium permanganate (KMnO4) into thirteen (13) injection wells within the ISCO Treatment Area. The following modifications are proposed for the full-scale injection program based upon the results of the Treatability Study and the Pilot Study discussed above:

1. Due to downgradient influence on TCE concentrations within MW-ISCO-01 from injections into IW-ISCO-05, **Panther** will not initially inject into IW-ISCO-11, IW-ISCO-12 or IW-ISCO-13 as the injections within the courtyard area will likely influence the TCE concentrations in MW-ISCO-01 and MW-ISCO-02. Additionally, not injecting into these wells provides an additional level of safety to prevent impacts on recently installed extraction wells EW-01 and EW-02 following startup from oxidant migration and geochemical shifts in the subsurface.

2. Following determination of the dosages necessary to accomplish project objectives in the TS and PS programs, as well as being protective of downgradient groundwater conditions near EW-1 and EW-2, the volume of oxidant solution has been reduced to approximately 336,000 gallons of a nominal 1.5% KMnO4 solution that will be injected into a minimum of ten (10) targeted ISCO Treatment Area wells versus the thirteen (13) originally anticipated.

If anyone has questions regarding the full-scale treatment of the ISCO Treatment Area, please feel free to contact Kevin Dyson at your earliest convenience at 609.714.2420 or by cell phone at 609.472.1276. Upon receipt of approval of this Technical Memo, **Panther** will immediately mobilize for full scale injections in the ISCO Treatment Area, currently scheduled to commence on June 28, 2010.

TABLES

Table 1. Summary of Pre-Pilot Testing Groundwater Analytical Results. Lawrence Aviation Superfund Site. Port Jefferson, New York.

Panther Sample ID:			ISCO-MW-01		ISCO-MW-01DL		ISCO-MW-04		ISCO-MW-04DL		ISCO-IW-05		ISCO-IW-05DL		ISCO-IW-06		ISCO-IW-06DL	
Lab Sample ID:			828422		828422D1		828421		828421D1		828425		828425D1		828426		828426D1	
Date Sampled:			4/28/2010		4/28/2010		4/28/2010		4/28/2010		4/28/2010		4/28/2010		4/28/2010		4/28/2010	
TCL VOCs SOM01.2	CAS Number	Units																
Acetone	67-64-1	ug/l	*19*	B	*27*	DJB	19	U	230	U	34	U	380	U	11	U	130	U
Benzene	71-43-2	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Bromochloromethane	74-97-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Bromodichloromethane	75-27-4	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Bromoform	75-25-2	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Bromomethane	74-83-9	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
2-Butanone (MEK)	78-93-3	ug/l	*0.52*	JB	71	U	19	U	230	U	34	U	380	U	11	U	130	U
Carbon disulfide	75-15-0	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Carbon tetrachloride	56-23-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Chlorobenzene	108-90-7	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Chloroethane	75-00-3	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Chloroform	67-66-3	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Chloromethane	74-87-3	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Cyclohexane	110-82-7	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2-dichlorobenzene	95-50-1	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,3-dichlorobenzene	541-73-1	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,4-dichlorobenzene	106-46-7	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Dibromochloromethane	124-48-1	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Dichlorodifluoromethane	75-71-8	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2-Dibromoethane	106-93-4	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,1-Dichloroethane	75-34-3	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2-Dichloroethane	107-06-2	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,1-Dichloroethene	75-35-4	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
cis-1,2-Dichloroethene	156-59-2	ug/l	*1.3*		7.1	U	*1.0*	J	23	U	*2.1*	J	38	U	*1.1*		13	U
trans-1,2-Dichloroethene	156-60-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2-Dichloropropane	78-87-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Ethylbenzene	100-41-4	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
2-Hexanone	591-78-6	ug/l	6.0	U	71	U	19	U	230	U	34	U	380	U	11	U	130	U
Isopropylbenzene	98-82-8	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	6	U	71	U	19	U	230	U	34	U	380	U	11	U	130	U
Methyl Acetate	79-20-9	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Methylene chloride	75-09-2	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Methylcyclohexane	108-87-2	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	0.38	J	7.1	U	1.9	U	23	U	3.4	U	38	U	*0.63*	J	13	U
Styrene	100-42-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Tetrachloroethene	127-18-4	ug/l	*1.9*		7.1	U	*3.0*		23	U	*6.0*		38	U	*1.8*		13	U
Toluene	108-88-3	ug/l	*0.29*	J	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,1,1-Trichloroethane	71-55-6	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,1,2-Trichloroethane	79-00-5	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Trichloroethene	79-01-6	ug/l	*240*	E	*240*	D	*490*	E	*530*	D	*980*	E	*1000*	D	*240*	E	*270*	D
Trichlorofluoromethane	75-69-4	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Vinyl chloride	75-01-4	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
o-Xylene	95-47-6	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
m&p-Xylene	179601-23-1	ug/l	0.60	U	7.1	U	1.9	U	23	U	3.4	U	38	U	1.1	U	13	U
Total TIC, Volatile	Not Available	ug/l	*12.6*	NJXB	*40*	JXBD	*10*	JXB	*120*	JXBD	*18*	JXB	*220*	JXBD	*5.8*	JXB	*70*	JXBD

Notes

Italics and grey shading indicates compounded detected above MDL.

1 - IW-ISCO-16 is a blind duplicate of ISCO-MW-01

Qualifiers

J - Estimated Value

X - a non-target constituent that represented a compound that is related to the DMC formulation.

B - Analyte detected in associated method blank.

U - Not detected at method detection limit.

N - Indicates presumptive evidence of compound.

