ARCADIS

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Site Characterization Work Plan

United Stellar Industries
Property
131 Sunnyside Boulevard
Plainview, New York

Prepared for:
131 Sunnyside, LLC
Gertrude Discount

Prepared by:
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Our Ref.:
NY001442.0003.00001

Date:
5 September 2005

Tables

Figures

Appendices

1. Introduction

This Site Characterization (SC) Work Plan for the United Stellar Industries Property (the Property) has been prepared by ARCADIS G&M Inc. (ARCADIS) on behalf of 131 Sunnyside, LLC (Sunnyside) and Gertrude Discount (Discount). The SC Work Plan is submitted pursuant to Section II B "Submission/Implementation of Work Plans", of the Order On Consent (Consent Order or CO) Index # W1-1025-04-10, executed by the New York State Department of Environmental Conservation (NYSDEC), Sunnyside, and Gertrude Discount. The former United Stellar Industries Property is located at 131 Sunnyside Boulevard, Plainview, New York.

The objective of the SC effort is as follows:

- Determine whether any significant concentration of hazardous waste remain at the Property.

This SC Work Plan provides the framework for the activities to be conducted as part of the SC for the Property as required by the CO and includes the following key elements:

- The technical scoping completed for the preparation of the SC Work Plan is presented in Section 2.0 which includes a description of the Property, its history, previous investigations and remedial actions completed, its environmental setting, and environmental conditions.
- The Site Conceptual Model is presented in Section 3.0.
- The rationale and specific objectives are discussed in Section 4.0.
- The Scope of Work is presented in Section 5.0.
- A Project Management Plan is presented in Section 6.0.

2. Property Description

2.1 General Property Description

Much of the information and descriptions presented in this section and the following section have been taken from the April 2004 Report "Environmental Site Assessment Equine-Stellar Corp., 131 Sunnyside Boulevard, Plainview, NY", prepared by Anson

Environmental Ltd. on behalf of 131 Sunnyside LLC and Astoria Federal Savings & Loan Association.

The property is located at 131 Sunnyside Boulevard, south of the Long Island Expressway on the eastern side of Sunnyside Boulevard in Plainview, Town of Oyster Bay. The property is 3.3 acres and currently contains one unoccupied building that is undergoing renovation. The footprint of the current structure is "L" shaped. To the south, a portion of the property is bounded by Terminal Drive.

The property is also located on the western side of but within the Plainview Industrial Park (140 acres). The Industrial Park has been assigned NYSDEC Site Registry No. 1-30-104 due to soil and groundwater contamination (primarily in the eastern part of the Park) that may have been the source of groundwater contamination detected in a Plainview Water District public supply well. Many of the sites within the Industrial Park are in various stages of environmental investigation/remediation. The property is not a listed site on the New York State Registry of Inactive Hazardous Waste Disposal Sites.

The location of the United Stellar Industries Property is shown on Figure 1.

2.2 Property History

United Stellar Industries, Corp. and its successor company Equine-Stellar Corp. occupied the subject property from the late 1950s until the company's closure in 2002. Initially two separate buildings occupied the property, a single story shop and office area near Sunnyside Boulevard, and a second two-story office building near Terminal Drive. Following a series of expansions to the Sunnyside building in the 1960's, the two buildings were joined in the configuration that exists today whose address is 131 Sunnyside Boulevard. A site plan of the Property is shown on Figure 2.

2.2.1 Former Activities

The property was used for the manufacture of metal parts for the aerospace industry, bicycles, and other metal structures. During the manufacturing process, hazardous materials were used to degrease the metals parts and to subsequently paint those parts. EPA generator identification number NYD055323760 was assigned to the site.

Nassau County Department of Health records reviewed by Anson indicated that

- plating operations took place on site in the late 1950s and early 1960s and associated chemicals were discharged to the ground from those operations (subsequent investigation of the plating area by Anson indicated no exceedances of TAGMs);

- hazardous materials were stored and used on-site;

- hazardous wastes were stored on-site prior to disposal off-site.

According to Anson Environmental, the NYSDEC reviewed the site operations in April 2002 and did not find any violations.

2.2.2 Previous Investigations Completed

Two previous investigations were conducted at the Property by Anson Environmental, Ltd. (AEL). Their titles and dates of completion are provided below:

- The report entitled, "Phase I Environmental Site Assessment, Site Location: 131 Sunnyside Boulevard, Plainview, New York", was completed on September 29, 2003.

- The report entitled, "Environmental Site Assessment Equine-Stellar Corp., 131 Sunnyside Boulevard, Plainview, NY", was completed on April 29, 2004.

Both of these reports have previously been provided to the NYSDEC.

The purposes of the AEL work conducted at the Property were as follows:

- Perform the due diligence associated with purchasing industrial real estate,

- Perform the underground injection control (UIC) investigation necessary to obtain closure for UIC structures, and

- Obtain closure of the EPA generator's permit for the site.

The scope of work associated with the Phase II environmental site assessment summarized in the April 2004 report included sampling of

- four drywells in the parking lot and driveway;

- floor drains in the hazardous material storage room;
- soils immediately beneath concrete patches in the floor;
- perched water beneath the western portion of the site;
- mold growing in the building interior; and
- suspected asbestos containing materials.

Laboratory analysis of the perched water sample collected by hydropunch was analyzed by United States Environmental Protection Agency (USEPA) Methods 8260, 8270, and Nassau County metals. No exceedances of the drinking water standards were found, except for trichloroethylene which was detected slightly above groundwater standards at 7 parts per billion (ppb), and Chromium which was found in unfiltered samples in excess of drinking water standards, but was not detected in the filtered sample.

Laboratory analysis of soil and sediment samples collected from the drywells, floor drain and patched concrete identified some concentrations of chromium and other metals that exceeded the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup Objectives (RSCOs) for these compounds. In addition, the drywell investigation identified underground pipes entering these drywells and the floor drain. Further investigation identified several drywells finished below grade associated with these pipes. In all cases of exceedances, excavation/removal was performed such that all endpoint samples were below TAGM 4046 RSCO levels (except for the northern post-cleanout sample from Drain 5 [tri-valent chromium slightly above RSCOs] where further excavation would have undermined a foundation footing).

The flooring and soil under the flooring in locations where hazardous materials were used or stored were sampled and analyzed using USEPA Methods 8260, 8270 and RCRA metals. Laboratory analytical data were compared to the New York State (NYS) TAGM 4046 RSCOs. Where soil did not meet the TAGM 4046 RSCOs, it was removed from the site and disposed of.

The UIC closure plan (coordinated with the Nassau County Department of Health [NCDOH] and the United States Environmental Protection Agency [EPA]) included

investigation/sampling of underground piping, drywells, and sanitary pools. Where sample results of soils exceeded TAGM 4046 RSCO levels, soil was excavated and disposed of offsite. Manifest documentation is provided in the AEL reports. All endpoint samples were below TAGM 4046 RSCO levels.

Closure of the EPA generator's identification number required sampling of the areas were hazardous materials and wastes were used or stored on site. As with the UIC work described above, excavation and proper offsite disposal was conducted in all areas exceeding TAGM 4046 RSCO levels. Endpoint samples were all below TAGM 4046 RSCO levels.

Asbestos containing materials identified inside the building have been removed. Mold contaminated building materials have also been removed. All required manifests are documented in the AEL reports.

All work performed by AEL was presented to NYSDEC personnel (Nathan Putnam) at an onsite meeting on July 12, 2004. The reports cited above detailing the work performed were hand delivered to the Department at the July 12, 2004 meeting.

The closure letter pertaining to the UIC structures is referenced as:

- Letter from United States Environmental Protection Agency, dated September 10, 2004: Regarding Underground Injection Control Program Regulation Injection Well Closures and Authorization by Rule 131 Sunnyside, LLC (UICID:04NY05926070)

On December 30, 2004, ARCADIS collected three sub-slab soil gas samples from beneath the footprint of the building. Due to the detection of various VOCs in the sub-slab soil gas, a vapor extraction pilot test was conducted in late April 2005 and into May. Data from the pilot test are currently being analyzed and will be included in the SC Report along with any pilot test conclusions. During the Site Characterization efforts however, ARCADIS would propose to continue pilot testing. Therefore, following submittal of this Work Plan, ARCADIS will be contacting the NYSDEC (under separate cover) regarding continuation of the pilot test.

In the early 1990's, the NYSDEC commissioned the consulting firm of Dvirka and Bartilucci to perform a preliminary site assessment of the entire Plainview Industrial Park. That report is:

- Dvirka and Bartilucci, February 2003, Preliminary Site Assessment Report, Plainview Industrial Park, Plainview, Nassau County, New York; Prepared for NYSDEC.

The Dvirka and Bartilucci report focused on thirteen properties within the Industrial Park. Data suggests that some of the properties located in the eastern half of the Industrial Park may be linked to the Industrial Park eastern contamination and the offsite contamination that had been detected at the Plainview Water District supply well. The United Stellar Industries Property is the only property of the thirteen that is located at the western boundary of the Industrial Park. There is no evidence that links the eastern offsite contamination to this site. The United Stellar Industries Property, its location within the Plainview Industrial Park, and the location of other sites within the Park are shown on Figure 3.

2.3 Environmental Setting

The following sections describe the environmental setting of the site.

2.3.1 Site Description

The United Stellar Industries Property is comprised of 3.3 acres, located on the east side of Sunnyside Boulevard, just south of the Long Island Expressway. The Property is bordered by Extra Space Storage, a self storage facility to the north; Nationwide Movers, BBB Van Lines, and Terminal Drive to the south; an automobile auction facility to the east; and Sunnyside Boulevard to the west. The Property is approximately 200 feet above mean sea level and is generally flat.

2.3.2 Site Area Geology

In general, the geology at the Property, from land surface down to the bottom of the Magothy Formation, consists primarily of sand with interbedded layers of silt, clay and gravel. The uppermost sequence of these sediments is part of the Upper Pleistocene outwash and/or morainal deposits, while the lower sequence comprises the Magothy Formation, which is part of the Atlantic Coastal Plain deposits. In the vicinity of the site, the Upper Pleistocene deposits are approximately 100 feet thick while the underlying Magothy deposits are may be in excess of 500 feet thick (Smolensky, 1989). The Upper Pleistocene deposits in this area of Long Island tend to be coarser than the underlying Magothy Formation. Within the Magothy Formation, the deposits tend to be fine to medium sands with interbedded clays and silts. The lowest 75 feet

(approximate thickness) of the Magothy (referred to as the basal Magothy) tends to be coarser than the rest of the Magothy.

2.3.3 Site Area Hydrogeology

The water bearing units underlying the Property are the Upper Glacial and Magothy aquifers. Regional water table configuration maps (U.S.G.S., 1998 and 1987) indicate that the site is located just south of the regional groundwater divide. Recent drilling efforts at the site conducted by AEL noted the presence of perched water approximately 80 ft bls. Dvirka and Bartilucci (2003) also noted the presence of perched water in borings drilled to the east. It is unknown exactly how extensive and/or continuous the perched zone may be below the site. Groundwater (the water table) exists approximately 125 ft bls. No natural surface water features exist in the area.

2.4 Summary of Existing Environmental Data

See section 2.2.2 for a summary of previously completed investigations and existing data. The reader is referred to reports by Anson Environmental, Ltd. for a detailed discussion of the work conducted, along with figures and tables showing data collection locations, analytical results and findings.

3. Site Conceptual Model

Based on a review of the previously cited reports by AEL, the following conceptual model has been developed. The Property was initially developed in the early 1950's with the construction of a building heated by natural gas and setup as a machine shop. In the 1960's, two buildings, one on Sunnyside Boulevard, and a second located on Terminal Drive, were connected following a series of expansions of the Sunnyside Boulevard building.

The Property was occupied by United Stellar Industries Corp., and its successor company CorpEquine-Stellar Corp. from the 1950's through the company's closure in 2002. Operations at the site involved the manufacture of various plated and painted metal components. During the performance of this work, hazardous materials, including degreasers were used. Data collected by AEL indicated multiple areas of soil impacts both beneath the facility floor, and in various floor drains located throughout the Property.

To date, all areas of concern (drywells, septic systems, floor drains, etc.) have been cleaned up to NYSDEC standards. All excavations of soil and sediment have been conducted to TAGM 4046 RSCO levels (except as noted on page 4). These efforts have been extensive and complete. They have addressed all known and/or suspected areas of contamination.

Since the company's closure in 2002, the Property has been unoccupied. Immediately following property transfer to the current owner, remediation of impacted soils occurred. The Property is being renovated by the current property owners, 131 Sunnyside, LLC.

4. Work Plan Rationale

The following sections discuss the Site Characterization Approach and Objectives.

4.1 Site Characterization Approach

In order to successfully meet the SC objective in an effective and efficient manner, the SC investigation will focus on on-site groundwater (both perched and in the saturated zone). All activities that relate to soil conditions have already been completed (as documented by AEL.

4.2 Site Characterization Objectives

Following are the objectives for the Site Characterization effort.

- Determine the nature and extent (depth, thickness, direction of dip) of the confining unit underlying the on-site perched water horizon.
- Determine the presence of any significant impacts to the quality of the perched water (if any) with respect to volatile organic compounds, metals, or semivolatile organic compounds.
- Determine the presence of any significant impacts to the quality of the groundwater (the water table), if any, with respect to volatile organic compounds, metals, or semivolatile organic compounds.

5. Site Characterization Tasks

The following sections describe development of the SC work scope; the environmental investigation to be conducted; the components of the Sampling and Analysis Plan; how the collected data will be evaluated and the objectives of the SC refined in light of the data evaluation; and preparation of the SC Report.

5.1 Scoping the Site Characterization

The scoping process for the purpose of identifying and defining the SC tasks described below included the following:

- Visits to the site and surrounding area;
- Evaluation of the Consent Order requirements and relevant State and Federal guidance documents;
- Evaluation of existing reports for the site and surrounding area; and,
- Evaluation of existing data from the site and surrounding area.

5.2 Environmental Investigation

The following sections describe how the environmental investigation will be conducted.

5.2.1 Groundwater and Soil Investigation

All field sampling, laboratory analysis, and field work will be conducted in accordance with the protocols described in the Sampling and Analysis Plan (SAP), as described below and documented in detail in Appendices A (Field Sampling Plan [FSP]); B (Quality Assurance Project Plan [QAPP]); and C (Health and Safety Plan [HASP]).

The specific objectives of the groundwater and soil investigation are:

- Drill two borings to collect soil core samples from various horizons at locations targeted for the installation of monitoring well clusters.

- Identify the presence of a perched unit and determine both its depth and thickness from soil samples and natural gamma geophysical logs.
- Identify the depth to groundwater and select an appropriate well design and screen length based on the materials encountered at the water table.
- Install two monitoring well clusters; each consisting of one perched water and one groundwater (water-table) monitoring well (one cluster will be installed at the same location as the 2003 Anson Environmental Hydropunch).
- Install two additional monitoring wells in the perched water horizon (not associated with the two well clusters described above.
- Note that if a perched layer is identified southwest of Pools 1 and 2 (at proposed well location PW-1), then another perched monitoring well will be installed to the northeast of Pools 1 and 2 to determine if the layer extends in that direction.
- Assess the presence of impacts to water quality (if any) beneath the Property (in both perched water and groundwater).

The locations of proposed groundwater and perched water monitoring wells are shown on Figure 4. Table 1 provides a summary of SC data collection and rationale.

5.2.2 Data Analysis and Data Management

Samples of perched water and groundwater (collected from finished monitoring wells [see Attachment to Appendix A for details on analytical methods]) will be analyzed in accordance with the analytical methods listed in Table 1. The chemistry data will be transferred from the laboratory and maintained by ARCADIS in a database format (GIS-KEY). Severn Trent Laboratories (STL) will provide Electronic Data Deliverables (EDDs), which will be uploaded directly into the database.

For analytical samples associated with permanent monitoring wells, STL will produce CLP-type data packages that will contain all information needed for formal validation of the data. Data validation will be performed on 5% of the data in accordance with USEPA Region II Standard Operating Procedures (SOPs). These procedures are specific with regard to evaluation of holding time, surrogate and spike recoveries, precision of duplicate measurements, instrument performance, blank contamination,

compound identification, and compound quantification. Data will be qualified as necessary in accordance with the SOPs.

5.2.3 Site Characterization Deliverables

Following full evaluation and analysis of all field and analytical data, a determination will be made as to the validity of the site conceptual model. This will include the determination of any perched or groundwater impacts that are identified. The comprehensive SC Report, would then be submitted to the NYSDEC.

5.3 Sampling and Analysis Plan

A separate and distinct Sampling and Analysis Plan (SAP) does not exist but rather it is the umbrella term that covers Appendices A through C. The SAP includes the following required elements:

- A Field Sampling Plan (FSP - Appendix A) that defines sampling and data gathering methods consistent with "Field Methods Compendium," OSWER Directive 9285.2-11 (draft June 1993).

- A Quality Assurance Project Plan (QAPP – Appendix B) that describes the quality assurance and quality control protocols necessary to achieve the initial data quality objectives.

- A Health and Safety Plan (HASP – Appendix C) to protect persons at and in the vicinity of the Site during performance of the SC (in accordance with 29 CFR 1910).

In addition to the above, the components of the SAP will also be consistent with the requirements of NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002.

5.4 Site Characterization Report

A Site Characterization Report will be prepared and submitted to the NYSDEC for review. The report will be written following applicable USEPA and NYSDEC guidance, and will be consistent with the requirements of the Consent Order.

6. Project Management Plan

The following personnel will play key roles in completing the SC. Mr. Nathan Putnam will serve as the NYSDEC Project Manager. Mr. Douglas Smolensky, C.P.G. will serve as ARCADIS' Project Manager and will be the primary point of contact to Mr. Putnam. Mr. Smolensky will have overall responsibility for the performance of the SC, its deliverables, schedule and budget. Mr. Robert Porsche, C.P.G. and Ms. Christina Tuohy, P.E. will serve as the task managers, respectively. While conducting their respective tasks, Mr. Porsche and Ms. Tuohy may serve as the day-to-day contact for Mr. Putnam.

ARCADIS anticipates that all subcontractors used for specialty services, such as drilling, analytical laboratory, etc. will be contactors ARCADIS has previously relied on for similar tasks at other sites. Any subcontractor utilized will meet any special requirements of the NYSDEC.

6.1 Project Schedule

The proposed schedule to conduct the Site Characterization is provided in Figure 5. The schedule begins with the SC Work Plan task and ends with the approval of the SC report.

7. References

ARCADIS, June 20, 2005. Letter to Mr. Nathan Putnam, Division of Environmental Remediation, NYSDEC, re: Records Search Report, Index #W1-1025-04-10.

Anson Environmental, Ltd., September 29, 2003. Phase I Environmental Site Assessment, Site Location: 131 Sunnyside Boulevard, Plainview, New York.

Anson Environmental, Ltd., April 29, 2004. Environmental Site Assessment, Equine-Stellar Corp., 131 Sunnyside Boulevard, Plainview, New York..

Busciolano, Monti, and Chu, 1998. Water Table and Potentiometric Surface Altitudes of the Upper Glacial , Magothy, and Lloyd Aquifers on Long Island, New York, in March-April 1997, with a Summary of Hydrologic Conditions. U.S. Geological Survey WRI Report 98-4019

Doriski, Thomas, 1987. Potentiometric Surface of the Water-Table, Magothy, and Lloyd Aquifers on Long Island, New York, in 1984. U.S. Geological Survey WRI Report 86-4189.

Dvirka and Bartilucci, February 2003. Preliminary Site Assessment Report, Plainview Industrial Park, Plainview, Nassau County, New York; Prepared for NYSDEC.

New York State Department of Environmental Conservation, May 12, 2005. Order on Consent, Index # W1-1025-04-10.

Smolensky, D.A., Buxton, H.T., and Shernoff, P.K., 1989. Hydrologic Framework of Long Island, New York. U.S. Geological Survey Hydrologic Investigations Atlas HA-709.

