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TECHNICAL MEMORANDUM SOLID WASTE MANAGEMENT UNIT 3 (SWMU 3) SOIL  
DELINEATION SAMPLING SATA SUMMARY NSA CRANE IN  
5/1/2013  
TETRA TECH

**Technical Memorandum**

**SWMU 3 Soil Delineation Sampling  
Data Summary**

**Naval Support Activity  
Crane, Indiana**

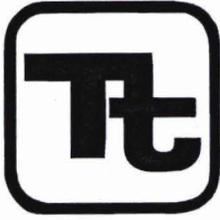


**Naval Facilities Engineering Command  
Midwest**

**Contract Number N62472-03-D-0057**

**Contract Task Order C065**

**May 2013**



## TECHNICAL MEMORANDUM

PITT-05-13-045

**DATE:** May 23, 2013

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**FROM:** Ms. Karen Lyons, Tetra Tech

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Project File – CTO C065

**SUBJECT:** NSA Crane – SWMU 3 Soil Delineation Sampling Data Summary

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### 1.0 BACKGROUND

A Resource Conservation and Recovery Act (RCRA) Facilities Investigation (RFI) was conducted for Solid Waste Management Unit (SWMU) 3 – Ammunition Burning Grounds (ABG)/Old Jeep Trail (OJT) at Naval Support Activity (NSA) Crane, located in Crane, Indiana under Contract Task Order (CTO) 159, Contract N62467-94-D-0008, Comprehensive Long-Term Environmental Action Navy (CLEAN) by Tetra Tech, Inc. (Tetra Tech) in 2001. An RFI Report was subsequently prepared and submitted to the Navy (Tetra Tech, 2005). The RFI Report identified the need for corrective measures at the OJT Treatment Area. The development of an Interim Measures Work Plan (IMWP) required additional soil delineation sampling to support a prescriptive soil removal action. The proposed additional delineation sampling was conducted in 2011 under CTO F274, Contract N62470-08-D-1001. This Technical Memorandum presents the results of the initial delineation sampling event, and includes recommendations for further action. The additional sampling proposed in this Technical Memorandum will be conducted under CTO 065, Contract N62472-03-D-0057.

The OJT is a closed munitions demilitarization area located south-southeast of the SWMU 3 Main Treatment Area (MTA) adjacent to Little Sulphur Creek (Figure 1-1). The OJT Treatment Area was used from the mid-1970s through 1983. Materials to be demilitarized were treated at two separate locations of

the OJT Treatment Area where the Burn Area and the Burn Pit were located. The approximate locations of these areas are shown on Figure 1-1. The term "pit" may be a misnomer because the area is believed to be a natural topographic depression rather than an excavated pit. At the burn area, bomb casings from which the bulk explosives had been removed were filled with initiating powder, tilted on-end toward a hillside east of the OJT Treatment Area, and flashed to complete the demilitarization process. Some munitions are thought to have been lashed to a horizontally positioned utility pole prior to flashing.

The burn pit was approximately 100 feet long, 30 feet wide, and 10 to 12 feet deep, located just south-southeast of the burn area. Powder was flashed and explosives-contaminated materials were burned in this pit. The contaminated material may have included cardboard, paper, wood, and metal packaging that may have come into contact with explosives, solvent-contaminated rags, and/or any other material that may have been contaminated with explosives. Small munitions items and components were also reportedly treated in the burn pits. The area has not been used for any operations since 1983 when it was filled with clean fill material and revegetated. The area is now overgrown with brush, trees, and grasses (Tetra Tech, 2005).

The OJT portion of SWMU 3 is located in the eastern portion of NSA Crane along Little Sulphur Creek (Figure 1-1). Within the OJT is the OJT Treatment Area where five "hot spots" of contamination were identified in the RFI Report (Tetra Tech, 2005). These "hot spots" are the focus of the soil delineation sampling. Four of the "hot spots" (03SB018, 03SB019, 03SB022, and 03SB024) are located in the Northern Study Area and one "hot spot" (03SB048) is located in the Southern Study Area. The "hot spots" are contaminated with one or more constituents, consisting of lead, 2,4,6-trinitrotoluene (TNT) and hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX).

Based on the findings in the RFI, the Navy determined that an interim measures action would be conducted to reduce the human health and ecological risks associated with lead and explosives. Efficient implementation of the interim measure required a more precise delineation of the extent of soil contamination in each area.

The investigation strategy for SWMU 3 is to implement soil contamination delineation sampling (lead, RDX, and TNT) for an IMWP phase of the project at the five discrete "hot spot" areas in order to provide soil excavation design data. The IMWP will include the volume of soil required for excavation in order to achieve the Media Cleanup Standard (MCS), which is based on the horizontal and vertical extent of soil contamination. Based on this approach, no confirmation sampling would be required during or after excavation activities.

## 1.1 Hot Spot Contamination Areas

Based on historical data, two soil populations were identified as areas of interest around five “hot spots” having contaminant concentrations greater than their respective MCSs. One population includes contaminated soil as a result of past site operations. The second population is uncontaminated soil which will help delineate the extent of site-related contamination. The red and green dots on Figure 1-2 depict the known locations of contaminated (red dots) and uncontaminated (green dots) soil locations prior to the December 2011 sampling event.

Contamination identified at each of the five historic sample location is as follows:

### **Northern Study Area**

**Boring 03SB018:** Lead only to a depth of 4 feet below ground surface (bgs). Contamination in excess of the lead MCS at this location could be deeper than 4 feet bgs, and the lateral extent of lead contamination is unknown.

**Boring 03SB019:** Lead only at a depth of 4 feet bgs. A sample from 12 to 15 feet bgs did not exceed MCS. Contamination at this location deeper than 4 feet and less than 12 feet bgs could exceed the MCS; however, the Project Team has determined that the maximum depth for the excavation is 10 feet bgs. Therefore, the contamination at this location between 4 to 10 feet bgs could exceed the MCS. The lateral extent of contamination is unknown.

**Boring 03SB022:** TNT and RDX to a depth of 2 feet bgs. Samples from 2 to 4 and 12 to 15 feet bgs did not exceed the MCS. Contamination in excess of MCSs at this location could be deeper than 4 feet bgs and less than 12 feet bgs; however, the Project Team has determined that the maximum depth for the excavation is 10 feet bgs. Therefore, the contamination at this location between 4 to 10 feet bgs could exceed the MCS. The lateral extent of contamination is unknown.

**Boring 03SB024:** Lead, TNT, and RDX to a maximum depth of 2 feet bgs. Samples from 4 to 6 and 12 to 15 feet bgs did not exceed the MCS. Contamination in excess of MCSs at this location could be between 2 to 4 and 6 to 12 feet bgs; however, the Project Team has determined that the maximum depth for the excavation is 10 feet bgs. Therefore, the contamination at this location from 2 to 4 feet bgs and 6 to 10 feet bgs could exceed the MCS. The lateral extent of contamination is unknown.

### Southern Study Area

**Boring 03SB048:** Lead only to a depth of 10 feet bgs because the Project Team has determined that the maximum depth for the excavation is 10 feet bgs, the vertical extent of contamination is defined. The lateral extent of contamination is unknown.

## 2.0 FIELD ACTIVITIES

The SWMU 3 soil delineation sampling field activities conducted in December 2011 were implemented in accordance with the EPA-approved Sampling and Analyses Plan (SAP) (Tetra Tech, 2011). Table 2-1 lists the samples that were collected and the analyses for each. Figures 3-1 through 3-3 present the December 2011 sample locations. Appendix A.1 presents the field notes, sample logs, and XRF information for the December 2011 sampling event. The field documentation for the prior sampling events is presented in the SWMU 3 RFI Report (Tetra Tech, 2005). Appendix A.2 presents the sample chain-of-custody forms for the December 2011 event, and Appendix A.3 presents site photographs.

### 2.1 Media Cleanup Standards

The MCSs are based on 10 times the United States Environmental Protection Agency (USEPA) Soil Screening Value for the protection of the human health residential receptor. The 10 times MCS value equates to a  $1 \times 10^{-5}$  carcinogenic risk criteria. The MCSs for RDX and TNT are 55 milligrams per kilogram (mg/kg) and 190 mg/kg, respectively. Explosives were not determined to be a risk concern for groundwater exposure in the RFI Report (Tetra Tech, 2005). In addition, historical data shows a declining trend for explosive concentrations in groundwater; therefore, the removal of explosive contaminated soil, as planned in the remedy, will only further decrease the concentrations of explosives in groundwater.

The MCS for lead was established at 400 mg/kg, which is the same as the human health screening criteria used in the risk assessment.

The data collected in December 2011 was used in conjunction with the historical data to determine the extent of remediation, which will be addressed in an IMWP.

### 2.2 XRF Field Screening Methodology

Field x-ray fluorescence (XRF) measurements were used to guide lead contamination soil sampling. These field measurements were supported with laboratory confirmation that lead concentrations are less than 400 mg/kg in samples considered to be uncontaminated based on field analysis. Table 2-2 presents the XRF analyses for each sample. The 400 mg/kg limit is the MCS for lead. For field screening of lead contamination, a lead XRF limit of 200 parts per million (ppm) in soil was selected as the field screening criteria. This 200 ppm limit for field XRF is based on Tetra Tech's experience with similar projects that have shown when field XRF measurements are less than 200 ppm the corresponding fixed-base laboratory (FBL) analytical lead concentration is less than 400 mg/kg.

Only FBL analyses were used to establish the extent of TNT and RDX contamination because laboratory analysis was less expensive for these organic contaminants than field analysis, and a reliable correlation between field analytical data and FBL data for these analytes has not been demonstrated.

### 3.0 DATA RESULTS

Soil delineation samples were collected in December 2011. Empirical Laboratories, LLC (Empirical) was the FBL which conducted the analyses. Table 3-1 presents the surface and subsurface soil sample data screened against the applicable MCSs. Figures 3-1 through 3-3 present the concentrations for the surface and subsurface soil data which exceed the MCSs. The figures depict the known locations of contaminated (red dots for concentrations greater than MSCs) and uncontaminated locations (green dots for concentrations less than MSCs). Both the tables and figures contain the entire dataset for all samples collected at the OJT Treatment Area in the areas of interest as part of the RFI, as well as the most recent delineation sampling event.

#### 3.1 Boring 03SB018 Area Soil Delineation Data

Fifteen (15) soil borings were advanced with the use of a direct-push technology (DPT) drill rig within the area of location 03SB018 (Table 2-1). Up to three subsurface soil samples were collected from each soil boring location, depending on field XRF readings. The subsurface soil samples were collected from 2 to 8 feet bgs. Select delineation soil samples, based on XRF readings (<200 ppm), were submitted to the FBL for lead analysis.

Figure 3-1 presents the sample locations with lead concentrations greater than (red dots) and less than (green dots) MCSs for the subsurface soil data in the area of location 03SB018. The data results show that the lead contamination present at "hot spot" location 03SB18 has been fully horizontally delineated with the use of FBL and/or XRF data to the north by 03SB018N2 (15 feet away), to the south by 03SB018S2 (6 feet away), to the east by 03SB018E3 (15 feet away), and to the west by 03SB018S1 (6 feet away). In addition, the lead contamination has been delineated vertically to a depth of 4 feet bgs as determined by the clean samples collected from the 4 to 6 foot bgs interval in the area.

Delineation sample 03SB018E2-0204 exhibited an FBL lead concentration of 547 mg/kg; which is greater than the MCS of 400 mg/kg. This new "hot spot" is bounded to the east by 03SB129 (20 feet), to the south by 03SB19N1 (14 feet), and to the west by 03SB018N2 (15 feet). The closest clean sample to the north is historic sample 03SB015, located approximately 30 feet away. The deeper sample at this location (03SB018E2-0406) exhibited a lead concentration of 24.5 mg/kg, which is well below the MCS.

#### 3.2 Boring 03SB019 Area Soil Delineation Data

Twelve (12) soil borings were advanced with the use of a DPT drill rig within the area of location 03SB019 (Table 2-1). Up to two subsurface soil samples were collected from each soil boring location, depending on field XRF readings. The subsurface soil samples were collected from 2 to 8 feet bgs. Select

delineation soil samples, based on XRF readings (<200 ppm), were submitted to the FBL for lead analysis.

Figure 3-1 presents the sample locations with lead concentrations greater than (red dots) and less than (green dots) MCSs for the soil data in the area of location 03SB019. The data results show that the lead contamination present at “hot spot” location 03SB19 has been fully delineated with the use of FBL and/or XRF data horizontally to the north by 03SB019N1 (9 feet northwest) and 03SB019N2 (11 feet north), to the south by 03SB019S1 (8 feet away), to the east by 03SB019E3 (5 feet away), and to the west by 03SB019W1 (6 feet away). In addition, the lead contamination has been delineated vertically to 4 feet bgs.

### 3.3 Boring 03SB022 Area Soil Delineation Data

Twenty (20) soil borings were advanced with the use of a DPT drill rig or hand auger within the area of location 03SB022 (Table 2-1). One surface soil and one subsurface soil sample were collected from each soil boring location. The subsurface soil samples were collected from 2 to 4 feet bgs. All soil samples collected in the area of 03SB022 were submitted to the FBL for analyses of TNT and RDX. In addition, select delineation soil samples, based on field XRF readings (<200 ppm), were submitted to the FBL for lead analysis.

Figure 3-2 presents the sample locations with RDX and TNT concentrations greater than (red dots) and less than (green dots) MCSs for the soil data in the area of location 03SB022. No lead concentrations were greater than the MCS in any of the historic or delineation soil samples in this area; therefore, there is no concern for lead contamination in the area of location 03SB022.

The data results show that the RDX and TNT contamination present at “hot spot” location 03SB22 has not been fully delineated horizontally or vertically to the north, east, or west.

### 3.4 Boring 03SB024 Area Soil Delineation Data

Nineteen (19) soil borings were advanced with the use of a DPT drill rig or hand auger within the area of location 03SB024 (Table 2-1). One surface soil and one subsurface soil sample were collected from each soil boring location. The subsurface soil samples were collected from 2 to 4 feet bgs. All soil samples collected in the area of location 03SB024 were submitted to the FBL for analyses of TNT and RDX. In addition, select delineation soil samples, based on field XRF readings (<200 ppm), were submitted to the FBL for lead analysis.

Figure 3-2 presents the sample locations with RDX and TNT concentrations greater than (red dots) and less than (green dots) MCSs for the soil data in the area of location 03SB024. No lead concentrations were greater than the MCS in any of the delineation soil samples; however, lead contamination does exist at location 03SB024 (0 to 2 feet bgs) and has not been fully horizontally delineated.

The data results show that the RDX and TNT contamination present at “hot spot” location 03SB024 has not been fully delineated horizontally or vertically to the north, south, east, or west. Additionally, lead contamination has not been fully delineated horizontally to the south of location 03SB024.

### 3.5 Boring 03SB048 Area Soil Delineation Data

Eleven (11) soil borings were advanced with the use of a DPT drill rig or hand auger within the area of location 03SB048 (Table 2-1). One subsurface soil sample was collected from each soil boring location, based on field XRF readings. All the soil samples were collected from 2 to 4 feet bgs. Select delineation soil samples, based on XRF readings (<200 ppm), were submitted to the FBL for lead analysis.

Figure 3-3 presents the sample locations with lead concentrations greater than (red dots) and less than (green dots) MCSs for the subsurface soil data in the area of location 03SB048. The data results show that the lead contamination present at “hot spot” location 03SB48 has been fully delineated with the use of FBL and/or XRF data horizontally to the north by 03SB048N1 (7 feet), to the south by 03SB048S1 (4 feet), to the northeast by 03SB048E1 (7 feet), and to the west by 03SB048W1 (5 feet).