Panther Sample ID:			ISCO-IW-16[1]		ISCO-IW-16DL[1]	
Lab Sample ID:			828427		828427D1	
Date Sampled:			4/28/2010		4/28/2010	
TCL VOCs SOM01.2	CAS Number	Units				
Acetone	67-64-1	ug/l	12	U	140	U
Benzene	71-43-2	ug/l	1.2	U	14	U
Bromochloromethane	74-97-5	ug/l	1.2	U	14	U
Bromodichloromethane	75-27-4	ug/l	1.2	U	14	U
Bromoform	75-25-2	ug/l	1.2	U	14	U
Bromomethane	74-83-9	ug/l	1.2	U	14	U
2-Butanone (MEK)	78-93-3	ug/l	12	U	140	U
Carbon disulfide	75-15-0	ug/l	1.2	U	14	U
Carbon tetrachloride	56-23-5	ug/l	1.2	U	14	U
Chlorobenzene	108-90-7	ug/l	1.2	U	14	U
Chloroethane	75-00-3	ug/l	1.2	U	14	U
Chloroform	67-66-3	ug/l	1.2	U	14	U
Chloromethane	74-87-3	ug/l	1.2	U	14	U
Cyclohexane	110-82-7	ug/l	1.2	U	14	U
1,2-dichlorobenzene	95-50-1	ug/l	1.2	U	14	U
1,3-dichlorobenzene	541-73-1	ug/l	1.2	U	14	U
1,4-dichlorobenzene	106-46-7	ug/l	1.2	U	14	U
Dibromochloromethane	124-48-1	ug/l	1.2	U	14	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1.2	U	14	U
Dichlorodifluoromethane	75-71-8	ug/l	1.2	U	14	U
1,2-Dibromoethane	106-93-4	ug/l	1.2	U	14	U
1,1-Dichloroethane	75-34-3	ug/l	1.2	U	14	U
1,2-Dichloroethane	107-06-2	ug/l	1.2	U	14	U
1,1-Dichloroethene	75-35-4	ug/l	1.2	U	14	U
cis-1,2-Dichloroethene	156-59-2	ug/l	*1.2*		14	U
trans-1,2-Dichloroethene	156-60-5	ug/l	1.2	U	14	U
1,2-Dichloropropane	78-87-5	ug/l	1.2	U	14	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1.2	U	14	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1.2	U	14	U
Ethylbenzene	100-41-4	ug/l	1.2	U	14	U
2-Hexanone	591-78-6	ug/l	12	U	140	U
Isopropylbenzene	98-82-8	ug/l	1.2	U	14	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	12	U	140	U
Methyl Acetate	79-20-9	ug/l	1.2	U	14	U
Methylene chloride	75-09-2	ug/l	1.2	U	14	U
Methylcyclohexane	108-87-2	ug/l	1.2	U	14	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	*0.65*	J	14	U
Styrene	100-42-5	ug/l	1.2	U	14	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1.2	U	14	U
Tetrachloroethene	127-18-4	ug/l	*2.1*		14	U
Toluene	108-88-3	ug/l	1.2	U	14	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	1.2	U	14	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1.2	U	14	U
1,1,1-Trichloroethane	71-55-6	ug/l	1.2	U	14	U
1,1,2-Trichloroethane	79-00-5	ug/l	1.2	U	14	U
Trichloroethene	79-01-6	ug/l	*280*	E	*280*	D
Trichlorofluoromethane	75-69-4	ug/l	1.2	U	14	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	1.2	U	14	U
Vinyl chloride	75-01-4	ug/l	1.2	U	14	U
o-Xylene	95-47-6	ug/l	1.2	U	14	U
m&p-Xylene	179601-23-1	ug/l	1.2	U	14	U
Total TIC, Volatile	Not Available	ug/l	*6.5*	JXB	*78*	JXBD

Notes
Italics and grey shading indicates compounded detected above MDL.
1 - IW-ISCO-16 is a blind duplicate of ISCO-MW-01

Qualifiers
J - Estimated Value
X - a non-target constituent that represented a compound that is related to the DMC formulation.
B - Analyte detected in associated method blank.
U - Not detected at method detection limit.
N - Indicates presumptive evidence of compound.

Table 2. Summary of Pre Pilot TAL Metals and Geochemical Analysis. Lawrence Aviation Superfund Site. Port Jefferson, New York.

Panther Sample ID:			ISCO-MW-01		ISCO-MW-04		ISCO-IW-05		ISCO-IW-06		ISCO-IW-16[1]		FB100428	
Lab Sample ID:			828422		828421		828425		828426		828427		828423	
Date Sampled:			4/28/2010		4/28/2010		4/28/2010		4/28/2010		4/28/2010		4/28/2010	
TAL Metals ILM05.4	CAS Number	Units												
Silver	7440-22-4	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Antimony	7440-36-0	ug/l	60	U	60	U	60	U	60	U	60	U	60	U
Aluminum	7429-90-5	ug/l	1930		13500		14300		9390		9580		200	U
Arsenic	7440-38-2	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Barium	7440-39-3	ug/l	51.3	J	48.2	J	18	J	30.6	J	38.3	J	200	U
Beryllium	7440-41-7	ug/l	0.70	J	2.6	J	2.2	J	2	J	2.0	J	5	U
Calcium	7440-70-2	ug/l	16500		18100		9100		17900		18300		5000	U
Cadmium	7440-43-9	ug/l	0.90	J	1.5	J	0.91	J	5	U	5	U	5.0	U
Cobalt	7440-48-4	ug/l	6.8	J	1.8	J	50	U	50	U	50	U	50.0	U
Chromium	7440-47-3	ug/l	1.6	J	19.9		44.8		36.6		38.0		10	U
Copper	7440-50-8	ug/l	7.8	J	25	U	25	U	25	U	25	U	25	U
Iron	7439-89-6	ug/l	705		26.7	J	100	U	33.5	J	17.0	J	100	U
Magnesium	7439-95-4	ug/l	7580		8170		4270	J	8430		8620		5000	U
Mercury	7439-97-6	ug/l	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.2	U
Manganese	7439-96-5	ug/l	256		855		803		80.3		82.1		15	U
Sodium	7440-23-5	ug/l	37300		24900		28900		33500		34600		5000	U
Nickel	7440-02-0	ug/l	118		329		226		114	J	119		40	U
Lead	7439-92-1	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Potassium	7440-09-7	ug/l	11400		12100		41200		22300		22900		5000	U
Selenium	7782-49-2	ug/l	35	U	35	U	35	U	35	U	35	U	35	U
Thallium	7440-28-0	ug/l	25	U	25	U	25	U	25	U	25	U	25	U
Vanadium	7440-62-2	ug/l	50	U	50	U	2.8	J	50	U	50	U	50	U
Zinc	7440-66-6	ug/l	59	J	54	J	37.2	J	39	J	38.4	J	60	U
Total Organic Carbon - SM5310B	NA	mg/l	10		1.0	U	1.1		1	U	1	U	NA	
Total Suspended Solids - SM2540D	NA	mg/l	11		5	U	5	U	5	U	27		NA	
Total Dissolved Solids - SM2540C	NA	mg/l	220		250		240		250		250		NA	
Chloride - MCAWW Method 300.0	NA	mg/l	26		32		14		29		29		NA	
Sulfate - MCAWW Method 300.0	NA	mg/l	38		36		23		39		39		NA	
Alkalinity - SM2320B	NA	mg/l	50		28		64		51		50		NA	

Qualifiers
J - Estimated Value
U - Not detected at method detection limit.
NA - Not Analyzed
1 - ISCO-IW-16 is blind duplicate of ISCO-IW-06

Table 3. Summary of Post-Pilot Testing Groundwater Analytical Results. Lawrence Aviation Superfund Site. Port Jefferson, New York.

