SEPARATIONS PROCESS RESEARCH UNIT (SPRU)
DISPOSITION PROJECT (DP)

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Characterization Plan for H1 Area of Concern

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URS

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Table of Contents

List of Figures

Tables

Appendices

Acronyms

AOC	Area of Concern
ASP	Analytical Services Protocol
COC	Constituents of Concern
ELAP	Environmental Laboratory Approval Program
KAPL	Knolls Atomic Power Laboratory
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCB	polychlorinated biphenyls
QAPjP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SCO	Soil Cleanup Objective
SPRU	Separations Process Research Unit
SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic Leaching Procedure

1.0 INTRODUCTION

This characterization plan addresses more extensive sampling and analyses of the soil in the area of the H1 Cooling Tower Area of Concern (AOC) at the Separations Process Research Unit (SPRU), Knolls Atomic Power Laboratory (KAPL), Niskayuna, New York (Figures 1 and 2).

The New York State Department of Environmental Conservation (NYSDEC) is overseeing clean up of the chemical contamination at the SPRU Upper Level under the Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq. 1976) corrective action program (Permit No. 4-4224-00024/00042).

1.1 Background

The H1 Cooling Tower and Pump House were utilized from 1950 until 1992. In August and September of 2006, the H1 cooling tower and pump house were demolished and removed. An investigation, the *Radiological and Chemical Characterization of Soil and Groundwater at Structure H-1*, was performed in April 2007. Relative to the 2006 demolition work, remaining subsurface utility and drain lines were cut and capped, and the excavation was backfilled.

Some of the existing utilities extending from the former H1 cooling tower's excavation footprint will be removed as part of the H2 remediation in the RCRA Interim Corrective Measures Work Plan Upper Level SWMUs (SPRU-ENV-006) and additional removal/characterization of remaining utilities will be addressed at that time.

1.2 Objectives

The objective of this Characterization Plan is to provide further investigation of soil in the area of the H1 AOC. To achieve this, more sampling and analyses for chromium will be performed.

1.3 Physical Setting and Site Description

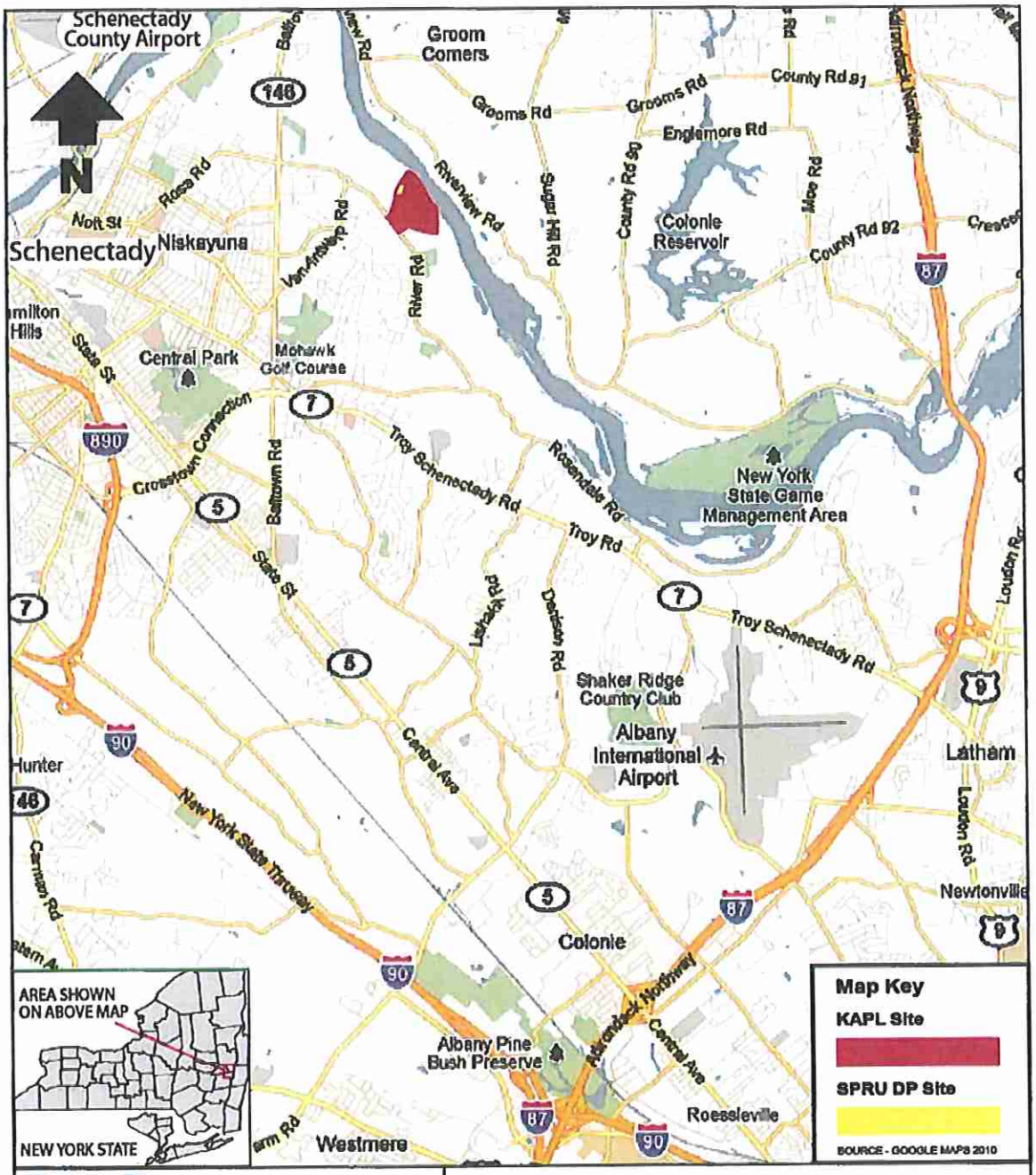
1.3.1 General Site Conditions

The SPRU facilities were constructed in the late 1940s to research the chemical separation of plutonium and uranium. SPRU operated between February 1950 and October 1953, after which research activities ceased. Research was performed on a laboratory scale; SPRU was never a production plant. After discontinuing operations in October 1953, SPRU was maintained in a caretaking status until decommissioning began in 2000. The SPRU Upper Level site (Figure 2) includes buildings G2 and H2, the H2 Tank Farm, Pipe Tunnels, surrounding vegetation and roadways, and the former H1 cooling tower north of H2.

