

**PHASE B SOURCE AREA INVESTIGATION
REVISIONS TO AREA I THROUGH IV WORK PLANS
DRAFT TEXT/Drawing SUBMITTAL – NOVEMBER 10, 2008**

I. INTRODUCTION

Tronox LLC (Tronox) has submitted four Area Sampling and Analysis Plans (SAPs) to the Nevada Division of Environmental Protection (NDEP) as part of the ongoing Phase B Site Investigation for the Tronox Henderson facility. This Environmental Conditions Assessment (ECA) work is being performed under terms of a 1996 Consent Agreement between NDEP and Tronox (then Kerr-McGee Chemical Corporation, Reference). NDEP has responded with comments on each Area SAP. After receiving conditional approval of the Area I SAP, Tronox initiated sampling in Area I in June 2008, but suspended work in July 2008 due to a combination of financial issues and a desire to ensure that changes being requested by NDEP in all four of the Area SAPs could be incorporated. Several conference calls have subsequently been held between NDEP and Tronox in an effort to identify the most efficient way to proceed with the Phase B work. This revised SAP submission incorporates our understanding of the combined comments and discussions for all four Area SAPs. We hope to receive timely approval of the modified SAPs presented here, to be followed by initiation of the proposed field work.

This response document is organized into five major parts. The first includes a review of the rationale for modifying the Phase B SAPs. A brief summary history of all NDEP correspondence related to the SAPs and copies of all NDEP comment letters and teleconference meeting minutes are attached in Appendix A (the comments are not separated by Areas since many of the teleconference discussions covered multiple Area plans). Parts two through five of this submission are tabbed sections for each Phase B Site Investigation Area, including revised soil and groundwater SAP Tables (Tables 2 and 3 for each Area). Two versions of each Table are included. The first highlights changes being made by showing additions with a green background and deletions with a brown background, similar to a red-line strikeout format. The second version is a clean black and white copy of each Table showing only the proposed work. The sampling locations for the four Site Areas being investigated are all shown on Plate A. As requested, five copies of Plate A have been included in the volume submitted to Shannon Harbour, while all other copies of the document contain only one copy of Plate A. In addition to showing the division of the Site into the four major sampling Areas, Plate A also shows former and revised locations of individual borings and wells which NDEP has requested be moved.

The goal of the overall Phase B Site Investigation is to identify the nature and extent of chemical constituents from 70 potential source areas on the Tronox Site. Results from conducting the four Area SAPs will be combined with data from Site-wide soil-gas

sampling (completed earlier this year), data from the Phase A Site Investigation, and data from a forthcoming work plan for quantifying background concentrations in quaternary alluvium (Qal) groundwater, to form the basis for development of a Site Human Health Risk Assessment (HHRA). The HHRA is expected to be prepared in the latter half of 2009. As Tronox proposes to modify the HHRA SOP generated by BMI to incorporate commercial/industrial land use and a few other changes, NDEP requested that Tronox provide a red-line/strike out version of Tronox' proposed modifications to the BMI SOP. This SOP is attached as Appendix B.

II RATIONALE FOR SAP MODIFICATIONS

Tronox is proposing several adjustments to the previously submitted SAPs. The adjustments involve a combination of the following:

- Incorporating NDEP review comments into the SAPs, as modified by subsequent NDEP teleconference discussions;
- Optimizing sample collection methods and vertical sampling frequency to improve efficiency in the field; and
- Limiting sampling in areas of the Site for which regulatory closure is not currently being requested (e.g. active production areas).

Incorporating NDEP Review Comments

NDEP comments on the initial SAP submissions, as modified by telephone discussions, have been incorporated into the SAPs. As noted in the introduction, where corrections have been made, or wells/borings have been added, the changes are shown on the respective SAP Tables highlighted with a green background. Where deletions have been made from the original Table submissions, those changes are shown with brown backgrounds.

Tronox has taken the NDEP comments for each Area SAP as the starting point for making the proposed revisions and has not gone back to individual LOU packages. In general, the columns titled "Location Description and Characterized Area Rationale for Investigation" or similar titles in the original SAP submissions have not been modified except to add estimated depths to groundwater for each boring/well. Tronox expects that this approach will facilitate the review process deferring extensive discussion of the individual LOUs to the full Phase B Site Investigation report.