The lead contamination in this area has been delineated vertically to 10 feet bgs (maximum depth of excavation based on human health criteria).

### 3.6 Lead Correlation Analysis

Table 3-2 presents the lead correlation analyses. Figure 3-4 is a scatterplot of the XRF lead results and the FBL lead results for each sample. The scatterplot shows a strong positive linear trend. The correlation ( $r$ ) between FBL concentrations and XRF concentrations was 0.978. The correlation always falls between -1 and 1. Values of  $r$  near 0 indicate a very weak linear relationship. The strength of the linear relationship increases as  $r$  moves away from 0 toward either -1 or 1. Values of  $r$  close to -1 and 1 indicate that the points lie close to a straight line. The extreme values -1 and 1 occur only in the case of a perfect linear relationship. So the correlation indicates a strong linear trend.

The r-squared value is 96 percent ( $r^2 = 0.9599$  as shown on Figure 3-5). This value represents the percent of variation in FBL lead concentrations that can be explained by the lead XRF concentration. An r-squared value greater than about 80 percent indicates a very strong relationship between the two

measurement methods. The maximum possible value is 100 percent. Based on the r and r-squared values, XRF concentrations can be used to predict FBL concentrations with a relatively high degree of accuracy. At concentrations between 100 ppm and 1,000 ppm, the measured XRF values are within 30 percent of the predicted FBL values. The following equation can be used to convert the XRF concentrations into FBL concentration equivalents:

$$\text{FBL (mg/kg)} = [0.7273 \text{ (mg/kg)/ppm}] * (\text{XRF ppm}) + 10.07 \text{ mg/kg.}$$

Based on this analyses, it has been determined the XRF data can be used to accurately determine lead concentrations in the soil samples collected at SWMU 3; therefore, can be used for soil delineation for removal purposes.

## 4.0 SUMMARY AND CONCLUSIONS

### 4.1 Boring 03SB018 Contamination Area

Based on the evaluation of data available for “hot spot” 03SB018, the extent of the lead contamination in soil has not fully delineated. Delineation sample 03SB018E2, located approximately 25 feet to the northeast, showed an elevated concentration of lead in the 2 to 4 feet bgs sample (547 mg/kg). Therefore, two soil borings (03SB165 and 03SB166) will be sampled to fully delineate, both horizontally and vertically, the extent of lead concentrations greater than MCSs in the area northeast of location 03SB018. Figure 4-1 presents the locations of the proposed soil delineation borings. Each boring location will be sampled down to 10 feet bgs in two-foot increments and submitted to the FBL for lead analyses (see Table 4-1).

In addition to the above mentioned samples proposed for collection, a soil characterization sample will be collected within the area of the 03SB018 “hot spot” for the purpose of determining whether any specific soil to be eventually excavated and removed from the area under the IMWP will require management as a hazardous or non-hazardous material. The soil characterization sample will be collected adjacent to 03SB018 from the 2 to 4 foot interval where the lead concentration was found to be the greatest and analyzed for TC metals (see Table 4-1).

### 4.2 Boring 03SB019 Contamination Area

Based on the evaluation of data available for “hot spot” 03SB019, the extent of the lead contamination in soil has been fully delineated in all four directions in the immediate vicinity of 03SB019, both horizontally and vertically. Figure 4-1 presents the area of proposed excavation for “hot spot” 03SB019. The area proposed for excavation is approximately 109 square feet (SF) by 4 feet deep, or approximately 16 cubic yards (CY).

A soil characterization sample will be collected within the area of the 03SB019 “hot spot” for the purpose of determining whether any specific soil to be eventually excavated and removed from the area under the IMWP will require management as a hazardous or non-hazardous material. The soil characterization sample will be collected adjacent to 03SB019 from the 2 to 4 foot interval where the lead concentration was found to be the greatest and analyzed for TC metals (see Table 4-1).

### 4.3 Boring 03SB48 Contamination Area

Based on the evaluation of data available for “hot spot” 03SB048, the extent of the lead contamination in soil has not fully delineated to the east. Therefore, one soil boring (03SB167) will be sampled to fully delineate, both horizontally and vertically, the extent of lead concentrations greater than MCSs in the area east of location 03SB048. Figure 4-2 presents the location of the proposed soil delineation boring. The boring will be sampled down to 10 feet bgs in two-foot increments and submitted to the FBL for lead analyses (see Table 4-1).

In addition to the above mentioned sample proposed for collection, a soil characterization sample will be collected within the area of the 03SB048 “hot spot” for the purpose of determining whether any specific soil to be eventually excavated and removed from the area under the IMWP will require management as a hazardous or non-hazardous material. The soil characterization sample will be collected adjacent to 03SB048 from the 2 to 6 foot interval where the lead concentration was found to be the greatest and analyzed for TC metals (see Table 4-1).

#### 4.4 Borings 03SB022 and 03SB024 Contamination Area

Based on the evaluation of all data available for both “hot spots” 03SB022 and 03SB024, it is apparent the soil contamination in this area overlaps and is comingled (i.e., there is no distinct separation of contamination between the two areas due to their close proximity to each other). The extent of RDX and TNT contamination in soil has not been fully delineated vertically or horizontally to the north, south, east, or west. In addition, the extent of lead contamination has not been fully delineated horizontally in the area south of location 03SB024.

Fifteen soil borings (03SB168 through 03SB182) will be placed around the perimeter of the “hot spots” and will be sampled to fully delineate, both horizontally and vertically, the extent of RDX and TNT concentrations greater than MCSs. To ensure lead contamination is fully delineated in the areas around locations 03SB022 and 03SB024, all proposed perimeter locations will be sampled for lead analysis. XRF field analysis is not proposed for this round of sampling; therefore, to ensure the extent of horizontal lead contamination is fully delineated especially to the south of “hot spot” 03SB024, three additional borings (03SB183 through 03SB185) will be placed south of proposed locations 03SB180 and 03SB181. Each boring location will be sampled down to 10 feet bgs in 2-foot increments.

All proposed RDX and TNT soil samples, as shown on Figure 4-3, and identified in Table 4-1, will be collected and shipped to the FBL. Due to the limited extraction time associated with explosives analysis (seven days), the FBL will be instructed to extract all samples, but to initially analyze only those samples collected from the 0 to 2 and 2 to 4 foot increments. Should the analysis from the 2 to 4 foot increment

indicate that RDX or TNT concentrations are greater than their respective MCS, the FBL will then be instructed by Tetra Tech to analyze additional sample increments from that particular location.

All proposed lead soil samples, as shown on Figure 4-3, and identified in Table 4-1, will be collected and shipped to the FBL for complete lead analysis. Due to the relatively low cost associated with lead analysis, these samples will not be subject to the above extract and hold methodology.

In addition to the above mentioned samples proposed for collection, a soil characterization sample will be collected within the area of the 03SB024 "hot spot" for the purpose of determining whether any specific soil to be eventually excavated and removed from the area under the IMWP will require management as a hazardous or non-hazardous material. The soil characterization sample will be collected adjacent to 03SB024 from the 0 to 2 foot interval where the lead concentration was found to be the greatest and analyzed for TC metals (see Table 4-1).

## References

Tetra Tech, 2005; Resource Conservation and Recovery Act Facility Investigation for Solid Waste Management Unit (SWMU) 3, Ammunition Burning Grounds/Old Jeep Trail (OJT), Naval Support Activity Crane, Crane, Indiana, Tetra Tech NUS, Inc., March 2005.

Tetra Tech, 2011; Sampling and Analysis Plan, Soil Contamination Delineation for Corrective Measures Design at the Old Jeep Trail Treatment Area of SWMU 3 – Ammunition Burning Grounds/Old Jeep Trail Support Activity Crane, Crane, Indiana, Tetra Tech NUS, Inc., August 2011.

SAMPLE COLLECTION AND ANALYSIS SUMMARY (DECEMBER 2011)  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 1 OF 6

HOT SPOT AREA	SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH	XRF (LEAD)	FBL ANALYSES		
							LEAD	TNT	RDX
03SB018	03SB018	03SB018-0204	12/14/2011	DPT	2-4	X	--	--	--
		03SB018-0406	12/14/2011	DPT	4-6	X	X	--	--
		03SB018-0608	12/14/2011	DPT	6-8	X	--	--	--
	03SB018-N2	03SB018-0204-N2	12/13/2011	DPT	2-4	X	--	--	--
		03SB018-0406-N2	12/13/2011	DPT	4-6	X	X	--	--
	03SB018-N3	03SB018-0204-N3	12/14/2011	DPT	2-4	X	X	--	--
	03SB131	03SB131-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB018-S1	03SB018-0204-S1	12/14/2011	DPT	2-4	X	--	--	--
	03SB018-S2	03SB018-0204-S2	12/13/2011	DPT	2-4	X	--	--	--
	03SB123	03SB123-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB018-E2	03SB018-0204-E2	12/13/2011	DPT	2-4	X	X	--	--
	03SB018-E2	03SB018-0406-E2	12/13/2011	DPT	4-6	X	X	--	--
	03SB018-E3	03SB018-0204-E3	12/14/2011	DPT	2-4	X	X	--	--
	03SB134	03SB134-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB018-W2	03SB018-0204-W2	12/13/2011	DPT	2-4	X	X	--	--
	03SB018-W2	03SB018-0406-W2	12/13/2011	DPT	4-6	X	X	--	--
	03SB018-W3	03SB018-0204-W3	12/14/2011	DPT	2-4	X	X	--	--
03SB133	03SB133-0204	12/13/2011	DPT	2-4	X	--	--	--	
03SB019	03SB019	03SB019-0406	12/14/2011	DPT	4-6	X	X	--	--
		03SB019-0608	12/14/2011	DPT	6-8	X	X	--	--
	03SB019-N1	03SB019-0204-N1	12/14/2011	DPT	2-4	X	X	--	--
		03SB019-0406-N1	12/14/2011	DPT	4-6	X	X	--	--
	03SB019-N2	03SB019-0204-N2	12/13/2011	DPT	2-4	X	--	--	--

TABLE 2-1

SAMPLE COLLECTION AND ANALYSIS SUMMARY (DECEMBER 2011)  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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HOT SPOT AREA	SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH	XRF (LEAD)	FBL ANALYSES		
							LEAD	TNT	RDY
03SB019	03SB129	03SB129-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB019-S1	03SB019-0204-S1	12/14/2011	DPT	2-4	X	X	--	--
	03SB019-S2	03SB019-0204-S2	12/13/2011	DPT	2-4	X	--	--	--
	03SB125	03SB125-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB019-E1	03SB019-0204-E1	12/14/2011	DPT	2-4	X	X	--	--
	03SB019-E2	03SB019-0204-E2	12/13/2011	DPT	2-4	X	--	--	--
	03SB127	03SB127-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB019-W1	03SB019-0204-W1	12/14/2011	DPT	2-4	X	X	--	--
	03SB019-W2	03SB019-0204-W2	12/13/2011	DPT	2-4	X	--	--	--
03SB048	03SB048-N1	03SB048-0204-N1	12/13/2011	DPT	2-4	X	X	--	--
	03SB048-N2	03SB048-0204-N2	12/13/2011	DPT	2-4	X	--	--	--
	03SB164	03SB164-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB048-S1	03SB048-0204-S1	12/14/2011	DPT	2-4	X	X	--	--
	03SB048-S2	03SB048-0204-S2	12/13/2011	DPT	2-4	X	--	--	--
	03SB162	03SB162-0204	12/13/2011	HA	2-4	X	--	--	--
	03SB048-E1	03SB048-0204-E1	12/14/2011	DPT	2-4	X	X	--	--
	03SB048-E2	03SB048-0204-E2	12/13/2011	DPT	2-4	X	--	--	--
	03SB163	03SB163-0204	12/13/2011	DPT	2-4	X	--	--	--
	03SB048-W1	03SB048-0204-W1	12/14/2011	DPT	2-4	X	X	--	--
03SB161	03SB161-0204	12/13/2011	DPT	2-4	X	--	--	--	
03SB022	03SS022-N1	03SS022-0002-N1	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-N1	12/15/2011	DPT	2-4	--	X	X	X

SAMPLE COLLECTION AND ANALYSIS SUMMARY (DECEMBER 2011)  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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HOT SPOT AREA	SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH	XRF (LEAD)	FBL ANALYSES		
							LEAD	TNT	RDX
03SB022	03SS022-N2	03SS022-0002-N2	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-N2	12/15/2011	DPT	2-4	--	X	X	X
	03SS022-N3	03SS022-0002-N3	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-N3	12/15/2011	DPT	2-4	--	X	X	X
	03SS137	03SS137-0002	12/15/2011	DPT	0-2	X	X	X	X
		03SB137-0204	12/15/2011	DPT	2-4	--	X	X	X
	03SS137-N2	03SS137-0002-N2	12/15/2011	DPT	0-2	--	--	X	X
		03SB137-0204-N2	12/15/2011	DPT	2-4	--	--	X	X
	03SS022-S1	03SS022-0002-S1	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-S1	12/15/2011	DPT	2-4	--	X	X	X
	03SS022-S2	03SS022-0002-S2	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-S2	12/15/2011	DPT	2-4	--	X	X	X
	03SS022-S3	03SS022-0002-S3	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-S3	12/15/2011	DPT	2-4	--	X	X	X
	03SS141	03SS141-0002	12/15/2011	DPT	0-2	X	X	X	X
		03SB141-0204	12/15/2011	DPT	2-4	--	X	X	X
	03SS141-S2	03SS141-0002-S2	12/15/2011	DPT	0-2	--	--	X	X
		03SB141-0204-S2	12/15/2011	DPT	2-4	--	--	X	X
	03SS022-E1	03SS022-0002-E1	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-E1	12/15/2011	DPT	2-4	--	X	X	X
03SS022-E2	03SS022-0002-E2	12/15/2011	DPT	0-2	--	X	X	X	
	03SB022-0204-E2	12/15/2011	DPT	2-4	--	X	X	X	

TABLE 2-1

SAMPLE COLLECTION AND ANALYSIS SUMMARY (DECEMBER 2011)  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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HOT SPOT AREA	SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH	XRF (LEAD)	FBL ANALYSES		
							LEAD	TNT	RDX
03SB022	03SS022-E3	03SS022-0002-E3	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-E3	12/15/2011	DPT	2-4	--	X	X	X
	03SS138	03SS138-0002	12/15/2011	DPT	0-2	X	X	X	X
		03SB138-0204	12/15/2011	DPT	2-4	--	X	X	X
	03SS138-E2	03SS138-0002-E2	12/15/2011	DPT	0-2	--	--	X	X
		03SB138-0204-E2	12/15/2011	DPT	2-4	--	--	X	X
	03SS022-W1	03SS022-0002-W1	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-W1	12/15/2011	DPT	2-4	--	X	X	X
	03SS022-W2	03SS022-0002-W2	12/15/2011	DPT	0-2	--	X	X	X
		03SB022-0204-W2	12/15/2011	DPT	2-4	--	X	X	X
	03SS022-W3	03SS022-0002-W3	12/15/2011	HA	0-2	--	X	X	X
		03SB022-0204-W3	12/15/2011	HA	2-4	--	X	X	X
	03SS140	03SS140-0002	12/13/2011	HA	0-2	X	X	X	X
		03SB140-0204	12/13/2011	HA	2-4	--	X	X	X
03SB024	03SS024-N1	03SS024-0002-N1	12/15/2011	DPT	0-2	--	X	X	X
		03SB024-0204-N1	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-N2	03SS024-0002-N2	12/15/2011	DPT	0-2	X	X	X	X
		03SB024-0204-N2	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-N3	03SS024-0002-N3	12/15/2011	DPT	0-2	--	--	X	X
		03SB024-0204-N3	12/15/2011	DPT	2-4	--	--	X	X
	03SS147	03SS147-0002	12/15/2011	DPT	0-2	X	--	X	X
		03SB147-0204	12/15/2011	DPT	2-4	--	--	X	X