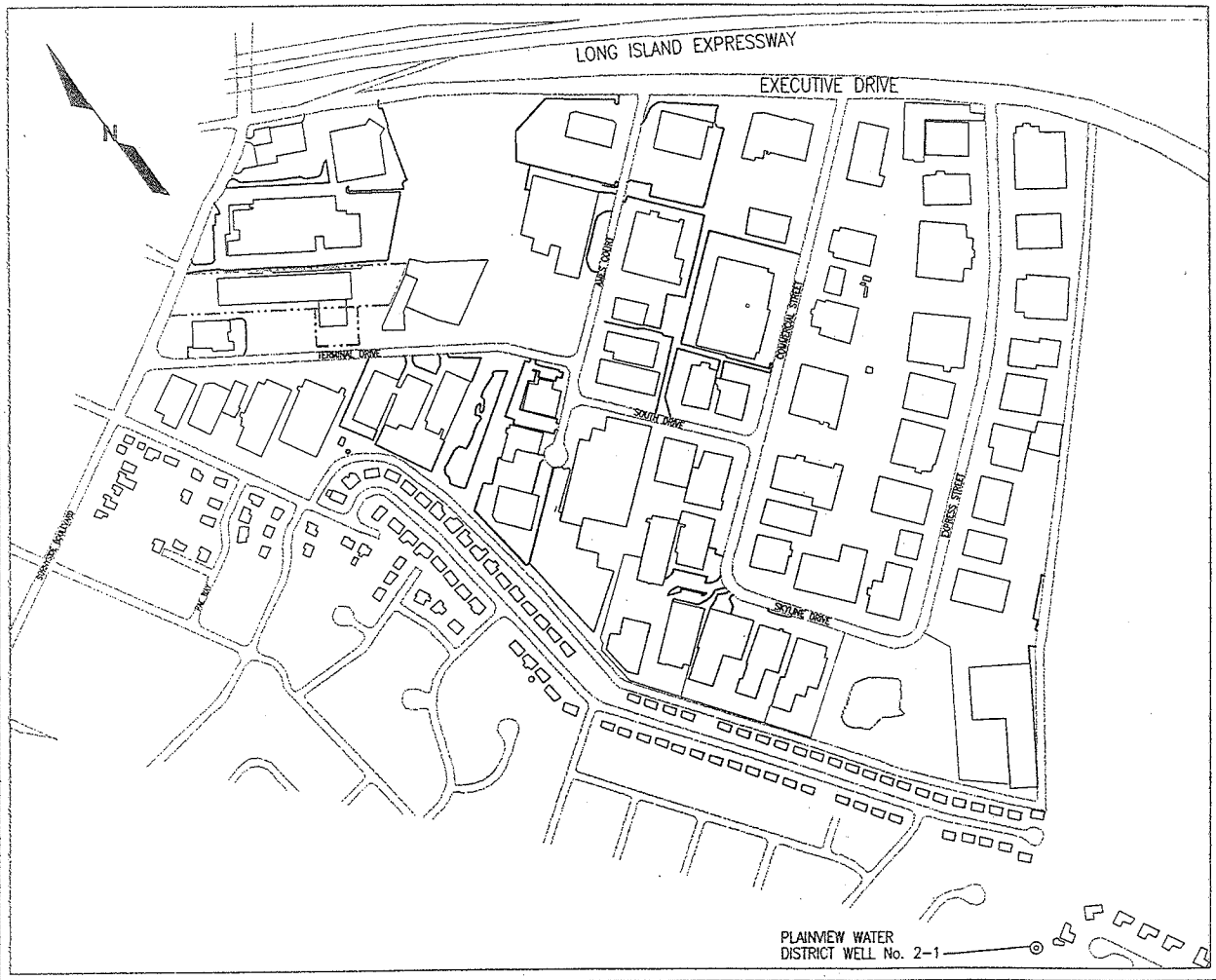
United States Environmental Protection Agency, September 10, 2004. Letter to Mr. Jeffrey Wilks re: Underground Injection Control Program Regulation Injection Well Closures and Authorization by Rule, 131 Sunnyside LLC (UICID:04NY05926070).

ARCADIS

Table 1. Summary of Site Characterization Data Collection and Rationale,
United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Analysis	Analytical Method	Primary	Field Duplicates	Matrix Spikes	Matrix Spike Duplicates	Field Blanks	Trip Blanks
Groundwater - Wells Monitoring both Perched Water Horizon and Groundwater							
RCRA Metals	SW-846 6010/7471	6	1	1	1	2	
TCL VOCs	SW-846 8260B	6	1	1	1	2	2
TCL SVOCs	SW-846 8270C	6	1	1	1	2	

PW-1 Shallow well monitoring perched water, west side of property.
MW-1 Groundwater monitoring well, west side of property.
PW-2 Shallow well monitoring perched water, driveway along south side of building.
PW-3 Shallow well monitoring perched water, south side of property near Terminal Drive.
MW-2 Groundwater monitoring well, south side of property near Terminal Drive.
PW-4 Shallow well monitoring perched water, northeast corner of property.
Shallow wells monitoring perched water will be constructed with 10 ft screens set approximately 70-80 ft bls.
Groundwater monitoring wells will be constructed with 10 ft screens set approximately 120-130 ft bls.
Groundwater monitoring well screens will be constructed to bridge the water table.
ft bls feet below land surface.



LEGEND

PROPERTY BOUNDARY UNITED STELLAR IND.

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SCALE: 1" = 400'

REV. ISSUED DATE DESCRIPTION

KEYPLAN

ARCADIS

63 Dupont Road
Melville, NY 11747
Tel: 631-249-7000 Fax: 631-249-7610
www.arcadis-us.com

PROJECT TITLE

131 SUNNYSIDE BOULEVARD
PLAINVIEW, TOWN OF OYSTER BAY
NASSAU COUNTY, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED
R. PORSCHE	D. SMOLENSKY		R. PORSCHE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
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		PROJECT NUMBER	DRAWING NUMBER
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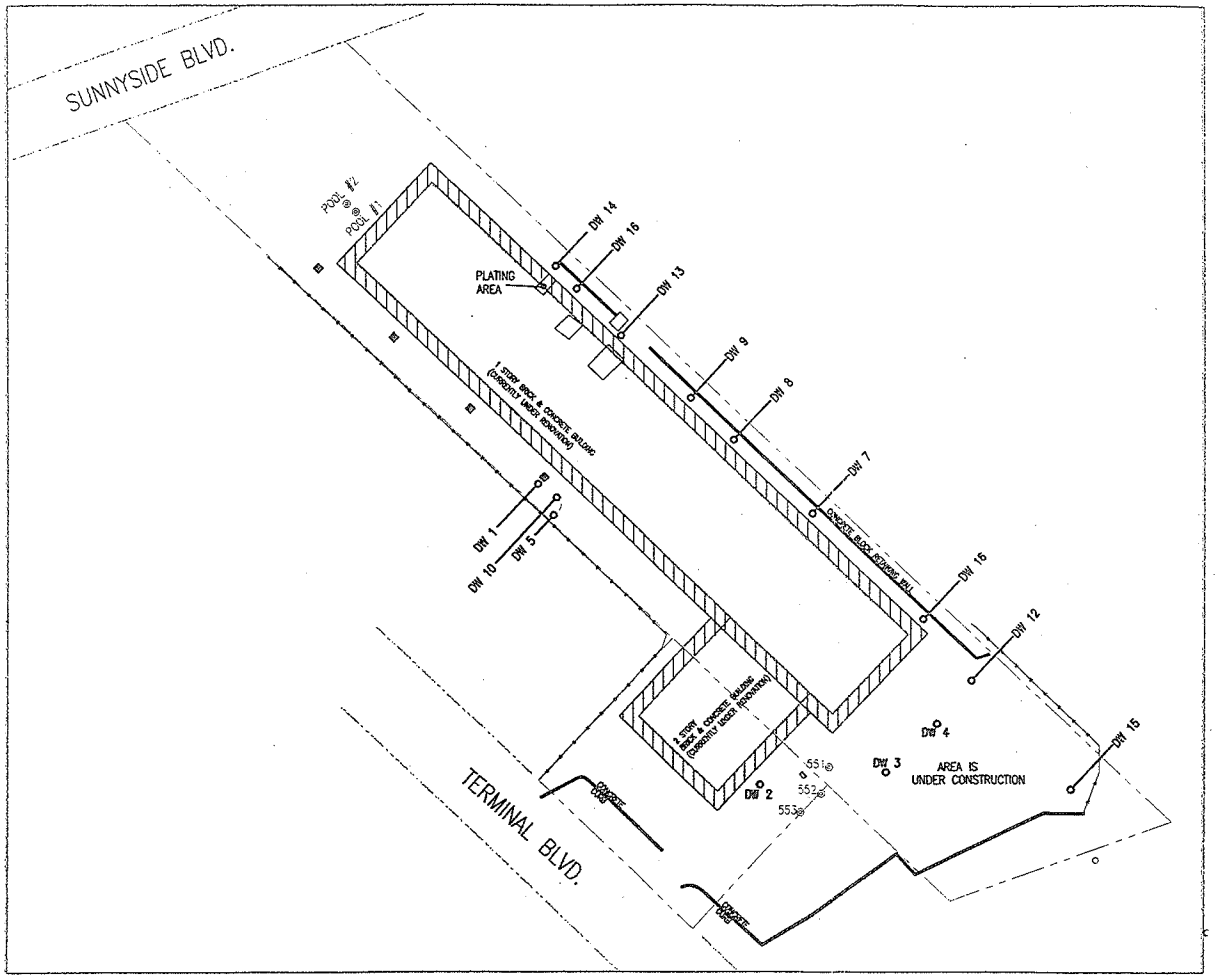

LEGEND

- FORMER SANITARY LEACHING POOL ◎
- SEWER MANHOLE
- SURVEY CONTROL STATION
- BUILDING LINE
- EDGE OF PAVEMENT
- RETAINING WALL/CURB
- FENCE LINE
- APPROX. PROPERTY LINE

NOTES

1. FIELD SURVEY WAS CONDUCTED FEB., 2004 BY WELSH ENGINEERING & LAND SURVEYING, P.C.
2. UNDERGROUND UTILITIES ARE NOT SHOWN.

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REV. ISSUED DATE DESCRIPTION

KEYPLAN

ARCADIS
85 Duryea Road
Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610

PROJECT TITLED
131 SUNNYSIDE BOULEVARD
PLAINVIEW, TOWN OF OYSTER BAY
NASSAU COUNTY, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED
R. PORSCHE	D. SMOLENSKY		R. PORSCHE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
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		PROJECT NUMBER	DRAWING NUMBER
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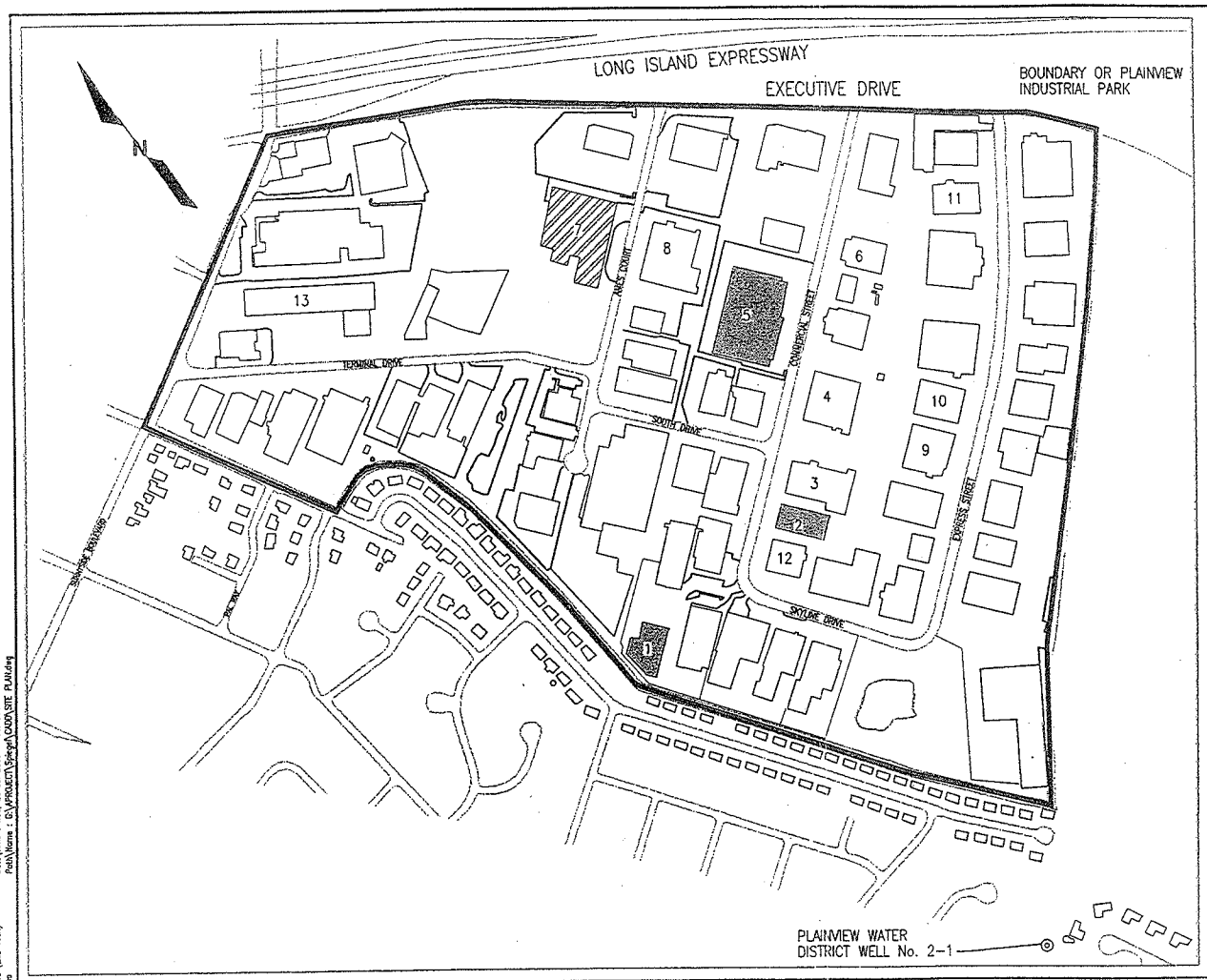

SITE #	ADDRESS	COMPANY NAME
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2	31 COMMERCIAL STREET	THREE DIMENSIONAL CIRCUITS
3	51 COMMERCIAL STREET	AMERICAN CASTINGS
4	75 COMMERCIAL STREET	CONTEMPORARY PACKAGING
5	100 COMMERCIAL STREET	100 COMMERCIAL STREET
6	101 COMMERCIAL STREET	PERMIGILE INDUSTRIES
7	TERMINAL DRIVE	VEECO INSTRUMENTS
8	155 AMES COURT	ROMAC ELECTRONIC
9	130 EXPRESS STREET	DIE-MATIC PRODUCTS
10	150 EXPRESS STREET	OMEGA INDUSTRIES
11	200 EXPRESS STREET	ANALYTICAL PRODUCTS
12	10 SKYLINE DRIVE	DIA-MATIC PRODUCTS
13	131 SUNNYSIDE BLVD.	UNITED STELLAR INDUSTRIES

LEGEND

[1] FACILITY WITH DOCUMENTED SOLVENT USE.

NYSDEC REGISTRY SITE

SPDES SITE

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REV. ISSUED DATE DESCRIPTION

KEYPLAN

ARCADIS
65 Duryea Road
Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610
www.arcadis-us.com

PROJECT TITLE
131 SUNNYSIDE BOULEVARD
PLAINVIEW, TOWN OF OYSTER BAY
NASSAU COUNTY, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED
R. PORSCHE	D. SMOLENSKY		R. PORSCHE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
PLAINVIEW INDUSTRIAL PARK 131 SUNNYSIDE BOULEVARD PLAINVIEW, NEW YORK		00001	E. HUGHES
		PROJECT NUMBER	DRAWING NUMBER
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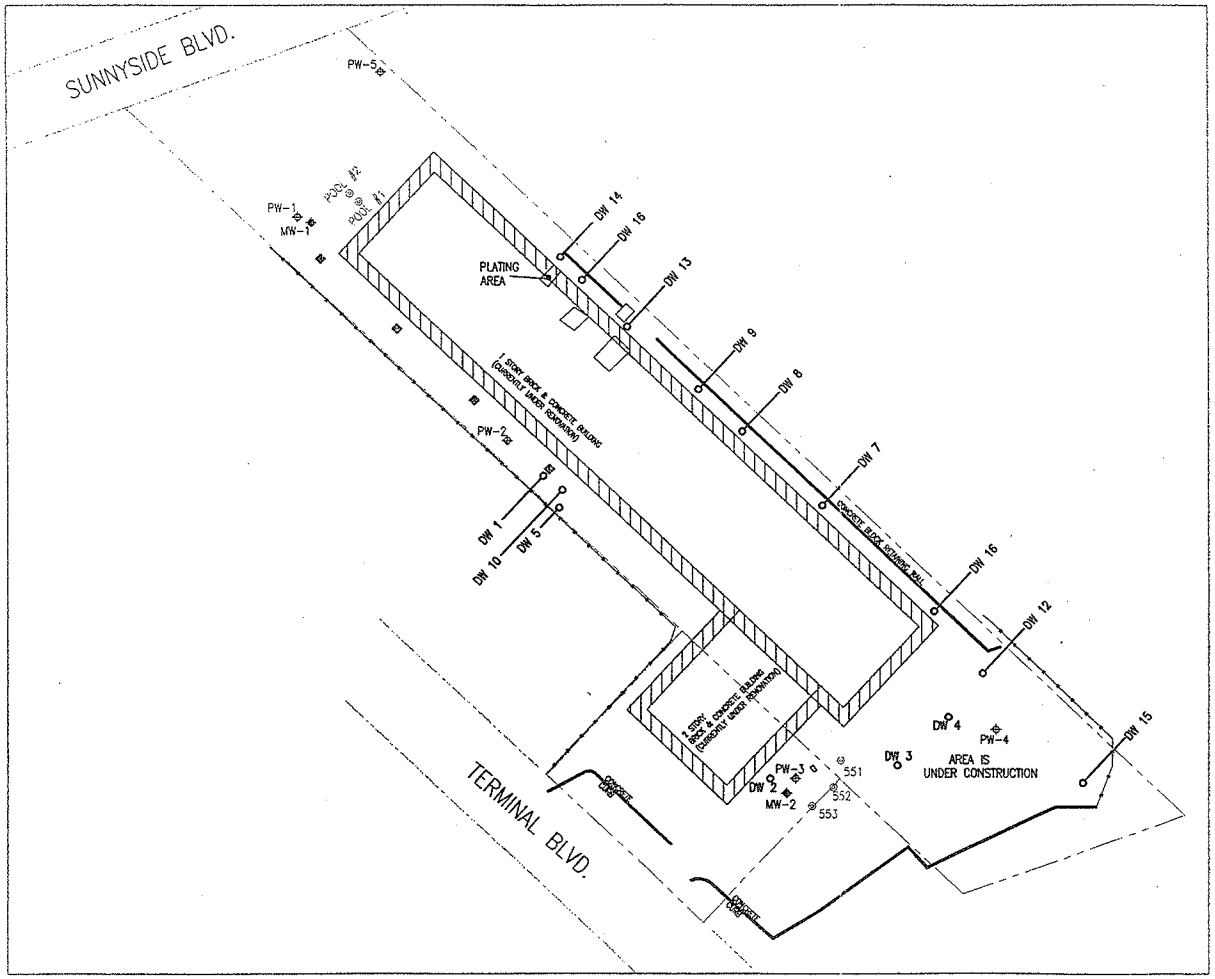

LEGEND

- DRY WELL
- FORMER SANITARY LEACHING POOL
- SEWER MANHOLE
- SURVEY CONTROL STATION
- GROUNDWATER MONITORING WELL
- PERCHED WATER MONITORING WELL
- BUILDING LINE
- EDGE OF PAVEMENT
- RETAINING WALL/CURB
- FENCE LINE
- APPROX. PROPERTY LINE

NOTES

1. FIELD SURVEY WAS CONDUCTED FEB., 2004 BY WELSH ENGINEERING & LAND SURVEYING, P.C.
2. UNDERGROUND UTILITIES ARE NOT SHOWN.
3. PW-5 IS ONLY TO BE INSTALLED IF PERCHED CONDITIONS EXIST AT PW-1.

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SCALE: 1" = 80'

REV. ISSUED DATE DESCRIPTION

KEYPLAN

ARCADIS
65 Duryea Road
Melville, NY 11747
Tel: 631-249-7600 Fax: 631-249-7610
www.arcadis-us.com

PROJECT TITLE
131 SUNNYSIDE BOULEVARD
PLAINVIEW, TOWN OF OYSTER BAY
NASSAU COUNTY, NEW YORK

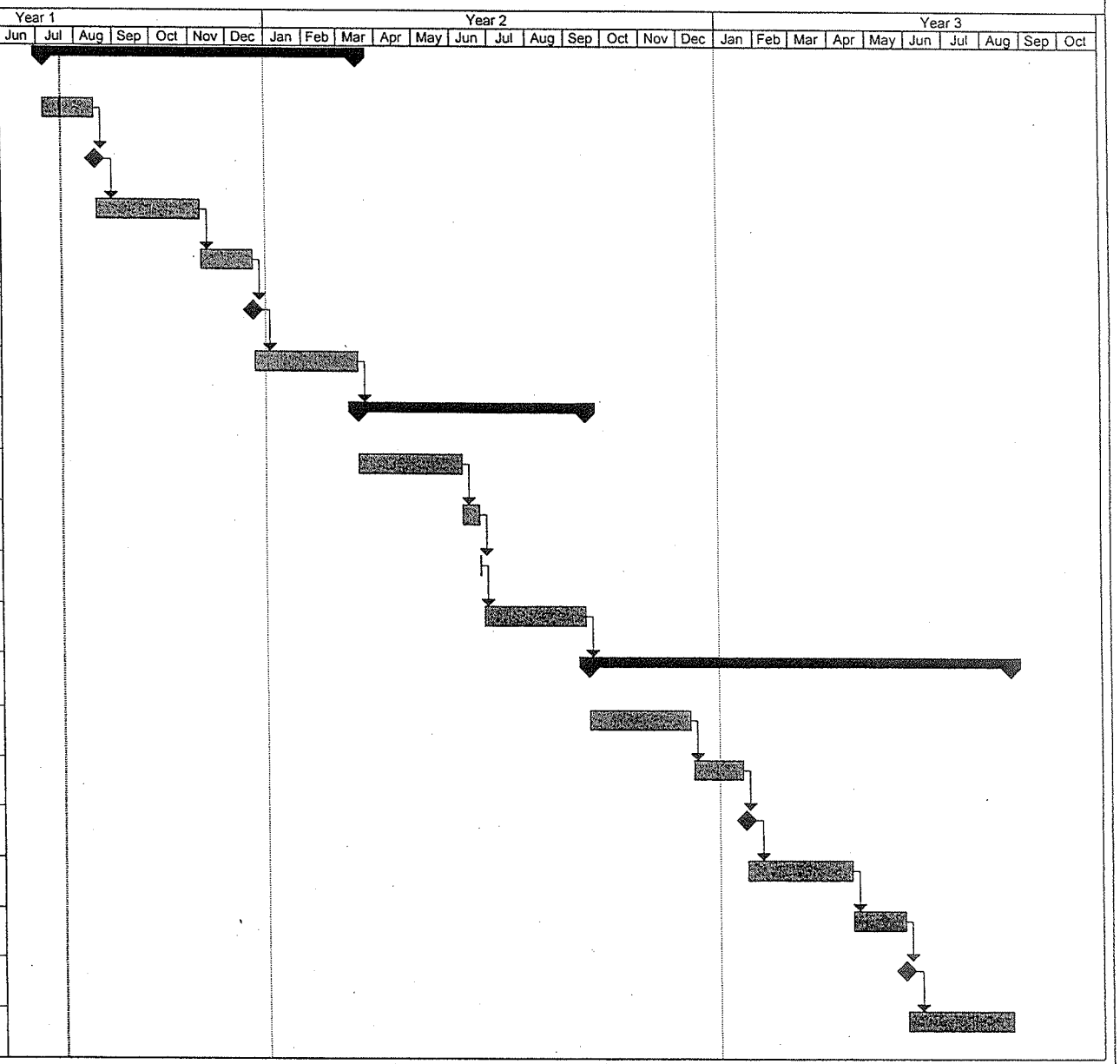
PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED
R. PORSCHE	D. SMOLENSKY		R. PORSCHE

SHEET TITLE
PROPOSED MONITORING WELL CLUSTER LOCATIONS
131 SUNNYSIDE BOULEVARD
PLAINVIEW, NEW YORK

TASK/PHASE NUMBER	DRAWN BY
00001	E. HUGHES
PROJECT NUMBER	DRAWING NUMBER
NY001422.0003	4

Figure No. 5. [redacted] Schedule, 131 Sunnyside Boulevard, Plainview, New York.

