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August 4, 2011

Mr. Ian Beilby
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Subject: **Field Activities Plan: Waste Management Area Leachate Pipe Investigation, Shutdown Evaluation Monitoring, and Tributary Sampling**
AL Tech Specialty Steel (NYSDEC Site 401003)
MACTEC Engineering and Consulting, P.C., Project Nos. 3612062061/3612062062

Dear Ian:

MACTEC Engineering and Consulting, P.C., (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC) for environmental services at the AL Tech Specialty Steel Site (Site No. 401003) in Colonie, New York is providing this Field Activities Plan (FAP) for the activities associated with the Leachate System Evaluation Monitoring and Tributary Sampling planned at the Waste Management Area (WMA) portion of the Site.

MACTEC will perform this work under Work Assignment Nos. D004444-05 and D004444-06 and the April 2005 Superfund Standby Contract D004444 between MACTEC and the NYSDEC.

BACKGROUND

This FAP was developed to provide the scope of work and describe the tasks for implementing the leachate collection system shut down, shutdown evaluation monitoring, and tributary investigation. This FAP identifies the following work elements:

- leachate collection line investigation, including shallow test pits and piezometers to provide data on the physical setting in the area of the leachate collection pipe;
- pre- and post shut-down evaluation monitoring to track groundwater rebound and/or potential water quality changes related to shutdown of the leachate collection system;
- additional tributary investigation and sampling to further the understanding of water quality along the unnamed tributary at the WMA.

SCOPE OF WORK

Leachate Collection Pipe Investigation

MACTEC's current understanding of surface and subsurface features in the vicinity of the leachate collection line are shown on Figure 1. The following subtasks will be performed to characterize the subsurface conditions in the vicinity of the leachate collection line:

- Shallow hand excavations will be conducted at four or more locations immediately downslope from the landfill cap weep drain to evaluate whether the cap geomembrane extends beyond the weep drain. Based on design drawings, the geomembrane is installed within two feet of the surface slope on the upslope side of the weep drain. MACTEC will use a hand shovel at the locations shown on Figure 1 and visually inspect for the presence/absence of the geomembrane. This information will be used to gain a better understanding of as-built conditions, and further our understanding of the available pathways for surface water infiltration in the vicinity of the leachate collection line.
- Direct-push drilling will be performed to install piezometers at three locations as shown on Figure 1. Piezometer PZ-01 will be positioned near the weep drain but upgradient from the leachate collection pipe to monitor the affect on water table response as a result of plugging the pipe. Piezometer PZ-02 will be located between the weep drain and the rip rap-lined surface swale that transports surface drainage off the landfill and to the tributary. This location will also serve to monitor water table response to plugging the line as well to evaluate localized response to storm events and potential surface water infiltration. A third piezometer (PZ-03) is planned outside of the landfill fence and near the head of the tributary. This location will be determined in the field based on accessibility, with an objective of placing a piezometer adjacent to the rock-filled gabion liner located at the head of the tributary. All piezometer borings will include continuous soil sampling to characterize subsurface conditions. PZ-01 and PZ-02 will be completed using screen sections of 15-feet to allow for water table rebound after discontinuation of leachate collection. PZ-03 will be completed using a 10-foot screen to straddle the water table since less water table rebound is anticipated in this location. The piezometers will be constructed of 1.5-inch diameter polyvinyl chloride (PVC) with 0.010-inch machined slots. They will be completed aboveground using protective steel guard casings with locking caps.
- Test pits will be completed at three or more locations westward from a visible surface leachate line clean-out (see Figure 1) to characterize near surface soil conditions

upslope from the clean-out along the presumed extended path of the leachate collection pipe and near the swale that forms a drainage pathway toward the riprap drainage channel (Figure 1). Test pits will be completed to an approximate depth of 10-feet to visually log soil.

MACTEC envisions the test pits can be accomplished at the same time that landfill cover repair activities are being completed to the drainage channel in this area. These repairs are scoped under a different contract.

Data generated from this activity will aid in the conceptual understanding of the setting of the underlying leachate collection pipe and to help determine if this swale is providing a pathway for the rapid infiltration of surface water runoff to the pipe.