SAMPLE COLLECTION AND ANALYSIS SUMMARY (DECEMBER 2011)  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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HOT SPOT AREA	SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH	XRF (LEAD)	FBL ANALYSES		
							LEAD	TNT	RDX
03SB024	03SS147-N2	03SS147-0002-N2	12/15/2011	DPT	0-2	--	--	X	X
		03SB147-0204-N2	12/15/2011	DPT	2-4	--	--	X	X
	03SS024-S1	03SS024-0002-S1	12/15/2011	DPT	0-2	--	X	X	X
		03SB024-0204-S1	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-S2	03SS024-0002-S2	12/15/2011	DPT	0-2	X	X	X	X
		03SB024-0204-S2	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-S3	03SS024-0002-S3	12/15/2011	DPT	0-2	--	--	X	X
		03SB024-0204-S3	12/15/2011	DPT	2-4	--	--	X	X
	03SS143	03SS143-0002	12/13/2011	HA	0-2	X	--	X	X
		03SB143-0204	12/13/2011	HA	2-4	--	--	X	X
	03SS143-S2	03SS143-0002-S2	12/15/2011	HA	0-2	--	--	X	X
		03SB143-0204-S2	12/15/2011	HA	2-4	--	--	X	X
	03SS024-E1	03SS024-0002-E1	12/15/2011	DPT	0-2	--	X	X	X
		03SB024-0204-E1	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-E2	03SS024-0002-E2	12/15/2011	DPT	0-2	X	X	X	X
		03SB024-0204-E2	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-E3	03SS024-0002-E3	12/15/2011	DPT	0-2	--	--	X	X
		03SB024-0204-E3	12/15/2011	DPT	2-4	--	--	X	X
	03SS145	03SS145-0002	12/15/2011	DPT	0-2	X	--	X	X
		03SB145-0204	12/15/2011	DPT	2-4	--	--	X	X
03SS145-E2	03SS145-0002-E2	12/15/2011	DPT	0-2	--	--	X	X	
03SB145-E2	03SB145-0204-E2	12/15/2011	DPT	2-4	--	--	X	X	

TABLE 2-1

SAMPLE COLLECTION AND ANALYSIS SUMMARY (DECEMBER 2011)  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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HOT SPOT AREA	SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	SAMPLE METHOD	SAMPLE DEPTH	XRF (LEAD)	FBL ANALYSES		
							LEAD	TNT	RDX
03SB024	03SS024-W1	03SS024-0002-W1	12/15/2011	DPT	0-2	--	X	X	X
		03SB024-0204-W1	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-W2	03SS024-0002-W2	12/15/2011	DPT	0-2	X	X	X	X
		03SB024-0204-W2	12/15/2011	DPT	2-4	--	X	X	X
	03SS024-W3	03SS024-0002-W3	12/15/2011	DPT	0-2	--	--	X	X
		03SB024-0204-W3	12/15/2011	DPT	2-4	--	--	X	X

DPT = Direct-push Technology

HA = Hand Auger

-- = Compound not analyzed

TABLE 2-2

**XRF ANALYSES**  
**SWMU 3 - ABG/OJT MAIN TREATMENT AREA**  
**NSA CRANE**  
**CRANE, INDIANA**  
**PAGE 1 OF 4**

SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	XRF ANALYSES	
			DATE	XRF VALUE (ppm)
03SB018	03SB018-0204	12/14/2011	12/15/2011	836.00
	03SB018-0406	12/14/2011	12/15/2011	41.33
	03SB018-0608	12/14/2011	12/15/2011	22.00
03SB018-N2	03SB018-0204-N2	12/13/2011	12/13/2011	1400.00
	03SB018-0406-N2	12/13/2011	12/14/2011	66.33
03SB018-N3	03SB018-0204-N3	12/14/2011	12/14/2011	60.00
03SB131	03SB131-0204	12/13/2011	12/13/2011	28.33
03SB018-S1	03SB018-0204-S1	12/14/2011	12/15/2011	37.33
03SB018-S2	03SB018-0204-S2	12/13/2011	12/13/2011	58.33
03SB123	03SB123-0204	12/13/2011	12/13/2011	68.67
03SB018-E2	03SB018-0204-E2	12/13/2011	12/13/2011	697.33
	03SB018-0406-E2	12/13/2011	12/13/2011	10.67
03SB018-E3	03SB018-0204-E3	12/14/2011	12/14/2011	51.67
03SB134	03SB134-0204	12/13/2011	12/13/2011	150.67
03SB018-W2	03SB018-0204-W2	12/13/2011	12/14/2011	317.00
	03SB018-0406-W2	12/13/2011	12/14/2011	40.00
03SB018-W3	03SB018-0204-W3	12/14/2011	12/14/2011	56.00
03SB133	03SB133-0204	12/13/2011	12/14/2011	64.33
03SB019	03SB019-0406	12/14/2011	12/14/2011	308.67
	03SB019-0608	12/14/2011	12/14/2011	5.00
03SB019-N1	03SB019-0204-N1	12/14/2011	12/14/2011	306.33
	03SB019-0406-N1	12/14/2011	12/14/2011	35.00
03SB019-N2	03SB019-0204-N2	12/13/2011	12/13/2011	16.00
03SB129	03SB129-0204	12/13/2011	12/13/2011	21.67
03SB019-S1	03SB019-0204-S1	12/14/2011	12/14/2011	97.67
03SB019-S2	03SB019-0204-S2	12/13/2011	12/13/2011	37.67
03SB125	03SB125-0204	12/13/2011	12/13/2011	59.33

TABLE 2-2

**XRF ANALYSES**  
**SWMU 3 - ABG/OJT MAIN TREATMENT AREA**  
**NSA CRANE**  
**CRANE, INDIANA**  
**PAGE 2 OF 4**

SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	XRF ANALYSES	
			DATE	XRF VALUE (ppm)
03SB019-E1	03SB019-0204-E1	12/14/2011	12/14/2011	187.00
03SB019-E2	03SB019-0204-E2	12/13/2011	12/13/2011	50.33
03SB127	03SB127-0204	12/13/2011	12/13/2011	12.00
03SB019-W1	03SB019-0204-W1	12/14/2011	12/14/2011	71.67
03SB019-W2	03SB019-0204-W2	12/13/2011	12/13/2011	170.00
03SB048-N1	03SB048-0204-N1	12/13/2011	12/15/2011	19.67
03SB048-N2	03SB048-0204-N2	12/13/2011	12/14/2011	18.00
03SB164	03SB164-0204	12/13/2011	12/14/2011	5.00
03SB048-S1	03SB048-0204-S1	12/14/2011	12/15/2011	22.33
03SB048-S2	03SB048-0204-S2	12/13/2011	12/14/2011	12.67
03SB162	03SB162-0204	12/13/2011	12/14/2011	8.67
03SB048-E1	03SB048-0204-E1	12/14/2011	12/15/2011	24.33
03SB048-E2	03SB048-0204-E2	12/13/2011	12/14/2011	14.67
03SB163	03SB163-0204	12/13/2011	12/14/2011	26.00
03SB048-W1	03SB048-0204-W1	12/14/2011	12/15/2011	34.67
03SB161	03SB161-0204	12/13/2011	12/14/2011	26.67
03SS022-N1	03SS022-0002-N1	12/15/2011	NA	---
	03SB022-0204-N1	12/15/2011	NA	---
03SS022-N2	03SS022-0002-N2	12/15/2011	NA	---
	03SB022-0204-N2	12/15/2011	NA	---
03SS022-N3	03SS022-0002-N3	12/15/2011	NA	---
	03SB022-0204-N3	12/15/2011	NA	---
03SS137	03SS137-0002	12/15/2011	12/15/2011	29.33
	03SB137-0204	12/15/2011	NA	---
03SS022-S1	03SS022-0002-S1	12/15/2011	NA	---
	03SB022-0204-S1	12/15/2011	NA	---
03SS022-S2	03SS022-0002-S2	12/15/2011	NA	---
	03SB022-0204-S2	12/15/2011	NA	---

TABLE 2-2

**XRF ANALYSES**  
**SWMU 3 - ABG/OJT MAIN TREATMENT AREA**  
**NSA CRANE**  
**CRANE, INDIANA**  
**PAGE 3 OF 4**

SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	XRF ANALYSES	
			DATE	XRF VALUE (ppm)
03SS022-S3	03SS022-0002-S3	12/15/2011	NA	---
	03SB022-0204-S3	12/15/2011	NA	---
03SS141	03SS141-0002	12/15/2011	12/15/2011	44.00
	03SB141-0204	12/15/2011	NA	---
03SS022-E1	03SS022-0002-E1	12/15/2011	NA	---
	03SB022-0204-E1	12/15/2011	NA	---
03SS022-E2	03SS022-0002-E2	12/15/2011	NA	---
	03SB022-0204-E2	12/15/2011	NA	---
03SS022-E3	03SS022-0002-E3	12/15/2011	NA	---
	03SB022-0204-E3	12/15/2011	NA	---
03SS138	03SS138-0002	12/15/2011	12/15/2011	183.67
	03SB138-0204	12/15/2011	NA	---
03SS022-W1	03SS022-0002-W1	12/15/2011	NA	---
	03SB022-0204-W1	12/15/2011	NA	---
03SS022-W2	03SS022-0002-W2	12/15/2011	NA	---
	03SB022-0204-W2	12/15/2011	NA	---
03SS022-W3	03SS022-0002-W3	12/15/2011	NA	---
	03SB022-0204-W3	12/15/2011	NA	---
03SS140	03SS140-0002	12/13/2011	12/14/2011	66.67
	03SB140-0204	12/13/2011	NA	---
03SS024-N1	03SS024-0002-N1	12/15/2011	NA	---
	03SB024-0204-N1	12/15/2011	NA	---
03SS024-N2	03SS024-0002-N2	12/15/2011	12/15/2011	66.67
	03SB024-0204-N2	12/15/2011	NA	---
03SS147	03SS147-0002	12/15/2011	12/15/2011	81.67
03SS024-S1	03SS024-0002-S1	12/15/2011	NA	---
	03SB024-0204-S1	12/15/2011	NA	---

TABLE 2-2

XRF ANALYSES  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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SAMPLE LOCATION	SAMPLE ID	SAMPLE DATE	XRF ANALYSES	
			DATE	XRF VALUE (ppm)
03SS024-S2	03SS024-0002-S2	12/15/2011	12/14/2011	55.00
	03SB024-0204-S2	12/15/2011	NA	---
03SS143	03SS143-0002	12/13/2011	12/14/2011	76.33
03SS024-E1	03SS024-0002-E1	12/15/2011	NA	---
	03SB024-0204-E1	12/15/2011	NA	---
03SS024-E2	03SS024-0002-E2	12/15/2011	12/15/2011	92.00
	03SB024-0204-E2	12/15/2011	NA	---
03SS145	03SS145-0002	12/15/2011	12/15/2011	65.33
03SS024-W1	03SS024-0002-W1	12/15/2011	NA	---
	03SB024-0204-W1	12/15/2011	NA	---
03SS024-W2	03SS024-0002-W2	12/15/2011	12/15/2011	111.33
	03SB024-0204-W2	12/15/2011	NA	---

Notes:

- = Not conducted
- NA = Not applicable
- ppm = parts per million
- mg/kg = milligrams per kilogram
- XRF = X-ray fluorescence
- FBL = Fixed Base Laboratory

TABLE 3-1

FBL DATA AND CALCULATED LEAD VALUES  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 1 OF 4

LOCATION	SAMPLE ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	TNT (mg/kg)	RDX (mg/kg)	LEAD (mg/kg)	CALC LEAD (mg/kg)
03SB001	03SS0010002	0	2	20010608	0.25 U	0.25 U	NA	NA
03SB002	03SS0020002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0020206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0020610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB003	03SS0030002	0	2	20010608	0.25 U	0.25 U	NA	NA
03SB004	03SS0040002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0040206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0040610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB005	03SS0050002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0050206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0050610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB006	03SS0060002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0060206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0060610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB007	03SS0070002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0070206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0070610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB008	03SS0080002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0080206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0080610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB009	03SS0090002	0	2	20010623	0.25 U	0.25 U	NA	NA
	03SB0090204	2	4	20010623	0.25 U	0.25 U	NA	NA
03SB010	03SS0100002	0	2	20010620	0.25 U	0.25 U	NA	NA
	03SB0100206	2	6	20010620	0.25 U	0.25 U	NA	NA
	03SB0100610	6	10	20010620	0.25 U	0.25 U	NA	NA
03SB011	03SS0110002	0	2	20010619	0.25 U	0.25 U	NA	NA
	03SB0110206	2	6	20010619	0.25 U	0.25 U	NA	NA
	03SB0110610	6	10	20010619	0.25 U	0.25 U	NA	NA
03SB012	03SS0120002	0	2	20010608	0.25 U	0.25 U	NA	NA
03SB013	03SS0130002	0	2	20010620	0.25 U	0.93	NA	NA
	03SB0130206	2	6	20010620	0.25 U	0.25 U	NA	NA
	03SB0130610	6	10	20010620	0.25 U	0.25 U	NA	NA
03SB014	03SS0140002	0	2	20010620	0.25 U	0.25 U	NA	NA
	03SB0140206	2	6	20010620	0.25 U	0.25 U	NA	NA
	03SB0140610	6	10	20010620	0.25 U	0.25 U	NA	NA
03SB015	03SS0150002	0	2	20010620	0.25 U	0.25 U	NA	NA
	03SB0150206	2	6	20010620	0.25 U	0.25 U	NA	NA
	03SB0150610	6	10	20010620	0.25 U	0.25 U	NA	NA
03SB016	03SS0160002	0	2	20010620	0.39 J	0.25 U	NA	NA
	03SB0160206	2	6	20010620	0.97	0.25 U	NA	NA
	03SB0160610	6	10	20010620	0.25 U	0.25 U	NA	NA
03SB017	03SS0170002	0	2	20010620	0.25 U	0.25 U	21.2 J	NA
	03SB0170406	4	6	20010620	0.25 U	0.25 U	12.6 J	NA
	03SB0171214	12	14	20010620	0.25 U	0.25 U	7.5 J	NA
03SB018	03SS0180002	0	2	20010624	0.25 U	1.2	244 J	NA
	03SB0180204	2	4	20010624	0.25 U	3.9	1110 J	618
	03SB018-0406	4	6	20111214	NA	NA	36.2	40.1
03SB018E2	03SB018-0204-E2	2	4	20111213	NA	NA	547	517
	03SB018-0406-E2	4	6	20111213	NA	NA	24.5	17.8
03SB018E3	03SB018-0204-E3	2	4	20111214	NA	NA	80.6	47.6
03SB018N2	03SB018-0406-N2	4	6	20111213	NA	NA	54.3	58.3
03SB018N3	03SB018-0204-N3	2	4	20111214	NA	NA	60.4	53.7
03SB018W2	03SB018-0204-W2	2	4	20111213	NA	NA	258	241
	03SB018-0406-W2	4	6	20111213	NA	NA	50.4	39.2
03SB018W3	03SB018-0204-W3	2	4	20111214	NA	NA	60.7	50.8
03SB019	03SS0190002	0	2	20010621	2	6.2	14.7 J	NA
	03SB0190204	2	4	20010621	2.1	0.92	616 J	NA
	03SB019-0406	4	6	20111214	NA	NA	208	235
	03SB019-0608	6	8	20111214	NA	NA	14	13.7
	03SB0191215	12	15	20010621	0.25 U	0.25 U	45 J	NA
03SB019E1	03SB019-0204-E1	2	4	20111214	NA	NA	143	146
03SB019N1	03SB019-0204-N1	2	4	20111214	NA	NA	213	233
	03SB019-0406-N1	4	6	20111214	NA	NA	39.2	35.5
03SB019S1	03SB019-0204-S1	2	4	20111214	NA	NA	97.4	81.1
03SB019W1	03SB019-0204-W1	2	4	20111214	NA	NA	60.0	62.2
03SB020	03SS0200002	0	2	20010620	0.25 U	0.25 U	11.3 J	NA
	03SB0200810	8	10	20010620	0.25 U	0.25 U	10.5 J	NA
	03SB0201215	12	15	20010620	0.25 U	0.25 U	4.5 J	NA

