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SOLID WASTE MANAGEMENT UNIT 21 SAMPLING PLAN FOR DELINEATION NSA CRANE
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NAVFAC Atlantic Biological Resource Services

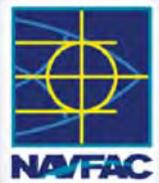
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February 14, 2014



SWMU 21 Sampling Plan for Delineation at Naval Support Activity Crane

Crane, Indiana



Prepared for:
NAVFAC Midwest
201 Dacatur Avenue, Building 1A
Great Lakes, IL 60088



Prepared by:
Tetra Tech, Inc.
1320 North Courthouse Road, Suite 600
Arlington, VA 22201





SAMPLING PLAN FOR DELINEATION

Project/Installation Name NSA Crane, SWMU 21 – Defense Reutilization Marketing Office (DRMO) Storage Lot	CTO & Project Number <u>CTO F272; 112IG06018</u>	Task Modification Number <u>003</u>
Modification to: <u>SWMU 21 Sampling and Analysis Plan (SAP), August 2010; and SWMU 21 SAP Addendum, March 2011</u>	Site Location <u>NSA Crane</u>	Date of Request <u>February 14, 2014</u>

Background. Tetra Tech performed RCRA Facility Investigation (RFI) sampling in September 2010, April 2011, and March, June, and July 2012 at SWMU 21 - Defense Reutilization Marketing Office (DRMO) Storage Lot. This work included collection of surface and subsurface soil, sediment, and surface water samples and analysis for multiple compounds including polychlorinated biphenyls (PCBs), lead, and polycyclic aromatic hydrocarbons (PAHs).

Within some areas of the site, the horizontal and vertical limits of either PCB, lead, or PAHs were not defined during earlier investigations. The purpose of this Field Task Modification Request (FTMR) is to identify the proposed additional sampling and analyses to be conducted to address existing data gaps at SWMU 21. Additional sampling and analyses are required to better define limits of contamination in some areas and to determine the presence or absence of contamination in other areas. This new information will be used to complete the RFI, define potential excavation limits, and provide accurate potential remediation costs.

All work will be conducted in compliance with field and analytical procedures described in the August 2010 SWMU 21 Sampling and Analysis Plan (SAP) and the March 2011 SWMU 21 SAP Addendum.

Additional characterization at SWMU 21 will be completed both inside and outside the DRMO fence. The fence line, which encompasses the main portion of the DRMO yard, is shown on Figure 1. Sampling objectives are different for locations inside the fence versus locations outside the fence. Inside the fence, samples will be collected to characterize contamination based on industrial land use. Samples outside the fence will be collected to characterize contamination based on residential land use. Therefore, different Media Cleanup Goals (MCGs) have been defined for samples collected inside and outside the fence, as shown in the table below.

Contaminant	Inside DRMO fence (Industrial)	Outside DRMO fence (Residential)
Total PCBs	25 mg/kg	1 mg/kg
Lead	800 mg/kg	400 mg/kg
Benzo(a)pyrene (BAP)	2,100 µg/kg	210 µg/kg

MCGs for PCBs are based on Toxic Substance Control Act (TSCA) closure levels. Indiana Department of Environmental Management (IDEM) closure levels for residential and industrial land use are used as the MCGs for lead and BAP.

The proposed supplemental sampling and associated tasks described in this FTMR include:

- Collection of surface and subsurface soil samples from locations inside the fence to further define the vertical and horizontal extent of PCB, lead, or PAH contamination based on the industrial MCGs.
- Collection of surface and subsurface soil samples from locations outside the fence to further define the vertical and horizontal extent of PCB or lead contamination based on the residential MCGs.
- Collection of a sediment/sludge sample from the inactive oil/water (O/W) separator at Building 3058. This sample will be characterized to assist with decisions regarding the fate of the O/W separator.
- Collection of gravel samples from locations inside the fence. Much of the site located inside the fence is covered with a gravel layer (gravel pad) that ranges in thickness from 1 to 4 feet below deep. The gravel may

have been impacted by PCB releases. The gravel will be sampled and characterized to determine whether it is a source of PCB contamination that may impact soil below the gravel layer.

- In addition to these on-site areas, SWMU 21 was identified as a potential source for offsite runoff of PCB contaminated soil. Therefore, additional sediment sampling is required to determine if locations adjacent to the site and downstream of SWMU 21 in Hayes Branch and Turkey Creek have been adversely impacted by SWMU 21 activities.
- Collection of survey data that will provide an accurate and defensible representation of sample locations and relevant site features, such as the fence line and the stream bank.

Inside the DRMO Fence

The general sampling approach for proposed locations inside the DRMO fence is discussed below. Proposed sample locations are shown on the attached Figures 2, 2A, 3, 3A, 4, 4A, 4B, and 5 and summarized in Table 1. Additional rationale for the proposed samples is included in a subsequent section of this FTMR, entitled Figures.

- **Determine Presence/Extent of PCBs and Lead inside DRMO fence in North Area.** The presence or absence of PCB contamination in the Northern Area of the site, shown on Figure 2, has not been investigated. Soil data from the 2012 RFI sampling events indicate that there is potential for PCB contamination to be present in the North Area based on observed PCB contamination in the Central North Area of the site (shown on Figure 3). It is also unknown whether lead contamination is present in the earthen berm located inside the fence. Therefore, as shown on Figures 2 and 2A, additional surface and subsurface soil sampling will be performed in the North Area and the North Central Area to determine if PCB and lead contamination is present and the extent of contamination if it is detected. Initially, only the samples listed in Table 1 as “primary” samples will be analyzed. “Provisional” soil samples will be held in a cooled, dark refrigerated area and will only be analyzed if the concentration of PCBs or lead in the “primary” soil sample exceeds the applicable MCG.

Earthen Berm - Soil samples from random depths, to be determined in the field, will be collected from the earthen berm located inside the fence. Samples from varying depths at each sample location in the earthen berm are not considered to be necessary because the material comprising the berm is assumed to be already mixed, homogenized. Native soil samples underlying the earthen berm will also be collected as provisional samples. If contamination greater than the applicable MCG is observed in the soil samples collected from the berm, then the provisional native soils samples from under the berm will be analyzed for the respective contaminants identified.

Locations not Associated with Earthen Berm – Initially only samples from the surface soil intervals will be analyzed; these samples are labeled as “primary” samples. “Provisional” subsurface soil samples will only be analyzed if the concentration of PCBs or lead in the “primary” soil sample exceeds the applicable MCG.

- **Delineate Extent of Lead, PCBs, and PAHs Inside DRMO Fence.** Soil concentrations from locations collected inside the DRMO fence during the 2012 RFI sampling events exceed industrial MCGs for lead, PCBs, and PAHs. Additional surface and subsurface samples will be collected to delineate the vertical and horizontal extent of contamination at the identified hot spots (locations with concentrations greater than industrial MCGs). This information will be used to estimate potential excavation limits and remedial costs.

Lead - As identified on Figures 2A (location SB30), 3A (locations SB21, SB66, SB68, and SB69), and 4A (locations SB18, SB55, and SB74), three general areas of lead hot spots, consisting of soil concentrations greater than industrial MCG of 800 mg/kg, were identified inside the fence at SWMU 21. A step-out sample collection approach and XRF field screening techniques will be used to delineate the extent of lead contamination in soil. To define the vertical and horizontal extent of contamination, surface and subsurface soil samples will be collected at 15-foot step-out increments from previously collected soil sample locations where the lead concentrations exceed the industrial MCG and are not bounded horizontally. Subsurface soil samples will also be collected from previously collected soil sample locations where the lead concentrations exceed the MCG and are not bounded vertically. All samples will be screened using a field portable XRF spectrometer to estimate the lead concentration in soil; the XRF field screening approach was described in the March 2011 SAP Addendum. The XRF results will be used to guide the collection of additional step-out samples and/or collection of soil from deeper intervals. Since the lead MCG for inside the fence is 800 mg/kg, a conservative screening value of 400 mg/kg of lead will be used in the field for decision-making purposes. This value was chosen based on past experience that shows field XRF results to be potentially biased low. Approximately twenty percent of the soil samples, representing the range of lead concentrations observed via the XRF, will be sent to the fixed-

base laboratory for lead analysis. A minimum of twenty samples for the entire site will be submitted to the fixed-base laboratory. A correlation between the XRF and fixed-base laboratory data will be established and used to estimate concentrations of lead in the samples not submitted for fixed-base laboratory analysis. The minimum acceptable correlation coefficient for use of the XRF data is 0.65.