ID	Task Name
1	**Prepare Site Characterization Work Plan**
2	Prepare draft Site Characterization Work Plan
3	Submit draft Site Characterization Work Plan to NYSDEC
4	NYSDEC review and comment
5	Revise draft Work Plan
6	Submit final Site Characterization Work Plan to NYSDEC
7	NYSDEC approval of Workplan
8	**Implement Site Characterization Work Plan**
9	Monitoring Well Cluster Installation/ Well Development
10	Groundwater Quality Sampling
11	Water Level Guaging
12	Laboratory Analysis of Groundwater Samples
13	**Prepare Site Characterizaiton Report**
14	Data Validation, Tabulation and Interpretation
15	Prepare summary Site Characterizaiton report and figures
16	Submit draft Report to NYSDEC
17	NYSDEC review of Report
18	Revise draft Report
19	Submit Final Site Characterizaiton Report to NYSDEC
20	NYSDEC approval of Site Characterization Report



Site Characterization Schedule
Wed 7/20/05

Task Progress Milestone Summary

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Appendix A

Field Sampling Plan of Sampling and Analysis Plan

ARCADIS

Appendix A

Field Sampling Plan

United Stellar Industries Property
131 Sunnyside Boulevard,
Plainview, New York

ARCADIS

Christopher Keen
Project Scientist

Robert Porsche
Senior Scientist

Douglas A. Smolensky
Associate Vice President

Appendix A
Field Sampling Plan

United Stellar Industries
Property
131 Sunnyside Boulevard,
Plainview, New York

Prepared for:
131 Sunnyside, LLC
Gertrude Discount

Prepared by:
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Our Ref.:
NY001422.0003.00001
Date:
5 September 2005

Attachments

ARCADIS

1. Introduction

This Field Sampling Plan (FSP) has been prepared by ARCADIS G&M, Inc. (ARCADIS) on behalf of 131 Sunnyside, LLC (Sunnyside) and Gertrude Discount (Discount). The FSP has been prepared to serve as the primary reference that provides the details of methods and procedures related to environmental sample collection activities that are being conducted by direction of the New York State Department of Environmental Conservation (NYSDEC) for the United Stellar Industries Property (the Property). This FSP is a required component of the Site Characterization (SC) Work Plan for the Property that is being prepared pursuant to Section II B "Submission/Implementation of Work Plans" of the Administrative Order on Consent (Consent Order or CO) Index No. W1-1025-04-10 executed by the NYSDEC, Sunnyside, and Discount. The Property is located at 131 Sunnyside Boulevard, Plainview, New York.

ARCADIS has prepared this FSP as Appendix A of the Sampling and Analysis Plan (SAP) of the SC Work Plan. The procedures and protocols described herein shall be conducted in accordance with the analytical requirements set forth in the Quality Assurance Project Plan (QAPP), provided as Appendix B of the SAP, as well as the requirements of the Health and Safety Plan (HASP), which is provided as Appendix C of the SAP.

In accordance with New York State Department of Health (NYSDOH) requirements, the Community Air Monitoring Plan (CAMP) is included as Attachment A-1 to this FSP.

1.1 Plan Organization

This FSP contains the following sections:

- Section 2: Property Background briefly summarizes the history of the Site.
- Section 3: Sampling Activities - describes the type of sampling to be performed in accordance with the FSP.

The subsequent sections of the FSP provide procedures for the sampling activities, as follows:

- Section 4: Pre-Field Preparation and Equipment summarizes preparation and equipment needed prior to mobilization to the field.
- Section 5: Sampling associated with investigation activities:
  - Collection of soil samples from soil borings.
  - Drilling and installation of permanent monitoring wells.
  - Collection of groundwater samples from permanent monitoring wells.
  - Collection of hydraulic (water-level) measurements from monitoring wells.
- Section 6: Investigation-derived waste (IDW) sampling.
- Section 7: Sample Collection, Labeling, Handling and Analyses.
- Section 8: Field Decontamination Procedures.
- Section 9: Waste Management and Disposal.

2. Property Background

The Property is located at 131 Sunnyside Boulevard, south of the Long Island Expressway on the eastern side of Sunnyside Boulevard in Plainview, NY. The Property is 3.3 acres in size and currently contains one unoccupied building that is undergoing renovation. United Stellar Industries Corp. and its successor company, Equine-Stellar Corp., occupied the subject property from the late 1950s until the company's closure in 2002. The building had only been occupied by Equine-Stellar Corp. to manufacture metal parts for the aerospace industry, bicycles, and other metal structures. During the manufacturing process, hazardous materials were used to degrease the metal parts and to subsequently paint those parts. Due to hazardous materials use on site, U.S. Environmental Protection Agency (EPA) generator identification number NYD055323760 was assigned to the Site. The NYSDEC reviewed the Site operations in April 2002 and did not find any violations. Based on previous investigations, metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) are the constituents of concern (COCs).

3. Sampling Activities

The primary Site related activities are to characterize soil lithology, identify the presence of any significant concentrations of hazardous waste at the site, and characterize IDW in accordance with regulations and disposal facility requirements. Sample collection efforts include obtaining discrete soil samples (for characterization of soil lithology), groundwater samples from permanent monitoring wells, and IDW liquid and solid media samples for waste characterization purposes.

4. Pre-Field Preparation and Equipment

The following sections describe the preparation that will be performed and equipment that is needed prior to mobilization to the field to conduct the activities specified in the FSP. The field project team (technicians, engineers, and scientists) will be responsible for obtaining and maintaining the required equipment, collecting the samples as specified herein, and for procuring and maintaining sample containers pertinent to the collection of environmental samples. The following text describes these procedures in detail.

The pre-cleaned environmental sample containers (bottles) will be provided by the laboratory in accordance with procedures and requirements set forth in the QAPP (Appendix B of the SAP). The sample containers will be inventoried and inspected to verify that all the required containers are present and in good condition. Specific sample container inspection procedures are as follows:

- Water sample bottles will be inventoried and inspected to ensure that the required bottles are present, visually clean, unbroken, and have been properly preserved (as appropriate) by the laboratory.

Field equipment will be inventoried and inspected. The equipment listed below will be available and used during the course of general field activities.

- Personal Protective Equipment (PPE) and air monitoring equipment as defined in the HASP (Appendix C to the SAP) and CAMP (Attachment 1 to this appendix).
- Field logs as specified in the QAPP.
- Weighted tape measure accurate to one-hundredth of one foot.

- "Micro-90" (or equivalent) low-phosphate detergent and new scrub brushes.
- Sufficient quantities of distilled/de-ionized water.
- 4-millimeter thick plastic sheeting.
- Digital Camera.

The following additional equipment/forms shall be available and used during collection of groundwater samples from permanent monitoring wells.

- Water Sampling logs, as specified in the QAPP.
- Variable speed submersible pump, motor lead, support cable, submersible pump control box, and portable 110 volt or 230 volt generator. For details on the type of pump and appurtenant equipment required for the wells to be sampled, see Section 5.4.3 (Monitoring Well Groundwater Sample Collection) of this FSP.
- Centrifugal pump (Waste Management and Disposal – Section 9 of the FSP).
- Electronic water-level indicator accurate to one-hundredth of one foot.
- Field parameter metering including pH/Conductivity/Temperature/Turbidity and calibration standards.
- Purge water containers (New York State Department of Transportation-compliant 55-gallon capacity "bung-top" drums).
- Plastic coolers for sample storage and shipment.
- Disposable in-line field filters (0.45 micron).
- Water sample containers (dependent on analysis performed, refer to the QAPP – Appendix B).

The following additional equipment/forms shall be used during collection of soil samples for lithologic characterization:

- Soil Sample/Core Logs (as specified in the QAPP) and Unified Soil Classification System (USCS).
- Portable table for logging soil samples.
- Two, plastic 5-gallon buckets for spilt-spoon decontamination (see below).
- Other required equipment not specified herein will be provided by the drilling subcontractor.

5. Sampling Associated with Investigation Activities

The following sections describe methods for sampling associated with investigation activities. The QAPP provides additional details regarding Field Records and Quality Assurance/Quality Control (QA/QC) samples, frequency and protocols (Section 4.1 – Field QA/QC), sample labeling (Section 4.2 – Preparation and Preservation of Sample Containers), and sample custody (Section 4.4 – Sample Custody).

5.1 Sample Locations and Schedule

The locations of permanent monitoring wells that are proposed for the SC are shown on Figure 4 of the SC Work Plan. Monitoring well groundwater samples are intended to identify the presence of any hazardous waste disposed of at the Site.

The number, location, and anticipated depth of permanent monitoring wells (both perched water and groundwater) are provided in Table 1 in the SC Work Plan. Groundwater samples are expected to be collected from all new monitoring wells.

5.2 Soil Borings

The procedures described herein describe the methods to collect soil samples from soil borings for the purpose of lithologic characterization. Field conditions will dictate modifications to sampling intervals and the number of samples collected. It is anticipated that hollow stem auger (HSA) drilling methods will be employed. Alternatively, rotosonic drilling techniques may be employed. This drilling method provides continuous soil cores that can be described and correlated with the response from the gamma logs. This should be helpful when using the gamma logs for interpretation of the geology and provide a better understanding of the geology. The soil borings will include the following activities: the borehole will be drilled using

either HSA or rotosonic drilling, discrete split-spoon soil samples (HSA) or continuous soil cores (rotosonic) will be collected for lithologic characterization, and the borehole will be geophysically logged (natural gamma method) after attaining the borehole terminus. Following completion of drilling, sampling, and geophysical logging, the borehole will be abandoned and sealed if HSA drilling techniques are employed. If rotosonic drilling techniques are employed, the borehole will be used for the installation of a permanent monitoring well. Additional details on soil sample collection are provided below.

5.2.1 Spilt-Spoon Sampling

If HSA drilling techniques are employed, discrete split-spoon soil samples obtained from the subsurface will be collected using a two-foot long by two-inch outer diameter (O.D.) carbon steel split-spoon soil sampler. Spilt-spoon samples will be collected at selected depths. The general sequence of split-spoon sampler assembly, sample collection, logging, and record keeping is as follows:

- Assemble the sampler by aligning both sides of barrel and then screwing the drive shoe on the bottom and the head piece on top.
- Lower the sampler to the desired sampling depth.
- Drive the spilt spoon through the bottom of the borehole with a 140 pound hammer dropped 30 inches vertically repeatedly. Do not drive past the bottom of the head piece or compression of the sample will result.
- Record the length of the sampler used to penetrate the material being sampled and the number of blows, per six inches of spilt-spoon penetration, required to obtain the depth on the sample/core log sheets.
- Withdraw the sampler from the borehole and open by unscrewing the drive shoe and head piece and splitting the barrel. Record the amount of recovery and soil type on the sample/core log. The soil type should be described using the classification system described in Attachment A-2 to this appendix. Specific information recorded should include:
    - The structure of the soils sampled, including layering/stratification features, and the dominant soil types.
    - The color of soils.

- The moisture content of soils.
- Soil grain features, including grain sizes, degree of sorting or grading, angularity, and mineralogy.
- Identification of any rock fragments, organic material, or other components.

- The split-spoon sample will be screened for VOCs using an appropriate monitoring device. Refer to the HASP (Appendix C) for specific requirements and action levels.

- The sample will be containerized in a 55-gallon drum and the split-spoon will be decontaminated in accordance with Section 8 of the FSP.

If rotosonic drilling techniques are employed, continuous soil core samples will be obtained from the subsurface will be collected using rotosonic drilling equipment. Should rotosonic drilling techniques be employed, additional details will be provided to the NYSDEC prior to implementation.

5.3 Monitoring Well Drilling and Installation

Monitoring wells will be drilled using HSA or rotosonic methods. Should rotosonic drilling techniques be employed, additional details will be provided to the NYSDEC prior to implementation.

The following text summarizes the general methods employed for monitoring well drilling and installation:

- Driller will hand dig the monitoring well borehole to a depth of 5 feet below land surface (ft bls) to verify that underground utilities are not present. The drilling rig will then be utilized and the borehole will be advanced to the specified depth. Water or other lubricants (i.e., bentonite drilling mud) may be used during the monitoring well drilling and installation activities. A weighted measuring tape will be used to routinely check the depth of the open hole.

- Once the prescribed borehole total depth is attained, driller will install the well and well finishing materials.

- Monitoring wells installed in the perched water horizon will be drilled using the HSA drilling method and will consist of two-inch diameter schedule 40 polyvinyl

chloride (PVC) well casing and two-inch diameter PVC well screen and will be installed to the specified depth in a continuous process. Once the monitoring well casing and screen are inserted into the borehole, the annular space between the well screen and the borehole will be backfilled with the appropriate filter pack. The filter pack will be emplaced to 3 feet above the top of each well screen. A 2-foot thick #00 Morie (or equivalent) fine sand seal will be emplaced above the filter pack. A minimum of 2 feet of hydrated bentonite pellet sealant or bentonite slurry will be emplaced above the fine sand seal. The remaining annulus will then be grouted to approximately 2 ft bls with a 95% cement/5% bentonite grout mixture using a tremie pipe. In addition, a locking cap will be placed on the well and a stick-up or flush-mount protective surface casing will be installed. Once well installation activities are complete, the total depth of the well and the depth to water will be measured and recorded.

- Monitoring wells installed in the shallow portion of the unconfined aquifer (i.e., water table wells) will be of double-cased construction. Using the HSA drilling method, a surface casing will be installed to three feet below the top of the lower permeability layer (i.e., perched water horizon). The surface casing will be grouted and allowed to cure for a period of 24 hours. Following the surface casing curing period, boring through the grout will allow for installation of a two-inch diameter PVC well casing and PVC well screen to the specified depth. Once the monitoring well casing and screen are inserted into the borehole, the annular space between the well screen and the borehole will be backfilled with the appropriate filter pack. The filter pack will be emplaced to 3 feet above the top of each well screen. A 2-foot thick #00 Morie (or equivalent) fine sand seal will be emplaced above the filter pack. A minimum of 2 feet of hydrated bentonite pellet sealant or bentonite slurry will be emplaced above the fine sand seal. The remaining annulus will then be grouted to approximately 2 ft bls with a 95% cement/5% bentonite grout mixture using a tremie pipe. In addition, a locking cap will be placed on the well and a stick-up or flush-mount protective surface casing will be installed. Once well installation activities are complete, the total depth of the well and the depth to water will be measured and recorded.

- Monitoring wells will be developed to remove fine-grained material and ensure hydraulic communication with the surrounding formation.

- Perform decontamination and waste disposal as specified in Sections 8 and 9, respectively.

- Monitoring wells will be surveyed to establish horizontal and vertical control by a New York State licensed surveyor.

5.4 Monitoring Well Groundwater Sample Collection and Hydraulic Monitoring

5.4.1 Sample Locations

The exact depth of the monitoring wells that will be installed and sampled as part of this SC is dependent on the results of the soil borings, the altitude of the perched water horizon, and the altitude that the water table is encountered. However, the sections below describe hydraulic monitoring and groundwater sampling for the monitoring wells that are proposed for installation.

5.4.2 Hydraulic Monitoring

Hydraulic (i.e., water level) measurements will be made using the following procedures:

- For all monitoring locations water-level measurements will be made by measuring the depth to groundwater at each location from the surveyed measuring point.
- The water-level measurements will be made to the nearest one-hundredth of a foot with an electronic water-level indicator.
- The probe will be decontaminated between well locations using methods described in Section 8 with more detail provided in the QAPP (Appendix B, Section 4.3 – Decontamination).
- Water-level measurements and other pertinent information (e.g., well designation) will be recorded as outlined in the QAPP (Section 4.1.5 – Field Records).

5.4.3 Monitoring Well Groundwater Sample Collection

Pre-sampling activities will be performed including accessing the well, preparing the well for purging and sampling, and collecting initial measurements. To access the well, the protective casing will be unlocked and any surficial dirt will be cleaned from around the wellhead. Plastic sheeting will be placed around the well and secured at the corners. The depth to water in the well will be measured to the nearest one-hundredth of a foot with an electronic water-level indicator and the total depth of the well will be

sounded. Information pertinent to the well purging and sampling activities will be recorded as outlined in the QAPP (Section 4.1.5 – Field Records).

Monitoring wells will be purged and sampled using a non-dedicated, variable speed, 2-inch diameter stainless steel submersible pump following EPA low-flow (minimal drawdown) groundwater sampling procedures as follows:

- Disposable ½-inch diameter polyethylene tubing will be connected to the pump and the pump and tubing will be gradually lowered so as to place the pump intake within the approximate center of the well screen zone or the midpoint of the saturated portion of the screen if the well bridges the water table.

- Groundwater will then be extracted from each well using low-flow techniques and will be directed into a flow-through cell. This cell will contain the dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, specific conductance, and temperature probes and will be designed and constructed in such a manner as to preclude groundwater contact with atmospheric air. Turbidity will be measured external to the flow-through cell. The wells will be purged at rates that do not exceed 500 milliliters per minute (mL/min). Ideally, the purge rate of each well should equal the recharge rate of that well.

- Field parameters (DO, ORP, pH, specific conductance, temperature, and turbidity) will be measured initially and at approximately five minute intervals during purging. Field parameters will be monitored with calibrated meters. Field meters will be calibrated daily according to manufacturer's instructions (see QAPP, Appendix B of the SAP). Completion of purging, and therefore, the actual volume of water purged from each well, will be based on the stabilization protocols described in the low-flow method. In summary, the stabilization protocols are as follows: 1) measurements should be taken every three to five minutes; 2) stabilization is achieved after all parameters have stabilized for three successive readings; and, 3) three successive readings should be within +/- 0.1 for pH, +/- 3 percent for specific conductance, +/- 10 percent for DO, +/- 10 mV for ORP, and +/- 10 percent for temperature.

- Following stabilization of field parameters, the purge rate will then be reduced to approximately 100 mL/min and the groundwater sample will be collected directly from the pump discharge. Filtered samples for metal analysis will not be collected unless turbidity stabilizes above 50 NTUs. In such a case, both filtered and non-filtered samples will be collected and analyzed. For the analyses that require field

filtering of groundwater samples, dedicated, single-use, 0.45 micron filters will be affixed to the pump discharge. Due to the potential for a limited quantity of water that may be present within the perched zone, purging may cease prior to stabilization of field parameters. Assuming the perched zones are saturated, all efforts will be made to allow for the collection of samples from this horizon.

- Once sampling is complete, the non-dedicated pump will be gradually removed from the well and dedicated sampling equipment (e.g., tubing) will be disconnected from the pump and remain secured inside the well casing. The well will be closed and locked, reusable equipment will be decontaminated (see Section 8), and disposable equipment will be disposed of at the Site.

6. Investigation-Derived Waste Sampling

In general, IDW will be containerized in one of the following types of portable containers:

1. Department of Transportation-approved 55-gallon drum, as follows: bung (water/liquid IDW) or open top (soil/solid IDW).

2. Large capacity portable vessel (water/liquid IDW).

Soil/solid IDW samples will be collected from open top drums by opening the drum and collecting a grab soil sample using a hand auger and placing the sample either directly into the sample container or into a stainless steel bowl, depending on the type of analysis to be performed. Composite samples will be collected from a representative number of drums and homogenized in the stainless steel bowl using a stainless steel trowel or spoon. Samples will be collected and will be analyzed by the laboratory for the parameters, as specified by the requirements of the disposal facility. Soil/solid IDW will be disposed off-site at a permitted disposal facility following waste characterization.

Water/liquid IDW samples will be collected from either bung type drums or larger capacity portable vessels by opening the drum or larger capacity portable vessel top and collecting a grab liquid sample using a bailer and placing the sample directly into the sample container. Samples will be collected and will be analyzed by the laboratory for the parameters, as specified by the requirements of the disposal facility. Water/liquid IDW containerized either in bung type drums or in larger capacity

portable vessels will be disposed off-site at a permitted disposal facility following waste characterization.

7. Sample Collection, Labeling, Handling, and Analysis

Groundwater samples will be collected directly into the laboratory-supplied sample bottles. The flow of water from the sample port will be adjusted to ensure slow laminar flow so that no entrained air bubbles result. Special care will be taken in filling and capping VOC vials so that headspace/air bubbles are not present in the groundwater samples. In addition, overflowing bottles will be avoided to prevent the loss of floating substances or preservatives that may have already been added to the bottle. For samples that will be analyzed for dissolved metals the sample will be filtered in the field using an in-line, 0.45-micron disposable filter prior to decanting the sample into the appropriate sample container. All sample bottle caps will be secured snugly, but not over-tightened.