Optimization/Efficiency Changes

The full list of Tronox' proposed sampling plan adjustments is as follows:

1. Use a Geoprobe™ to collect proposed soil samples at depths of 0-0.5 and 10 feet below ground surface (bgs).
2. Reduce the number of soil samples collected between 10 feet bgs and the capillary fringe.
3. Limit the number of soil samples to be analyzed for Organochlorine Pesticides (OCPs) by review of the Conceptual Site Model (CSM).
4. Limit the number of soil and groundwater samples to be analyzed for Organophosphorus Pesticides (OPPs) and Organic Acids (OAs) by review of the CSM.
5. Limit the number of congener and Arochlor PCB analyses by review of the CSM.

6. Limit sampling in the active production areas of Area III, where closure is not being requested.
7. Reduce possible confusion and review time by showing individual borings/wells only on the Table for the Area in which they are physically located.
8. Supplement ENSR data validation (DV) efforts with DV services provided by Laboratory Data Corporation (LDC).

The following subsections describe in more detail the proposed SAP modifications related to each of the eight changes above.

1.0 Geoprobe™ Program

Recent Tronox Geoprobe™ experience in soil-gas sampling demonstrated rapid set-up and penetration of alluvial soils. The soil gas investigation demonstrated that this equipment could reach the depth of five feet below ground surface (bgs) with relative ease and likely can reach at least 10 feet. In order to increase the sampling efficiency in the field, Tronox proposes to utilize Geoprobe™ equipment to collect the soil samples from the 0.5 and 10-foot bgs intervals. As in the original work plans, Sonic drill rigs will be utilized to collect deeper soil samples and in any locations where the Geoprobe™ fails to reach the required sampling depth.

Based on ENSR experience, Tronox anticipates significant increases in sample collection rates using the Geoprobe™ equipment.

A draft Standard Operating Procedure (SOP) for Geoprobe™ work is provided in Appendix C. A copy of the draft SOP has been forwarded by Ranajit Sahu of BMI to NDEP for approval and incorporation into their standard set of SOPs to be utilized in environmental evaluations for the BMI Complex.

2.0 Revision of Soil Sample Intervals

Tronox proposes to collect soil samples at the surface (0-0.5 feet) and 10 feet bgs to evaluate the direct contact risk pathway and determine whether site related chemicals are migrating downward toward groundwater. Soil samples will be collected from the capillary fringe (i.e., 2 feet above the water table) to evaluate whether constituents migrating with groundwater are being sorbed onto soils. However, rather than collecting soil samples at 10-foot intervals between 10 feet bgs and the capillary fringe, Tronox proposes to reduce the sampling frequency.

Tronox proposes to collect soil samples at the following depths:

- 0 feet (Asbestos analysis only collected within the top two inches bgs),
- 0.5 feet bgs,
- 10 feet bgs,
- the capillary fringe,
- If the capillary fringe is 20 feet or more below the 10 foot sample an additional sample will be taken near the midpoint (see below). If the capillary fringe depth minus 10 feet exceeds 40 feet two additional samples will be collected making the maximum depth between each vertical sample no more than 20 feet.

The capillary fringe sampling depths shown on the SAP Tables were determined by using Tronox May 2008 groundwater data and surface elevations to develop site-wide groundwater elevations. These groundwater elevations were used to estimate the depth to the groundwater at proposed boring locations. The capillary fringe sample depth shown on the revised SAP Tables is located two feet above the estimated depth to groundwater. The actual depth to groundwater will be confirmed as soil sampling is performed.

For clarity, an example calculation of sample depths between the 10 foot bgs and capillary fringe depth is as follows:

If the elevation difference between the 10 foot bgs sample and the capillary fringe does not exceed 40 feet, take the difference between the 10 foot sample depth and the capillary fringe sample depth, divide it by two, and add this value to the 10 foot sample depth, then round to the nearest 5-foot interval.

- If the original sampling plan called for samples to be collected at 0.5, 10, 20, 30, 40, and 47 feet bgs,
 - The difference between 10 feet and 42 feet = 32 feet.
 - Divide 32 feet by two: $32/2 = 16$ feet
 - Add 16 feet to 10 feet: $16+10 = 26$ feet
 - Round to nearest 5-foot interval: 25 feet bgs is the depth for an additional sample.

- The SAP Table is then revised for this location to indicate that soil samples will be collected at 0.5, 10, 25, and 42 feet. The originally proposed sample depths of 20 and 40 feet are highlighted with a brown background in the color SAP tables to indicate that they have been removed from the SAP. The samples at 25 and 42 feet bgs are shown with a green background indicating that they have been added.