PCBs – There is one hot spot area inside the DRMO fence in the North Central Area where PCBs were found in the soil at concentrations greater than the 25 mg/kg industrial MCG for total PCBs. The area is shown on the northwestern corner of Figure 3, locations SB27 and SB120. A 15-foot step-out approach will be used to delineate the vertical and horizontal extent of PCB contamination in this area. Initially, the surface soil samples nearest the hot spot locations will be analyzed for PCBs; these samples are identified in Table 1 as “primary” samples for PCB analysis. Subsurface soil samples collected from the initial step-out locations and additional step-out samples will be labeled as “provisional” samples and held in a cooled, dark refrigerated area pending the results of the initial analysis. “Provisional” subsurface soil samples will only be analyzed for PCBs if the total concentration of PCBs in the soil interval above the subsurface soil sample or at the adjacent step-out location exceeds 25 mg/kg, the TSCA closure level for industrial land use.

PAHs – As identified on Figures 4B (location SB38) and 5 (locations SB53 and SB105), two general areas of PAH hot spots, consisting of BAP soil concentrations greater than the industrial MCG of 2,100 µg/kg, were identified inside the fence at SWMU 21. To determine the horizontal and vertical extent of PAHs, surface and subsurface soil samples will be collected near these areas. All of these samples will be analyzed for PAHs, as summarized on Table 1.

- **Characterize PCBs in Gravel Samples in North Central Area.** PCB soil contamination inside the fence resulted from surface releases. Therefore, it is possible the gravel layer over the surface soil may be contaminated with PCBs and these areas may act as a future source of contamination. As shown on Figure 3 (with green shaded text), five gravel samples will be collected from three areas (two samples in one area in the northern portion of the figure with soil PCB concentrations greater than the industrial MCG; one sample in the center portion of the figure with soil PCB concentrations less than the industrial MCG; and two samples from one area in the southern portion of the figure with soil PCB concentrations less than the industrial MCG) and analyzed for PCBs. The gravel will be analyzed using SW-846 Method 3540C Soxhlet extraction.
- **Characterize O/W Separator Sediment/Sludge at Building 3058.** Sediment/sludge in the bottom of the inactive O/W separator at Building 3058, as shown on Figure 4 (top of figure), will be collected and analyzed for PCBs, PAHs, and metals. Sediment/sludge will be collected using an Ekman or Ponar dredge sampling tool as described in Standard Operating Procedure (SOP) 20 attached to this FTMR.

Outside DRMO Fence

The general sampling approach for proposed locations outside the DRMO fence is discussed below. Proposed sample locations are shown on the attached Figures 2, 2A, 3, 3A, 4, 4A, and 6 and summarized in Table 1. Additional rationale for the proposed samples is included in a subsequent section of this FTMR, entitled **Figures**.

- **Determine Presence/Extent of PCBs and Lead Outside DRMO Fence in North Area.** Based on the 2012 RFI samples collected from the Central North Area of SWMU 21, soil PCB contamination, ranging from 1.1 mg/kg to 520 mg/kg total PCBs, is present outside the DRMO fence near Haynes Branch (Figure 3). It is not known how far north the PCB contamination extends or if lead contamination is present in the earthen berm located north of the fence. Therefore, as illustrated on Figures 2, 2A, and the top of Figure 3, additional surface and subsurface soil samples will be collected outside the fence in the North Area of the site to confirm the presence or absence of PCB and lead contamination and the extent of contamination if it is detected.

Earthen Berm - Soil samples from random depths, to be determined in the field, will be collected from the earthen berm located outside the fence. Samples from varying depths at each sample location in the earthen berm are not considered to be necessary because the material comprising the berm is assumed to be already mixed, homogenized. Native soil samples underlying the earthen berm will also be collected as provisional samples. If contamination greater than the applicable MCG is observed in the soil samples collected from locations within or immediately south of the berm, then the provisional native soils samples from under the berms will be analyzed for the respective contaminants identified. Also, soil from additional locations will be sampled to define the extent of contamination north and west of the berm.

Locations not Associated with Earthen Berm – Initially only samples from the surface soil intervals will be analyzed; these samples are labeled as “primary” samples. “Provisional” subsurface soil samples will only be analyzed if the concentration of PCBs or lead in the “primary” soil sample exceeds the applicable MCG.

Lead - XRF field screening techniques will be used to determine if lead is present in the North Area. If lead is detected at concentrations greater than the applicable MCG, the step-out approach defined in other sections of this FTMR will be used to delineate the extent of lead contamination in soil.

- **Delineate Extent of PCBs and Lead Outside DRMO Fence.** Soil concentrations from locations collected outside the DRMO fence during the 2012 RFI sampling events exceed residential MCGs for PCBs and lead. Additional surface and subsurface samples will be collected to delineate the vertical and horizontal extent of contamination at the identified hot spots (locations with concentrations greater than residential MCGs). This information will be used to estimate potential excavation limits and remedial costs.

PCBs – There is a large hot spot area, encompassing approximately 150 feet, outside the DRMO fence in the North Central Area of the site where PCBs were found in the soil at concentrations greater than the 1 mg/kg residential MCG for total PCBs. The area is shown in the middle right hand side of Figure 3; the northernmost location is SB166 and the southernmost location is SB46. Additionally, on Figure 4, there are two hot spot areas outside the DRMO fence (one approximately 60 feet southeast of Building 3058 and the other approximately 240 feet southeast of Building 3058) and one inside the DRMO immediately adjacent to the fence near Building 3058 (locations SB55 and SB74). A 15-foot step-out approach will be used to delineate the vertical and horizontal extent of PCB contamination outside the fence in these areas. Initially, the surface soil samples nearest the hot spot locations will be analyzed for PCBs; these samples are identified in Table 1 as “primary” samples for PCB analysis. Subsurface soil samples collected from the initial step-out locations and additional step-out samples will be labeled as “provisional” samples and held in a cooled, dark refrigerated area pending the results of the initial analysis. “Provisional” subsurface soil samples will only be analyzed for PCBs if the total concentration of PCBs in the soil interval above the subsurface soil sample or at the adjacent step-out location exceeds 1 mg/kg, the TSCA closure level for residential land use.

Lead - As identified on Figures 3A (location SB61) and 4A (location SB48), two general areas of lead hot spots, consisting of soil concentrations greater than residential MCG of 400 mg/kg, were identified outside the fence at SWMU 21. In addition, another hot spot of lead contamination (locations SB35, SB55, and SB35) was observed inside the DRMO immediately adjacent to the fence near Building 3058, as seen on Figure 4A. A step-out sample collection approach and x-ray fluorescence (XRF) field screening techniques will be used to delineate the extent of lead contamination in soil in these areas. To define the vertical and horizontal extent of contamination, surface and subsurface soil samples will be collected at 15-foot step-out increments from previously collected soil sample locations where the lead concentrations exceed the residential MCG and are not bounded horizontally. Subsurface soil samples will also be collected from previously collected soil sample locations where the lead concentrations exceed the MCG and are not bounded vertically. All samples will be screened using a field portable XRF spectrometer to estimate the lead concentration in soil; the XRF field screening approach was described in the March 2011 SAP Addendum. The XRF results will be used to guide the collection of additional step-out samples and/or collection of soil from deeper intervals. Since the lead MCG for outside the fence is 400 mg/kg, a conservative screening value of 200 mg/kg of lead will be used in the field for decision-making purposes. Approximately twenty percent of the soil samples, representing the range of lead concentrations observed via the XRF, will be sent to the fixed-base laboratory for lead analysis. A minimum of twenty samples for the entire site will be submitted to the fixed-base laboratory. Lead concentrations for samples not submitted to the fixed-base laboratory will be estimated using the correlation coefficient between the XRF and fixed-base laboratory data, providing that the coefficient is greater than or equal to 0.65.