TABLE 3-1

FBL DATA AND CALCULATED LEAD VALUES  
SWMU 3 - ABG/OJT MAIN TREATMENT AREA

NSA CRANE  
CRANE, INDIANA

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LOCATION	SAMPLE ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	TNT (mg/kg)	RDX (mg/kg)	LEAD (mg/kg)	CALC LEAD (mg/kg)
03SB021	03SS0210002	0	2	20010620	0.25 U	0.25 U	16.2 J	NA
	03SB0211012	10	12	20010620	0.25 U	0.25 U	3 J	NA
	03SB0211215	12	15	20010620	0.25 U	0.25 U	4.3 J	NA
03SB022	03SS0220002	0	2	20010621	510	140	27.6 J	NA
	03SB0220204	2	4	20010621	0.25 U	0.25 U	387 J	NA
	03SB0221215	12	15	20010621	0.25 U	2.1	26.8 J	NA
03SB022E1	03SS022-0002-E1	0	2	20111215	0.167 U	0.18 J	18.3 J	NA
	03SB022-0204-E1	2	4	20111215	0.154 U	0.154 U	23.6 J	NA
03SB022E2	03SS022-0002-E2	0	2	20111215	1210	829	43.8 J	NA
	03SB022-0204-E2	2	4	20111215	10000	5460	149 J	NA
03SB022E3	03SS022-0002-E3	0	2	20111215	753	116	54.4 J	NA
	03SB022-0204-E3	2	4	20111215	0.106 J	4.18	21.3 J	NA
03SB022N1	03SS022-0002-N1	0	2	20111215	0.138 J	0.442 J	23.7 J	NA
	03SB022-0204-N1	2	4	20111215	0.154 U	0.154 U	21.8 J	NA
03SB022N2	03SS022-0002-N2	0	2	20111215	0.148 U	0.148 U	19.8 J	NA
	03SB022-0204-N2	2	4	20111215	159	406	61.9 J	NA
03SB022N3	03SS022-0002-N3	0	2	20111215	0.167 U	0.597	20.5 J	NA
	03SB022-0204-N3	2	4	20111215	42.1	23.9	25.8 J	NA
03SB022S1	03SS022-0002-S1	0	2	20111215	0.2 U	1.17	30.2 J	NA
	03SB022-0204-S1	2	4	20111215	0.167 U	0.478	30.8 J	NA
03SB022S2	03SS022-0002-S2	0	2	20111215	0.19 U	0.19 U	19.4 J	NA
	03SB022-0204-S2	2	4	20111215	0.182 U	0.182 U	20.4 J	NA
03SB022S3	03SS022-0002-S3	0	2	20111215	0.186 J	3.84	20.9 J	NA
	03SB022-0204-S3	2	4	20111215	0.16 U	0.487	21.6 J	NA
03SB022W1	03SS022-0002-W1	0	2	20111215	1.17	1.87	54.7 J	NA
	03SB022-0204-W1	2	4	20111215	80.6	631	69.7 J	NA
03SB022W2	03SS022-0002-W2	0	2	20111215	28.8	193	52.2 J	NA
	03SB022-0204-W2	2	4	20111215	26.1 J	2060 J	50.9 J	NA
03SB022W3	03SS022-0002-W3	0	2	20111215	0.522	4.6	123 J	NA
	03SB022-0204-W3	2	4	20111215	2.69 J	1.9 J	94.1 J	NA
03SB023	03SS0230002	0	2	20010624	0.25 U	0.25 U	54.7 J	NA
	03SB0230610	6	10	20010624	0.25 U	0.25 U	28.5 J	NA
03SB024	03SS0240002	0	2	20010621	1700 J	2400 J	10200 J	NA
	03SB0240406	4	6	20010621	0.76	1.4 J	277 J	NA
	03SB0241215	12	15	20010621	1.9	4.4	23.6 J	NA
03SB024E1	03SS024-0002-E1	0	2	20111215	0.598	3.11	36.3 J	NA
	03SB024-0204-E1	2	4	20111215	0.148 U	0.525 J	32.2 J	NA
03SB024E2	03SS024-0002-E2	0	2	20111215	27.9	1080	54.4 J	77
	03SB024-0204-E2	2	4	20111215	10.3	7.8	15.7 J	NA
03SB024E3	03SS024-0002-E3	0	2	20111215	778	3800	NA	NA
	03SB024-0204-E3	2	4	20111215	5.92	7.94	NA	NA
03SB024N1	03SS024-0002-N1	0	2	20111215	2.72	82.6	125	NA
	03SB024-0204-N1	2	4	20111215	0.182 U	0.182 U	103	NA
03SB024N2	03SS024-0002-N2	0	2	20111215	87.6	307	35.3	58.6
	03SB024-0204-N2	2	4	20111215	0.174 J	9.03	115	NA
03SB024N3	03SS024-0002-N3	0	2	20111215	138	1530	NA	NA
	03SB024-0204-N3	2	4	20111215	22.9	240	NA	NA
03SB024S1	03SS024-0002-S1	0	2	20111215	0.154 U	0.154 U	71.1	NA
	03SB024-0204-S1	2	4	20111215	0.167 U	0.167 U	17	NA
03SB024S2	03SS024-0002-S2	0	2	20111215	0.243 J	1.03	73.2	50.1
	03SB024-0204-S2	2	4	20111215	0.248 J	2.06	160	NA
03SB024S3	03SS024-0002-S3	0	2	20111215	0.154 U	0.847	NA	NA
	03SB024-0204-S3	2	4	20111215	0.2 U	0.2 UJ	NA	NA
03SB024W1	03SS024-0002-W1	0	2	20111215	3.48	0.674 J	97.9 J	NA
	03SB024-0204-W1	2	4	20111215	0.174 U	0.174 U	23.9 J	NA
03SB024W2	03SS024-0002-W2	0	2	20111215	0.287 J	11.9	72.4	91.0
	03SB024-0204-W2	2	4	20111215	0.348	0.711	90.2	NA
03SB024W3	03SS024-0002-W3	0	2	20111215	2.75	5.52	NA	NA
	03SB024-0204-W3	2	4	20111215	0.16 U	0.343 J	NA	NA
03SB025	03SS0250002	0	2	20010620	0.25 U	0.25 U	16 J	NA
	03SB0250608	6	8	20010620	0.25 U	0.25 U	12.5 J	NA
03SB026	03SS0260002	0	2	20010624	0.25 U	4.3	66 J	NA
	03SB0260610	6	10	20010624	0.25 U	0.25 U	34 J	NA
03SB027	03SS0270002	0	2	20010624	0.25 U	0.25 U	36 J	NA
	03SB0270206	2	6	20010624	0.25 U	0.25 U	49 J	NA
	03SB0270607	6	7	20010624	0.25 U	0.25 U	14.5 J	NA
03SB028	03SS0280002	0	2	20010624	0.25 U	0.25 U	22.6 J	NA
	03SB0280204	2	4	20010624	0.25 U	0.25 U	20.8 J	NA

TABLE 3-1

FBL DATA AND CALCULATED LEAD VALUES  
SWMU 3 - ABG/OJT MAIN TREATMENT AREA

NSA CRANE  
CRANE, INDIANA  
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LOCATION	SAMPLE ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	TNT (mg/kg)	RDX (mg/kg)	LEAD (mg/kg)	CALC LEAD (mg/kg)
03SB029	03SS0290002	0	1.1	20010608	0.25 U	0.25 U	26.8 J	NA
03SB030	03SS0300002	0	1.65	20010608	0.25 U	0.25 U	20.9 J	NA
03SB031	03SS0310002	0	2	20010608	0.25 U	0.25 U	20.8 J	NA
03SB032	03SS0320002	0	2	20010608	0.25 U	0.25 U	14.4 J	NA
03SB033	03SS0330002	0	1.1	20010608	0.25 U	0.25 U	9.2 J	NA
03SB034	03SS0340002	0	2	20010622	0.25 U	0.25 U	19.6 J	NA
	03SB0340206	2	6	20010622	0.25 U	0.25 U	12.2 J	NA
	03SB0340610	6	10	20010622	0.25 U	0.25 U	16 J	NA
03SB035	03SS0350002	0	2	20010622	0.25 U	0.25 U	60.3 J	NA
03SB036	03SS0360002	0	2	20010622	0.25 U	0.25 U	12.8 J	NA
	03SB0360206	2	6	20010622	0.25 U	0.25 U	13.9 J	NA
	03SB0360610	6	10	20010622	0.25 U	0.25 U	16.6 J	NA
03SB037	03SS0370002	0	2	20010622	0.25 U	0.25 U	15.5 J	NA
03SB038	03SS0380002	0	2	20010622	0.25 U	0.25 U	85.5 J	NA
03SB039	03SS0390002	0	2	20010622	0.25 U	0.25 U	16.3 J	NA
	03SB0390206	2	6	20010622	0.25 U	0.25 U	15 J	NA
	03SB0390610	6	10	20010622	0.25 U	0.25 U	16.7 J	NA
03SB040	03SS0400002	0	2	20010622	0.25 U	0.25 U	15.7 J	NA
	03SB0400206	2	6	20010622	0.25 U	0.25 U	12.6 J	NA
	03SB0400610	6	10	20010622	0.25 U	0.25 U	16.2 J	NA
03SB041	03SS0410002	0	2	20010623	0.25 U	0.25 U	83.5 J	NA
03SB042	03SS0420002	0	2	20010622	0.25 U	0.25 U	14.8 J	NA
	03SB0420206	2	6	20010622	0.25 U	0.25 U	13.5 J	NA
	03SB0420610	6	10	20010622	0.25 U	0.25 U	15 J	NA
03SB043	03SS0430002	0	2	20010623	0.25 U	0.25 U	20.6 J	NA
03SB044	03SS0440002	0	2	20010622	0.25 U	0.25 U	61.1 J	NA
	03SB0440206	2	6	20010622	0.25 U	0.25 U	20 J	NA
	03SB0440610	6	10	20010622	0.25 U	0.25 U	18.5 J	NA
03SB045	03SS0450002	0	2	20010623	0.25 U	0.25 U	63.3 J	NA
03SB046	03SS0460002	0	2	20010622	0.25 U	0.25 U	17.3 J	NA
	03SB0460206	2	6	20010622	0.25 U	0.25 U	13.3 J	NA
	03SB0460610	6	10	20010622	0.25 U	0.25 U	17.1 J	NA
03SB047	03SS0470002	0	2	20010622	0.25 U	0.25 U	16 J	NA
	03SB0470206	2	6	20010622	0.25 U	0.25 U	34 J	NA
	03SB0470610	6	10	20010622	0.25 U	0.25 U	13.6 J	NA
03SB048	03SS0480002	0	2	20010622	0.25 U	0.25 U	124 J	NA
	03SB0480206	2	6	20010622	0.25 U	0.25 U	3590 J	NA
	03SB0480610	6	10	20010622	0.25 U	0.25 U	3410 J	NA
03SB048E1	03SB048-0204-E1	2	4	20111214	NA	NA	26.4	27.8
03SB048N1	03SB048-0204-N1	2	4	20111213	NA	NA	25	24.4
03SB048S1	03SB048-0204-S1	2	4	20111214	NA	NA	24.2	26.3
03SB048W1	03SB048-0204-W1	2	4	20111214	NA	NA	48.6	35.3
03SB049	03SS0490002	0	2	20040423	0.25 U	0.25 U	26.1 J	NA
	03SB0490206	2	6	20040423	0.25 U	0.25 U	24.9 J	NA
	03SB0490610	6	10	20040423	0.25 U	0.25 U	19.9 J	NA
	03SB0491014	10	14	20040423	0.25 U	0.25 U	43.6 J	NA
03SB050/TW06	03SS0500002	0	2	20040423	0.39 J	0.25 U	105 J	NA
	03SB0500206	2	6	20040423	0.25 U	0.25 U	25.2 J	NA
	03SB0500610	6	10	20040423	0.25 U	0.25 U	24.8 J	NA
	03SB0501014	10	14	20040423	0.25 U	0.25 U	10.3 J	NA
03SB051	03SS0510002	0	2	20040423	0.25 U	0.25 U	13 J	NA
	03SB0510206	2	6	20040423	0.25 U	0.25 U	21.1 J	NA
	03SB0510610	6	10	20040423	0.25 U	0.25 U	13 J	NA
03SB052	03SS0520002	0	2	20040423	0.25 U	0.25 U	32.1 J	NA
	03SB0520206	2	6	20040423	0.25 U	0.25 U	16.9 J	NA
	03SB0520610	6	10	20040423	0.25 U	0.25 U	13.3 J	NA
03SB137	03SB0521014	10	14	20040423	0.25 U	0.25 U	9.8 J	NA
	03SS137-0002	0	2	20111215	0.278 J	2.45	26.6 J	31.4
	03SB137-0204	2	4	20111215	0.19 U	1.61	101 J	NA
03SB137N2	03SS137-0002-N2	0	2	20111215	0.155 J	0.167 U	NA	NA
	03SB137-0204-N2	2	4	20111215	0.143 U	0.143 U	NA	NA
03SB138	03SS138-0002	0	2	20111215	2.79	146	68.7 J	144
	03SB138-0204	2	4	20111215	2.1	81.2	118 J	NA
03SB138E2	03SS138-0002-E2	0	2	20111215	6.05	13.5	NA	NA
	03SB138-0204-E2	2	4	20111215	0.138 U	0.263 J	NA	NA
03SB140	03SS140-0002	0	2	20111213	0.194 J	0.173 J	87.4 J	58.6
	03SB140-0204	2	4	20111213	0.215 J	0.287 J	68.6 J	NA
03SB141	03SS141-0002	0	2	20111215	2.41	226	48.6 J	42.1

TABLE 3-1

FBL DATA AND CALCULATED LEAD VALUES  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
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LOCATION	SAMPLE ID	TOP DEPTH	BOTTOM DEPTH	SAMPLE DATE	TNT (mg/kg)	RDX (mg/kg)	LEAD (mg/kg)	CALC LEAD (mg/kg)
03SB141	03SB141-0204	2	4	20111215	0.182 U	0.747	85.9 J	NA
03SB141S2	03SS141-0002-S2	0	2	20111215	3.68 J	242	NA	NA
	03SB141-0204-S2	2	4	20111215	0.154 U	0.249 J	NA	NA
03SB143	03SS143-0002	0	2	20111213	89.5	264	NA	NA
	03SB143-0204	2	4	20111213	764	534	NA	NA
03SB143S2	03SS143-0002-S2	0	2	20111215	0.154 U	0.873	NA	NA
	03SB143-0204-S2	2	4	20111215	0.167 U	0.961	NA	NA
03SB145	03SS145-0002	0	2	20111215	28.4	909	NA	NA
	03SB145-0204	2	4	20111215	0.148 U	0.599	NA	NA
03SB145E2	03SS145-0002-E2	0	2	20111215	0.243 J	0.655	NA	NA
	03SB145-0204-E2	2	4	20111215	0.16 U	0.998	NA	NA
03SB147	03SS147-0002	0	2	20111215	3260	4030	NA	NA
	03SB147-0204	2	4	20111215	547	820	NA	NA
03SB147N	03SS147-0002-N2	0	2	20111215	0.523	0.785	NA	NA
	03SB147-0204-N2	2	4	20111215	0.138 U	0.138 U	NA	NA

