Remedial Investigation/ Alternatives Analysis Report/Interim Remedial Measures Work Plan

348 Langner Road Site
West Seneca, New York

September 2011 0123-005-102

Prepared For:

Delta Sonic Car Wash Systems, Inc.

Prepared By:

WORK PLAN
FOR
REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES/ALTERNATIVES ANALYSIS REPORT

348 LANGNER ROAD SITE
WEST SENECA, NEW YORK

September 2011 0123-005-102

Prepared for:

Delta Sonic Car Wash Systems, Inc.
570 Delaware Avenue
Buffalo, New York 14202

RI/IRM/AAR WORK PLAN

348 Langner Road Site
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1.0 INTRODUCTION

This document presents the proposed scope of work and implementation procedures for completion of a Remedial Investigation (RI), Interim Remedial Measures (IRM), and Alternatives Analysis Report (AAR) at the 348 Langner Road Site (Site), located at 348 Langner Road, West Seneca, New York (see Figures 1 and 2).

The Applicant, Delta Sonic Car Wash Systems, Inc. (Delta Sonic) acting as a Volunteer, have elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and has executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC).

The RI/IRM/AAR will be completed by TurnKey Environmental Restoration, LLC (TurnKey), in association with Benchmark Environmental Engineering & Science, PLLC (Benchmark), on behalf of Delta Sonic. The work will be completed in general accordance with NYSDEC DER-10 guidelines (Ref. 1).

1.1 Background

The Site is an approximately 2.6-acre parcel located at the corner of Langner Road and Ridge Road in the Town of West Seneca, New York (see Figures 1 and 2). The parcel is currently improved with one convenience store building, one car wash building, four product dispenser islands and two underground storage tank (UST) areas containing a total of eight petroleum USTs. The Site is bound by Langner Road to the east, Ridge Road to the north, vacant land and a rail line to the west, and commercial buildings to the south.

The Site has been a gas station since the 1950s. Prior to the current location of the product dispensers and buildings, the gas station and fuel assets were located in the northeastern portion of the property where the current carwash building sits.

During the completion of soil borings during a 2010 Phase II Investigation (see Appendix B), contaminated soils, and petroleum-like odors were observed at various locations. Several locations exhibited petroleum-like odors and elevated photoionization detector (PID) readings (as high as 777 ppm). Based on the findings of previous investigations, the NYSDEC opened a spill file for the Site (No. 0910758). The spill file for the Site was administratively closed by the Department upon acceptance into the BCP, and

further remediation will be directed under the guidance of the BCP. Details of the previous investigations are presented in Section 2.8 below.

1.2 Project Objectives

For sites entering the BCP at the point of investigation, NYSDEC requires completion of a RI/AAR. The primary objectives of the RI/AAR are to:

- Collect additional soil/fill and groundwater samples, under appropriate quality assurance/quality control criteria, to better delineate the nature and extent of contamination;
- Determine if the concentrations of constituents of concern in site soil and/or groundwater pose potential unacceptable risks to human health and the environment; and,
- Provide the data needed to evaluate potential remedial measures and determine appropriate actions to address potential significant risks.

As part of the RI/IRM/AAR process, sampling data will be used to evaluate whether remedial alternatives can meet the objectives. The intended uses of these data dictate the confidence levels. Two data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including PID measurements, groundwater elevation measurements, and field analyses (i.e., pH, temperature, specific conductivity, and turbidity). Definitive level confidence will apply to samples for chemical analysis. The applicability of these levels of data will be further specified in the Quality Assurance Project Plan (QAPP) in Section 5.0. Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity, are defined in the QAPP.

As part of the RI, IRMs will be completed to address known environmental impacts related to past use of the Site. An IRM will quickly mitigate risks to public health and the environment. Planned IRM activities include: removal of underground storage tanks (USTs); excavation of petroleum-impacted soil and either off-Site disposal or treatment; and, implementation of a Soil/Fill Management Plan (SFMP) during redevelopment activities. This Work Plan includes planned IRM activities based on current information and may be modified, subject to NYSDEC approval, immediately after the RI fieldwork is completed.

The Applicants intent is for the IRMs to substantially or completely constitute the final NYSDEC-approved remedy for the Site. The cleanup objectives employed during the IRM will be 6NYCRR Part 375 Restricted-Commercial Soil Cleanup Objectives (SCOs); however, the applicant may choose to remediate to a higher level of cleanup (e.g., Restricted-Residential) during the course of remedial work. Details of anticipated IRM activities are included in Section 4.0

1.3 Project Organization and Responsibilities

The Applicant, Delta Sonic Car Wash Systems, Inc., has applied and been accepted into the New York State BCP as a Volunteer per ECL§27-1405. TurnKey, in association with Benchmark, will manage the brownfield cleanup on behalf of the Applicant. The NYSDEC Division of Environmental Remediation (Region 9), in consultation with the New York State Department of Health (NYSDOH), will monitor the remedial actions to verify that the work is performed in accordance with the Brownfield Cleanup Agreement, the approved RI/IRM/AAR Work Plan, and NYSDEC DER-10 guidance (May 2010).

TurnKey personnel and key subcontractors for this project have not been determined at this time. Once pricing is secured, subcontract agreements are in place, and a field schedule determined, resumes for the selected project team will be provided to the Department, if requested. TurnKey's Project Manager's résumé, however, has been included in Appendix A. The table below presents the planned project team.

Company	Role	Name	Contact Information
TurnKey	Project Manager	Mike Lesakowski	(716) 856-0635
TurnKey	Field Personnel	TBD	(716) 856-0635
Delta Sonic	Facility Contact	Mike DePriest	(716) 878-9404
TBD	Analytical Testing	TBD	TBD
TBD	Geoprobe Drilling Services	TBD	TBD
TBD	Drilling Services	TBD	TBD
TBD	Excavation Services	TBD	TBD
TBD	Data Usability Summary Report	TBD	TBD

2.0 SITE DESCRIPTION

2.1 General

The Site is an approximately 2.6-acre parcel located at the corner of Langner Road and Ridge Road in the Town of West Seneca, Erie County, New York. The Site is bound by Langner Road to the east, Ridge Road to the north, vacant land and a rail line to the west, and commercial buildings to the south. The Site is improved with two buildings, a product dispenser canopy, and associated gravel/asphalt parking areas (see Figure 2). Building #1 refers to the convenience store located along the north border of the Site, Building #2 refers to the car wash facility along the east boarder of the Site.

2.2 Site Topography and Drainage

The Site is generally flat lying with limited topographic features. The surface of the Site is covered with buildings, asphalt, and gravel. Precipitation (i.e., rain or melting snow) moves to the storm drains in the roadways via overland flow. Surface and shallow groundwater flow are likely impacted by various cycles of development and filling, as well as utility lines and foundations.

2.3 Geology and Hydrogeology

2.3.1 Overburden

The U.S. Department of Agriculture Soil Conservation Service soil survey map of Erie County (Ref. 2) describes the general soil type at the Site as a combination of Urban Land (Ud) and Niagara Silt Loam (NfA), with 0-3 percent slopes. This is indicative of the level to gently sloping land with at least 40 percent of the soil surface covered by asphalt, concrete, buildings, or other impervious structures typical of an urban environment. The geology of the Site will be investigated as part of the RI activities.

2.3.2 Bedrock

Based on the bedrock geologic map of Erie County (Ref. 2), the Site is situated over the Hamilton Group Formation of the Middle Devonian Series. The Hamilton Group, Skaneateles Formation is comprised of Levanna Shale, and Stratford Limestone. The unit has an approximate thickness of 200 to 500 feet. Structurally, the bedrock formations strike

in an east-west direction and exhibit a regional dip that approximates 50 feet per mile (3 to 5 degrees) toward the south and southwest. As a result of this dip, the older Onondaga limestone outcrops or subcrops north of the Hamilton Group. An intersecting, orthogonal patter of fractures and joint sets are common throughout the bedrock strata. The surficial geomorphology of the bedrock strata was modified by period sub-aerial erosion and continental glaciation. Depth to and type of bedrock below the Site has not been determined by drilling.

2.3.3 Hydrogeology

The Site is located in the Erie-Niagara River Basin. In the Erie-Niagara Basin, the major areas of groundwater are within coarser overburden deposits and limestone and shale bedrock. Regional groundwater appears to flow west – southwest towards Lake Erie. Localized on-Site groundwater flow will be confirmed during the RI.