All samples (including QA/QC samples specified in the QAPP – Appendix B) will be properly labeled and identified, and the Groundwater Sampling Form or Water Sampling Log and Chain-of-Custody Form will be completely filled out. The QAPP provides additional details regarding Field Records and QA/QC samples, frequency and protocols (Section 4.1 – Field QA/QC), sample labeling (Section 4.2 – Preparation and Preservation of Sample Containers), and sample custody (Section 4.4 – Sample Custody). All sample containers will be checked for proper identification/ labeling and compared to the Chain-of-Custody Form for accuracy prior to packaging any sample for shipment. The Chain-of-Custody Form will be placed in a sealed plastic bag and taped to the underside of the cooler lid. The samples will then be wrapped with a cushioning material, as needed, to preclude breakage during shipment and placed in a cooler. For water samples, sufficient amounts of bagged ice or ice packs will be placed in the cooler to keep the samples at 4 degrees Celsius until arrival at the laboratory. For all samples shipped for laboratory analysis, when the cooler is ready, it will be sealed with shipping tape, and custody seals will be placed in such a manner that any opening of the cooler prior to arrival at the laboratory can be detected.

Samples will be delivered by overnight carrier to the analytical laboratory following sample custody requirements specified in the QAPP. The laboratory will be prepared to receive the samples and perform preliminary extractions or analyses within the analytical method recommended holding times.

Groundwater samples (including QA/QC samples) will be analyzed for Target Compound List (TCL) VOCs using EPA Method 8260, TCL SVOCs using EPA Method 8270, and Resource Conservation and Recovery Act (RCRA) metals using EPA Methods 6010/7471. Additional details on laboratory analyses to be performed are provided in the QAPP (Section 4.5 – Laboratory Analyses)

8. Field Decontamination Procedures

Decontamination procedures for non-dedicated field equipment are presented in detail in the QAPP and include decontamination procedures associated with non-dedicated soil sampling and well evacuation and sampling equipment (i.e., split-spoons, trowels, hand augers, bowls, water quality monitoring probes, flow cells, and pumps/appurtenances), and PPE, as applicable. In general field decontamination of these items will require scrubbing with a Micro-90 low-phosphate detergent (or equivalent) and potable water solution and distilled/de-ionized water rinse. The equipment will be decontaminated before and between each use and prior to de-mobilization.

All downhole drilling equipment will be free of petroleum-based oil and grease (vegetable-based lubricants are acceptable), and will be decontaminated using a high pressure steam cleaner prior to the start of drilling activities, between each borehole, and prior to leaving the Site. Decontamination fluids will be containerized, transported, and/or disposed of, as described in Section 9 (Waste Management and Disposal) of this FSP.

9. Waste Management and Disposal

Soil and liquid IDW generated during sampling activities including, but not limited to, soil samples, drill cuttings, well purge water, development water, and decontamination water, will be disposed as outlined in this section.

Sampling procedures involving the collection of water samples obtained as direct grab samples will be performed in such a manner so to not generate waste, other than disposable PPE.

Liquid IDW (i.e., purge water, development water, and decontamination water) will be containerized in either 55-gallon drums or larger capacity portable vessels, characterized in accordance with the requirements of the disposal facility, and

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transported off-site for disposal. Generated liquid waste will be staged on-site until such time as the waste is transported off-site for disposal.

Solid IDW (i.e., soils, cuttings, PPE, and disposable sampling equipment) will be containerized in 55-gallon drums, characterized in accordance with the requirements of the disposal facility, and transported off-site for disposal. Generated solid waste will be staged on-site until such time as the waste is transported off-site for disposal.

10. References

Puls, Robert W. and Barcelona, Michael J. 1996. Ground Water Issue Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, U.S. Environmental Protection Agency, Office of Research and Development, Office of Solid Waste and Emergency Response, EPA/540/S-95/504. April 1996.

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Attachment A-1

Community Air Monitoring Plan

Attachment A-1
Community Air Monitoring Plan
United Stellar Industries Property,
131 Sunnyside Boulevard, Plainview, New York.

Date Prepared: July 21, 2005

Introduction

In accordance with New York State Department of Health (NYSDOH) requirements, this Community Air Monitoring Plan (CAMP) has been prepared for use during certain site characterization field activities associated with the United Stellar Industries Property (the Site). This CAMP serves to present the methods and procedures to conduct real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at each designated work area when certain activities are in progress. This CAMP is not intended for use in establishing action levels for worker respiratory protection; action levels are described in the Site Health and Safety Plan (HASP) (ARCADIS, 2005). The intent of this CAMP is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers that are not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities that are related to the Site. The response levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, this CAMP helps to confirm that work activities do not spread contamination off-site through the air.

Depending upon the nature of the site-related contaminants of concern, chemical-specific monitoring, with appropriately sensitive methods, may be required during field work (please refer to the HASP for details).

Reliance on this CAMP does not preclude simple, common-sense measures to keep potential VOCs, dust, and odor emissions at a minimum around work areas.

The following sections of this CAMP present the monitoring instrumentation required to comply with NYSDOH policy, the frequency of monitoring, response levels, and response actions.

Monitoring Instrumentation

Based on the currently available analytical data and the contaminants of concern for the Site, real-time air monitoring for VOCs and particulates at the perimeter areas of the work area (i.e., the exclusion zone – see HASP for definition) will be necessary for field activities associated with investigation and remediation of the Site.

VOC monitoring will be performed using real-time monitoring instrumentation that is appropriate to measure the types of VOCs known or suspected to be present at the work location (please refer to the HASP for details). The equipment will be calibrated on the frequency and using the methods described in the HASP. It is preferable to use instrumentation that is capable of calculating 15-minute running average concentrations or provide a written record of readings taken during monitoring events. If neither capability is available, then the reading obtained every 15 minutes will be used for decision making.

The particulate monitoring will be performed using real-time monitoring instrumentation that is capable of measuring particulates less than 10 micrometers in size (PM-10). It is preferable to use instrumentation that is capable of calculating 15-minute running average concentrations or provide a written record of readings taken during monitoring events. If neither capability is available, then the reading obtained every 15 minutes will be used for decision making. The particulate monitoring equipment will be equipped with an audible alarm to indicate an exceedance of the response level.

Monitoring Frequency

This section defines the typical activities that will occur in relation to the Site and relates these activities to the frequency of monitoring required.

Continuous monitoring for VOCs and particulates will be carried out for intrusive activities. Additionally, upwind VOC and particulate concentrations will be measured at the **start** of each work day and **periodically** (see below) thereafter to establish the background concentration. Ground intrusive activities typically include the following:

1. Soil excavation and handling.
2. Test pitting or trenching.
3. Drilling and installation of vertical profile borings, soil borings, and/or monitoring wells.
4. During the demolition of contaminated or potentially contaminated structures.
5. Construction activities involving earthwork or disturbance of earthen surfaces.
6. Other activities specified in this CAMP.

Periodic monitoring for VOCs will be carried out during non-intrusive activities. For non-intrusive activities, the upwind concentrations will be measured at the **start and finish** of the work effort to establish the background concentration. Non-intrusive activities typically include the following:

1. Site Mobilization/Demobilization of equipment and machinery.
2. Drum or container sampling.
3. Soil sampling (to the extent not coinciding with intrusive work).

4. Groundwater sampling.
5. Water-level measurements.
6. Surveying (geophysical, coordinate/elevation).
7. Well development.
8. Waste transportation.
9. Site preparation and restoration that does not involve re-grading or other disturbances to surface materials.

"Periodic" monitoring should be performed, at a minimum, as follows:

1. Upon arrival at a work location to determine the ambient, or background concentrations.
2. During each phase of work that potentially may generate VOC emissions to the air.
3. Prior to leaving the work location.

As an example, "Periodic" monitoring for VOCs during sample collection activities shall include monitoring as above and during the following times:

1. When accessing wells, opening drums or containers, or overturning soil.
2. During well bailing/purging.
3. During collection of samples (soil/sediment/water).

For non-intrusive activities, particulate monitoring will not be performed.

VOC Monitoring Station Locations, Response Levels, and Actions

During each workday, the VOC monitoring station will be positioned at the downwind perimeter of the work area (i.e., the exclusion zone – see HASP for definition). As stated above, monitoring frequency (periodic or continuous) will be determined based on whether the activity is considered intrusive or non-intrusive. The direction of wind (if any) will be periodically recorded during each work day and re-positioning of upwind/downwind monitoring stations will be performed accordingly.

The VOC monitoring instrumentation output documenting 15-minute running average concentrations (or printed output of readings taken or the reading taken every 15 minutes, as available), will be compared to the following response levels:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds 5 parts per million (ppm) **above background** for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm **above background** but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All readings will be recorded on the appropriate air monitoring log (please refer to the HASP for details) or the electronic log will be printed out. Air monitoring results will be appended to the appropriate report.

Particulate Monitoring Station Locations, Response Levels, and Actions

For intrusive activities, the particulate (i.e., dust) monitoring station will be positioned at the downwind perimeter of the work zone (i.e., exclusion zone – see HASP for definition). In addition, fugitive dust migration will be visually assessed during all work activities. The direction of wind (if any) will be periodically recorded during each work day and re-positioning of the downwind monitoring station will be performed accordingly. The response levels and actions for fugitive dust are as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) **above background** (i.e., upwind perimeter) for the 15-minute period or if airborne dust is visually observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and provided that no visible dust is observed leaving the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ug/m^3 above the **background** concentration, then work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust from leaving the work area.

All readings will be recorded on the appropriate air monitoring log (please refer to the HASP for details) or the electronic log will be printed out. Air monitoring results will be appended to the appropriate report.

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Attachment A-2

ARCADIS Lithologic Logs Soil Classification and Terminology, New York/New Jersey Office

ARCADIS
Lithologic Logs
Soil Classification and Terminology

New York/New Jersey Office

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Introduction

During a field investigation the following soil classification system is used by ARCADIS personnel most of the time to describe unconsolidated soil material. However, there may be occasions where on a project specific basis an alternative method may have to be used due to client or regulatory requirements. The principal component (highest relative proportion) of the sample is described first, capitalizing the first letter. The principal component is then followed by other components of the sample in decreasing order of importance (i.e., relative proportion). Each description is then followed by a series of modifiers which explain other notable characteristics. The description of each component includes grain size, relative proportion, color, angularity, water content, and mineralogy/rock type. An example of a soil sample description is presented on Figure 1; please note the punctuation and case.

Stratification

Prior to preparing a descriptive lithologic log, the field geologist/hydrogeologist should examine the soil sample as to its stratification. He/she should then prepare their lithologic log keeping in mind the apparent stratification. More specifically, if the sample to be described is from a 2-foot long split spoon and alternating layers of coarse sand, fine sand, and clay exist, then the resultant description should be of the three individual lithologies and their vertical relationship and not a description lumping all 3 lithologies together.

Grain Size

The descriptive names for grain size are based on the intermediate width of the particles. For instance, particles that have an intermediate width greater than 300 millimeters (i.e., greater than 11.8 inches) are classified as boulders, whereas particles that are smaller than 0.08 millimeters are classified as silt. Table 1 (Unified Soil Classification System) presents a range of grain sizes and their descriptive category.

For gravel-sized deposits and larger the measured size is given. If all particles in gravel and larger size classes are similar then the average size is given and where the particles vary the range in size is given.

Plasticity

Unconsolidated material which passes through the No. 200 sieve (0.08) millimeters) consists principally of silt and/or clay. The plasticity of these fine-grained soils is used in classifying soil for engineering purposes. Depending on the moisture content, fine-grained soils may behave as a plastic material which may be deformed or molded into any form or shape. The plastic index indicates the range of moisture content within which a soil-water mixture is plastic. The plastic index is defined as the liquid limit minus the plastic limit. Table 2 presents the field criteria used to describe plasticity.

Roundness

Roundness (or conversely angularity) is related to the sharpness or curvature of particle edges and corners. If the grain-size of the component is coarse sand or larger, a description of the angularity is provided using the following six class terminology:

- very angular
- angular
- sub-angular
- sub-rounded
- rounded
- well-rounded

The roundness generally increases with greater distance of transport and weathering. However, particles of fine sand and silt tend to remain angular. See Appendix A for a chart displaying visual examples of sediment of varying degrees of roundness.

Color

The color is described using simple basic terminology and modifiers such as light, or dark as appropriate. Subjective terminology, such as "brick red" or "battleship gray" should be avoided.

Mineralogy

For sand size particles the mineralogy is described. For gravel and larger the mineralogy or rock type is described, as appropriate. The mineralogy/rock type is described to the best of one's ability given that the individual is in the field and not in a laboratory.

Relative Proportion

The relative proportion of each component is described using modifiers such as "trace", "little" or "some" (see Table 3. The relative proportions are estimated in the field using visual examination. The relative proportion of the principal component is not provided but can be determined by subtracting the sum of relative proportions of the non-principal components from 100 percent. See Appendix B for a chart displaying visual examples of percentage composition.

Water Content

The water content of the sample is described using the following three class terminology:

- dry
- moist
- wet

Summary

For descriptions of water content the sample in its entirety is described while all other descriptions pertain to each individual component where practical.

Unified Soil Classification System

In addition to describing the soil by this ARCADIS Soil Classification System, the sample is also described using the Unified Soil Classification System. This system is summarized on Table 4.

Table 1. Grain Sizes - Unified Soil Classification System (USCS).

Descriptions	Millimeters	Inches
Boulders	>300	>11.8
Cobbles	300 - 75	11.8 - 2.9
Gravel:		
Coarse	75 - 19	2.9 - .75
Fine	19 - 4.8	.75 - .19
Sand:		
Coarse	4.8 - 2.0	.19 - .08
Medium	2.0 - .43	.08 - .02
Fine	.43 - .08	.02 - .003
Fines:		
Silts	<.08	<.003
Clays	<.08	<.003

Table 2. Field Identification of Plasticity

Field Designation	Degree of Plasticity	Overall Plasticity Index	Feel and Smear Appearance	Ease of Rolling Threads of Soil	Smallest Diameter of Thread (inches)
Silt	Non-Plastic	0	Gritty to Rough	No Threads can be Rolled	--
Clayey Silt	Slight	1 to 5	Rough to Smooth	Difficult	1/4
Silt and Clay	Low	5 to 10	Rough to Smooth	Less Difficult	1/8
Clay and Silt	Medium	10 to 20	Smooth and Dull	Readily	1/16
Silty Clay	High	20 to 40	Shiny	Very Readily	1/32
Clay	Very High	40 and Greater	Very Shiny and Waxy	Very Readily	1/64

1. Pick out any fine gravel or coarse particles.
2. Moisten if necessary and press out thread between fingers to a thickness of between about 1/4-inch and 1/2-inch.
3. Roll thread on hard surface with gentle pressure of forefinger until it breaks.

Table 3. Modifers for Relative Proportions

Description Term	Percent
Trace	1-10
Little	11-20
Some	21-35
And	36-50

Table 4. Unified Soil Classification System.

Field Identification			Group Symbols	Typical Names
Coarse-grained soils More than half of material is larger than No. 200 sieve size	Gravels More than half of coarse fraction is larger than No. 4 sieve size	Clean gravels	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravel with fines	GM	Silty gravels, poorly graded gravel-sand-clay mixtures
			GC	Clayey gravels, poorly graded gravel-sand-clay mixtures
	Sand More than half of coarse fraction is smaller than No. 4 sieve size	Clean sands	SW	Well graded sands, gravelly sands little or no fines
			SP	Poorly graded sands, gravelly sands little or no fines
		Sands with fines	SM	Silty sands, poorly graded sand clay mixtures
			SC	Clayey sands, poorly graded sand clay mixtures
Fine-grained soils More than half of material is smaller than No. 200 sieve size	Silts and Clays		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silt clays of low plasticity
			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of medium to high plasticity
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat and other highly organic soils

From Wagner, 1957 & ASTM D-2487 boundary classifications.
Soils possessing characteristics of two groups are designated by combinations of group symbols. For example: GW-GC, well graded gravel-sand mixture with clay binder. All sieve sizes on this chart are U.S. Standard

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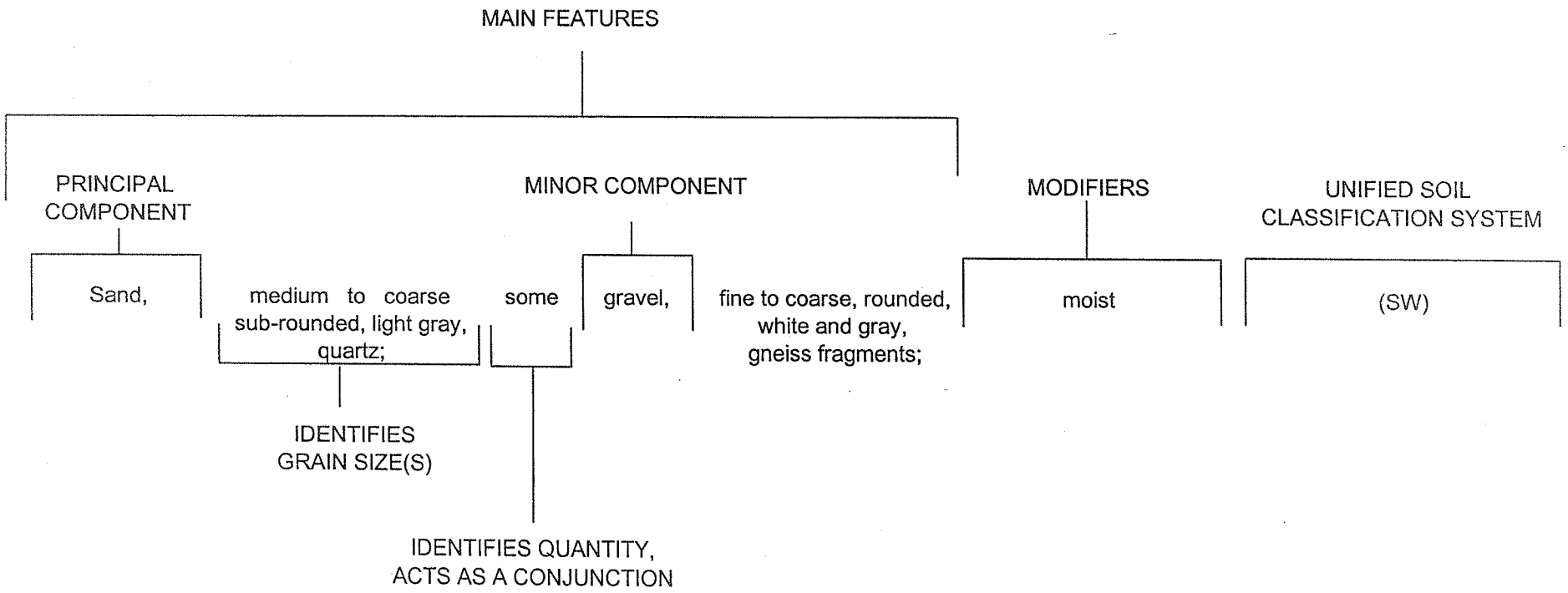
Figure 1. Example of ARCADIS Soil Classification System



Appendix A

Comparison Chart for Estimating Roundness and Sphericity

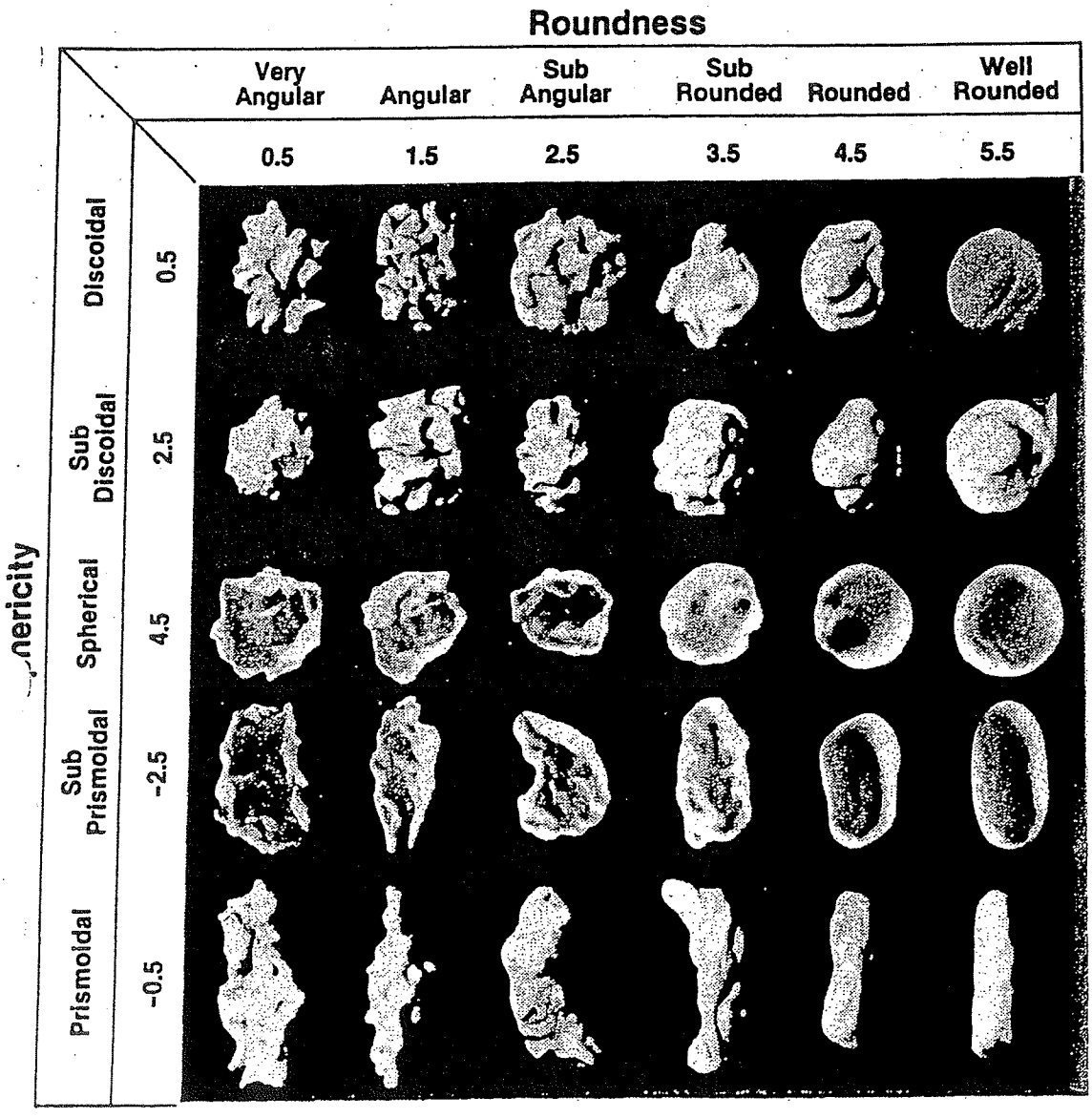
Comparison Chart for Estimating Roundness and Sphericity

by Maurice C. Powers, Elizabeth City State University

This sheet showing both sphericity and roundness suggests that particle shapes that initially break out or weather from parent rocks tend to be either discoidal, rodlike (prismatic), or spheroidal. It further suggests that as the particles are reduced in size by abrasion and/or chemical weathering they tend to assume more nearly spherical shapes. This, of course, is not invariably true, but it is the evolutionary process to be expected.