**Notes**

MCS - Media Cleanup Standard

CALC LEAD - calculated lead value

MG/KG - milligrams per kilogram

U - concentrations was not detected above the laboratory detection limit

Indicates a concentration greater than the Media Cleanup Standard

TABLE 3-2

LEAD CORRELATION ANALYSES  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 1 OF 2

LOCATION ID	SAMPLE ID	SAMPLE DATE	PARAMETER	XRF-VALUE	FBL-VALUE	CALC VALUE	PLOT DATA		
							XRF-VALUE	FBL-VALUE	XRF-VALUE
03SB018	03SB018-0204	12/15/2011	LEAD	836.33	---	618.2	41.33	36.2	41.33
	03SB018-0406	12/14/2011	LEAD	41.33	36.2	40.1	66.33	54.3	66.33
	03SB018-0608	12/14/2011	LEAD	22.00	---	26.1	60.00	60.4	60.00
	03SB018-0204-N2	12/13/2011	LEAD	1400.00	---	1028.2	697.33	547	697.33
	03SB018-0406-N2	12/13/2011	LEAD	66.33	54.3	58.3	10.67	24.5	10.67
	03SB018-0204-N3	12/14/2011	LEAD	60.00	60.4	53.7	51.67	80.6	51.67
03SB131	03SB131-0204	12/13/2011	LEAD	28.33	---	30.7	317.00	258	317.00
03SB018	03SB018-0204-S1	12/14/2011	LEAD	37.33	---	37.2	40.00	50.4	40.00
03SB018	03SB018-0204-S2	12/13/2011	LEAD	58.33	---	52.5	56.00	60.7	56.00
03SB123	03SB123-0204	12/13/2011	LEAD	68.67	---	60.0	308.67	208	308.67
03SB018	03SB018-0204-E2	12/13/2011	LEAD	697.33	547	517.2	5.00	14	5.00
03SB018	03SB018-0406-E2	12/13/2011	LEAD	10.67	24.5	17.8	306.33	213	306.33
03SB018	03SB018-0204-E3	12/14/2011	LEAD	51.67	80.6	47.6	35.00	39.2	35.00
03SB134	03SB134-0204	12/13/2011	LEAD	150.67	---	119.6	97.67	97.4	97.67
03SB018	03SB018-0204-W2	12/13/2011	LEAD	317.00	258	240.6	187.00	143	187.00
03SB018	03SB018-0406-W2	12/13/2011	LEAD	40.00	50.4	39.2	71.67	60	71.67
03SB018	03SB018-0204-W3	12/14/2011	LEAD	56.00	60.7	50.8	19.67	25	19.67
03SB134	03SB134-0204	12/13/2011	LEAD	64.33	---	56.9	22.33	24.2	22.33
03SB019	03SB019-0406	12/14/2011	LEAD	308.67	208	234.5	24.33	26.4	24.33
03SB019	03SB019-0608	12/14/2011	LEAD	5.00	14	13.7	34.67	48.6	34.67
03SB019	03SB019-0204-N1	12/14/2011	LEAD	306.33	213	232.8	29.33	26.6	29.33
03SB019	03SB019-0406-N1	12/14/2011	LEAD	35.00	39.2	35.5	66.67	87.4	66.67
03SB019	03SB019-0204-N2	12/13/2011	LEAD	16.00	---	21.7	183.67	68.7	183.67
03SB129	03SB129-0204	12/13/2011	LEAD	21.67	---	25.8	44.00	48.6	44.00
03SB019	03SB019-0204-S1	12/14/2011	LEAD	97.67	97.4	81.1	66.67	35.3	66.67
03SB019	03SB019-0204-S2	12/13/2011	LEAD	37.67	---	37.5	55.00	73.2	55.00
03SB125	03SB125-0204	12/13/2011	LEAD	59.33	---	53.2	92.00	54.4	92.00
03SB019	03SB019-0204-E1	12/14/2011	LEAD	187.00	143	146.1	111.33	72.4	111.33
03SB019	03SB019-0204-E2	12/13/2011	LEAD	50.33	---	46.7			
03SB127	03SB127-0204	12/13/2011	LEAD	12.00	---	18.8			
03SB019	03SB019-0204-W1	12/14/2011	LEAD	71.67	60	62.2			
03SB019	03SB019-0204-W2	12/13/2011	LEAD	170.00	---	133.7			
03SB048	03SB048-0204-N1	12/13/2011	LEAD	19.67	25	24.4			
03SB048	03SB048-0204-N2	12/13/2011	LEAD	18.00	---	23.2			
03SB164	03SB164-0204	12/13/2011	LEAD	5.00	---	13.7			
03SB048	03SB048-0204-S1	12/14/2011	LEAD	22.33	24.2	26.3			
03SB048	03SB048-0204-S2	12/13/2011	LEAD	12.67	---	19.3			
03SB162	03SB162-0204	12/13/2011	LEAD	8.67	---	16.4			
03SB048	03SB048-0204-E1	12/14/2011	LEAD	24.33	26.4	27.8			
03SB048	03SB048-0204-E2	12/13/2011	LEAD	14.67	---	20.7			
03SB163	03SB163-0204	12/13/2011	LEAD	26.00	---	29.0			
03SB048	03SB048-0204-W1	12/14/2011	LEAD	34.67	48.6	35.3			
03SB161	03SB161-0204	12/13/2011	LEAD	26.67	---	29.5			
03SS022	03SS022-0002-N1	20111215	LEAD	---	23.7	NA			
03SB022	03SB022-0204-N1	12/15/2011	LEAD	---	21.8	NA			
03SS022	03SS022-0002-N2	20111215	LEAD	---	19.8	NA			
03SB022	03SB022-0204-N2	12/15/2011	LEAD	---	61.9	NA			
03SS022	03SS022-0002-N3	20111215	LEAD	---	20.5	NA			
03SB022	03SB022-0204-N3	12/15/2011	LEAD	---	25.8	NA			
03SS137	03SS137-0002	20111215	LEAD	29.33	26.6	31.4			
03SB137	03SB137-0204	12/15/2011	LEAD	---	101	NA			
03SS022	03SS022-0002-S1	20111215	LEAD	---	30.2	NA			
03SB022	03SB022-0204-S1	12/15/2011	LEAD	---	30.8	NA			
03SS022	03SS022-0002-S2	20111215	LEAD	---	19.4	NA			
03SB022	03SB022-0204-S2	12/15/2011	LEAD	---	20.4	NA			
03SS022	03SS022-0002-S3	20111215	LEAD	---	20.9	NA			
03SB022	03SB022-0204-S3	12/15/2011	LEAD	---	21.6	NA			
03SS140	03SS140-0002	20111213	LEAD	66.67	87.4	58.6			
03SB140	03SB140-0204	12/13/2011	LEAD	---	68.6	NA			
03SS022	03SS022-0002-E1	20111215	LEAD	---	18.3	NA			
03SB022	03SB022-0204-E1	12/15/2011	LEAD	---	23.6	NA			
03SS022	03SS022-0002-E2	20111215	LEAD	---	43.8	NA			
03SB022	03SB022-0204-E2	12/15/2011	LEAD	---	149	NA			
03SS022	03SS022-0002-E3	20111215	LEAD	---	54.4	NA			
03SB022	03SB022-0204-E3	12/15/2011	LEAD	---	21.3	NA			
03SS138	03SS138-0002	20111215	LEAD	183.67	68.7	143.6			
03SB138	03SB138-0204	12/15/2011	LEAD	---	118	NA			
03SS022	03SS022-0002-W1	20111215	LEAD	---	54.7	NA			
03SB022	03SB022-0204-W1	12/15/2011	LEAD	---	69.7	NA			
03SS022	03SS022-0002-W2	20111215	LEAD	---	52.2	NA			
03SB022	03SB022-0204-W2	12/15/2011	LEAD	---	50.9	NA			
03SS022	03SS022-0002-W3	20111215	LEAD	---	123	NA			
03SB022	03SB022-0204-W3	12/15/2011	LEAD	---	94.1	NA			

TABLE 3-2

LEAD CORRELATION ANALYSES  
 SWMU 3 - ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 2 OF 2

LOCATION ID	SAMPLE ID	SAMPLE DATE	PARAMETER	XRF-VALUE	FBL-VALUE	CALC VALUE	PLOT DATA		
							XRF-VALUE	FBL-VALUE	XRF-VALUE
03SS141	03SS141-0002	20111215	LEAD	44.00	48.6	42.1			
03SB141	03SB141-0204	12/15/2011	LEAD	---	85.9	NA			
03SS024	03SS024-0002-N1	20111215	LEAD	---	125	NA			
03SB024	03SB024-0204-N1	20111215	LEAD	---	103	NA			
03SS024	03SS024-0002-N2	20111215	LEAD	66.67	35.3	58.6			
03SB024	03SB024-0204-N2	20111215	LEAD	---	115	NA			
03SS147	03SS147-0002	20111215	LEAD	81.67	---	69.5			
03SS024	03SS024-0002-S1	20111215	LEAD	---	71.1	NA			
03SB024	03SB024-0204-S1	20111215	LEAD	---	17	NA			
03SS024	03SS024-0002-S2	20111215	LEAD	55.00	73.2	50.1			
03SB024	03SB024-0204-S2	20111215	LEAD	---	160	NA			
03SS143	03SS143-0002	12/13/2011	LEAD	76.33	---	65.6			
03SS024	03SS024-0002-E1	20111215	LEAD	---	36.3	NA			
03SB024	03SB024-0204-E1	20111215	LEAD	---	32.2	NA			
03SS024	03SS024-0002-E2	20111215	LEAD	92.00	54.4	77.0			
03SB024	03SB024-0204-E2	20111215	LEAD	---	15.7	NA			
03SS145	03SS145-0002	20111215	LEAD	65.33	---	57.6			
03SS024	03SS024-0002-W1	20111215	LEAD	---	97.9	NA			
03SB024	03SB024-0204-W1	20111215	LEAD	---	23.9	NA			
03SS024	03SS024-0002-W2	20111215	LEAD	111.33	72.4	91.0			
03SB024	03SB024-0204-W2	20111215	LEAD	---	90.2	NA			

TABLE 4-1

PROPOSED ADDITIONAL DELINEATION SOIL SAMPLES  
 SWMU 3 – ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 1 OF 5

Sample Location	Sample ID	FBL Analyses			
		Lead	RDX	TNT	TC Metals
03SB022N2	03SB022N2-0406	---	X	X	---
	03SB022N2-0608	---	X	X	---
	03SB022N2-0810	---	X	X	---
03SB022W1	03SB022W1-0406	---	X	X	---
	03SB022W1-0608	---	X	X	---
	03SB022W1-0810	---	X	X	---
03SB022W2	03SB022W2-0406	---	X	X	---
	03SB022W2-0608	---	X	X	---
	03SB022W2-0810	---	X	X	---
03SB022E2	03SB022E2-0406	---	X	X	---
	03SB022E2-0608	---	X	X	---
	03SB022E2-0810	---	X	X	---
03SB138	03SB138-0406	---	X	X	---
	03SB138-0608	---	X	X	---
	03SB138-0810	---	X	X	---
03SB024N3	03SB024N3-0406	---	X	X	---
	03SB024N3-0608	---	X	X	---
	03SB024N3-0810	---	X	X	---
03SB143	03SB143-0406	---	X	X	---
	03SB143-0608	---	X	X	---
	03SB143-0810	---	X	X	---
03SB147	03SB147-0406	---	X	X	---
	03SB147-0608	---	X	X	---
	03SB147-0810	---	X	X	---
03SB165	03SS165-0002	X	---	---	---
	03SB165-0204	X	---	---	---
	03SB165-0406	X	---	---	---
	03SB165-0608	X	---	---	---
	03SB165-0810	X	---	---	---
03SB166	03SS166-0002	X	---	---	---
	03SB166-0204	X	---	---	---
	03SB166-0406	X	---	---	---
	03SB166-0608	X	---	---	---
	03SB166-0810	X	---	---	---

TABLE 4-1

PROPOSED ADDITIONAL DELINEATION SOIL SAMPLES  
 SWMU 3 – ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 2 OF 5

Sample Location	Sample ID	FBL Analyses			
		Lead	RDX	TNT	TC Metals
03SB167	03SS167-0002	X	---	---	---
	03SB167-0204	X	---	---	---
	03SB167-0406	X	---	---	---
	03SB167-0608	X	---	---	---
	03SB167-0810	X	---	---	---
03SB168	03SS168-0002	X	X	X	---
	03SB168-0204	X	X	X	---
	03SB168-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB168-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB168-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB169	03SS169-0002	X	X	X	---
	03SB169-0204	X	X	X	---
	03SB169-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB169-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB169-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB170	03SS170-0002	X	X	X	---
	03SB170-0204	X	X	X	---
	03SB170-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB170-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB170-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB171	03SS171-0002	X	X	X	---
	03SB171-0204	X	X	X	---
	03SB171-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB171-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB171-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB172	03SS172-0002	X	X	X	---
	03SB172-0204	X	X	X	---
	03SB172-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB172-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB172-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB173	03SS173-0002	X	X	X	---
	03SB173-0204	X	X	X	---
	03SB173-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB173-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---

TABLE 4-1

PROPOSED ADDITIONAL DELINEATION SOIL SAMPLES  
 SWMU 3 – ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 3 OF 5

Sample Location	Sample ID	FBL Analyses			
		Lead	RDX	TNT	TC Metals
	03SB173-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB174	03SS174-0002	X	X	X	---
	03SB174-0204	X	X	X	---
	03SB174-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB174-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB174-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB175	03SS175-0002	X	X	X	---
	03SB175-0204	X	X	X	---
	03SB175-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB175-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB175-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB176	03SS176-0002	X	X	X	---
	03SB176-0204	X	X	X	---
	03SB176-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB176-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB176-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB177	03SS177-0002	X	X	X	---
	03SB177-0204	X	X	X	---
	03SB177-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB177-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB177-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB178	03SS178-0002	X	X	X	---
	03SB178-0204	X	X	X	---
	03SB178-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB178-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB178-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB179	03SS179-0002	X	X	X	---
	03SB179-0204	X	X	X	---
	03SB179-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB179-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB179-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB180	03SS180-0002	X	X	X	---
	03SB180-0204	X	X	X	---
	03SB180-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---

TABLE 4-1

PROPOSED ADDITIONAL DELINEATION SOIL SAMPLES  
 SWMU 3 – ABG/OJT MAIN TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA  
 PAGE 4 OF 5

Sample Location	Sample ID	FBL Analyses			
		Lead	RDX	TNT	TC Metals
	03SB180-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB180-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB181	03SS181-0002	X	X	X	---
	03SB181-0204	X	X	X	---
	03SB181-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB181-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB181-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB182	03SS182-0002	X	X	X	---
	03SB182-0204	X	X	X	---
	03SB182-0406	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB182-0608	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
	03SB182-0810	X	X <sup>(1)</sup>	X <sup>(1)</sup>	---
03SB183	03SS183-0002	X	---	---	---
	03SB183-0204	X	---	---	---
	03SB183-0406	X	---	---	---
	03SB183-0608	X	---	---	---
	03SB183-0810	X	---	---	---
03SB184	03SS184-0002	X	---	---	---
	03SB184-0204	X	---	---	---
	03SB184-0406	X	---	---	---
	03SB184-0608	X	---	---	---
	03SB184-0810	X	---	---	---
03SB185	03SS185-0002	X	---	---	---
	03SB185-0204	X	---	---	---
	03SB185-0406	X	---	---	---
	03SB185-0608	X	---	---	---
	03SB185-0810	X	---	---	---
03SB018-TC	03SB018-TC-0204	---	---	---	X
03SB019-TC	03SB019-TC-0204	---	---	---	X
03SB048-TC	03SB048-TC-0206	---	---	---	X
03SB024-TC	03SS024-TC-0002	---	---	---	X
<b>TOTAL SOIL SAMPLES</b>		<b>105</b>	<b>99</b>	<b>99</b>	<b>4</b>