2.4 Climate

Western New York has a cold continental climate, with moisture from Lake Erie causing increased precipitation. Average annual precipitation is reportedly 40.5 inches and snowfall is 93.6 inches (Ref. 3) to the northern part of the watershed with over 150 inches per year falling on the southern portion of the watershed. Average monthly temperatures range from 24.5 degrees Fahrenheit in January to 70.8 degrees Fahrenheit in July (Ref. 3). The ground and lakes typically remain frozen from December to March. Winds are generally from the southwest (240 degrees) with a mean velocity of 10 miles per hour (Buffalo Airport, 1999).

2.5 Population and Land Use

The Town of West Seneca, encompassing 21.4 square miles, has a population of 43,935 (2005-2009 American Community Survey), The Site is located in Census Tract 120.01, in the Town of West Seneca an area zoned for commercial and residential property use.

The Site is located in a highly developed commercial retail area of the Town of West Seneca. Properties adjacent to the Site are used commercially. The surrounding land is utilized for commercial applications and residential homes. Residential areas surrounding the Site are located approximately 0.5-miles to the south.

2.6 Utilities and Groundwater Use

The subject property has access to all major public and private utilities, including potable water (Erie County Water Authority), sanitary and storm sewers (Town of West Seneca), electric (National Grid), and natural gas (National Fuel Gas).

Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. Currently, there are no known deed restrictions on the use of groundwater at the Site; however, there are no groundwater supply wells on the property. Regionally, groundwater in the area has not been developed for industrial, agriculture, or public supply purposes. Municipal potable water service is provided on-site and off-site.

2.7 Wetlands and Floodplains

There are no State or Federal wetlands or floodplains located on the Site. Per the Erie County GIS On-Line Mapping System, Lake Erie and the Niagara River are located approximately 4.0-miles to the west of the site, A NYSDEC regulated freshwater wetland (BU-16) is located approximately 0.25-mile to the south of the site. Referenced wetlands and floodplains are shown on Figure 3.

2.8 Previous Investigations

A summary of the investigations that have occurred at the Site are presented below. These reports are attached in Appendix B.

2.8.1 January 2010 – Limited Phase II Site Investigation Report

Benchmark Environmental Engineering and Science, PLLC (Benchmark) conducted an environmental site investigation of the subject property, and the findings are described below:

- Visual and olfactory evidence of impacted soil/fill was noted in multiple soil boring locations by field personnel. Elevated PID readings for volatile organic compounds (VOCs) were detected in multiple locations across the site, with readings as high as 777 ppm being detected.
- Petroleum-impacted soil exceeding TAGM #4046 Recommended Soil Cleanup Objectives (RSCOs) for VOCs and semi-volatile organic compounds (SVOCs) were detected at multiple soil boring locations across the site.

- VOCs were detected in groundwater exceeding NYSDEC groundwater quality standards (GWQS)s (i.e., up to 42,879 ug/L total VOCs) in several temporary monitoring wells across the Site.
- Based on the data collected during the site investigation, the NYSDEC was contacted and Spill No. 09-10758 was opened for the Site.

2.9 Primary Constituents of Potential Concern (COPCs)

Based on findings to date, the Constituents of Potential Concern (COPCs) are presented by media below:

- ***Soil:*** VOCs and SVOCs
- ***Groundwater:*** VOCs

3.0 REMEDIAL INVESTIGATION SCOPE OF WORK

The Remedial Investigation scope of work is focused on defining the nature and extent of contamination on-site, identifying the source of contamination, defining chemical constituent migration pathways, qualitatively assessing human health and ecological risks (if necessary), and obtaining data of sufficient quantity and quality to perform the alternatives analysis report.

Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the QAPP in Section 5. USEPA and NYSDEC-approved sample collection and handling techniques will be used. Samples for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements. Analytical results will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP.

During intrusive RI activities, a Community Air Monitoring Plan (CAMP) will be followed. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

and NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4031- Fugitive Dust Suppression and Particulate Monitoring Program will be followed. These documents are included in the Health and Safety Plan (HASP) in Appendix C.

3.1 Field Investigation Activities

3.1.1 Soil/Fill Investigation

A soil/fill investigation will be completed to evaluate whether additional impacts exist beyond the limits of the planned IRM activities (see Section 4.0 below). The soil/fill investigation will include the advancement and characterization of sixteen (16) soil borings. No surface soil samples will be collected as part of the RI, as the Site is predominantly covered by buildings and asphalt/gravel parking areas. The proposed RI sample locations are presented on Figure 4.

The sampling plan includes analysis of VOCs and SVOCs in all planned soil borings. As a requirement of the BCP, the soil/fill investigation will also include limited sampling for polychlorinated biphenyls (PCBs), pesticides, herbicides and metals to assess whether other potential contaminants exist within on-Site soil/fill at concentrations of concern.

The soil/fill investigation will employ direct-push drilling techniques. Each soil boring will be advanced to approximately 14-16 feet below ground surface (fbgs), or refusal. All soil samples will be field screened for the presence of VOCs using a field PID as a procedure for ensuring the health and safety of personnel at the Site, and to identify potentially impacted soil samples for laboratory analysis. Upon reaching the completion depth of each boring, PID and visual/olfactory results will be reviewed. The sample interval identified as the most impacted (i.e., greatest PID scan result and/or evidence of visual/olfactory impact) will be selected for analysis. In the event that either the impacts are ubiquitous from grade to final depth or no impacts were identified, the native soils directly above water table will be selected for analysis. If the impacts are ubiquitous from grade to final depth or no impacts were identified and water is not encountered at a particular sample location, the sample interval will be selected based on the discretion of the field personnel.

Soil samples will be collected using dedicated stainless steel sampling tools. Representative soil samples will be placed in pre-cleaned laboratory provided sample bottles, cooled to 4ºC in the field, and transported under chain-of-custody command to TestAmerica, located in Amherst, New York, a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory. Each of the subsurface soil samples will be analyzed for Target Compound List (TCL) plus NYSDEC STARS List VOCs and TCL SVOCs, and three of the soil samples will be also be analyzed for Target Analyte List (TAL) metals, polychlorinated biphenyls (PCBs), pesticides and herbicides. However, samples will not be analyzed for VOCs in the absence of elevated PID readings above 5 ppm and visual/olfactory evidence of impacts.

3.1.2 Groundwater Investigation

Seven (7) of the planned soil boring locations will be converted into groundwater monitoring wells, as shown on Figure 4. The monitoring wells will provide groundwater flow direction and groundwater quality data. Monitoring well installation, well development, and groundwater sample collection details are discussed in the following sections.

3.1.2.1 Monitoring Well Installation

After completion of the soil borings advancement, seven (7) boring locations will be converted into groundwater-monitoring wells. Proposed groundwater monitoring well locations are shown on Figure 4. A direct-push drill rig capable of advancing hollow-stem augers will be employed to install 2-inch inside diameter (ID) monitoring wells. Each boring location will be advanced to approximately 14-16 fbgs, or refusal, with a target minimum of 5 feet below the first encountered groundwater. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox).

Subsequent to boring completion, a 2-inch ID diameter flush-joint Schedule 40 PVC monitoring well will be installed at the boring locations. Each well will be constructed with a minimum 5-foot flush-joint Schedule 40 PVC, 0.010-inch machine slotted well screen. Each well screen and attached riser will be placed at the bottom of each borehole and a silica sand filter pack (size #0) will be installed from the base of the well to a maximum of 2 feet above the top of the screen. A bentonite chip seal will then be installed and allowed to hydrate sufficiently to mitigate the potential for downhole grout contamination. The newly installed monitoring wells will be completed with keyed-alike locks, a lockable J-plug, and a steel flush mounted road box.

3.1.2.2 Well Development

After installation, but not within 24 hours, newly installed monitoring wells will be developed in accordance with TurnKey and NYSDEC protocols. Development of the monitoring wells will be accomplished with dedicated disposable polyethylene bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen and specific conductance will be measured periodically (i.e., every well volume or as necessary) during development. Field measurements will continue until they became relatively stable. Stability will be defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements. A minimum of three well volumes will be evacuated from each monitoring well. Development water from the monitoring wells will be passed through a mobile granular-carbon treatment vessel, and discharged to the ground in the vicinity of the monitoring well being developed.

3.1.2.3 Groundwater Sample Collection

Prior to sample collection, static water levels will be measured and recorded from all on-Site monitoring wells. Following water level measurement, TurnKey personnel will purge and sample monitoring wells using either a peristaltic pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures; or using a dedicated polyethylene bailer. Prior to sample collection, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min). Field measurements for pH, temperature, turbidity, dissolved oxygen, specific conductance and water level, as well as visual and olfactory field observations, will be periodically recorded and monitored for stabilization. Purging will be considered complete when pH, specific conductivity, dissolved oxygen and temperature stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU), or become stable above 50 NTU. Stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed as discussed below.