The chart below incorporates the median rho values for roundness suggested by Folk (1955) because of the ease of handling these values statistically and because they represent midpoints of each roundness class.

The same reasoning is applied here to the sphericity classes. Prismoidal shapes are identified with negative numbers whereas discoidal shapes have positive values. On this basis the median rho value obtained from a probability plot of the accumulated data will indicate quantitatively the extent to which a sample varies from a spherical shape and whether the variation is discoidal or prismoidal.



From AGI Data Sheets compiled by R.V. Dietrich, J.T. Dutro, Jr., and R.M. Foose, American Geological Institute, 1982.

Appendix B

Comparison Chart for Estimating Percentage Composition

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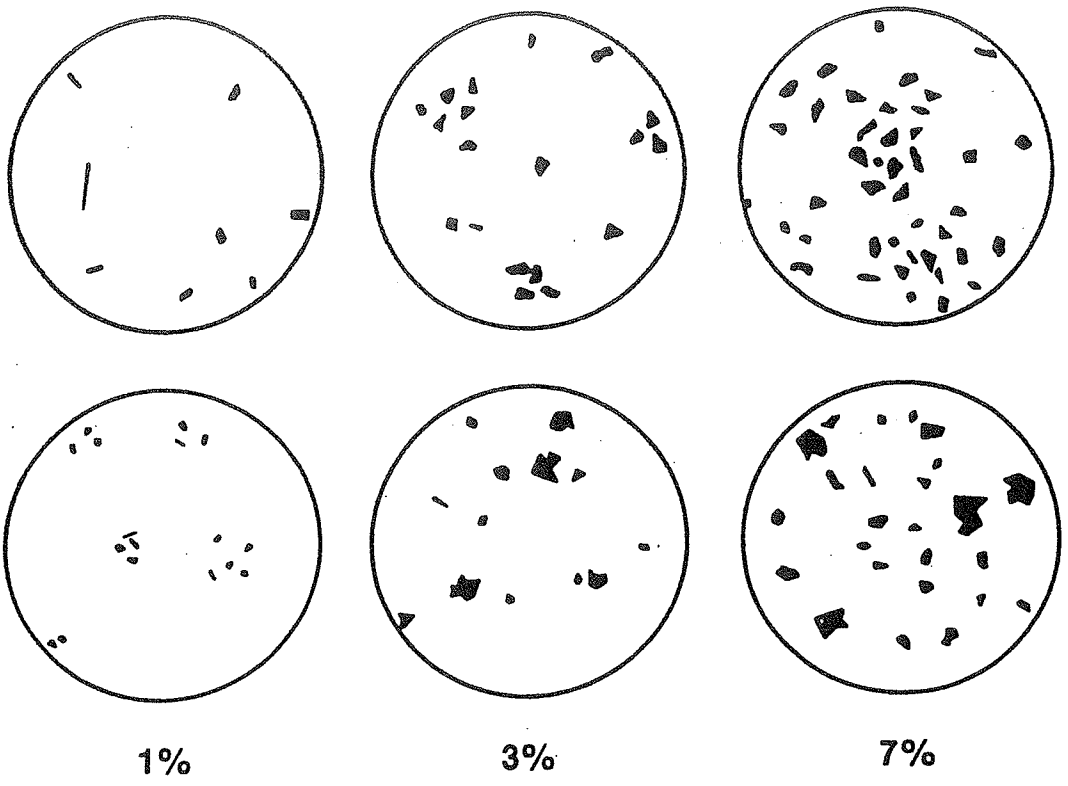
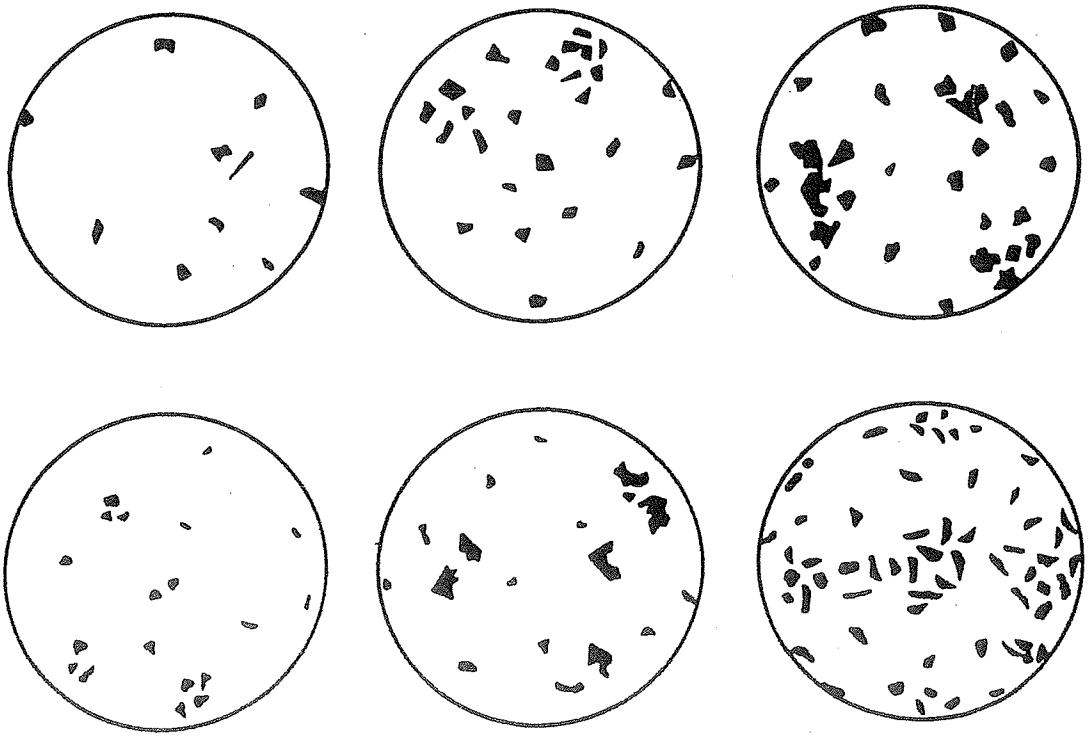
Comparison Chart for Estimating Percentage Composition

Prepared by Richard D. Terry and George V. Chilingar, Allen Hancock Foundation, Los Angeles. Reprinted from *Journal of Sedimentary Petrography*, v. 25, n. 3, p. 229-234, Sept. 1955.





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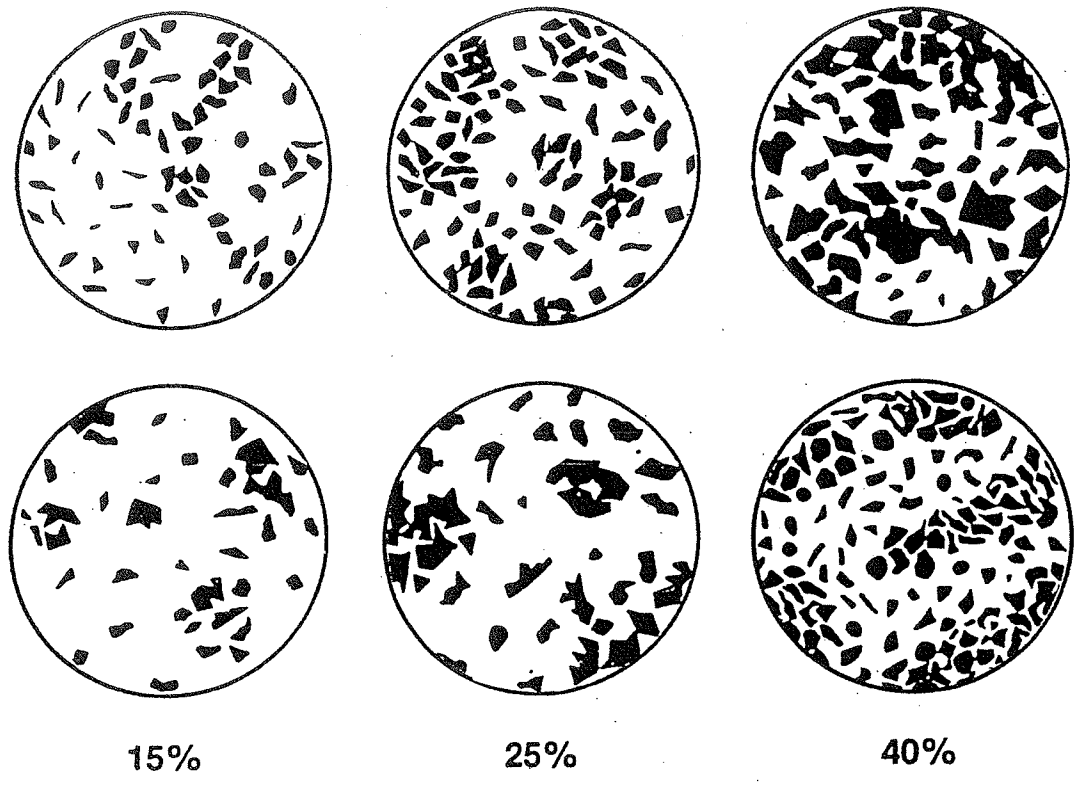

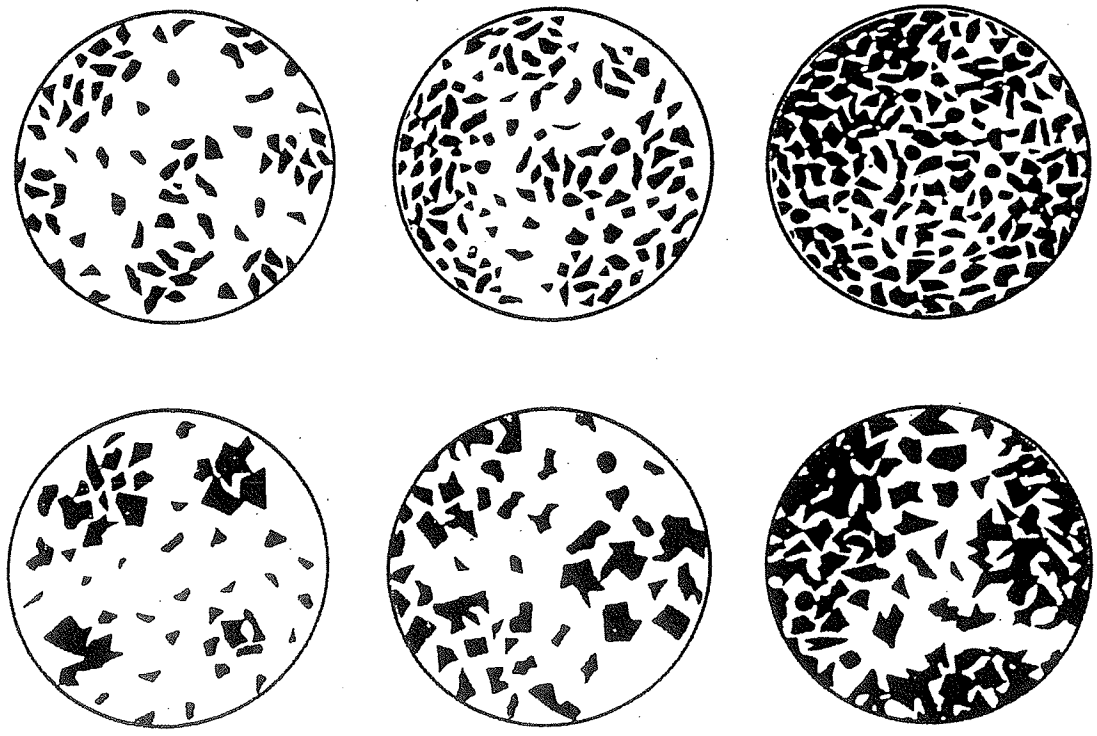

From AGI Data Sheets compiled by R.V. Dietrich, J.T. Dutro, Jr., and R.M. Foose. American Geological Institute. 1982.

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Appendix B

Quality Assurance Project Plan of
Sampling Analysis Plan

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Appendix B

Quality Assurance Project Plan

United Stellar Industries Property
131 Sunnyside Boulevard,
Plainview, New York

ARCADIS

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Project Scientist

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Appendix B
Quality Assurance Project Plan

United Stellar Industries
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Our Ref.:
NY001422.0003.00001

Date:
5 September 2005

Tables

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Attachments

1. Introduction

This Quality Assurance Project Plan (QAPP) has been prepared as a component of the Site Characterization (SC) Work Plan for the United Stellar Industries Property (the Site) in Plainview, New York to address specific quality control (QC) checks and quality assurance (QA) auditing processes.

The overall QAPP objective is to ensure that data produced as a result of the various sampling and monitoring is of the highest quality. This QAPP has been prepared in accordance with the United States Environmental Protection Agency (USEPA) guidance, "Guidance for Quality Assurance Project Plans," (USEPA 2002), The New York State Department of Environmental Conservation (NYSDEC) Draft DER-10 Technical Guidance for Site Investigation and Remediation, and considering requirements of the Administrative Order on Consent (Consent Order or CO) Index No. W1-1025-04-10. This QAPP presents project organization and responsibilities, and quality assurance/quality control (QA/QC) protocols related to field sampling and analysis activities associated with various sampling and monitoring requirements. The procedures in this QAPP will be implemented to ensure that precision, accuracy, representativeness, completeness, and comparability (PARCC parameters) of the data can be documented, as applicable.

2. Property Description

The Property is located at 131 Sunnyside Boulevard, south of the Long Island Expressway on the eastern side of Sunnyside Boulevard in Plainview, NY. The Property is 3.3 acres in size and currently contains one unoccupied building that is undergoing renovation. United Stellar Industries Corp. and its successor company, Equine-Stellar Corp., occupied the subject property from the late 1950s until the company's closure in 2002. The building had only been occupied by Equine-Stellar Corp. to manufacture metal parts for the aerospace industry, bicycles, and other metal structures. During the manufacturing process, hazardous materials were used to degrease the metal parts and to subsequently paint those parts. Due to hazardous materials use on the Property, U.S. Environmental Protection Agency (EPA) generator identification number NYD055323760 was assigned to the Site. The NYSDEC reviewed the Site operations in April 2002 and did not find any violations. Based on previous investigations, metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) are the constituents of concern (COCs).

Activities planned for the Site consist of the site characterization of groundwater contaminants of potential concern (COPCs). Specifically, soil borings and permanent monitoring wells will be drilled, installed, developed, and sampled to determine the presence (if any) of hazardous waste disposed of at the site.

3. Project Organization and Responsibilities

The responsibilities of the key project personnel are detailed below.

- The Project Director is responsible for overseeing the implementation of the project tasks. The Project Director will review all documents and other correspondence concerning the activities performed. The Project Director is also responsible for the overall QA including technical adequacy of the project activities and reports and conformance to the scope of work.

- The Project Manager is responsible for the following: sampling QC; overall project coordination; adherence to the project schedules; directing, reviewing, and assessing the adequacy of the performance of the technical staff and subcontractors assigned to the project; implementing corrective action, if warranted; interacting with the Project Director; preparing reports; and, maintaining full and orderly project documentation.

- The project team members include the task managers, field hydrogeologists, sampling team/field technicians, and support staff (e.g., data processors, administrative assistants, and in-house experts in engineering, etc.), who are responsible for work in their respective specialty areas and are or may be required to meet the project objectives.

- The Project QA/QC Officer is responsible for performing systems auditing and for providing independent data quality review of project documents and reports.

- The Site Health and Safety Officer is responsible for implementing the site-specific health and safety directives in the Health and Safety Plan (HASP – see Appendix C) and for contingency response.

- The Data Validator is responsible for review of laboratory data for compliance with the QA objectives for the PARCC parameters, and notifications to the project manager of any QC deficiencies.

4. Quality Assurance/Quality Control – Field Sampling and Analysis Activities

The overall QA objective for this aspect of the project is to develop and implement procedures for field measurements, sampling, and analytical testing that will provide data of known quality that is consistent with the intended use of the information. Generally, the specific field sampling and analysis activities to be conducted during this project which require QA/QC protocols include remedial investigation groundwater sampling (i.e., permanent monitoring well groundwater sampling, and liquid and solid waste characterization sampling).

QA/QC protocols will be used to ensure the PARCC parameters of data collected during these field activities meets the objectives of the overall project. Specifically, all data will be gathered or developed using procedures appropriate for the intended use of the data. The field measurements and laboratory analyses will be used to support one or more steps in the monitoring described above.

The QA/QC protocols for this aspect of the project will include laboratory analysis and validation procedures, field decontamination procedures, calibration and maintenance of field instruments, and QA/QC sampling procedures. The following sections outline the QA/QC protocols for each of these issues.

4.1 Field QA/QC

To ensure that data collected in the field is consistent, accurate and complete, forms will be utilized for repetitive data collection, such as depth to water in wells, groundwater sampling, etc. These field forms include a Soil Sample/Core Log; Monitoring Well Construction Log; Daily Log; Water-Level Measurement Log; and, a Water Sampling Log, as applicable to a specific field task. Forms are provided in Attachment A.

QA/QC samples will be collected to assure quality control of groundwater samples. Analyses of QA/QC samples will enable data evaluation for accuracy and integrity. A QA/QC sample set includes one or more of the following: field (equipment rinsate) blank, trip blank, blind (field) duplicate, and site-specific matrix spike/matrix spike duplicate (MS/MSD), as applicable. The QA/QC sample set will vary depending on the objective of the collected sample as well as the parameter or group of parameters specified for analysis. A summary of the QA/QC samples is provided in Table B-1. In general, blanks and duplicate samples will be used to verify the quality of the sampling

results. Demonstrated analyte-free water will be supplied by the laboratory for the preparation of equipment and trip blank QA/QC samples; documentation for the analysis of QA/QC blank water will be provided if contamination is detected in the blanks. A brief description of these QA/QC samples follows.

4.1.1 Field (Equipment Rinsate) Blank

A field (equipment rinsate) blank is a water sample that consists of laboratory supplied analyte-free water that is poured through or over a decontaminated piece of sampling or other down-hole equipment to assess or document the thoroughness of the decontamination process. A rinsate blank will be collected from the decontaminated down-hole equipment by pouring analyte-free water over the equipment and into sample containers before using the equipment in sampling. One field blank will be collected each day non-dedicated (disposable or reusable) equipment is used. These QA/QC samples will only be collected in connection with the collection of aqueous-phase samples and submitted for the appropriate chemical analysis (see Table B-1).

4.1.2 Trip Blank

A trip blank will contain laboratory supplied analyte-free water and will be transported to the Site and returned to the laboratory without opening. This will serve as a check for contamination originating from sample transport, shipping, and from Site conditions. One trip blank per day per sampling team will be utilized during groundwater sampling. The maximum number of samples per trip blank is 20. These QA/QC samples will only be collected in connection with the collection of aqueous samples (associated with groundwater sampling) for VOC analysis and submitted for the appropriate chemical analysis (see Table B-1).

4.1.3 Blind (Field) Duplicate

The relative difference in analytical results between samples and their blind duplicates will be used to determine if the data reported by the laboratory meet PARCC requirements. The blind duplicate samples will be assigned fictitious identifications; the correct sample identification number will be recorded on the water sampling log. One blind duplicate sample per 20 groundwater samples will be collected during groundwater sampling activities. These QA/QC samples will be collected in connection with the collection of aqueous samples (associated with groundwater sampling) and submitted for the appropriate chemical analysis (see Table B-1).

4.1.4 MS/MSD Sample

Site-specific MS and MSD samples will be collected and submitted to the laboratory as separate samples to provide site-specific matrix interference data. Upon arrival at the laboratory, the MS/MSD samples will be spiked with appropriate analytes and analyzed by the appropriate method. The purpose of spiking and analyzing the samples is to evaluate any site-specific matrix interference on the analytical results. One MS/MSD sample set will be collected for every 20 samples collected during groundwater sampling activities. These QA/QC samples will be collected in connection with the collection of aqueous samples (associated with groundwater sampling) and submitted for the appropriate chemical analysis (see Table B-1).

4.1.5 Field Records

Proper documentation will consist of all field personnel maintaining records of all work accomplished including the items listed below:

- Date and time of work events;
- Purpose of work;
- Description of methods;
- Description of samples;
- Number and size of samples;
- Description of sampling point;
- Date and time of collection of sample;
- Sample collector's name;
- Field observations; and,
- Field measurements with portable instruments.