Panther Sample ID:			ISCO-MW-01		ISCO-MW-01DL		ISCO-MW-04		ISCO-MW-04DL		ISCO-IW-05		ISCO-IW-05DL		ISCO-IW-06		ISCO-IW-06DL	
Lab Sample ID:			830640		830640D1		830641		830641D1		830642		830642D1		830643		830643D1	
Date Sampled:			5/17/2010		5/17/2010		5/17/2010		5/17/2010		5/20/2010		5/20/2010		5/20/2010		5/20/2010	
TCL VOCs SOM01.2	CAS Number	Units																
Acetone	67-64-1	ug/l	*6.4*	B	*7.3*	DJB	*5.3*	JB	*51*	DJB	*370*	EB	*290*	DB	24	B	21	DB
Benzene	71-43-2	ug/l	0.50	U	1.0	U	1.2	U	15	U	*0.037*	J	4.6	U	0.50	U	1.0	U
Bromochloromethane	74-97-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Bromodichloromethane	75-27-4	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Bromoform	75-25-2	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Bromomethane	74-83-9	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
2-Butanone (MEK)	78-93-3	ug/l	5.0	U	10	U	12	U	150	U	*7.8*		*8.9*	DJ	*0.80*	J	10	U
Carbon disulfide	75-15-0	ug/l	0.50	U	*0.12*	DJB	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Carbon tetrachloride	56-23-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	*0.048*		4.6	U	*0.039*	J	1.0	U
Chlorobenzene	108-90-7	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Chloroethane	75-00-3	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Chloroform	67-66-3	ug/l	0.50	U	1.0	U	1.2	U	15	U	*0.29*	J	4.6	U	*0.28*	J	1.0	U
Chloromethane	74-87-3	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Cyclohexane	110-82-7	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,2-dichlorobenzene	95-50-1	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,3-dichlorobenzene	541-73-1	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,4-dichlorobenzene	106-46-7	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Dibromochloromethane	124-48-1	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Dichlorodifluoromethane	75-71-8	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,2-Dibromoethane	106-93-4	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,1-Dichloroethane	75-34-3	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,2-Dichloroethane	107-06-2	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,1-Dichloroethene	75-35-4	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
cis-1,2-Dichloroethene	156-59-2	ug/l	0.30	J	*0.29*	DJ	*2.7*		*3.1*	DJ	0.15	J	4.6	U	0.50		1.0	U
trans-1,2-Dichloroethene	156-60-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,2-Dichloropropane	78-87-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Ethylbenzene	100-41-4	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
2-Hexanone	591-78-6	ug/l	5.0	U	10	U	12	U	150	U	*1.2*	JB	*5.4*	DJB	5	U	10	U
Isopropylbenzene	98-82-8	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	5.0	U	10	U	12	U	150	U	5.0	U	46	U	5	U	10	U
Methyl Acetate	79-20-9	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Methylene chloride	75-09-2	ug/l	*0.060*	JB	*0.15*	DJ	*0.22*	JB	*3.0*	DJB	0.50	U	*0.79*	DJB	*0.077*	JB	*0.17*	DJB
Methylcyclohexane	108-87-2	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	*1.3*		1.0	U	*0.69*	J	15	U	*0.60*		*0.50*	DJB	*0.83*	J	*0.61*	DJ
Styrene	100-42-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Tetrachloroethene	127-18-4	ug/l	*0.18*	J	*0.19*	DJ	*2.7*		*3.0*	DJ	*2.2*		*2.4*	DJ	*1.9*		*1.8*	D
Toluene	108-88-3	ug/l	*0.15*	J	*0.15*	DJ	1.2	U	15	U	*0.092*	J	4.6	U	*0.10*	J	*0.10*	DJ
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,1,1-Trichloroethane	71-55-6	ug/l	0.50	U	1.0	U	1.2	U	15	U	*0.12*	J	4.6	U	*0.069*	J	*0.062*	DJ
1,1,2-Trichloroethane	79-00-5	ug/l	0.50	U	1.0	U	1.2	U	15	U	*0.085*	J	4.6	U	0.50	U	1.0	U
Trichloroethene	79-01-6	ug/l	*23*	E	*23*	D	*390*	E	*410*	D	*110*	E	*120*	D	*31*	E	*28*	D
Trichlorofluoromethane	75-69-4	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
Vinyl chloride	75-01-4	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
o-Xylene	95-47-6	ug/l	0.50	U	1.0	U	1.2	U	15	U	0.50	U	4.6	U	0.50	U	1.0	U
m&p-Xylene	179601-23-1	ug/l	*0.069*	J	*0.079*	DJ	1.2	U	15	U	*0.042*	J	4.6	U	*0.042*	J	1.0	U
Total TIC, Volatile	Not Available	ug/l	*3.1*	JXB	*6.2*	JXBD	*7.0*	JXB	*94*	JXBD	*3.64*	NJXB	*29*	JXBD	*3.0*	JXB	*6.3*	JXBD

Notes

Italics and grey shading indicates compounded detected above MDL.

1 - ISCO-IW-16 is a blind duplicate of ISCO-MW-04.

Qualifiers

J - Estimated Value

X - a non-target constituent that represented a compound that is related to the DMC formulation.

B - Analyte detected in associated method blank.

U - Not detected at method detection limit.

N - Indicates presumptive evidence of compound.

