

**Summary of Available Data for LOU 38 –
Former Satellite Accumulation Point, Ammonium Perchlorate Change
House/Laboratory
Tronox Facility – Henderson, Nevada**

- Name of Facility:** **Former Satellite Accumulation Point, Ammonium Perchlorate (AP) Laboratory**
- Goal of Closure:**
- Continuation of current use – regulatory closure not required.
- Site Investigation Area:**
- Size: Approximately 12 feet by 2 feet [Ref. 2].
 - Location: West-central portion of site, along north wall of AP Laboratory building [Ref. 2].
 - Current Status/Features: LOU 38 is currently active, continuing to be used as a satellite accumulation point.
- Description:**
- LOU 38 consists of a raised 3-inch high concrete pad covered by an overhang from the roof along north wall of the AP Laboratory building [Ref. 2]. The concrete pad contains three, properly labeled, metal storage cabinets to store flammable wastes [Ref. 2].
 - LOU 38 received wastes from the AP laboratory operations.
 - Partially full containers of flammable waste materials are temporarily stored in the metal cabinets; the containers are placed in drums with absorbent material (vermiculite) for offsite disposal [Ref. 2].
 - Historically, the AP Laboratory was where quality assurance (QA) analyses were performed on the AP that was produced at this facility. After AP production permanently ceased in 1994, quality assurance activities performed at the AP Laboratory switched to the products that are currently produced at this facility (e.g., manganese dioxide, boron, boron trichloride) [Ref. 3].
 - The AP Laboratory has been operational from about 1951 to present day [Ref. 3].
 - The AP Laboratory operations included of rinsing laboratory equipment associated with the preparation of standards, caustic and acid solutions for pH determinations, and dilute titrants including dilute formaldehyde titrant. The rinse water was discharged to the septic tank [Ref. 2].
 - One Lab Pack drum was present during the 1992 site inspection. The drum was resting on asphalt adjacent to the northwest corner of the concrete pad [Ref. 2].

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Process Waste Streams Associated with LOU 38	Known or Potential Constituents Associated with LOU 38
Potential releases during handling of spent chemicals when placing them into cabinets or from cabinets to Lab Pack drum.	<ul style="list-style-type: none"> • Metals • Hexavalent chromium • Perchlorate • Chlorate • Ammonia • Wet chemistry analytes • VOCs • Acids and caustics • Alcohols
Rinse water from laboratory equipment discharged to AP Area Change House/Laboratory Septic Tank (LOU 54).	<ul style="list-style-type: none"> • Metals • Perchlorate • Chlorate • Ammonia • Acids and caustics • Wet chemistry analytes • Dilute formaldehyde titrant

Overlapping or Adjacent LOUs: The following LOUs overlap or are adjacent to LOU 38:

Overlapping LOUs

- None

Adjacent LOUs

- LOU 54 (AP Plant Area Change House/Laboratory Septic Tank) is northwest of LOU 38.
- LOU 5 (Beta Ditch) is north of LOU 38.
- LOU 39 (Satellite Accumulation Point, AP Maintenance Shop) is east of LOU 38.

LOU 39 is cross-gradient to LOU 38 and LOUs 54 and 5 are downgradient to LOU 38 and are not considered to affect LOU 38; therefore, no additional chemical classes have been added to the proposed Phase B Analytical Plan for LOU 38.

For detailed information on the LOUs listed above, please refer to the specific LOU data package.

Other LOUs Potentially Affecting Soils in LOU 38:

- None

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Known or Potential Chemical Classes:	<ul style="list-style-type: none"> • Metals • Hexavalent chromium • Perchlorate • Wet chemistry analytes • VOCs • Formaldehyde titrant
Known or Potential Release Mechanisms:	<ul style="list-style-type: none"> • No known releases were identified in the documents reviewed. • Possible impacts to surrounding soils from surface releases. • Double and triple containment make releases to the environment unlikely.
Results of Historical Sampling:	<ul style="list-style-type: none"> • No known historical soil sampling was identified in the documents reviewed.
Did Historical Samples Address Potential Release?	<ul style="list-style-type: none"> • No
Summary of Phase A SAI:	<p><u>Soil</u></p> <ul style="list-style-type: none"> • None specifically conducted for this LOU. <p><u>Groundwater</u></p> <ul style="list-style-type: none"> • None specifically conducted for this LOU.
Are Phase A Sample Locations in “Worst Case” Areas?	<ul style="list-style-type: none"> • No
Is Phase B Investigation Recommended?	<ul style="list-style-type: none"> • Yes
Proposed Phase B Soil Investigation/Rationale:	<ul style="list-style-type: none"> • The Phase B investigation of LOU 38 consists of drilling one (1) random soil boring (RSAN3) adjacent to the concrete pad. • No soil borings will be drilled within the boundaries of LOU 38 in order to maintain the integrity of the concrete pad. • The proposed boring along with the analytical program to evaluate soil samples from LOU 38 are listed on Table A – Soil Sampling and Analytical Plan for LOU 38.

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**Proposed Phase B Constituents
List for Soils:**

Soil samples will be analyzed for the following full list of Phase A site related chemicals for LOU-specific and area-wide coverage purposes and for formaldehyde titrant:

- Metals (Phase A list)
- Hexavalent chromium
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs
- TPH-DRO/ORO
- Organochlorine pesticides
- Dioxins/furans
- Radionuclides
- Asbestos
- Formaldehyde titrant

**Proposed Phase B Groundwater
Investigation/Rationale:**

- The Phase B groundwater investigation of LOU 38 consists of collecting groundwater samples from two (2) locations to evaluate local groundwater conditions and as part of the Site-wide evaluation of constituent trends in groundwater.
 - Well M-123 is located approximately 370 feet southwest (upgradient) of LOU 38 and will be used to evaluate local and area-wide groundwater conditions.
 - Well M-125 is located approximately 310 feet north-northwest (downgradient) of LOU 38 and will be used to evaluate local and area-wide groundwater conditions.
 - The two wells along with the analytical program to evaluate groundwater samples associated with LOU 38 are listed on **Table B – Groundwater Sampling and Analytical Plan for LOU 38**.

**Proposed Phase B Constituents
List for Groundwater:**

Groundwater samples will be analyzed for the following analytes:

- Metals (Phase A list)
- Hexavalent chromium
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs
- Organochlorine pesticides
- Radionuclides
- Formaldehyde titrant

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**Proposed Phase B Soil Gas
Investigation/Rationale:**

One (1) Soil gas sample will be collected to evaluate area conditions for the presence of vapor-phase VOCs in the vadose zone.

- SG29 will be located adjacent to soil boring RSAN3 to investigate a potential a vapor intrusion pathway at the AP Lab Building.

Details of the soil gas sampling program are contained in the NDEP-approved (March 26, 2008) Soil Gas Survey Work Plan, Tronox LLC, Henderson, Nevada, dated March 20, 2008.

**Proposed Phase B Constituents
List for Soil Gas:**

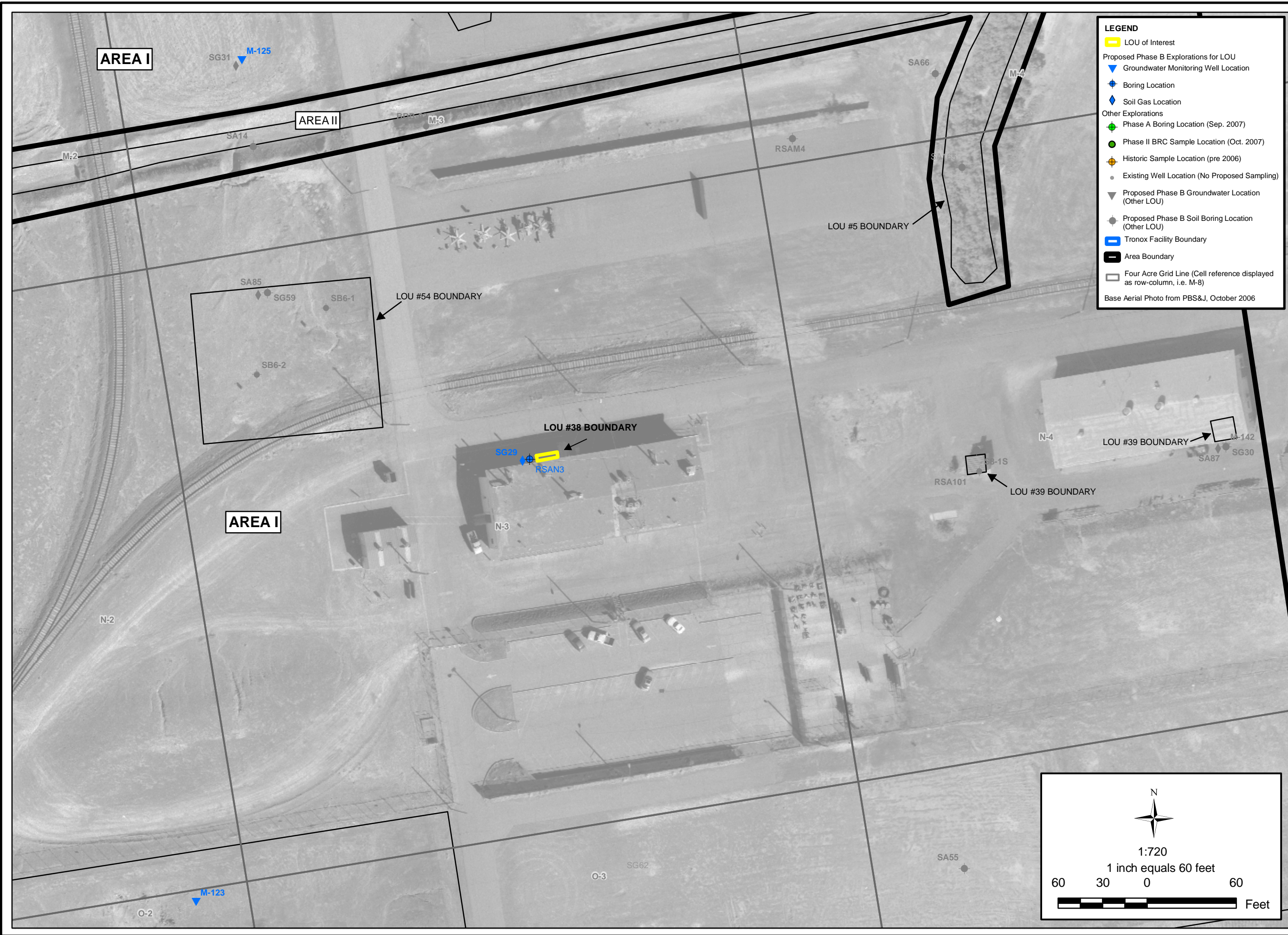
- VOCs (EPA TO-15)

References:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. Kleinfelder, 1993, Environmental Conditions Assessment, Kerr-McGee Chemical Corporation, Henderson, Nevada Facility, April 15, 1993 (Final).

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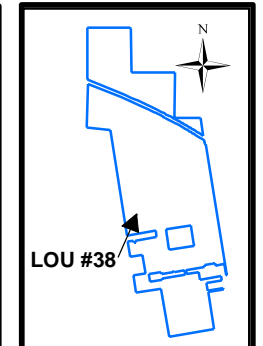
LOU Map



LEGEND

- LOU of Interest
- ▼ Proposed Phase B Explorations for LOU
- ▼ Groundwater Monitoring Well Location
- ⊕ Boring Location
- ◆ Soil Gas Location
- ⊕ Other Explorations
- Phase A Boring Location (Sep. 2007)
- Phase II BRC Sample Location (Oct. 2007)
- ⊕ Historic Sample Location (pre 2006)
- Existing Well Location (No Proposed Sampling)
- ▼ Proposed Phase B Groundwater Location (Other LOU)
- ⊕ Proposed Phase B Soil Boring Location (Other LOU)
- Tronox Facility Boundary
- Area Boundary
- Four Acre Grid Line (Cell reference displayed as row-column, i.e. M-8)

Base Aerial Photo from PBS&J, October 2006



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SAMPLE LOCATIONS FOR LOU #38
FORMER SATELLITE ACCUMULATION
POINT AP-LABORATORY
 Phase B Source Area Investigation
 Tronox Facility
 Henderson, Nevada

SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	4/2/2008	04020-023-430

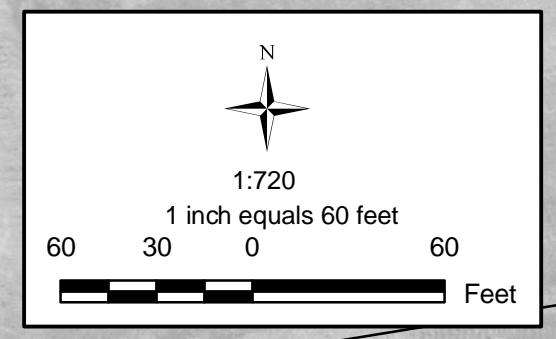


FIGURE NUMBER:
1

SHEET NUMBER:
X

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Sampling and Analytical Plans for LOU 38:

Table A – Soil Analytical Plan for LOU 38
Table B – Groundwater Analytical Plan for LOU 38

Table A
Soil Sampling and Analytical Plan for LOU 38
Phase B Source Area Investigation Work Plan
Tronox Facility - Henderson, Nevada