1.3.2 Geology

The SPRU Upper Level site is topographically located about 100 feet above the Mohawk River along the western margin of the KAPL site. The land surface slopes to the west and north. A natural terrace along the river defines the Lower Level, which is about 15 to 20 feet above the Mohawk River.

The geology underlying the SPRU site consists of unconsolidated glacial till overlying bedrock. Bedrock beneath the Upper Level is about 65 feet below ground surface and is identified as the Upper-Middle Ordovician aged Schenectady Formation. This formation is comprised of alternating beds of graywacke, sandstone, siltstone and shale about 2,000 feet thick, dipping gently to the west and southwest. The uppermost rock material beneath the site is shale.



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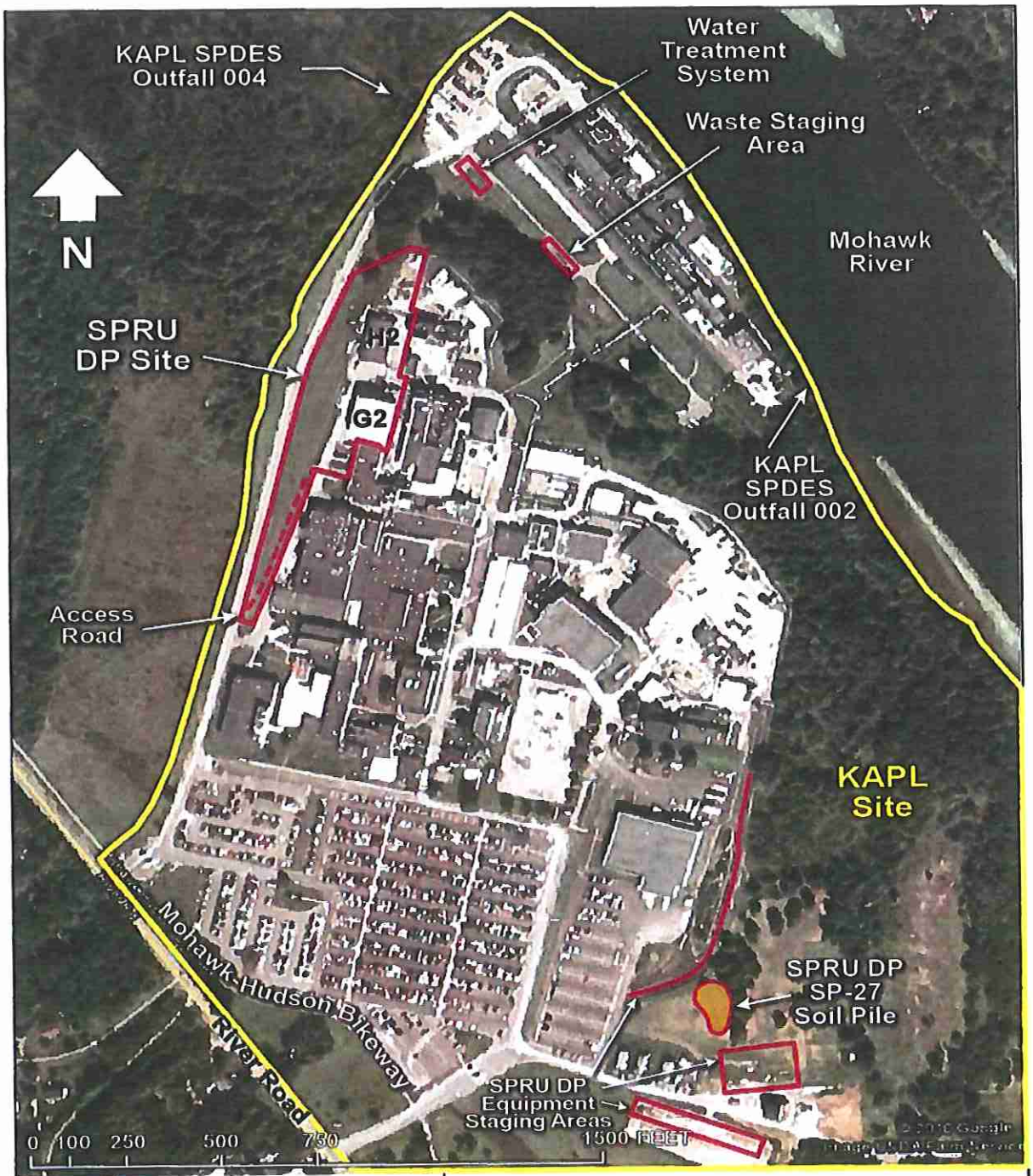
KAPL SITE
SPRU DP SITE
LOCATION MAP

SIZE	PROJECT NUMBER:	DRAWING NUMBER:	REV
A	SWPPP-09001	FIGURE 1	0
SCALE: 1" = 1.25 MILES	DATE: 11/15/2010	SHEET: 1 OF 1	



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KAPL SITE AND SPRU DP SITE

SIZE	PROJECT NUMBER:	DRAWING NUMBER:	REV
A	SWPPP-09001	FIGURE 2	11

SCALE:	DATE:	SHEET:
1" = 370'	12/08/2011	1 OF 1

The soil types encountered in the soil borings installed within and surrounding the H1 Cooling Tower and Pump House excavation consist of brown till with clayey silt with minor amounts of sand and gravel. At the base of the deeper borings, a transition from brown to gray till was observed. At monitoring well UWT-1, gray till was encountered at 17.9' below the ground surface. With the exception of the soil boring intervals within backfilled portions of the excavation, the brown and gray till encountered within a few inches of the surface was found to be native material then backfill as evidenced by the presence of bedding structures, mottling, and traces of rootlet organics in the upper portion of many soil borings.