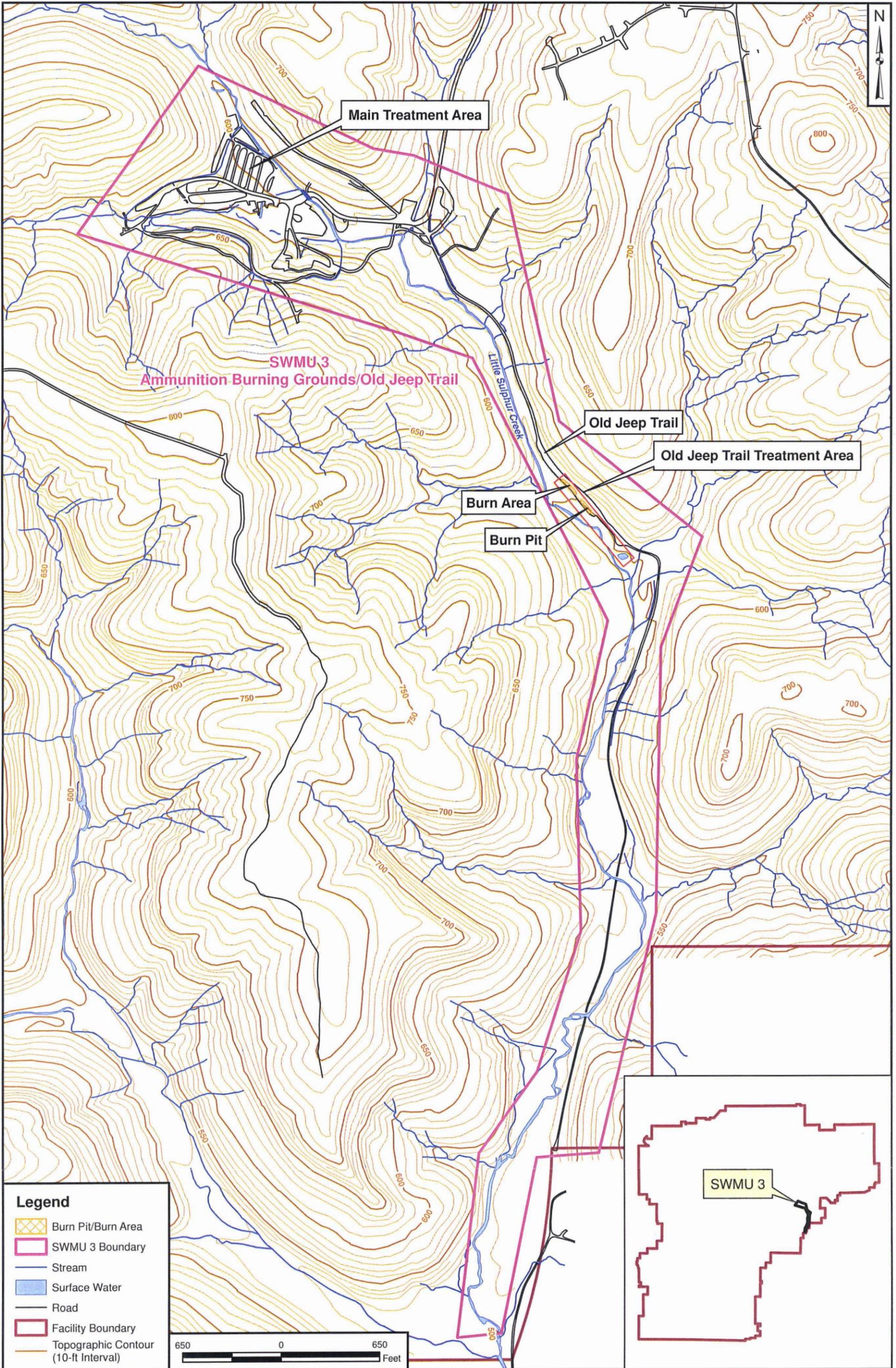
(1) = Sample to be collected, marked as Extract and Hold, and shipped to the FBL. Sample only to be analyzed by the FBL if instructed to do so by Tetra Tech.

**TABLE 4-1**

**PROPOSED ADDITIONAL DELINEATION SOIL SAMPLES  
SWMU 3 – ABG/OJT MAIN TREATMENT AREA  
NSA CRANE  
CRANE, INDIANA  
PAGE 5 OF 5**

Field duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples per analyte.

FBL = Fixed-base laboratory  
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine  
SB = Soil boring / subsurface soil sample  
SS = Surface soil sample  
TC = Toxicity characteristic  
TNT = 2,4,6-trinitrotoluene

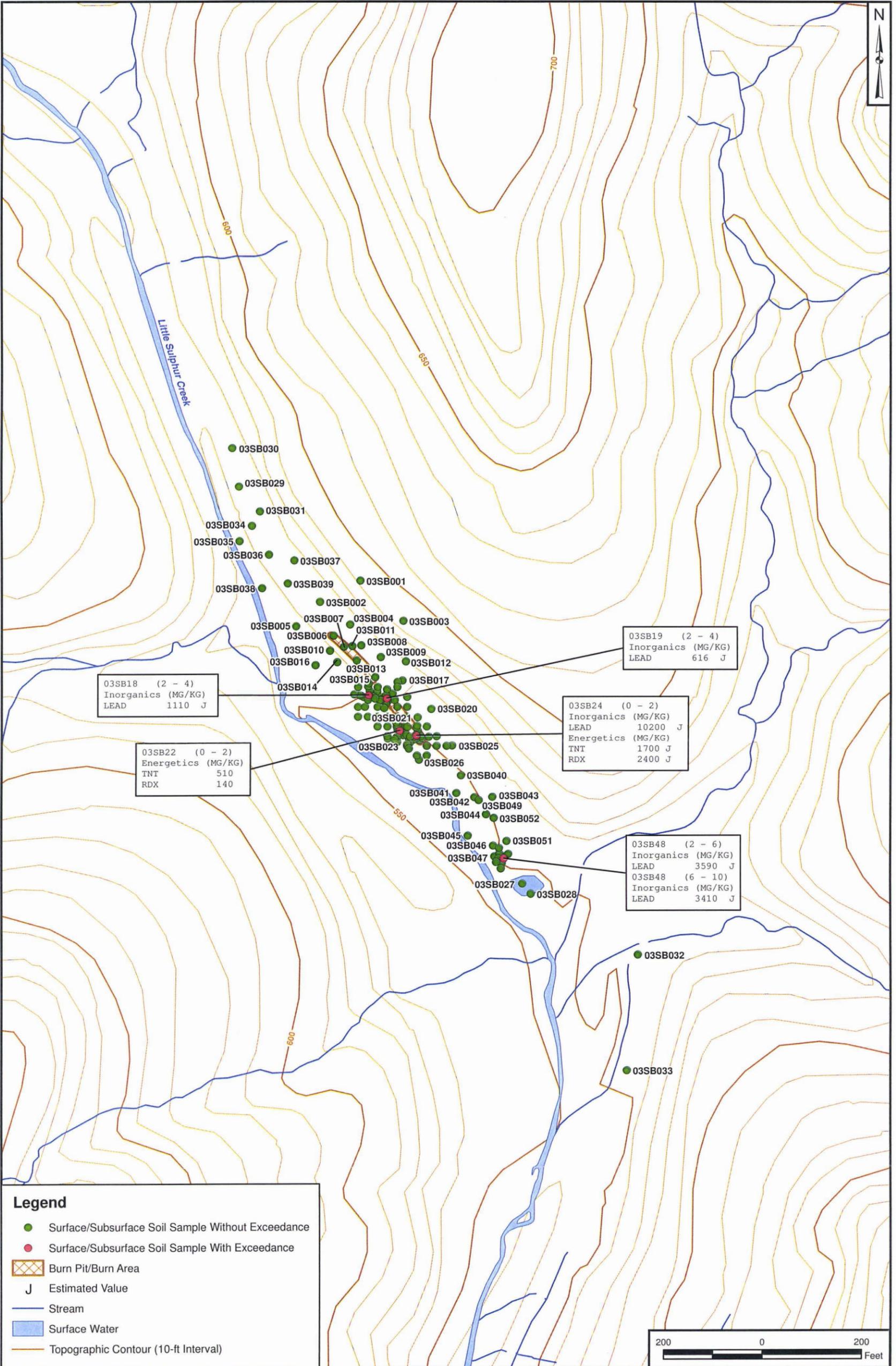


DRAWN BY	DATE
T. WHEATON	04/18/11
CHECKED BY	DATE
J. GOERDT	05/22/13
REVISED BY	DATE
S. PAXTON	05/22/13
SCALE	
AS NOTED	



**SITE LOCATION MAP**  
**SWMU 3 - AMMUNITION BURNING GROUNDS/OLD JEEP TRAIL**  
**NSA CRANE**  
**CRANE, INDIANA**

CONTRACT NUMBER	
CTO 21	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 1-1	0

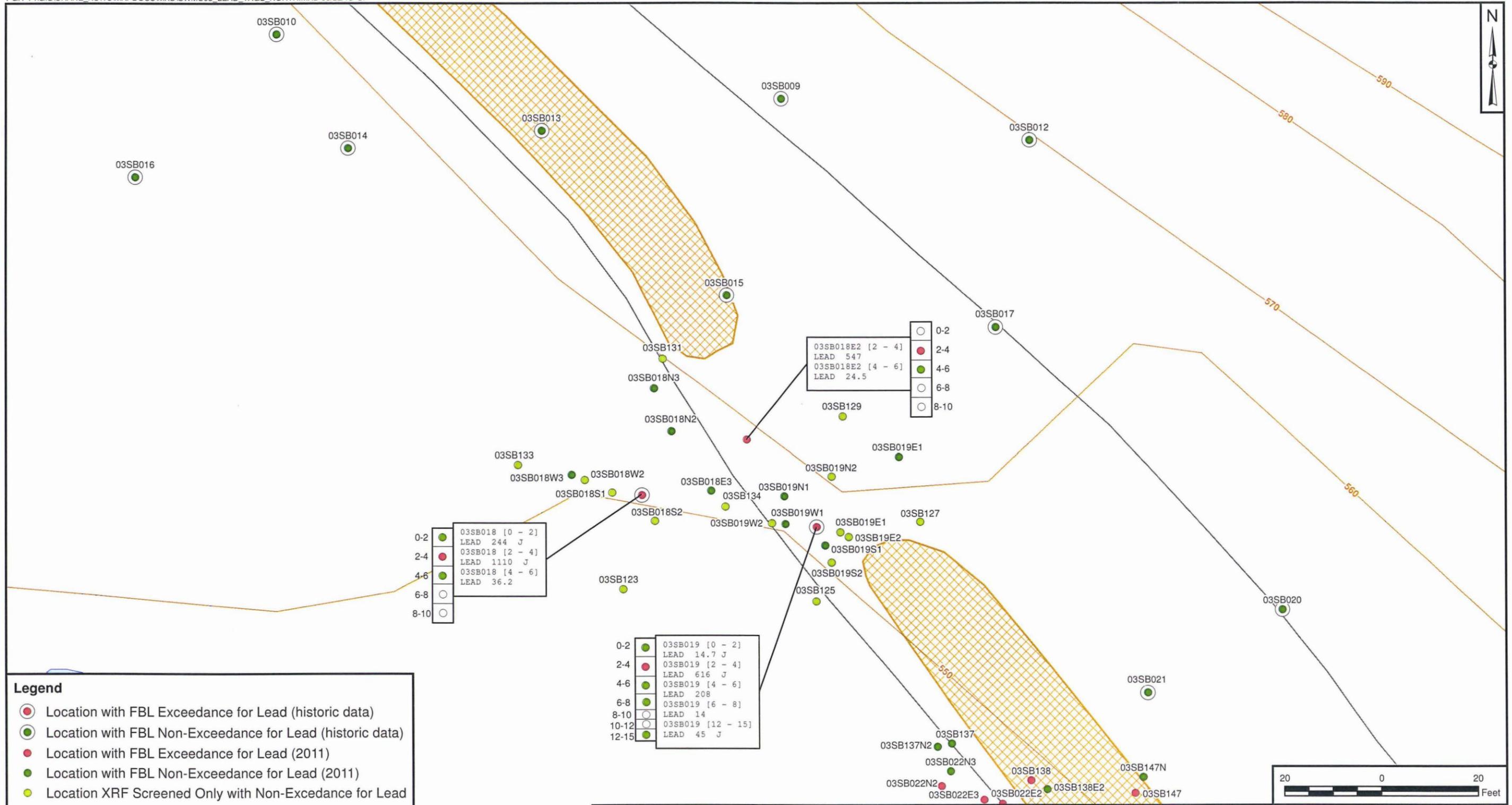


DRAWN BY	DATE
T. WHEATON	04/07/11
CHECKED BY	DATE
J. DUCAR	4/12/12
REVISED BY	DATE
SCALE	AS NOTED



**HISTORIC LEAD AND EXPLOSIVES EXCEEDANCES IN  
SURFACE AND SUBSURFACE SOIL  
SWMU 3 - AMMUNITION BURNING GROUNDS/OJT TREATMENT AREA  
NSA CRANE  
CRANE, INDIANA**

CONTRACT NUMBER	
CTO F274	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
1-2	0



**Legend**

- Location with FBL Exceedance for Lead (historic data)
- Location with FBL Non-Exceedance for Lead (historic data)
- Location with FBL Exceedance for Lead (2011)
- Location with FBL Non-Exceedance for Lead (2011)
- Location XRF Screened Only with Non-Exceedance for Lead

Concentrations in mg/kg

- J Estimated Value

- Road
- Water
- ▨ Burn Pit/Burn Area
- Topographic Contour (10-ft Interval)

- Exceedance of MCS
- Non-Exceedance of MCS
- No Sample Collected

0-2 ● 03SB018 [0 - 2]  
LEAD 244 J

2-4 ● 03SB018 [2 - 4]  
LEAD 1110 J

4-6 ● 03SB018 [4 - 6]  
LEAD 36.2

6-8 ○

8-10 ○

0-2 ● 03SB019 [0 - 2]  
LEAD 14.7 J

2-4 ● 03SB019 [2 - 4]  
LEAD 616 J

4-6 ● 03SB019 [4 - 6]  
LEAD 208

6-8 ● 03SB019 [6 - 8]

8-10 ○ LEAD 14

10-12 ○ 03SB019 [12 - 15]