Tronox understands that this approach will reduce the total number of soil samples collected. Data for soils in the 0-10 foot bgs "direct contact" zone of the proposed HHRA will not be impacted by the change. Estimation of potential source quantities for leaching constituents from soils between 10 feet bgs and the capillary fringe will involve fewer samples and will require that Tronox use a "conservative" approach in preparing such estimates.

3.0 Rationale for Organochlorine Pesticide Sampling Program

3.1 Soil Sampling for OCPs

There are a limited number of locations on Tronox property where Organochlorine pesticides (OCPs) or liquid wastes potentially containing OCPs were produced, stored, conveyed, or potentially disposed. It is proposed that judgmental borings (i.e., boring numbers prefaced with "SA . . .") will be drilled at specific locations and analyzed for OCPs in these areas of the Site. In addition, soils at selected locations along the western boundary of the Tronox Site will be analyzed since OCPs are present in off-Site soil to the west of the Site as a result of historic OCP production by other BMI companies. Judgmental boring locations were selected to provide general areal coverage in the western portion of the Site. At those judgmental boring locations where OCPs (and potential related wastes) were not generated, stored, conveyed, or disposed of, OCP sampling is not proposed. All random grid samples will be analyzed for OCPs.

Other than the former Hardesty Chemical site (LOU 4), which may have produced Dichloro-Diphenyl-Trichloroethane (DDT) and its degradation products on the Tronox

Site, Tronox knows of no other on-Site pesticide production area. Locations at the Site where OCPs could have been released to the environment include:

- LOU 4 (former Hardesty Chemical Co.) located north of Unit 2. OCPs may be present at this location, as DDT may have been produced and stored here in the 1940s. Soil from borings in LOU 4 will be analyzed for OCPs.
- LOU 60 (Acid Drain System). Liquid effluent potentially containing DDT from LOU 4 could have been conveyed along LOU 60 pipelines. Soil from borings along specific segments of LOU 60 pipelines that carried effluent from off-site sources to the west will also be analyzed for OCPs. Borings located along the LOU 60 conveyance route, specifically from Unit 2 to LOU 1 (the former Trade Effluent Ponds) where effluent was discharged, will also be analyzed for OCPs.
- LOU 1 (former Trade Effluent Ponds). In the 1940s, effluent from the Acid Drain System was discharged into the Trade Effluent Ponds. Soil from select judgmental borings within LOU 1 will be analyzed for OCPs.
- LOU 59 (Storm Sewer System). Surface water that potentially contained OCPs could have entered LOU 59 through storm-water run-off. Soil from borings along segments of LOU 59 that carried effluent from off-site sources west of the Site will be analyzed for OCPs. Additional borings located along the LOU 59 conveyance route specifically from Unit 2 to LOU 5 (Beta Ditch), which was (and still is) the receptor for discharges from LOU 59 will also be analyzed for OCPs.
- LOU 5 (Beta Ditch). LOU 5 was the receptor for discharges from LOU 59. Moreover, effluent discharged into the segment of Beta Ditch west of the Site would have flowed eastward (via surface flow) along Beta Ditch and onto the Tronox property.

Figure 1 shows the locations and proposed sampling depths for OCPs. In the areas where a hydrostatic head could have provided a potential transport mechanism for OCPs into the underlying soil column (marked by blue dots on Figure 1), samples collected from depths of 0.5-foot, 10 feet and the capillary fringe will be analyzed for OCPs. Where there is not a hydrostatic head driver (see red dots on Figure 1), samples from 0.5 foot and the capillary fringe will be analyzed for OCPs to evaluate whether wind-blown soils or OCPs migrating with groundwater are being sorbed onto soils. Samples will also be collected from the remaining boring depths (shown on the SAP

Tables with the notation "Hold"). These samples will be held for later analysis if OCPs are detected in samples from that same boring which are being analyzed. Tronox understands that the hold time (14 days for extraction) for these "Hold" samples may be exceeded if the samples are subsequently analyzed after results from the first samples are reported; therefore, OCP analyses of the "Hold" samples may be coded (J-flagged) to indicate that values are estimated. Since these analyses will likely be utilized for developing a groundwater source term rather than a direct contact pathway, the J-flagged data should be adequate.

As noted above, soils from all proposed random borings (i.e., boring numbers prefaced with "RSA . . .") will be analyzed for OCPs for general site-wide coverage. For the random borings, soil samples collected from 0.5 foot and the capillary fringe will be analyzed for OCPs. Intermediate samples in these borings will be placed on "hold" pending OCP results from the 0.5-foot and capillary fringe samples for those same borings.