Sample collection methods that may be implemented during the RI include:

- **Peristaltic Pump with Dedicated Pump Tubing**

  Wells less than 20 fbgs will be purged and sampled using a peristaltic pump and dedicated pump tubing following low-flow (minimal drawdown) purge and sample collection procedure, as described above. However, the pump will not require decontamination because all components are dedicated to each monitoring well. In addition, groundwater samples collected for VOC analysis will not be sampled directly through the peristaltic pump due to potential degassing (i.e., loss of VOCs) of the groundwater sample. Instead, prior to collection of VOC samples, the pump will be turned off and the pressure on the flexible walled tubing within the pump head will be maintained in order to prevent water within the collection tubing from escaping. The tubing will be removed from the well and coiled to prevent any contact with the ground surface. Upon removal of the tubing and prior to re-activating the pump, the pump flow direction will be reversed. Upon pump re-activation, the pumping rate will be slowly increased; positively displacing groundwater within the tubing allowing it to flow, without disturbance and degassing, into the appropriate VOC sample vials.

- **Polyethylene Disposable Bailer**

Wells of any depth (up to 100 fbgs) may be purged and sampled using a polyethylene disposable bailer via direct grab. In general, a bottom filling dedicated polyethylene bailer is attached to a length of dedicated hollow-braid polypropylene rope and lowered into the well smoothly and slowly as not to agitate the groundwater or damage the well. Purging continues until a predetermined volume of water has been removed (typically three well volumes) or to dryness. Measurements for pH, temperature, specific conductance, dissolved oxygen and turbidity are recorded following removal of each well volume. The well is purged until the readings for indicator parameters stabilize or the well is purged to dryness.

Prior to, and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, dissolved oxygen, turbidity and water level, as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to TestAmerica for analysis.

3.1.2.4 Groundwater Sample Analyses

A total of seven (7) groundwater samples will be collected and analyzed for TCL plus NYSDEC STARS list VOCs in accordance with USEPA SW-846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment. In addition, three groundwater samples will be analyzed for TCL SVOCs, TAL Metals, PCBs, pesticides and herbicides.

3.1.3 Soil Vapor Assessment

If initial RI subsurface soil and groundwater data indicates that VOCs may cause a soil vapor concern, TurnKey will discuss with NYSDEC whether a soil vapor assessment is necessary in the vicinity of the planned new building.

3.1.4 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill, and groundwater samples described above, field-specific quality assurance/quality control (QA/QC) samples will be collected and analyzed to ensure the reliability of the generated data as described in the QAPP (see Section 5.0) and to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks.

3.2 Investigation-Derived Waste Management

During installation of the monitoring wells, excess soil cuttings will be containerized (e.g. 55-gallon drums), and sampled to determine if they can be utilized on-Site or require treatment or off-Site disposal. Groundwater from well development and purging will be passed through a mobile granular-carbon treatment vessel and discharged to the ground.

Drums will be labeled with regard to contents, origin, and date of generation using a paint stick marker on two sides and the top of each drum. The drums will be staged on-site pending soil analyses and remedial measures assessment.

3.3 Site Mapping

A Site map will be developed during the field investigation. All sample points and relevant Site features will be located on the map. TurnKey will employ a Trimble GeoXT handheld GPS unit to identify the locations of all soil borings and newly installed wells relative to State planar grid coordinates. Monitoring well elevations will be measured by TurnKey's surveyor. An isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to USGS vertical datum. Site maps will be provided with the RI report.

4.0 INTERIM REMEDIAL MEASURES

Following completion of the RI, an IRM will be completed to address environmental concerns and to expedite the remedial and overall project schedule. This Work Plan includes planned IRM activities based on current information and may be modified, subject to NYSDEC approval, after the RI fieldwork is completed. The planned IRM includes the following tasks:

- Demolition and removal of existing Building #1 convenience store and existing dispenser island canopy;
- Removal of four gasoline USTs and one diesel UST and associated piping and product dispensers from UST Area #1 beneath the western portion of the dispenser island canopy;
- Removal of three gasoline USTs from UST Area #2 located west of the carwash building and associated piping and product dispensers;
- Excavation and off-Site disposal or treatment of known petroleum-impacted soil proximate UST Area #2;
- Excavation and off-Site disposal or treatment of petroleum-impacted soil (if encountered) in the area of UST Area #1 and/or beneath product dispensers and/or piping;
- Implementation of a Soil/Fill Management Plan (SFMP) during remedial and redevelopment activities.

4.1 Utility Clearance

Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor a minimum of three business days in advance of the work and informed of the intent to perform excavation work at the Site. If underground utilities are present on the property and are anticipated to interfere with intrusive activities, the Applicant and the NYSDEC will be contacted to discuss mitigating measures.

4.2 Site Preparation

Prior to implementing IRM activities, pre-demolition surveys, removal and proper disposal of miscellaneous debris located within Building #1, and appropriate permits, if required will be completed prior to work activities. Structures will then be demolished to grade.

4.3 Waste Characterization

Waste characterization samples will be collected and analyzed prior to initiating excavation work. Two composite samples will be collected from soil/fill in UST Area #2, where known petroleum impacts are present. Pre-characterization of the soil will allow for direct loading and off-site transportation at the time of the UST system removal.

Waste characterization samples will be analyzed for TCL VOCs, TCL SVOCs, Resource Conservation and Recovery Act (RCRA) metals, PCBs, pesticides, herbicides, toxicity characteristic leaching procedure (TCLP) VOCs, TCLP SVOCs, TCLP metals, ignitability, corrosivity and reactivity. Based on the results of the waste characterization sampling, impacted soil will be managed according to all federal, State and local waste disposal regulations.

4.4 UST System Removal

The following USTs and their associated piping and product dispensers will be removed in accordance with applicable NYSDEC guidelines:

- Four 4,000-gallon steel gasoline USTs and one 4,000-gallon steel diesel UST in UST Area #1; and,
- Three fiberglass-reinforced plastic gasoline USTs (i.e., 1-6,000-gallon, 1-8,000-gallon and 1- 10,000 gallon) in UST Area #2.

Figure 5 shows the location of the UST system components relative to key Site features. The NYSDEC will be notified at least 10 days prior to UST system removal activities.

4.5 Removal of Impacted Soils

Following removal of the USTs in UST Area #2 impacted soil/fill will be excavated and transported off-site for disposal at a commercial solid waste landfill or biotreatment at Tonawanda Terminals Biotreatment Facility. If impacted materials are encountered in the UST Area #1 and/or beneath piping or product dispensers, they will be handled in a similar manner to the areas of known petroleum impacts.

A PID and visual/olfactory observations will be used to screen soil/fill materials and assist in verifying removal of impacted soil/fill. All excavation work will be directed by an experienced TurnKey professional to remove impacted material. Lateral and vertical excavation will continue until suspected source area soils and visually impacted soil/fill is removed, Part 375 commercial SCOs are met, excavation has reached the property line or other physical barriers, or NYSDEC agrees that no further excavation is required or feasible. Based on the findings of the RI and field observations, an evaluation to clean up the Site to a less restrictive level (e.g., Restricted-Residential SCOs) may be conducted.

4.6 Excavation Confirmation Sampling

Post excavation confirmatory samples will be collected from the excavated areas. Sample locations from excavated areas will include samples from excavation sidewalls and bottom. A minimum of one sample per 30 linear feet of sidewall and one sample for each 900 square feet of excavation bottom will be collected. In areas of product piping (i.e., between the canopy and UST Area #2, one sample per 20 linear feet of piping will be collected.

Samples from the UST Area #1 and dispenser island canopy excavations will be analyzed for TCL plus NYSDEC STARS List VOCs and NYSDEC STARS List SVOCs as both gasoline and diesel USTs and dispensers are located in those areas. Samples from UST Area #2 and piping between the dispenser island canopy and UST Area #2 will be sampled for TCL plus NYSDEC STARS List VOCs only as that area has gasoline USTs. Samples will be analyzed in accordance with USEPA SW-846 Methodology with an equivalent Category B deliverables package to facilitate data evaluation by a third-party validation expert. Expedited turnaround times will be requested for the analytical results to minimize the time that the excavation(s) remains open.