12-15 ● LEAD 45 J

○ 0-2

● 2-4

● 4-6

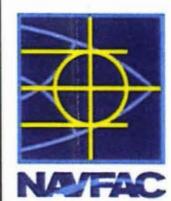
○ 6-8

○ 8-10

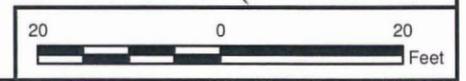
03SB018E2 [2 - 4]  
LEAD 547

03SB018E2 [4 - 6]  
LEAD 24.5

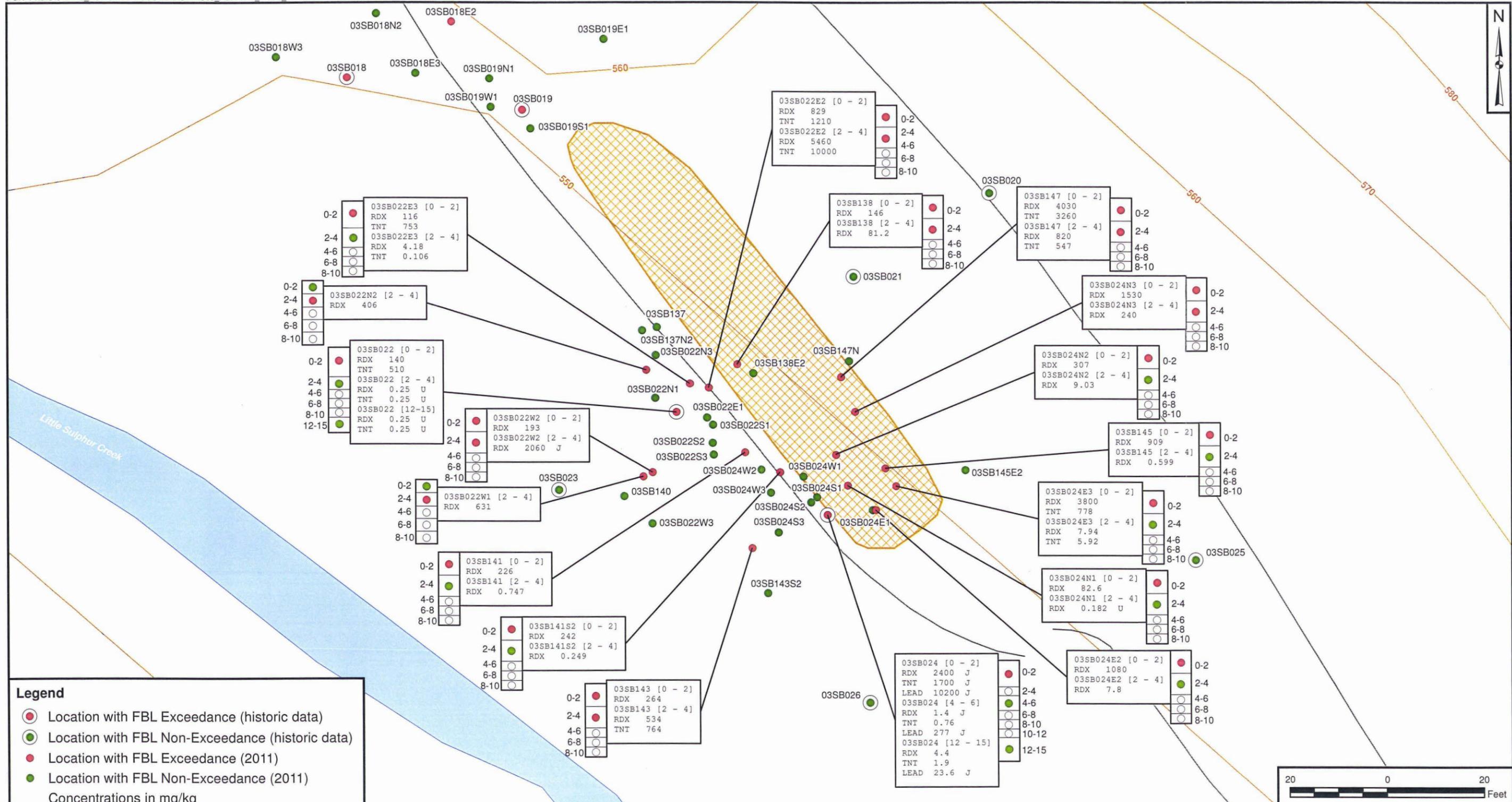
DRAWN BY	DATE
K. MOORE	3/26/12
CHECKED BY	DATE
J. GOERDT	05/22/13
REVISED BY	DATE
S. PAXTON	05/22/13
SCALE	
AS NOTED	



NORTHERN AREA (03SB018 & 03SB019) LEAD RESULTS  
SWMU 3 - AMMUNITION BURNING GROUNDS/OJT  
NSA CRANE  
CRANE, INDIANA



CONTRACT NUMBER	CTO NUMBER
	F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
3-1	0



**Legend**

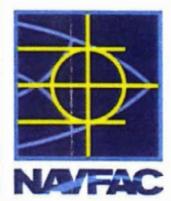
- Location with FBL Exceedance (historic data)
- Location with FBL Non-Exceedance (historic data)
- Location with FBL Exceedance (2011)
- Location with FBL Non-Exceedance (2011)

Concentrations in mg/kg  
 U Not Detected Above the Laboratory Detection Limit  
 J Estimated Value

- Road
- Water
- ▨ Burn Pit/Burn Area
- Topographic Contour (10-ft Interval)

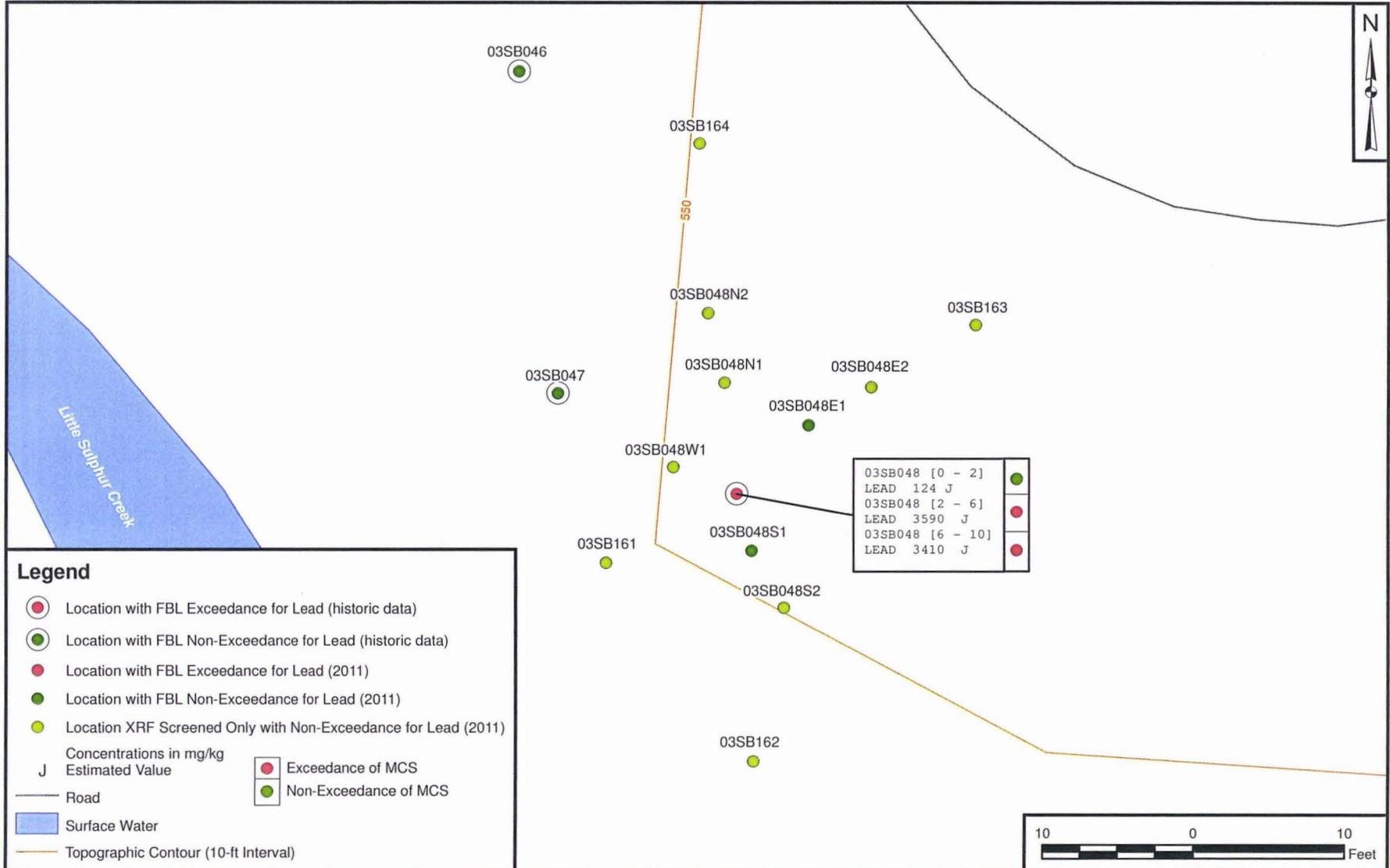
- Exceedance of MCS
- Non-Exceedance of MCS
- No Sample Collected

DRAWN BY K. MOORE	DATE 3/26/12
CHECKED BY J. GOERDT	DATE 05/22/13
REVISED BY S. PAXTON	DATE 05/22/13
SCALE AS NOTED	

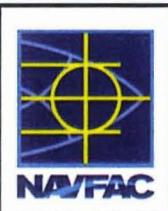


**NORTHERN AREA (03SB022 & 03SB024) RDX, TNT, AND LEAD RESULTS**  
**SWMU 3 - AMMUNITION BURNING GROUNDS/OJT**  
**NSA CRANE**  
**CRANE, INDIANA**

CONTRACT NUMBER	CTO NUMBER F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. 3-2	REV 0



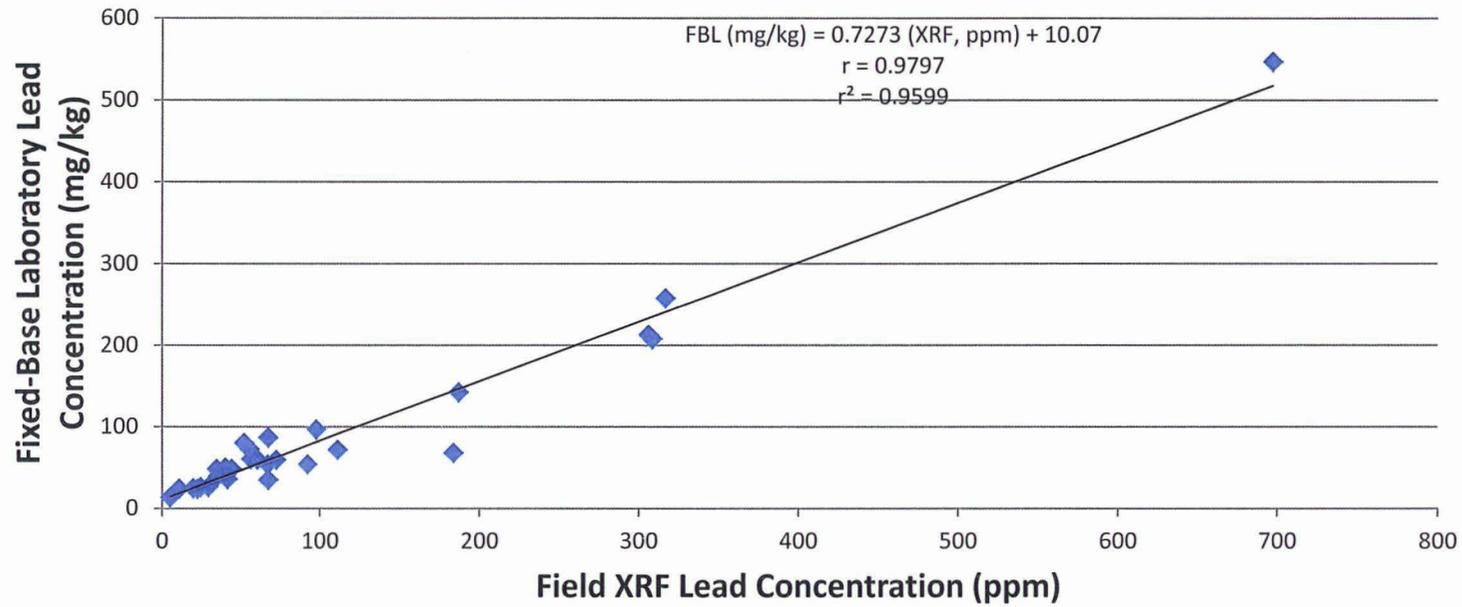
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K. MOORE	03/26/12
CHECKED BY	DATE
J. GOERDT	05/22/13
REVISED BY	DATE
S. PAXTON	05/22/13
SCALE	
AS NOTED	



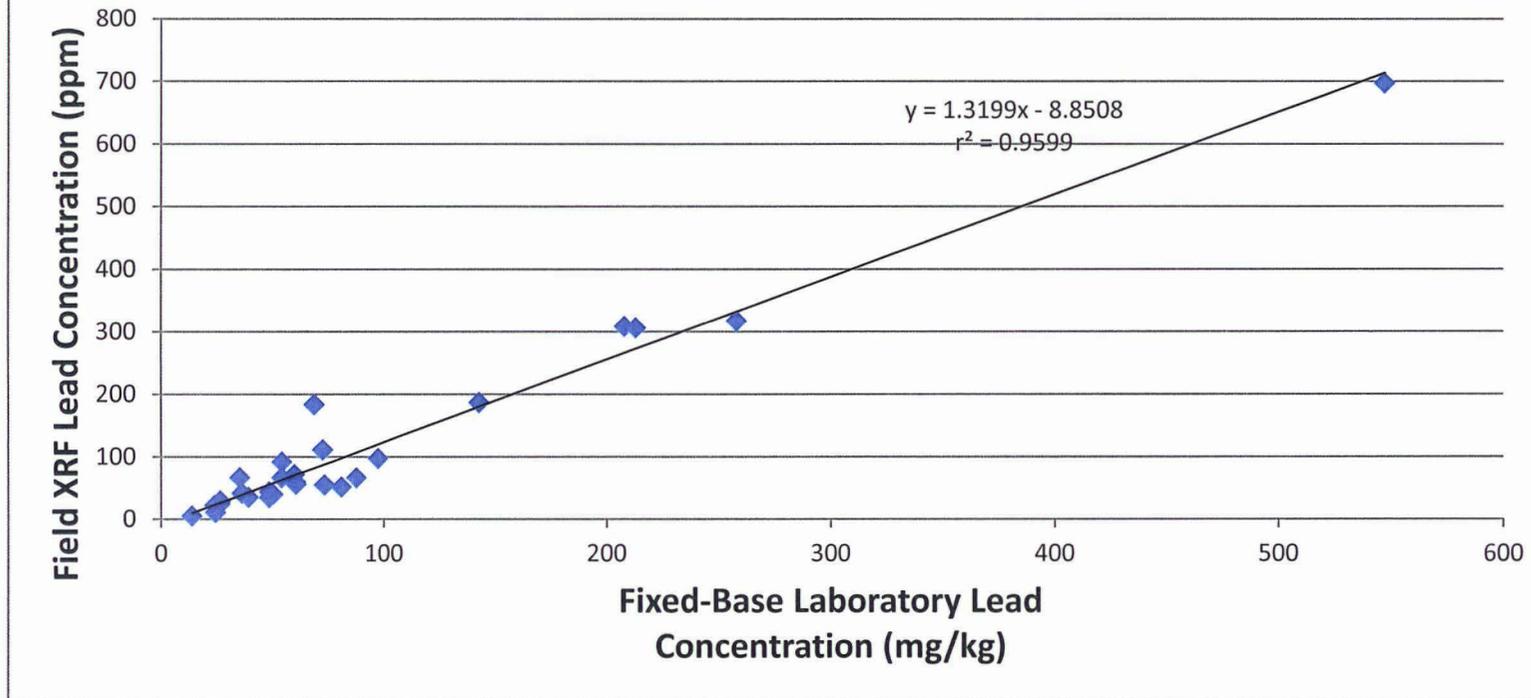
SOUTHERN AREA (03SB048) LEAD RESULTS  
 SWMU 3 - AMMUNITION BURNING GROUNDS/OJT TREATMENT AREA  
 NSA CRANE  
 CRANE, INDIANA