- **Delineate SWMU 21 Impacts on the Adjacent Creek.** Additional sediment sampling is needed in the creek adjacent to the site to determine whether the PCB and lead contamination observed in the soil at the site has migrated via surface runoff and deposited in creek sediments.

North Area - Because limited information is available for this area of the site, additional soil sampling will be conducted to characterize and delineate the extent of PCB and lead contamination in soil. Provisional sediment samples will also be collected in the adjacent creek. If contamination greater than the applicable MCG is observed in the soil samples, then the provisional sediment samples from the creek will be analyzed for the respective contaminants identified. Provisional sediment locations, 21SD/SW23 through 21SD/SW25, are illustrated on Figures 2 and 2A.

North Central Area - PCB contamination greater than MCGs has been observed in several soil samples (starting at 21SB166 south to 21SB146) outside the fence in the middle of the North Central Area. Therefore, three sediment samples, 21SD26 through 21SD28, will be collected and analyzed for PCBs, as shown on Figure 3.

Central Area - PCB contamination greater than MCGs has been observed in several soil samples (21SB108, 21SB146, and 21SB149) outside the fence approximately 60 feet southeast of Building 3058. Therefore, one sediment sample, 21SD30, will be collected near this hotspot and analyzed for PCBs, as illustrated on Figure 4. In addition, lead contamination greater than the MCGs has been observed in a stretch of the creek sediment representing 21SD03 to 21SB007. As shown on Figure 3A and 4A, two sediment samples, 21SD29 and 21SD31, will be collected to delineate the lead contamination identified in this stretch of the creek.

- **Characterize SWMU 21 Impacts on Nearby Downstream Creeks.** Haynes Branch is located east of the site and flows south; it discharges into Turkey Creek approximately 1,000 feet south of the site. Turkey Creek then flows approximately 2 miles southwest and discharges into Boggs Creek. As shown of Figure 6, sediment samples in depositional areas of Haynes Branch and Turkey Creek will be collected to determine if PCBs released from SWMU 21 through surface water runoff have migrated and deposited in sediments of nearby streams.

Survey

All samples proposed in this FTMR and/or added during the field event will be surveyed, recorded, and reported by a professional land surveyor. The same quality of data and precision must also be applied to site features including but not limited to the DRMO fence, the west bank of Haynes Branch, and the corners of the O/W separator.

Figures

Proposed PCB sampling locations are shown on Figures 2, 3, 4, and 6; proposed lead sampling locations are shown on Figures 2A, 3A, and 4A; and proposed PAH sampling locations are shown on Figures 4B and 5. Each of these figures and proposed locations are discussed in further detail below. Information regarding the number and type of samples that will be collected at each location can be found on Table 1.

- Figure 1 shows an overview of SWMU 21, locations of existing samples and observed lead, BAP, and PCB contamination at SWMU 21.
- Figure 2 (North Area; PCBs) presents the PCB analysis locations both inside and outside of the fence for determining whether PCB contamination is present in the North Area of the site. Soil samples from the earthen berms will be collected at random depths to be determined in the field; native soil underlying the berms located inside and outside the fence will also be collected as provisional samples. If surface soil from locations within the berms or immediately south of the northernmost berm contain PCBs at concentrations greater than the 1 mg/kg residential MCG, then the provisional native soil samples will be analyzed. Surface soil from other locations in the North Area will be analyzed first and are designated as “primary” samples on Table 1. Subsurface soil samples from these locations are “provisional” samples and will be analyzed if concentrations of PCBs in the “primary” surface soil samples exceed the appropriate MCG. Provisional sediment samples from the adjacent creek will be analyzed if concentrations of PCBs in any soil sample near the creek exceed the appropriate MCG.
 - Inside the fence, 11 soil locations (SB227 – SB233, SB235, SB237, SB240, and SB243) are proposed.
 - Outside the fence, 19 soil locations (SB217 – SB226, SB234, SB236, SB238, SB242, SB244, SB328 through SB331) and three sediment locations (SD23 through SD25) are proposed.
- Figure 2A (North Area; lead) presents the existing sample locations and additional sample locations required to delineate the horizontal and vertical extent of lead contamination observed at SB30, located inside the DRMO fence in the North Area of SWMU 21, and to determine whether lead contamination is present in the earthen berms and the adjacent creek in the North Area. Deeper interval soil samples are needed at SB30 and four additional sample locations (SB239 – SB241 and SB280) near SB30 are proposed. Soil samples from the earthen berms (SB217 – SB220 and SB227 – SB229) will be collected at random depths to be determined in the field; native soil underlying the berms located inside and outside the fence will also be collected as provisional samples. If surface soil from locations within the berms or immediately south of the northernmost berm (SB221 – SB223 and SB328) contain lead at concentrations greater than the 400 mg/kg residential MCG, then the provisional native soil samples will be analyzed. Provisional sediment samples (SD23 and SD24) from the adjacent creek will be analyzed if concentrations of PCBs in any soil sample near the creek exceed the appropriate MCG.

- Figure 3 (North Central Area; PCBs) presents the existing sample locations and proposed sample locations for delineating the vertical and horizontal extent of PCB contamination both inside and outside the fence in the North Central Area of the site.
 - Outside the fence in the right hand center of Figure 3, a large area of PCB contaminated soil is observed. Three soil sample locations (SB281 to the north and SB325 and SB326 to the south) are proposed to bound contamination observed in this area. In addition, three sediment sample locations (SD26 through SD28) are proposed to determine whether the PCB contamination in the soil in this area of the site has impacted the adjacent creek.
 - Outside the fence in the upper right hand portion of Figure 3, four soil sample locations (SB245, SB247, SB248, and SB250) are proposed to determine the presence/absence of PCBs.
 - Inside the fence in the northwestern portion of Figure 3, 10 soil sample locations are proposed to delineate observed contamination at SB27 and SB120. As identified in Table 1, surface soil from five proposed "primary" samples (SB251 – SB253, SB282, and SB283) nearest SB27 and SB120 will be analyzed first. The remaining proposed locations (SB284 – SB288) are "provisional" locations and will be analyzed if concentrations of PCBs in the "primary" samples exceed the 25 mg/kg industrial MCG.
 - Inside and near the fence in the northeast portion of Figure 3, two sample locations (SB246 and SB249) are proposed.
 - Inside the fence in three areas of the site identified with green highlighted tags, gravel samples are proposed for five locations (SB252 and SB253 in the northern portion of the figure, SB254 in the center portion of the figure near the DRMO fence, and SB255 and SB256 in the southern portion of the figure near the DRMO fence).

- Figure 3A (North Central Area; lead) presents existing sample locations and proposed sample locations for two areas, one within the fence and one outside the fence, where soil lead requires further vertical and horizontal delineation in the North Central Area of SWMU 21.
 - Inside the fence in the lower center half of Figure 3A, deeper interval soil samples are needed at SB21, SB66, SB68, and SB69 and 11 additional soil locations (SB257 – SB260 and SB293 – SB299) are proposed near these four borings to bound observed lead contamination in this general area.
 - Outside the fence area in the northeast portion of Figure 3A, six proposed locations (SB245, SB289 – SB292, and SB247) are proposed near SB61.

Additionally, one sediment sample (SD29) is proposed to be collected upstream of the lead contamination observed in the creek at SD03 (Figure 4A).

- Figure 4 (Central Area; PCBs) presents the existing sample locations and three areas outside the fence where the horizontal and vertical extent of PCB contamination requires delineation in the Central Area of the site. In addition, it is proposed that the contents of the O/W separator be characterized for lead, PCB, and metal concentrations.
 - At the O/W separator located inside fence, a sediment/sludge sample (SD32) is proposed to be collected.
 - Outside the fence immediately east of Building 3058, two additional soil locations (SB261 and SB262) are proposed near the observed PCB contamination at SB55 and SB74.
 - Outside the fence approximately 60 feet southeast of Building 3058, deeper interval subsurface samples are needed at locations SB109 and SB145 and nine additional soil locations (SB263 – SB265 and SB301 – SB305) are proposed to bound observed contamination in this general area. As identified on Table 1, some of the samples are "primary" samples that will be analyzed initially, while other samples are "provisional" samples that will only be analyzed if concentrations of PCBs in the "primary" samples exceed the 1 mg/kg residential MCG.
 - Outside the fence approximately 240 feet southeast of Building 3058, 13 additional soil locations are proposed near SB48. Surface soil from the six proposed "primary" samples (SB266 – SB268, SB306, SB307, and SB316) nearest SB48 will be analyzed first. The remaining proposed locations (SB308 – SB310 and SB312 – SB315) are "provisional" locations and will be analyzed if concentrations of PCBs in the "primary" samples exceed the 1 mg/kg residential MCG.