Grid Location	LOU Number	Phase B Boring No.	Sample ID Number	Sample Depths (ft, bgs)	Perchlorate (EPA 314.0)	Metals (EPA 6020)	Hex Cr (EPA 7199)	TPH-DRO/ORO (EPA 8015B)	TPH-GRO (EPA 8015B)	VOCs ¹ (EPA 8260B)	Wet Chemistry ²	OCPs ³ (8081A)	SVOCs ⁴ (EPA 8270C)	Radio-nuclides ⁵	Dioxins/Furans ⁶	Formaldehyde Titrant (EPA 8315A)	Asbestos EPA/540/R-97/028	Location Description and Characterized Area Rationale
Borings are organized by grid location (N-3) as shown on Plate A																		
N-3	38	RSAN3	RSAN3-0.0	0.0														Boring located to evaluate LOU 38 (Former Satellite Accumulation Point, AP-Laboratory). Dilute formaldehyde titrant was used in the AP-Laboratory.
N-3	38		RSAN3-0.5	0.5	X	X	X	X		X	X	X	X		X	X	X	
N-3	38		RSAN3-10	10	X	X	X	X		X	X	Hold	X	X		X	X	
N-3	38		RSAN3-20	20	X	X	X	X		X	X		X	X		X	X	
N-3	38		RSAN3-30	30	X	X	X	X		X	X		X	X		X	X	
N-3	38		RSAN3-40	40	X	X	X	X		X	X		X	X		X	X	
Number of Borings:		1																
Number of Samples:					2	2	2	2	0	2	2	1	2	2	1	2	1	

Notes:

- X Sample will be collected and analyzed.
- No sample collected under Phase B sampling program.
- TPH-DRO/ORO Total petroleum hydrocarbons - Diesel-Range Organics/Oil-Range Organics.
- 1. Samples for VOC analysis will be preserved in the field using sodium bisulfate (or DI water) and methanol preservatives per EPA Method 5035.
- 2. Includes wet chemistry parameters listed on Table 1 of the Phase B Source Area Work Plan.
- 3. Organochlorine Pesticides (includes analysis for hexachlorobenzene).
- 4. Semi-volatile Organic Compounds
- 5. Radionuclides consists of alpha spec reporting for Thorium-230/232, Uranium 234/235, Uranium-238, and beta spec for Radium-226/228 (per NDEP).
- 6. Dioxins/furans: 90% will be tested by immunoassay, 10% analyzed by HRGC/HRMS in the laboratory.

Table B
Groundwater Sampling and Analysis Plan for LOU 38
Phase B Source Area Investigation Area I Work Plan
Tronox Facility - Henderson, Nevada

Grid Location	Location Area	Monitoring Well No.	Screen Interval (ft bgs)	Well Sampled for Phase A? (y/n)	Perchlorate (EPA 314.0)	Hex Cr (EPA 7199)	Metals	VOCs1 (EPA 8260)	Wet Chemistry2	OCPs3 (EPA 8081A)	SVOCs4 (EPA 8270C)	Radio-nuclides5	Rationale
Wells are organized by grid location as shown on Plate A - Starting point is on the northwestern-most grid in Area 1 (M-3) and ending with the southeastern-most grid covering Area I (O-2).													
M-3	1	M-125	TBD	new well	X	X	X	X	X	X	X	X	New monitoring well located to serve as a downgradient stepout for LOUs 5 and 54; to evaluate potential offsite sources from the west; and for general site coverage.
O-2	1	M-123	TBD	new well	X	X	X	X	X	X	X	X	New monitoring well located to evaluate LOU 35; as an upgradient stepout for LOUs 38 and 54; to evaluate potential offsite sources to the west; and for general site coverage.
Number of Field Samples:					2	2	2	2	2	2	2	2	
Notes:													
X Sample will be collected and analyzed.													
1 Volatile organic compounds- samples for VOC analysis will be preserved in the field using sodium bisulfate(or DI water) and methanol preservatives per EPA method 5035													
2 Includes wet chemistry parameters listed on table 1. of the Phase B Source Area Work Plan.													
3 Organochlorine pesticides(includes analysis for hexachlorobenzene).													
4 Semi-volatile organic compounds													
5 Radionuclides consists of alpha spec reporting for Thorium-230/232, Uranium 234/235, Uranium-238, and beta spec for Radium-226/228 (per NDEP)													
TBD To Be Determined when well is constructed.													

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Soil and Groundwater Characterization Data

(No Associated Data Tables for LOU 38)