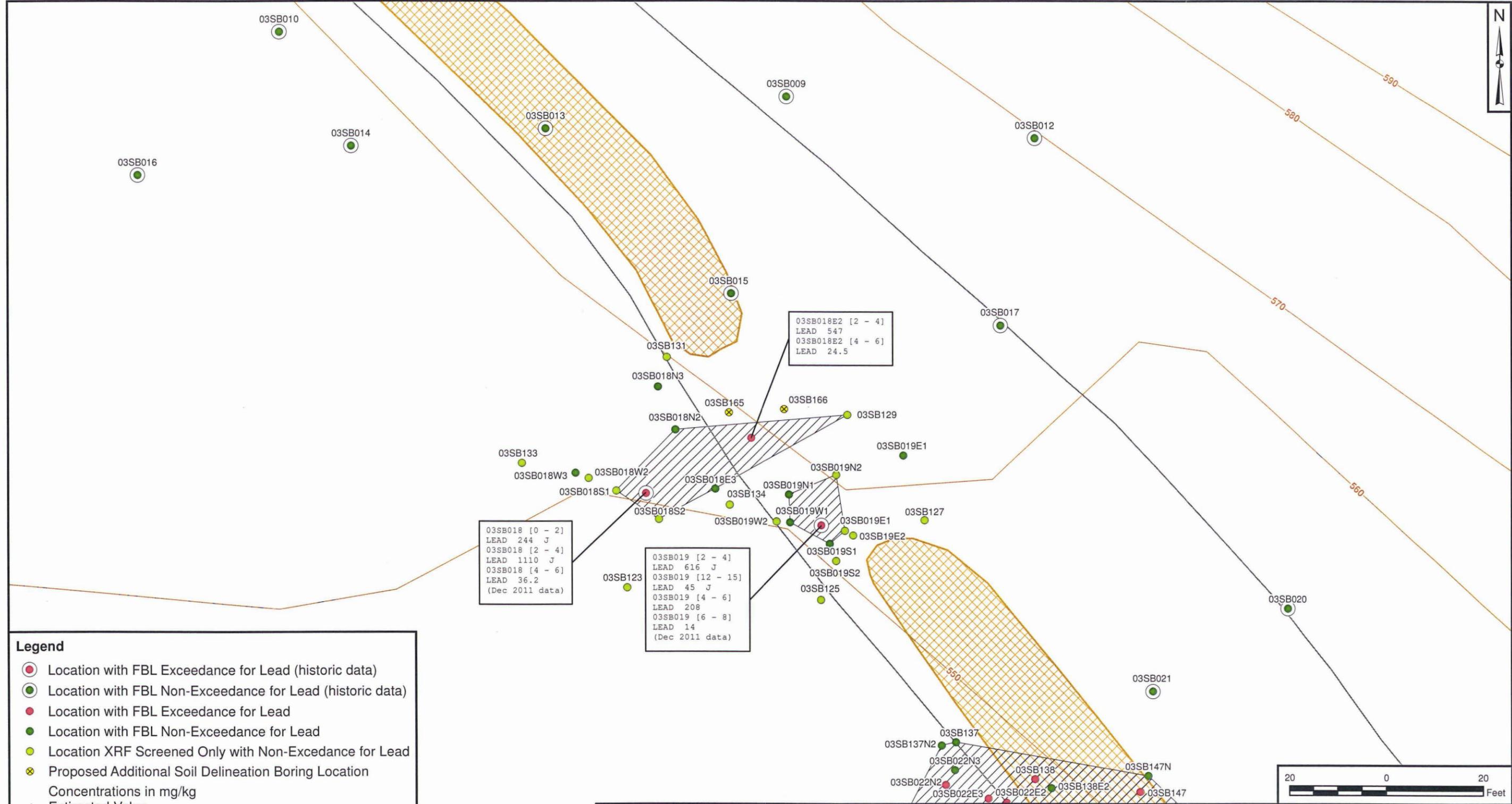
CONTRACT NUMBER	
F274	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
3-3	0

**FIGURE 3-4 LEAD CORRELATION PLOT**  
**Field XRF Concentrations vs. Fixed-Base Laboratory**  
**Concentrations**



**FIGURE 3-5 LEAD CORRELATION PLOT:  
Fixed-Base Laboratory and Field XRF Lead Concentrations**





**Legend**

- Location with FBL Exceedance for Lead (historic data)
- Location with FBL Non-Exceedance for Lead (historic data)
- Location with FBL Exceedance for Lead
- Location with FBL Non-Exceedance for Lead
- Location XRF Screened Only with Non-Exceedance for Lead
- ✕ Proposed Additional Soil Delineation Boring Location

Concentrations in mg/kg  
 J Estimated Value

- Road
- Topographic Contour (10-ft Interval)
- ▨ Proposed Soil Removal Area
- Water
- ▩ Burn Pit/Burn Area

03SB018 [0 - 2]  
 LEAD 244 J  
 03SB018 [2 - 4]  
 LEAD 1110 J  
 03SB018 [4 - 6]  
 LEAD 36.2  
 (Dec 2011 data)

03SB019 [2 - 4]  
 LEAD 616 J  
 03SB019 [12 - 15]  
 LEAD 45 J  
 03SB019 [4 - 6]  
 LEAD 208  
 03SB019 [6 - 8]  
 LEAD 14  
 (Dec 2011 data)

03SB018E2 [2 - 4]  
 LEAD 547  
 03SB018E2 [4 - 6]  
 LEAD 24.5

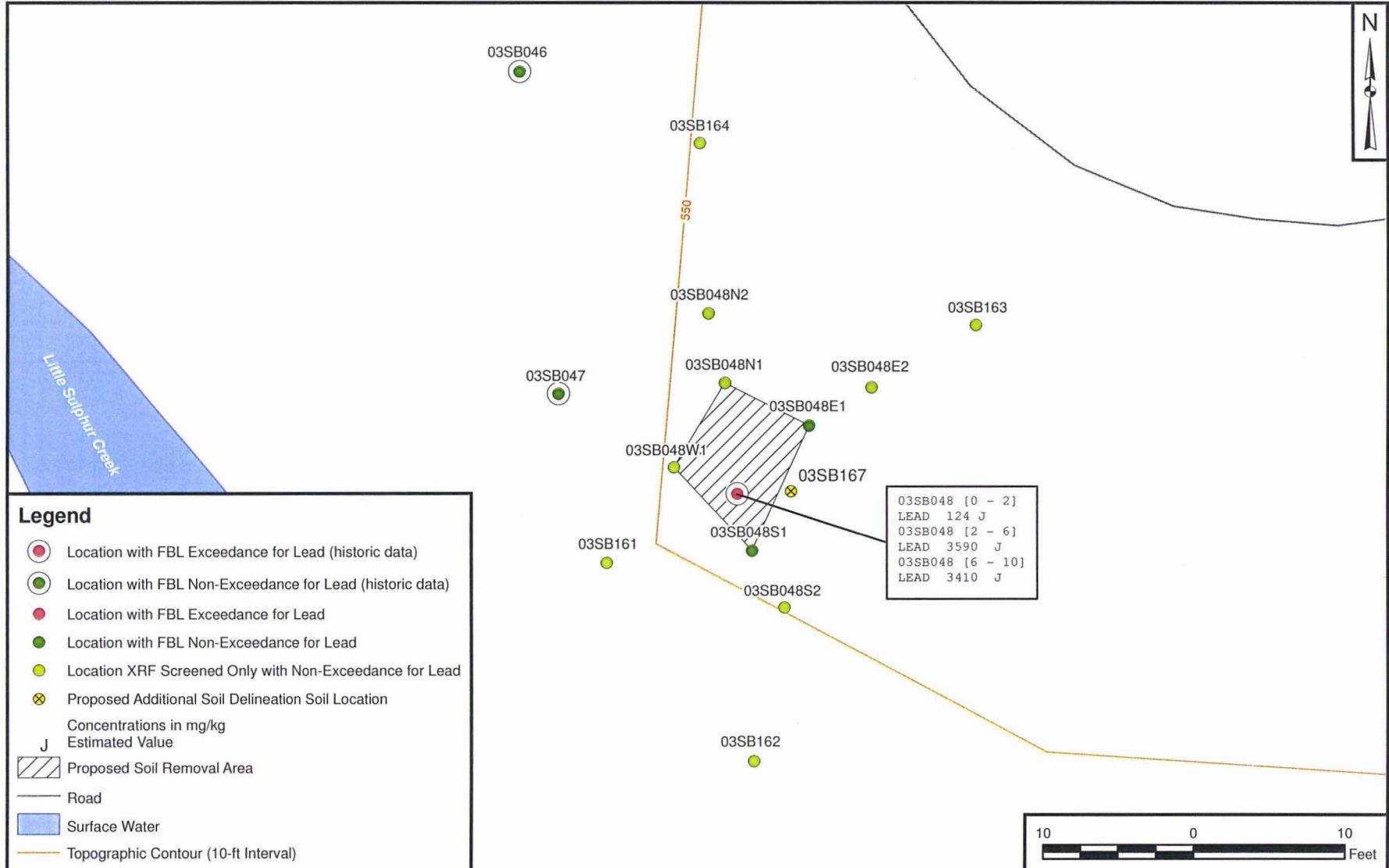


DRAWN BY	DATE
K. MOORE	03/26/12
CHECKED BY	DATE
J. GOERDT	05/22/13
REVISED BY	DATE
S. PAXTON	05/22/13
SCALE AS NOTED	

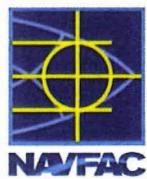


**PROPOSED ADDITIONAL SOIL DELINEATION SAMPLING LOCATIONS**  
 NORTHERN AREA (03SB018)  
 SWMU 3 - AMMUNITION BURNING GROUNDS/OJT  
 NSA CRANE  
 CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
	F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
4-1	0

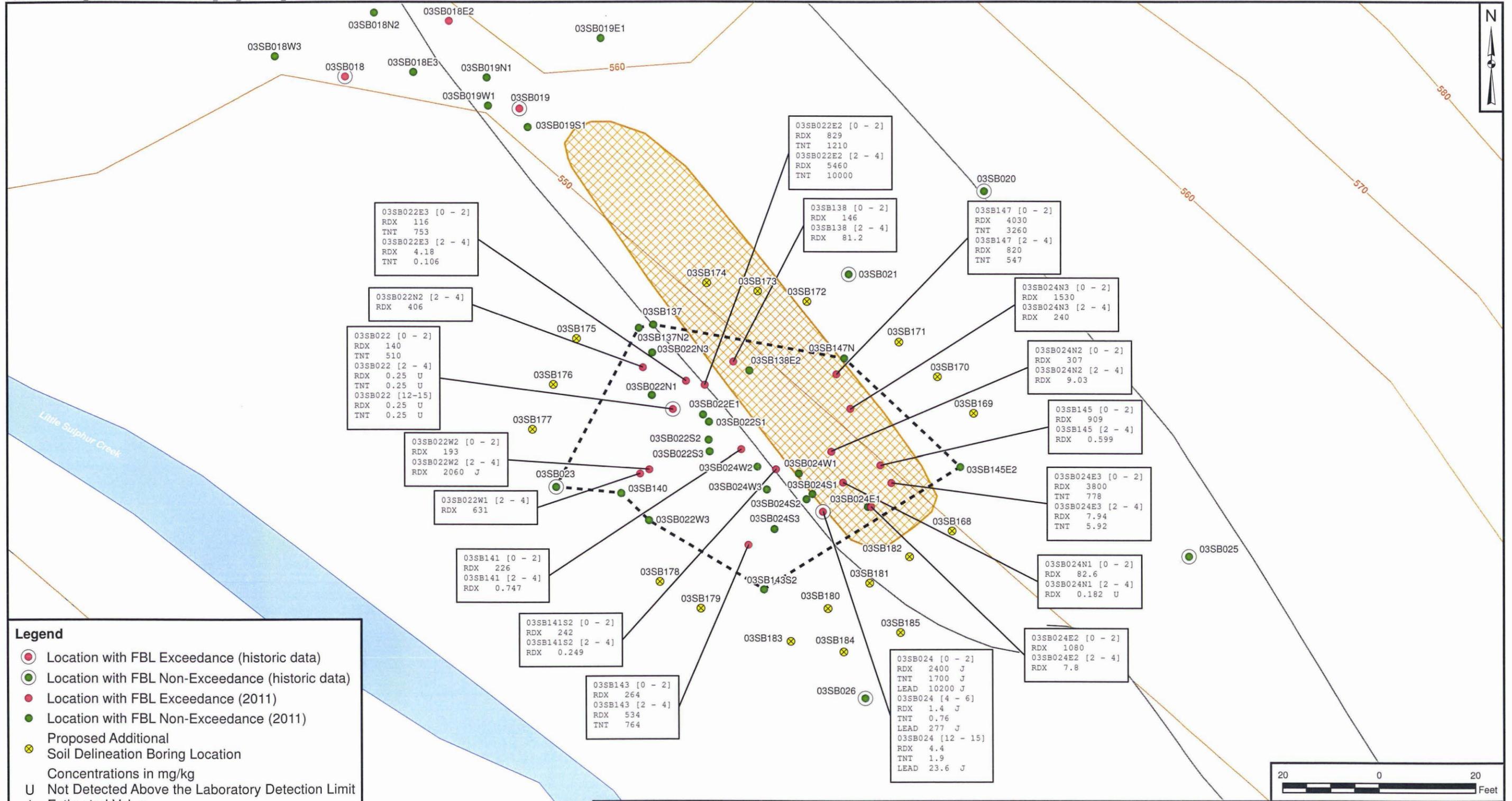


DRAWN BY	DATE
K. MOORE	03/26/12
CHECKED BY	DATE
J. GOERDT	05/22/13
REVISED BY	DATE
S. PAXTON	05/22/13
SCALE	
AS NOTED	



**PROPOSED ADDITIONAL SOIL DELINEATION SAMPLING LOCATION**  
**SOUTHERN AREA (03SB048)**  
**SWMU 3 - AMMUNITION BURNING GROUNDS/OJT TREATMENT AREA**  
**NSA CRANE**  
**CRANE, INDIANA**

CONTRACT NUMBER	
F274	
APPROVED BY	DATE
_____	_____
APPROVED BY	DATE
_____	_____
FIGURE NO.	REV
4-2	0



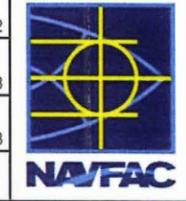
**Legend**

- Location with FBL Exceedance (historic data)
- Location with FBL Non-Exceedance (historic data)
- Location with FBL Exceedance (2011)
- Location with FBL Non-Exceedance (2011)
- ⊗ Proposed Additional Soil Delineation Boring Location

Concentrations in mg/kg  
 U Not Detected Above the Laboratory Detection Limit  
 J Estimated Value

- Road
- - - Current Estimated Contamination Area Boundary
- Water
- ⊗ Burn Pit/Burn Area
- Topographic Contour (10-ft Interval)

DRAWN BY	DATE
K. MOORE	04/16/12
CHECKED BY	DATE
J. GOERDT	05/22/13
REVISED BY	DATE
S. PAXTON	05/22/13
SCALE	
AS NOTED	



**PROPOSED ADDITIONAL SOIL DELINEATION SAMPLING LOCATIONS**  
 NORTHERN AREA (03SB022 & 03SB024)  
 SWMU 3 - AMMUNITION BURNING GROUNDS/OJT  
 NSA CRANE  
 CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
	F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
4-3	0

## **APPENDIX A**

### **SWMU 3 DATA SUMMARY TABLES**

**(Included on attached CD)**

- **APPENDIX A.1 – Field Documentation**
- **APPENDIX A.2 – Chain-of-Custody Forms**
- **APPENDIX A.3 – Site Photographs**