One sediment sample (SD30) is also proposed to be collected near the lead contamination observed in the soil at location SB108, SB146, and SB149.

- Figure 4A (Central Area; lead) presents the existing sample locations and four areas, two inside the fence and two outside the fence, where soil lead concentrations require further vertical and horizontal delineation in the Central Area of SWMU 21.
 - Inside the fence near the former old metal bailer, deeper interval soil samples are needed at SB18 and three additional soil locations (SB317 – SB319) are proposed near SB18.

- Inside the fence near the southeastern corner of Building 3058, two additional soil locations (SB311 and SB320) are proposed near the observed lead contamination at SB55 and SB74.
- Outside the fence immediately east of Building 3058, three additional lead soil locations (SB261, SB262, and SB332) are proposed near the observed lead contamination at SB35, SB55, and SB74.
- Outside the fence approximately 240 feet southeast of Building 3058, three additional soil locations (SB266 – SB268) are proposed near SB48.

Additionally, one sediment sample (SD31) is proposed to be collected downstream of the lead contamination observed in the creek at SD07.

- Figure 4B (Central Area; PAHs) shows the existing sample locations and seven proposed sample locations (SB269 – SB271, SB321, SB323, SB324, and SB321) in the northwest corner of the figure for delineating PAH contamination near soil boring SB38 in the Central Area of the site.
- Figure 5 (Southwest Area; PAHs) presents the existing sample locations and nine proposed sample locations (SB272 – SB279 and SB322) for delineating PAH contamination surrounding SB53 and SB105 in the Southwest Area of SWMU 21.
- Figure 6 (Haynes Branch and Turkey Creek) presents approximate locations for the collection of sediment PCB samples (SD12 – SD22) in depositional areas to determine whether PCB-contaminated soil from the DRMO has migrated downstream.

Attachments to this FTMR include:

Figures

- Figures 1, 2, 2A, 3, 3A, 4, 4A, 4B, 5, and 6

Tables

- Table 1 Proposed Supplemental Sampling at SWMU 21

Standard Operating Procedures

- SOP 20 Field Use of Ekman or Ponar Dredge for Sediment Samples

Approvals:

Karen Lyons, Tetra Tech Project Manager / Date

Ralph Basinski, Tetra Tech Activity Coordinator / Date

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 1 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale	
Figure 2 – North Area – Proposed PCB Soil and Sediment Sample Locations							
SWMU 21 SB217	21SB217TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1	Determine whether the material in the berm, which was apparently excavated from the DRMO, contains PCBs.	
	21SB217TBD	Soil	TBD; depth of native soil	PCBs; Provisional ⁽²⁾⁽⁷⁾	1		
SWMU 21 SB218	21SB218TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1		
	21SB218TBD	Soil	TBD; depth of native soil	PCBs; Provisional ⁽²⁾⁽⁷⁾	1 + 1 FD		
SWMU 21 SB219	21SB219TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1		
	21SB219TBD	Soil	TBD; depth of native soil	PCBs; Provisional ⁽²⁾⁽⁷⁾	1		
SWMU 21 SB220	21SB220TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1		
	21SB220TBD	Soil	TBD; depth of native soil	PCBs; Provisional ⁽²⁾⁽⁷⁾	1		
SWMU 21 SB221	21SS2210002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		Confirm the presence or absence of PCBs outside the fence; to date, no PCB sampling has been conducted in this area.
	21SB2210204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2210406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB222	21SS2220002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		
	21SB2220204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2220406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB223	21SS2230002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		
	21SB2230204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2230406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB224	21SS2240002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		
	21SB2240204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2240406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB225	21SS2250002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		
	21SB2250204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2250406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB226	21SS2260002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		
	21SB2260204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2260406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB227	21SB227TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1	Determine whether the material in the berm, which was apparently excavated from the DRMO, contains PCBs.	
SWMU 21 SB228	21SB228TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 2 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB229	21SB229TBD	Soil	TBD; random	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SB230	21SS2300002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence.
	21SB2300204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2300406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB231	21SS2310002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB2310204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2310406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB232	21SB2320002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB2320204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2320406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB233	21SS2330002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB2330204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2330406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB234	21SS2340002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Confirm the presence or absence of PCBs outside the fence; to date, no PCB sampling has been conducted in this area.
	21SB2340204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2340406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB235	21SS2350002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence.
	21SB2350204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2350406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB236	21SS2360002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Confirm the presence or absence of PCBs outside the fence line; to date, no PCB sampling has been conducted in this area.
	21SB2360204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2360406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1 + 1 FD	
SWMU 21 SB237	21SS2370002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence.
	21SB2370204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2370406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB238	21SS2380002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Confirm the presence or absence of PCBs outside the fence; to date, limited PCB sampling has been conducted in this area.
	21SB2380204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2380406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB242	21SS2420002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB2420204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2420406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB243	21SS2430002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence.
	21SB2430204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2430406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 3 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB244	21SS2440002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Confirm the presence or absence of PCBs outside the fence; to date, limited PCB sampling has been conducted in this area.
	21SB2440204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2440406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB328	21SS3280002	Soil	0 to 2	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3280204	Soil	2 to 4	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3280406	Soil	4 to 6	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
SWMU 21 SB329	21SS3290002	Soil	0 to 2	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3290204	Soil	2 to 4	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3290406	Soil	4 to 6	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
SWMU 21 SB330	21SS3300002	Soil	0 to 2	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3300204	Soil	2 to 4	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3300406	Soil	4 to 6	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
SWMU 21 SB331	21SS3310002	Soil	0 to 2	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3310204	Soil	2 to 4	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
	21SB3310406	Soil	4 to 6	PCBs; Provisional ⁽²⁾⁽⁷⁾	1	
SWMU 21 SD23	21SD230006	Sediment	0 to 0.5	PCBs; Provisional ⁽⁹⁾	1 + 1 FD	Determine whether PCBs have migrated to the creek adjacent to the site and whether they are present at concentrations > 1 mg/kg. Sediment samples will be collected from depositional areas where soils eroded from the DRMO by surface water runoff would have been deposited.
	21SD230612	Sediment	0.5 to 1	PCBs; Provisional ⁽⁹⁾	1	
SWMU 21 SD24	21SD240006	Sediment	0 to 0.5	PCBs; Provisional ⁽⁹⁾	1	
	21SD240612	Sediment	0.5 to 1	PCBs; Provisional ⁽⁹⁾	1	
SWMU 21 SD25	21SD250006	Sediment	0 to 0.5	PCBs; Provisional ⁽⁹⁾	1	
	21SD250612	Sediment	0.5 to 1	PCBs; Provisional ⁽⁹⁾	1	
Figure 2A – North Area – Proposed Lead Soil and Sediment Sample Locations						
SWMU 21 SB30 ⁽⁴⁾	21SB300305	Soil	3 to 5	Lead ⁽⁶⁾	1 + 1 FD	Delineate vertical extent of lead contamination at this location, where lead was found at a concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.
	21SB300507	Soil	5 to 7	Lead ⁽⁶⁾	1	
SWMU 21 SB217	21SB217TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1	Determine whether the material in the berm, which was apparently excavated from the DRMO, contains lead.
	21SB217TBD	Soil	TBD; depth of native soil	Lead; Provisional ⁽²⁾⁽⁸⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 4 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale	
SWMU 21 SB218	21SB218TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1	Determine whether the material in the berm, which was apparently excavated from the DRMO, contains lead.	
	21SB218TBD	Soil	TBD; depth of native soil	Lead; Provisional ⁽²⁾⁽⁸⁾	1		
SWMU 21 SB219	21SB219TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1		
	21SB219TBD	Soil	TBD; depth of native soil	Lead; Provisional ⁽²⁾⁽⁸⁾	1		
SWMU 21 SB220	21SB220TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1		
	21SB220TBD	Soil	TBD; depth of native soil	Lead; Provisional ⁽²⁾⁽⁸⁾	1		
SWMU 21 SB221	21SS2210002	Soil	0 to 2	Lead; Primary ⁽¹⁾	1	Confirm the presence or absence of lead outside the fence; to date, no lead sampling has been conducted in this area.	
	21SB2210204	Soil	2 to 4	Lead; Provisional ⁽²⁾	1		
	21SB2210406	Soil	4 to 6	Lead; Provisional ⁽²⁾	1		
SWMU 21 SB222	21SS2220002	Soil	0 to 2	Lead; Primary ⁽¹⁾	1		
	21SB2220204	Soil	2 to 4	Lead; Provisional ⁽²⁾	1		
	21SB2220406	Soil	4 to 6	Lead; Provisional ⁽²⁾	1		
SWMU 21 SB223	21SS2230002	Soil	0 to 2	Lead; Primary ⁽¹⁾	1		
	21SB2230204	Soil	2 to 4	Lead; Provisional ⁽²⁾	1		
	21SB2230406	Soil	4 to 6	Lead; Provisional ⁽²⁾	1		
SWMU 21 SB328	21SS3280002	Soil	0 to 2	Lead; Primary ⁽¹⁾	1		
	21SB3280204	Soil	2 to 4	Lead; Provisional ⁽²⁾	1		
	21SB3280406	Soil	4 to 6	Lead; Provisional ⁽²⁾	1		
SWMU 21 SB227	21SB227TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1		Determine whether the material in the berm, which was apparently excavated from the DRMO, contains lead.
SWMU 21 SB228	21SB228TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1		
SWMU 21 SB229	21SB229TBD	Soil	TBD; random	Lead; Primary ⁽¹⁾	1		
SWMU 21 SB239	21SS2390002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB30, where lead was found at a concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.	
	21SB2390204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB2390406	Soil	4 to 6	Lead ⁽⁶⁾	1		
SWMU 21 SB240	21SS2400002	Soil	0 to 2	Lead ⁽⁶⁾	1		
	21SB2400204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB2400406	Soil	4 to 6	Lead ⁽⁶⁾	1		
SWMU 21 SB241	21SS2410002	Soil	0 to 2	Lead ⁽⁶⁾	1		
	21SB2410204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB2410406	Soil	4 to 6	Lead ⁽⁶⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 5 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale	
SWMU 21 SB280	21SS2800002	Soil	0 to 2	Lead ⁽⁶⁾	1		
	21SB2800204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB2800406	Soil	4 to 6	Lead ⁽⁶⁾	1		
SWMU 21 SD23	21SD230006	Sediment	0 to 0.5	Lead; Provisional ⁽⁶⁾⁽⁹⁾	1	Determine whether lead has migrated to the creek adjacent to the site and whether it is present at concentrations > 400 mg/kg. Sediment samples will be collected from depositional areas where soils eroded from the DRMO by surface water runoff would have been deposited.	
	21SD230612	Sediment	0.5 to 1	Lead; Provisional ⁽⁶⁾⁽⁹⁾	1		
SWMU 21 SD24	21SD240006	Sediment	0 to 0.5	Lead; Provisional ⁽⁶⁾⁽⁹⁾	1		
	21SD240612	Sediment	0.5 to 1	Lead; Provisional ⁽⁶⁾⁽⁹⁾	1		
Figures 2 and 2A – North Area – Proposed Lead and PCB Soil Sample Locations							
SWMU 21 SB240	21SS2400002	Soil	0 to 2	Lead ⁽⁶⁾	1		Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence. Delineate vertical and horizontal extent of lead contamination near SB30, where lead was found at a concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.
				PCBs; Primary ⁽¹⁾	1		
	21SB2400204	Soil	2 to 4	Lead ⁽⁶⁾	1		
				PCBs; Provisional ⁽²⁾	1		
	21SB2400406	Soil	4 to 6	Lead ⁽⁶⁾	1		
				PCBs; Provisional ⁽²⁾	1		
Figure 3 – North Central Area – Proposed PCB Soil, Gravel, and Sediment Sample Locations							
SWMU 21 SB246	21SS2460002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence.	
	21SB2460204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2460406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB248	21SS2480002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine presence of PCB in soil and, if present, vertical extent of PCB contamination > 1 mg/kg outside the fence.	
	21SB2480204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2480406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB249	21SS2490002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine whether PCBs are present at concentrations > 1 mg/kg adjacent to the DRMO fence.	
	21SB2490204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2490406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB250	21SS2500002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine presence of PCB in soil near SB165 and, if present, vertical extent of PCB contamination > 1 mg/kg outside the fence.	
	21SB2500204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2500406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 6 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale	
Figure 3 – North Central Area – Proposed PCB Soil and Gravel Sample Locations							
SWMU 21 SB251	21SS2510002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Delineate the vertical and horizontal extent of PCB contamination near SB120, where PCBs were found at a total concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.	
	21SB2510204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB2510406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB252	21GV0010001 ⁽³⁾	Gravel	0 to 1	PCBs; Primary ⁽¹⁾	1 + 1 FD	Determine if PCBs are entrained in the gravel (i.e., if it is a source of contamination for offsite transport via surface water runoff or infiltration into the underlying soils).	
	21GV0010102 ⁽³⁾	Gravel	1 to 2	PCBs; Primary ⁽¹⁾	1		
	21SS2520204	Soil	2 to 4	PCBs; Primary ⁽¹⁾	1 + 1 FD	Delineate the vertical and horizontal extent of PCB contamination near SB27 and SB120, where PCBs were found at total concentrations > the industrial standard in shallow soil from depths ≤ 3 feet bgs inside the fence.	
	21SB2520406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1 + 1 FD		
	21SB2520608	Soil	6 to 8	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB253	21GV0020001 ⁽³⁾	Gravel	0 to 1	PCBs; Primary ⁽¹⁾	1	Determine if PCBs are entrained in the gravel (i.e., if it is a source of contamination for offsite transport via surface water runoff or infiltration into the underlying soils).	
	21GV0020102 ⁽³⁾	Gravel	1 to 2	PCBs; Primary ⁽¹⁾	1		
	21SS2530204	Soil	2 to 4	PCBs; Primary ⁽¹⁾	1	Delineate the vertical and horizontal extent of PCB contamination near SB27 and SB120, where PCBs were found at total concentrations > the industrial standard in shallow soil from depths ≤ 3 feet bgs inside the fence.	
	21SS2530406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
	21SS2530608	Soil	6 to 8	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB254	21GV0030001 ⁽³⁾	Gravel	0 to 1	PCBs; Primary ⁽¹⁾	1	Determine if PCBs are entrained in the gravel (i.e., if it is a source of contamination for offsite transport via surface water runoff or infiltration into the underlying soils).	
	21GV0030102 ⁽³⁾	Gravel	1 to 2	PCBs; Primary ⁽¹⁾	1		
SWMU 21 SB255	21GV0040001 ⁽³⁾	Gravel	0 to 1	PCBs; Primary ⁽¹⁾	1		
	21GV0040102 ⁽³⁾	Gravel	1 to 2	PCBs; Primary ⁽¹⁾	1		
SWMU 21 SB256	21GV0050001 ⁽³⁾	Gravel	0 to 1	PCBs; Primary ⁽¹⁾	1		
	21GV0050102 ⁽³⁾	Gravel	1 to 2	PCBs; Primary ⁽¹⁾	1		
SWMU 21 SB281	21SS2810002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		Determine presence of PCB in soil near SB165 and SB166 and, if present, vertical extent of PCB contamination > 1 mg/kg outside the fence.
	21SB2810204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1 + 1 FD		
	21SB2810406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 7 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB282	21SS2820002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Delineate the vertical and horizontal extent of PCB contamination near SB120, where PCBs were found at a total concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.
	21SB2820204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2820406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB283	21SS2830002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Delineate the vertical and horizontal extent of PCB contamination near SB27, where PCBs were found at a total concentration > the industrial standard in the 0 to 2 feet bgs soil sample inside the fence.
	21SB2830204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2830406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB284	21SS2840002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	Delineate the vertical and horizontal extent of PCB contamination near SB120, where PCBs were found at a total concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.
	21SB2840204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2840406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB285	21SS2850002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB2850204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2850406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB286	21SS2860002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB2860204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2860406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB287	21SS2870002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB2870204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2870406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB288	21SS2880002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	Delineate the vertical and horizontal extent of PCB contamination near SB27, where PCBs were found at a total concentration > the industrial standard in the 0 to 2 feet bgs soil sample inside the fence.
	21SB2880204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2880406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB325	21SS3250002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Determine presence of PCB in soil near SB46 and, if present, vertical extent of PCB contamination > 1 mg/kg outside the fence.
	21SB3250204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3250406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB326	21SS3260002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1 + 1 FD	
	21SB3260204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3260406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SD26	21SD260006	Sediment	0 to 0.5	PCBs; Primary	1	Determine whether PCBs have migrated to the creek adjacent to the stretch of soil representing SB166 to SB46 and whether they are present at concentrations > 1 mg/kg. Sediment samples will be collected from depositional areas where soils eroded from the DRMO by surface water runoff would have been deposited.
	21SD260612	Sediment	0.5 to 1	PCBs; Primary	1	
SWMU 21 SD27	21SD270006	Sediment	0 to 0.5	PCBs; Primary	1	