Panther Sample ID:			ISCO-IW-16[1]		ISCO-IW-16DL[1]	
Lab Sample ID:			830644		830644D1	
Date Sampled:			5/17/2010		5/17/2010	
TCL VOCs SOM01.2	CAS Number	Units				
Acetone	67-64-1	ug/l	*3.0*	JB	5.2	DJB
Benzene	71-43-2	ug/l	0.50	U	1.5	U
Bromochloromethane	74-97-5	ug/l	0.50	U	1.5	U
Bromodichloromethane	75-27-4	ug/l	0.50	U	1.5	U
Bromoform	75-25-2	ug/l	0.50	U	1.5	U
Bromomethane	74-83-9	ug/l	0.50	U	1.5	U
2-Butanone (MEK)	78-93-3	ug/l	5	U	15	U
Carbon disulfide	75-15-0	ug/l	*0.082*	JB	1.5	U
Carbon tetrachloride	56-23-5	ug/l	0.50	U	1.5	U
Chlorobenzene	108-90-7	ug/l	0.50	U	1.5	U
Chloroethane	75-00-3	ug/l	0.50	U	1.5	U
Chloroform	67-66-3	ug/l	0.50	U	1.5	U
Chloromethane	74-87-3	ug/l	0.50	U	1.5	U
Cyclohexane	110-82-7	ug/l	0.50	U	1.5	U
1,2-dichlorobenzene	95-50-1	ug/l	0.50	U	1.5	U
1,3-dichlorobenzene	541-73-1	ug/l	0.50	U	1.5	U
1,4-dichlorobenzene	106-46-7	ug/l	0.50	U	1.5	U
Dibromochloromethane	124-48-1	ug/l	0.50	U	1.5	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	0.50	U	1.5	U
Dichlorodifluoromethane	75-71-8	ug/l	0.50	U	1.5	U
1,2-Dibromoethane	106-93-4	ug/l	0.50	U	1.5	U
1,1-Dichloroethane	75-34-3	ug/l	0.50	U	1.5	U
1,2-Dichloroethane	107-06-2	ug/l	0.50	U	1.5	U
1,1-Dichloroethene	75-35-4	ug/l	0.50	U	1.5	U
cis-1,2-Dichloroethene	156-59-2	ug/l	*2.8*		*2.7*	D
trans-1,2-Dichloroethene	156-60-5	ug/l	0.50	U	1.5	U
1,2-Dichloropropane	78-87-5	ug/l	0.50	U	1.5	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.50	U	1.5	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.50	U	1.5	U
Ethylbenzene	100-41-4	ug/l	0.50	U	1.5	U
2-Hexanone	591-78-6	ug/l	5.0	U	15	U
Isopropylbenzene	98-82-8	ug/l	0.50	U	1.5	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	5.0	U	15	U
Methyl Acetate	79-20-9	ug/l	0.50	U	1.5	U
Methylene chloride	75-09-2	ug/l	0.50	U	*0.19*	DJB
Methylcyclohexane	108-87-2	ug/l	0.50	U	1.5	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	*0.71*		*0.61*	DJ
Styrene	100-42-5	ug/l	0.50	U	1.5	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.50	U	1.5	U
Tetrachloroethene	127-18-4	ug/l	*2.7*		*2.7*	D
Toluene	108-88-3	ug/l	0.50	U	1.5	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.50	U	1.5	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	*0.035*	JB	1.5	U
1,1,1-Trichloroethane	71-55-6	ug/l	*0.055*	J	1.5	U
1,1,2-Trichloroethane	79-00-5	ug/l	*0.089*	J	1.5	U
Trichloroethene	79-01-6	ug/l	*340*	E	*390*	DE
Trichlorofluoromethane	75-69-4	ug/l	0.50	U	1.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	0.50	U	1.5	U
Vinyl chloride	75-01-4	ug/l	0.50	U	1.5	U
o-Xylene	95-47-6	ug/l	0.50	U	1.5	U
m&p-Xylene	179601-23-1	ug/l	0.50	U	1.5	U
Total TIC, Volatile	Not Available	ug/l	*3*	JXB	*8.7*	JXBD

Notes
Italics and grey shading indicates compounded detected above MDL.
1 - ISCO-IW-16 is a blind duplicate of ISCO-MW-04.

Qualifiers
J - Estimated Value
X - a non-target constituent that represented a compound that is related to the DMC formulation.
B - Analyte detected in associated method blank.
U - Not detected at method detection limit.
N - Indicates presumptive evidence of compound.

Table 4. Summary of Post Pilot TAL Metals and Geochemical Analysis. Lawrence Aviation Superfund Site. Port Jefferson, New York.

Panther Sample ID:			ISCO-MW-01		ISCO-MW-04		ISCO-IW-05		ISCO-IW-06		ISCO-IW-16[(1)]		FB100520	
Lab Sample ID:			830640		830641		830642		830643		830644		830645	
Date Sampled:			5/17/2010		5/17/2010		5/20/2010		5/20/2010		5/17/2010		5/20/2010	
TAL Metals ILM05.4	CAS Number	Units												
Silver	7440-22-4	ug/l	10	U	10	U	10	U	3.4	J	10	U	10	U
Antimony	7440-36-0	ug/l	60	U	60	U	60	U	60	U	60	U	60	U
Aluminum	7429-90-5	ug/l	1040		14000		760		6190		13900		200	U
Arsenic	7440-38-2	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Barium	7440-39-3	ug/l	42..2	J	82.0	J	200	U	77.1	J	80.5	J	200	U
Beryllium	7440-41-7	ug/l	0.44	J	2.3	J	5.0	U	1.2	J	2.3	J	5.0	U
Calcium	7440-70-2	ug/l	15500		18700		18700		32400		18500		5000	U
Cadmium	7440-43-9	ug/l	5	U	0.78	J	5.0	U	1.6	J	0.72	J	5.0	U
Cobalt	7440-48-4	ug/l	50	U	50	U	50.0	U	50	U	1.0	J	50.0	U
Chromium	7440-47-3	ug/l	8.1	J	21.3		53		146		21.4		10.0	U
Copper	7440-50-8	ug/l	25	U	25	U	25	U	25	U	25	U	25.0	U
Iron	7439-89-6	ug/l	120		174		100	U	58.1	J	168		100	U
Magnesium	7439-95-4	ug/l	7270		8850		5930		14100		8690		5000	U
Mercury	7439-97-6	ug/l	0.20	U	0.20	U	0.20	U	0.49		0.20	U	0.20	U
Manganese	7439-96-5	ug/l	21.4		597		48800		15.0	U	619		4.4	J
Sodium	7440-23-5	ug/l	27600		24800		19400		43300		24500		5000	U
Nickel	7440-02-0	ug/l	32	J	241		2.4	J	176		239		40	U
Lead	7439-92-1	ug/l	4.1	J	6.3	J	4.9	J	21.6		5.5	J	10	U
Potassium	7440-09-7	ug/l	12600		13000		179000		76300		13100		5000	U
Selenium	7782-49-2	ug/l	35	U	35	U	6.0	J	116		35	U	35	U
Thallium	7440-28-0	ug/l	25	U	25	U	25	U	212		25	U	25	U
Vanadium	7440-62-2	ug/l	50	U	50	U	7.3	J	6.1	J	50	U	50	U
Zinc	7440-66-6	ug/l	20.1	J	39.1	J	14.0	J	42.7	J	38.6	J	60	U
Total Organic Carbon - SM5310B	NA	mg/l	5.3		3.5		8.8		3.5		2.2		NA	
Total Suspended Solids - SM2540D	NA	mg/l	5	U	5	U	6.5		5		5	U	NA	
Total Dissolved Solids - SM2540C	NA	mg/l	190		270		580		640		260		NA	
Chloride - MCAWW Method 300.0	NA	mg/l	35		32		12		24		32		NA	
Sulfate - MCAWW Method 300.0	NA	mg/l	25		31		15		32		30		NA	
Alkalinity - SM2320B	NA	mg/l	27		21		220		54		27		NA	