1.3.3 Hydrogeology

Groundwater beneath the site is limited to perched layers within the glacial till with a flow direction that essentially mirrors the topography. The till has a very low permeability except for occasional interspersed fine sand lenses. Based on drilling data, these lenses are limited in both vertical and horizontal extent and are isolated from one another.

On January 11 and 12, 2007, an attempt was made to install 3 groundwater monitoring wells in the northern, middle, and southern portions of the H1 Cooling Tower and Pump House excavation. Three soil borings in the northern and middle portions of the excavations encountered dry soil conditions and were subsequently abandoned. A fourth soil boring in the southern portion of the excavation encountered saturated conditions at about 15 feet below ground surface and was completed as a temporary groundwater monitoring well.

1.3.4 Surface Water

The Mohawk River is located about ¼-mile north of the SPRU Upper Level site. Stormwater on the project site is managed through a Stormwater Pollution Prevention Plan (SWPPP) (SPRU-ENV-002).

1.4 Historical Information Review

The following section summarizes the findings of the previous investigation, the *Radiological and Chemical Characterization of Soil and Groundwater at Structure H-1* (April 2007).

A combination of soil borings and one well were used to collect samples from the H1 AOC area. More specifically, the locations included a temporary monitoring well and 101 soil samples. The 101 soil samples were tested for chromium (total), chromium (hexavalent), pH, % solids, and asbestos.

Total chromium concentrations from 11 boreholes exceeded the background value (18.8 ppm) at values that ranged from 40.1 to 539 mg/kg. The 539 mg/kg value is in the southwest area.

Hexavalent chromium was detected in six soil borings at concentrations ranging from 1.6 to 8.4 mg/kg. At each of the six borings, the vertical extent of hexavalent chromium is bounded by underlying soil sample intervals with hexavalent chromium less than the above levels. Hexavalent chromium was not detected in groundwater from the Pump House area of the H1 excavation.

Anthropomorphic materials (yellow material resembling paint chips, associated clumped soil, etc) were removed by hand from approximately 40 pounds of surface soil (within the upper 0.5 feet bgs) collected between soil borings LA1404-8-S4 and LA1404-8-S4W.

The cooling tower structures (concrete, metal and wood) had 8 samples analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals and polychlorinated biphenyls (PCBs) as appropriate. The 8 Resource Conservation and Recovery Act (RCRA) toxicity characteristic metals and total PCB concentrations were below applicable levels.

Soil samples were screened for gamma activity using the onsite gamma spectrometer. Cesium-137 was reported in 13 of 45 samples at trace concentrations (less than 0.63 ± 0.08 pCi/g).

2.0 CHARACTERIZATION PLAN

This section comprehensively addresses the H1 AOC area and the approach to investigate the soil surrounding the H1 AOC area as discussed above.

2.1 Description of H1 AOC Area

The H1 Cooling Tower and Pump House were constructed in 1950. After the SPRU shutdown in 1953, the Cooling Tower and Pump House continued to support KAPL operations through 1992 when it was shutdown. It consisted of a two stack forced circulation non-contact cooling tower and attached Pump House that contained a pumping system used to circulate cooled water throughout the KAPL facility. The Cooling Tower was constructed of redwood with poly-vinyl chloride corrugated siding. It was approximately 26 feet wide, 48 feet long, and extended 31 feet above grade. The concrete basin and footers extended to 6 feet below grade. The Pump House was 22 feet wide, 27 feet long, and extended 14 feet above grade. The concrete sump and footers extended about 14 feet below grade.

In August and September of 2006, the H1 cooling tower and pump house were demolished and removed. The excavation depth at the north end was ~6 feet and sloped to the south end at ~14 feet. Soil was backfilled into the excavation area. Per LSRS-SPRU-RPT-005, page 7, the soil contained low level detections of herbicides and pesticides and diesel range organic compounds which commonly result from agricultural applications and use of diesel equipment in the gravel pit. All analytical results are below applicable criteria. The utility/drain lines were cut and capped as shown on the Lata-Sharp drawing (Appendix 1) "H-1 Post Demolition Utility Cutoff Locations" which documents the current conditions and the future work needed to remove these lines. In 2010, additional gravel was applied (for a total of ~1-1.5') so that disturbed soil was not exposed.

The H1 Cooling Tower was a heat removal device used to transfer process waste heat to the atmosphere. Water treatment agents were utilized to prevent growth that could interfere with the continuous flow of the water. The *Nuclear Facility Historical Site Assessment for the SPRU Disposition Project* (April 2006) lists water treatment agents utilized at the H1 Cooling Tower. It says that Hagatreat, a chromate based water treatment, was used in the Cooling Towers until the 1970s. Since then, chemicals used for treating cooling water included sulfuric acid Baume 66 degree, Mogul sodium hypochlorite AS 494, HTH chlorine, and Mogul PC 122 phosphate for corrosion control. These chemicals could be considered hazardous (e.g., corrosive) before use. As used in the system, they would not be hazardous. Additional investigative analysis for these chemicals is not needed since they do not have an associated soil cleanup objective value under 6 NYCRR Part 375-6.8(b).

2.2 Constituents of Concern

The Constituents of Concern (COCs) for soil were identified based on the results of the *Radiological and Chemical Characterization of Soil and Groundwater at Structure H-1*. These include chromium species that were found in concentrations above background that could be attributed to SPRU operations. The Soil Cleanup Objective (SCO) value for each chemical is the more stringent of the promulgated SCOs under 6 NYCRR Part 375-6.8(b) for the protection of groundwater or for residential exposure. Table 1 lists the COCs and associated SCOs.