	21SD270612	Sediment	0.5 to 1	PCBs; Primary	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 8 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SD28	21SD280006	Sediment	0 to 0.5	PCBs; Primary	1	Determine whether PCBs have migrated to the creek adjacent to the stretch of soil representing SB166 to SB46 and whether they are present at concentrations > 1 mg/kg. Sediment samples will be collected from depositional areas where soils eroded from the DRMO by surface water runoff would have been deposited.
	21SD280612	Sediment	0.5 to 1	PCBs; Primary	1	
Figure 3A – North Central Area – Proposed Lead Soil and Sediment Sample Locations						
SWMU 21 SB21 ⁽⁴⁾	21SB210507	Soil	5 to 7	Lead ⁽⁶⁾	1 + 1 FD	Delineate vertical extent of lead contamination at this location, where lead was found at concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB210709	Soil	7 to 9	Lead ⁽⁶⁾	1	
SWMU 21 SB66 ⁽⁴⁾	21SB660507	Soil	5 to 7	Lead ⁽⁶⁾	1	Delineate vertical extent of lead contamination at this location, where lead was found at concentration > the industrial standard in the 4 to 5 feet bgs soil sample inside the fence.
	21SB660709	Soil	7 to 9	Lead ⁽⁶⁾	1	
SWMU 21 SB68 ⁽⁴⁾	21SB680507	Soil	5 to 7	Lead ⁽⁶⁾	1	Delineate vertical extent of lead contamination at this location, where lead was found at concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB680709	Soil	7 to 9	Lead ⁽⁶⁾	1	
SWMU 21 SB69 ⁽⁴⁾	21SB690507	Soil	5 to 7	Lead ⁽⁶⁾	1	Delineate vertical extent of lead contamination at this location, where lead was found at concentration > the industrial standard in the 4 to 5 feet bgs soil sample inside the fence.
	21SB690709	Soil	7 to 9	Lead ⁽⁶⁾	1	
SWMU 21 SB257	21SS2570002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB66, where lead was found at a concentration > the industrial standard in the 4 to 5 feet bgs soil sample inside the fence.
	21SB2570204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2570406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB258	21SS2580002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB66, where lead was found at a concentration > the industrial standard in the 4 to 5 feet bgs soil sample inside the fence.
	21SB2580204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2580406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB259	21SS2590002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB21, where lead was found at a concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB2590204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2590406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB260	21SS2600002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB21, where lead was found at a concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB2600204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2600406	Soil	4 to 6	Lead ⁽⁶⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 9 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB289	21SS2890002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB61, where lead was found at a concentration > 400 mg/kg in the 0 to 2 feet bgs soil sample outside the fence.
	21SB2890204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2890406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB290	21SS2900002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB2900204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2900406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB291	21SS2910002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB2910204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2910406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB292	21SS2920002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB2920204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2920406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB293	21SS2930002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB66, where lead was found at a concentration > the industrial standard in the 4 to 5 feet bgs soil sample inside the fence.
	21SB2930204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2930406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB294	21SS2940002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB2940204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2940406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB295	21SS2950002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB68, where lead was found at a concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB2950204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2950406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB296	21SS2960002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB2960204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2960406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB297	21SS2970002	Soil	0 to 2	Lead ⁽⁶⁾	1 + 1 FD	Delineate vertical and horizontal extent of lead contamination near SB68, where lead was found at a concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB2970204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2970406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB298	21SS2980002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB69, where lead was found at a concentration > the industrial standard in the 4 to 5 feet bgs soil sample inside the fence.
	21SB2980204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2980406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB299	21SS2990002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB2990204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB2990406	Soil	4 to 6	Lead ⁽⁶⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 10 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SD29	21SD280006	Sediment	0 to 0.5	Lead ⁽⁶⁾	1	Delineate lead concentrations upstream of SD03, where lead was found at a concentration > 400 mg/kg.
	21SD280612	Sediment	0.5 to 1	Lead ⁽⁶⁾	1	
Figures 3 and 3A – North Central Area – Proposed Lead and PCB Soil Sample Locations						
SWMU 21 SB245	21SS2450002	Soil	0 to 2	Lead ⁽⁶⁾	1	Determine presence of PCB in surface soil and, if present, vertical extent of PCB contamination > 1 mg/kg outside the fence. Delineate vertical and horizontal extent of lead contamination near SB61, where lead was found at a concentration > 400 mg/kg in the 0 to 2 feet bgs soil sample outside the fence.
				PCBs; Primary ⁽¹⁾	1	
	21SB2450204	Soil	2 to 4	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1	
21SB2450406	Soil	4 to 6	Lead ⁽⁶⁾	1		
			PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB247	21SS2470002	Soil	0 to 2	Lead ⁽⁶⁾	1	
				PCBs; Primary ⁽¹⁾	1	
	21SB2470204	Soil	2 to 4	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1	
	21SB2470406	Soil	4 to 6	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1	
Figure 4 – Central Area – Proposed PCB and Other Analytical Soil and Sediment Sample Locations						
SWMU 21 SB109 ⁽⁴⁾	21SB1090406	Soil	4 to 6	PCBs; Primary ⁽¹⁾	1	Delineate vertical extent of PCB contamination at this location, where PCBs were found at concentration > 1 mg/kg in the 2 to 4 feet bgs soil sample outside the fence.
SWMU 21 SB145 ⁽⁴⁾	21SB1450406	Soil	4 to 6	PCBs; Primary ⁽¹⁾	1	Delineate vertical extent of PCB contamination at this location, where PCBs were found at concentration > 1 mg/kg in the 2 to 4 feet bgs soil sample outside the fence.
	21SB1450608	Soil	6 to 8	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB263	21SS2630002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Delineate vertical and horizontal extent of PCB contamination near SB108, SB145, SB146, SB148, and SB149, where PCBs were found at total concentrations > 1 mg/kg in the 0 to 2 feet bgs soil sample outside the fence.
	21SB2630204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2630406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB264	21SS2640002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB2640204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1 + 1 FD	
	21SB2640406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB265	21SS2650002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB2650204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB2650406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 11 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB300	21SS3000002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Delineate vertical and horizontal extent of PCB contamination near SB108, SB145, SB146, SB148, and SB149, where PCBs were found at total concentrations > 1 mg/kg in the 0 to 2 feet bgs soil sample outside the fence.
	21SB3000204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3000406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB301	21SS3010002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3010204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3010406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB302	21SS3020002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3020204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3020406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB303	21SS3030002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3030204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3030406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB304	21SS3040002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3040204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3040406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB305	21SS3050002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3050204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3050406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB306	21SS3060002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	Delineate vertical and horizontal extent of PCB contamination near SB48, where total PCBs were found at concentrations > 1 mg/kg in the 0 to 2 feet bgs soil sample outside the fence.
	21SB3060204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3060406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB307	21SS3070002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1	
	21SB3070204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3070406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB308	21SS3080002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	Delineate vertical and horizontal extent of PCB contamination near SB48, where total PCBs were found at concentrations > 1 mg/kg in the 0 to 2 feet bgs soil sample outside the fence.
	21SB3080204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3080406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB309	21SS3090002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3090204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3090406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB310	21SS3100002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3100204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3100406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	
SWMU 21 SB312	21SS3120002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1	
	21SB3120204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1	
	21SB3120406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 12 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale	
SWMU 21 SB313	21SS3130002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1 + 1 FD		
	21SB3130204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB3130406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB314	21SS3140002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1		
	21SB3140204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB3140406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB315	21SS3150002	Soil	0 to 2	PCBs; Provisional ⁽²⁾	1		
	21SB3150204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB3150406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB316	21SS3160002	Soil	0 to 2	PCBs; Primary ⁽¹⁾	1		
	21SB3160204	Soil	2 to 4	PCBs; Provisional ⁽²⁾	1		
	21SB3160406	Soil	4 to 6	PCBs; Provisional ⁽²⁾	1		
SWMU 21 SD30	21SD300006	Sediment	0 to 0.5	PCBs; Primary	1		Determine whether PCBs have migrated to the creek adjacent to SB108, SB146, and SB149 and whether they are present at concentrations > 1 mg/kg. Sediment samples will be collected from depositional areas where soils eroded from the DRMO by surface water runoff would have been deposited.
	21SD300612	Sediment	0.5 to 1	PCBs; Primary	1		
SWMU 21 SD32	21SD320006	Sediment	Not Applicable	PCBs, PAHs, Metals ⁽⁵⁾ ; Primary ⁽¹⁾	1		Characterize the contaminant concentrations present in the oil/water separator sediment/sludge.
Figure 4A – Central Area – Proposed Lead Soil and Sediment Sample Locations							
SWMU 21 SB18 ⁽⁴⁾	21SB180305	Soil	3 to 5	Lead ⁽⁶⁾	1 + 1 FD	Delineate vertical extent of lead contamination at this location, where lead was found at a concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.	
	21SB180507	Soil	5 to 7	Lead ⁽⁶⁾	1		
SWMU 21 SB311	21SS3110002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead and PCB contamination near SB55, where total PCBs and lead were found at concentrations > 1 mg/kg and > 400 mg/kg, respectively, in the 2 to 4 feet bgs soil sample inside the fence.	
	21SB3110204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB3110406	Soil	4 to 6	Lead ⁽⁶⁾	1		
SWMU 21 SB317	21SS3170002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB18, where lead was found at a concentration > the industrial standard in the 1 to 3 feet bgs soil sample inside the fence.	
	21SB3170204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB3170406	Soil	4 to 6	Lead ⁽⁶⁾	1		
SWMU 21 SB318	21SS3180002	Soil	0 to 2	Lead ⁽⁶⁾	1		
	21SB3180204	Soil	2 to 4	Lead ⁽⁶⁾	1		
	21SB3180406	Soil	4 to 6	Lead ⁽⁶⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 13 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB319	21SS3190002	Soil	0 to 2	Lead ⁽⁶⁾	1	
	21SB3190204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB3190406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB320	21SS3200002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB74, where lead was found at a concentration > the industrial standard in the 3 to 5 feet bgs soil sample inside the fence.
	21SB3200204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB3200406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SB332	21SS3320002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead contamination near SB35, where lead was found near the fence at a concentration > the residential standard in the 4 to 6 feet bgs soil sample inside the fence.
	21SB3320204	Soil	2 to 4	Lead ⁽⁶⁾	1	
	21SB3320406	Soil	4 to 6	Lead ⁽⁶⁾	1	
SWMU 21 SD31	21SD3100006	Sediment	0 to 0.5	Lead ⁽⁶⁾	1 + 1 FD	Delineate lead concentrations downstream of SD07, where lead was found at a concentration > 400 mg/kg.
	21SD3100006	Sediment	0.5 to 1	Lead ⁽⁶⁾	1	
Figure 4B – Central Area – Proposed PAH Soil Sample Locations						
SWMU 21 SB269	21SS2690002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1 + 1 FD	Delineate vertical and horizontal extent of PAH contamination near SB38, where PAHs were found at concentrations > the industrial standards in the 4 to 6 feet bgs soil sample inside the fence.
	21SB2690204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB2690406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB2690608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	
SWMU 21 SB270	21SS2700002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	
	21SB2700204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB2700406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB2700608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	
SWMU 21 SB271	21SS2710002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	
	21SB2710204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB2710406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB2710608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	
SWMU 21 SB321	21SS3210002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	
	21SB3210204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB3210406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB3210608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	
SWMU 21 SB323	21SS3230002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	
	21SB3230204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB3230406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB3230608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 14 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
SWMU 21 SB324	21SS3240002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	Delineate vertical and horizontal extent of PAH contamination near SB38, where PAHs were found at concentrations > the industrial standards in the 4 to 6 feet bgs soil sample inside the fence.
	21SB3240204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB3240406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB3240608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	
SWMU 21 SB327	21SS3270002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	
	21SB3270204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1	
	21SB3270406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1	
	21SB3270608	Soil	6 to 8	PAHs; Primary ⁽¹⁾	1	
Figures 4 and 4A – Central Area – Proposed Lead and PCB Soil Sample Locations						
SWMU 21 SB261	21SS2610002	Soil	0 to 2	Lead ⁽⁶⁾	1 + 1 FD	Delineate vertical and horizontal extent of lead and PCB contamination near SB74, where total PCBs and lead were found at concentrations > 1 mg/kg and > 400 mg/kg, respectively, in the 3 to 5 feet bgs soil sample adjacent to the fence.
				PCBs; Primary ⁽¹⁾	1 + 1 FD	
	21SB2610204	Soil	2 to 4	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1 + 1 FD	
21SB2610406	Soil	4 to 6	Lead ⁽⁶⁾	1		
			PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB262	21SS2620002	Soil	0 to 2	Lead ⁽⁶⁾	1	
				PCBs; Primary ⁽¹⁾	1	
	21SB2620204	Soil	2 to 4	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1	
21SB2620406	Soil	4 to 6	Lead ⁽⁶⁾	1		
			PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB266	21SS2660002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead and PCB contamination near SB48, where total PCBs and lead were found at concentrations > 1 mg/kg and at 400 mg/kg, respectively, in the 0 to 2 feet bgs soil sample outside the fence.
				PCBs; Primary ⁽¹⁾	1	
	21SB2660204	Soil	2 to 4	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1	
21SB2660406	Soil	4 to 6	Lead ⁽⁶⁾	1		
			PCBs; Provisional ⁽²⁾	1		
SWMU 21 SB267	21SS2670002	Soil	0 to 2	Lead ⁽⁶⁾	1	
				PCBs; Primary ⁽¹⁾	1	
	21SB2670204	Soil	2 to 4	Lead ⁽⁶⁾	1	
				PCBs; Provisional ⁽²⁾	1	
21SB2670406	Soil	4 to 6	Lead ⁽⁶⁾	1		
			PCBs; Provisional ⁽²⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 15 OF 16

Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale	
SWMU 21 SB268	21SS2680002	Soil	0 to 2	Lead ⁽⁶⁾	1	Delineate vertical and horizontal extent of lead and PCB contamination near SB48, where total PCBs and lead were found at concentrations > 1 mg/kg and at 400 mg/kg, respectively, in the 0 to 2 feet bgs soil sample outside the fence.	
				PCBs; Primary ⁽¹⁾	1		
	21SB2680204	Soil	2 to 4	Lead ⁽⁶⁾	1		
				PCBs; Provisional ⁽²⁾	1		
	21SB2680406	Soil	4 to 6	Lead ⁽⁶⁾	1		
				PCBs; Provisional ⁽²⁾	1		
Figure 5 – Southwest Area – Proposed PAH Soil Sample Locations							
SWMU 21 SB272	21SS2720002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	Delineate vertical and horizontal extent of PAH contamination near SB53 and SB105, where PAHs were found at concentrations > the industrial standards in the soil from depths between 3 to 6 feet bgs inside the fence.	
	21SB2720204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2720406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB273	21SS2730002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1		
	21SB2730204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2730406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB274	21SS2740002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1		
	21SB2740204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2740406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB275	21SS2750002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1		Confirm that PAHs are present at concentrations < the industrial standard immediately south of Building 3249.
	21SB2750204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2750460	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB276	21SS2760002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1	Delineate vertical and horizontal extent of PAH contamination near SB53 and SB105, where PAHs were found at concentrations > the industrial standards in the soil from depths between 3 to 6 feet bgs inside the fence.	
	21SB2760204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2760406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB277	21SS2770002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1		
	21SB2770204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2770406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB278	21SS2780002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1		
	21SB2780204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2780406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB279	21SS2790002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1		Delineate vertical and horizontal extent of PAH contamination near SB53 and SB105, where PAHs were found at concentrations > the industrial standards in the soil from depths between 3 to 6 feet bgs inside the fence.
	21SB2790204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1		
	21SB2790406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		
SWMU 21 SB322	21SS3220002	Soil	0 to 2	PAHs; Primary ⁽¹⁾	1 + 1 FD		
	21SB3220204	Soil	2 to 4	PAHs; Primary ⁽¹⁾	1 + 1 FD		
	21SB3220406	Soil	4 to 6	PAHs; Primary ⁽¹⁾	1		