All information pertinent to field sampling activities will be recorded on the logs provided in Appendix A. Duplicates of field notes/forms will be prepared and kept in a secure place away from the Site.

4.2 Preparation and Preservation of Sample Containers

Laboratory pre-cleaned sample containers will be provided by the laboratory. Each sample container will be provided with a label for sample identification purposes. The information on the label will include a sample identification number, time, date and initials of the sample collector. All sample containers will be accompanied by a full chain-of-custody (see Attachment B).

All sample containers will be thoroughly cleaned at the laboratory prior to sampling and appropriate sample preservatives will be added to the bottles, prior to sample bottle shipment to the client. It is laboratory practice to preserve sample containers to minimize potential contaminants in the field and to reduce unnecessary sample handling in the field (see laboratory Quality Assurance Plan in Attachment C for additional information). Table B-2 provides a summary of sample analytical methods, sample containers, holding times and preservation procedures to be used.

4.3 Decontamination

Proper decontamination of all sampling equipment will help ensure that the data collected will meet the PARCC requirements.

4.3.1 Decontamination Procedures

Field equipment will be decontaminated before and after well/sampling locations using the following procedures.

4.3.2 Sampling Equipment

Field decontamination of non-dedicated soil sampling and permanent monitoring well evacuation and sampling equipment (i.e., split spoons and pumps) will consist of: 1) surficial wash and manual scrubbing with 2-percent Micro-90 (or equivalent) solution to remove foreign material, and 2) potable water rinse. The items will then be stored in such a manner as to preserve their decontaminated condition prior to use at the next sampling location.

4.3.3 Personal Protective Equipment

The personal protective equipment (PPE) decontamination procedure shall consist of the minimum decontamination stations outlined in the Health and Safety Plan (HASP) (Appendix C), as applicable for the planned field activities.

4.3.4 Other Equipment

Electronic water-level indicators, measuring tapes, and meter probes will be rinsed with potable water before each use.

4.4 Sample Custody

To maintain and document sample possession, chain-of-custody procedures will be followed. A chain-of-custody form contains the signatures of individuals who have possession of the samples after collection in the field; the chain-of-custody form is provided in Attachment B.

A sample is under custody if it is:

1. In one's actual possession; or
2. In one's view, after being in your physical possession; or
3. Was in one's physical possession and then was locked up or sealed to prevent tampering; or,
4. It is in a designated secure place restricted to authorized personnel.

Each person involved with the samples will know chain-of-custody procedures. A detailed discussion of the stages of possession (i.e., field collection, transfer, and laboratory custody) is presented below in the following sections.

4.4.1 Environmental Samples Chain-of-Custody

The laboratory begins the chain-of-custody procedure with the preparation of the sample bottles. The field sampler continues the chain-of-custody procedure in the field and is the first to sign the form upon collection of samples. The field sampler is personally responsible for the care and custody of the samples until they are transferred

and properly dispatched. Each sample will have sample labels completed (using waterproof ink), have proper preservation, and be packaged to preclude breakage during shipment. Every sample will be assigned a unique identification number that is entered on the chain-of-custody form. Samples can be grouped for shipment using a single form.

4.4.2 Transfer of Custody and Shipments

All samples will be accompanied by a chain-of-custody record. When transferring the possession of samples, the individual(s) relinquishing and receiving will sign, date, and note the time of transfer on the chain-of-custody form. This record documents transfer of custody of samples from the sampler to another person to the analytical laboratory.

Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in each sample cooler. All chemical analytical samples will be delivered to the laboratory within 24 hours of collection.

Whenever samples are split with a facility or government agency, a separate chain-of-custody record will be prepared for those samples and marked to indicate with whom the samples were split.

4.4.3 Laboratory Sample Custody

The laboratory utilized for chemical analysis will have standard operating procedures for documenting receipt and tracking of samples and compilation of sample data. Sample custody, related to sampling procedures and sample transfer, is described below:

(1) Shipping or pickup of cooler by sampling personnel.

(2) Cooler packed at the laboratory after contact with sampling personnel.

(3) Cooler wrapped with evidence tape.

4.4.4 Field Chain of Custody

(1) Chain-of-Custody form filled out by field sampling personnel.

(2) Field sampling personnel supply evidence tape and seal cooler prior to shipment back to the laboratory.

4.4.5 Laboratory Sample Custody

(1) Samplers check for any external damage (such as leaking).

(2) Samplers sign the waybill for sending cooler to the laboratory.

(3) The laboratory receives cooler and completes chain of custody.

The samples will be stored at the proper temperature prior to analysis. It is the responsibility of the laboratory to properly dispose of samples beyond the holding period.

4.5 Laboratory Analyses

All groundwater samples will be analyzed by a New York State Department of Health (NYSDOH)-approved laboratory. Groundwater samples will be analyzed for Target Compound List (TCL) VOCs by United States Environmental Protection Agency (USEPA) Method 8260, TCL SVOCs by USEPA Method 8270, and Resource Conservation and Recovery Act (RCRA) metals by USEPA Methods 6010/7471. Tables B-3A, B-3B, and B-3C summarize the list of parameters to be analyzed for in aqueous samples (i.e., groundwater) along with the respective required quantitation limits for the following groups of analytes: VOCs, SVOCs, and metals, respectively.

The internal laboratory Standard Operating Procedures (SOPs) and QA/QC procedures are described in the individual laboratory facility Quality Assurance Plan, an independent plan provided by the analytical laboratory. The laboratory Quality Assurance Plan is provided in Attachment C.

4.6 Laboratory Reporting

The laboratory will provide a NYSDEC Analytical Services Protocol (ASP) Category B deliverable (unless otherwise specified) for the sampling effort within two weeks of receipt of samples. Additional documentation may be required from the laboratory based on the results of the data evaluation.

4.7 Data Validation

Data validation is a process in which analytical data generated by the laboratory are evaluated against a specific set of requirements and specifications, and determinations of data usability and limitations are made. The data validator examines the criteria pertaining to analytical data generated in accordance with Contract Laboratory Program (CLP) protocols from four perspectives, as follows:

- Technical requirements.
- Contractual requirements.
- Determination of compliance.
- Determination and action of how to define the usability or qualify the data.

Validation of the organic data will be performed following the QA/QC criteria set forth in the NYSDEC ASP, October 1995 and the USEPA CLP National Functional Guidelines for Organic Data Review, October 1999. Validation of the inorganic data will be performed following the QA/QC criteria set forth in the NYSDEC ASP, October 1995 and the USEPA CLP National Functional Guidelines for Inorganic Data Review, October 2004.

Groundwater samples associated with sampling of permanent monitoring wells will require a NYSDEC ASP Category A deliverable. Waste characterization samples (liquid or solid-phase) will be reported as a NYSDEC ASP Category B deliverable and validated accordingly, unless otherwise specified and required by the disposal facility.

The NYSDEC ASP Category B deliverable data review will include checking the following:

- Chain-of-custody form.
- Adherence to specified holding times.
- Field and laboratory blank-detected constituents.
- Field replicate precision.

Final validation of data obtained during the field sampling and analysis activities will be performed by the Data Validator. The laboratory deliverables will be reviewed for accuracy, precision, completeness, and overall quality of data. All laboratory data will be reviewed for adherence to method-specific QA/QC guidelines and to the data validation guidelines that are described above. If specific data quality issues arise based on the data validation and review guidelines described above, the data validation and review process may be expanded, as warranted, in order to address the specific data quality issue. Any additional validation performed will continue to be performed until the specific data quality issue is resolved.

4.8 Data Usability

The Data Validator for the project will review the analytical data for usability including determining if the data are accurate, precise, representative, complete, and comparable. The review of the analytical results will include checking chain-of-custody forms, sample holding times, blank contamination, spike recoveries, surrogate recoveries, internal standard, and precision of duplicate sample analysis, and laboratory control samples (as appropriate). This review will be used to classify the data as valid, usable, or unusable. Valid data will indicate that all QA/QC review criteria have been met and are acceptable (as per details outlined in the preceding section). Data will be characterized as usable when QA/QC parameters are marginally outside acceptable limits (example: sample holding times were slightly exceeded) where the data may be questionable, but still usable within limitation. Unusable data will be data that are observed to have gross errors or analytical interference that would render the data invalid for any purpose.

4.9 Performance and System Audits

Performance and system audits will be performed on a periodic basis, as appropriate, to ensure that the work is implemented in accordance with the approved project SOPs and in an overall satisfactory manner. Examples of audits that will be performed during the project activities are as follows:

- The field personnel will supervise and check, on a daily basis during sampling activities, that monitoring well integrity is intact; that field measurements are made accurately; that equipment is thoroughly decontaminated; that samples are collected and handled properly; and that all field work is accurately and neatly documented.

- On a timely basis, the data packages submitted by the laboratory will be checked for the following information: that all requested analyses were performed; that sample holding times were met; that the data were generated through the approved methodology with the appropriate level of QC effort and reporting; and that the analytical results are in conformance with the prescribed acceptance criteria. The quality and limitations of the data will be evaluated based on these factors.

- The project manager will oversee the field personnel and check that the management of the acquired data proceeds in an organized and expeditious manner.

- Audits of the laboratory are performed on a regular basis by regulatory agencies. Audits are discussed in the laboratory Quality Assurance Plan (Attachment C).

4.10 Preventive Maintenance

ARCADIS has established a program for the maintenance of field equipment to ensure the availability of equipment in good working order when and where it is needed, as indicated, in the following examples:

- An inventory of equipment, including model and serial number, quantity, and condition will be maintained. Each item will be tagged and signed out when in use and its operating condition and cleanliness will be checked upon return. Routine checks will be made on the status of equipment and spare parts will be stocked. An equipment manual library will also be maintained.

- The field personnel are responsible for making sure that the equipment is tested, cleaned, charged, and calibrated in accordance with the manufacturer's instructions before being taken to the field.

The laboratory also follows a well-defined program to prevent the failure of laboratory equipment and instrumentation. This preventive maintenance program is described in the laboratory Quality Assurance Plan (Attachment C).

5. References

New York State Department of Environmental Conservation, 2002, Draft DER-10 Technical Guidance for Site Investigation and Remediation.

U.S. Environmental Protection Agency (EPA), 2002, EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5, EPA/240/R-02/009.

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Table B-1. Quality Assurance/Quality Control Sample Summary, Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Matrix	Sampling Event	Sample Location/ Sample Point	Parameters (1)	Frequency	Estimated Sample Quantity per Event	Estimated Field Blanks per Event (*)	Estimated Trip Blanks per Event (3)	Estimated Field Duplicates per Event (**)	Estimated MS/MSD per Event (2)
Aqueous (groundwater)	Groundwater Quality Sampling	Monitoring Wells	VOCs	Site Characterizaton/Monitoring	6	2	2	1	1
			RCRA Metals		6	2	NA	1	1
			SVOCs		6	2	NA	1	1
Solid/Aqueous (soil/water)	Waste Characterization	Grab	Varies (4)	Site Characterization	TBD	TBD	TBD	TBD	TBD

(1) All analyses will be performed in accordance with NYSDEC Analytical Services Protocol (ASP) and USEPA methods by a CLP-certified NYSDOH-approved laboratory.
(2) Matrix spike/matrix spike duplicate (MS/MSD) analysis is performed on a site sample and therefore is not counted as separate samples. For MS/MSDs, triple sample volume will be provided. MS/MSD sample sets will be collected at a frequency of one per 20 samples of the same matrix and will acompany the associated site sample during shipment.
(3) Trip blanks will be provided by the analytical laboratory and will accompany VOC samples as they are collected and during shipment. Trip blanks will be collected at a frequency of one per day. A trip blank will accompany the other samples collected the same day. The maximum number of samples per trip blank is 20.
(4) Waste characterization sample analysis will depend on generator knowledge and the requirements of the disposal facility.

* One field blank collected per day every time non-dedicated (i.e., disposable or reusable) sampling equipment (i.e., pumps and/or bailers) is used.
** A field (blind) duplicate will be collected at a frequency of one per 20 samples of the same matrix. Field duplicate samples collected at a frequency of one per 20 samples.
NA Not applicable
MS/MSD Matrix spike/matrix spike duplicate
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
RCRA Resource Conservation and Recovery Act
USEPA U.S. Environmental Protection Agency
NYSDEC New York State Department of Environmental Conservation
TBD To be determined

Table B-2. Summary of Sample Containers, Analytical Methods, Preservation, and Holding Times, Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Matrix	Monitoring Program	Parameters (1)	Analytical Laboratory Methodology	Sample Containers	Preservation	Holding Time
Aqueous (groundwater)	Groundwater Monitoring	VOCs	USEPA Method 8260	Two (2) 40-mL glass with Teflon-lined septa	Cool, 4 degrees C	7 days VTSR
		SVOCs	USEPA Method 8270	Two (2) 1-L amber	Cool, 4 degrees C	7 days to extract, then 40 days VTSR to analyze
		RCRA Metals	USEPA Methods 6010/7471	One (1) 500-mL plastic	HNO_3 to pH <2	6 months
Soil/Water	Waste Characterization (2)	Varies	Varies	Varies	Varies	Varies

Notes and Abbreviations:

(1) Refer to Tables B-3A through B-3C for specific analyte lists for analyses of aqueous samples.
(2) Waste characterization sample analysis will depend on generator knowledge and the requirements of the disposal facility.

USEPA U.S. Environmental Protection Agency
C Celsius
L Liter
HNO_3 Nitric Acid
mL Milliliter
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
RCRA Resource Conservation and Recovery Act
VTSR Verified Time of Sample Receipt at lab.

Table B-3A. Analyte List for Analysis of Aqueous Samples (VOCs), Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Monitoring Program:	Groundwater Sampling
Method:	USEPA Method 8260
Matrix/Sample Type:	Aqueous/Groundwater & Water
Constituent [1]	Contract-Required Quantitation Limits (ug/L)
VOCs:	
Chloromethane	5
Bromomethane	5
Vinyl Chloride	2
Chloroethane	5
Methylene chloride	5
Acetone	50
Carbon disulfide	50
1,1-Dichloroethene	5
1,1-Dichloroethane	5
cis-1,2-Dichloroethene	5
trans-1,2-Dichloroethene	5
2-Butanone	50
Chloroform	7
1,2-Dichloroethane	5
1,1,1-Trichloroethane	5
Carbon tetrachloride	5
Bromodichloromethane	50
1,2-Dichloropropane	5
cis-1,3-Dichloropropene	5
Trichloroethene	5
Benzene	0.7
Dibromochloromethane	5
trans-1,3-Dichloropropene	5
1,1,2-Trichloroethane	5
Bromoform	50
4-Methyl-2-pentanone	50
2-Hexanone	50
Tetrachloroethene	5
1,1,2,2-Tetrachloroethane	5
Toluene	5
Chlorobenzene	5
Ethylbenzene	5
Styrene	5
Xylene (total)	5

See next page for Notes and Abbreviations.

Table B-3A. Analyte List for Analysis of Aqueous Samples (VOCs), Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Notes and Abbreviations:

*	CRQLs/RQLs are the same for groundwater samples (environmental monitoring) and for water samples (waste characterization sampling).
(1)	Listed constituents represent Target Compound List (TCL) volatile organic compounds (VOCs).

VOCs	Volatile organic compounds
USEPA	U.S. Environmental Protection Agency
CRQLs	Contract-Required Quantitation Limits
RQLs	Required Quantitation Limits
ug/L	micrograms per liter

Table B-3B. Analyte List for Analysis of Aqueous Samples (SVOCs), Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Monitoring Program:	Groundwater Sampling
Method:	USEPA Method 8270
Matrix/Sample Type:	Aqueous/Groundwater

Constituent [1]	Required Quantitation Limits (ug/L)
SVOCs:	
Phenol	0.5
Bis(2-chloroethyl)ether	0.5
2-Chlorophenol	0.5
1,3-Dichlorobenzene	0.5
1,4-Dichlorobenzene	0.5
1,2-Dichlorobenzene	0.5
2-Methylphenol	0.5
4-Methylphenol	0.5
N-Nitroso-di-n-propylamine	0.5
Hexachloroethane	0.5
Nitrobenzene	0.5
Isophorone	0.5
2-Nitrophenol	0.5
2,4-Dimethylphenol	0.5
Bis(2-chloroethoxy)methane	0.5
2,4-Dichlorophenol	0.5
1,2,4-Trichlorobenzene	0.5
Naphthalene	0.5
4-Chloroaniline	0.5
Hexachlorobutadiene	0.5
4-Chloro-3-methylphenol	0.5
2-Methylnapthalene	0.5
Hexachlorocyclopentadiene	0.5
2,4,6-Trichlorophenol	0.5
2,4,5-Trichlorophenol	2.5
2-Chloronaphthalene	0.5
2-Nitroaniline	2.5
Dimethylphthalate	0.5
Acenaphthylene	0.5
2,6-Dinitrotoluene	0.5
3-Nitroaniline	2.5
Acenaphthene	0.5
2,4-Dinitrophenol	2.5
4-Nitrophenol	2.5
Dibenzofuran	0.5
2,4-Dinitrotoluene	0.5
Diethylphthalate	0.5
4-chlorophenyl(phenyl) ether	0.5
Fluorene	0.5
4-Nitroaniline	0.5
4,6-Dinitro-2-methylphenol	2.5
N-Nitrosodiphenylamine (1)	0.5

See next page for Notes and Abbreviations.

Table B-3B. Analyte List for Analysis of Aqueous Samples (SVOCs), Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Monitoring Program:	Groundwater Sampling
Method:	USEPA Method 8270
Matrix/Sample Type:	Aqueous/Groundwater

Constituent [1]	Required Quantitation Limits (ug/L)
SVOCs (continued):	
Hexachlorobenzene	0.5
Pentachlorophenol	2.5
Phenanthrene	0.5
Anthracene	0.5
Carbazole	0.5
Di-n-butylphthalate	0.5
Fluoranthene	0.5
Pyrene	0.5
Butylbenzylphthalate	0.5
3,3'-Dichlorobenzidine	0.5
Benzo(a)anthracene	0.5
Chrysene	0.5
Bis(2-ethylhexyl)phthalate (BEHP)	0.5
Di-n-octylphthalate	0.5
Benzo(b)fluoranthene	0.5
Benzo(k)fluoranthene	0.5
Benzo(a)pyrene	0.5
Indeno(1,2,3-cd)pyrene	0.5
Dibenz(a,h)anthracene	0.5
Benzo(g,h,i)perylene	0.5
4-bromophenyl-phenylether	0.5
Benzoic acid	2.5
Benzyl alcohol	0.5
Bis(2-chloroisopropyl)ether	0.5

Notes and Abbreviations:

(1) Listed constituents represent Target Compound List (TCL) semi-volatile organic compounds (SVOCs).

SVOCs Semi-volatile organic compounds
USEPA U.S. Environmental Protection Agency
RQLs Required Quantitation Limits
ug/L micrograms per liter

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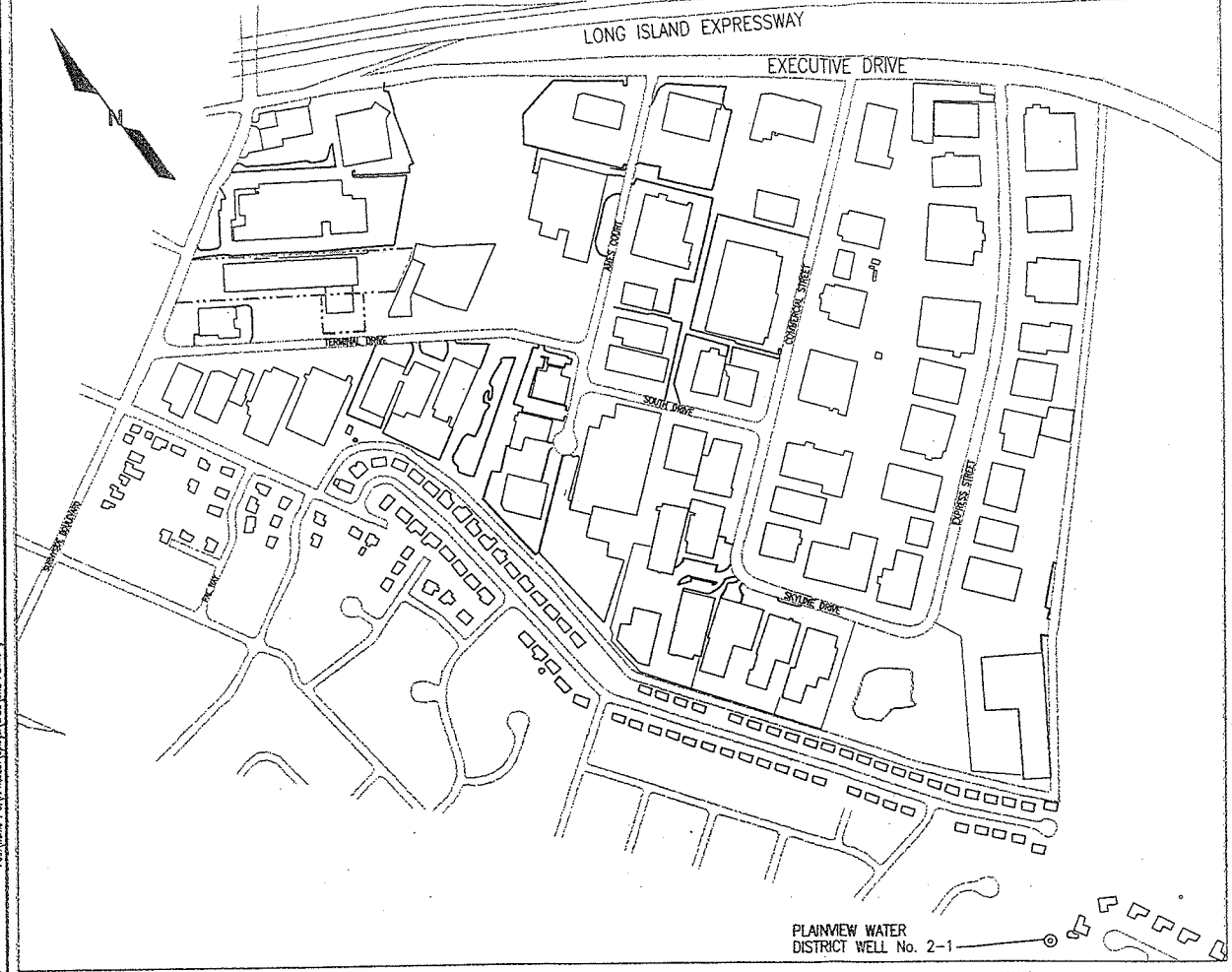
Table B-3C. Analyte List for Analysis of Aqueous Samples (Metals), Quality Assurance Project Plan (QAPP), Site Characterization Work Plan, United Stellar Industries Property, 131 Sunnyside Boulevard, Plainview, New York.