4.7 Groundwater Management

Water removed from excavations and surface water run-in to excavations during the impacted soil removal will be handled on-Site prior to discharge to the municipal sewer. In general, water removed from excavations will be stored/settled in a portable 20,000-gallon storage tank, and if deemed necessary, will be pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). Following completion of excavation work, settled solids remaining in the tank and spent filter bags will be disposed of off-site.

If the accumulated waters required treatment, the spent GAC will be characterized (TCLP VOC testing) and regenerated off-site, or disposed at a permitted disposal facility in accordance with applicable federal and state regulations. The storage tank will be decontaminated via pressure washing. TurnKey or the Site owner will coordinate with the local sewer authority to obtain any necessary temporary sewer discharge permits.

4.8 Excavation Backfill

Following NYSDEC concurrence that the remedial excavation is complete, the excavation will be backfilled with approved backfill material. The backfill material will be placed into the excavation and compacted with the excavator/backhoe bucket in 1 to 2-foot lifts to match the existing grade of the Site and minimize settling. Alternatively, Delta Sonic's redevelopment plans may require that select backfill be placed in accordance with certain geotechnical requirements (e.g., 95% of a modified Proctor test). Specific details regarding acceptable backfill materials, test requirements and handling is presented in the Soil-Fill Management Plan, included in Appendix E. Table 2 includes the chemical criteria for import of backfill material to the Site.

5.0 QUALITY ASSURANCE PROJECT PLAN

A QAPP has been prepared in support of the RI/IRM activities. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping, is provided as below.

The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. The QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations; the EPA Region II CERCLA Quality Assurance Manual, and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

5.1 Scope of the QAPP

This QAPP was prepared to provide quality assurance (QA) guidelines to be implemented during the RI/IRM activities. This document may be modified for subsequent phases of investigative work, as necessary. The QAPP provides:

- A means to communicate to the persons executing the various activities exactly what is to be done, by whom, and when.
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations).
- A historical record that documents the investigation in terms of the methods used, calibration standards and frequencies planned, and auditing planned.
- A document that can be used by the Project Manager's and QA Officer to assess if the activities planned are being implemented and their importance for accomplishing the goal of quality data.
- A plan to document and track project data and results.

- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the quality assurance and quality control aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended.

QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

5.2 QAPP Organization and Responsibility

The principal organizations involved in verifying achievement of data collection goals for the 348 Langner Road Site include: the NYSDEC, NYSDOH, Delta Sonic (Applicant), TurnKey Environmental Restoration, LLC (Volunteer's Consultant), the drilling subcontractor(s), the independent environmental laboratory, and the independent third party data validator. Roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections. Resumes are included in Appendix A.

5.2.1 NYSDEC and NYSDOH

It is the responsibility of the NYSDEC, in conjunction with NYSDOH, to review the RI/IRM Work Plan and supporting documents, for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QA Plan was followed.

5.2.2 Applicant

Delta Sonic ("Applicant") will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicant will also have the authority to select Remedial Action Contractor(s) to assist them in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

5.2.3 TurnKey Environmental Restoration, LLC

TurnKey Environmental Restoration, LLC (TurnKey) is the prime consultant on this project and is responsible for the performance of all services required to implement each phase of the RI/IRM Work Plan, including, but not limited to, field operations, laboratory testing, data management, data analysis and reporting. Any one member of TurnKey's staff may fill more than one of the identified project positions (e.g., field team leader and site safety and health officer). The various quality assurances, field, laboratory and management responsibilities of key project personnel are defined below.

- *TurnKey Project Manager (PM):* *Michael Lesakowski*

  The TurnKey PM has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will report directly to the Delta Sonic Project Coordinator and the NYSDEC/NYSDOH Project Coordinators and is responsible for technical and project oversight. The PM will:

  - Define project objectives and develop a detailed work plan schedule.
  - Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
  - Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
  - Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
  - Review the work performed on each task to assure its quality, responsiveness, and timeliness.

- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

- *TurnKey FTL/SSHO:* *Bryan Hann*

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

- Define daily work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

For this project the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, he is responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

5.3 Quality Assurance (QA) Responsibilities

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and TurnKey policies,

and NYSDEC requirements. The QA Officer has sufficient authority to stop work on the investigation as deemed necessary in the event of serious QA issues.

- *Project QA Officer:* *Lori E. Riker*

  Specific function and duties include:
  - Performing QA audits on various phases of the field operations
  - Reviewing and approving QA plans and procedures
  - Providing QA technical assistance to project staff
  - Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations
  - Responsible for assuring third party data review of all sample results from the analytical laboratory

5.4 Field Responsibilities

TurnKey field staff for this project is drawn from a pool of qualified resources. The Project Manager will use staff to gather and analyze data, and to prepare various task reports and support materials. All of the designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

5.5 Quality Assurance Objectives for Measurement Data

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.

- Data management.
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort conformance for sample analysis and data management by TestAmerica under EPA analytical methods.

5.6 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix (see Table 1).

The general level of QC effort will be one field (blind) duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one

site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

5.7 Sampling and Analysis Plan

The selection and rationale for the RI/IRM sampling program is discussed in the RI/IRM Work Plan. Methods and protocol to be used to collect environmental samples (i.e., soil, and groundwater) for this investigation are described in the TurnKey Field Operating Procedures (FOPs) presented in Appendix F.

The number and types of environmental samples to be collected is summarized on Table 1. Sample parameter lists, holding times and sample container requirements are summarized on Table 3. The sampling program and related site activities are discussed below. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

5.7.1 Custody Procedures

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following section and FOPs for Sampling, Labeling, Storage, and Shipment, located in Appendix F, describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

5.7.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, ± 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

5.7.3 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish COC and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.

- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample storage log (same as the laboratory COC).

- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

5.7.4 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

5.8 Calibration Procedures and Frequency

This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments.

5.8.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, dissolved oxygen and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil

sampling include screening for the presence of volatile organic constituents using a photoionization detector (PID).

FOPs located in Appendix F describe the field instruments used to monitor for these parameters and the calibration methods, standards, and frequency requirements for each instrument. Calibration results will be recorded on the appropriate field forms and in the Project Field Book.

5.9 Analytical Procedures

Samples collected during this investigation field sampling activities will be analyzed by TestAmerica Analytical Testing Corporation (TestAmerica), 10 Hazelwood Drive, Amherst, New York 14228, (716) 691-2600.

5.9.1 Field Analytical Procedures

Field procedures for collecting and preserving groundwater and soil samples are described in FOPs located in Appendix F. A summary of the FOPs is presented on Table 4.

5.10 Data Usability Evaluation

Data usability evaluation procedures shall be performed for both field and laboratory operations as described below.

5.10.1 Procedures Used to Evaluate Field Data Usability

Procedures to validate field data for this project will be facilitated by adherence to the FOPs identified in Appendix F. The performance of all field activities, calibration checks on all field instruments at the beginning of each day of use, manual checks of field calculations, checking for transcription errors and review of field log books is the responsibility of the Field Team Leader.

5.10.2 Procedures Used to Evaluate Laboratory Data Usability

Data evaluation will be performed by the third party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) *National Functional Guidelines for Organic Data Review*, and Contract Laboratory Program*, National Functional Guidelines for Inorganic Data Review*. The data review guidance will

be used only to the extent that it is applicable to the SW-846 methods; SW-846 methodologies will be followed primarily and given preference over CLP when differences occur. Also, results of blanks, surrogate spikes, MS/MSDs, and laboratory control samples will be reviewed/evaluated by the data validator. All sample analytical data for each sample matrix shall be evaluated. The third party data validation expert will also evaluate the overall completeness of the data package. Completeness checks will be administered on all data to determine whether deliverables specified in this QAPP are present. The reviewer will determine whether all required items are present and request copies of missing deliverables.

6.0 INVESTIGATION SUPPORT DOCUMENTS

6.1 Health and Safety Protocols

TurnKey Environmental Restoration has prepared a Site-Specific Health and Safety Plan (HASP) for use by our employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix C, includes the following site-specific information:

- A hazard assessment.
- Training requirements.
- Definition of exclusion, contaminant reduction, and other work zones.
- Monitoring procedures for site operations.
- Safety procedures.
- Personal protective clothing and equipment requirements for various field operations.
- Disposal and decontamination procedures.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan that describes required particulate and vapor monitoring to protect the neighboring community during intrusive site investigation and remediation activities.

Health and safety activities will be monitored throughout the field investigation and IRM. A member of the field team will be designated to serve as the on-site Health and Safety Officer throughout the field program. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation and/or remedial activities.