Leachate System Shutdown Evaluation Monitoring

Monitoring will be conducted to assess potential changes to water quality as a result of discontinuation of the collection system. For the purposes of this FAP, the following tasks will constitute the shutdown of the leachate system:

1. A flexible pipe sleeve will be used to seal the length of collection line that extends into Manhole 16 and to transition to a PVC elbow. Solid PVC pipe will be attached to the elbow and extended vertically to an elevation just below the manhole cover. This PVC pipe will serve as a piezometer to measure the elevation head within the pipe and to prevent flow from the pipe to the holding tanks located in the storage building.
2. Once flow at the leachate holding tanks has been observed to cease, the valves at the leachate storage vessels will be closed. Prior to closing these valves, the valves and piping associated with the holding tanks in the storage building will be inspected and their condition documented.

This shutdown approach is reversible; therefore, the collection system may be resumed if chosen.

The Shutdown Evaluation Monitoring will consist of five monitoring events:

Event 1 – Pre Shut-down

Event 2 – Post Shut-down approximately 1 week after system shutdown

Event 3 – Post Shut-down approximately 1 month after system shutdown

Event 4 – Post Shut-down approximately 3 months after system shutdown

Event 5 – Post Shut-down approximately 9 months after system shutdown

Event 6 – Post Shut-down approximately 12 months after system shutdown

- Pre-Shut-down Event. Prior to discontinuing leachate collection, a round of water level measurements will be collected from monitoring wells and water samples will be collected from select wells and surface water monitoring stations to characterize conditions at start of the monitoring program. Water level measurements and sampling locations are listed in Table 1 and shown on Figure 2.

  Proposed sampling locations listed in Table 1 and shown on Figure 2 were chosen because these locations are nearest the leachate collection line and could either be influenced by increased groundwater discharge to the tributary or are in predicted overburden/bedrock flowpaths originating from the southern portion of the landfill and migrating toward the Kromma Kill. Combined, these locations would show water table response to the system shutdown.

  In addition to the newly installed piezometers, a new surface water sampling point (SW-9) will be established at the downstream end of the rock-filled gabion section at the head of the unnamed tributary (see Figure 2). Information from this new location will help to characterize surface water at the head of the stream and will allow for comparison with the downstream locations to help assess changes in indicator metals concentrations with increasing distance from the landfill.

- Post-Shut-Down Events. Five monitoring events are scoped after the shut-down of the line. The first will occur one week after shut-down, the second one will be performed one month after shutdown, with the next three conducted on a quarterly basis from shut-down (3 mos., 6 mos., 9 mos., 12 mos.) Each of these will include a contemporaneous round of water level measurements and water samples as described in the Pre-Shut-Down event above.

- Analytical Program: Groundwater and surface water samples will be analyzed for metals and indicator parameters consistent with the ongoing WMA Long-term Monitoring (LTM) Program. If feasible, a shut-down monitoring event and the next LTM (March 2012) will be scheduled at the same time so that a comprehensive sampling event is conducted during the shut-down evaluation monitoring.

Unnamed Tributary Sampling Investigation

Currently, long-term monitoring at the WMA includes surface water sampling stations in the Kromma Kill and the Unnamed Tributary (tributary) that extends from the southeastern edge of the landfill to the Kromma Kill. From upstream to downstream, there are four stations in the Kromma Kill (SW-1, SW-2, SW-5, SW-7) and the three stations in the tributary (SW-8, SW-3 SW-4). Of the stations in the Kromma Kill, two are upstream of the confluence with the tributary and two are downstream (see Figure 2).

Surface water samples from the three stations in the tributary indicate concentrations of metals higher than those in the Kromma Kill. Consistent with recent historical results, hexavalent chromium was detected in December 2010 in excess of the Class D surface Water Quality

Standards (WQS) at SW-8, SW-3, and SW-4. SW-8 was sampled for the first time during the December event and showed the highest concentration of hexavalent chromium (1.4 J milligrams per liter) detected in surface water from the unnamed tributary to date. Other analytes reported at higher concentrations in tributary samples from December 2010 than samples from the Kromma Kill include chromium, molybdenum, selenium, magnesium, barium, potassium and fluoride. Among these, the highest result is from SW-8 (the location closest to the landfill).

For the purposes of this FAP, indicator parameters at the Site include chromium, hexavalent chromium, molybdenum, fluoride, and sulfate. These compounds have been consistently detected in leachate prior to landfill capping at concentrations notably higher than concentrations detected in the majority of groundwater samples collected at the Site.