Qualifiers
J - Estimated Value
U - Not detected at method detection limit.
NA - Not Analyzed
1 - ISCO-IW-16 is a blind duplicate
of ISCO-MW-04

Table 5. Summary of Field Pilot Testing Laboratory Blank Analysis. Port Jefferson, New York.

Panther Sample ID:			FB100428		Trip Blank 0428		Trip Blank 0429		VBLKJC		VBLKJD		VBLKJE		VHBLK01		VIBLKJH	
Lab Sample ID:			828423		828428		828424		VBLKJC		VBLKJD		VBLKJE		VHBLK01		VIBLKJH	
Date Sampled:			4/28/2010		4/28/2010		4/29/2010		4/30/2010		5/1/2010		5/3/2010		5/3/2010		5/1/2010	
TCL VOCs SOM01.2	CAS Number	Units																
Acetone	67-64-1	ug/l	5.0	U	5.0	U	5.0	U	*3.2*	J	*2.8*	J	*2.2*	J	5.0	U	5.0	U
Benzene	71-43-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	74-97-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	75-27-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	75-25-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	74-83-9	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Butanone (MEK)	78-93-3	ug/l	5.0	U	5.0	U	5.0	U	*1.6*	J	*1.3*	J	*1.1*	J	5.0	U	5.0	U
Carbon disulfide	75-15-0	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	56-23-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	108-90-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	75-00-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	67-66-3	ug/l	0.25	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	74-87-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	110-82-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-dichlorobenzene	95-50-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-dichlorobenzene	541-73-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-dichlorobenzene	106-46-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	124-48-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	75-71-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromoethane	106-93-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	75-34-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	107-06-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	75-35-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	156-59-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	156-60-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	78-87-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	100-41-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Hexanone	591-78-6	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Isopropylbenzene	98-82-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Methyl Acetate	79-20-9	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	75-09-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylcyclohexane	108-87-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	100-42-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	127-18-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	108-88-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	71-55-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	79-00-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	79-01-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	75-69-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	75-01-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	95-47-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m&p-Xylene	179601-23-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Total TIC, Volatile	Not Available	ug/l	*2.8*	JXB	*2.8*	JXB	*2.8*	JXB	*2.8*	JX	*2.7*	JX	*2.8*	JX	*2.8*	JXB	*2.7*	JXB

Notes
VHBLK01 is a storage blank all others are method or equipment blanks except trip blanks.
Italics and grey shading indicates compounded detected above MDL.

Qualifiers
J - Estimated Value
X - a non-target constituent that represented a compound that is related to the DMC formulation.
B - Analyte detected in associated method blank.
U - Not detected at method detection limit.
N - Indicates presumptive evidence of compound.

Panther Sample ID:			VIBLKJI		VIBLKJJ		FB100520		Trip Blank		VBLKJV		VBLKJW		VBLKJA		VHBLK01	
Lab Sample ID:			VIBLKJI		VIBLKJJ		830645		830646		VIBLKMZ		VBLKJW		VBLKJA		VHBLK01	
Date Sampled:			5/1/2010		5/1/2010		5/20/2010		5/20/2010		5/25/2010		5/25/2010		5/27/2010		5/27/2010	
TCL VOCs SOM01.2	CAS Number	Units																
Acetone	67-64-1	ug/l	*1.2*	JB	5.0	U	*1.7*	JB	*1.8*	JB	*2.5*	J	*1.5*	J	*4.2*	J	*2.4*	JB
Benzene	71-43-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	74-97-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	75-27-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	75-25-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	74-83-9	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Butanone (MEK)	78-93-3	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	*1.1*	J	0.62	JB
Carbon disulfide	75-15-0	ug/l	0.5	U	0.5	U	*0.092*	JB	*0.7*	JB	*0.10*	J	*0.068*	J	0.5	U	0.5	U
Carbon tetrachloride	56-23-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	108-90-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	75-00-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	67-66-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	74-87-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	110-82-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-dichlorobenzene	95-50-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-dichlorobenzene	541-73-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-dichlorobenzene	106-46-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	*0.038*	J	0.5	U	0.5	U	0.5	U
Dibromochloromethane	124-48-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	75-71-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromoethane	106-93-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	75-34-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	107-06-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	75-35-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	156-59-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	156-60-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	78-87-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	100-41-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Hexanone	591-78-6	ug/l	5.0	U	5.0	U	*1.0*	JB	5.0	U	*1.5*	J	*1.1*	J	*1.2*	J	5.0	U
Isopropylbenzene	98-82-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Methyl Acetate	79-20-9	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	*0.16*	J	0.5	U	0.5	U	0.5	U
Methylene chloride	75-09-2	ug/l	0.5	U	0.5	U	*0.15*	JB	*0.11*	JB	*0.15*	J	*0.073*	J	0.5	U	0.5	U
Methylcyclohexane	108-87-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	100-42-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	127-18-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	108-88-3	ug/l	0.5	U	0.5	U	0.17	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.5	U	0.5	U	*0.053*	JB	0.5	U	*0.11*	J	0.075	J	0.5	U	0.5	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	0.5	U	0.5	U	*0.063*	JB	*0.044*	JB	*0.13*	J	0.06	J	*0.21*	J	0.5	U
1,1,1-Trichloroethane	71-55-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	79-00-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	79-01-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	J	0.5	U
Trichlorofluoromethane	75-69-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	75-01-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	95-47-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m&p-Xylene	179601-23-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Total TIC, Volatile	Not Available	ug/l	*5.0*	NJXB	*2.7*	JXB	*2.8*	JXB	*3.1*	JXB	*3.1*	JX	*3.1*	JX	*3.2*	JX	*2.9*	JXB

Notes
VHBLK01 is a storage blank all others are method or equipment blanks except trip blanks.
Italics and grey shading indicates compounded detected above MDL.