6.1.1 Community Air Monitoring

Real-time community air monitoring will be performed during IRM activities at the Site. A CAMP is included with TurnKey's HASP. Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during subgrade excavation, grading and soil/fill handling activities in accordance with this plan. The CAMP is

consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

6.2 Soil/Fill Management Plan (SFMP)

The purpose of the SFMP is to protect both the environment and human health during redevelopment and post-development maintenance activities of the Site, subsequent to completion of Brownfield cleanup activities. The SFMP will be modified/expanded as appropriate based on the results of the RI. The SFMP is included in Appendix E.

While an assessment of surface and subsurface soil/fill and groundwater at the Site will be performed during the RI, subsurface information is never 100 percent complete or accurate. As such, it is not unreasonable to anticipate the possibility that some quantity of subsurface soil/fill contamination may be encountered after completion of the Brownfield cleanup. In particular, soil/fill contamination may be encountered during post-development activities such as utility installation or maintenance.

Compliance with the SFMP is required to properly manage subsurface soil contamination. The SFMP was developed and incorporated into this Work Plan with the express purpose of addressing unknown subsurface contamination if and when encountered. This SFMP provides protocols for the proper handling of Site soil/fill during development activities, including:

- Excavation, grading, sampling and handling of site soils.
- Acceptability of soils/fill from off-site sources for backfill or subgrade fill.
- Erosion and dust control measures.
- Access controls.
- Health and safety procedures for subsurface construction work and the protection of the surrounding community.

6.3 Citizen Participation Activities

NYSDEC will coordinate and lead community relations throughout the course of the project. TurnKey will support NYSDEC's community relations activities, as necessary. A Citizen Participation Plan will be prepared by TurnKey and submitted to NYSDEC under separate cover. The Citizen Participation Plan will follow NYSDEC's Citizen Participation

Plans template for Brownfield Cleanup Program sites entering the BCP at the point of site investigation.

7.0 REPORTING AND SCHEDULE

Upon completion of the RI and IRM fieldwork, a comprehensive RI/IRM/AAR report will be completed summarizing the RI and IRM tasks completed as described below.

7.1 Remedial Investigation Reporting

The RI section of the RI/IRM/AAR report will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

- Introduction and background;
- A description of the site and the investigation areas;
- A description of the field procedures and methods used during the RI;
- A discussion of the nature and rationale for any significant variances from the scope of work described in this RI Work Plan;
- The data obtained during the RI and historical data considered by TurnKey to be of useable quality. This will include geochemical data, field measurements, etc;
- Comparative criteria that may be used to calculate cleanup levels during the alternatives analysis report (AAR) process, such as NYSDEC Soil Cleanup Objectives and other pertinent regulatory standards or criteria;
- A discussion of contaminant fate and transport. This will provide a description of the hydrologic parameters of the Site, and an evaluation of the lateral and vertical movement of groundwater;
- Conclusions regarding the extent and character of environmental impact in the media being investigated;
- The conclusions of the qualitative human health and environmental risk assessments, including any recommendations for more detailed assessments, if applicable; and
- Supporting materials for RI data. These will include boring logs, monitoring well construction diagrams, laboratory analytical reports, and similar information.

In addition, TurnKey will require third-party data review by a qualified, independent data validation expert. Specifically, a Data Usability Summary Report (DUSR) will be prepared, with appropriate data qualifiers added to the results. The DUSR will follow NYSDEC format per the NYSDEC's September 1997 DUSR guidelines and May 2010 DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the RI report.

7.2 IRM Reporting

A TurnKey scientist or engineer will be on-site on a full-time basis to document IRM activities. Such documentation will include, at minimum, daily reports of IRM activities, community air monitoring results, photographs and sketches.

7.2.1 Construction Monitoring

Standard daily reporting procedures will include preparation of a daily report and, when appropriate, problem identification and corrective measures reports. Appendix D contains sample project documentation forms. Information that may be included on the daily report form includes:

- Processes and locations of construction under way;
- Equipment and personnel working in the area, including subcontractors;
- Number and type of truckloads of soil/fill removed from the site;
- A description of off-site materials received;
- Approximate verification sampling locations (sketches) and sample designations.

The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item. Photo documentation of the IRM activities will be prepared by TurnKey throughout the duration of the project as necessary to convey typical work activities and whenever changed conditions or special circumstances arise.

7.2.2 IRM Construction Closeout

A summary of the IRM construction will be included in the RI/IRM/AAR report submitted to the NYSDEC, with full details of the IRM activities included in the Final Engineering Report. At a minimum, the IRM section of the report will include:

- A Site or area planimetric map showing the parcel(s) remediated;
- A map showing the lateral limits of excavation;
- Summaries of unit quantities, including: volume of soil/fill excavated; disposition of excavated soil/fill and collected ground/surface water; volume/type/source of backfill; and volume of ground/surface water pumped and treated;
- Planimetric map showing location of all verification and other sampling locations with sample identification labels/codes;
- Tabular comparison of verification and other sample analytical results to SCOs. An explanation shall be provided for all results exceeding acceptance criteria; and
- Text describing that the excavation activities were performed in accordance with this Work Plan.

7.3 Alternatives Analysis Report

An alternatives analysis report (AAR) is typically developed to provide a forum for evaluating and selecting a recommended remedial approach. However, the planned IRM may effectively remove contaminants from the Site. If additional contamination is discovered during RI site characterization activities, the AAR may need to evaluate additional remedial measures beyond the IRM activities. If the IRM effectively removes site contaminants, the AAR will evaluate the IRM as the final remedy.

A list of remedial action objectives will be developed based on findings of the RI and IRM and the requirement for the selected remedial measures to be protective of human health and the environment under the proposed future use scenario. Proposed soil cleanup objectives (SCOs) for the property will also be presented based on the proposed future use of the Site. SCOs will be based on published standards, criteria, and guidance (SCGs) and other NYSDEC and NYSDOH-accepted values.

Based on the remedial action objectives and SCOs, volumes and areas of media potentially requiring additional remediation will be calculated. General response actions will then be delineated to address each of the site problem areas. These response actions will form the foundation for the development and screening of applicable remedial alternatives against the following criteria as described in 6NYCRR 375-1.10:

- Overall Protection of Human Health and the Environment
- Compliance with Standards, Criteria, & Guidance (SCGs)
- Long-term Effectiveness & Permanence
- Reduction of Toxicity, Mobility, or Volume
- Short-term Effectiveness
- Implementability
- Cost

In addition, the criteria of community acceptance will be considered based on public comments on the AAR and proposed remedial action. Following the screening of alternatives, a comparative analysis will be performed against the above criteria. The comparative analysis will allow for better understanding of the relative advantages and disadvantages of each of the alternatives, and will facilitate identification of a recommended remedial approach.

8.0 PROJECT SCHEDULE

A tentative project schedule for the major tasks to be performed in support of the RI/IRM/AAR is presented as Figure 6.

9.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation*. May 2010.

2. United States Department of Agriculture (USDA), Soil Conservation Service. *Soil Survey of Erie County, New York*. December 1986.

3. National Oceanic & Atmospheric Administration (NOAA) Satellites and Information. Data Tables through 2000.

4. Benchmark Environmental Engineering & Science, PLLC. *Limited Phase II Site Investigation Report, 348 Langner Road Parcel [348 Langner Road Site], West Seneca, New York*. January 2010.

5. U.S. Environmental Protection Agency. *Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5)*. October 1998.

6. U.S. Environmental Protection Agency, Region II. *CERCLA Quality Assurance Manual, Revision I*. October 1989.

7. U.S. Environmental Protection Agency, *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-70-020. 1983b.

8. U.S. Environmental Protection Agency. National Functional Guidelines for Organic Data Review (EPA-540/R-94-012), 1994a.

9. U.S. Environmental Protection Agency. National Functional Guidelines for Inorganic Data Review (EPA-540/R-94-013), 1994b.