Monitoring Program:	Groundwater Sampling
Method:	USEPA Methods 6010/7471
Matrix/Sample Type:	Aqueous/Groundwater
Constituent	Required Quantitation Limits (ug/L)
Inorganics (Metals):	
Arsenic	5
Barium	5
Cadmium	5
Chromium	5
Lead	5
Mercury	5
Selenium	5
Silver	5

Notes and Abbreviations:

USEPA	U.S. Environmental Protection Agency
RQLs	Required Quantitation Limits
ug/L	micrograms per liter



LEGEND

PROPERTY BOUNDARY UNITED STELLAR IND.

Data\Time : Wed, 20 Jul 2005 - 11:49am
Path\Name : G:\PROJECT\Shegal\CADD\SITE PLAN.dwg
User Name : ehughes
Acad Version : R16.1s (LMS Tech)

0 400'
SCALE: 1" = 400'

REV. ISSUED DATE DESCRIPTION

KEYPLAN

ARCADIS
63 Dorpus Road
Suite 1
Tel: 631-249-7600 Fax: 631-249-7610

PROJECT TITLE

131 SUNNYSIDE BOULEVARD
PLAINVIEW, TOWN OF OYSTER BAY
NASSAU COUNTY, NEW YORK

PROJECT MANAGER	DEPARTMENT MANAGER	LEAD DESIGN PROF.	CHECKED
R. PORSCHE	D. SMOLENSKY		R. PORSCHE
SHEET TITLE		TASK/PHASE NUMBER	DRAWN BY
SITE LOCATION 131 SUNNYSIDE BOULEVARD PLAINVIEW, NEW YORK		00001	E. HUGHES
		PROJECT NUMBER	DRAWING NUMBER
		NY001422.0003	B-1

Appendix A

Field Forms

G&M MILLER, INC.
Ground-Water Consultants

WATER SAMPLING LOG

Project/No. _____ Page _____ of _____

Site Location _____

Site/Well No. _____ Coded/ Replicate No. _____ Date _____

Weather _____ Time Sampling Began _____ Time Sampling Completed _____

EVACUATION DATA

Description of Measuring Point (MP) _____

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP _____ Water-Level Elevation _____

Held _____ Depth to Water Below MP _____ Diameter of Casing _____

Wet _____ Water Column in Well _____ Gallons Pumped/Bailed Prior to Sampling _____

Gallons per Foot _____

Gallons in Well _____ Sampling Pump Intake Setting (feet below land surface) _____

Evacuation Method _____

SAMPLING DATA/FIELD PARAMETERS

Color _____ Odor _____ Appearance _____ Temperature _____ °F/°C

Other (specific ion; OVA; HNU; etc.) _____

_____

Specific Conductance, umhos/cm _____ pH _____

Sampling Method and Material _____

Constituents Sampled	Container Description From Lab _____ or G&M _____	Preservative

Remarks _____

Sampling Personnel _____

WELL CASING VOLUMES

GAL./FT	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

& MILLER, INC.
Ground-Water Consultants

DAILY LOG

Well(s) _____ Project/No. _____ Page _____ of _____

Site Location _____

Prepared By _____

Date/Time	Description of Activities

GERAGHTY & MILLER, INC.
Ground-Water Consultants

LOCATION SKETCH

Well(s) _____ Project/No. _____ Page _____ of _____

Site Location _____

Observer _____

(Locate all wells, borings, etc. with reference to three permanent reference points; tape all distances; clearly label all wells, roads, and permanent features)

0 ft ft

& MILLER, INC.
Ground-Water Consultants

SAMPLE/CORE LOG

Boring/Well _____ Project/No. _____ Page _____ of _____

Site Location _____ Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ (feet)

Hole Diameter _____ (inches) Type of Sample/ Coring Device _____

Length and Diameter of Coring Device _____ Sampling Interval _____ feet

Drilling Fluid Used _____ Drilling Method _____

Drilling Contractor _____ Driller _____ Helper _____

Prepared By _____ Hammer Weight _____ Hammer Drop _____ inches

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description

& MILLER, INC.
Ground-Water Consultants

SAMPLE/CORE LOG (Cont.d)

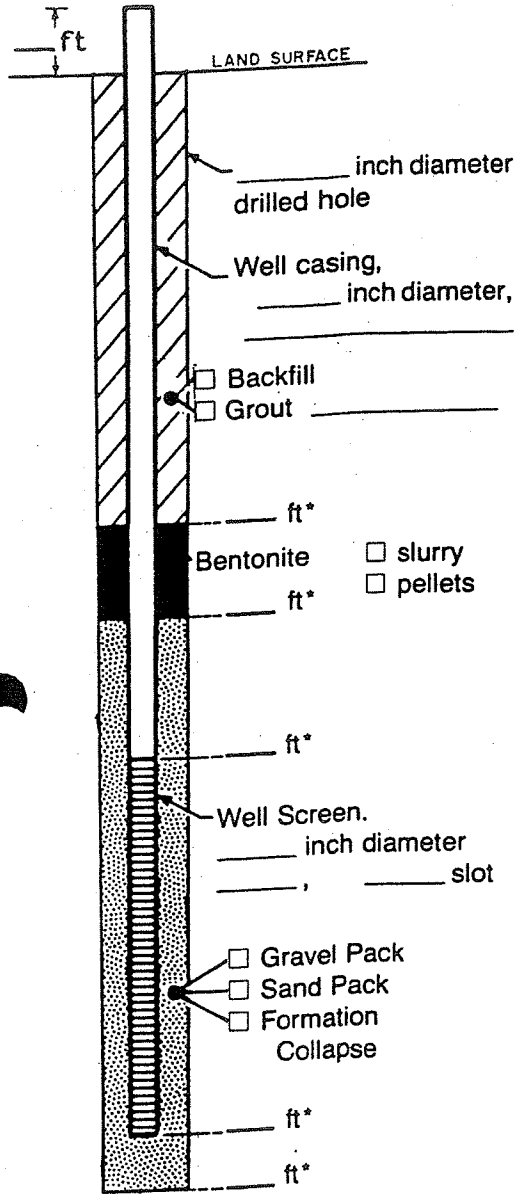
Boring/Well ________ Page ______ of ______

Prepared By ______________________

Sample/Core Depth (feet below land surface) From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description

& MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project _____ Well _____

Town/City _____

County _____ State _____

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) _____

Drilling Method _____

Drilling Contractor _____

Drilling Fluid _____

_____

Development Techniques(s) and Date(s)

_____

_____

_____

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose _____

_____

_____

Remarks _____

_____

_____

_____

_____

_____

Prepared by _____

PROJECT ______________________ WELL __________ SITE ______________________

SCREEN SETTING __________ MEASURING POINT DESCRIPTION ______________________ HEIGHT ABOVE GROUND SURFACE __________

STATIC WATER LEVEL __________ MEASURED WITH ______________________ DATE/TIME __________

DRAWDOWN ☐ START OF TEST ______________________ PUMPING WELL __________

RECOVERY ☐ END OF TEST ______________________

DISTANCE FROM WELL MEASURED TO PUMPING WELL (r) __________ DISCHARGE RATE ______________________ ORIFICE __________

DATE & TIME	WELL OR t (mins)	HELD (ft)	WET (ft)	DEPTH TO WATER (ft)	s (ft)	DEW.[1] CORR. (ft)	ART.[2] s′ (ft)		Q (gpm)	MANO-METER (in)	REMARKS[3]

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

GERAGHTY & MILLER, INC.
Ground-Water Consultants

MATERIALS/COST LOG

Wells: _____ Project/No.: _____
Site Location: _____ Calculated By: _____ Checked By: _____

Well	Footage Drilled (ft)	Split Spoons (ea)	Screen	Casing	Sand or Gravel (bag)	Bentonite		Cement (bag)	Developing Time (hrs)	Rig time (hrs)	Other Items*
			Diam/Length (ft)	Diam/Length (ft)		Pellets (lb)	Powder (bag)				
Totals											
Unit Cost	$	$	$	$	$	$	$	$	$	$	$
Cost Totals	$	$	$	$	$	$	$	$	$	$	$

Appendix B

Chain-of-Custody Forms

GERAGHTY & MILLER, INC.
Ground-Water Consultants

CHAIN-OF-CUSTODY RECORD

Location: ____________________

Laboratory: ____________________

Project/Number ____________________

Shipping Container ID: ____________________

Sampler(s) ____________________

____

SAMPLE CONTAINER DESCRIPTION

SAMPLE IDENTITY	Date Sampled													Total	Remarks

Total No. of Containers ______

Relinquished by: ____________________ Organization: ____________________
Date: __________ Time: __________

Received by: ____________________ Organization: ____________________
Date: __________ Time: __________

Relinquished by: ____________________ Organization: ____________________
Date: __________ Time: __________

Received by: ____________________ Organization: ____________________
Date: __________ Time: __________

Relinquished by: ____________________ Organization: ____________________
Date: __________ Time: __________

Received by: ____________________ Organization: ____________________
Date: __________ Time: __________

Delivery Method: ____________________ (attach shipping bill, if any)

(Use extra sheets, if necessary)

Appendix C

Laboratory Quality Assurance Plan (QAP) will be supplied upon request

Appendix C

Health and Safety Plan of Sampling and Analysis Plan

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Appendix C

Health and Safety Plan

Client Name: 131 Sunnyside, LLC

Project Name: United Stellar Industries Property
131 Sunnyside Boulevard,
Plainview, New York

Date: September 5, 2005

ARCADIS

Christopher Keen
Designated H&S Plan Writer

Carlo San Giovanni
Designated H&S Plan Reviewer

Douglas Smolensky
Project Manager

Appendix C
Health and Safety Plan

United Stellar Industries
Property
131 Sunnyside Boulevard,
Plainview, New York

Prepared for:
131 Sunnyside, LLC
Gertrude Discount

Prepared by:
ARCADIS G&M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610

Our Ref.:
NY001422.0003.00001

Date:
5 September 2005

Attachments

1. Introduction

All work on this project will be carried out in compliance with ARCADIS' Health and Safety Manual and the Occupational Safety and Health Administration's Hazardous Waste Operations and Emergency Response regulation 29 CFR 1910.120. Specific safety information for the project is contained in this Health and Safety Plan (HASP). All personnel working on hazardous operations or in the area of hazardous operations shall read and be familiar with this HASP before doing any work. All project personnel shall sign the certification page acknowledging that they have read and understand this HASP.

Changes in the scope of the project or introduction of new hazards to the project shall require revision of the HASP by the HASP writer and reviewer, and approval by the Project Manager. The HASP Addendum Form is included as Attachment A. Addendums are to be added to every copy of the HASP, and logged in the following table to verify that all copies of the HASP are current:

Addendum Number	Date of Addendum	Reason for Addendum	Person Completing Addendum
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

2. Project Description

2.1 Property Background

The Property is located at 131 Sunnyside Boulevard, Plainview, New York. The Property is situated south of the Long Island Expressway, on the eastern side of Sunnyside Boulevard. The Property is 3.3 acres and currently contains one unoccupied building that is undergoing renovation. The Property consists of one large warehouse-type structure that currently has no windows, few doors, and is in poor condition except for the new roof and asphalt parking areas. Connected to the large warehouse-type structure are two smaller portions of the building that were formerly used as office space.

The property was formerly used for the manufacture of metal parts for the aerospace industry, bicycles, and other metal structures. During the manufacturing process, hazardous materials were used to degrease the metals parts and to subsequently paint those parts. Based on previous investigations, metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) are the constituents of concern (COCs).

The New York State Department of Environmental Conservation (NYSDEC) is requiring 131 Sunnyside, LLC (Sunnyside) and Gertude Discount (Discount) to conduct a Site Characterization (SC) effort. On May 22, 2005, the NYSDEC, Sunnyside, and Discount entered into a Consent Order. .

2.2 List of Project Tasks and Scope of Work

The planned project tasks at the Property do not involve any work inside the unoccupied building. All project tasks currently planned as part of the SC Work Plan implementation will be conducted at the Site at locations exterior to the building. ARCADIS has prepared this HASP as Appendix C of the Sampling and Analysis Plan (SAP) of the SC Work Plan. The tasks described below will be conducted as part of the SC Work Plan implementation.

Task 1 – Drilling of Soil Borings and Monitoring Well Installation

Task 1 will involve the following activities: advancing soil borings and collection of soil cores for the purpose of lithologic characterization; geophysical logging (natural gamma method) of the soil borings; installation of monitoring wells to characterize the

nature and extent of groundwater contamination (both perched water and groundwater); development of monitoring wells; surveying of monitoring wells; and, on-site management of investigation-derived waste. The soil borings and monitoring wells will be drilled using either hollow-stem auger, mud rotary, or rotosonic drilling techniques.

Task 2 – Monitoring Well Sampling and Hydraulic Monitoring

The monitoring wells (both perched water and groundwater) will be sampled using low-flow (minimal drawdown) groundwater sampling techniques and the collected samples will be submitted for laboratory analysis. The monitoring wells will be used to monitor groundwater quality at the Site over time. In addition, hydraulic (i.e., water level) measurements will be collected using an electronic water-level indicator.

2.3 Site Description

Site Type: (Check as many as applicable)

	Active		Secure	X	Industrial		Landfill		Service station
X	Inactive	X	Unsecured		Commercial		Well field		Water work
			Uncontrolled		Residential		Railroad		Undeveloped
					Other specify:				

Surrounding Population:

	Residential	X	Industrial	X	Commercial		Rural		Other:

The Site is generally flat with slight topographic inclines from the north and west to the parking areas across the property. The northern property boundary consists of fencing, which is situated upon an approximately four-foot high retaining wall. Soil was previously excavated from areas on the eastern portion of the property and the pavement is broken and discontinuous with uneven holes in this portion of the property. However, the excavations have been backfilled and the uneven holes are limited to the pavement. Three accessible gates exist on the property, two on the south side (Terminal Drive) and one along the west side on Sunnyside Boulevard. The Site is bordered by a self storage facility to the north; moving companies to the south; an automobile auction facility to the east; and, Sunnyside Boulevard to the west.

3. Hazard Analysis

3.1 Project Hazard Checklist

Physical Hazards Present: ☐ None	☒ Heat ☒ Cold ☒ Noise ☒ Walking/working surfaces (includes slip/trip/fall & floor/wall openings) ☐ Visible Dust ☐ LASER ☐ Other:	☒ Holes/Pits ☐ Ionizing radiation ☐ Non-ionizing radiation ☒ Electricity ☒ Severe Weather ☐ Poor lighting ☒ Overhead Hazards ☐ Other:
Environmental/Equipment Hazards Present: ☐ None	☐ Heavy machinery ☐ Trenching/excavation ☐ Docks – marine operations ☐ Docks – loading ☐ Diving operations ☒ Drilling ☐ Forklifts ☐ Water operations work ☐ Elevated heights (includes fall protection) ☒ Overhead/Underground utilities ☐ Confined spaces ☐ Power tools	☐ Cranes/Hoists/Rigging ☐ Ladders ☐ Scaffolding ☐ Man lifts ☐ Welding ☒ Gas cylinders (calibration canisters) ☐ Roadway work ☐ Railroad work ☐ Energized equipment (LO/TO) ☐ Pressurized equipment (LO/TO) ☒ Drums and containers ☒ Other: Generators
Biological Hazards Present: ☒ None	☐ Animal/human fluids or blood ☐ Animal/human tissue(s) ☐ Poisonous/irritating plants ☐ Other:	☐ Contaminated needles ☐ Live bacterial cultures ☐ Insects/rodents/snakes ☐ Other:
Ergonomic Hazards Present: ☐ None	☒ Repetitive motion ☐ Awkward position ☒ Heavy lifting ☐ Frequent lifting ☐ Other:	☐ Limited movement ☐ Forceful exertions ☐ Vibration ☐ Other: ☐ Other:
Personal Safety/Security: ☐ None	☒ Personal safety ☐ Security issue ☐ Project site in isolated area ☒ Employees working alone ☐ Other:	☐ Employees working early/late ☐ Potentially dangerous wildlife ☐ Guard or stray dogs in area ☐ No/limited cell phone service ☐ Other:
Driving Safety ☒ None	☐ Driving early/late ☐ Driving long trip ☐ Driving off-road	☐ City driving ☐ Pulling trailer ☐ Other:

3.2 Chemical Hazards

Chemical	Hazards	TLV/PEL* 8-hr TWA	Ionization Potential	Symptoms of Overexposure	Special Precautions
Trichloroethene	Irritant	50 ppm	9.45 eV	Irritation, dizziness, headache, vomiting.	Full-Face Respirator if Required
1,2-Dichloroethene	Irritant	200 ppm	9.65 eV	Irritation, dizziness, headache, vomiting.	Full-Face Respirator if Required
Tetrachloroethene	Irritant	25 ppm	9.32 eV	Irritation, dizziness, headache, vomiting.	Full-Face Respirator if Required
1,1,1-Trichloroethane	Irritant	350 ppm	11.00 eV	Irritation, dizziness, headache, vomiting.	Full-Face Respirator if Required
1,1-Dichloroethene	Irritant	5 ppm	10.00 eV	Irritation, dizziness, headache, vomiting.	Full-Face Respirator if Required
Toluene	Irritant	50 ppm	8.82 eV	Irritation, dizziness, headache, vomiting.	Full-Face Respirator if Required
Arsenic	Toxic	0.010 mg/m^3	Not Applicable	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [potential occupational carcinogen]	**Personal Protection & Sanitation** Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench
Cadmium	Toxic	0.005 mg/m^3	Not Applicable	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	**First Aid:** Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
Chromium	Toxic	0.5 mg/m^3	Not Applicable	Irritation eyes, skin; lung fibrosis (histologic)	**First Aid:** Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
Copper	Toxic	1 mg/m^3	Not Applicable	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing; [potential occupational carcinogen]	**Personal Protection & Sanitation** Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily

Lead	Toxic	0.050 mg/m^3	Not Applicable	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension	**Personal Protection & Sanitation** Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily
Mercury	Toxic	0.010 mg/m^3	Not Applicable	Paresthesia; ataxia, dysarthria; vision, hearing disturbance; spasticity, jerking limbs; dizziness; salivation; lacrimation (discharge of tears); nausea, vomiting, diarrhea, constipation; skin burns; emotional disturbance; kidney injury; possible teratogenic effects	**Personal Protection & Sanitation** Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench
Nickel	Toxic	1 mg/m^3	Not Applicable	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	**Personal Protection & Sanitation** Skin: Prevent skin contact Eyes: No recommendation Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily
Zinc	Toxic	5 mg/m^3 (dust)	Not Applicable	Chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Breathing: Respiratory support

*The TLV (Threshold Limit Value) from the American Conference of Governmental Industrial Hygienists is listed unless the PEL (Permissible Exposure Limit), designated by OSHA, is lower.

3.3 Task Hazard Analysis

Each hazard is evaluated and rated for the level of risk based on the task of the project. A thorough task hazard analysis is completed for each respective task using the following Relative Hazard Rating Scale:

Hazard is/has...	Minimal health effects	Moderate health effects	Severe health effects
Rarely present	LOW	LOW	MED
Sometimes present	LOW	MED	HIGH
Constantly present	MED	HIGH	HIGH

Administrative and engineering controls for each hazard are evaluated for hazard abatement. Personal protective equipment (PPE) required to protect employees from the hazard are indicated, and a summary checklist is provided in Attachment B. Prior to initiating field work, a tailgate safety briefing must be conducted with all field staff to review the hazards with the project team. Tailgate safety briefings should be conducted daily, or as tasks/hazards change. The tailgate safety briefing form is included in Attachment C.

This section also specifies the monitoring equipment to be used on Site for each task. If air monitoring levels reach and/or approach the action levels, work should be suspended and the project manager contacted to determine if the HASP should be amended to upgrade PPE requirements. All monitoring equipment will be maintained and calibrated in accordance with manufacturer recommendations. All pertinent monitoring data will be logged on the Real Time Air Monitoring Data Form (Appendix D) and maintained on Site for the duration of project activities. Calibration of all monitoring equipment will be conducted **daily** and logged on the same form.