Qualifiers
J - Estimated Value
X - a non-target constituent that represented a compound that is related to the DMC formulation.
B - Analyte detected in associated method blank.
U - Not detected at method detection limit.
N - Indicates presumptive evidence of compound.

Table 5. Summary of Field Pilot Testing Laboratory Blank Analysis. Port Jefferson, New York.

Panther Sample ID:			VIBLKJX		VIBLKJY		VIBLKJZ	
Lab Sample ID:			VIBLKJX		VIBLKJY		VIBLKJZ	
Date Sampled:			5/25/2010		5/25/2010		5/25/2010	
TCL VOCs SOM01.2	CAS Number	Units						
Acetone	67-64-1	ug/l	*2.6*	JB	*1.9*	JB	*37*	B
Benzene	71-43-2	ug/l	0.5	U	0.5	U	0.5	U
Bromochloromethane	74-97-5	ug/l	0.5	U	0.5	U	0.5	U
Bromodichloromethane	75-27-4	ug/l	0.5	U	0.5	U	0.5	U
Bromoform	75-25-2	ug/l	0.5	U	0.5	U	0.5	U
Bromomethane	74-83-9	ug/l	0.5	U	0.5	U	0.5	U
2-Butanone (MEK)	78-93-3	ug/l	5.0	U	5.0	U	*1.0*	J
Carbon disulfide	75-15-0	ug/l	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	56-23-5	ug/l	0.5	U	0.5	U	0.5	U
Chlorobenzene	108-90-7	ug/l	0.5	U	0.5	U	0.5	U
Chloroethane	75-00-3	ug/l	0.5	U	0.5	U	0.5	U
Chloroform	67-66-3	ug/l	0.5	U	0.5	U	0.5	U
Chloromethane	74-87-3	ug/l	0.5	U	0.5	U	0.5	U
Cyclohexane	110-82-7	ug/l	0.5	U	0.5	U	0.5	U
1,2-dichlorobenzene	95-50-1	ug/l	0.5	U	0.5	U	0.5	U
1,3-dichlorobenzene	541-73-1	ug/l	0.5	U	0.5	U	0.5	U
1,4-dichlorobenzene	106-46-7	ug/l	0.5	U	0.5	U	0.5	U
Dibromochloromethane	124-48-1	ug/l	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	75-71-8	ug/l	0.5	U	0.5	U	0.5	U
1,2-Dibromoethane	106-93-4	ug/l	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	75-34-3	ug/l	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	107-06-2	ug/l	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	75-35-4	ug/l	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	156-59-2	ug/l	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	156-60-5	ug/l	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	78-87-5	ug/l	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.5	U	0.5	U	0.5	U
Ethylbenzene	100-41-4	ug/l	0.5	U	0.5	U	0.5	U
2-Hexanone	591-78-6	ug/l	*0.33*	JB	5.0	U	5.0	U
Isopropylbenzene	98-82-8	ug/l	0.5	U	0.5	U	0.5	U
4-Methyl-2-pentanone(MIBK)	108-10-1	ug/l	5.0	U	5.0	U	5.0	U
Methyl Acetate	79-20-9	ug/l	0.5	U	0.5	U	0.5	U
Methylene chloride	75-09-2	ug/l	*0.060*	JB	*0.10*	JB	*0.067*	JB
Methylcyclohexane	108-87-2	ug/l	0.5	U	0.5	U	0.5	U
Methyl Tert-Butyl Ether	1634-04-4	ug/l	0.5	U	0.5	U	0.5	U
Styrene	100-42-5	ug/l	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.5	U	0.5	U	0.5	U
Tetrachloroethene	127-18-4	ug/l	0.5	U	0.5	U	0.5	U
Toluene	108-88-3	ug/l	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	71-55-6	ug/l	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	79-00-5	ug/l	0.5	U	0.5	U	0.5	U
Trichloroethene	79-01-6	ug/l	*0.31*	J	*0.17*	J	*0.16*	J
Trichlorofluoromethane	75-69-4	ug/l	0.5	U	0.5	U	0.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ug/l	0.5	U	0.5	U	0.5	U
Vinyl chloride	75-01-4	ug/l	0.5	U	0.5	U	0.5	U
o-Xylene	95-47-6	ug/l	0.5	U	0.5	U	0.5	U
m&p-Xylene	179601-23-1	ug/l	0.5	U	0.5	U	0.5	U
Total TIC, Volatile	Not Available	ug/l	*3.2*	JX	*3.0*	JXB	*3.0*	JXB

Notes
VHBLK01 is a storage blank all others are method or equipment blanks except trip blanks.
Italics and grey shading indicates compounded detected above MDL.