3.2 Groundwater Sampling for OCPs

There are no proposed changes to the groundwater sampling program for OCPs that has been previously proposed in the Area work plans submitted to NDEP. All groundwater well samples in the Phase B Site Investigation will be analyzed for OCPs. Table 3 for each Area and **Figure 3** show the proposed Phase B groundwater well locations to be sampled of OCPs.

4.0 Rationale for Organophosphorus Pesticides and Organic Acids Sampling Program

The Tronox Site is not known to have supported production of organophosphorus pesticides (OPPs) or organic acids (OAs). The only pesticides thought to have been produced on Site are associated with the former Hardesty Chemical site (LOU 4), where OCPs (e.g., DDT) may have been produced (though production records are not available for the operation). Possible migration of OPPs and OAs from sources off-site to the west of the Site prompted NDEP, in its July 21, 2008 letter, to request sampling for

OPPs and OAs in soil borings and groundwater samples throughout the Tronox site. Tronox proposes to demonstrate from the CSM, that a reduced number of samples is adequate to characterize migration of OPPs and OAs onto the Site.

4.1 Soil Sampling for OPPs and OAs

Tronox proposes to collect soil samples for OPP and OA analyses from areas along the western portion of the Site (Area I) and from specific locations in Areas II, III, and VI where LOU 5 (Beta Ditch), and segments of LOU 59 (Storm Sewer System) and LOU 60 (Acid Drain System) may have carried OPP and OA constituents onto Tronox property from offsite sources to the west. Two borings are also proposed in the former Hardesty Chemical LOU to confirm the absence of OPPs and OAs. The proposed boring locations are shown on **Figure 2**.

NDEP requested OPP and OA analyses in soil borings and groundwater samples in and downstream of LOU 5 (Beta Ditch), LOU 59 (Storm Drain System), and LOU 60 (Acid Drain System). These LOUs are discussed below:

- LOU 5 (Beta Ditch) – Waste discharges being conveyed to the upper BMI ponds from the various BMI complex companies operating to the west of the Tronox Site flowed across the Site in the Beta Ditch. Some of these flows may have contained OPPs and OAs and therefore some infiltration of these contaminants into soils below the unlined Beta Ditch is possible. Tronox proposes to sample soils along the path of the Beta Ditch for OPPs and OAs.
- LOU 59 (Storm Sewer System) – As shown on **Figure 2**, the gravity flow Storm Drain System picked up water from the area west of the Site and carried it north, then moved east to 6th Street and finally north to the Beta Ditch. Since the drain lines slope to the north, it is highly unlikely that effluent would flow in directions opposite the flow arrows shown on the Figure. Accordingly, Storm Drain locations east of 6th Street (between Units 1 and 2) are not likely to carry constituents from the west. Tronox proposes to sample soils below the LOU 59 pipeline segments that carried off-site process waste from the west.
- LOU 60 (Acid Drain System) – The same argument presented above for LOU 59 applies to LOU 60 and similar sampling for OPPs and OAs is proposed. Entry of OPPs and OAs from west of the Site into the Acid Drain System would be limited to the line running from the southern end of the Site (Grid T-3) northward along 5th Street. That line then joins the other acid drain piping at Unit 1, running

eastward along Avenue G towards 9th Street, then north to the conveyance leading to the former Trade Effluent Ponds.

Based on information provided to Tronox by NDEP (Figure 2-2 of Revision 1.0 Conceptual Site Model, Former Montrose and Stauffer Facilities and Downgradient Areas to Las Vegas Wash, Henderson, Clark County, Nevada, Replacement Pages dated July 25, 2008), the only direct connections for the transfer of liquids potentially containing OPPs and OAs from the west are through the segment of LOU 60 that enters the Tronox Site at Grid O-2 and through off-site flow from the west onto the Tronox portion of the Beta Ditch. Accordingly, Tronox proposes to sample for OPPs and OAs in the specified segment of LOU 60.

- LOU 1 (Former Trade Effluent Ponds) – In the 1940s, effluent from the Acid Drain System was discharged into the Trade Effluent Ponds. If OPPs and OAs from sources to the west used the Acid Drain System to dispose of process waste then the possibility exists that LOU 1 may have been impacted. Tronox proposes to sample for OPPs and OAs at select borings within LOU 1.
- Along Western Property Line - Surface and capillary fringe sampling along the western edge of the Site in Areas I and IV will be conducted to assess migration of OPPs and OAs from the west.
- While the Hardesty Chemical operation (LOU 4) is not known to have produced OPPs or OAs, two borings in LOU 4 will be sampled for OPPs and OAs to confirm the CSM information.
- Additional locations outside of the areas discussed above will be analyzed for OPPs and OAs. These locations, shown on **Figure 2**, were selected based on wind rose patterns for the area and will provide general coverage across the Site to evaluate the potential transport of these constituents by wind and groundwater.