In addition to hexavalent chromium, indicator parameters chromium and molybdenum (as well as some additional non-indicator metals) were reported in the three tributary samples at concentrations higher than those collected both upstream and downstream from the Kromma Kill. The results were reported in MACTEC's most recent Site Management Report (MACTEC, 2011). While hexavalent chromium is the sole metal in tributary waters that exceeds Class D WQS, the overall pattern of elevated metals is consistent: with the highest concentrations at upstream sample SW-8 and the lowest concentrations at the furthest downstream sample, SW-4.

In an effort to characterize the source of contamination within the unnamed tributary, additional characterization will be performed as follows:

- Surface water sampling at a new monitoring station (SW-9) at the head of the unnamed tributary (discussed above);
- Sampling locations SW-8, SW-3, SW-4 and SW-5 to provide contemporaneous data from the unnamed tributary and the immediate downstream location within the Kromma Kill,
- Installation of shallow hand-driven driven piezometers at two locations within the tributary (PZ-T1 and PZ-T2) to characterize vertical gradients and, if upward gradients indicate a groundwater contribution to the tributary, provide samples of pore water within the sediment
- A surface walkover survey along the banks bordering the tributary to evaluate whether unconsolidated waste exists that could potentially be contributing to detection of metals in the tributary.

Surface water sampling to be conducted as part of the Tributary Investigation is summarized in Table 2. Note that some of the planned sampling coincides with the shut-down monitoring

described above. The tributary sampling will be performed simultaneously to the Pre-Shut-down sampling so that duplicate field efforts are minimized.

Piezometer PZ-T1 and PZ-T2 locations will be determined in the field based on observations within the stream channel. One likely location is near SW-8 at the confluence of a side gulley that enters from the south. The floor of the tributary ravine varies between alluvium and possible bedrock; therefore, locations will be selected where overburden material is present in sufficient thickness to allow the installation of the piezometers. A second location may be near SW-9 below the rock-filled gabions. The piezometers will consist of a 1/4-inch stainless steel pipe with a three-inch screen that will be pushed by hand methods (e.g. slide hammer) into the bottom sediment of the tributary. An attempt will be made to pair these with existing surface water stations (e.g., SW-8, SW-9) stations to provide for a direct comparison of water quality between pore water and stream water. If sediment is sufficiently thick, piezometers will be installed in a pool with standing water so that a comparison of piezometric head within the points can be made with the stream water surface exterior to the point. The point tips will be pushed to planned depths of two feet into the sediment. The points will be installed and left overnight to equilibrate. Prior to sampling, water levels will be measured inside the piezometer and from the stream outside to establish if there is a measurable vertical gradient. Tubing will be attached to the end of the pore water samplers and water samples will be collected using a Geopump. All surface water and piezometer samples will be analyzed for dissolved TAL metals plus molybdenum, fluoride, sulfate, and hexavalent chromium.

The tributary investigation will also include a thorough walkover of the tributary to log observed areas of debris or surficial fill along the banks to evaluate the presence/absence of landfill-type unconsolidated waste that may be a source of chromium in the tributary. The survey will be conducted by taking detailed notes on the types and relative density of debris that is visible on the slopes above the stream. Photographs will be used to document debris and correlate field notes with observed conditions. A walkover survey along the south bank of the Kromma Kill to the northeast of the landfill will also be performed to assess if additional area(s) of unconsolidated waste are visible in this portion of the site. These areas are identified in Figure 2.

Reporting

MACTEC will present the findings of the Leachate Collection System Evaluation and tributary sampling investigation in letter reports to the NYSDEC. Each letter report will include discussion of the work performed, supporting field documents, tabulated data results, and figures. Data from subsequent shutdown evaluation monitoring events will be transmitted via letters that present the results and discuss observed changes from prior historical data. At the completion of the 12 month post shutdown monitoring event, MACTEC will summarize the findings and provide recommendations for future monitoring.

Schedule

Upon approval of the Scope of Work described in this FAP, subcontractors will be procured and field personnel will mobilize to accomplish the field work. MACTEC anticipates that field work will commence within 30 days of approval.

MACTEC understands that existing funds within Work Assignment Nos. D004444-05 and D004444-06 will be used to accomplish the work.