TABLES

TABLE 1

SAMPLING AND ANALYSIS PLAN

RI / IRM / AAR WORK PLAN

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

Matrix	Parameter	No. Samples	Estimated Number of QC Samples: Trip Blank[2]	Matrix Spike[3]	MS Duplicate[3]	Blind Duplicate[3]	Total[4]
			Remedial Investigation[1]				
Subsurface Soil/Fill	TCL + STARS VOCs	16		1	1	1	19
	TCL SVOCs	16		1	1	1	19
	TAL Metals	3		1	1	1	6
	PCBs	3		1	1	1	6
	Pesticides	3		1	1	1	6
	Herbicides	3		1	1	1	6
Groundwater	TCL + STARS VOCs	7	1	1	1	1	11
	TCL SVOCs	3		1	1	1	6
	TAL Metals	3		1	1	1	6
	PCBs	3		1	1	1	6
	Pesticides	3		1	1	1	6
	Herbicides	3		1	1	1	6
	Field Parameters: DO, pH, Turbidity, Conductance, Temperature	7					7
			Interim Remedial Measures[1]				
Post-Excavation Samples	TCL + STARS VOCs	40		2	2	2	46
	TCL SVOCs	TBD					
			Soil Characterization Sampling				
Soil Characterization Sampling	TCLP VOCs	2					2
	TCLP SVOCs	2					2
	TCLP Metals	2					2
	TCL + STARS VOCs	2					2
	TCL SVOCs	2					2
	TAL Metals	2					2
	Total PCBs/ Pest. / Herb.	2					2
	Hazardous Characterisitcs						
	Ignitability	2					2
	Reactivity	2					2
	Corrosivity	2					2

Notes:

1. Analyses will be performed via USEPA SW-846 methodology w/ equivalent Category B deliverables package.
2. Trip blanks will be submitted to the laboratory each day aqueous volatile organic samples are collected.
3. Blind duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples collected.
4. Dedicated sampling equipment will be used for groundwater and soil/fill sample collection; therefore, an equipment blank is not required.

TBD = to be determined

TABLE 2

RI/IRM/AAR Work Plan

CRITERIA FOR IMPORTED SOIL-FILL

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill
Volatile Organic Compounds (mg/Kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,2-Dichloroethene(cis)	0.25
1,2-Dichloroethene(trans)	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	1.2
Methyl ethyl ketone	0.12
Methyl tert-butyl ether	0.93
Methylene chloride	0.05
Propylbenzene-n	3.9
Sec-Butylbenzene	11
Tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47

TABLE 2

RI/IRM/AAR Work Plan

CRITERIA FOR IMPORTED SOIL-FILL

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill
Volatile Organic Compounds (mg/Kg)	
Trimethylbenzene-1,2,4	3.6
Trimethylbenzene-1,3,5	8.4
Vinyl chloride	0.02
Xylene (mixed)	1.6
Semi-Volatile Organic Compounds (mg/Kg)	
Acenaphthene	98
Acenaphthylene	107
Anthracene	500
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1.7
Benzo(g,h,i)perylene	500
Benzo(k)fluoranthene	1.7
Chrysene	1
Dibenz(a,h)anthracene	0.56
Fluoranthene	500
Fluorene	386
Indeno(1,2,3-cd)pyrene	5.6
m-Cresol(s)	0.33
Naphthalene	12
o-Cresol(s)	0.33
p-Cresol(s)	0.33
Pentachlorophenol	0.8
Phenanthrene	500
Phenol	0.33
Pyrene	500

TABLE 2

RI/IRM/AAR Work Plan

CRITERIA FOR IMPORTED SOIL-FILL

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill
Metals (mg/Kg)	
Arsenic	16
Barium	400
Beryllium	47
Cadmium	7.5
Chromium, Hexavalent[1]	19
Chromium, Trivalent[1]	1500
Copper	270
Cyanide	27
Lead	450
Manganese	2000
Mercury (total)	0.73
Nickel	130
Selenium	4
Silver	8.3
Zinc	2480
PCBs/Pesticides (mg/Kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	17
4,4'-DDT	47
4,4'-DDD	14
Aldrin	0.19
Alpha-BHC	0.02
Beta-BHC	0.09
Chlordane (alpha)	2.9
Delta-BHC	0.25
Dibenzofuran	210
Dieldrin	0.1
Endosulfan I	102

TABLE 2

RI/IRM/AAR Work Plan

CRITERIA FOR IMPORTED SOIL-FILL

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill
PCBs/Pesticides (mg/Kg)	
Endosulfan II	102
Endosulfan sulfate	200
Endrin	0.06
Heptachlor	0.38
Lindane	0.1
Polychlorinated biphenyls	1

Notes:

1. The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

TABLE 3

SAMPLE CONTAINER, VOLUME, PRESERVATION & HOLDING TIME REQUIREMENTS

348 Langner Road Site

West Seneca, New York

Matrix	Parameter [1]	Method [1]	Container Type	Minimum Volume	Preservation (Cool to 2-4 °C for all samples)	Holding Time from Sample Date
Soil/Sediment	TCL + STARS VOCs + MTBE	8260B	WMG	16 oz.	Cool to 2-4 °C, Zero Headspace	14 days
	TCL SVOCs & Tetraethyl Lead	8270C	WMG	16 oz.	Cool to 2-4 °C	14 days extrac./40 days
	TAL Metals & Total Lead	6010B	WMG	4 oz.	Cool to 2-4 °C	6 months/Hg 28 days
	Pesticides	8081	WMG	8oz	Cool to 2-4 °C	14 days extrac./40 days
	Herbicides	8151	WMG	8oz	Cool to 2-4 °C	14 days extrac./40 days
	PCBs	8082	WMG	4 oz.	Cool to 2-4 °C	14 days extrac./40 days
Groundwater	TCL + STARS VOCs + MTBE	8260B	glass vial	3 - 4 oz.	HCl to pH<2, Zero Headspace, Cool to 2-4 °C	14 days
	TCL SVOCs & Tetraethyl Lead	8270C	amber glass	1000 ml	Cool to 2-4 °C	7 days extrac/40 days
	TAL Metals & total Lead	6010B	plastic	600 ml	HNO_3 to pH<2, Cool to 2-4 °C	6 months/Hg 28 days
	PCBs	8082	amber glass	1000 ml	Cool to 2-4 °C	7 days extrac/40 days

References:

1. Test Methods for Evaluating Solid Wastes, USEPA SW-846, Update III, 1991.

Notes:

1. EPA-approved methods published in Reference 1 above may be used. The list of analytes, laboratory method and the method detection limit for each parameter are included in Tables 1 and 2 of the QAPP.

Acronyms:

VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
TCL = Target Compound List
TAL = Target Analyte List
WMG = Wide Mouth Glass