At locations marked with red dots on Figure 2, soil samples will be collected from depths of 0.5-foot bgs and the capillary fringe. These samples will be analyzed for OPPs and OAs to assess potential impacts related to wind-blown dust and to evaluate whether constituents migrating with groundwater are being sorbed onto soils. At locations marked with blue dots, soil samples from a depth of 10 feet bgs will also be analyzed for OPPs and OAs because at these locations, a hydrostatic head could have existed that provided a potential transport mechanism for OCPs into the underlying soil column.

4.2 Groundwater Sampling for OPPs and OAs

OPPs and OAs produced from the various BMI complex companies operating west of the Tronox Site could potentially be carried beneath the Tronox site via groundwater migration from the west to the north-northeast. Tronox proposes to sample groundwater for OPPs and OAs along the path of groundwater migration from the west and downgradient of the Beta Ditch. Groundwater in the alluvium along the west side of the Site is effectively separated from groundwater on the eastern portion of the Site, by a Muddy Creek "high". Where alluvial wells are not dry, Tronox proposes to sample groundwater in the alluvium along the western edge of the site. Groundwater in the upper portion of the Muddy Creek formation will also be sampled.

Groundwater samples for OPPs and OAs will be collected from monitoring well locations shown on **Figure 3**. The wells were selected to provide general coverage to evaluate potential migration of OPPs and OAs onto Tronox from offsite sources to the west.

5.0 Rationale for Polychlorinated Biphenyl Sampling Program

Tronox has and continues to operate electrolytic cells on the Henderson Site. NDEP has questioned whether the Tronox electrolytic cells could generate poly-chlorinated biphenyl (PCB) compounds and has requested that Tronox analyze soil samples for both Aroclor PCBs and congener PCBs using EPA analytical methods 8082 and 1668A, respectively.

Aroclor PCBs are typically associated with electric transformers; these types of transformers have been used at the Site and a spill of PCB-containing transformer oil has been reported. Tronox proposes to utilize EPA method 8082 for analyzing Aroclor PCBs in such areas.

Tronox maintains that the electrolytic cells utilized at the Site do not generate PCB congeners. Tronox proposes that the use of EPA analytical method 1668A be limited to samples from the west side of the Site, where NDEP indicates that PCB congeners generated off-site may be entering Tronox property.

Tronox and its predecessors have operated several types of electrolytic cells on the Site since the 1940's. These include:

- Sodium chlorate cells converting NaCl to NaClO_3
- Sodium perchlorate cells converting NaClO_3 to NaClO_4 , and
- Manganese cells plating MnO_2 from manganese sulfate solutions.

Currently, the manganese dioxide cells in Units 5 and 6 (LOU 44) are the only electrolytic cells in operation at the Site. They operate using a sulfate based anolyte and thus do not generate chlorine needed to form PCBs.

While both the historic sodium chlorate and sodium perchlorate cells generated free chlorine (a degradation product of sodium hypochlorite, an intermediate compound in the electrolytic operation), neither process utilized organic compounds that could produce benzene ring structures which could then be chlorinated to PCBs. Moreover, PCB congeners typically form at temperatures ranging from 400 to 700 degrees Celsius. Tronox electrolytic production processes (both historic and current) operate at temperatures well below the boiling point of water. Thus, it is highly unlikely that Tronox's manufacturing processes would have yielded PCB congeners as byproducts.

Geosyntec Consultants's conceptual site model (CSM) indicates that the Montrose Chemical Company's closed pond areas (CPAs) have site-related chemicals (SRCs) such as chloroform, chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene and benzene that have affected both the soil and groundwater beneath and around the CPAs (Geosyntec, Sec 4.2.3). Montrose's SRCs are either organic hydrocarbons or chlorinated hydrocarbons, all of which are possible precursors to PCB byproduct synthesis. In the event that PCBs have been generated off-site through byproduct synthesis and not direct synthesis, EPA method 8082 for commercial mixtures of Aroclor PCBs is unlikely to be effective. EPA method 1668A for PCB congeners will be therefore be utilized at locations along the Tronox western boundary.