If you have any questions or concerns, please feel free to call us at 207-775-5401.

Sincerely,
MACTEC Engineering and Consulting, P.C.

Jayme P. Connolly
Project Manager

Bryanna Stiles w/permission by M.J.S.
Mark J. Stelmack
Principal Professional

cc: File

REFERENCES

MACTEC Engineering and Consulting, P.C., 2011. Site Management Report – August-December 2010, Al Tech Specialty Steel WMA, Site 401003. Prepared for the New York State Department of Conservation, Albany, NY. March 2011.

LIST OF ACRONYMS

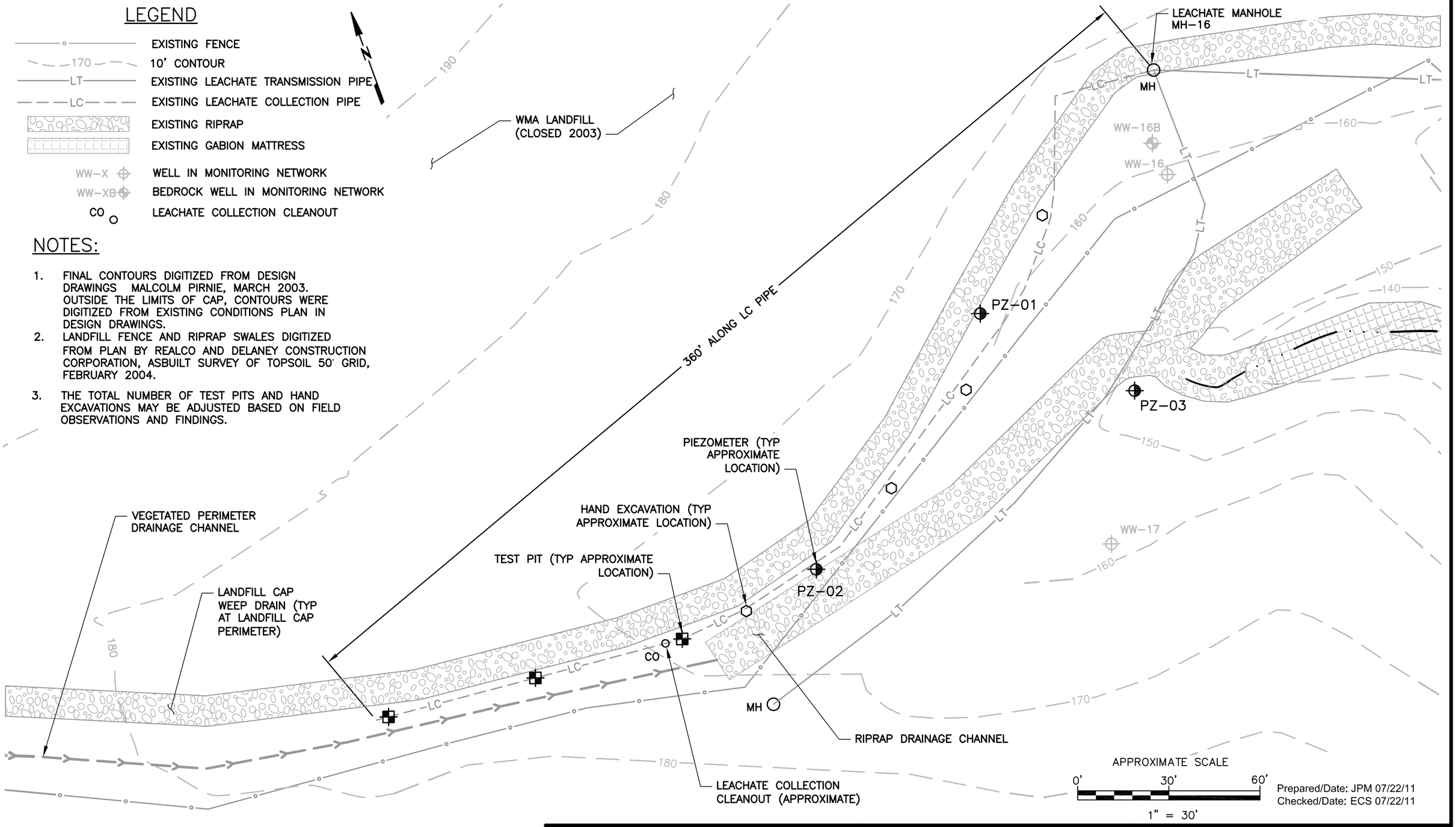
FAP	Field Activities Plan
LTM	Long Term Monitoring
MACTEC	MACTEC Engineering & Consulting, P.C.
NYSDEC	New York State Department of Environmental Conservation
PVC	polyvinyl chloride
tributary	Unnamed Tributary
WMA	Waste Management Area
WQS	Water Quality Standards