TABLE 4

SUMMARY OF FIELD OPERATING PROCEDURES

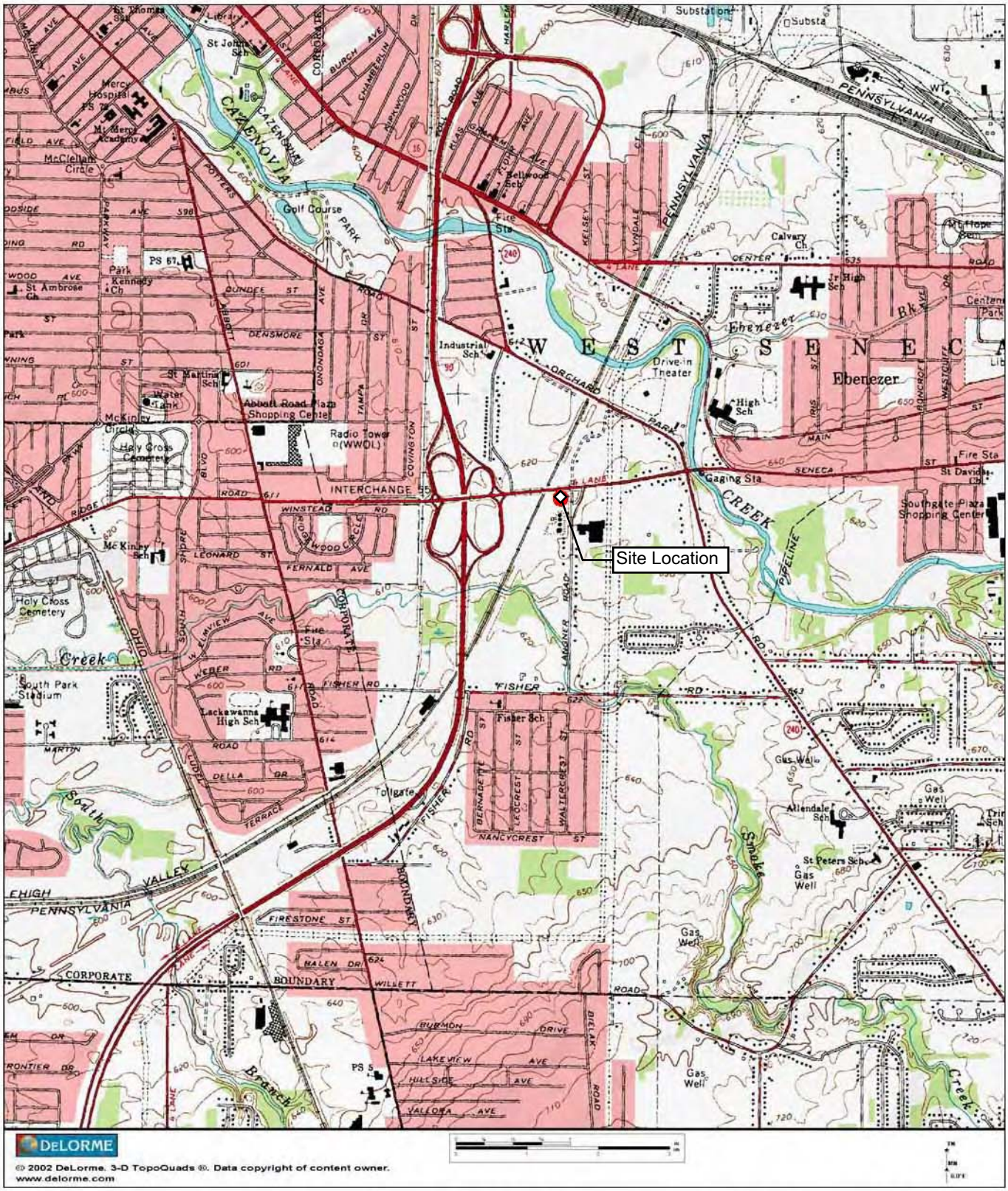
348 Langner Road Site

West Seneca, New York

TurnKey FOP No.	Procedure
001.1	Abandonment of Borehole Procedures
007.0	Calibration and Maintenance of Portable Dissolved Oxygen Meter
008.0	Calibration and Maintenance of Portable Field pH/Eh Meter
009.0	Calibration and Maintenance of Portable Field Turbidity Meter
011.0	Calibration and Maintenance of Portable Photoionization Detector
012.0	Calibration and Maintenance of Portable Specific Conductance Meter
015.0	Documentation Requirements for Drilling and Well Installation
017.0	Drill Site Selection Procedure
018.0	Drilling and Excavation Equipment Decontamination Procedures
021.0	Establishing Horizontal and Vertical Control
022.0	Groundwater Level Measurement
024.0	Groundwater Sample Collection Procedures
026.1	Hollow Stem Auger (HSA) Drilling Procedures
031.1	Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedure
032.1	Management of Investigation-Derived Waste (IDW)
033.0	Monitoring Well Construction for Hollow Stem Auger Boreholes
036.0	Monitoring Well Development Procedures
046.0	Sample Labeling, Storage and Shipment Procedures
047.0	Screening of Soil Samples for Organic Vapors During Drilling Activities
054.0	Soil Description Procedures Using The USCS
063.2	Surface and Subsurface Soil Sampling Procedures
073.1	Real-Time Air Monitoring During Intrusive Activities
076.0	"Before Going Into the Field" Procedure
078.0	Geoprobe Drilling Procedure
084.0	Calibration and Maintenance of Portable Particulate Meter

FIGURES

FIGURE 1



TurnKey Environmental Restoration, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0123-005-102

DATE: SEPTEMBER 2011

DRAFTED BY: JGT

SITE LOCATION AND VICINITY MAP

RI/IRM/AAR WORK PLAN

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

PREPARED FOR

DELTA SONIC

Parcel Information per Town of West Seneca Assessor Office

Not to Scale

TurnKey Environmental Restoration LLC

[illegible] HAMBURG TURNPIKE
[illegible] 500
[illegible], NY 14[illegible]
(716) [illegible]

PROJECT NO.: 0123-005-102

DATE: SEPTEMBER 2011

DRAFTED BY: JGT

SITE PLAN (AERIAL)

RI/IRM/AAR WORK PLAN

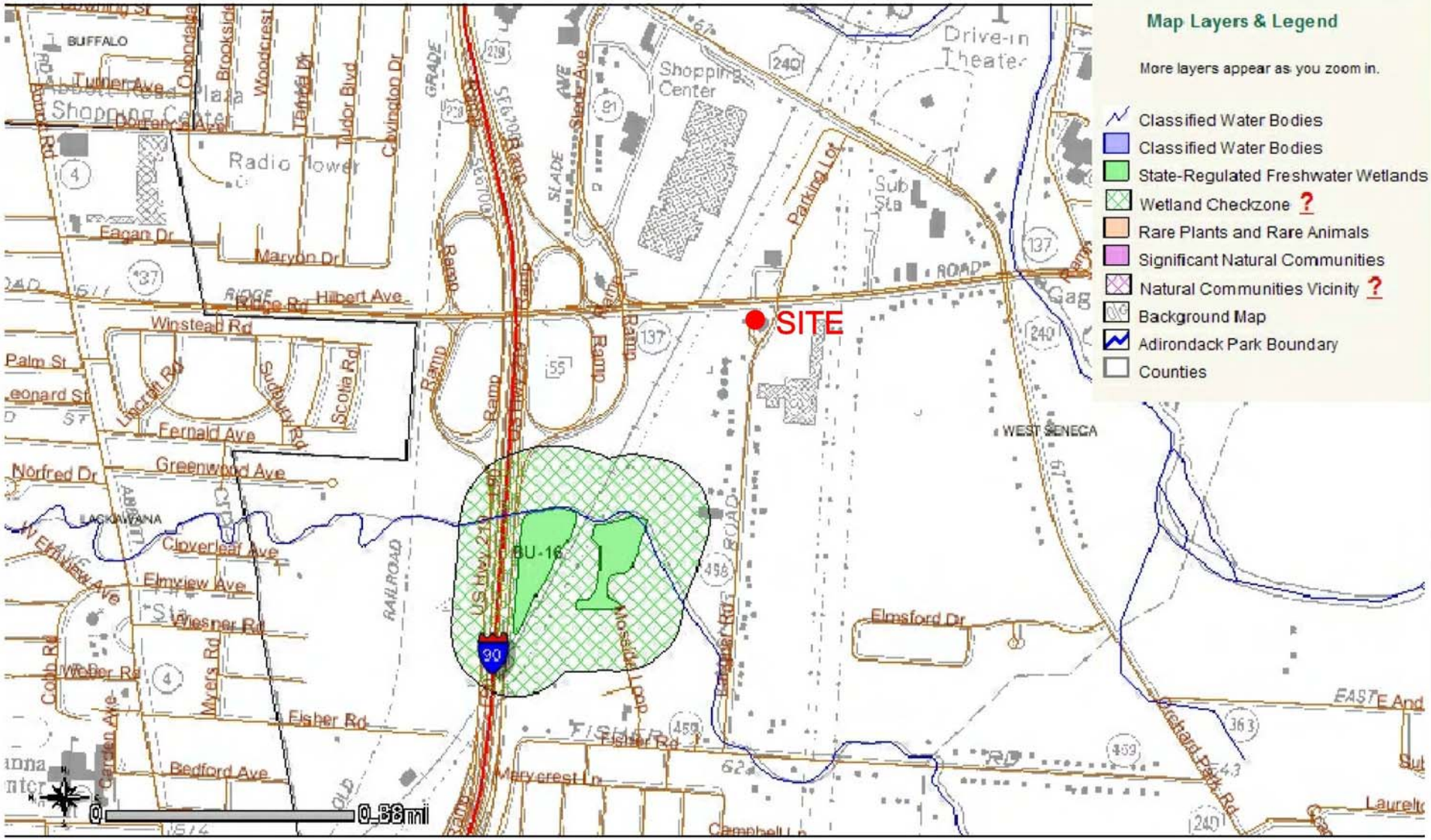
348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

PREPARED FOR

DELTA SONIC

FIGURE 2



TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0123-005-102

DATE: SEPTEMBER 2011

DRAFTED BY: JGT

REGIONAL WETLANDS AND FLOODPLAINS

RI/IRM/AAR WORK PLAN

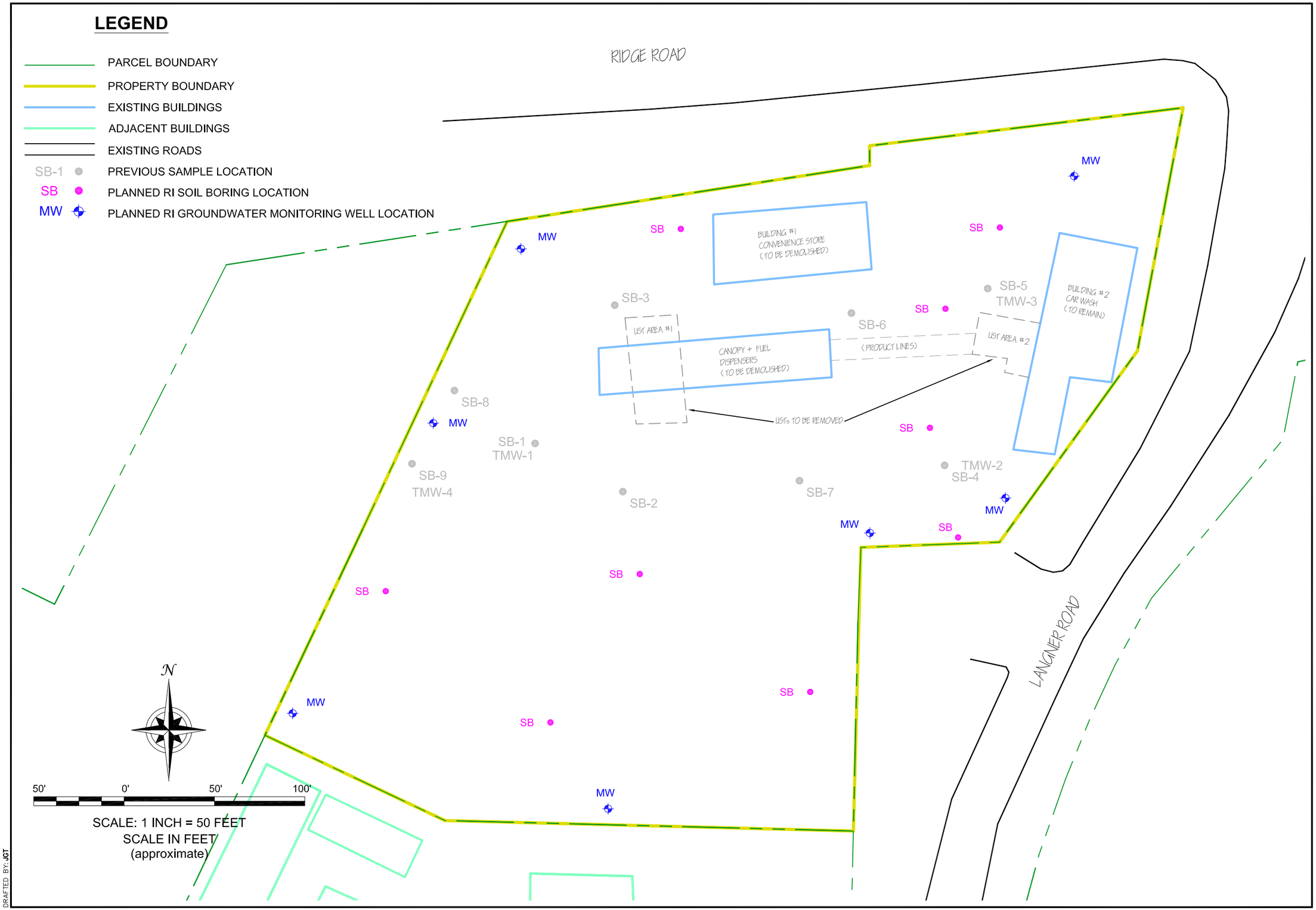
348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

PREPARED FOR

DELTA SONIC

FIGURE 3



DATE: SEPTEMBER 2011
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2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0123-005-102

PROPOSED RI SAMPLE LOCATIONS

RI/IRM/AAR WORK PLAN
348 LANGNER ROAD SITE
WEST SENECA, NEW YORK
PREPARED FOR
DELTA SONIC

FIGURE 4

LEGEND

- PARCEL BOUNDARY
- PROPERTY BOUNDARY
- EXISTING BUILDINGS
- ADJACENT BUILDINGS
- EXISTING ROADS
- SB-1 PREVIOUS SAMPLE LOCATION
- SB PLANNED RI SOIL BORING LOCATION
- MW PLANNED RI GROUNDWATER MONITORING WELL LOCATION
- PLANNED IRM DEMOLITION
- PLANNED IRM SOIL EXCAVATION

RIDGE ROAD

BUILDING #1
CONVENIENCE STORE
(TO BE DEMOLISHED)

BUILDING #2
CAR WASH
(TO REMAIN)

CANOPY + FUEL
DISPENSERS
(TO BE DEMOLISHED)

UST AREA #1

UST AREA #2

(PRODUCT LINES)

USTs TO BE REMOVED

SB-1
TMW-1

SB-2

SB-3

SB-4
TMW-2

SB-5
TMW-3

SB-6

SB-7

SB-8

SB-9
TMW-4

MW

SB

LANGNER ROAD

N

50' 0' 50' 100'

SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

DATE: SEPTEMBER 2011
DRAFTED BY: JGT

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

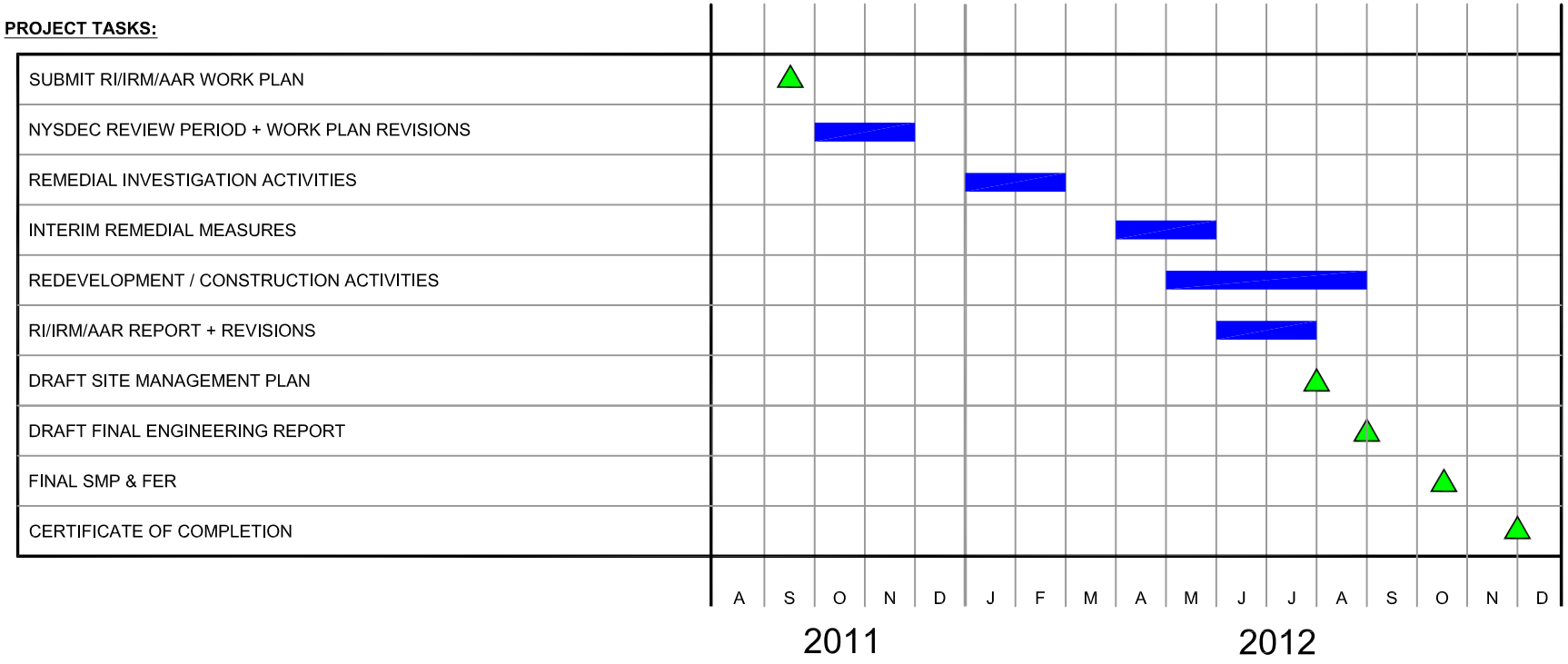
TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0123-005-102

PROPOSED IRM ACTIVITIES

RI/IRM/AAR WORK PLAN
348 LANGNER ROAD SITE
WEST SENCA, NEW YORK
PREPARED FOR
DELTA SONIC

FIGURE 5



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PROJECT SCHEDULE

RI/IRM/AAR WORK PLAN

348 LANGNER ROAD SITE

WEST SENECA, NEW YORK

PREPARED FOR

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FIGURE 6