5.1 Soil Sampling for PCBs

Based on the discussion above, the following areas will be sampled for PCBs:

- Soil borings along the western property boundary where possible PCB congeners generated off-site may enter Tronox property.
- LOU 5 – Beta Ditch will be tested since off-site wastes flowed across the Tronox Site in the unlined ditch.
- LOU 27 – PCB Storage Area,
- LOU 35 – former Truck Emptying/Dumping Area (PCBs were detected in Phase A samples),
- LOU 40 – PCB Transformer Spill will be sampled for PCBs, and
- Per NDEP's request, soil borings located near the WAPA site.

Figure 4 shows the PCB soil sampling locations. Borings identified with a red dot on Figure 4 will be analyzed by EPA method 8082 for Arochlors. Borings identified with a blue dot will be analyzed using both EPA method 8082 and EPA method 1668A for PCB congeners.

NDEP previously requested specific borings be sampled for PCBs. Some of these borings, however, have already been drilled as part of the Area I Phase B source area investigation and were found to contain negligible PCB concentrations (see Table 1). Other NDEP proposed borings were found to be in areas associated with Tronox electrolytic cells not associated with PCBs (as discussed above). Since no significant concentrations of PCB congeners have been identified over a large area of the Site, Tronox proposes that the following borings requested by NDEP not be sampled for PCB Arochlors or congeners: SA35, SA70, SA175, SA155, SA107, SA158, SA62, SA145, SA61, SA144, SA71, RSAM8, RSAN7, SA151, SA208, SA31, SA122, SA34, SA177, SA68, SA59, and RSAT6.

As with OCP, OPP and OA sampling, Tronox proposes to sample at depths of 0.5 feet bgs and the capillary fringe at locations where a hydrostatic head is not likely to have facilitated downward migration of constituents through the soil column. At locations with a potential for hydraulic head such as the Beta Ditch, an additional sample at 10 feet bgs will be collected.

Soil samples in LOU 64 (former Koch Materials Company Area) and other locations marked with blue diamonds on **Figure 4** were collected as part of the Area I Phase B investigation (June-July 2008). Those samples were analyzed for both Arochlors and PCB congeners (see Table 1).

5.2 Groundwater Sampling for PCBs

Groundwater samples will be analyzed for both Arochlor and congener PCBs at two locations (M-123 and M-125) associated with LOU 35 (former Truck Emptying/Dumping Area). (Arochlor PCBs were detected in soil and groundwater from LOU 35 during Phase A investigation). One location (M-123) has already been sampled as part of the Area I Phase B investigation.

To determine whether PCBs are moving onto the Tronox Site in groundwater from the west, samples from the following wells will be tested using both EPA methods 8082 and 1668A: M-7B, M-5A, M-127, M-125, and M-123.

6.0 Modification to Area III Soil Boring Program Where Closure is Not Being Sought (Removal of Justified Boring Locations)

In the original Phase B Area III SAP submission, Tronox proposed both random (4-acre grid) and judgmental sampling of several LOUs not being proposed for closure due to ongoing plant operations. Tronox now proposes to simplify the Phase B sampling by limiting sampling in areas not proposed for closure to random samples only. In areas of the Site that will remain as active production areas for the foreseeable future (i.e., the Manganese Leach Plant Area, and Units 5 and 6), judgmental boring locations have been removed from the Area III Soil SAP. The randomly-located borings in these areas will be drilled and these borings remain on Table 2 (Soil Sampling and Analytical Plan) for Area III as discussed with NDEP (October 1, 2008).

The borings initially proposed in the Area III Work Plan that will not be drilled include the following: SA140, SA159, SA78, SA38, SA37, SA174, SA36, SA177, SA34, and SA132.

7.0 Removal of Duplicate Entries on Area Sampling Tables

In the original Area SAPs submitted to NDEP, several borings and wells were listed in sampling Tables for more than one Area. This was done because the wells/borings were organized according to their listings in the individual LOU Data Packages. For example, in some cases, a well may be downgradient of an LOU in Area II and the same

well may be upgradient of an LOU in Area I. To simplify review of this submission, Tronox has removed the duplicate entries and shows the borings and groundwater wells only in the Area in which they are physically located. The color coded **Table 2** and **Table 3** for each Area identifies duplicate listings for borings/wells that have been removed by a brown background and an explanation in the Rationale column.