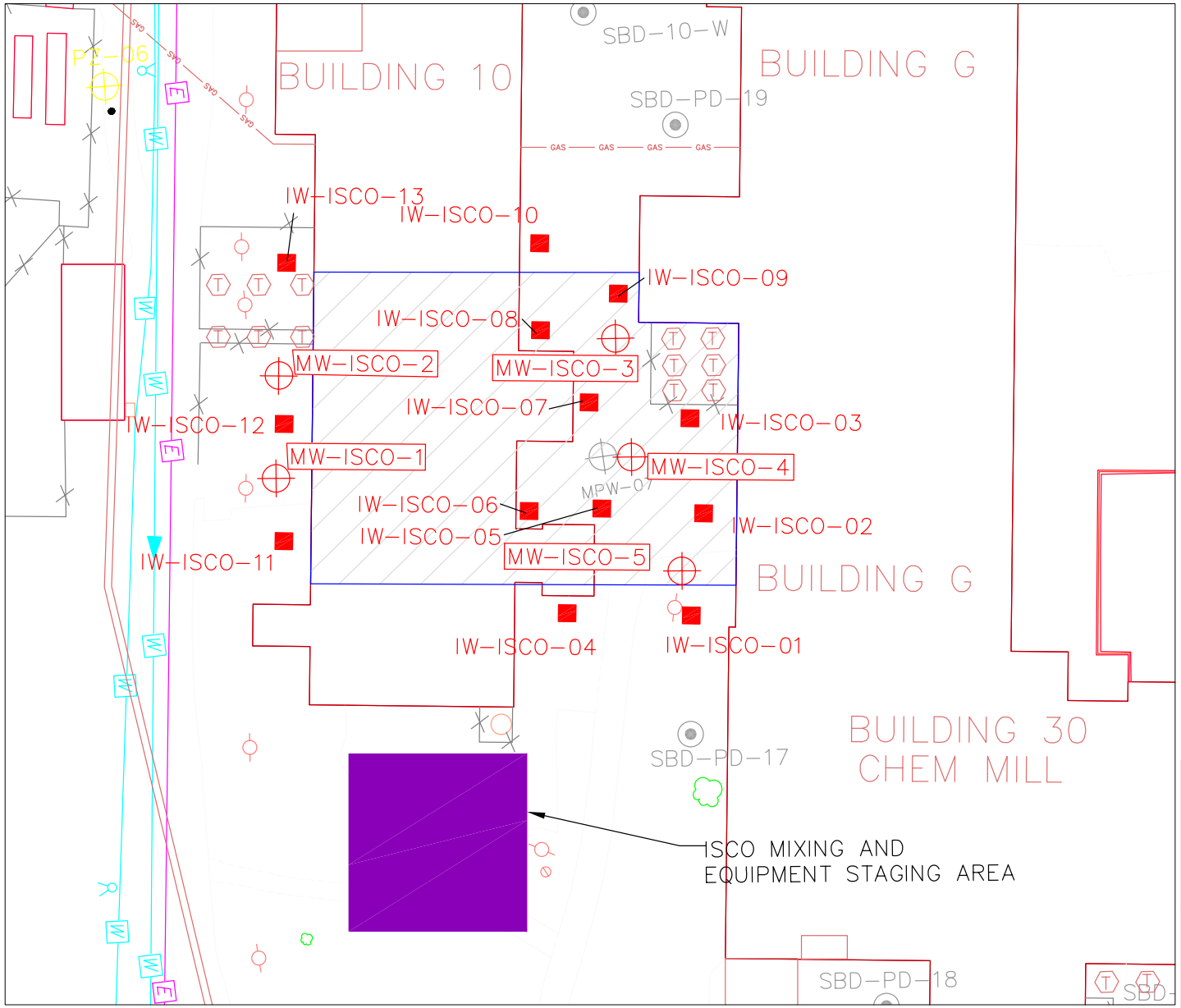
Qualifiers
J - Estimated Value
X - a non-target constituent that represented a compound that is related to the DMC formulation.
B - Analyte detected in associated method blank.
U - Not detected at method detection limit.
N - Indicates presumptive evidence of compound.

Table 6. Summary of ISCO Full-Scale Treatment Area Field and Analytical Monitoring. Lawrence Aviation Superfund Site. Port Jefferson, New York.

	Monitor Well Designation	Approximate Screened Interval (ft BGS)	*Field Parameters During Injections*						*Lab Parameters - Pre, Prefinal and Final*		
			pH	Color	Cond	ORP	Temp	DTW	TAL VOCs	TAL Metals	TOC, TDS, TSS Alkalinity, Sulfates, Chlorides
	Within Treatment Area										
1	MW-ISCO-01	207-217	√	√	√	√	√	√	√	√	√
2	MW-ISCO-02	207-217	√	√	√	√	√	√	√	√	√
3	MW-ISCO-03	206-216	√	√	√	√	√	√	√	√	√
4	MW-ISCO-04	206-216	√	√	√	√	√	√	√	√	√
5	MW-ISCO-05	206-216	√	√	√	√	√	√	√	√	√

Pre - Baseline prior to full-scale injections.
Prefinal - 30 days following injections.
Final - 180 days following injections.

FIGURES



LEGEND

IW-ISCO-05 — APPROXIMATE LOCATION OF INSITU CHEMICAL OXIDATION INJECTION WELLS (13 TOTAL)

MW-ISCO-4 — APPROXIMATE LOCATION OF ISCO MONITORING WELLS (5 TOTAL)

ISCO TREATMENT AREA

40' 0' 40'

Title:

INSITU CHEMICAL OXIDATION CONCEPTUAL SITE PLAN

PORT JEFFERSON, NEW YORK

Prepared For:

ARROWHEAD CONTRACTING, INC.

PANTHER TECHNOLOGIES, INC.	Compiled by: K.D.D.	Date: 04/10	Figure 1
	Prepared by: K.D.D.	Scale: SHOWN	
	Project Mgr: K.D.D.	Revision: FINAL	
	Proj No: J303001	File No:303001008	

APPENDIX A
PRE PILOT TEST WELL PURGING RECORDS
LAWRENCE AVIATION SUPERFUND SITE
PORT JEFFERSON, NEW YORK

Figure 2. Ground Water Sampling Log

Project 241 Site Rust Jeff. NJ Well No. BEC MW01 Date 4/27/10

Well Depth 21.6' Screen Length 10.0' Well Diameter 4" Casing Type 4" ϕ SCH 80

Sampling Device QED MP 50 Tubing type 1/4 min 3/8 Dia. Water Level 0.01' SS WW

Measuring Point TOC Mark Other Infor Poly - DEDICATED

Sampling Personnel J Simpson Page (1) of (2)

DTW

Time	pH	Temp	Cond.	Dis.O_2	Turb.	[ ]Conc			Notes
1500	6.18	14.7	0.321	6.60	19	188'4"			START PID 0 ppm -
1510	6.21	14.9	0.33	6.4	49				At TOC.
1520									
1530	6.17	15.4	0.306	5.12	143				
1540									
1550	6.16	15.3	0.305	4.28	138	188'4"			
1600									
1615	6.03	13.02	0.302	4.0	166	166			
1620	6.07	13.7	0.249	3.96		188'4"			
1630	6.08	13.05	0.249	4.14	154				
1640									Collect Samples

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 3. **Ground Water Sampling Log** (with automatic data logging for most water quality parameters)

Project LAI Site Port Jeff, NY Well No. 1500MW01 Date 4/27/10.
Well Depth 216' Screen Length 10.0' Well Diameter 4" Casing Type 4" ϕ SCH80/0.01" SSWW
Sampling Device GeoMP50 Tubing type 1/4 HDPE 3/8 DISCH Water Level
Measuring Point TOC MARK Other Infor Poly-DEDICATED

Sampling Personnel J. Simpson PAGE (2) OF (2)

Time	Pump Rate	Turbidity	TDS Alkalinity	ORP mV [ ] Conc	Notes
1500	180 ml/MIN.	0.21			
1510	180 "	0.20	87		
1520	—	—	—		
1530		0.20	87		
1540		0.20	90		
1550		0.20	89		
1600					
1615		0.21	90		
1620		—	90		
1630		0.19	91		

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 2. **Ground Water Sampling Log**

Project LAI **Site** Pease AFB, NH **Well No.** ISCO MW04 **Date** 4/27/10

Well Depth 216' **Screen Length** 10.0' **Well Diameter** 4" **Casing Type** Sch 80 PVC / 0.01" ww, SS.

Sampling Device MP-50 **Tubing type** 3/8" Poly (Dedicated) **Water Level** 189.0'

Measuring Point Toc Mark **Other Infor**

Sampling Personnel J Simpson

Time	pH	Temp	Cond.	Dis.O_2	Turb.	[ ]Conc	DTW		Notes
1145	6.09	13.85	0.363	14.31	12.6		189.0		START
1200									PID – 0 ppm @ TOC
1215	5.73	14.38	0.326	6.89	31		188'11"		
1230	5.74	14.78	0.330	6.91	29		"		
1245	5.77	14.91	0.328	6.79	22				
1250	5.78	~~15.35~~ 15.35	0.331	6.92	24		188'10"		
1255	5.77	15.2	0.330	6.91	25		"		
1330	SAMPLED.								

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 3. **Ground Water Sampling Log** (with automatic data logging for most water quality parameters)

Project LAI **Site** Port Jeff, NY **Well No.** MW-04 **Date** 4/27/10.
Well Depth 216' **Screen Length** 10.0' **Well Diameter** 4" **Casing Type** SCH 80 PVC / 0.01" WW SS
Sampling Device MP-50 **Tubing type** 3/8" Poly (DEDICATED) **Water Level** 194.01'
Measuring Point TOC MARK **Other Infor**

Sampling Personnel J. Simpson Page (2) of (2)

Time	Pump Rate	Turbidity (TDS)	Alkalinity (ORP)	[ ] Conc	Notes
1145	185 mL/MIN.	0.20	171		
1215	194 mL/MIN	0.21	196		
1230	190 mL/MIN	0.21	201		
1245	190 "	0.21	206		
1250	195 "	0.21	207		

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 2. Ground Water Sampling Log

Project LAI Site Red Jeff. NM Well No. ISO IW05 Date 4/28/10

Well Depth 221' Screen Length 20' Well Diameter 2" ϕ Casing Type SCH40 PVC

Sampling Device MP-50 Tubing type 3/8" poly (HDPE LINED) Water Level 304 0.02" NW

Measuring Point TOC MARK Other Infor 55

Sampling Personnel J. Simpson

Time	pH	Temp	Cond.	Dis.O_2	Turb.	[ ]Conc	~~[ ]Conc~~ EOP DTW.		Notes
1005							188'6"	"	Start PID=0
1020							"		ppm
1030							188'9	"	
1045	6.03	11.2	0.297	4.4	16	208	"		
1100	6.05	11 34	0.298	4.31	15	205	"		
1115	6.04	11.2	0.297	4.36	14	205	188'9	"	
1130	6.05	11.44	0.298	4.29	12	206	"		
1145	—	Sample	—						

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 3. Ground Water Sampling Log (with automatic data logging for most water quality parameters)

Project LAI Site Port Jeff, NY Well No. ISW 1W05 Date 4/28/10
Well Depth 22' Screen Length 20' Well Diameter 2" ϕ Casing Type SCH 40 PVC
Sampling Device MP-50 Tubing type 3/8" poly (REDICATED) Water Level
Measuring Point TOC MARK Other Infor

Sampling Personnel J. Simpson

TDS

Time	Pump Rate	Turbidity	Alkalinity	[ ] Conc	Notes
1005		0.19			
1020					
1030					
1045	190 ml/min				
1100	"	0.20			
1115	190 ml/min	0.19			
1130	190 "	0.19			

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 2. Ground Water Sampling Log

Project LAI Site Port Jeff NY Well No. 1500 IW-06 Date 4/28/10

Well Depth 221' Screen Length 20' Well Diameter 2" ϕ Casing Type PVC Sch 40

Sampling Device MP50 QED Tubing type 1/4" HR. 3/8" DIS. Water Level 304 SS 0.02"

Measuring Point TOC MARK Other Infor Poly. SCREEN.

Sampling Personnel J. SIMPSON DTW — 188' 9"

ORP DTW Pg. (1) of (2)

Time	pH	Temp	Cond.	Dis.O_2	Turb.	[ ]Conc			Notes
1315							188'9"		PID = 0 PPM @ WELL HEAD.
1340	PUMP	ON -							
1400									
1410	6.04	12.9	0.321	7.95	109	194	"		
1420	6.05	12.4	0.345	7.7	12.5	201	"		
1430	6.04	12.2	0.346	7.79	11.9	211	"		
1440	6.05	12.3	0.346	7.60	12.0	212			
1500									
1515									
1530	6.04	12.3	0.347	7.73	10	214	"		
1532	—	SAMPLE	—						
		COLLECT	BLIND	DUP.					
		ID =	1500 IW-1K			TIME REPORT	1400.		

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 3. Ground Water Sampling Log (with automatic data logging for most water quality parameters)

Project LAI Site Pont Jeff NY Well No. 1510 MW 06 Date 4/28/10

Well Depth 221' Screen Length 20' Well Diameter 2" ϕ Casing Type PVC sch40 / 304 s s 0.02"

Sampling Device QED MP50 Tubing type 1/4" ID x 3/8" OD SCH Water Level _____

Measuring Point TOC MARK Other Infor Poly

Pg. (2) of (2)

Sampling Personnel J. Simpson

Time	Pump Rate	Turbidity / TDS	Alkalinity	[ ] Conc	Notes
/					
/					
/					
1410	190 ml/min	0.21			
1420	"	0.21			
1430	"	0.22			
1440	"	0.21			
1500	"	0.21			
1515		0.22			
1530	"	0.23			

Type of Samples Collected

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$