LEGEND

- EXISTING FENCE
- 170 — 10' CONTOUR
- LT — EXISTING LEACHATE TRANSMISSION PIPE
- LC — EXISTING LEACHATE COLLECTION PIPE
- EXISTING RIPRAP
- EXISTING GABION MATTRESS
- WW-X — WELL IN MONITORING NETWORK
- WW-XB — BEDROCK WELL IN MONITORING NETWORK
- CO — LEACHATE COLLECTION CLEANOUT

NOTES:

1. FINAL CONTOURS DIGITIZED FROM DESIGN DRAWINGS MALCOLM PIRNIE, MARCH 2003. OUTSIDE THE LIMITS OF CAP, CONTOURS WERE DIGITIZED FROM EXISTING CONDITIONS PLAN IN DESIGN DRAWINGS.
2. LANDFILL FENCE AND RIPRAP SWALES DIGITIZED FROM PLAN BY REALCO AND DELANEY CONSTRUCTION CORPORATION, ASBUILT SURVEY OF TOPSOIL 50' GRID, FEBRUARY 2004.
3. THE TOTAL NUMBER OF TEST PITS AND HAND EXCAVATIONS MAY BE ADJUSTED BASED ON FIELD OBSERVATIONS AND FINDINGS.



APPROXIMATE SCALE
0' 30' 60'
1" = 30'

Prepared/Date: JPM 07/22/11
Checked/Date: ECS 07/22/11

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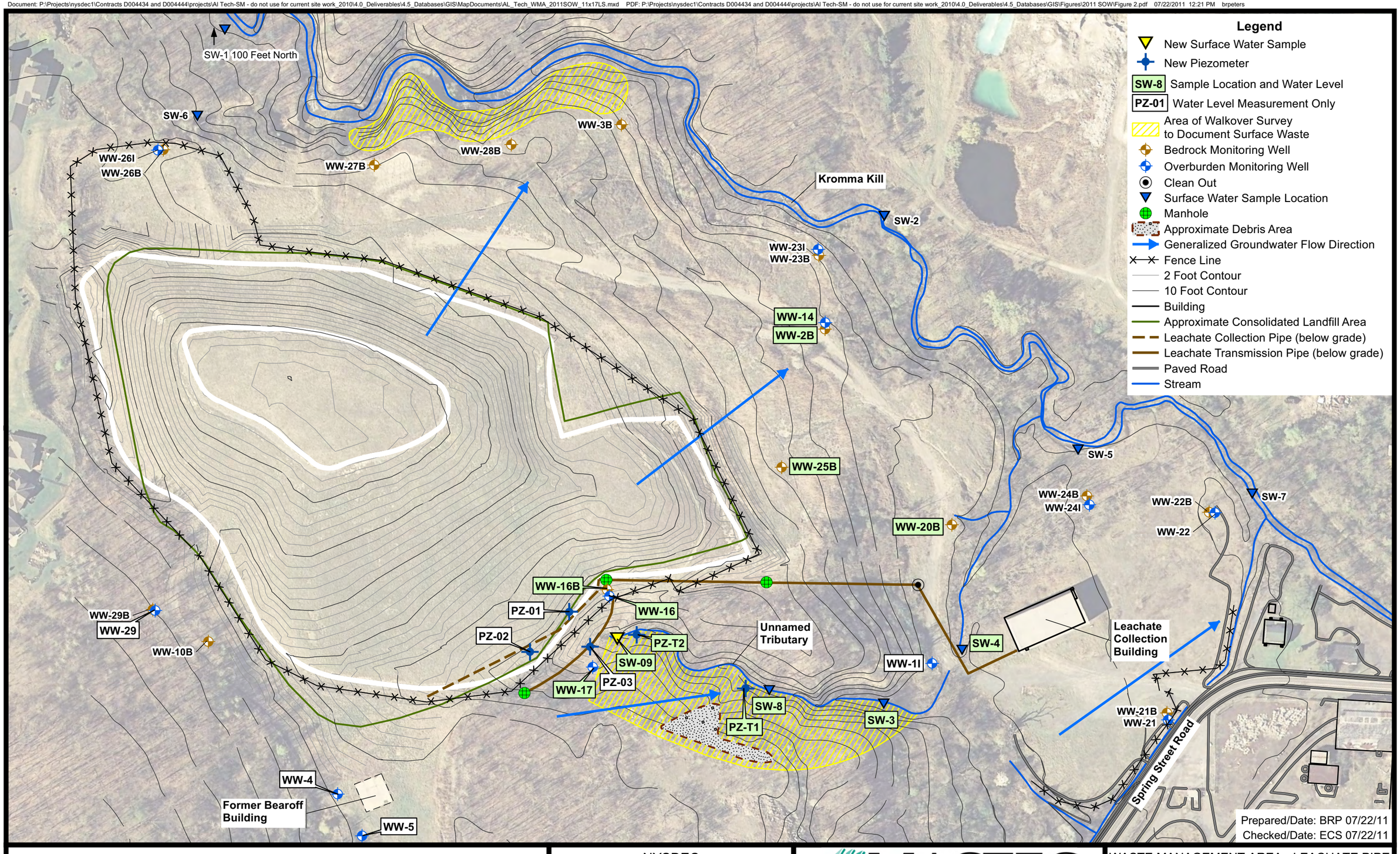
LEACHATE COLLECTION PIPE INVESTIGATION