For Phase B investigation wells located outside of Area boundaries or off-site, the wells are shown on Table 3 for the Area work plans indicated below:

- Wells located in the north, west, and east of Area I are listed in Table 3 of Area I.
- Wells located off-site and east of Area III are listed in Table 3 of Area III.
- Wells locate on Tronox Parcels F, G, and H area listed in Table 3 of Area IV.

To assist reviewers, should a question arise on which Area includes a specific well or boring, two tables have been provided. **Table X** and **Table Y** show alphabetical lists of groundwater wells and borings, respectively, along with corresponding Site grid coordinates and the Area SAP in which the well/boring is located.

8.0 Data Validation

To increase efficiencies in the data validation process, Tronox proposes to use Laboratory Data Corporation (LDC) to validate laboratory sample results. ENSR will coordinate the flow of data from the laboratories to LDC and will work with LDC to streamline the Tronox validation process.

Appendix A Phase B Source Area Investigation Work Plans – Submittal History and NDEP Response Chronology

This Appendix provides a short summary of the four Phase B Site Investigation Area Work Plan submittals to NDEP, NDEP comments to those submittals and subsequent teleconferences between NDEP and Tronox. Following the summary, copies of full NDEP comment letters and teleconference minutes are attached.

To investigate the approximately 70 source areas and their potential affect on soil and groundwater conditions, the Tronox facility (Site) has been subdivided into four "Areas" (Area I, II, III, and IV; see Plate A of attached report). Work plans for each of the four Areas were submitted to NDEP between April and June 2008. NDEP reviewed and issued comments for each of the Work Plans, and a series of conference calls were held

between NDEP and Tronox to discuss Tronox responses to the comments. For each of the Area work plans, NDEP provided conditional approval provided that NDEP's concerns were addressed prior to commencement of field activities.

Date	Event	Document	Author
April 3, 2008	Tronox submits Phase B Area I Work Plan to NDEP	Phase B Source Area Investigation Work Plan, Area I (Northern LOUs), Tronox LLC Facility, Henderson, Nevada	Tronox
May 6, 2008	NDEP issues comments on Area I Work Plan to Tronox	Nevada Division of Environmental Protection (NDEP) Response to: <i>Phase B Source Area Investigation Work Plan, Area I (Northern LOUs), Tronox LLC Facility, Henderson, Nevada</i>	NDEP
May 8, 2008	NDEP and Tronox meet via conference call to discuss Tronox responses to NDEP comments on Area I Work Plan.	Meeting Minutes Regarding Future Phase B submittals and NDEP's comments to the <i>Phase B Source Area Investigation Work Plan, Area I (Northern LOUs), Tronox LLC Facility, Henderson, Nevada</i>	NDEP (Meeting minutes are in-lieu of Tronox RTCs.)
May 16, 2008	Tronox submits Phase B Area IV Work Plan to NDEP	Phase B Source Area Investigation Work Plan, Area IV (Western and Southern LOUs), Tronox LLC Facility, Henderson, Nevada	Tronox
May 30, 2008	Tronox submits to NDEP the following components of the Area I Work Plan that have been revised per requests from NDEP (May 8, 2008): Plate A Table 2 (Soil SAP) Table 3 (GW SAP)	Additional Documents for Phase B Area I Work Plan, Tronox LLC, Henderson, Nevada	Tronox.

Date	Event	Document	Author
June 18, 2008	NDEP issues comments on Area IV Work Plan to Tronox.	Nevada Division of Environmental Protection (NDEP) Response to: <i>Phase B Source Area Investigation Work Plan, Area IV (Western and Southern LOUs), Tronox LLC Facility, Henderson, Nevada</i>	NDEP
June 23, 2008	NDEP and Tronox meet via conference call to discuss future Phase B submittals and Tronox responses to NDEP comments on Area IV Work Plan.	Meeting Minutes Regarding Future Phase B submittals and NDEP's comments to the <i>Phase B Source Area Investigation Work Plan, Area IV (Western and Southern LOUs), Tronox LLC Facility, Henderson, Nevada</i>	NDEP (Meeting minutes are in-lieu of Tronox RTCs.)
July 11, 2008	Tronox submits to NDEP the following components of the Area IV Work Plan that have been revised per requests from NDEP (June 23, 2008): Plate A Table 2 (Soil SAP) Table 3 (GW SAP)	Revised Documents for Phase B Area IV Work Plan, Tronox LLC, Henderson, Nevada	Tronox
June 27, 2008	Tronox submits Phase B Area II Work Plan to NDEP	Phase B Source Area Investigation Work Plan, Area II (Central LOUs), Tronox LLC Facility, Henderson, Nevada	Tronox
June 27, 2008	Tronox submits Phase B Area III Work Plan to NDEP	Phase B Source Area Investigation Work Plan, Area III (Eastern LOUs), Tronox LLC Facility, Henderson, Nevada	Tronox