3.3.1 Task 1 — Drilling of Soil Borings and Monitoring Well Installation

HAZARD	Volatile Organic Compounds in Air	Level of Risk:	MED
Source of Hazard	Volatile vapors during drilling activities		
Admin. & Eng. Controls	Open Air Environment, Add water during drilling if necessary to control vapors	PPE:	Level D
HAZARD	Dust in Air	Level of Risk:	LOW
Source of Hazard	Dust during drilling activities		
Admin. & Eng. Controls	Open Air Environment, Due to presence of metals employ dust suppression, as necessary	PPE:	Level D
HAZARD	Being Struck by Equipment	Level of Risk:	MED
Source of Hazard	Drilling rig and other heavy equipment		
Admin. & Eng. Controls	Cautiousness, Communication, Injury Prevention Training, Establish and maintain clearance around equipment	PPE:	Level D
HAZARD	Noise	Level of Risk:	MED
Source of Hazard	Drilling rig and other heavy equipment		
Admin. & Eng. Controls	Use Insulation/Baffels/Sound Barricades on Equipment, As Needed; Orient Equipment Exhaust away from Personnel	PPE:	Hearing Protection, As necessary
HAZARD	Walking/Workings Surface, Holes/Pits	Level of Risk:	LOW
Source of Hazard	Uneven Terrain/Floors, Open Pits		
Admin. & Eng. Controls	Cautiousness, adequate lighting, caution tape around open trenches/boreholes to prevent entry, Injury Prevention Training	PPE:	Level D

HAZARD	Electricity/Energized Equipment	Level of Risk:	MED
Source of Hazard	Overhead Electrical Service		
Admin. & Eng. Controls	Cautiousness, Training; See Also Overhead Utilities Below	PPE:	Level D
HAZARD	Overhead/Underground Utilities	Level of Risk:	MED
Source of Hazard	Utility Service Lines		
Admin. & Eng. Controls	Mark Outs, GPR Survey/Utility Clearance, Cautiousness, Training; Hand Dig Upper 5 ft if Utility Location is in Question. Utilize ARCADIS Utility Checklist Form	PPE:	Level D
HAZARD	Drums and containers	Level of Risk:	MED
Source of Hazard	Drums will be used containerize waste during drilling activities		
Admin. & Eng. Controls	Properly label and stage containers	PPE:	Level D
HAZARD	Gas Cylinders	Level of Risk:	LOW
Source of Hazard	Calibration gases for PID		
Admin. & Eng. Controls	Proper care and storage when using gas cylinders	PPE:	Level D
HAZARD	Heat/Cold Stress	Level of Risk:	MED
Source of Hazard	Hot weather and little shade in work area, long work days, strenuous work to setup and breakdown sampling apparatus, cold weather in winter		
Admin. & Eng. Controls	Frequent breaks during hot weather, maintain supply of fluids, clothing for winter work	PPE:	Proper Seasonal Clothing

Is air monitoring required for this task? ☒ YES ☐ NO If yes, complete the following:		
Monitoring Equipment	**Monitoring Frequency**	**Action Level**
PID (with 11.7 eV lamp)	Periodic (15 minute intervals)	5 ppm
Particulate Monitor	Periodic (15 minute intervals)	150 ug/m^3

3.3.2 Task 2 – Monitoring Well Sampling and Hydraulic Monitoring

HAZARD	Volatile Organic Compounds in Air	Level of Risk:	MED
Source of Hazard	Volatile vapors during sampling activities		
Admin. & Eng. Controls	Open Air Environment, Let well vent until PID reading is below action level	PPE:	Level D
HAZARD	Walking/Workings Surface, Holes/Pits	Level of Risk:	LOW
Source of Hazard	Uneven Terrain/Floors, Open Pits		
Admin. & Eng. Controls	Cautiousness, adequate lighting, caution tape around open trenches to prevent entry, Injury Prevention Training	PPE:	Level D
HAZARD	Electricity/Energized Equipment	Level of Risk:	LOW
Source of Hazard	Generator		
Admin. & Eng. Controls	Cautiousness, Training	PPE:	Level D
HAZARD	Personal Safety/Employees Working Alone	Level of Risk:	LOW
Source of Hazard	Working On-site Late or Alone		
Admin. & Eng. Controls	Avoid working late on-site, if alone; be in contact with PM or TM regarding your location by cell (call every ½ hour, every hour maximum).	PPE:	Level D
HAZARD	Heavy Lifting	Level of Risk:	MED
Source of Hazard	Moving sampling equipment (i.e., generator and pump)		
Admin. & Eng. Controls	Lift with your knees, move slowly, don't twist at waist; Use Buddy to Assist or Arrange Equipment to Avoid Lifting.	PPE:	Level D

HAZARD	Drums and containers	Level of Risk:	MED
Source of Hazard	Drums will be used containerize waste during groundwater sampling		
Admin. & Eng. Controls	Properly label and stage containers	PPE:	Level D
HAZARD	Gas Cylinders	Level of Risk:	LOW
Source of Hazard	Calibration gases for PID		
Admin. & Eng. Controls	Proper care and storage when using gas cylinders	PPE:	Level D
HAZARD	Heat/Cold Stress	Level of Risk:	MED
Source of Hazard	Hot weather and little shade in work area, long work days, strenuous work to setup and breakdown sampling apparatus, cold weather in winter		
Admin. & Eng. Controls	Frequent breaks during hot weather, maintain supply of fluids, clothing for winter work	PPE:	Proper Seasonal Clothing

Is air monitoring required for this task? ☒ YES ☐ NO If yes, complete the following:

Monitoring Equipment	Monitoring Frequency	Action Level
PID (with 11.7 eV lamp)	Periodic (15 minute intervals)	5 ppm

4. Decontamination Procedures

Level D decontamination protocol will be used with the following decontamination stations:

Level D Decontamination Steps		
	1	Equipment Drop
	2	Disposable Garment, Outer Boot, and Glove Removal (Disposal into Trash)
	3	Field Wash

Place an X by all decontamination equipment that is required at the Site.

Decontamination Equipment Checklist			
X	Scrub Brushes	X	Garbage Bags
X	Waste Containers	X	Paper Towels
X	Soap		Isopropyl Alcohol
	Plastic Tubs	X	Pump Spray Bottles
	Plastic Drop Cloths	X	Pump Spray Bottles (water)

5. Emergency Procedures

In the event that an injury, over-exposure or spill has occurred, emergency response procedures will be implemented. The Site Safety Officer (SSO) will coordinate the entry and exit of response personnel during an emergency and make emergency contacts as necessary from the following list. After immediate notifications are made, the SSO will contact the Project Manger.

5.1 Emergency Contact Information

Emergency Contact	Phone Numbers
Local Police	911 and/or 516-573-6200
Local Ambulance	911 and/or 516-938-6901
Local Fire Department	911 and/or 516-938-6901
Local Hospital – Plainview Hospital (888 Old Country Road, Plainview, New York)	516-719-3000
National Response Center (all spills in reportable quantities)	800.424.8802
U.S. Coast Guard (spills to water)	800.424.8802
Project Manager – Doug Smolensky	631-249-7600
Client Contact – Fred Werfel	516-395-1100 ext. 222

The Project Manager will make the following notifications:

Name	Phone Numbers
Corporate Health & Safety Director – Mike Thomas	720.344.3835 (O) 720.308.2147 (C)
Corporate Health & Safety Manager – Pat Vollertsen	720.344.3779 (O)
Regional Health & Safety Manager – Mija Coppola	614-799-4716 (O)
Area Health & Safety Representative – Carlo San Giovanni	631-391-5259 (O) 516.903.6591 (C)

If emergency attention is not needed but professional medical attention is necessary, the employee will be taken to:

Medical Facility: North Shore University Hospital at Plainview
Address: 888 Old Country Road
Plainview, New York
Phone Number: 516-719-3000

A map to the medical facility is included in Attachment E.

5.2 Emergency Equipment

	Emergency shower	X	First-aid kit
X	Emergency eyewash	X	Cell phone/radio
X	Fire extinguisher		Chemical spill kit
	Other:		Other:

All employees working on this project will be shown the location and proper use of all emergency equipment prior to beginning work on the project.

6. Project Team and Training

6.1 Personnel List

The project manager is responsible for safety at the project site and for ensuring that all site workers have reviewed the HASP and understand the hazards. The project manager must also ensure that the necessary PPE is procured and provided to site workers. The task manager assists the project manager in implementing safety measures at the site, and conveys any safety concerns to the project manager.

The SSO officer is responsible for implementing the HASP at the project site. If any site personnel or visitors do not comply with the HASP, the SSO will cease all work until personnel/visitors comply. The SSO will contact the PM/TM to inform them of any personnel not complying with the HASP.

Project Manager:	Doug Smolensky
Task Manager:	Robert Porsche
Site Safety Officer:	John Corral, or other designee
Site Workers:	John Corral, Gary Williams, Patricia Prezorski, Dennis McClafferty

6.2 Training Requirements

All personnel working at the site must have the necessary training based on the hazards present. The following training is required for all site workers:

Training Required:		
	☒ 40-hour HAZWOPER	☐ Confined space
	☐ 24-hour HAZWOPER	☐ Lockout/tagout
	☒ HAZWOPER site supervisor	☐ Electricity
	☐ OSHA 30-hour Construction	☐ Fire extinguishers
	☐ OSHA 10-hour Construction	☐ Fall protection
	☐ PPE	☐ Noise exposure
	☐ Respiratory protection	☐ Forklifts
	☐ Chemical hygiene	☐ Asbestos
	☒ Hazard communication	☐ Lead
	☐ Hazardous waste	☐ Cadmium
	☐ First-aid/CPR/Bloodborne pathogens	☐ Radiation safety
	☐ DOT/IATA hazmat transportation	☐ Client specific
	☐ Diving	☐ Other:
☐ None	☐ Boating safety	

Medical Screening	☒ Medical Surveillance Exam (HAZWOPER) ☐ Client required drug and/or alcohol testing	☐ Blood and/or urine screening for other hazardous substances

All 40-hour HAZWOPER trained personnel who are working at HAZWOPER project sites are required to participate in the ARCADIS medical surveillance program as outlined in the Corporate Health and Safety Manual.

6.3 Subcontractors

A copy of this HASP is to be provided to all subcontractors prior to the start of work so that the subcontractor is informed of the hazards at the site. While the ARCADIS HASP will be the minimum H&S requirements for the work completed by ARCADIS and its subcontractors, each subcontractor, in coordination with ARCADIS H&S personnel, is expected to perform its operations in accordance with its own HASP, policies and procedures unique to the subcontractor's work to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to ARCADIS for review prior to the start of on-site activities.

In the event that the subcontractor's procedures/requirements conflict with requirements specified in this HASP, the more stringent guidance will be adopted after discussion and agreement between the subcontractor and ARCADIS project H&S personnel. Hazards not listed in this HASP, but known to the subcontractor or known to be associated with the subcontractor's services, must be identified and addressed to the ARCADIS Project or Task Manager and SSO prior to beginning work operations.

If the subcontractor prefers to adopt this HASP, the **"Subcontractor Acknowledgement Memo" (provided on the ARCADIS Intranet) must be signed and dated by the subcontractor's management and placed in the project file.** Once the signed memo is received by the project manager, an electronic version of our HASP can be submitted to the subcontractor to use as their own. Subcontractors working at the site will need to have this plan with them, and will also need to sign the Subcontractors HASP receipt signature page of the ARCADIS HASP (Section 7.2). Subcontractors are responsible for the H&S of their employees at all times, and have the authority to halt work if unsafe conditions arise.

The Project/Task Manager and SSO (or authorized representative) has the authority to halt the subcontractor's operations and to remove the subcontractor or subcontractor's employee(s) from the Site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

7. Project Personnel HASP Certification

7.1 ARCADIS Personnel Signature Page

I certify that I have read, understand, and will abide by the safety requirements outlined in this HASP.

Printed Name	Signature	Date

7.2 Subcontractor Acknowledgement: Receipt of HASP

ARCADIS claims no responsibility for the use of this HASP by others although subcontractors working at the Site may use this HASP as a guidance document. In any event, ARCADIS does not guarantee the health and/or safety of any person entering this Site. Strict adherence to the health and safety guidelines provided herein will reduce, but not eliminate, the potential for injury at this Site. To this end, health and safety becomes the inherent responsibility of personnel working at the Site.

Printed Name	Company	Signature	Date

7.3 Visitor Acknowledgement and Acceptance of HASP

By signing below, I waive, release and discharge the Owner of the Site and ARCADIS G&M, Inc. and their employees from any future claims for bodily and personal injuries which may result from my presence at, entering, or leaving the Site and in any way arising from or related to any and all known and unknown conditions on the Site.

Name	Company	Reason for Visit	Date/Time On Site	Date/Time Off Site

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Attachment A

HASP Addendum Pages

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Addendum Page

This form should be used to document any changes required to this HASP. These changes may be a result of changes to the scope of services, changes in field conditions, new hazards identified on the Site, higher or lower hazards than anticipated, etc. Please complete this form prior to the next work day once the changes have been identified. Review the modifications with all Site staff, including subcontractors, during the daily tailgate briefing, and complete the tailgate briefing form as required. Attach a copy of the addendum to all copies of the HASP including the Site copy, and log in the Addendum Log in Section 1.0.

Addendum Number: _____ Project Number: _____
Date of Changed Conditions: _____ Date of Addendum: _____

Description of Change that Results in Modifications to HASP:

Hazard Analysis for Change in Work:

HAZARD		Level of Risk:	
Source of Hazard			
Admin. & Eng. Controls		PPE:	
HAZARD		Level of Risk:	
Source of Hazard			
Admin. & Eng. Controls		PPE:	

Signed: _____ Signed: _____
Project Manager Site Safety Officer

Signed: _____ Signed: _____
H&S Plan Writer H&S Plan Reviewer

Make additional copies of this form as necessary.

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Attachment B

PPE Checklist

Description (Specify Material or Type in Box)	Level Of Protection R = Required O = Optional	
ARCADIS	D	C
Body		
Coveralls	R	
Chemical Protective Suit	O	R
Splash Apron	O	
Rain Suit	O	O
Traffic Safety Vest (reflective)		
Head		
Hard Hat (if does not create other hazard)	R	R
Head Warmer (depends on temperature and weather	O	O
Eyes & Face		
Safety Glasses (incorporate sun protection as necessary)	R	
Goggles (based on hazard)	O	
Splash Guard (based on hazard)	O	O
Ears		
Ear Plugs	R	R
Ear Muffs	O	O
Hands and Arms		
Outer Chemical Resistant Gloves (i.e. Nitrile)	O	R
Inner Chemical Resistant Gloves (i.e. Latex)	R	O
Insulated Gloves	O	O
Work Gloves	R	R
Foot		
Safety Boots (steel toe and shank)	R	R
Rubber, Chemical Resistant Boots	O	O
Rubber Boots	O	O
Disposable Boot Covers	O	R
Respiratory Protection (indicate cartridge type where applicable)		
Dust Protection, As Needed	O	O
1/2 Mask APR	NA	
Full Face APR	NA	R
Full Face Canister APR	NA	NA
Powered APR	NA	NA
Other Supplies		
First Aid Kit	R	R
Fire Extinguisher	R	R
Mobile Phone	R	R
Traffic Cones	O	O
Walkie Talkies	O	O
Water or Other Fluid Replenishment	R	R
Eye Wash Station		
Eye Wash Bottle	R	R
Wash and Dry Towelettes		
Sunscreen (SPF 15 or higher)		
Insect Repellant		

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Attachment C

Tailgate Briefing Sign-in Log

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Site Activities Tailgate Safety Briefing Sign-in Log

Project Number:		**Project Name:**	
Date:		**Time:**	

Briefing Conducted by:	**Signature:**	**Company:**

This sign-in log documents the tailgate briefing conducted in accordance with the HASP. Personnel who perform work operations on Site are required to attend each briefing and to acknowledge receipt of each briefing, daily.

TOPICS COVERED (check all those covered):

☐ General PPE Usage	☐ Confined Space	☐ Excavation Safety
☐ Hearing Conservation	☐ Slips, Trips, Falls	☐ Confined Space
☐ Respiratory Protection	☐ Heat Stress	☐ Traffic Safety
☐ Personal Hygiene	☐ Thermal Stresses	☐ Changes to the HASP
☐ Exposure Guidelines	☐ Site Control	☐ Initial Review of Hazard Evaluation
☐ Decon Procedures	☐ Work Zones	☐ Other (specify):
☐ Emergency Procedures (include route to hospital)	☐ Lockout/Tagout	☐ Other (specify):

Personnel Sign-in List

Printed Name	Signature	Company Name

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Attachment E

Map to the Hospital

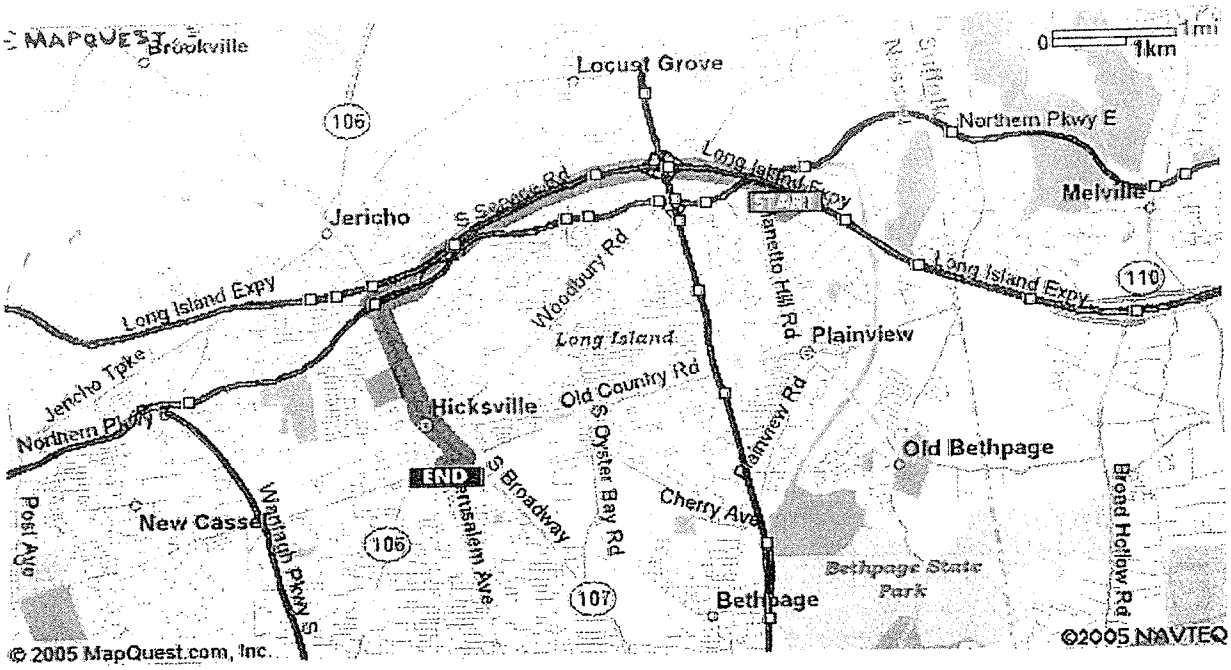
MAPQUEST

Start: 131 Sunnyside Blvd
Plainview, NY 11803-1511, US

End: 88 W Old Country Rd
Hicksville, NY 11801-4018, US

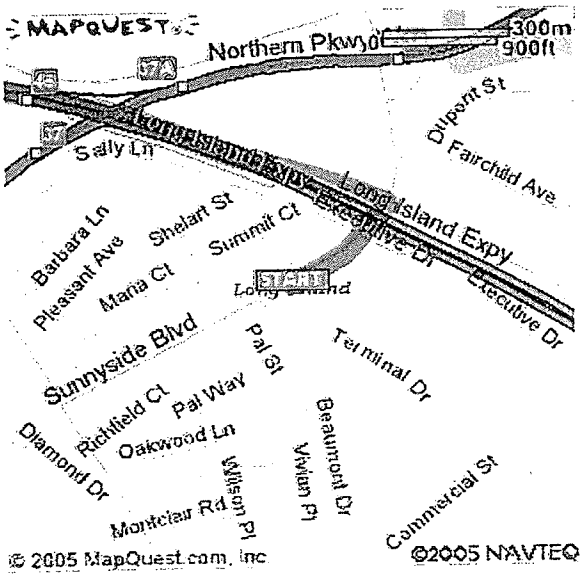
Directions	Distance
START 1: Start out going NORTHEAST on SUNNYSIDE BLVD toward SUMMIT ST.	0.1 miles
2: Merge onto LONG ISLAND EXPY / I-495 W via the ramp on the LEFT toward NEW YORK.	2.9 miles
3: Merge onto NORTHERN PKWY W via EXIT 42 toward NEW YORK.	0.8 miles
SOUTH 107 4: Merge onto N BROADWAY / NY-107 S via EXIT 35S toward HICKSVILLE.	1.6 miles
5: Turn RIGHT onto W OLD COUNTRY RD.	0.1 miles
END 6: End at 88 W Old Country Rd Hicksville, NY 11801-4018, US	

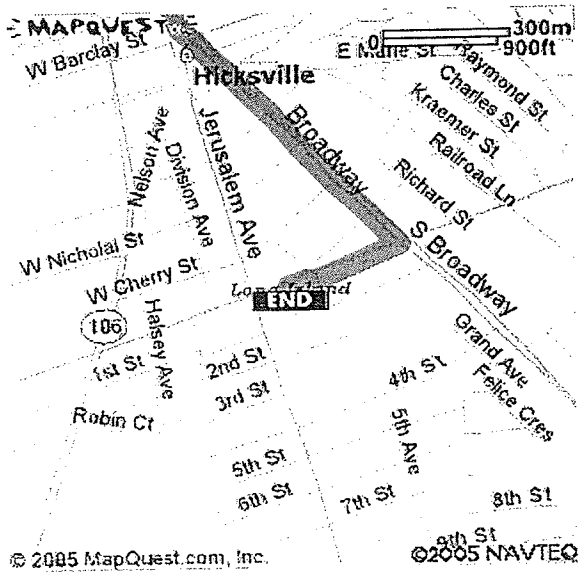
Total Est. Time: 9 minutes **Total Est. Distance: 5.85 miles**



Start:
131 Sunnyside Blvd
Plainview, NY 11803-1511, US

End:
88 W Old Country Rd
Hicksville, NY 11801-4018, US





Notes: