

**Summary of Available Data for LOUs 34E, 47, 48, 49, 50, 51 and Area 70
Multiple LOUs Located in Operational Manganese Leach Plant Area
Tronox Facility – Henderson, Nevada**

Name of LOU: Multiple LOUs associated with the Manganese Leach Plant plus the U.S. Vanadium Leasehold

LOU 34E – Former Manganese Tailings Area, East
LOU 47 – Current and Historical Leach Plant Area
Manganese Ore Piles
LOU 48 – Leach Plant Anolyte Tanks
LOU 49 – Leach Plant Area Sulfuric Acid Storage Tanks
LOU 50 – Current and Historical Leach Plant Area Leach Tanks
LOU 51 – Leach Plant Transfer Lines
Area 70 – U.S. Vanadium Leasehold

Goal of Closure:

- Closure not requested at this time. Current operations to continue.

Site Investigation Area:

- Six LOUs and Area 70 are combined within the Manganese (Mn) Leach Plant area.
- Most facilities (tanks, tailings/or piles, piping) have been moved several times within the Leach Plant area since operations commenced.
- The Leach Plant is located north of Units 5 and 6 in an area approximately 750 feet by 500 feet (8.6 acres).

LOU 34E – Former Manganese Tailings Area, East

- Size: Approximately 170 feet by 110 feet (0.4 acre)
- Location: Southeast portion of the Site, approximately 175 feet north of Unit 6.
- Current Status/Features: LOU 34E is no longer active. Tailings were removed and placed in LOU 24 (Historic Mn Tailings Pile). This area currently contains the anolyte storage tanks associated with the Leach Plant.

LOU 47 – Current and Historical Leach Plant Area Manganese Ore Piles

Historical Leach Plant Area Mn Ore Piles

- Size: The southern portion is approximately 340 feet by 200 feet (1.6 acres) and the northern portion is approximately 75 feet by 290 feet (0.5 acre).
- Location: Within the eastern half of the Manganese Leach Plant Area, north of Units 5 and 6.
- Current Status/Features: The historical Mn Ore Pile location is no longer used. The southern portion of this area currently contains a portion of the active Mn Leach Plant equipment. The southeast portion of this area is currently occupied by anolyte storage tanks.

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Current Leach Plant Area Mn Ore Piles

- Size: This area is approximately 260 feet by 210 feet (1.3 acres).
- Location: Within the northeastern half of the Manganese Leach Plant Area, north of Units 5 and 6.
- Current Status/Features: This LOU is currently used for storage of the active manganese ore pile.

LOU 48 – Leach Plant Anolyte Tanks

Historical Leach Plant Anolyte Tanks

- Size: Approximately 70 feet by 60 feet (0.1 acre).
- Location: Western portion of the Manganese Leach Plant Area, north of Unit 5.
- Current Status/Features: One of the historic anolyte tanks is still present in the area southeast of LOU 50 (Leach Plant Area Tanks).

Current Leach Plant Anolyte Tanks

- Size: Approximately 140 feet by 110 feet (0.3 acre).
- Location: Southeast corner of the Manganese Leach Plant Area, north of Unit 6.
- Current Status/Features: Three anolyte storage tanks currently located in the southeast corner of the Leach Plant area. The three tanks are housed within secondary containment.

LOU 49 – Leach Plant Area Sulfuric Acid Storage Tanks

- Size: Approximately 20 feet by 30 feet.
- Location: Northwest portion of Leach Plant, approximately 550 feet north of Unit 5.
- Current Status/Features: LOU 49 is currently active and contains a vertical, closed top aboveground storage tank (AST) installed on a concrete containment pad.

LOU 50 – Leach Plant Area Leach Tanks

- Size: Approximately 90 feet by 70 feet (0.1 acre).
- Location: Northwest portion of the Manganese Leach Plant Area, north of Unit 5.
- Current Status/Features: The leach tanks are currently in use.

LOU 51 – Leach Plant Transfer Lines

- Size: Approximately 900 linear feet.
- Location: The transfer lines originate in the Leach Plant and anolyte tank and extend into in Unit 6.
- Current Status/Features: The transfer lines are currently in use.

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Area 70 – U.S. Vanadium Leasehold

- Size: Approximately 400 feet by 450 feet (4.1 acres).
- Location: North of Unit 6 in the southeast portion of the Leach Plant.
- Current Status/Features: Currently part of the active Manganese Leach Plant facility [Ref. 6].

Description:

Mn Leach Plant

The Mn Leach Plant itself is not an LOU; however, parts of the plant have been identified as LOUs (LOUs 34E, 47, 48, 49, 50, and 51). The following description of the Leach Plant has been included to provide a broader understanding of the processes associated with the LOUs in the Leach Plant.

- The Leach Plant houses all facilities associated with the beneficiation of manganese dioxide ore to produce cell feed sent to Units 5 and 6 [Ref. 5].
- The plant has been operational since 1951 and is planned to be active for the foreseeable future [Ref. 4].
- The plant houses a variety of tanks including manganese sulfate anolyte tanks, sulfuric acid storage tanks, leach tanks, process equipment, overhead and underground transfer lines, manganese tailing piles, and ore piles.
- Most facilities (tanks, lines, tailing piles, and ore piles) have been moved within the Leach Plant facility (i.e., anolyte tanks were in southeast corner and are now in the northwest corner of Leach Plant).
- Materials used at the site include manganese dioxide ore (50% Mn by weight), historically coal and coke (not used in current process), natural gas, sulfuric acid, barium sulfide, diatomaceous earth, lime (dolomite), hydrogen sulfide, and flocculent.
- The manganese purification process begins with the roasting of manganese ore (Mn ore) to convert it to soluble manganese oxide [Ref. 5].
- The manganese is then leached out with acid and the residual material is the manganese tailings [Ref. 5].
- The solution containing the dissolved manganese is then purified by precipitation with sulfides and the high concentration manganese liquor from this process becomes the cell feed that is piped to Units 5 and 6 for plating of manganese dioxide onto electrodes [Ref. 5].
- Process wastes from calcining, leach tanks, cathode wash, etc., were historically piped to surface ponds C-1 (LOU 20) and Mn-1 (LOU 21).

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- The purified manganese dioxide is then removed from the electrodes, washed (in Unit 6), ground to a uniform size and placed in super sacks for sale [Ref. 5].

**LOU 47 – Current and Historical Leach Plant Area
Manganese Ore Piles**

- Mn ore piles in LOU 47 were/are typically stored in windrow-type piles 10 to 15 feet high and more than 300 feet long [Ref. 3].
- Surface piles are not contained [Ref. 3].
- Mn ore has been stored and processed onsite since WECCO initiated electrolytic manganese dioxide production in 1951 [Ref. 3].
- Mn ore consists of gravel-size (1/2- to 1-inch diameter) particles to reduce potential for wind-blown releases of fine particulates [Ref. 3].
- Historically, the source of Mn ore has been from one location: a mine in Gabon, West Africa [Ref. 4].

LOU 48 – Leach Plant Anolyte Tanks

- LOU 48 has three ASTs housed within a concrete containment berm. the ASTs are used to hold manganese sulfate anolyte solution (a sulfuric acid and manganese sulfate solution) [Ref. 4].
- The ASTs are constructed of rubber-lined or fiberglass-lined carbon steel and are used to store anolyte [Ref. 3].
- Two historical anolyte storage tanks are believed to have been installed by WECCO between 1950 and 1953 without containment at the southeast corner of LOU 50 (Figure 1) [Ref. 4].
- The current anolyte tanks along with the secondary containment system were installed in 1992 [Ref. 3].
- The current tank area was previously used for Mn ore piles [Ref. 4].

LOU 49 – Leach Plant Area Sulfuric Acid Storage Tanks

- LOU 49 consists of an AST housed on a containment pad used to store sulfuric acid until needed by the process [Ref. 4].

LOU 50 – Current and Historical Leach Plant Area Leach Tanks

- The leach tanks in LOU 50 are housed on containment pads and are used to leach the manganese dioxide ore to gain its manganese value for use in the Unit 6 electrolyte cells. The Leach Plant contains two sets of leach tanks (all open top tanks installed within a concrete containment area):

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- The first set of Leach Tanks includes four ASTs (each 2,000- to 3,000-gallon capacity) installed circa 1950 to 1953 taken out of service on August 1, 1991 [Ref. 3].
- The second set of Leach Tanks was brought on-line on August 1, 1991 and is located within secondary containment with a total capacity rated at 250,000-gallons [Ref. 3].
- Locations of both sets of tanks are shown on Figure 1.
- The Leach Plant also includes open roasting hearths (permitted) to reduce the manganese dioxide to manganese oxide which is fed to the leach tanks (LOU 50). Drop-down hoods cover the ore piles during the roasting process [Ref. 5].
- Manganese oxide is leached from calcined ore using fresh sulfuric acid and anolyte solution in these tanks [Ref. 3].

LOU 51 – Leach Plant Transfer Lines

- The transfer lines in LOU 51 cross the Leach Plant area to and from Unit 6. There are also two adjacent aboveground pipelines (including pipe rack, pipe trench, and pipe supports) where solutions are transferred between the Leach Plant and Unit 6 [Ref 3]:
 - One pipeline carries concentrated manganese sulfate solution from the Leach Plant to the Unit 6 electrolytic cells, where manganese dioxide is plated out [Ref. 3].
 - The second pipeline carries the spent anolyte solution (sulfuric acid and any remaining manganese sulfate) from Unit 6 back to the Leach Plant for reconstitution [Ref. 3].
 - Within the Leach Plant, the pipelines form a network of conveyances enabling the transfer of anolyte, sulfuric acid, manganese sulfate, and other solutions throughout the Leach Plant as shown on Figure 1 [Ref. 3].
- The original Leach Plant had underground transfer lines made with high-density polybutylene (HDPB) and high density polyethylene (HDPE) [Ref. 3].
- In 1986, the underground pipelines were replaced with aboveground pipelines (Teflon-lined carbon steel) [Ref. 3].

Area 70 – U.S. Vanadium Leasehold

- With the exception of the boundary of the area leased to U.S. Vanadium, little information is known about the operations carried out by U.S. Vanadium. The plant reportedly made tungsten products.

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Process Waste Streams Associated with LOU 34E	Known or Potential Constituents Associated with LOU 34E
Manganese ore piles leachate	<ul style="list-style-type: none"> • Manganese
Manganese tailings piles leachate	<ul style="list-style-type: none"> • Manganese
Manganese anolyte tank releases	<ul style="list-style-type: none"> • Manganese sulfate, • Heavy metal sulfides
Acid storage tank releases	<ul style="list-style-type: none"> • Sulfuric acid
Leach tanks releases	<ul style="list-style-type: none"> • Sulfuric acid • Heavy metal sulfides
Transfer lines leaks	<ul style="list-style-type: none"> • Manganese
Calcining process releases	<ul style="list-style-type: none"> • Manganese dioxide, • Sulfuric acid
Cathode wash area releases	<ul style="list-style-type: none"> • Manganese dioxide • Manganese sulfate, • Heavy metal sulfides
Transfer piping leaks	<ul style="list-style-type: none"> • Manganese • Manganese sulfate, • Heavy metal sulfides
Process Waste Streams Associated with LOU 47	Known or Potential Constituents Associated with LOU 47
Leachate from Manganese ore piles	<ul style="list-style-type: none"> • Metals (primarily manganese)
Process Waste Streams Associated with LOU 48	Known or Potential Constituents Associated with LOU 48
Manganese anolyte tank releases	<ul style="list-style-type: none"> • Manganese sulfate • Manganese dioxide • Sulfuric acid
Process Waste Streams Associated with LOU 49	Known or Potential Constituents Associated with LOU 49
Acid storage tank releases [Ref. 3]	<ul style="list-style-type: none"> • Sulfuric acid • Acid solutions
Process Waste Streams Associated with LOU 50	Known or Potential Constituents Associated with LOU 50
Leach tanks releases	<ul style="list-style-type: none"> • Metals • Wet chemistry analytes

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Process Waste Streams Associated with LOU 51	Known or Potential Constituents Associated with LOU 51
Transfer line leaks [Ref. 3]	<ul style="list-style-type: none"> • Metals • Wet chemistry analytes • Acid solutions
Process Waste Streams Associated with Area 70	Known or Potential Constituents Associated with Area 70
Wastewater and solid waste associated with tungsten manufacturing process (specific process[es] are unknown)	<ul style="list-style-type: none"> • Metal wastes (tungsten, aluminum, molybdenum, iron, boron, and cobalt) • Ammonia • Acids

Overlapping or Adjacent LOUs:

The following LOUs overlap or are adjacent:

Overlapping:

- LOUs 34E, 47, 48, 51, and Area 70 overlap each other.
- LOU 59 (Storm Sewer System) – Overlaps LOU 47 and Area 70.
- LOU 60 (Acid Drain System) – Overlaps the northern (downgradient) portion of the historical portion of LOU 47 and the southern portion of LOU 50.

Adjacent LOUs

- LOU 48 (Leach Plant Anolyte Tanks) – Historical tanks are located east of LOU 50. LOU 48 is also bound on the west, north, and east side by LOU 51 (Leach Plant Transfer Lines).
- LOU 49 (Leach Plant Area Sulfuric Acid Storage Tank) – Located east (cross-gradient) of the northern portion of LOU 50 (Current and Historical Leach Plant Area Leach Tanks).
- LOU 59 (Storm Sewer System) – Located south (downgradient) of LOUs 47, 34E, and 50.
 - LOU 59 located west (cross-gradient) of LOU 34E and LOU 48.
 - LOU 59 located east (cross-gradient) of LOUs 34E, 47, 48, 51, and Area 70.
- LOU 60 (Acid Drain System) – Located east (cross-gradient) of LOUs 34E, 47, 48, 51, and Area 70.

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LOUs Potentially Affecting Soils in LOUs:

- The overlapping LOUs in this area associated with the historical and current Leach Plant operations have the potential for affecting each other.
- Known or potential chemical classes associated with adjacent or overlapping LOUs are consistent with each other; therefore, no additional chemical classes have been added to the Phase B Analytical Plan for LOUs 34E, 47, 48, 49, 50, 51, and Area 70. For detailed information on these LOUs, please refer to the specific LOU data package.

Known or Potential Chemical Classes:

- Metals
- Tungsten (associated with Area 70)
- Wet chemistry analytes

Known or Potential Release Mechanisms:

LOU 34E – Former Manganese Tailings Area and East LOU 47 – Current and Historical Leach Plant Area Mn Ore Piles

- Potential storm water run off from the historic manganese tailings or historic/current ore piles.
- Potential infiltration to subsurface soils and groundwater.

LOU 48 – Leach Plant Anolyte Tanks and LOU 49 – Leach Plant Area Sulfuric Acid Storage Tanks

- No known releases were identified in the documents reviewed.
- Possible overflow, spills, and/or releases (if any) from tanks and containments to the soil and groundwater (none documented).
- Potential leaks from process piping to the soil and groundwater.
- Possible releases from the waste piping (to and from ponds C-1, Mn-1, WC-West and WC-East) to the soil and groundwater.
- Possible surface flow of releases (if any) north to the Beta Ditch.

LOU 50 – Current and Historical Leach Plant Area Leach Tanks

- Documented releases include the following:
 - The concrete containment area and surrounding soil within a 5-foot radius of each of the four original tanks were stained from historic spills [Ref. 3].

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LOU 51 – Leach Plant Transfer Lines

- Documented releases include the following [Ref. 3]:
 - On February 25, 1986 approximately 5,500-gallons of anolyte solution containing 139 gallons (2,130 pounds) of sulfuric acid were released to the ground surface when an anolyte transfer line separated.
 - A buried anolyte transfer line has been the source of numerous small leaks.
- Documented response actions for the releases included the following measures [Ref. 3]:
 - Stopping liquid flow in leaking line by activating proper process controls;
 - Using manganese tailings from the onsite manganese tailings area to contain, neutralize (tailings pH = 8-9), and absorb released liquid;
 - Neutralizing leaked solution with either lime or soda ash;
 - Testing remediated material for non-hazardous pH conditions and subsequently disposing material in onsite manganese tailings area; and
 - Notifying appropriate agencies of release and mitigation measures taken (reportable quantity for sulfuric acid release is 1,000 pounds).

Results of Historical Sampling:

- Mn tailings and Mn ore tested as non-hazardous on several occasions, including during the Phase A Source Area Investigation [Ref. 1].
- Upgradient and downgradient monitoring wells (M-11, M-31A, M-52, M-77, M-32, and M-33) are tested for chromium, hexavalent chromium, perchlorate, manganese, TDS, pH, and electrical conductivity as part of periodic or routine groundwater monitoring programs [Ref. 2].

Analytical results for soil and groundwater from historical sampling events are summarized in LOUs 34E, 47, 48, 49, 50, 51, and Area 70 Tables 22, 23, and 24 (see attached).

Did Historical Samples Address Potential Release?

- Partially. Historic Mn tailings and Mn ore samples confirm that these materials are non-hazardous; however, there are no historical soil samples in other areas of the Leach Plant; therefore, potential releases associated with the Leach Plant have not been addressed.

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Summary of Phase A SAI:

Soil

- Phase A boring SA13 is located in northern portion of the Leach Plant area and was specifically sampled to evaluate LOUs 48, 49, and 50.
- Phase A borings SA07 and SA08 located about 100 feet south of the LOUs in the Leach Plant area and were not specifically sampled to evaluate the LOUs in the Leach Plant area.

Groundwater

- The closest well sampled (M-31A) is located northeast (downgradient) of LOUs 48, 49, and 50 and was specifically sampled to evaluate these LOUs.
- The closest downgradient well sampled (M-11) is located south and southwest of the LOUs in the Leach Plant area and was not specifically sampled to evaluate these LOUs.
- The closest groundwater sample (GWSA08) was collected from Phase A boring SA08 located southeast of the Leach Plant area and was not specifically sampled to evaluate these LOUs.

Chemical classes detected in Phase A soil borings SA07, SA08, and SA13:

- Metals (Phase A list)
- Hexavalent chromium (SA07 and SA13)
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs (SA08)
- TPH-ORO (SA07)
- TPH-GRO/DRO (SA08)
- Organochlorine pesticides (SA13)
- Dioxins/furans (SA07 and SA08)
- Radionuclides
- Asbestos

As a result of the Phase A data, the Phase B analytical plan for samples collected from LOUs 34E, 47, 48, 49, 50, 51, and Area 70 will be expanded to include analyses for perchlorate, VOCs, SVOCs, TPH-GRO/DRO/ORO, organochlorine pesticides, dioxins/furans, radionuclides, and asbestos.

- Analytical results for soil and groundwater from the Phase A sampling event are summarized in LOU 34E, 47, 48, 49, 50, 51, and Area 70 Tables 1 through 21 (see attached).

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Are Phase A Sample Locations in “Worst Case” Areas?

- Only the Mn ore and Mn tailings samples are considered to be worst case samples for LOUs 34E and 47.
- Phase A sample locations are not considered to be worst case samples for the LOUs in the Leach Plant area.

Is Phase B Investigation Recommended?

- Yes, for selected locations that will not impact Leach Plant operations or breach secondary containment structures.

Proposed Phase B Soil Investigation/Rationale:

Focused investigation activities for the LOUs within the Leach Plant area will be deferred to the future, when the entire plant is permanently closed, for the following reasons:

- Drilling equipment cannot adequately access areas within or adjacent to these LOU due to the close proximity of nearby operating equipment.
- Numerous active overhead and underground pipelines (including high pressure natural gas lines and product transfer lines) crisscross the Leach Plant area, creating potential safety hazards to field personnel engaged in subsurface sampling activities.

The Phase B Source Area Investigation for these LOUs will consist of collecting soil samples from six (6) locations:

- Four (4) soil borings (SA37, SA38, RSAQ8, and RSAP8) will be drilled within the boundaries of LOU 34E, 47, and Area 70.
- One (1) soil boring (SA140) will be drilled north (downgradient) of LOUs 49 and 50.
- One (1) soil boring (RSAQ7) will be drilled south (upgradient) of LOUs 49 and 50.
- All six borings along with the analytical program to evaluate soil samples from LOUs 34E, 47, 48, 49, 50, 51, and Area 70 are listed on **Table A – Soil Sampling and Analytical Plan for LOUs 34E, 47, 48, 49, 50, 51, and Area 70.**

- Soil sample locations consist of both judgmental and randomly-placed locations.
- Judgmental sample locations:
 - Designed to evaluate soil for known or potential chemical classes associated with LOUs 34E, 47, 48, 49, 50, 51 and Area 70, based on the known process waste streams.
 - Three (3) of the six (6) borings are judgmental and include the following soil borings SA140, SA38, and SA37.

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- Random sample grid locations:
 - Designed to assess whether unknown constituents associated with the multiple LOUs are present.
 - Three (3) soil borings (RSAP8, RSAQ7, and RSAQ8) are randomly-placed sample locations.

Proposed Phase B Constituents List for Soils:

Both judgmental and random sample locations will be analyzed for the following constituents:

- Metals (Phase A list)
- Hexavalent chromium
- Tungsten (SA38, SA37, and RSAQ8 only)
- Perchlorate
- Wet chemistry analytes
- VOCs
- SVOCs
- TPH-DRO/ORO
- TPH-GRO (SA38 and SA37 only)
- Organochlorine pesticides
- Dioxins/furans
- Radionuclides
- Asbestos

Proposed Phase B Groundwater Investigation/Rationale:

Direct assessment to be delayed until the Leach Plant is removed from service in the future.

The Phase B groundwater investigation of LOUs 34E, 47, 48, 49, 50, 51 and Area 70 consists of collecting groundwater samples from six (6) locations to evaluate local groundwater conditions and as part of site-wide evaluation of constituent trends in groundwater.

- One (1) well (M-77) within the boundaries of LOU 47 and Area 70 will be sampled.
- Two (2) wells south (upgradient) of LOUs 34E, 47, 48, and Area 70 will be sampled. These wells are M-122 and M-11.
- Two (2) wells north (downgradient) of LOUs 34E, 47, 48, 49 and 50 will be sampled. These wells are M-141 and CLU1.
- One (1) well (M-52) west (cross-gradient) of LOUs 50 and 48 will be sampled.
- All six wells along with the analytical program to evaluate groundwater samples associated with LOUs 34E, 47, 48, 49, 50, 51 and Area 70 are listed on **Table B – Groundwater Sampling and Analytical Plan for LOUs 34E, 47, 48, 49, 50, 51 and Area 70.**

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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

Proposed phase B Soil Gas Investigation/Rationale: • None proposed specifically for this LOU.

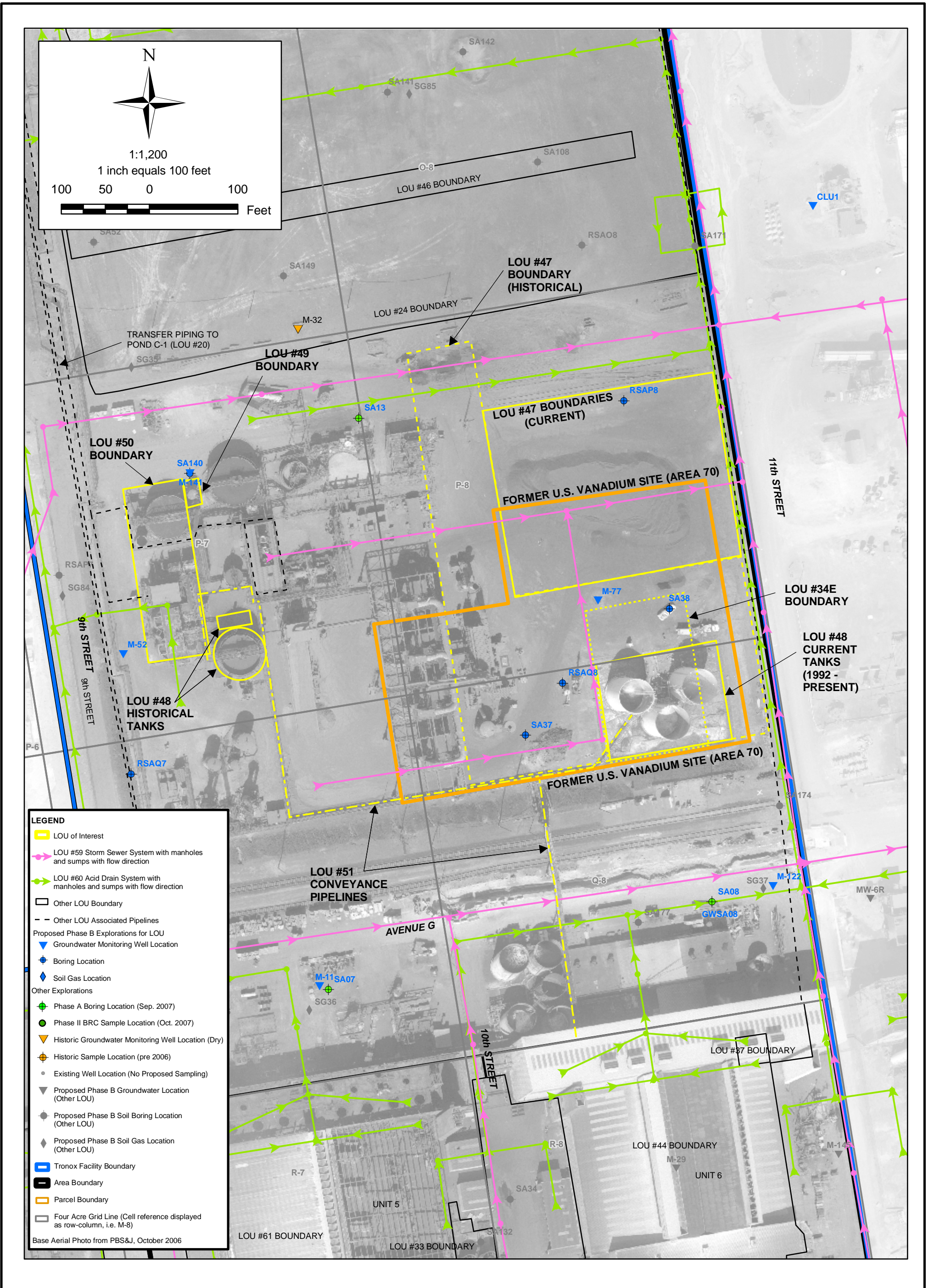
Proposed Phase B Constituents List for Soil Gas: • None proposed specifically for this LOU.

References:

1. ENSR, 2007a, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. ENSR, 2007b, Quarterly Performance Report for Remediation Systems, Tronox LLC, Henderson, Nevada, July-September 2007, November 2007.
3. Kleinfelder, 1993, Environmental Conditions Assessment, Kerr-McGee Chemical Corporation, Henderson, Nevada Facility, April 15, 1993 (Final).
4. Tronox, Susan Crowley, Verbal Communication, 2007.
5. Environmental Answers, Keith Bailey, Verbal Communication, April 23, 2008.
6. Kerr-McGee, 1996, Response to Letter of Understanding, Henderson, Nevada, October 1996.

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LOU Figure



LEGEND

- LOU of Interest
- LOU #59 Storm Sewer System with manholes and sumps with flow direction
- LOU #60 Acid Drain System with manholes and sumps with flow direction
- Other LOU Boundary
- Other LOU Associated Pipelines
- 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 Groundwater Monitoring Well Location (Dry)
 - ◇ 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)
 - ◇ Proposed Phase B Soil Gas Location (Other LOU)
- Tronox Facility Boundary
- Area Boundary
- Parcel Boundary
- Four Acre Grid Line (Cell reference displayed as row-column, i.e. M-8)

Base Aerial Photo from PBS&J, October 2006

SHEET NUMBER: X

FIGURE NUMBER: 1

SAMPLE LOCATIONS FOR LOUs #34E, #47, #48, #49, #50, #51 AND AREA 70 (FORMER U.S. VANADIUM SITE)

Phase B Area III Source Area Investigation
Tronox Facility
Henderson, Nevada

SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	6/3/2008	04020-023-430

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LOUs #34E, #47, #48, #49, #50, #51 AND AREA 70 (FORMER U.S. VANADIUM SITE)

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Sampling and Analytical Plans for LOUs 34E, 47, 48, 49, 50, 51 and Area 70:

Table A – Soil Sampling and Analytical Plan for LOUs 34E, 47, 48, 49, 50, 51
and Area 70

Table B – Groundwater Sampling and Analytical Plan for LOUs 34E, 47, 48, 49,
50, 51 and Area 70

Grid Location	LOU Number	Phase B Boring No.	Sample ID Number	Sample Depths ¹ (ft. bgs)	Perchlorate (EPA 314.0)	Metals (EPA 6020)	Hex Cr (EPA 7199)	TPH-DRO/ORO (EPA 8015B)	TPH-GRO (EPA 8015B)	VOCs ² (EPA 8260B)	Wet Chemistry ³	Total Cyanide (EPA 9012A)	OCs ⁴ (EPA 8081A)	SVOCs ⁵ (EPA 8270C)	Radio-nuclides ⁶	Dioxins/Furans ⁷	PCBs ⁸ (EPA 8082 and 1668A)	Asbestos ⁹ EPA/540/R-97/028	Geo-technical Tests ¹⁰	Rationale	
Borings are organized by grid location as shown on Plate A - Starting point is on the northwestern most grid in Area 3 (N-7) and ending with the southeastern most grid in Area 3 (S-8).																					
P-7	48, 49, 50	SA140	SA140-0.0	0.0																	
P-7	48, 49, 50		SA140-0.5	0.5	X	X	X			X	X		X		X	X					
P-7	48, 49, 50		SA140-10	10	X	X	X			X	X		Hold		X						
P-7	48, 49, 50		SA140-20	20	X	X	X			X	X		Hold		X						
P-7	48, 49, 50		SA140-30	30	X	X	X			X	X		Hold		X						
P-7	48, 49, 50		SA140-40	40	X	X	X			X	X		X		X						
P-8	47, A70	RSAP8	RSAP8-0.0	0.0															X		
P-8	47, A70		RSAP8-0.5	0.5	X	X	X	X		X	X		X	X	X	X					
P-8	47, A70		RSAP8-10	10	X	X	X	X		X	X		Hold	X	X						
P-8	47, A70		RSAP8-20	20	X	X	X	X		X	X		Hold	X	X						
P-8	47, A70		RSAP8-30	30	X	X	X	X		X	X		Hold	X	X						
P-8	47, A70		RSAP8-40	40	X	X	X	X		X	X		X	X	X						
P-8	34E, 47, 48, 51, A70	SA38	SA38-0.0	0.0															X		
P-8	34E, 47, 48, 51, A70		SA38-0.5	0.5	X	X	X	X	X	X	X		X	X	X	X					
P-8	34E, 47, 48, 51, A70		SA38-10	10	X	X	X	X	X	X	X		Hold	X	X						
P-8	34E, 47, 48, 51, A70		SA38-20	20	X	X	X	X	X	X	X		Hold	X	X						
P-8	34E, 47, 48, 51, A70		SA38-30	30	X	X	X	X	X	X	X		Hold	X	X						
P-8	34E, 47, 48, 51, A70		SA38-40	40	X	X	X	X	X	X	X		X	X	X						
Q-7	20, 22, 23, 48, 50, 51, 60	RSAQ7	RSAQ7-0.0	0.0															X		
Q-7	20, 22, 23, 48, 50, 51, 60		RSAQ7-0.5	0.5	X	X	X	X		X	X	X	X	X	X	X					
Q-7	20, 22, 23, 48, 50, 51, 60		RSAQ7-10	10	X	X	X	X	X	X	X	X	Hold	X	X						
Q-7	20, 22, 23, 48, 50, 51, 60		RSAQ7-20	20	X	X	X	X	X	X	X	X	Hold	X	X						
Q-7	20, 22, 23, 48, 50, 51, 60		RSAQ7-30	30	X	X	X	X	X	X	X	X	Hold	X	X						
Q-7	20, 22, 23, 48, 50, 51, 60		RSAQ7-40	40	X	X	X	X	X	X	X	X	X	X	X						
Q-8	34E, 47, 48, 59, A70	RSAQ8	RSAQ8-0.0	0.0															X		
Q-8	34E, 47, 48, 59, A70		RSAQ8-0.5	0.5	X	X	X	X		X	X		X	X	X	X					
Q-8	34E, 47, 48, 59, A70		RSAQ8-10	10	X	X	X	X		X	X		Hold	X	X				X		
Q-8	34E, 47, 48, 59, A70		RSAQ8-20	20	X	X	X	X		X	X		Hold	X	X						
Q-8	34E, 47, 48, 59, A70		RSAQ8-30	30	X	X	X	X		X	X		Hold	X	X						
Q-8	34E, 47, 48, 59, A70		RSAQ8-40	40	X	X	X	X		X	X		X	X	X						
Q-8	47, 48, 51, 59	SA37	SA37-0.0	0.0															X		
Q-8	47, 48, 51, 59		SA37-0.5	0.5	X	X	X	X	X	X	X		X	X	X	X					
Q-8	47, 48, 51, 59		SA37-10	10	X	X	X	X	X	X	X		Hold	X	X						
Q-8	47, 48, 51, 59		SA37-20	20	X	X	X	X	X	X	X		Hold	X	X						
Q-8	47, 48, 51, 59		SA37-30	30	X	X	X	X	X	X	X		Hold	X	X						
Q-8	47, 48, 51, 59		SA37-40	40	X	X	X	X	X	X	X		X	X	X						
Number of Borings:					6																
Number of Samples:					30	30	30	25	10	30	30	5	12	25	30	6	0	6	1		
Notes:																					
n/a Not applicable - boring is not associated with a specific LOU but is located to evaluate soil for general area-wide coverage.																					
X Sample will be collected and analyzed.																					
No sample collected under Phase B sampling program.																					
DD* Sample depth to be determined in the field where DD = sample depth (ft).																					
TPH-DRO/ORO Total petroleum hydrocarbons - Diesel-Range Organics/Oil-Range Organics.																					
1. The 0.5 ft bgs sample will be collected from the 0.0 to 0.5 ft interval, unless the area is paved. If area is paved, samples will be collected at 0.5 feet below or from a representative depth beneath the pavement. Alternately, if an unpaved area is within a reasonable distance, the sample will be moved to the unpaved area.																					
2. Samples for VOC analysis will be preserved in the field using sodium bisulfate (or DI water) and methanol preservatives per EPA Method 5035.																					
3. Consists of wet chemistry parameters (including pH) listed on Table 1 of the Phase B Source Area Work Plan.																					
4. Organochlorine Pesticides (includes analysis for hexachlorobenzene).																					
5. Semi-volatile Organic Compounds																					
6. Radionuclides consists of alpha spec reporting for isotopic Thorium and isotopic Uranium, and Radium-226, plus Radium-228 by beta counting (per NDEP).																					
7. Dioxins/furans will be analyzed by EPA Method 8290 for all samples. Screening reports will be provided for 90% of the samples and full data packages for 10% of the samples.																					
8. Polychlorinated biphenyls - Sample locations will be analyzed by USEPA methods 8082 and 1668A. Concrete surfaces at these locations will also include chip and/or wipe samples per EPA Region 1 SOP for Sampling Concrete in the Field (1)																					
9. Soil samples for asbestos analyses will be collected from a depth of 0 to 2-inches bgs.																					
10. Geotechnical Tests consist of: moisture content (ASTM D-2216), grain size analysis (ASTM D-422 and C117-04), Soil Dry Bulk Density (ASTM D-2937), Grain Density (ASTM D-854, Soil-Water Filled Porosity (ASTM D-2216); Vertical Hydraulic Conductivity (ASTM D-5084/USEPA 9100).																					

Grid Location	Location Area	Monitoring Well No.	Screen Interval (ft bgs)	Soil Type Expected Across Screen Interval ¹	Well Sampled for Phase A? (y/n)	Perchlorate (EPA 314.0)	Hex Cr (EPA 7199)	Metals	VOCs ² (EPA 8260)	Wet Chemistry (a)	OCPs ³ (EPA 8081A)	SVOCs ⁴ (EPA 8270C)	Radio-nuclides ⁵	Rationale
Wells are organized by grid location as shown on Plate A - Starting point is on the northwestern-most grid in Area III (N-7) and ending with the southeastern-most grid covering Area III (Q-9).														
O-10	IIIE	CLU1	nr	nr	no	X	X	X	X	X	X	X	X	Serves as a step out downgradient for LOUs 34E, 47, 48, 51, and Area 70 (former U.S. Vanadium), and general Site coverage located on Timet.
P-7	III	M-52	34.5 - 44.5	MCfg1	no	X	X	X	X	X	X	X	X	Located to evaluate LOUs 34E, 47 through 51, and Area 70 (former U.S. Vanadium); as a crossgradient step out for LOUs 20, 22, 23, and 60; and for general Site coverage.
P-7	III	M-141	TBD	TBD	new well	X	X	X	X	X	X	X	X	New monitoring well co-located with boring SA140 to evaluate LOUs 49 and 50.
P-8	III	M-77	29 - 43.8	Qal/MCfg1	no	X	X	X	X	X	X	X	X	Located to evaluate LOUs 34E, 47 through 51 and Area 70 (former U.S. Vanadium); as a downgradient step out for LOUs 33, 40, and 61; as a crossgradient step out for LOU 59; and for general Site coverage.
Q-7	III	M-11	33.3 - 53	Qal/MCfg1	yes	X	X	X	X	X	X	X	X	Located as a downgradient step out for LOU 61; as an upgradient step out for LOUs 34E, 47 through 51 and Area 70 (former U.S. Vanadium); as a crossgradient step out for LOUs 20, 22, 23, and 60, and for general Site coverage.
Q-8	III	M-122	TBD	TBD	new well	X	X	X	X	X	X	X	X	New monitoring well located to serve as a downgradient step out for LOUs 37, 44, and 60; as an upgradient step out for LOUs 34E, 47, 48, 51, 59 and Area 70 (former U.S. Vanadium); to evaluate possible offsite sources to the east; and for general Site coverage.
Number of Field Samples:						6	6	6	6	6	6	6	6	

Notes:

- X Sample will be collected and analyzed.
- 1 It is anticipated that the large majority of the flow to the well will be from the coarse-grained sediments. As such, in the cases where there are two lithologies present across the screen interval, the water sampled will represent conditions in the coarse-grained interval.
- 2 VOCs = Volatile organic compounds (to include analysis for naphthalene).
- 3 OCPs = Organochlorine pesticides (to include analysis for hexachlorobenzene).
- 4 SVOCs = Semi volatile organic compounds.
- 5 Radionuclides consists of alpha spec reporting for isotopic Thorium and isotopic Uranium, and Radium-226, plus Radium-228 by beta counting (per NDEP).
- (a) Complete list of wet chemistry parameters are shown on Table 1. All groundwater samples will have pH measured in the field.
- IIIN/E/W/S Well located outside (north, east, west, or south) of Area III.
- TBD To be determined when well is constructed.
- nr Not recorded in the All Wells Database (June 2008).
- Qal Quaternary Alluvium
- MCfg1 Muddy Creek Formation - first fine-grained facies
- MCcg1 Muddy Creek Formation - first coarse-grained facies
- MCfg2 Muddy Creek Formation - second fine-grained facies

**Summary of Available Data for LOUs 34E, 47, 48, 49, 50, 51 and Area 70
Multiple LOUs Located in Operational Manganese Leach Plant Area
Tronox Facility – Henderson, Nevada**

Soil and Groundwater Characterization Data

**Summary of Available Data for LOUs 34E, 47, 48, 49, 50, 51 and Area 70
Multiple LOUs Located in Operational Manganese Leach Plant Area
Tronox Facility – Henderson, Nevada**

LOU-specific analytes identified include:

- Wet chemistry analytes
- Dioxins/furans
- Metals
- Organochlorine pesticides
- Perchlorate
- Radionuclides
- SVOCs
- TPH
- VOCs
- Asbestos
- Tungsten
- Hexavalent chromium

The tables in **BOLD** below present historical data associated with these LOU specific analytes.

LOUs 34E, 47, 48, 49, 50, 51 and Area 70

Table 1 – Soil Characterization Data – Wet Chemistry

Table 2 – Groundwater Characterization Data – Wet Chemistry

Table 3 – Soil Characterization Data – Dioxins and Dibenzofurans

Table 4 – Soil Characterization Data – Metals

Table 5 – Groundwater Characterization Data – Metals

Table 6 – Soil Characterization Data – Organochlorine Pesticides (OCPs)

Table 7 – Groundwater Characterization Data – Organochlorine Pesticides (OCPs)

Table 8 – Soil Characterization Data – Organophosphorus Pesticides (OPPs)

Table 9 – Groundwater Characterization Data – Organophosphorus Pesticides (OPPs)

Table 10 – Soil Characterization Data – PCBs

Table 11 – Groundwater Characterization Data – PCBs

Table 12 – Soil Characterization Data – Perchlorate

Table 13 – Groundwater Characterization Data – Perchlorate

Table 14 – Soil Characterization Data – Radionuclides

Table 15 – Groundwater Characterization Data – Radionuclides

Table 16 – Soil Characterization Data – SVOCs

Table 17 – Groundwater Characterization Data – SVOCs

Table 18 – Soil Characterization Data – TPH and Fuel Alcohols

Table 19 – Soil Characterization Data – VOCs

Table 20 – Groundwater Characterization Data – VOCs

Table 21 – Soil Characterization Data – Long Asbestos Fibers in Respirable Soil Fraction

Table 22 – Groundwater Characterization Data – Routine Monitoring

Table 23 – Summary of Historical Groundwater Analytical Data

Table 24 – Summary of Historical Groundwater Analytical Data

Table 25 – Analytical Composition of Manganese Dioxide Ore

Notes for all tables presented at the end of the tables.

**LOUs 34East and 47 to 51 Table 1
Soil Characterization Data - Wet Chemistry**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program	Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A		
Boring No.	--	--	SA7	SA7	SA7	SA7	SA7	SA7	SA7	SA8	SA8	
Sample ID	Mn Ore	Mn Tailings	SA7-0.5	SA7-10	SA7-10D	SA7-20	SA7-30	SA7-34	SA8-0.5	SA8-10		
Sample Depth (ft)	0.5	composite	0.5	10	10	20	30	34	0.5	10		
Sample Date	01/19/2007	01/19/2007	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/17/2006	11/17/2006		
Wet Chemistry Parameter	MSSL ² mg/kg										Units	
Percent moisture	--	4.9	19.5	5.3	5.6	7.1	7.6	6.3	23.3	4.8	6.3	percent
Alkalinity (as CaCO ₃)	--			68.9	53.0 U	70.2	174	158	65.2 U	134	53.4 U	mg/kg
Bicarbonate	--			178	212	193	131	340	290	358	247	mg/kg
Total Alkalinity	--			247	249	263	305	497	319	492	281	mg/kg
Ammonia (as N)	--			5.3 UJ	5.3 UJ	5.4 UJ	5.4 UJ	5.3 UJ	6.5 UJ	5.3 UJ	5.3 UJ	mg/kg
Cyanide	1.37E+04			R	R	R	R	R	R	R	R	mg/kg
MBAS	--			4.2 U	4.4 U	4.4 U	4.4 U	4.4 U	5.0 U	5.9	4.2 U	mg/kg
pH (solid)	--			8.2	7.9	8.0	8.3	8.5	7.6	8.4	8.2	none
Bromide	--			1.1 J	0.65 J	2.7 U	2.7 U	2.7 U	32.6 U	2.6 U	2.7 U	mg/kg
Chlorate	--			108 J+	138 J+	183 J+	201 J+	28.7 J+	66.2 J+	16.7 J-	1.9 J-	mg/kg
Chloride	--			127	160	177	208	46.7	95.6	495 J+	62.3 J+	mg/kg
Nitrate (as N)	--			8.9	7.0	5.3	6.1	0.71 J+	0.89 J+	2.6 J+	1.7 J+	mg/kg
Nitrite	--			R	2.1 UJ	2.2 UJ	2.2 UJ	2.1 UJ	2.6 UJ	4.7 J-	2.1 UJ	mg/kg
ortho-Phosphate	--			7.2	5.3 U	10.6	5.4 U	2.8 J	6.5 U	2.4 J	5.3 U	mg/kg
Sulfate	--			449 J	805 J	120 J	145 J	67.5 J	5380 J	177	696	mg/kg
Total Organic Carbon	--			6780 J-	1950 J-	4480 J-	5000 J-	925 J-	11600 J-	3480 J-	1220 J-	mg/kg

Sampling Program	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.	SA8	SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13	SA13	
Sample ID	SA8-20	SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40		
Sample Depth (ft)	20	30	37	0.5	0.5	10	20	30	40		
Sample Date	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	
Wet Chemistry Parameter	MSSL ² mg/kg										Units
Percent moisture	--	4.7	8.4	26.6	14.1	9.6	4.3	6.1	5.1	20.7	percent
Alkalinity (as CaCO ₃)	--	52.4 U	279	68.1 U	58.2 UJ	235 J	71.3 J	53.2 UJ	98.4 J	136 J	mg/kg
Bicarbonate	--	293	1050	157	279 J	1930 J	523 J	269 J	246 J	699 J	mg/kg
Total Alkalinity	--	333	1330	157	279 J	2170 J	594	303 J	344 J	835 J	mg/kg
Ammonia (as N)	--	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ	mg/kg
Cyanide	1.37E+04	R	R	R	R	R	R	R	R	R	mg/kg
MBAS	--	4.4 U	4.3 U	5.6 U	4.2 U	4.3 U	4.2 U	4.3 U	4.3 U	4.8 U	mg/kg
pH (solid)	--	8.5	8.9	7.7	7.4	7.7	8.1	8.1	8.4	7.8	none
Bromide	--	2.6 U	2.7 U	1.5 J	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	3.2 U	mg/kg
Chlorate	--	3.2 J-	4.8 J-	16.8 J-	5.8 U	5.5 UJ	5.2 UJ	5.3 U	5.3 U	6.3 U	mg/kg
Chloride	--	345 J+	84.5 J+	395 J+	269 J	15.0 J	13.5 J	16.3 J	19.9 J	41.3 J	mg/kg
Nitrate (as N)	--	4.4 J+	8.2 J+	14.9	0.23 U	0.42 J+	0.80 J+	0.57 J+	0.17 J+	3.2 J+	mg/kg
Nitrite	--	4.0 J-	2.2 UJ	2.7 UJ	5.7 J	0.10 J	0.55 J	0.11 J	0.74 J	0.13 J	mg/kg
ortho-Phosphate	--	5.2 U	5.5 U	6.8 U	5.8 U	3.2 J	5.2 U	5.3 U	5.3 U	6.3 U	mg/kg
Sulfate	--	181	193	15100	13800 J	1080 J	853 J	294 J	174	382 J	mg/kg
Total Organic Carbon	--	3150 J-	6400 J-	12900 J-	4200 J-	2100 J-	1200 J-	6900 J-	6800 J-	10900 J	mg/kg

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).

**LOUs 34East and 47 to 51 Table 2
Groundwater Characterization Data - Wet Chemistry**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks
and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A	Ph A	Ph A	Ph A	
Well ID		SA8	M11	M11D	M31A	
Sample ID		M29 ¹	M11	M11D	M31A	
Sample Date		11/17/2006	12/06/2006	12/06/2006	12/06/2006	
Wet Chemistry Parameters	MCL ² mg/L					Units
Total Dissolved Solids	5.00E+02 j	6180 J-	3270	3280	9720	mg/L
Total Suspended Solids	--	449 J-	15.0 J	9.0 J	25.0 J	mg/L
Alkalinity (as CaCO3)	--	5.0 U	5.0 U	5.0 U	5.0 U	mg/L
Bicarbonate	--	268	205	184	108	mg/L
Total Alkalinity	--	268	205	184	108	mg/L
Ammonia (as N)	--	79.9	50.0 U	50.0 U	1270	ug/L
MBAS	--	0.20 U	0.20	0.17 J	1.8 J	mg/L
Cyanide	2.00E-01	5.0 UJ	R	R	R	ug/L
pH (liquid)	--		7.7 J	7.6 J	7.1 J	none
Specific Conductance	--	6420 J	2360 J+	2330 J+	2630 J+	umhos/cm
Bromide	--	14.1 J-	25.0 U	25.0 U	25.0 U	mg/L
Chlorate	--	15.0	421	444	3320	mg/L
Chloride	2.50E+02	229 J-	239	246	1130	mg/L
Nitrate (as N)	1.00E+01	9.5	3.4	3.5	17.6	mg/L
Nitrite	1.00E+00	2.0 U	3.1	2.0 U	10.0 U	mg/L
ortho-Phosphate	--	5.0 U	5.0 U	5.0 U	500 U	mg/L
Sulfate	2.50E+02 j	5330	1290	1380	1480	mg/L
Total Organic Carbon	--	2.2	50 U	50 U	50.0 U	mg/L

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility - Henderson, Nevada, September 2007.
 2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
- (j) Secondary Drinking Water Regulation value.

**LOUs 34East and 47 to 51 Table 3
Soil Characterization Data - Dioxins and Dibenzofurans**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program				Ph A ¹	Ph A	Ph A	Ph A
Boring No.				SA7	SA8	SA13	SA13
Sample ID				SA7-0.5	SA8-0.5	SA13-0.5	SA13-0.5D
Sample Depth (ft)				0.5	0.5	0.5	0.5
Sample Date				11/20/2006	11/17/2006	11/17/2006	11/17/2006
chemical_name:	Method	Unit	MSSL ² ng/kg				
Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (a) ng/kg		ng/kg	--	192	0.014	0.006	
Dioxin SW 846 8290 Total TEQ-ENSR Calculated (a) ng/kg		ng/kg	--	169			
Dioxin 8290 SCREEN Total TEQ-ENSR Calculated (b) ng/kg		ng/kg	--	192	0.063	0.1	
Dioxin SW 846 8290 Total TEQ-ENSR Calculated (b) ng/kg		ng/kg	--	169			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	8290 Screen	ng/kg	--	927.107	0.479	0.047 U	0.325
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW 846 8290	ng/kg	--	873.925 J			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	85.450	0.714	0.054 U	0.736
1,2,3,4,6,7,8-Heptachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--	85.45			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	8290 Screen	ng/kg	--	392.108	0.075 U	0.067 U	0.140 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW 846 8290	ng/kg	--	392.11			
1,2,3,4,7,8-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	372.915	0.034 U	0.035 U	0.084 U
1,2,3,4,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--	372.915			
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	8.841	0.043 U	0.041 U	0.060 U
1,2,3,4,7,8-Hexachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--	8.841			
1,2,3,6,7,8-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	249.626	0.030 U	0.031 U	0.079 U
1,2,3,6,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--	249.626			
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	19.448	0.036 U	0.035 U	0.055 U
1,2,3,6,7,8-Hexachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--	19.448			
1,2,3,7,8,9-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	31.354	0.041 U	0.042 U	0.113 U
1,2,3,7,8,9-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--	31.353			
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	21.698	0.040 U	0.038 U	0.058 U
1,2,3,7,8,9-Hexachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--	21.698			
1,2,3,7,8-Pentachlorodibenzofuran	8290 Screen	ng/kg	--	199.693	0.023 U	0.028 U	0.050 U
1,2,3,7,8-Pentachlorodibenzofuran	SW 846 8290	ng/kg	--	199.692			
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	16.175	0.030 U	0.023 U	0.055 U
1,2,3,7,8-Pentachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--	16.175			
2,3,4,6,7,8-Hexachlorodibenzofuran	8290 Screen	ng/kg	--	112.484	0.034 U	0.035 U	0.092 U
2,3,4,6,7,8-Hexachlorodibenzofuran	SW 846 8290	ng/kg	--	112.484			
2,3,4,7,8-Pentachlorodibenzofuran	8290 Screen	ng/kg	--	92.926	0.022 U	0.027 U	0.049 U
2,3,4,7,8-Pentachlorodibenzofuran	SW 846 8290	ng/kg	--	92.927			
2,3,7,8-Tetrachlorodibenzofuran	8290 Screen	ng/kg	--	369.233	0.043 U	0.055 U	0.158 U
2,3,7,8-Tetrachlorodibenzofuran	SW 846 8290	ng/kg	--	136.994 J			
2,3,7,8-Tetrachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	1.00E+03 h,v	8.965	0.028 U	0.036 U	0.141 U
2,3,7,8-Tetrachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	1.00E+03 h,v	8.965			
Octachlorodibenzofuran	8290 Screen	ng/kg	--	2502.073	1.403	0.109 U	0.670
Octachlorodibenzofuran	SW 846 8290	ng/kg	--	2338.457 J			
Octachlorodibenzo-p-Dioxin	8290 Screen	ng/kg	--	191.912	6.973	0.660	3.166
Octachlorodibenzo-p-Dioxin	SW 846 8290	ng/kg	--	191.912			
Tetrachlorinated Dibenzofurans, (Total)	SW 846 8290	ng/kg	--	1642.861 J			
Total HpCDD	SW 846 8290	ng/kg	--	151.421			
Total HpCDF	SW 846 8290	ng/kg	--	1846.885 J			

LOUs 34East and 47 to 51 Table 3 (continued)
Soil Characterization Data - Dioxins and Dibenzofurans

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program				Ph A ¹	Ph A	Ph A	Ph A
Boring No.				SA7	SA8	SA13	SA13
Sample ID				SA7-0.5	SA8-0.5	SA13-0.5	SA13-0.5D
Sample Depth (ft)				0.5	0.5	0.5	0.5
Sample Date				11/20/2006	11/17/2006	11/17/2006	11/17/2006
chemical_name:	Method	Unit	MSSL ² ng/kg				
Total HxCDD	SW 846 8290	ng/kg	--	158.189			
Total HxCDF	SW 846 8290	ng/kg	--	1786.919			
Total PeCDD	SW 846 8290	ng/kg	--	154.674			
Total PeCDF	SW 846 8290	ng/kg	--	1665.598			
Total TCDD	SW 846 8290	ng/kg	--	160.412			

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
 - (a) Calculated assuming 0 for non-detected congeners and 2006 toxic equivalency factors (TEFs).
 - (b) Calculated assuming 1/2 detection limit as proxy for non-detected congeners and 2006 TEFs.
 - (h) Dioxins and furans were expressed as 2,3,7,8- TCDD TEQ (toxic equivalents), calculated using the TEFs published by Van den Berg et al., 2006.
 - (v) USEPA. 1998. Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April, 1998. A value of 1000 ng/kg is applicable to residential soils. The range of 5000 to 20000 ng/kg is applicable to commercial/industrial soils. The Agency for Toxic Substances and Disease Registry (ATSDR) provides a screening level of 50 ng/kg for dioxin in residential soil [<http://www.atsdr.cdc.gov/substances/dioxin/policy/>].

**LOUs 34East and 47 to 51 Table 4
Soil Characterization Data - Metals**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.		--	--	SA7	SA7	SA7	SA7	SA7	SA7	SA8	SA8	
Sample ID		Mn Ore	Mn Tailings	SA7-0.5	SA7-10	SA7-10D	SA7-20	SA7-30	SA7-34	SA8-0.5	SA8-10	
Sample Depth (ft)		0.5	composite	0.5	10	10	20	30	34	0.5	10	
Sample Date		01/19/2007	01/19/2007	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/17/2006	11/17/2006	
Metals	MSSL ² mg/kg											Units
Aluminum	1.00E+05	10300 J	51700 J	6400	5850	7100	6450	6390	7400	6450	6650	mg/kg
Antimony	4.50E+02	3.4	3.6	0.36 J-	0.17 J-	0.13 J-	0.15 J-	0.15 J-	0.32 J-	0.15 J-	0.24 J-	mg/kg
Arsenic	2.80E+02	24.9	90.1	5.5	2.5	2.3	3.3	4.8	24.3	1.8	2.5	mg/kg
Barium	1.00E+05	1360 J	473 J	201 J+	147	166	149 J	73.6 J	158 J	143 J+	165 J	mg/kg
Beryllium	2.20E+03	0.66 U	2.3 J	0.41	0.42	0.47	0.46	0.44 J-	0.35 J-	0.40 J-	0.46 J-	mg/kg
Boron	1.00E+05	4.4 UJ	65.2 UJ	48.6 J-	8.7 UJ	8.2 UJ	9.3 UJ	12.3 UJ	36.8 J-	2.5 J-	3.5 J-	mg/kg
Cadmium	5.60E+02	7.8 J-	8.2 J-	0.24	0.075	0.084	0.068	0.065	0.084	0.085	0.087	mg/kg
Calcium	--	361 J-	25500 J-	37500	26400	20500	25200	29000	62700 J+	9930 J+	10500 J+	mg/kg
Chromium (Total)	7.10E+01	4.0	74.3	18.5 J-	8.2 J-	7.9 J-	8.6 J-	7.4 J-	33.8 J-	10.1 J-	11.2 J-	mg/kg
Chromium-hexavalent	5.00E+02	0.15 J	0.32	0.56	0.21 U	0.22 U	0.22 U	0.12 J	0.13 J	0.21 U	0.21 U	mg/kg
Cobalt	2.10E+03	871	1840	8.6 J-	6.0 J-	6.2 J-	5.8 J-	5.2 J-	3.1 J-	7.0 J-	6.4 J-	mg/kg
Copper	4.20E+04	155 J	797 J	16.5 J-	10.4 J-	11.3 J-	12.0 J-	11.3 J-	9.5 J	12.4 J-	13.5 J	mg/kg
Iron	1.00E+05	9240 J	54600 J	9830	9600	9830	10300	9530	7520	14000	13600	mg/kg
Lead	8.00E+02	31.8	121	32.5	7.4	7.8	6.7	6.0	4.4	7.6	8.4	mg/kg
Magnesium	--	80.7 J-	5550 J-	8360 J-	5750	6310	8920 J-	8250 J-	19000 J-	6390 J-	5350 J-	mg/kg
Manganese	3.50E+04	560000	79600	1290	278	262	250	159	171 J	316 J	349 J	mg/kg
Molybdenum	5.70E+03	5.0	31.7	0.92	0.41 J	0.41 J	0.40 J	0.38 J	0.52 J	0.55	0.54	mg/kg
Nickel	2.30E+04	368 J	788 J	12.9 J-	11.4 J-	12.1 J-	11.8 J-	11.6 J-	9.8 J-	12.4 J-	12.7 J	mg/kg
Platinum	--	0.038 J	0.22 J	0.077 J	0.014 J	0.016 J	0.014 J	0.012 J	0.014 J	0.016 J	0.013 J	mg/kg
Potassium	--	3860 J-	10200 J-	1910	1790	2110	1280	1340	2080 J-	1380 J-	2390 J-	mg/kg
Selenium	5.70E+03	1.0 J-	4.4	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U	0.14 UJ	0.11 UJ	0.12 UJ	mg/kg
Silver	5.70E+03	1.9 J-	3.2 J-	0.16 J	0.11 J	0.13 J	0.12 J	0.11 J	0.12 J	0.12 J	0.12 J	mg/kg
Sodium	--	97.5 J-	1650 J-	763	314 J-	361 J-	392 J-	638 J-	533 J-	689 J-	1410 J-	mg/kg
Strontium	1.00E+05	116 J	244 J	130 J+	133 J-	130 J-	171 J	219 J	2280 J	119 J+	141 J	mg/kg
Thallium	--	3.3 J+	6.4 J+	0.38 U	0.21 U	0.20 U	0.12 U	0.10 U	0.32 U	0.087 U	0.14 U	mg/kg
Tin	--	0.81	2.0	0.92	0.43	0.52	0.43	0.42	0.39	1.2	0.99	mg/kg
Titanium	--	65.0 J-	721 J-	364 J+	379 J+	382 J+	454 J+	368 J+	444	583	654	mg/kg
Tungsten	--	17.4	52.6	1.4 J-	0.41 J-	0.32 J-	0.33 J-	0.30 J-	0.87 J-	0.37 UJ	0.36 UJ	mg/kg
Uranium	--	0.30	2.2	0.96	0.86	0.87	1.6	2.1	4.3	0.75	0.93	mg/kg
Vanadium	5.70E+03	58.1 J-	179 J-	24.1	23.7	23.5	29.8 J-	24.9 J-	30.1 J-	43.1 J-	44.5 J-	mg/kg
Zinc	1.00E+05	325 J	940 J	39.1 J-	21.7 J-	23.0 J-	22.3 J-	21.9 J-	20.3 J-	25.5 J-	26.9 J-	mg/kg
Mercury	3.41E+02 (t)	0.017 J	0.23 J+	0.0071 U	0.0074 J-	0.024 J-	0.0072 UJ	0.0071 UJ	0.0087 UJ	0.011 J-	0.0073 J-	mg/kg

**LOUs 34East and 47 to 51 Table 4 (continued)
Soil Characterization Data - Metals**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.	SA8	SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13	SA13	
Sample ID	SA8-20	SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40		
Sample Depth (ft)	20	30	37	0.5	0.5	10	20	30	40		
Sample Date	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	
Metals	MSSL ² mg/kg										Units
Aluminum	1.00E+05	6270	6930	8070	7350	8310	5630	7330	7090	8720	mg/kg
Antimony	4.50E+02	0.13 J-	0.18 J-	0.20 J-	0.19 J-	0.25 J-	0.18 J-	0.19 J-	0.18 J-	0.19 J-	mg/kg
Arsenic	2.80E+02	3.4	3.7	44.3	2.1	2.3	2.1	3.2	3.1	36.4	mg/kg
Barium	1.00E+05	161 J	168 J	81.9 J	159	181	159 J	197 J	127 J	123 J-	mg/kg
Beryllium	2.20E+03	0.42 J-	0.45 J-	0.47 J-	0.50 J-	0.51 J-	0.37 J-	0.46 J-	0.45 J-	0.55	mg/kg
Boron	1.00E+05	6.5 J-	5.6 J-	28.3 J-	3.0 J-	3.8 J-	2.6 J-	3.6 J-	3.3 J-	12.9 J-	mg/kg
Cadmium	5.60E+02	0.090	0.065	0.058 J	0.13	0.12	0.11	0.080	0.074	0.11	mg/kg
Calcium	--	28800 J+	22800 J+	79600 J+	12600 J	12300 J	9080 J+	21200 J+	15500 J+	28500	mg/kg
Chromium (Total)	7.10E+01	9.3 J-	11.7 J-	40.9 J-	12.8 J-	13.8 J-	10.1 J-	11.4 J-	8.8 J-	14.5	mg/kg
Chromium-hexavalent	5.00E+02	0.21 U	0.22 U	0.27 U	0.23 U	0.12 J	0.21 U	0.21 U	0.21 U	0.25 U	mg/kg
Cobalt	2.10E+03	7.6 J-	5.1 J-	3.5 J-	6.9 J-	7.2 J-	6.3 J-	7.3 J-	6.2 J-	5.6 J-	mg/kg
Copper	4.20E+04	15.6 J	11.7 J	11.7 J	15.9 J-	14.7 J-	12.6 J	12.7 J	12.1 J	12.4 J-	mg/kg
Iron	1.00E+05	12900	13300	7600	15600	16100	13200	13200	13600	12600	mg/kg
Lead	8.00E+02	6.9	7.8	4.4	9.0	9.5	9.4	10.4	7.4	8.1	mg/kg
Magnesium	--	7920 J-	7520 J-	51900 J-	6580 J-	7030 J-	4940 J-	8590 J-	7430 J-	15200	mg/kg
Manganese	3.50E+04	289 J	214 J	111 J	1680	2320	350 J	434 J	219 J	606	mg/kg
Molybdenum	5.70E+03	0.47 J	0.56	0.51 J	0.58 J	0.52 J	0.60	0.51 J	0.45 J	0.52 J	mg/kg
Nickel	2.30E+04	18.7 J-	11.5 J-	12.4 J-	13.9 J-	14.3 J-	11.6 J-	12.5 J-	12.0 J-	14.0 J-	mg/kg
Platinum	--	0.014 J	0.015 J	0.014 U	0.015 J	0.022 J	0.014 J	0.019 J	0.016 J	0.021 J	mg/kg
Potassium	--	1120 J-	1350 J-	2390 J-	2190	2500	1670 J-	1380 J-	1280 J-	2740	mg/kg
Selenium	5.70E+03	0.11 UJ	0.12 UJ	0.15 UJ	0.13 UJ	0.12 UJ	0.11 UJ	0.12 UJ	0.11 UJ	0.14 UJ	mg/kg
Silver	5.70E+03	0.12 J	0.12 J	0.10 J	0.15 J	0.16 J	0.13 J	0.14 J	0.13 J	0.16 J	mg/kg
Sodium	--	591 J-	586 J-	1540 J-	447 J-	564 J	251 J-	593 J-	694 J-	506 J-	mg/kg
Strontium	1.00E+05	201 J	206 J	542 J	130 J-	162 J-	117 J	215 J	310 J	178	mg/kg
Thallium	--	0.080 U	0.076 U	0.16 U	0.098 U	0.26 U	0.12 U	0.13 U	0.093 U	0.13 U	mg/kg
Tin	--	0.55	0.60	0.39	0.73	0.69	0.59	0.63	0.57	0.60	mg/kg
Titanium	--	627	577 J	431	830	806	733	689	649	681	mg/kg
Tungsten	--	0.28 UJ	0.25 UJ	0.41 UJ	0.36 UJ	0.45 UJ	0.35 UJ	0.40 UJ	0.32 UJ	0.73 UJ	mg/kg
Uranium	--	1.3	2.0	10.2	0.92	1.0	0.83	1.4	1.4	3.2	mg/kg
Vanadium	5.70E+03	41.9 J-	39.5 J-	40.3 J-	47.1 J-	48.9 J-	43.4 J-	44.1 J-	41.7 J-	56.3 J-	mg/kg
Zinc	1.00E+05	23.8 J-	25.0 J-	19.2 J-	31.5 J-	29.8 J-	27.3 J-	28.2 J-	27.4 J-	30.8 J-	mg/kg
Mercury	3.41E+02 (t)	0.007 UJ	0.010 J-	0.0091 UJ	0.013 J-	0.017 J-	0.0082 J-	0.012 J-	0.011 J-	0.0084 UJ	mg/kg

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
 2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (t) Value for mercury and compounds.

LOUs 34East and 47 to 51 Table 4 (continued)
Soil Characterization Data - Metals

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.	SA8	SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13	SA13	
Sample ID	SA8-20	SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40		
Sample Depth (ft)	20	30	37	0.5	0.5	10	20	30	40		
Sample Date	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	
Metals	MSSL ² mg/kg										Units
Aluminum	1.00E+05	6270	6930	8070	7350	8310	5630	7330	7090	8720	mg/kg
Antimony	4.50E+02	0.13 J-	0.18 J-	0.20 J-	0.19 J-	0.25 J-	0.18 J-	0.19 J-	0.18 J-	0.19 J-	mg/kg
Arsenic	2.80E+02	3.4	3.7	44.3	2.1	2.3	2.1	3.2	3.1	36.4	mg/kg
Barium	1.00E+05	161 J	168 J	81.9 J	159	181	159 J	197 J	127 J	123 J-	mg/kg
Beryllium	2.20E+03	0.42 J-	0.45 J-	0.47 J-	0.50 J-	0.51 J-	0.37 J-	0.46 J-	0.45 J-	0.55	mg/kg
Boron	1.00E+05	6.5 J-	5.6 J-	28.3 J-	3.0 J-	3.8 J-	2.6 J-	3.6 J-	3.3 J-	12.9 J-	mg/kg
Cadmium	5.60E+02	0.090	0.065	0.058 J	0.13	0.12	0.11	0.080	0.074	0.11	mg/kg
Calcium	--	28800 J+	22800 J+	79600 J+	12600 J	12300 J	9080 J+	21200 J+	15500 J+	28500	mg/kg
Chromium (Total)	7.10E+01	9.3 J-	11.7 J-	40.9 J-	12.8 J-	13.8 J-	10.1 J-	11.4 J-	8.8 J-	14.5	mg/kg
Chromium-hexavalent	5.00E+02	0.21 U	0.22 U	0.27 U	0.23 U	0.12 J	0.21 U	0.21 U	0.21 U	0.25 U	mg/kg
Cobalt	2.10E+03	7.6 J-	5.1 J-	3.5 J-	6.9 J-	7.2 J-	6.3 J-	7.3 J-	6.2 J-	5.6 J-	mg/kg
Copper	4.20E+04	15.6 J	11.7 J	11.7 J	15.9 J-	14.7 J-	12.6 J	12.7 J	12.1 J	12.4 J-	mg/kg
Iron	1.00E+05	12900	13300	7600	15600	16100	13200	13200	13600	12600	mg/kg
Lead	8.00E+02	6.9	7.8	4.4	9.0	9.5	9.4	10.4	7.4	8.1	mg/kg
Magnesium	--	7920 J-	7520 J-	51900 J-	6580 J-	7030 J-	4940 J-	8590 J-	7430 J-	15200	mg/kg
Manganese	3.50E+04	289 J	214 J	111 J	1680	2320	350 J	434 J	219 J	606	mg/kg
Molybdenum	5.70E+03	0.47 J	0.56	0.51 J	0.58 J	0.52 J	0.60	0.51 J	0.45 J	0.52 J	mg/kg
Nickel	2.30E+04	18.7 J-	11.5 J-	12.4 J-	13.9 J-	14.3 J-	11.6 J-	12.5 J-	12.0 J-	14.0 J-	mg/kg
Platinum	--	0.014 J	0.015 J	0.014 U	0.015 J	0.022 J	0.014 J	0.019 J	0.016 J	0.021 J	mg/kg
Potassium	--	1120 J-	1350 J-	2390 J-	2190	2500	1670 J-	1380 J-	1280 J-	2740	mg/kg
Selenium	5.70E+03	0.11 UJ	0.12 UJ	0.15 UJ	0.13 UJ	0.12 UJ	0.11 UJ	0.12 UJ	0.11 UJ	0.14 UJ	mg/kg
Silver	5.70E+03	0.12 J	0.12 J	0.10 J	0.15 J	0.16 J	0.13 J	0.14 J	0.13 J	0.16 J	mg/kg
Sodium	--	591 J-	586 J-	1540 J-	447 J-	564 J	251 J-	593 J-	694 J-	506 J-	mg/kg
Strontium	1.00E+05	201 J	206 J	542 J	130 J-	162 J-	117 J	215 J	310 J	178	mg/kg
Thallium	--	0.080 U	0.076 U	0.16 U	0.098 U	0.26 U	0.12 U	0.13 U	0.093 U	0.13 U	mg/kg
Tin	--	0.55	0.60	0.39	0.73	0.69	0.59	0.63	0.57	0.60	mg/kg
Titanium	--	627	577 J	431	830	806	733	689	649	681	mg/kg
Tungsten	--	0.28 UJ	0.25 UJ	0.41 UJ	0.36 UJ	0.45 UJ	0.35 UJ	0.40 UJ	0.32 UJ	0.73 UJ	mg/kg
Uranium	--	1.3	2.0	10.2	0.92	1.0	0.83	1.4	1.4	3.2	mg/kg
Vanadium	5.70E+03	41.9 J-	39.5 J-	40.3 J-	47.1 J-	48.9 J-	43.4 J-	44.1 J-	41.7 J-	56.3 J-	mg/kg
Zinc	1.00E+05	23.8 J-	25.0 J-	19.2 J-	31.5 J-	29.8 J-	27.3 J-	28.2 J-	27.4 J-	30.8 J-	mg/kg
Mercury	3.41E+02 (t)	0.007 UJ	0.010 J-	0.0091 UJ	0.013 J-	0.017 J-	0.0082 J-	0.012 J-	0.011 J-	0.0084 UJ	mg/kg

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
 2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (t) Value for mercury and compounds.

**LOUs 34East and 47 to 51 Table 5
Groundwater Characterization Data - Metals**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks,
Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	
Well ID:		SA08	M11	M31A	
Sample ID		M29	M11-Z	M31A-Z	
Sample Date		11/17/2006	05/11/2007	05/09/2007	
Metals	MCL ² ug/L				Unit
Aluminum	5.00E+01 j	7.9 U	393 U	760 J	ug/L
Antimony	6.00E+00	0.94 J	25.0 U	25.0 U	ug/L
Arsenic	1.00E+01	100	328	127 J	ug/L
Barium	2.00E+03	17.2	15.2 U	42.5 J	ug/L
Beryllium	4.00E+00	0.088 UJ	4.4 U	4.4 U	ug/L
Boron	7.30E+03	2670	10400	6950	ug/L
Cadmium	5.00E+00	0.078 J	2.9 U	2.9 U	ug/L
Calcium	--	395000	50200	617000	ug/L
Chromium (Total)	1.00E+02	24.7 J-	3130	12300	ug/L
Chromium-hexavalent	1.09E+02	25.8 J	2510 J	12900 J	ug/L
Cobalt	7.30E+02	5.1 J-	15.7 U	15.7 U	ug/L
Copper	1.30E+03 p	11.1 J-	12.5 U	12.5 U	ug/L
Iron	3.00E+02 j	94 U	6310 J-	470 UJ	ug/L
Lead	1.50E+01 u	0.49 U	24.6 U	24.6 U	ug/L
Magnesium	1.50E+05 a	619000	39300	275000	ug/L
Manganese	5.00E+01 j	108 J-	173 U	127 U	ug/L
Molybdenum	1.82E+02	23.9	25.0 U	25.0 U	ug/L
Nickel	7.30E+02	16.8 J-	25.8 U	25.8 U	ug/L
Platinum	--	0.1 U	5.0 U	5.0 U	ug/L
Potassium	--	15900 J-	19900	23600	ug/L
Selenium	5.00E+01	5.4 J	50.0 U	50.0 U	ug/L
Silver	1.00E+02 j	0.2 U	10.1 U	10.1 U	ug/L
Sodium	--	525000	953000	1650000	ug/L
Strontium	2.19E+04	10400	1300	14800	ug/L
Thallium	2.00E+00	0.32 U	16.0 U	16.0 U	ug/L
Tin	2.19E+04	0.2 U	10.0 U	10.0 U	ug/L
Titanium	1.46E+05	6.5 J-	19.6 U	33.6 J	ug/L
Tungsten	--	5 U	25.0 U	25.0 U	ug/L
Uranium	3.00E+01	241	15.0 J	28.9 J	ug/L
Vanadium	3.65E+01	50.7 J-	121 J	80.0 U	ug/L
Zinc	5.00E+03 j	16.8 J-	50.0 U	97.5 J	ug/L
Mercury	2.00E+00	0.093 UJ	0.11 U	0.11 J+	ug/L

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
 - (j) Secondary Drinking Water Regulation value.
 - (p) The national primary drinking water regulations (b) lists a treatment technology action level of 1.3 mg/l as the MCL for Copper. Therefore, the secondary value is not used.
 - (u) See footnote (b). Treatment technology action level.
 - (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.

LOUs 34East and 47 to 51 Table 6
Soil Characterization Data - Organochlorine Pesticides (OCP)

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A	
Boring No.		SA7	SA8	SA13	SA13	
Sample ID		SA7-0.5	SA8-0.5	SA13-0.5	SA13-0.5D	
Sample Depth (ft)		0.5	0.5	0.5	0.5	
Sample Date		11/20/2006	11/17/2006	11/17/2006	11/17/2006	
Organochlorine Pesticides	MSSL ² mg/kg					Unit
4,4'-DDD	1.10E+01	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
4,4'-DDE	7.80E+00	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
4,4'-DDT	7.80E+00	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Aldrin	1.10E-01	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Alpha-BHC	4.00E-01	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Alpha-chlordane	1.40E+00 (y)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Beta-BHC	1.40E+00	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Delta-BHC	--	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Dieldrin	1.20E-01	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Endosulfan I	4.10E+03 (aa)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Endosulfan II	4.10E+03 (aa)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Endosulfan Sulfate	4.10E+03 (aa)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Endrin	2.10E+02	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Endrin Aldehyde	2.10E+02 (k)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Endrin Ketone	2.10E+02 (k)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Gamma-BHC (Lindane)	1.90E+00	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Gamma-Chlordane	1.40E+00 (y)	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Heptachlor	4.30E-01	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Heptachlor Epoxide	2.10E-01	0.0018 U	0.018 U	0.0020 U	0.0019 U	mg/kg
Methoxychlor	3.40E+03	0.0035 UJ	0.035 U	0.0038 U	0.0076	mg/kg
Tech-Chlordane	1.40E+00	0.011 U	0.11 U	0.012 U	0.011 U	mg/kg
Toxaphene	1.70E+00	0.053 U	0.53 U	0.058 U	0.055 U	mg/kg

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
(y) Value for chlordane (technical) used as surrogate for alpha-chlordane and gamma-chlordane based on structural similarities.
(aa) Value for endosulfan used as surrogate for endosulfan I, endosulfan II and endosulfan sulfate based on structural similarities.
(k) Value for endrin used as surrogate for endrin aldehyde and endrin ketone due to structural similarities.

LOUs 34East and 47 to 51 Table 7
Groundwater Characterization Data - Organochlorine Pesticides (OCP)

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A	
Well ID		SA8	M11	M11D	M31A	
Sample ID		M29	M11	M11D	M31A	
Sample Date		11/17/2006	12/06/2006	12/06/2006	12/06/2006	
Organochlorine Pesticides	MCL ² ug/L					Unit
4,4'-DDD	2.80E-01	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
4,4'-DDE	1.98E-01	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
4,4'-DDT	1.98E-01	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Aldrin	4.00E-03	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Alpha-BHC	1.10E-02	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Alpha-chlordane	2.00E+00 (l)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Beta-BHC	3.74E-02	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Delta-BHC	1.10E-02 (z)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Dieldrin	4.20E-03 (z)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Endosulfan I	2.19E+02 (aa)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Endosulfan II	2.19E+02 (aa)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Endosulfan Sulfate	2.19E+02 (aa)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Endrin	2.00E+00	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Endrin Aldehyde	1.09E+01 (k)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Endrin Ketone	1.09E+01 (k)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Gamma-BHC (Lindane)	2.00E-01	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Gamma-Chlordane	2.00E+00 (l)	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Heptachlor	4.00E-01	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Heptachlor Epoxide	2.00E-01	0.050 U	0.050 U	0.050 U	0.050 U	ug/L
Methoxychlor	4.00E+01	0.10 U	0.10 U	0.10 U	0.10 U	ug/L
Tech-Chlordane	2.00E+00 (l)	0.50 U	0.50 U	0.50 U	0.50 U	ug/L
Toxaphene	3.00E+00	2.0 U	2.0 U	2.0 U	2.0 U	ug/L

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
 - (l) Value for chlordane used as surrogate for alpha-chlordane, chlordane (technical) and gamma-chlordane due to structural similarities.
 - (z) Value for alpha-BHC used as surrogate for delta-BHC based on structural similarities.
 - (aa) Value for endosulfan used as surrogate for endosulfan I, endosulfan II and endosulfan sulfate based on structural similarities.
 - (k) Value for endrin used as surrogate for endrin aldehyde and endrin ketone due to structural similarities.

LOUs 34East and 47 to 51 Table 8
Soil Characterization Data - Organophosphorus Pesticides (OPPs)

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A	
Boring No.		SA7	SA8	SA13	SA13	
Sample ID		SA7-0.5	SA8-0.5	SA13-0.5	SA13-0.5D	
Sample Depth (ft)		0.5	0.5	0.5	0.5	
Sample Date		11/20/2006	11/17/2006	11/17/2006	11/17/2006	
OPPs	MSSL ² mg/kg					Unit
Azinphos-methyl	--	0.014 U	0.014 U	0.015 UJ	0.014 U	mg/kg
Bolstar	--	0.014 U	0.014 U	0.015 UJ	0.014 U	mg/kg
Chlorpyrifos	2.10E+03	0.021 U	0.021 U	0.023 UJ	0.022 U	mg/kg
Coumaphos	--	0.014 UJ	0.014 UJ	0.015 UJ	0.014 UJ	mg/kg
Demeton-O	--	0.041 U	0.041 U	0.045 UJ	0.043 U	mg/kg
Demeton-S	--	0.016 U	0.016 U	0.017 UJ	0.017 U	mg/kg
Diazinon	6.20E+02	0.023 U	0.023 U	0.026 UJ	0.024 U	mg/kg
Dichlorvos	6.60E+00	0.024 U	0.024 U	0.027 UJ	0.025 U	mg/kg
Dimethoate	--	0.023 U	0.023 U	0.026 UJ	0.024 U	mg/kg
Disulfoton	2.70E+01	0.051 U	0.050 U	0.056 UJ	0.053 U	mg/kg
EPN	--	0.014 U	0.014 U	0.015 UJ	0.014 U	mg/kg
Ethoprop	--	0.016 U	0.016 U	0.017 UJ	0.017 U	mg/kg
Ethyl Parathion	4.10E+03	0.019 U	0.019 U	0.021 UJ	0.020 U	mg/kg
Famphur	--	0.014 U	0.014 U	0.015 UJ	0.014 U	mg/kg
Fensulfothion	--	0.014 U	0.014 U	0.015 UJ	0.014 U	mg/kg
Fenthion	1.70E+02 (ff)	0.035 U	0.035 U	0.038 UJ	0.037 U	mg/kg
Malathion	1.40E+04	0.016 U	0.016 U	0.017 UJ	0.017 U	mg/kg
Merphos	--	0.032 U	0.032 U	0.035 UJ	0.033 U	mg/kg
Methyl parathion	1.70E+02	0.021 U	0.021 U	0.023 UJ	0.022 U	mg/kg
Mevinphos	--	0.016 U	0.016 U	0.017 UJ	0.017 U	mg/kg
Naled	1.40E+03	0.035 UJ	0.035 UJ	0.038 UJ	0.037 UJ	mg/kg
Phorate	--	0.021 U	0.021 U	0.023 UJ	0.022 U	mg/kg
Ronnel	3.40E+04	0.019 U	0.019 U	0.021 UJ	0.020 U	mg/kg
Stirphos	--	0.016 U	0.016 U	0.017 UJ	0.017 U	mg/kg
Sulfotep	--	0.021 U	0.021 U	0.023 UJ	0.022 U	mg/kg
Thionazin	--	0.019 U	0.019 U	0.021 UJ	0.020 U	mg/kg
Tokuthion	--	0.021 UJ	0.021 UJ	0.023 UJ	0.022 UJ	mg/kg
Trichloronate	--	0.021 U	0.021 U	0.023 UJ	0.022 U	mg/kg

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
 2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.

**LOUs 34East and 47 to 51 Table 9
Groundwater Characterization Data - Organophosphorus Pesticides (OPPs)**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks
and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A	
Well ID		SA8	M11	M11D	M31A	
Sample ID		M29	M11	M11D	M31A	
Sample Date		11/17/2006	12/06/2006	12/06/2006	12/06/2006	
OPPs	MCL ² ug/L					Unit
Azinphos-methyl	--	2.5 U	2.5 U	2.5 U	2.5 U	ug/L
Bolstar	--	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Chlorpyrifos	1.09E+02	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Coumaphos	--	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Demeton-O	1.46E+00 (cc)	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Demeton-S	1.46E+00 (cc)	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Diazinon	3.28E+01	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Dichlorvos	2.32E-01	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Dimethoate	7.30E+00	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Disulfoton	1.46E+00	0.50 U	0.50 U	0.50 U	0.50 U	ug/L
EPN	3.65E-01	1.2 U	1.2 U	1.2 U	1.2 U	ug/L
Ethoprop	--	0.50 U	0.50 U	0.50 U	0.50 U	ug/L
Ethyl Parathion	9.12E+00 (tt)	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Famphur	--	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Fensulfothion	--	2.5 U	2.5 U	2.5 U	2.5 U	ug/L
Fenthion	9.10E+00 (ff)	2.5 U	2.5 U	2.5 U	2.5 U	ug/L
Malathion	7.30E+02	1.2 U	1.2 U	1.2 U	1.2 U	ug/L
Merphos	1.09E+00	5.0 U	5.0 U	5.0 U	5.0 U	ug/L
Methyl parathion	9.12E+00	4.0 U	4.0 U	4.0 U	4.0 U	ug/L
Mevinphos	--	6.2 U	6.2 U	6.2 U	6.2 U	ug/L
Naled	7.30E+01	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Phorate	7.30E+00	1.2 U	1.2 U	1.2 U	1.2 U	ug/L
Ronnel	1.82E+03	10 U	10 U	10 U	10 U	ug/L
Stirphos	--	3.5 U	3.5 U	3.5 U	3.5 U	ug/L
Sulfotep	1.82E+01	1.5 U	1.5 U	1.5 U	1.5 U	ug/L
Thionazin	--	1.0 U	1.0 U	1.0 U	1.0 U	ug/L
Tokuthion	--	1.6 U	1.6 U	1.6 U	1.6 U	ug/L
Trichloronate	--	0.50 U	0.50 U	0.50 U	0.50 U	ug/L

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
(cc) Value for demeton used as surrogate for demeton-o and demeton-s based on structural similarities.
(tt) Value for parathion-methyl used as surrogate for parathion-ethyl due to structural similarities.
(ff) Value for methyl parathion used as surrogate for fenthion based on structural similarities.

**LOUs 34East and 47 to 51 Table 10
Soil Characterization Data - PCBs**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program	Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A		
Boring ID	SA7	SA7	SA7	SA7	SA7	SA7	SA7	SA8	SA8	SA8	
Sample ID	SA7-0.5	SA7-10	SA7-10D	SA7-20	SA7-30	SA7-34	SA8-0.5	SA8-10	SA8-20		
Sample Depth (ft)	0.5	10	10	20	30	34	0.5	10	20		
Sample Date	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/17/2006	11/17/2006	11/17/2006		
PCBs	MSSL ² mg/kg									Unit	
Aroclor-1016	2.40E+01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg
Aroclor-1221	8.30E-01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg
Aroclor-1232	8.30E-01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg
Aroclor-1242	8.30E-01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg
Aroclor-1248	8.30E-01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg
Aroclor-1254	8.30E-01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg
Aroclor-1260	8.30E-01 (i)	0.035 U	0.035 U	0.036 U	0.036 U	0.035 U	0.043 U	0.035 U	0.035 U	0.035 U	mg/kg

Sampling Program	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring ID	SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13	SA13	
Sample ID	SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40		
Sample Depth (ft)	30	37	0.5	0.5	10	20	30	40		
Sample Date	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	
PCBs	MSSL ² mg/kg									Unit
Aroclor-1016	2.40E+01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg
Aroclor-1221	8.30E-01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg
Aroclor-1232	8.30E-01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg
Aroclor-1242	8.30E-01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg
Aroclor-1248	8.30E-01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg
Aroclor-1254	8.30E-01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg
Aroclor-1260	8.30E-01 (i)	0.036 U	0.045 U	0.038 U	0.037 U	0.034 U	0.035 U	0.035 U	0.042 U	mg/kg

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
 2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008)
- (i) For PCBs, the individual Aroclors were compared to the TSCA action level of 10 mg/kg, for high occupancy, restricted (non-residential) use. (40 CFR Part 761; 63 FR 35383-35474, June 29, 1998).

**LOUs 34East and 47 to 51 Table 11
Groundwater Characterization Data - PCBs**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks
and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A	
Well ID		SA8	M11	M11D	M31A	
Sample ID		M29	M11	M11D	M31A	
Sample Date		11/17/2006	12/06/2006	12/06/2006	12/06/2006	
PCBs	MCL ² ug/L					Unit
Aroclor-1016	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L
Aroclor-1221	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L
Aroclor-1232	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L
Aroclor-1242	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L
Aroclor-1248	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L
Aroclor-1254	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L
Aroclor-1260	5.00E-01 (bb)	0.10 UJ	0.10 U	0.10 U	0.10 U	ug/L

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
(bb) Value for total PCBs.

**LOUs 34East and 47 to 51 Table 12
Soil Characterization Data - Perchlorate**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks
and Transfer Lines
Tronox Facility - Henderson, Nevada

Boring ID	Sample ID	Sample Depth (ft)	Sample Date	Perchlorate ug/kg	MSSL¹ ug/kg	Sampling Program
SA8	SA8-0.5	0.5	11/17/2006	17500	7.95E+05	Ph A ²
	SA8-10	10	11/17/2006	1500	7.95E+05	Ph A
	SA8-20	20	11/17/2006	3300	7.95E+05	Ph A
	SA8-30	30	11/17/2006	2690	7.95E+05	Ph A
	SA8-37	37	11/17/2006	12100	7.95E+05	Ph A
SA13	SA13-0.5	0.5	11/17/2006	192	7.95E+05	Ph A
	SA13-0.5D	0.5	11/17/2006	120	7.95E+05	Ph A
	SA13-10	10	11/17/2006	195	7.95E+05	Ph A
	SA13-20	20	11/17/2006	184	7.95E+05	Ph A
	SA13-30	30	11/17/2006	220	7.95E+05	Ph A
	SA13-40	40	11/17/2006	1490	7.95E+05	Ph A

Notes:

1. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

LOUs 34East and 47 to 51 Table 13
Groundwater Characterization Data - Perchlorate

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks
and Transfer Lines
Tronox Facility - Henderson, Nevada

Well ID Number	Sample ID	Sample Date	Perchlorate	Units	MCL¹ ug/L	Sampling Program
M11	M11	12/06/2006	32500 J+	ug/L	1.80E+01 a,(m)	Ph A ²
M11D	M11D	12/06/2006	32400 J+	ug/L	1.80E+01 a,(m)	Ph A
SA8	M29	11/17/2006	2410	ug/L	1.80E+01 a,(m)	Ph A
M31A	M31A	12/06/2006	1740000 J+	ug/L	1.80E+01 a,(m)	Ph A

Notes:

1. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
 2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
- (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.
- (m) Equal to the provisional action level derived by NDEP as referenced in "Defining a Perchlorate Drinking Water Standard". NDEP Bureau of Corrective Action. URL [http://ndep.nv.gov/bca/perchlorate02_05.htm].

**LOUs 34East and 47 to 51 Table 14
Soil Characterization Data - Radionuclides**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

				Ra-226 (gamma) pCi/g	Ra-228 (gamma) pCi/g	Th-228 (TH MOD) pCi/g	Th-230 (TH MOD) pCi/g	Th-232 (TH MOD) pCi/g	U-233/234 (U MOD) pCi/g	U-235/236 (U MOD) pCi/g	U-238 (U MOD) pCi/g	
Boring ID Number	Sample ID	Sample Depth (ft)	Date									Sampling Program
SA7	SA7-0.5	0.5	11/20/2006	1.12 J-	1.83 J-							Ph A ¹
	SA7-10	10	11/20/2006	1.02 J-	1.9 J-							Ph A
	SA7-10D	10	11/20/2006	0.939 J-	1.77 J-							Ph A
	SA7-20	20	11/20/2006	1.28 J-	1.57 J-	0.488 J	0.775 J	0.618 J	0.652 J+	0.0145 U	0.493 J	Ph A
	SA7-30	30	11/20/2006	1.79 J-	1.78 J-							Ph A
	SA7-34	34	11/20/2006	7.49 J-	0.805 J-							Ph A
SA8	SA8-0.5	0.5	11/17/2006	1.07 J-	1.76 J-							Ph A
	SA8-10	10	11/17/2006	1.08 J-	2.05 UJ							Ph A
	SA8-20	20	11/17/2006	1 J-	1.88 J-							Ph A
	SA8-30	30	11/17/2006	1.34 J-	1.85 J-							Ph A
	SA8-37	37	11/17/2006	3.16 J-	0.771 UJ							Ph A
SA13	SA13-0.5	0.5	11/17/2006	1.12 J-	1.68 J-							Ph A
	SA13-0.5D	0.5	11/17/2006	1.06 J-	1.87 J-							Ph A
	SA13-10	10	11/17/2006	1.14 J-	2.05 J-							Ph A
	SA13-20	20	11/17/2006	1.27 J-	1.78 J-							Ph A
	SA13-30	30	11/17/2006	1.73 J-	1.88 J-							Ph A
	SA13-40	40	11/17/2006	1.79 J-	1.61 J-	0.659 J	0.922 J	0.539 J	1.05 J+	0.0274 U	0.813	Ph A
MN ORE			01/19/2007	0.271 U	0.55	0.517	0.249 J	0.514 J	0.21 J	0.0311 J	0.217 J	Ph A
MN TAILINGS			01/19/2007	0.968 U	1.54	1.19	0.802 J	0.957 J	0.882	0.0134 U	0.854	Ph A

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility - Henderson, Nevada, September 2007.

**LOUs 34East and 47 to 51 Table 15
Groundwater Characterization Data - Radionuclides**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

			Ra-226 pCi/L	Ra-228 pCi/L	Th-228 pCi/L	Th-230 pCi/L	Th-232 pCi/L	U-233/234 pCi/L	U-235/236 pCi/L	U-238 pCi/L	
Well ID Number	Sample ID	Date									Sampling Program
SA8	M29	11/17/2006	0.745 J	0.602 UJ							Ph A ¹
M11	M11-Z	05/11/2007	0.332 U	1.23 B							Ph A
M31A	M31A-Z	05/09/2007	0.312 J	0.862 UJ	0.0584 U	0.0798 U	0.0285 U	13.7	0.408	8.09	Ph A

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

LOUs 34East and 47 to 51 Table 16
Soil Characterization Data - SVOC

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.			SA7	SA7	SA7	SA7	SA7	SA7	SA8	SA8	SA8
Sample ID			SA7-0.5	SA7-10	SA7-10D	SA7-20	SA7-30	SA7-34	SA8-0.5	SA8-10	SA8-20
Sample Depth (ft)			0.5	10	10	20	30	34	0.5	10	20
Sample Date			11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/17/2006	11/17/2006	11/17/2006
SVOC	Analytical Method	MSSL ² ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
1,4-Dioxane	non-SIM	1.70E+05	70 U	350 U	360 U	360 U	350 U	430 U	69 U	350 U	350 U
2-Methylnaphthalene	non-SIM	2.10E+05 (jj)	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
2-Methylnaphthalene	SIM	2.10E+05 (jj)	7.0 U						6.9 U		
Acenaphthene	non-SIM	3.30E+07	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Acenaphthene	SIM	3.30E+07	7.0 U						6.9 U		
Acenaphthylene	non-SIM	3.30E+07 (pp)	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Acenaphthylene	SIM	3.30E+07 (pp)	7.0 U						6.9 U		
Anthracene	non-SIM	1.00E+08	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Anthracene	SIM	1.00E+08	7.0 U						6.9 U		
Benzo(a)anthracene	non-SIM	2.30E+03	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Benzo(a)anthracene	SIM	2.30E+03	7.0 U						6.9 U		
Benzo(a)pyrene	non-SIM	2.30E+02	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Benzo(a)pyrene	SIM	2.30E+02	7.0 U						6.9 U		
Benzo(b)fluoranthene	non-SIM	2.30E+03	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Benzo(b)fluoranthene	SIM	2.30E+03	7.0 U						6.9 U		
Benzo(g,h,i)perylene	non-SIM	3.20E+07 (w)	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Benzo(g,h,i)perylene	SIM	3.20E+07 (w)	7.0 U						6.9 U		
Benzo(k)fluoranthene	non-SIM	2.30E+04	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Benzo(k)fluoranthene	SIM	2.30E+04	7.0 U						6.9 U		
bis(2-Ethylhexyl)phthalate	non-SIM	1.40E+05	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Butyl benzyl phthalate	non-SIM	2.40E+05	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Chrysene	non-SIM	2.30E+05	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Chrysene	SIM	2.30E+05	7.0 U						7.0		
Dibenz(a,h)anthracene	non-SIM	2.30E+02	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Dibenz(a,h)anthracene	SIM	2.30E+02	7.0 U						6.9 U		
Diethyl phthalate	non-SIM	1.00E+08	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Dimethyl phthalate	non-SIM	1.00E+08	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Di-N-Butyl phthalate	non-SIM	6.80E+07	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Di-N-Octyl phthalate	non-SIM	--	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Fluoranthene	non-SIM	2.40E+07	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Fluoranthene	SIM	2.40E+07	7.0 U						27		
Fluorene	non-SIM	2.60E+07	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Fluorene	SIM	2.60E+07	7.0 U						6.9 U		
Hexachlorobenzene	non-SIM	1.20E+03	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Hexachlorobenzene	SIM	1.20E+03	7.0 U						6.9 U		
Indeno(1,2,3-cd)pyrene	non-SIM	2.30E+03	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Indeno(1,2,3-cd)pyrene	SIM	2.30E+03	7.0 U						6.9 U		
Naphthalene	non-SIM	2.10E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	0.79 J	5.3 U	5.2 U
Naphthalene	non-SIM	2.10E+05	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Naphthalene	SIM	2.10E+05	7.0 U						6.9 U		
Nitrobenzene	non-SIM	1.10E+05	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Octachlorostyrene	non-SIM	--	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Phenanthrene	non-SIM	1.00E+08 (n)	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Phenanthrene	SIM	1.00E+08 (n)	7.0 U						6.9 U		
Pyrene	non-SIM	3.20E+07	350 U	350 U	360 U	360 U	350 U	430 U	350 U	350 U	350 U
Pyrene	SIM	3.20E+07	7.0 U						12		
Pyridine	non-SIM	6.80E+05	1700 U	1700 U	1700 U	1700 U	1700 U	2100 U	1700 U	1700 U	1700 U

**LOUs 34East and 47 to 51 Table 16 (continued)
Soil Characterization Data - SVOC**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.			SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13
Sample ID			SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40
Sample Depth (ft)			30	37	0.5	0.5	10	20	30	40
Sample Date			11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006
SVOC	Analytical Method	MSSL ² ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
1,4-Dioxane	non-SIM	1.70E+05	360 U	450 U	77 U	73 U	340 U	350 U	350 U	420 U
2-Methylnaphthalene	non-SIM	2.10E+05 (jj)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
2-Methylnaphthalene	SIM	2.10E+05 (jj)			7.7 U	7.3 U				
Acenaphthene	non-SIM	3.30E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Acenaphthene	SIM	3.30E+07			7.7 U	7.3 U				
Acenaphthylene	non-SIM	3.30E+07 (pp)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Acenaphthylene	SIM	3.30E+07 (pp)			7.7 U	7.3 U				
Anthracene	non-SIM	1.00E+08	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Anthracene	SIM	1.00E+08			7.7 U	7.3 U				
Benzo(a)anthracene	non-SIM	2.30E+03	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(a)anthracene	SIM	2.30E+03			7.7 U	7.3 U				
Benzo(a)pyrene	non-SIM	2.30E+02	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(a)pyrene	SIM	2.30E+02			7.7 U	7.3 U				
Benzo(b)fluoranthene	non-SIM	2.30E+03	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(b)fluoranthene	SIM	2.30E+03			7.7 U	7.3 U				
Benzo(g,h,i)perylene	non-SIM	3.20E+07 (w)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(g,h,i)perylene	SIM	3.20E+07 (w)			7.7 U	7.3 U				
Benzo(k)fluoranthene	non-SIM	2.30E+04	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(k)fluoranthene	SIM	2.30E+04			7.7 U	7.3 U				
bis(2-Ethylhexyl)phthalate	non-SIM	1.40E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Butyl benzyl phthalate	non-SIM	2.40E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Chrysene	non-SIM	2.30E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Chrysene	SIM	2.30E+05			7.7 U	7.3 U				
Dibenz(a,h)anthracene	non-SIM	2.30E+02	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Dibenz(a,h)anthracene	SIM	2.30E+02			7.7 U	7.3 U				
Diethyl phthalate	non-SIM	1.00E+08	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Dimethyl phthalate	non-SIM	1.00E+08	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Di-N-Butyl phthalate	non-SIM	6.80E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Di-N-Octyl phthalate	non-SIM	--	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Fluoranthene	non-SIM	2.40E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Fluoranthene	SIM	2.40E+07			7.7 U	7.3 U				
Fluorene	non-SIM	2.60E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Fluorene	SIM	2.60E+07			7.7 U	7.3 U				
Hexachlorobenzene	non-SIM	1.20E+03	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Hexachlorobenzene	SIM	1.20E+03			7.7 U	7.3 U				
Indeno(1,2,3-cd)pyrene	non-SIM	2.30E+03	360 UJ	450 UJ	380 UJ	370 UJ	340 UJ	350 UJ	350 UJ	420 UJ
Indeno(1,2,3-cd)pyrene	SIM	2.30E+03			7.7 U	7.3 U				
Naphthalene	non-SIM	2.10E+05	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Naphthalene	non-SIM	2.10E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Naphthalene	SIM	2.10E+05			7.7 U	7.3 U				
Nitrobenzene	non-SIM	1.10E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Octachlorostyrene	non-SIM	--	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Phenanthrene	non-SIM	1.00E+08 (n)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Phenanthrene	SIM	1.00E+08 (n)			7.7 U	7.3 U				
Pyrene	non-SIM	3.20E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Pyrene	SIM	3.20E+07			7.7 U	7.3 U				
Pyridine	non-SIM	6.80E+05	1700 U	2200 U	1900 U	1800 U	1700 U	1700 U	1700 U	2000 U

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
 2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
(pp) Value for acenaphthene used as surrogate for acenaphthylene based on structural similarities.
(w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
(n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.

**LOUs 34East and 47 to 51 Table 16 (continued)
Soil Characterization Data - SVOC**

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.			SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13
Sample ID			SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40
Sample Depth (ft)			30	37	0.5	0.5	10	20	30	40
Sample Date			11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006
SVOC	Analytical Method	MSSL ² ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
1,4-Dioxane	non-SIM	1.70E+05	360 U	450 U	77 U	73 U	340 U	350 U	350 U	420 U
2-Methylnaphthalene	non-SIM	2.10E+05 (jj)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
2-Methylnaphthalene	SIM	2.10E+05 (jj)			7.7 U	7.3 U				
Acenaphthene	non-SIM	3.30E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Acenaphthene	SIM	3.30E+07			7.7 U	7.3 U				
Acenaphthylene	non-SIM	3.30E+07 (pp)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Acenaphthylene	SIM	3.30E+07 (pp)			7.7 U	7.3 U				
Anthracene	non-SIM	1.00E+08	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Anthracene	SIM	1.00E+08			7.7 U	7.3 U				
Benz(a)anthracene	non-SIM	2.30E+03	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benz(a)anthracene	SIM	2.30E+03			7.7 U	7.3 U				
Benzo(a)pyrene	non-SIM	2.30E+02	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(a)pyrene	SIM	2.30E+02			7.7 U	7.3 U				
Benzo(b)fluoranthene	non-SIM	2.30E+03	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(b)fluoranthene	SIM	2.30E+03			7.7 U	7.3 U				
Benzo(g,h,i)perylene	non-SIM	3.20E+07 (w)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(g,h,i)perylene	SIM	3.20E+07 (w)			7.7 U	7.3 U				
Benzo(k)fluoranthene	non-SIM	2.30E+04	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Benzo(k)fluoranthene	SIM	2.30E+04			7.7 U	7.3 U				
bis(2-Ethylhexyl)phthalate	non-SIM	1.40E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Butyl benzyl phthalate	non-SIM	2.40E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Chrysene	non-SIM	2.30E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Chrysene	SIM	2.30E+05			7.7 U	7.3 U				
Dibenz(a,h)anthracene	non-SIM	2.30E+02	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Dibenz(a,h)anthracene	SIM	2.30E+02			7.7 U	7.3 U				
Diethyl phthalate	non-SIM	1.00E+08	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Dimethyl phthalate	non-SIM	1.00E+08	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Di-N-Butyl phthalate	non-SIM	6.80E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Di-N-Octyl phthalate	non-SIM	--	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Fluoranthene	non-SIM	2.40E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Fluoranthene	SIM	2.40E+07			7.7 U	7.3 U				
Fluorene	non-SIM	2.60E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Fluorene	SIM	2.60E+07			7.7 U	7.3 U				
Hexachlorobenzene	non-SIM	1.20E+03	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Hexachlorobenzene	SIM	1.20E+03			7.7 U	7.3 U				
Indeno(1,2,3-cd)pyrene	non-SIM	2.30E+03	360 UJ	450 UJ	380 UJ	370 UJ	340 UJ	350 UJ	350 UJ	420 UJ
Indeno(1,2,3-cd)pyrene	SIM	2.30E+03			7.7 U	7.3 U				
Naphthalene	non-SIM	2.10E+05	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Naphthalene	non-SIM	2.10E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Naphthalene	SIM	2.10E+05			7.7 U	7.3 U				
Nitrobenzene	non-SIM	1.10E+05	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Octachlorostyrene	non-SIM	--	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Phenanthrene	non-SIM	1.00E+08 (n)	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Phenanthrene	SIM	1.00E+08 (n)			7.7 U	7.3 U				
Pyrene	non-SIM	3.20E+07	360 U	450 U	380 U	370 U	340 U	350 U	350 U	420 U
Pyrene	SIM	3.20E+07			7.7 U	7.3 U				
Pyridine	non-SIM	6.80E+05	1700 U	2200 U	1900 U	1800 U	1700 U	1700 U	1700 U	2000 U

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
 - (jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
 - (pp) Value for acenaphthene used as surrogate for acenaphthylene based on structural similarities.
 - (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
 - (n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.

**LOUs 34East and 47 to 51 Table 17
Groundwater Characterization Data - SVOC**

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach Tanks and
Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A ¹	Ph A	Ph A	Ph A
Well No.			SA8	M11	M11D	M31A
Sample ID			M29	M11	M11D	M31A
Sample Date			11/17/2006	12/06/2006	12/06/2006	12/06/2006
SVOCs	Analytic Method	MCL ² ug/L	ug/L	ug/L	ug/L	ug/L
1,4-Dioxane	non-SIM	6.11E+00	10 U	10 U	10 U	10 U
2-Methylnaphthalene	non-SIM	6.20E+00 (jj)	10 U	10 U	10 U	10 U
2-Methylnaphthalene	SIM	6.20E+00 (jj)				0.20 U
Acenaphthene	non-SIM	3.65E+02	10 U	10 U	10 U	10 UJ
Acenaphthene	SIM	3.65E+02				0.20 U
Acenaphthylene	non-SIM	3.65E+02 (pp)	10 U	10 U	10 U	R
Acenaphthylene	SIM	3.65E+02 (pp)				0.20 U
Anthracene	non-SIM	1.83E+03	10 U	10 U	10 U	10 U
Anthracene	SIM	1.83E+03				0.20 U
Benz(a)anthracene	non-SIM	9.21E-02	10 U	10 U	10 U	10 U
Benz(a)anthracene	SIM	9.21E-02				0.20 U
Benzo(a)pyrene	non-SIM	2.00E-01	10 U	10 U	10 U	10 U
Benzo(a)pyrene	SIM	2.00E-01				0.20 U
Benzo(b)fluoranthene	non-SIM	9.21E-02	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	SIM	9.21E-02				0.20 U
Benzo(g,h,i)perylene	non-SIM	1.83E+02 (w)	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	SIM	1.83E+02 (w)				0.20 U
Benzo(k)fluoranthene	non-SIM	9.21E-01	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	SIM	9.21E-01				0.20 U
bis(2-Ethylhexyl)phthalate	non-SIM	6.00E+00	1.5 J	10 U	10 U	10 U
Butyl benzyl phthalate	non-SIM	7.30E+03	10 U	10 U	10 U	10 U
Chrysene	non-SIM	9.21E+00	10 U	10 U	10 U	10 U
Chrysene	SIM	9.21E+00				0.20 U
Dibenz(a,h)anthracene	non-SIM	9.21E-03	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	SIM	9.21E-03				0.20 U
Diethyl phthalate	non-SIM	2.92E+04	10 U	10 U	10 U	10 U
Dimethyl phthalate	non-SIM	3.65E+05	10 U	10 U	10 U	10 U
Di-N-Butyl phthalate	non-SIM	3.65E+03	10 U	10 U	10 U	10 U
Di-N-Octyl phthalate	non-SIM	1.46E+03	10 U	10 U	10 U	10 U
Fluoranthene	non-SIM	1.46E+03	10 U	10 U	10 U	10 U
Fluoranthene	SIM	1.46E+03				0.23 U
Fluorene	non-SIM	2.43E+02	10 U	10 U	10 U	10 U
Fluorene	SIM	2.43E+02				0.20 U
Hexachlorobenzene	non-SIM	1.00E+00	10 U	10 U	10 U	10 U
Hexachlorobenzene	SIM	1.00E+00				0.20 U
Indeno(1,2,3-cd)pyrene	non-SIM	9.21E-02	10 U	10 UJ	10 UJ	10 UJ
Indeno(1,2,3-cd)pyrene	SIM	9.21E-02				0.20 U
Naphthalene	non-SIM	6.20E+00	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	non-SIM	6.20E+00	10 U	10 UJ	10 UJ	10 UJ
Naphthalene	SIM	6.20E+00				0.20 U
Nitrobenzene	non-SIM	3.40E+00	10 U	10 U	10 U	10 U

**LOUs 34East and 47 to 51 Table 17 (continued)
Groundwater Characterization Data - SVOC**

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach Tanks and
Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program			Ph A ¹	Ph A	Ph A	Ph A
Well No.			SA8	M11	M11D	M31A
Sample ID			M29	M11	M11D	M31A
Sample Date			11/17/2006	12/06/2006	12/06/2006	12/06/2006
SVOCs	Analytic Method	MCL ² ug/L	ug/L	ug/L	ug/L	ug/L
Octachlorostyrene	non-SIM	--	10 U	10 U	10 U	10 U
Phenanthrene	non-SIM	1.80E+03 (n)	10 U	10 U	10 U	10 U
Phenanthrene	SIM	1.80E+03 (n)				0.20 U
Pyrene	non-SIM	1.83E+02	10 U	10 U	10 U	10 U
Pyrene	SIM	1.83E+02				0.20 U
Pyridine	non-SIM	3.65E+01	20 U	20 U	20 U	20 U

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
 - (jj) Value for naphthalene used as surrogate for 2-methylnaphthalene based on structural similarities.
 - (pp) Value for acenaphthene used as surrogate for acenaphthylene based on structural similarities.
 - (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.
 - (n) Value for anthracene used as surrogate for phenanthrene due to structural similarities.

**LOUs 34East and 47 to 51 Table 18
Soil Characteristic Data - TPH and Fuel Alcohols**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

				Fuel Alcohols			Total Petroleum Hydrocarbons			
				Ethanol	Ethylene glycol	Methanol	TPH - ORO	TPH - DRO	TPH - GRO	
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
			MSSL ¹ mg/kg	--	1.00E+05	1.00E+05	1.00E+02 vv	1.00E+02 vv	1.00E+02 vv	
Boring No.	Sample ID	Sample Depth (ft)	Sample Date							Sampling Program
SA7	SA7-0.5	0.5	11/20/2006				26	26 UJ	0.11 UJ	Ph A ²
	SA7-10	10	11/20/2006				26 U	26 U	0.11 UJ	Ph A
	SA7-10D	10	11/20/2006				27 U	27 U	0.11 UJ	Ph A
	SA7-20	20	11/20/2006				27 U	27 U	0.11 UJ	Ph A
	SA7-30	30	11/20/2006				27 U	27 U	0.11 UJ	Ph A
	SA7-34	34	11/20/2006				33 U	33 U	0.13 UJ	Ph A
SA8	SA8-0.5	0.5	11/17/2006				530 U	3600	0.13	Ph A
	SA8-10	10.0	11/17/2006				27 U	27 U	0.11 U	Ph A
	SA8-20	20.0	11/17/2006				26 U	26 U	0.10 U	Ph A
	SA8-30	30.0	11/17/2006				27 U	27 U	0.11 U	Ph A
	SA8-37	37.0	11/17/2006				34 U	34 U	0.14 U	Ph A

Notes:

1. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
 2. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.
- (w) Value for pyrene used as surrogate for benzo(g,h,i)perylene based on structural similarities.

LOUs 34East and 47 to 51 Table 19
Soil Characterization Data - VOCs

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program	Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	
Boring No.	SA7	SA7	SA7	SA7	SA7	SA7	SA8	SA8	SA8	SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13	
Sample ID	SA7-0.5	SA7-10	SA7-10D	SA7-20	SA7-30	SA7-34	SA8-0.5	SA8-10	SA8-20	SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40	
Sample Depth (ft)	0.5	10	10	20	30	34	0.5	10	20	30	37	0.5	0.5	10	20	30	40	
Sample Date	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	
VOCs	MSSL ² ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	
Naphthalene	2.10E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	0.79 J	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,1,1,2-Tetrachloroethane	7.60E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,1,1-Trichloroethane	1.40E+06	5.3 U	0.54 J	5.4 U	5.4 U	0.37 J	6.5 U	0.95 J	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	0.53 J	5.3 U	6.3 U
1,1,2,2-Tetrachloroethane	9.70E+02	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,1,2-Trichloroethane	2.10E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,1-Dichloroethane	2.30E+06	5.3 U	1.9 J	5.4 U	5.4 U	1.4 J	6.5 U	3.0 J	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	1.8 J	5.3 U	6.3 U
1,1-Dichloroethene	4.70E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,1-Dichloropropene	1.75E+03 (gg)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2,3-Trichlorobenzene	2.60E+05 (hh)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2,3-Trichloropropane	1.60E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2,4-Trichlorobenzene	2.60E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2,4-Trimethylbenzene	2.20E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2-Dibromo-3-chloropropane	2.00E+01	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	12 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2-Dichlorobenzene	3.70E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2-Dichloroethane	8.40E+02	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,2-Dichloropropane	8.50E+02	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,3,5-Trimethylbenzene	7.80E+04	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
1,3-Dichlorobenzene	1.40E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,3-Dichloropropane	4.10E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
1,4-Dichlorobenzene	8.10E+03	5.3 U	5.3 U	0.32 J	5.4 U	5.3 U	6.5 U	16 J	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
2,2-Dichloropropane	8.50E+02 (ii)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
2-Butanone	3.40E+07	11 U	11 U	11 U	11 U	11 U	13 U	14 J	11 U	38	14	14 U	12 U	11 UJ	10 UJ	5.2 J	11 U	13 U
2-Chlorotoluene	5.10E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
2-Hexanone	1.72E+07 (nn)	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	13 UJ	11 UJ	11 UJ	3.8 J	11 UJ	14 UJ	12 UJ	11 UJ	10 UJ	11 UJ	11 UJ	13 UJ
2-Methoxy-2-methyl-butane	--	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
4-Chlorotoluene	5.10E+05 (ww)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
4-Isopropyltoluene	--	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
4-Methyl-2-pentanone	1.70E+07	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	13 UJ	11 UJ	11 U	10 U	11 U	14 U	12 U	11 UJ	10 UJ	11 UJ	11 U	13 U
Acetone	6.00E+07	4.5 J	6.1 J	11 U	11 U	21	6.6 J	90 J	24	250	100	45	5.1 J	9.8 J	10 UJ	34 J	11 U	14
Benzene	1.60E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	0.62 J	0.72 J	6.8 U	5.8 U	5.5 UJ	5.2 UJ	0.19 J	5.3 U	6.3 U
Bromobenzene	1.20E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Bromochloromethane	1.75E+03 (qq)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Bromodichloromethane	2.60E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Bromoform	2.40E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Bromomethane	1.50E+04	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	13 UJ	11 UJ	11 UJ	10 UJ	11 UJ	14 UJ	12 UJ	11 UJ	10 UJ	11 UJ	11 U	13 U
Carbon tetrachloride	5.80E+02	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Chlorobenzene	5.00E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Chloroethane	7.20E+03	5.3 UJ	5.3 UJ	5.4 UJ	5.4 UJ	5.3 UJ	6.5 UJ	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
Chloroform	5.80E+02	5.3 U	0.40 J	0.51 J	1.5 J	1.9 J	20	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	0.32 J	4.2 J
Chloromethane	1.70E+05	5.3 UJ	5.3 UJ	5.4 UJ	5.4 UJ	5.3 UJ	6.5 UJ	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
cis-1,2-Dichloroethene	1.60E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
cis-1,3-Dichloropropene	1.75E+03 (gg)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U

LOUs 34East and 47 to 51 Table 19 (continued)
Soil Characterization Data - VOCs

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program	Ph A ¹	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A	Ph A
Boring No.	SA7	SA7	SA7	SA7	SA7	SA7	SA8	SA8	SA8	SA8	SA8	SA8	SA13	SA13	SA13	SA13	SA13	SA13
Sample ID	SA7-0.5	SA7-10	SA7-10D	SA7-20	SA7-30	SA7-34	SA8-0.5	SA8-10	SA8-20	SA8-30	SA8-37	SA13-0.5	SA13-0.5D	SA13-10	SA13-20	SA13-30	SA13-40	
Sample Depth (ft)	0.5	10	10	20	30	34	0.5	10	20	30	37	0.5	0.5	10	20	30	40	
Sample Date	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/20/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006	11/17/2006
VOCs	MSSL ² ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Dibromochloromethane	2.60E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Dibromomethane	5.90E+05 (xx)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Dichlorodifluoromethane	3.40E+05	5.3 UJ	5.3 UJ	5.4 UJ	5.4 UJ	5.3 UJ	6.5 UJ	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	12 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
Ethyl t-butyl ether	7.90E+04 (kk)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Ethylbenzene	2.30E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Ethylene dibromide	7.00E+01	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Hexachlorobutadiene	2.50E+04	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	1.4 J	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
isopropyl ether	--	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Isopropylbenzene	5.80E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Methyl tert butyl ether	7.90E+04	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Methylene chloride	2.20E+04	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
N-Butylbenzene	2.40E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
N-Propylbenzene	2.40E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
sec-Butylbenzene	2.20E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
Styrene	1.70E+06	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
t-Butyl alcohol	--	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ	13 UJ	11 UJ	11 UJ	10 UJ	11 UJ	14 UJ	12 UJ	11 UJ	10 UJ	11 UJ	11 UJ	13 UJ
tert-Butylbenzene	3.90E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Tetrachloroethene	1.70E+03	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	2.1 J	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Toluene	5.20E+05	0.36 J	0.58 J	0.31 J	0.31 J	0.45 J	0.37 J	0.82 J	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	0.28 J	0.28 J	0.67 J	5.3 U	6.3 U
trans-1,2-Dichloroethylene	2.00E+05	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
trans-1,3-Dichloropropene	1.75E+03 (gg)	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Trichloroethene	1.00E+02	5.3 U	5.3 U	5.4 U	5.4 U	5.3 U	6.5 U	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 U	6.3 U
Trichlorofluoromethane	1.40E+06	5.3 UJ	5.3 UJ	5.4 UJ	5.4 UJ	5.3 UJ	6.5 UJ	5.3 UJ	5.3 UJ	5.2 UJ	5.5 UJ	6.8 UJ	5.8 UJ	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 UJ
Vinylchloride	8.60E+02	5.3 UJ	5.3 UJ	5.4 UJ	5.4 UJ	5.3 UJ	6.5 UJ	5.3 UJ	5.3 U	5.2 U	5.5 U	6.8 U	5.8 U	5.5 UJ	5.2 UJ	5.3 UJ	5.3 UJ	6.3 U
Xylene (Total)	2.10E+05	11 U	11 U	11 U	11 U	11 U	13 U	11 UJ	11 U	10 U	11 U	14 U	12 U	11 UJ	10 UJ	11 UJ	11 U	13 U

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility - Henderson, Nevada, September 2007.
 2. U.S. EPA, Region 6, Medium Specific Screening Levels (MSSLs) for Industrial - Outdoor Worker (March, 2008).
- (gg) Value for 1,3-dichloropropene used as surrogate for 1,1-dichloropropene, cis-1,3-dichloropropene and trans-1,3-dichloropropene based on structural similarities.
(hh) Value for 1,2,4-trichlorobenzene used as surrogate for 1,2,3-trichlorobenzene based on structural similarities.
(ii) Value for 1,2-dichloropropane used as surrogate for 2,2-dichloropropane based on structural similarities.
(nn) Value for methyl isobutyl ketone used as surrogate for 2-hexanone based on structural similarities.
(ww) Value for 2-chlorotoluene used as surrogate for 4-chlorotoluene based on structural similarities.
(qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.
(xx) Value for methylene bromide used as surrogate for dibromomethane based on structural similarities.
(kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.

**LOUs 34East and 47 to 51 Table 20
Groundwater Characteristic Data - VOCs**

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach
Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A
Well ID		SA8	SA7	SA7	M31A
Sample ID		M29	M11	M11D	M31A
Sample Date		11/17/2006	12/06/2006	12/06/2006	12/06/2006
VOCs	MCL ² ug/L	ug/L	ug/L	ug/L	ug/L
Naphthalene	6.20E+00	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1,2-Tetrachloroethane	4.32E-01	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	2.00E+02	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2,2-Tetrachloroethane	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	8.11E+02	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	7.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
1,1-Dichloropropene	3.95E-01 gg	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	7.16E+00 hh	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichloropropane	5.60E-03	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	7.00E+01	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trimethylbenzene	1.23E+01	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	2.00E-01	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichlorobenzene	6.00E+02	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
1,3,5-Trimethylbenzene	1.23E+01	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	1.83E+02	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichloropropane	1.22E+02	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	7.50E+01	0.92 J	5.0 U	5.0 U	5.0 U
2,2-Dichloropropane	1.65E-01 ii	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	6.97E+03	10 U	10 U	10 U	10 U
2-Chlorotoluene	1.22E+02	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	2.00E+03 nn	10 UJ	10 UJ	10 UJ	10 UJ
2-Methoxy-2-methyl-butane	--	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ
4-Chlorotoluene	1.22E+02 ww	5.0 U	5.0 U	5.0 U	5.0 U
4-Isopropyltoluene	--	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone	1.99E+03	10 UJ	10 UJ	10 UJ	10 UJ
Acetone	5.48E+03	10 U	10 U	10 U	10 U
Benzene	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
Bromobenzene	2.03E+01	5.0 U	5.0 U	5.0 U	5.0 U
Bromochloromethane	1.81E-01 qq	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	8.00E+01 r	5.0 U	5.0 U	5.0 U	5.0 U
Bromoform	8.00E+01 r	5.0 U	5.0 U	4.8 J	4.8 J
Bromomethane	8.66E+00	10 U	10 U	10 U	10 U
Carbon tetrachloride	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
Chlorobenzene	1.00E+02 o	5.0 U	5.0 U	5.0 U	5.0 U
Chloroethane	4.64E+00	5.0 UJ	5.0 U	5.0 U	5.0 U
Chloroform	8.00E+01 r	4.1 J	130	130	930 J+
Chloromethane	1.58E+02	5.0 UJ	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	7.00E+01	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,3-Dichloropropene	3.95E-01 gg	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	8.00E+01 r	5.0 U	5.0 U	5.0 U	5.0 U
Dibromomethane	6.08E+01 xx	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane	3.95E+02	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Ethyl t-butyl ether	1.10E+01 kk	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ
Ethylbenzene	7.00E+02	5.0 U	5.0 U	5.0 U	5.0 U
Ethylene dibromide	--	5.0 U	5.0 U	5.0 U	5.0 U

**LOUs 34East and 47 to 51 Table 20 (continued)
Groundwater Characteristic Data - VOCs**

Manganese Leach Plant Area Including Mn Ore Piles, Analyte Tanks, Sulfuric Acid Tanks, Leach
Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program		Ph A ¹	Ph A	Ph A	Ph A
Well ID		SA8	SA7	SA7	M31A
Sample ID		M29	M11	M11D	M31A
Sample Date		11/17/2006	12/06/2006	12/06/2006	12/06/2006
VOCs	MCL ² ug/L	ug/L	ug/L	ug/L	ug/L
Hexachlorobutadiene	8.62E-01	5.0 U	5.0 U	5.0 U	5.0 U
isopropyl ether	--	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ
Isopropylbenzene	6.58E+02	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert butyl ether	2.00E+01 a,uu	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	5.00E+00	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ
N-Butylbenzene	2.43E+02	5.0 U	5.0 U	5.0 U	5.0 U
N-Propylbenzene	2.43E+02	5.0 U	5.0 U	5.0 U	5.0 U
sec-Butylbenzene	2.43E+02	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	1.00E+02	5.0 U	5.0 U	5.0 U	5.0 U
t-Butyl alcohol	--	10 UJ	10 UJ	10 UJ	10 UJ
tert-Butylbenzene	2.43E+02	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	1.00E+03	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethylene	1.00E+02	5.0 U	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	--	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	5.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
Trichlorofluoromethane	--	5.0 UJ	5.0 U	5.0 U	5.0 U
Vinylchloride	2.00E+00	5.0 U	5.0 U	5.0 U	5.0 U
Xylene (Total)	1.00E+04	10 U	10 UJ	10 UJ	10 UJ

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility - Henderson, Nevada, September 2007.
2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted
 - (gg) Value for 1,3-dichloropropene used as surrogate for 1,1-dichloropropene, cis-1,3-dichloropropene and trans-1,3-dichloropropene based on structural similarities.
 - (hh) Value for 1,2,4-trichlorobenzene used as surrogate for 1,2,3-trichlorobenzene based on structural similarities.
 - (ii) Value for 1,2-dichloropropane used as surrogate for 2,2-dichloropropane based on structural similarities.
 - (nn) Value for methyl isobutyl ketone used as surrogate for 2-hexanone based on structural similarities.
 - (ww) Value for 2-chlorotoluene used as surrogate for 4-chlorotoluene based on structural similarities.
 - (qq) Value for bromodichloromethane used as surrogate for bromochloromethane due to structural similarities.
 - (o) See footnote (b). Listed under synonym monochlorobenzene.
 - (xx) Value for methylene bromide used as surrogate for dibromomethane based on structural similarities.
 - (kk) Value for methyl tertbutyl ether (MTBE) used as surrogate for ethyl-tert-butyl ether (ETBE) based on structural similarities.
 - (a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.
 - (uu) NDEP, 1998. Oxygenated Fuel Corrective Action Guidance. Draft. October, 12 1998. URL [http://ndep.nv.gov/bca/mtbe_doc.htm].

LOUs 34East and 47 to 51 Table 21
Soil Characterization Data - Long Asbestos Fibers in Respirable Soil Fraction

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

			Long Amphibole Protocol Structures	Long Amphibole Protocol Structures	Long Chrysotile Protocol Structures	Long Chrysotile Protocol Structures	Sampling Program
No.	Sample ID	Sample Date	s/gPM10	(structures/samples)	s/gPM10	(structures/samples)	
SA7	SA7	12/07/2006	2988000 U	0	2990000	2	Ph A ¹
SA8	SA8	12/07/2006	2997000 U	0	5990000	2	Ph A
SA13	SA13	12/08/2006	3000000	1	2996000 U	0	Ph A

Notes:

1. ENSR, 2007, Phase A Source Area Investigation Results, Tronox Facility, Henderson, Nevada, September 2007.

LOUs 34East and 47 to 51 Table 22
Groundwater Characterization Data - Routine Monitoring¹

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Well ID	Date	Depth to water (ft)	Perchlorate mg/L	Qual	MCL ² mg/L	Total Chromium mg/L	Qual	MCL ² mg/L	TDS mg/L	Qual	MCL ² mg/L	Nitrate (as N) mg/L	Qual	MCL ² mg/L	Chlorate mg/L	Qual	MCL ² mg/L
M-11	2/2/2006	42.69	52	d	1.80E-02 a,m	2.8	d	1.00E-01	3660		5.00E+02 j			1.00E+01			--
M-11	5/3/2006	43.29	43	d	1.80E-02 a,m	2.7	d	1.00E-01	2980		5.00E+02 j	<0.1	ud	1.00E+01	460	d	--
M-11	8/2/2006	43.50	31.4	d	1.80E-02 a,m	2.8	d	1.00E-01	2700		5.00E+02 j	1.3	d	1.00E+01	230	d	--
M-11	10/31/2006	43.51	33.4	d	1.80E-02 a,m	2.7	d	1.00E-01	3260		5.00E+02 j	3.86	d	1.00E+01	487	d	--
M-11	1/31/2007	43.50	30.6		1.80E-02 a,m	3		1.00E-01	3380		5.00E+02 j			1.00E+01			--
M-11	5/2/2007	43.51	25.1		1.80E-02 a,m	2.7		1.00E-01	3180		5.00E+02 j	3.01		1.00E+01	434		--
M-11	8/2/2007	43.82	33.9		1.80E-02 a,m	2.6		1.00E-01	3400		5.00E+02 j			1.00E+01			--
M-31A	2/2/2006	46.07	1800	d	1.80E-02 a,m	13	d	1.00E-01			5.00E+02 j			1.00E+01			--
M-31A	5/3/2006	46.41	1700	d	1.80E-02 a,m	13	d	1.00E-01	8030		5.00E+02 j			1.00E+01			--
M-31A	8/2/2006	46.56	1410	d	1.80E-02 a,m	12	d	1.00E-01	6300		5.00E+02 j			1.00E+01			--
M-31A	11/1/2006	47.03	1750	d	1.80E-02 a,m	13	d	1.00E-01	9780		5.00E+02 j			1.00E+01			--
M-31A	1/31/2007	46.43	1490		1.80E-02 a,m	13		1.00E-01	9710		5.00E+02 j			1.00E+01			--
M-31A	5/2/2007	46.05	1400		1.80E-02 a,m	13		1.00E-01	8750		5.00E+02 j			1.00E+01			--
M-31A	8/1/2007	46.84	1710		1.80E-02 a,m	11		1.00E-01	9330		5.00E+02 j			1.00E+01			--
M-52	2/2/2006	---	1200	d	1.80E-02 a,m	10	d	1.00E-01			5.00E+02 j			1.00E+01			--
M-52	5/4/2006	---	1100	d	1.80E-02 a,m	9.6	d	1.00E-01	6760		5.00E+02 j			1.00E+01			--
M-52	11/2/2006	---	1020	d	1.80E-02 a,m	9.1	d	1.00E-01	7190		5.00E+02 j			1.00E+01			--
M-52	1/31/2007	---	946		1.80E-02 a,m	9		1.00E-01	8600		5.00E+02 j			1.00E+01			--
M-52	5/2/2007	---	720		1.80E-02 a,m	7.9		1.00E-01	7450		5.00E+02 j			1.00E+01			--
M-77	5/3/2006	37.64	180	d	1.80E-02 a,m	0.35	d	1.00E-01	2710		5.00E+02 j			1.00E+01			--
M-77	5/2/2007	37.86	168		1.80E-02 a,m	0.4		1.00E-01	2400		5.00E+02 j			1.00E+01			--

Notes:

1. ENSR, 2007, Quarterly Performance Report for Remediation Systems, Tronox LLC, Henderson, Nevada, July-September 2007, November 2007.

2. U.S. EPA Maximum Contaminant Level (MCL) values unless noted

(a) NAC 445A.455 Secondary standards. Certain provisions of the National Primary Drinking Water Regulations are adopted by reference (NAC 445A.4525). These values are listed in the first column of this table and are therefore not listed again here. Only NAC 445A.455 Secondary standards are listed.

(m) Equal to the provisional action level derived by NDEP as referenced in "Defining a Perchlorate Drinking Water Standard". NDEP Bureau of Corrective Action. URL [http://ndep.nv.gov/bca/perchlorate02_05.htm].

(j) Secondary Drinking Water Regulation value.

< = less than the reporting limit

Blank cell or --- = no data and or no qualifier

Qual = data qualifiers applied by laboratory or during data validation

TDS = Total Dissolved Solids

mg/l = milligram per liter

Laboratory Qualifiers:

d = the sample was diluted

**LOUs 34East and 47 to 51 Table 23
Summary of Historical Groundwater Analytical Data**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks,
Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Sampling Program: Routine Monitoring

WELL #	Sample Date	Total Depth (ft bgs)	Depth to Water (ft TOC)	pH (Lab)	EC (Lab, µmho/cm)	Mn (ppm)
M-31	1/196	44.10	37.64	7.11	11700	--
M-31	2/1/96	44.10	37.94	7.04	10490	--
M-31	3/1/96	44.10	37.86	7.09	9280	--
M-31	4/27/98	--	39.10	7.13	11610	--
M-31	10/21/98	--	39.85	--	--	--
M-31	5/6/99	44.10	39.28	7.15	16000	0.82
M-31	5/5/00	44.10	40.00	7.25	14500	1.20
M-31	5/4/01	44.10	--	--	--	--
M-31A	11/4/03	--	--	--	--	--
M-31A	5/7/04	--	--	7.20	12040	--
M-31A	8/4/04	--	--	7.30	11530	--
M-32	1/196	57.34	54.61	7.20	7480	5.60
M-32	2/1/96	57.34	55.21	6.98	8120	6.32
M-32	3/1/96	57.34	55.51	7.03	7630	6.00
M-32	8/24/97	--	--	--	--	--
M-32	9/15/97	57.34	46.85	7.11	6770	--
M-32	4/27/98	--	47.75	7.25	8420	--
M-32	10/21/98	--	48.94	--	--	--
M-32	5/6/99	57.34	47.42	7.16	7660	4.20
M-32	5/5/00	57.34	49.01	7.09	10500	5.00
M-32	5/4/01	57.34	49.00	--	12120	--
M-32	5/2/02	--	47.88	7.2	8420	13
M-32	12/11/02	--	DRY	--	--	--
M-32	4/28/03	--	DRY	--	--	--
M-32	2/4/04	--	DRY	--	--	--
M-33	5/6/99	57.70	46.09	7.53	1730	3.6
M-33	5/6/99	57.70	--	--	--	2.1
M-52	5/6/99	47.07	40.16	7.03	27,700	0.09
M-52	5/5/00	47.07	39.65	7.36	17,200	2.70
M-52	3/11/02	47.07	--	--	--	0.84
M-52	4/30/02	47.07	39.69	7.4	11,600	0.52
M-52	9/9/02	47.07	--	--	--	0.58
M-52	12/9/02	47.07	40.42	7.3	10,400	0.81
M-52	4/28/03	47.07	--	7.6	--	ND<0.15
M-77	5/6/99	48.93	36.43	7.28	6,050	14.00
M-77	5/5/00	48.93	37.14	7.40	5,320	22.00
M-77	5/2/02	--	36.41	7.4	4,780	36
M-77	5/7/03	--	--	--	--	11

Notes:

ft bgs = feet below ground surface
µmho/cm = micromhos per centimeter
ppm = parts per million
ft TOC = feet from Top of Casing
EC = Electrical Conductivity
Mn = Manganese
-- = Either no data was obtained or was not analyzed for the respective constituent.

Labs: KMC Kerr-McGee Corporation
MW Montgomery Watson

Well Data From: Kerr-McGee Chemical LLC Company, Mother-hen Database.

**LOUs 34East and 47 to 51 Table 24
Summary of Historical Groundwater Analytical Data**

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

WELL #	Sample Date	Total Depth (ft bgs)	Depth to Water (ft TOC)	Mn (ppm)	pH (Lab)	EC (Lab, $\mu\text{mho/cm}$)	Cr ₊₆ (ppm)	Cr-total (ppm)	ClO ₄ (ppm)	LAB
M-33	5/6/99	57.70	46.09	3.6	7.53	1,730	--	ND	<10	KMC
M-33	5/6/99	57.70	--	2.1	--	--	--	--	--	--

LOUs 34East and 47 to 51 Table 25
Analytical Composition of Manganese Dioxide Ore¹

Leach Plant Area Historic and Current Manganese Ore Piles
Tronox Facility - Henderson, Nevada

Constituent	Dried at 105°C	Constituent	Dried at 105°C
Manganese Dioxide (MnO ₂)	75.65%	Total Manganese (Mn)	50.73%
Manganese Mono-oxide (Mn)	3.77%		
Ferric Oxide (Fe ₂ O ₃)	4.73%	Iron (Fe)	3.31%
Silica (SiO ₂)	2.63%		
Alumina (Al ₂ O ₃)	6.14%		
Phosphorus Pentoxide (P ₂ O ₅)	0.26%	Phosphorus (P)	0.11%
Lime (Ca)	0.09%		
Magnesia (MgO)	0.07%		
Sodium Oxide (Na ₂ O)	0.03%		
Potassium Oxide (K ₂ O)	0.86%		
Barium Oxide (BaO)	0.24%		
Titania (TiO ₂)	0.24%	Titanium (Ti)	0.14%
Vanadium Pentoxide (V ₂ O ₅)	0.02%	Vanadium (V)	0.01%
Cupric Oxide (CuO)	0.07%	Copper (Cu)	0.05%
Lead Mono-oxide (PbO)	0.004%	Lead (Pb)	0.00%
Zinc Oxide (ZnO)	0.08%	Zinc (Zn)	0.06%
Cobaltic Oxide (Co ₃ O ₄)	0.14%	Cobalt (Co)	0.10%
Nickel Mono-oxide (NiO)	0.07%	Nickel (Ni)	0.05%
Molybdenum Trioxide (MoO ₃)	0.01%	Molybdenum (Mo)	0.00%
Chromium Sesquioxide (Cr ₂ O ₃)	0.01%	Chromium (Cr)	0.01%
Arsenic Trioxide (As ₂ O ₃)	0.01%	Arsenic (As)	0.01%
Tungsten Trioxide (WO ₃)	(trace) 0.002%		
Tin Dioxide (SnO ₂)	(trace) 0.002%		
Combined Water (H ₂ O)	4.98%		
Carbon Dioxide (CO ₂)	0.06%		
Sulphur Trioxide (SO ₃)	0.06%	Sulphur (S)	0.02%

Notes:

1. Kleinfelder, 1993, Environmental Conditions Assessment, Kerr-McGee Chemical Corporation, Henderson, Nevada Facility, April 15, 1993 (Final).
Sample weighted at 105°C moisture content – 8.56% (as calculated from cargo results).
(trace) = Not Detected, less than concentration indicated

LOUs 34East and 47 to 51 Table 26
Notes for Phase A Data Tables

Manganese Leach Plant Area Including Mn Ore Piles, Anolyte Tanks, Sulfuric Acid Tanks, Leach Tanks and Transfer Lines
Tronox Facility - Henderson, Nevada

Blank	Not analyzed.
Bold	Bold values are constituents detected above the laboratory sample quantitation limit.
Gray	Grayed out values are non-detected values with the laboratory sample quantitation limits shown.
B	The result may be a false positive totally attributable to blank contamination.
D	Dissolved Metals.
DO	Dissolved Oxygen.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J-	The result is an estimated quantity and the result may be biased low.
J+	The result is an estimated quantity and the result may be biased high.
JB	The result may be biased high partially attributable to blank contamination.
JK	The result is an estimated maximum possible concentration.
R	The result was rejected and unusable due to serious data deficiencies. The presence or absence of the analyte cannot be verified.
S	Soluble metals
T	Total Metals.
U	The analyte was analyzed for, but was not detected above the laboratory sample quantitation limit.
UJ	The analyte was not detected above the laboratory sample quantitation limit and the limit is approximate.
mg/kg	Milligrams per kilogram.
mg/L	Milligrams per liter.
ml/min	Milliliters per minute.
ng/kg	Nanogram per kilogram.
nm	Not measured.
NTUs	Nephelometric Turbidity Units.
ORP	Oxidation-reduction potential.
pCi/g	PicoCuries per gram.
pCi/L	PicoCuries per liter.
s/gPM10	Revised protocol structures per gram PM10 fraction dust.
TEF	Toxic Equivalency Factor.
TEQ	Toxic Equivalent Concentration
ug/kg	Micrograms per kilogram.
ug/L	Micrograms per liter.
umhos/cm	MicroSiemens per centimeter.
L	Sample ID suffix indicating the sample was collected using low low-flow pumping rates (100-150 ml/min).
F	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min) and field filtered.
Z	Sample ID suffix indicating the sample was collected using low-flow pumping rates (150-480 ml/min)
*	No analytical data is available for this sample due to a laboratory error.
(a)	Calculated assuming 0 for non-detected congeners and 2006 toxic equivalency factors (TEFs).
(b)	Calculated assuming 1/2 detection limit as proxy for non-detected congeners and 2006 TEFs.
--	Not established