Table 1 SCOs for COCs

COC	SCO
Chromium, trivalent	36[a] ppm
Chromium, hexavalent	19[a] ppm

[a] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

3.0 SAMPLING AND ANALYSIS PLAN

This Sampling and Analysis Plan (SAP) describes the general approach to provide additional investigative characterization sampling. The intent of the sampling is to more accurately define the extent of chromium in the soil so an evaluation can be performed that would support possible corrective measures. This section presents information on sample locations, laboratory analysis and deliverables. Detailed quality assurance procedures for implementation of the SAP are presented in the Quality Assurance Project Plan (QAPjP) (SPRU-ENV-007). Project organization and responsibilities are identified in section 1.3 of the QAPjP.

3.1 Proposed Samples

Sampling will expand inside and outside of the former soil excavation footprint. Approximately 1-1.5' of crusher run was added to the surface area in 2010. LSRS-SPRU-RPT-003, Rev 2, has previous sample x-y coordinates (see Appendix 2), but did not list z coordinates.

Samples outside the former excavation footprint will be taken starting from the 2006 ground surface (i.e., beneath the new 1-1.5' of crusher run).

Samples inside the former excavation footprint will be taken starting from the base of the former excavation. The depths of the samples that will be taken for this investigation will need to be determined in the field using the geoprobe to identify the difference in the former backfill soil versus the native soil underneath it. Using the Tables on Figures 3 and 4 that list the expected depths of the samples, the soil recovered from the geoprobe will be examined for change in soil type from backfill to native till. Also, in 2006, a fabric was placed at the bottom of the former excavation area and will identify the bottom. From various pictures of the former excavation area in 2006, it is estimated that the floor of the excavation was about 6' deep at the northern end and sloped down to about 14' deep at the southern end.

To get the samples at depth without excavation, a geoprobe will be used. Figures 3 and 4, and Appendix 2 with coordinates from previous sample locations, identify the proposed sample locations. Proposed samples for Figure 3 and Figure 4 will be taken from 0-0.5' and >0.5-2', respectively. Depending on the soil recovery, all of the soil may be used to get the sample. Figure 4 identifies one sample at LA1407-1-S4N that will be taken from 2-4' to

To get the samples at depth without excavation, a geoprobe will be used. Figures 3 and 4, and Appendix 2 with coordinates from previous sample locations, identify the proposed sample locations. Proposed samples for Figure 3 and Figure 4 will be taken from 0-0.5' and >0.5-2', respectively. Depending on the soil recovery, all of the soil may be used to get the sample. Figure 4 identifies one sample at LA1407-1-S4N that will be taken from 2-4' to redefine vertical extent of contamination. The vertical extent of contamination was previously bounded by a sample from 2-4' that had a total chromium result of 20.8 mg/kg. Samples will be collected from both the 0 to 0.5 and 0.5 to 2 foot intervals at all sample locations (including those proposed on Figures 3 and 4). Also, per Department of Environmental Conservation request, confirmatory samples to be tested for hexavalent chromium will be taken east of the H1 AOC. Previous hexavalent chromium samples were all less than the SCO. Lateral locations will be determined per available method in the field such as a survey in accordance with Section 2.7 of the QAPjP. Vertical locations (>2') will be determined per field measurement with a geoprobe. Sampling is scheduled to start after DEC approval is received.

The sampling design process begins with the development of Data Quality Objectives (DQOs). The DQOs use site and contamination conditions to calculate the types, quantities, and locations of measurement to ensure that sampling efforts are adequate to obtain the objective. The DQOs identify the decision to be made following sampling of the area as: "Has the H1 AOC been sampled sufficiently to provide a more detailed understanding of the chromium contamination?"

See Table 2 for sample information at H1 AOC.

Table 2
Sample Information at H1 AOC

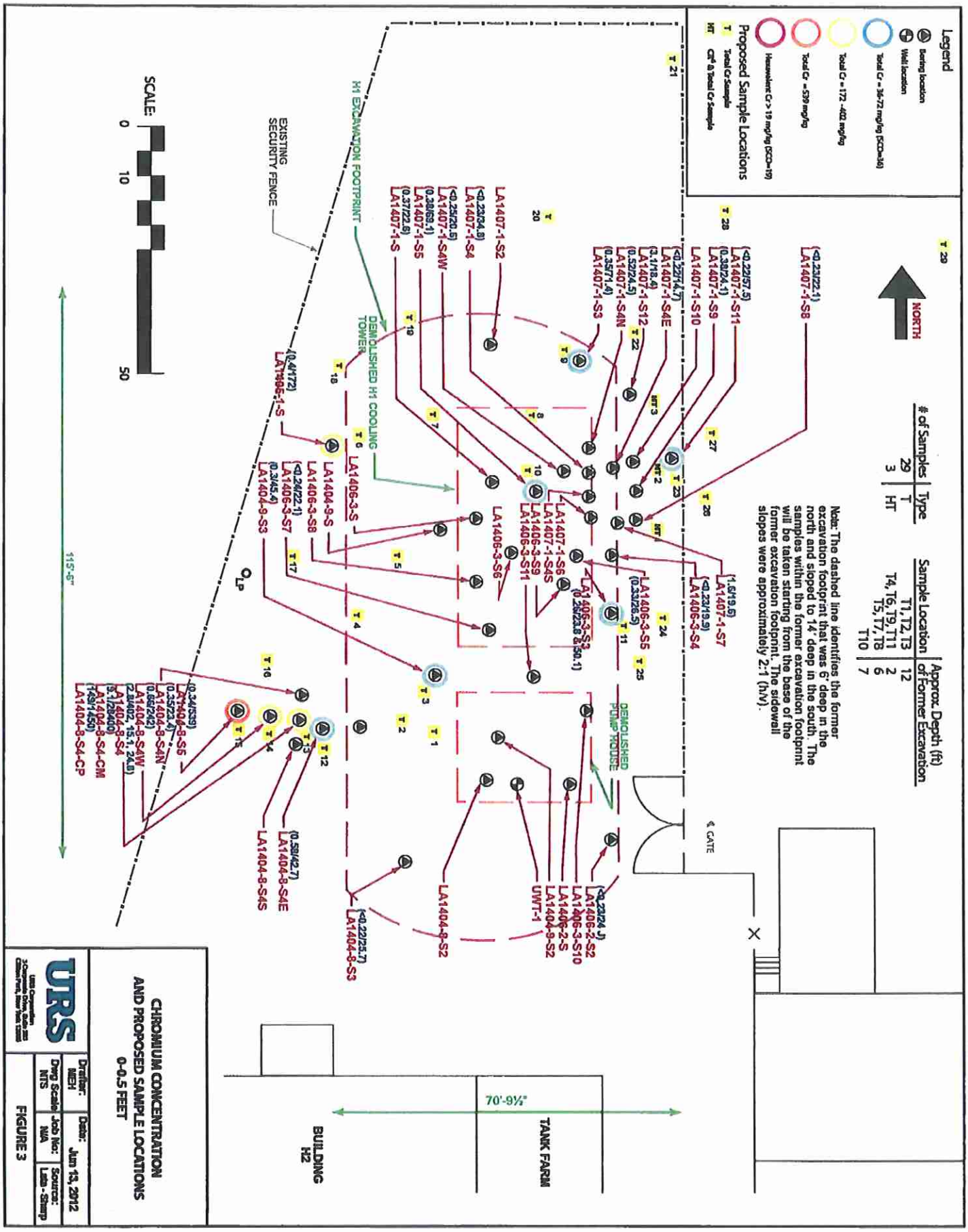
Soil Boring ID	Coordinates		2006 Sample Interval, Depth (ft) or Height amsl if noted (ft)		2012 Sample Interval Depth (ft)		Analyses
	Northing	Easting	Top/Bottom	Top/Bottom	Top/Bottom	Top/Bottom	
Borings Within 2006 Excavation (from bottom)							
T1	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T2	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T3	1029717.95	624692.93	0.0 / 0.5	NA	0.0 / 0.5	0.5 / 2.0	T
T4	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T5	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T6	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T7	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T8	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T9	1029773.15	624735.88	0.0 / 0.5	NA	0.0 / 0.5	0.5 / 2.0	T
T10	1029749.50	624721.21	0.0 / 0.5	0.5 / 2.0	0.0 / 0.5	0.5 / 2.0	T
T11	1029721.99	624730.06	0.0 / 0.5	0.5 / 2.0	0.0 / 0.5	0.5 / 2.0	T
T12	1029712.64	624668.89	0.0	0.5	0.0 / 0.5	0.5 / 2.0	T
T13	1029715.25	624664.71	0.0 / 0.5 (x3)	0.5 / 1.6	0.0 / 0.5	0.5 / 2.0	T
T14	1029717.38	624659.17	0.0 / 0.5	0.5 / 1.5 2.0 / 2.8	0.0 / 0.5	0.5 / 2.0	T
T30	1029755.67	624733.80	0.0 / 0.5	0.5 / 2.0	0.0 / 0.5	0.5 / 2.0	T
T31	1029755.67	624733.80	NA	2.0 / 4.0	NA	2.0 / 4.0	T
Borings Outside 2006 Excavation (from surface)							
T15	1029719.97	624653.33	327.8/327.3 amsl	327.3/325.8 amsl	0.0 / 0.5	0.5 / 2.0	T
T16	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T17	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T18	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T19	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T20	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T21	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T22	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T23	1029748.52	624750.81	328.3/327.8 amsl	327.8/326.3 amsl 323.3/321.3 amsl 321.3/319.3 amsl 319.3/317.3 amsl	0.0 / 0.5	0.5 / 2.0	T
T24	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T25	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T26	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T27	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T28	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
T29	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	T
HT1	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	HT
HT2	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	HT
HT3	NA	NA	NA	NA	0.0 / 0.5	0.5 / 2.0	HT

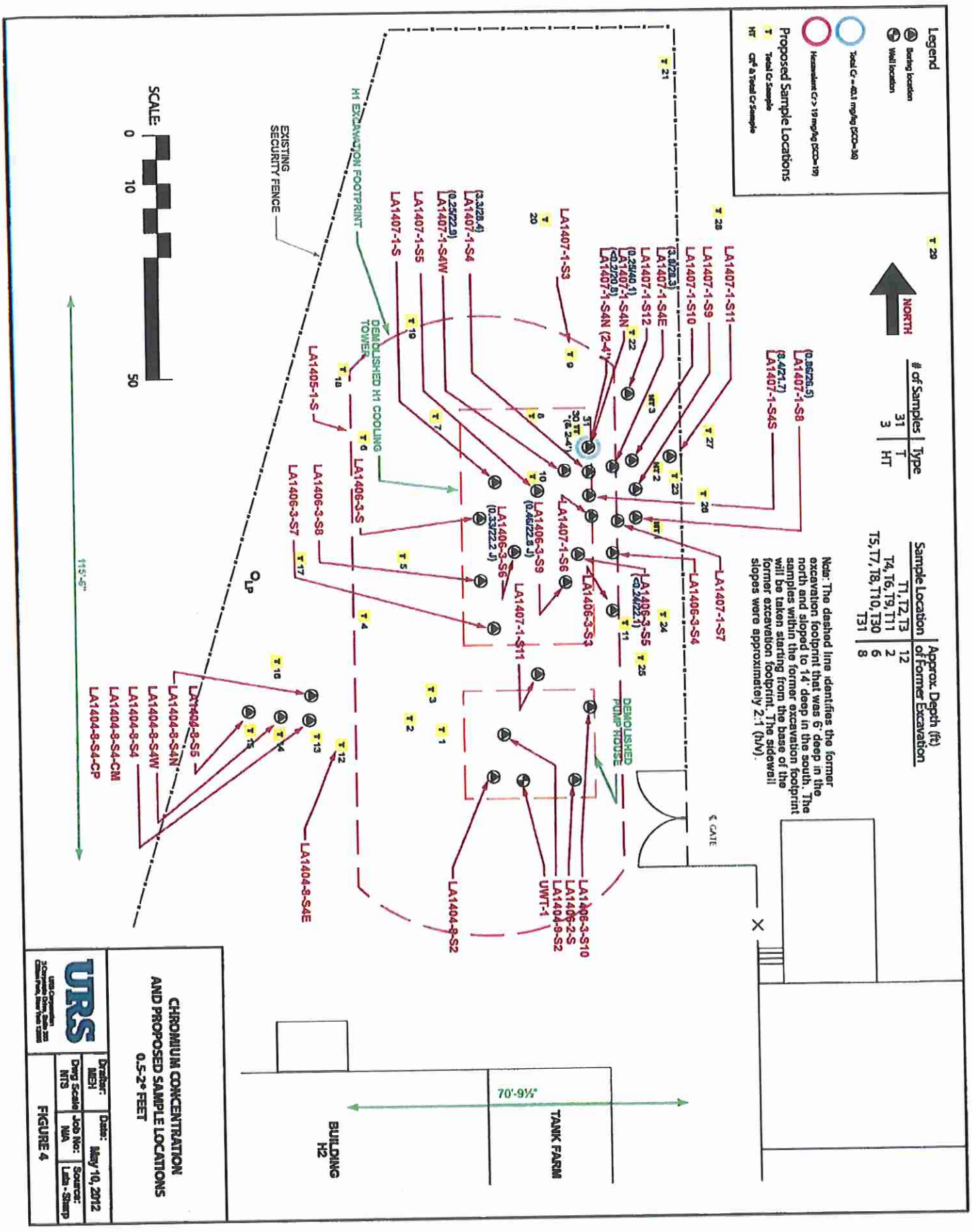
3.2 Laboratory Deliverables and Data Validation