Project 3612-06-2062

FIGURE 1



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0 75 150 Feet

Albany County color digital orthoimagery (2007) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

NYSDEC
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Colonie, New York

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WASTE MANAGEMENT AREA - LEACHATE PIPE SHUT-DOWN MONITORING LOCATIONS
Project 3612-06-2062 Figure 2

Table 1
Leachate Collection Line Shut-Down Monitoring

Sample Locations	Water Level Measurement	TAL Metals + Mo (Total)	TAL Metals+ Mo (Dissolved)	Fluoride	Sulfate	Cr+6	Hardness (Total)
		6010/ 7470	6010/ 7470	300	300	218.5	130.1
Monitoring Wells							
WW-1I	X						
WW-2B	X	X		X	X	X	
WW-4	X						
WW-5	X						
WW-14	X	X		X	X	X	
WW-16	X	X		X	X	X	
WW-16B	X	X		X	X	X	
WW-17	X	X		X	X	X	
WW-20B	X	X		X	X	X	
WW-21	X	X		X	X	X	
WW-25B	X	X		X	X	X	
WW-29	X						
PZ-01 (new)	X						
PZ-02 (new)	X						
PZ-03 (new)	X						
Surface Water							
SW-3			X	X	X	X	X
SW-4			X	X	X	X	X
SW-8			X	X	X	X	X
SW-9 (new)			X	X	X	X	X

Notes:
All water level measurements and samples shown apply to each planned event (pre-shut-down and post-shutdown evaluation monitoring).
One Field duplicate pair and extra aliquot of sample provided for MS/MSD per groundwater and surface water per event.

TAL = Target Analyte List
Mo = Molybdenum
CR^{+6} = Hexavalent Chromium
X = Analysis scheduled

Table 2
Tributary Sampling

Sample Locations	TAL Metals+ Mo (Dissolved)	Fluoride	Sulfate	Cr+6	Hardness (Total)
	6010/ 7470	**300**	**300**	**218.5**	**130.1**
Surface Water					
SW-3	X	X	X	X	X
SW-4	X	X	X	X	X
SW-5	X	X	X	X	X
SW-8	X	X	X	X	X
SW-9 (new)	X	X	X	X	X
Temporary Piezometers					
PZ-T1	X	X	X	X	X
PZ-T2	X	X	X	X	X

Note:
Surface water samples will be collected during initial shut-down evaluation monitoring event and results applied to this study.

TAL = Target Analyte List
Mo = Molybdenum
CR^{+6} = Hexavalent Chromium
X = Analysis scheduled