Date	Event	Document	Author
July 21, 2008	<p>NDEP issues comments on Area II Work Plan to Tronox.</p> <p>NDEP requests the following:</p> <ul style="list-style-type: none"> • SVOCs, PCBs, TPH-ORO/DRO/GRO, OPPs, and cyanide be added to the sampling plan for select borings, • select boring locations be moved, • select boreholes should be converted to groundwater wells, • new soil borings should be added to select locations. 	<p>Nevada Division of Environmental Protection (NDEP) Response to: <i>Phase B Source Area Investigation Work Plan Area II (Central LOUs). Tronox LLC Facility, Henderson, Nevada, Dated June 27, 2008</i></p>	NDEP
July 21, 2008	<p>NDEP issues comments on Area III Work Plan to Tronox.</p> <p>NDEP requests the following:</p> <ul style="list-style-type: none"> • SVOCs, PCBs, TPH-ORO/DRO/GRO, OPPs, and cyanide be added to the sampling plan for select borings, • select boring locations be moved, • select boreholes should be converted to groundwater wells, • new soil borings should be added to select locations 	<p>Nevada Division of Environmental Protection (NDEP) Response to: <i>Phase B Source Area Investigation Work Plan Area III (Eastern LOUs). Tronox LLC Facility, Henderson, Nevada, Dated June 27, 2008</i></p>	NDEP

Date	Event	Document	Author
July 21, 2008	<p>NDEP issues general comments that apply to the Work Plans for Areas I, II, III, and IV to Tronox.</p> <p>NDEP requests that PCBs, TPH-ORO/DRO, OPPs, and cyanide be added to the sampling plan for select borings.</p>	<p>Nevada Division of Environmental Protection (NDEP) Response to:</p> <ul style="list-style-type: none"> - <i>Phase B Source Area Investigation Work Plan, Area I (Northern LOUs), Tronox LLC Facility, Henderson, Nevada, Dated April 3, 2008</i> - <i>Phase B Source Area Investigation Work Plan Area IV (Western and Southern LOUs). Tronox LLC Facility, Henderson, Nevada, Dated May 16, 2008</i> - <i>Phase B Source Area Investigation Work Plan Area II (Central LOUs). Tronox LLC Facility, Henderson, Nevada, Dated June 27, 2008</i> - <i>Phase B Source Area Investigation Work Plan Area III (Eastern LOUs). Tronox LLC Facility, Henderson, Nevada, Dated June 27, 2008</i> 	NDEP
August 11, 2008	NDEP and Tronox meet via conference call to discuss Tronox responses to NDEP comments issued on July 21, 2008.	Meeting Minutes of TRX's response to comments to three NDEP letters dated July 21, 2008: 1) Re: Phase B SAPs Areas I through IV general soil sampling comments; 2) Re: Phase B Source Area Investigation Work Plan (SAP) Area II, and 3) Re: Phase B SAP Area III.	NDEP (Meeting minutes are in-lieu of Tronox RTCs.)

Date	Event	Document	Author
September 8, 2008	<p>NDEP and Tronox meet via conference call to discuss changes to Tronox responses to NDEP comments.</p> <p>Topics discussed:</p> <ul style="list-style-type: none"> • reducing the number of PCB congener analysis and organic acid analysis, • use of Geoprobe™ for drilling, • increasing the interval between sample depths within each soil boring, • reducing the number of proposed borings in the active production areas in Area III, and • data validation. 	Meeting Minutes on discussion of changes to Tronox's Response to Comments for the Phase B sampling.	NDEP
October 1, 2008	NDEP and Tronox meet via conference call to discuss Tronox's proposed justification for sampling design optimization	Meeting Minutes on discussion of Tronox's proposed justification for sampling design optimization for the Phase B Site Investigation for Areas I, II, III, and IV.	NDEP

Copies of NDEP Area Work Plan Comments and Teleconference Minutes

APPENDIX B

Red-line Revision of BMI SOP for Human Health Risk Assessment

(To be submitted on or before December 19, 2008)

APPENDIX C
DRAFT Geoprobe™ SOP
(Submitted by BMI to NDEP for inclusion in their SOP package.)