The soil samples will be subjected to analyses for total chromium and hexavalent chromium. All samples will be analyzed by a New York State Department of Health (NYSDOH), Environmental Laboratory Approval Program (ELAP), Analytical Services Protocol (ASP) approved lab. The laboratory (Gel Labs) will provide an ASP Category B deliverable data package. A detailed description of laboratory reporting and data validation is provided in the QAPjP. Analysis is scheduled within 60 days of DEC approval.

Analytical data validation involves evaluation of all sample specific information generated from sample collection to receipt of the final data package. The data validation will be performed and reported within the data summary reports. The validation report will contain an itemized discussion of the validation process and results. Copies of the data forms, annotated for qualifications as discussed in the validation report, will be attached to the report. Independent data validation will be performed after the laboratory review. A validator has not been selected yet.

Per Module II, Appendix II-B requirements of the Part 373 Permit, the project database will be managed using the existing URS system of procedures. Data will be managed by the Document Control Department using: *Document Control, Correspondence Control, and Records Management Program Administration*; *Sample Plans*; and *Data Review* or equivalent procedures. Per the QAPjP, section 1.3.2, the Project Manager will have responsibility for the implementation and completion of each task identified in the ICM WP.


Legend
Boring location
Well location
Total Cr = 36-72 mg/kg (SCC=36)
Total Cr = 172 - 402 mg/kg
Total Cr = 539 mg/kg
Hexavalent Cr > 19 mg/kg (SCC=19)
Proposed Sample Locations
T Total Cr Sample
HT Cr6 & Total Cr Sample
NORTH
SCALE: 0 10 50
# of Samples | Type | Sample Location | Approx. Depth (ft) of Former Excavation
29 | T | T1, T2, T3 | 12
3 | HT | T4, T6, T9, T11 | 2
T5, T7, T8 | 6
T10 | 7
Note: The dashed line identifies the former excavation footprint that was 6' deep in the north and sloped to 14' deep in the south. The samples within the former excavation footprint will be taken starting from the base of the former excavation footprint. The sidewall slopes were approximately 2:1 (h:V).
EXISTING SECURITY FENCE
H1 EXCAVATION FOOTPRINT
DEMOLISHED H1 COOLING TOWER
DEMOLISHED PUMP HOUSE
GATE
TANK FARM
BUILDING H2
70'-9½"
115'-6"
LA1407-1-S8
LA1407-1-S11
LA1407-1-S9
LA1407-1-S10
LA1407-1-S12
LA1407-1-S4N
LA1407-1-S3
LA1407-1-S4E
LA1407-1-S4
LA1407-1-S2
LA1407-1-S4W
LA1407-1-S5
LA1407-1-S
LA1406-1-S
LA1406-3-S
LA1404-9-S
LA1406-3-S8
LA1406-3-S7
LA1404-9-S3
LA1406-3-S6
LA1407-1-S6
LA1407-1-S4S
LA1406-3-S9
LA1406-3-S11
LA1406-3-S3
LA1406-3-S5
LA1407-1-S7
LA1406-3-S4
LA1406-2-S2
LA1406-3-S10
LA1406-2-S
LA1404-9-S2
UWT-1
LA1404-8-S2
LA1404-8-S3
LA1404-8-S4E
LA1404-8-S4S
LA1406-8-S5
LA1404-8-S4N
LA1404-8-S4W
LA1404-8-S4
LA1404-8-S4-CM
LA1404-8-S4-CP
CHROMIUM CONCENTRATION AND PROPOSED SAMPLE LOCATIONS 0-0.5 FEET
URS
Drafter: MEH
Date: Jun 13, 2012
Dwg Scale: NTS
Job No: N/A
Source: Labs - Shaw
FIGURE 3



CHROMIUM CONCENTRATION AND PROPOSED SAMPLE LOCATIONS
0.5-2' FEET

Drafter: MEH	Date: May 10, 2012
Dwg Scale: NTS	Job No: N/A
Source: Lab - Shaw	

FIGURE 4

URS Corporation

4.0 WASTE MANAGEMENT PLAN

Personal protective equipment and related materials (e.g., gloves, booties, and type suits, etc.) will be appropriately containerized. No RCRA characteristically hazardous waste should be generated. Soil will be removed and placed in sample containers. Excess soil should be placed back in the area from which it was removed. Decontamination water will be containerized.

Per *H-1 Post-Demolition Chemical Characterization Report* (LSRS, 2007), anthropomorphic materials were removed by hand from approximately 40 pounds of surface soil.

5.0 DATA REPORTS

Once investigation sampling and data validation is completed, the analytical results will be summarized in a Data Report. The report will be submitted to DOE for approval and is scheduled within 30 days of analytical results. This report will include the following:

- Map showing the area and sample (investigative) locations and
- Analytical data presented in a tabular form
- Data validation results (ASP Category B data packages)
- Data quality assessment summary and evaluation of laboratory data validated results
- Description of soil borings

Progress reports, as needed, will be provided per Module II Condition B.8 (a) of the Part 373 Permit. Progress Reports on this short duration project will consist of completion notifications for field sampling, laboratory analysis reports and data validation.

6.0 RECORDS

Sample analysis records will be generated as a result of implementing this plan.

7.0 REFERENCES

7.1 42 USC 6901 et seq., 1976, "Resource Conservation and Recovery Act of 1976," as amended

7.2 42 USC 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation, and Liability Act of 1980," as amended. (NOTE: The 1986 amendment is cited as "Superfund Amendments and Reauthorization Act of 1986," [SARA])

7.3 Environmental Resource Group LLC, 2006, *Nuclear Facility Historical Site Assessment for the SPRU Disposition Project*

7.4 LATA SHARP, 2007, LSRS-SPRU-RPT-002, *H-1 Post-Demolition Chemical Characterization Report*

7.5 LATA SHARP, 2007, LSRS-SPRU-RPT-003, *Radiological and Chemical Characterization of Soil and Groundwater at Structure H-1*

7.6 LATA Sharp, 2007, LSRS-SPRU-RPT-005, *LATA H-1 Demolition Complete Report*

7.7 URS, 2011, SPRU-ENV-002, *Storm water Pollution Prevention Plan*, as amended

7.8 URS, 2011, SPRU-ENV-006, *RCRA Interim Corrective Measures Work Plan Upper Level SWMUs*, as amended

7.9 URS, 2011, SPRU-ENV-007, *Quality Assurance Project Plan for the RCRA Interim Corrective Measures Work Plan Upper Level SWMUs*, as amended

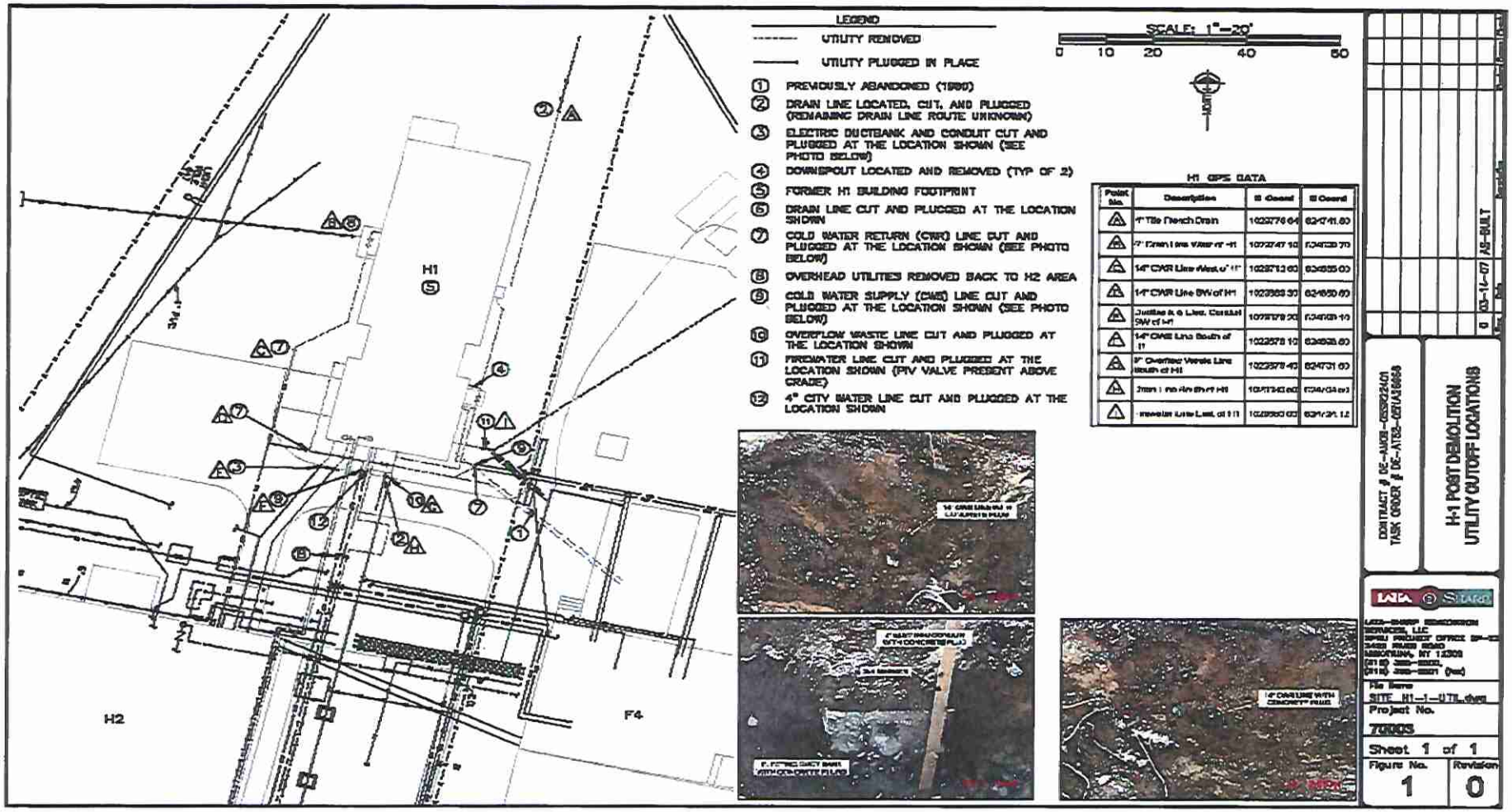
7.10 URS, 2011, SPRU-DC-RM-001 *Document Control, Correspondence Control, and Records Management Program Administration*, as amended

7.11 URS, 2011, SPRU-RC-123 *Sample Plans*, as amended

7.12 URS, 2011, SPRU-RC-132 *Data Review*, as amended

Appendix 1

H1 Post Demo Utility Cutoff Locations



Appendix 2

ADDENDUM TO TSM-26 (*RADIOLOGICAL CHARACTERIZATION REPORT FOR SPRU OUTSIDE AREAS*):

RADIOLOGICAL AND CHEMICAL CHARACTERIZATION OF SOIL AND GROUNDWATER AT STRUCTURE H-1

LSRS-SPRU-RPT-003

SPRU – DD&R OF K-5 AND H-1
CONTRACT #DE-AM09-05SR22401
TASK ORDER #DE-AT52-05NA26966

REVISION 2
MAY 29, 2007

PREPARED BY:

A Service-Disabled Veteran-Owned Small Business

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LATA Silver

REVISION LOG

Addendum to TSM-26 *(Radiological Characterization Report for SPRU Outside Areas)*:
Radiological and Chemical Characterization of Soil and Groundwater at Structure H-1
LSRS-SPRU-RPT-003

Revision Number/Date	Description of Changes	Pages Affected
0 03.23.07	Original Issue	N/A
1 04.05.07	a) Modified title to indicate document is addendum to TSM-26 and added paragraph to Section 1 identifying document as an addendum. b) Provide explanation for Level II data validation of QC Level IV radiological data package. c) Provide reference to data Appendices D and E. d) Add analytical data packages and review sheets as Appendices C and E	a) Cover, spine, and page 1 b) Page A-2 c) Pages i, 8, and A-2 TOC and added appendix volumes.
2 05.29.07	Responds to DOE comments received by e-mail on 04.24.07.	Pages 3, 4, 5, 7, and 13

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Approved by LSRS VP, SPRU Project Manager – Kathryn M. Johnson — Date 5-29-07

H-1 Soil Boring and Well Coordinates

StationID	Northing	Easting	Type
LA1407-1-S4	1029750.77	624732.40	Boring
LA1404-8-S4	1029716.25	624684.71	Boring
LA1405-1-S	1029767.84	624684.11	Boring
LA1404-9-S	1029746.39	624700.89	Boring
LA1407-1-S	1029753.28	624713.19	Boring
LA1407-1-S2	1029780.46	624719.46	Boring
LA1407-1-S3	1029773.15	624735.88	Boring
LA1404-9-S2	1029702.69	624702.20	Boring
LA1406-2-S2	1029676.41	624723.72	Boring
LA1406-3-S7	1029724.32	624705.45	Boring
LA1406-3-S11	1029712.93	624712.04	Boring
LA1406-3-S10	1029704.01	624720.64	Boring
LA1404-8-S2	1029694.69	624697.69	Boring
LA1407-1-S6	1029741.82	624730.75	Boring
LA1407-1-S7	1029739.62	624735.78	Boring
LA1407-1-S8	1029739.15	624739.44	Boring
LA1407-1-S9	1029745.03	624740.81	Boring
LA1407-1-S10	1029750.85	624741.52	Boring
LA1407-1-S11	1029748.62	624750.81	Boring
LA1407-1-S12	1029764.28	624744.15	Boring
LA1404-8-S5	1029719.97	624683.33	Boring
LA1407-1-S4N	1029755.67	624733.80	Boring
LA1407-1-S4S	1029748.05	624731.29	Boring
LA1407-1-S4E	1029750.63	624737.39	Boring
LA1407-1-S4W	1029752.23	624727.70	Boring
LA1404-8-S4W	1029717.38	624659.17	Boring
LA1404-8-S4S	1029710.66	624662.91	Boring
LA1404-8-S4E	1029712.64	624668.89	Boring
LA1404-8-S4N	1029720.12	624666.48	Boring
LA1406-3-S	1029747.00	624706.32	Boring
LA1407-1-S5	1029749.50	624721.21	Boring
LA1406-3-S6	1029736.53	624713.71	Boring
LA1406-3-S8	1029734.49	624705.44	Boring
LA1406-3-S9	1029729.88	624722.38	Boring
LA1406-3-S3	1029721.99	624730.06	Boring
LA1406-2-S	1029690.25	624713.90	Boring
UWT-1	1029691.05	624705.44	Well
LA1404-8-S3	1029682.56	624676.31	Boring
LA1404-9-S3	1029717.95	624692.93	Boring
LA1406-3-S4	1029733.34	624733.14	Boring
LA1406-3-S5	1029734.88	624726.02	Boring

Notes:
1) Obtained by sub-meter Trimble Differential Geographic Positioning System
2) Coordinates are NAD27 easting and northings

SPRU DP RECORD OF REVISION

Rev. No.	Description of Changes	Revision On Page(s)	Dated
0	Original Issue	All	06/07/11
1	Incorporated DOE comments	3, 7 9-12	08/05/11
2	Incorporated NRLFO comments	3, 8-12	09/28/11
3	Response to DEC comments on 11/10/11 including: revised schedule & added water treatment chemical information On 3/29/12, incorporated DOE comments (2/7/12) on responses to DEC comments (11/10/11) Incorporated DOE comments (4/19/12) on responses (3/29) to DEC comments (11/10/11) Incorporated DOE guidance from 5/7/12 and 5/11/12	3, 6-9, 11, 12	05/11/12
4	Response to DOE comments on 5/22/12 including: add 2 commas, delete a quotation mark, delay start date of sampling due to comments, include future removal of utility remnants, rephrase Progress Reports, previous sample locations will be estimated	7-9, 12	05/24/12
	Response to DOE comments on 6/7/12 & 6/11/12 including: coordinates of previous samples identified in old LATA Report so add coordinates of previous samples, future removal of utility remnants, add previous backfill description, add utility drawing, & add Table with sample information	3, 7-9, 12, 13	06/13/12
	Incorporated DOE comments on 6/25/12 for: DEC approval in July and provide discussion on utility removal in scope	4, 12, 15	07/17/12
5	Incorporated DEC comments on 12/14/12	9 - 11	01/29/13