TABLE 1 - PROPOSED SUPPLEMENTAL SAMPLING AT SWMU 21
PAGE 16 OF 16

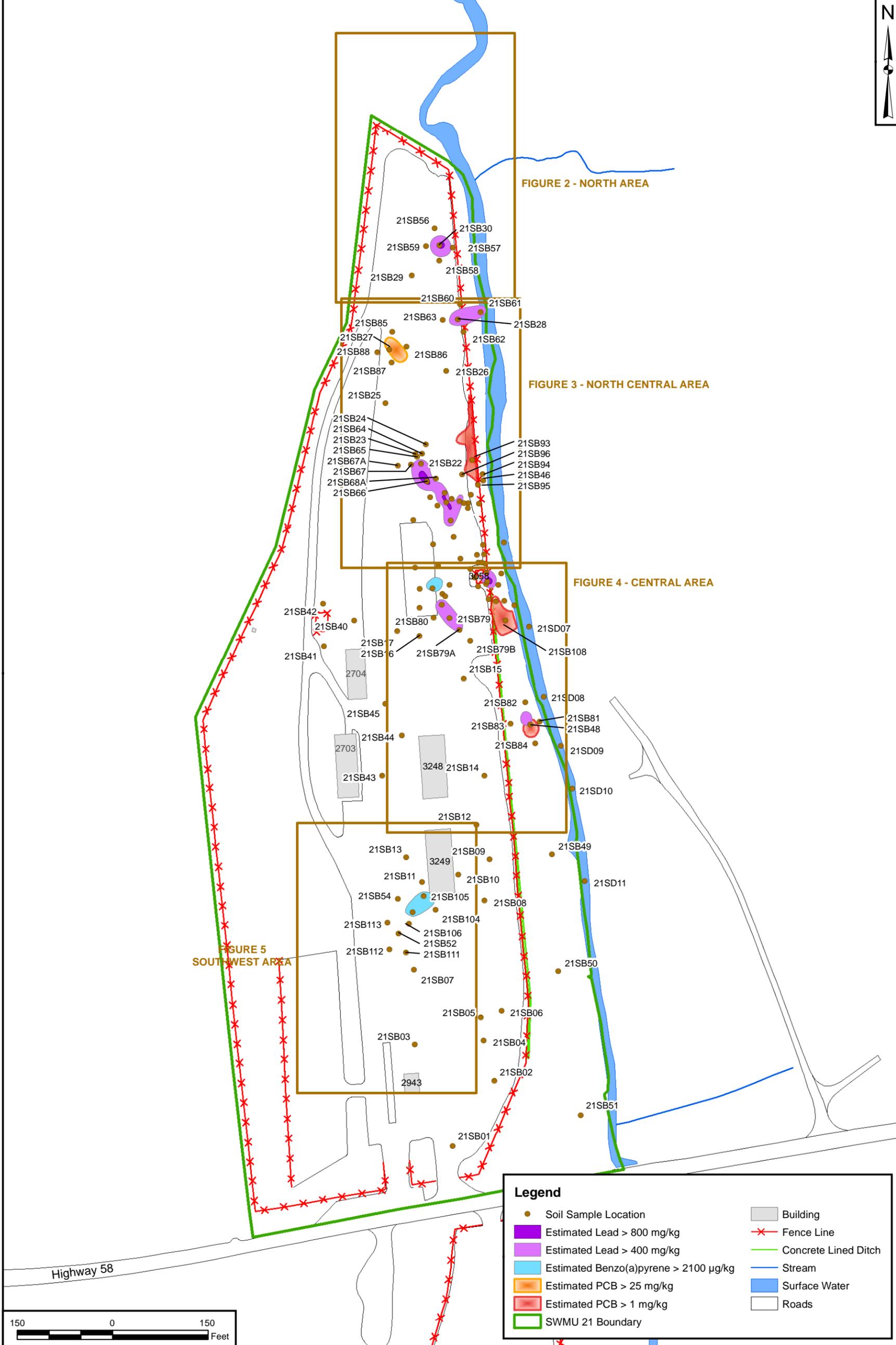
Sampling Location	ID Number	Matrix	Depth (feet bgs)	Analysis (Primary vs. Provisional)	Number of Samples	Sampling Rationale
Figure 7 – Haynes Branch and Turkey Creek – Proposed Sediment Sample Locations						
SWMU 21 SD12	21SD120006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1 + 1 FD	Determine whether PCBs have migrated downstream and whether they are present at concentrations > 1 mg/kg. Sediments samples will be collected from floodplain deposition areas where soils eroded from the DRMO by surface water runoff into Haynes Branch and carried downstream into Turkey Creek would have been deposited.
	21SD120612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD13	21SD130006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD130612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD14	21SD140006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD140612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD15	21SD150006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD150612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD16	21SD160006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD160612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD17	21SD170006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD170612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD18	21SD180006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD180612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD19	21SD190006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD190612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD20	21SD200006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD200612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD21	21SD210006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD210612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	
SWMU 21 SD22	21SD220006	Sediment	0 to 0.5	PCBs; Primary ⁽¹⁾	1	
	21SD220612	Sediment	0.5 to 1	PCBs; Primary ⁽¹⁾	1	

Notes:

- 1 Primary samples will be analyzed by the lab immediately.
- 2 The provisional samples will be kept refrigerated while the primary samples are analyzed. These samples may or may not be analyzed based on the results of the primary samples. There are no holding time limits for PCBs in soils as long as the samples are stored in the dark and at 4 +/- 2 degrees Centigrade.
- 3 Surface material samples (gravel) will be collected at 1 foot interval from the surface to the soil/gravel interface.
- 4 Shaded areas indicate deeper samples to be collected from a previous soil boring location.
- 5 The sediment/sludge sample collected from the bottom of the oil/water separator will be analyzed for PCBs, PAHs, and Metals.
- 6 Selected samples will be sent to an off-site laboratory for lead analysis to establish correlation coefficients between the XRF and laboratory data.
- 7 Sample from the native soil will be analyzed only if PCB concentrations exceed 1 mg/kg at locations 21SB221, 21SB222, or 21SB223.
- 8 Sample from the native soil will be analyzed only if lead concentrations exceed 400 mg/kg at locations 21SB221 and 21SB222.
- 9 Sample will be analyzed only if PCB or lead concentrations exceed the appropriate MCG in any soil sample collected near the creek.

Abbreviations:

bgs	Below ground surface	PAH	Polycyclic aromatic hydrocarbon
DRMO	Defense Reutilization Marketing Office	PCB	Polychlorinated biphenyl
FD	Field duplicate	SWMU	Solid Waste Management Unit
ID	Identifier	TBD	To be determined
mg/kg	Milligram per kilogram	XRF	Xray fluorescence



Legend

- Soil Sample Location
- Building
- Estimated Lead > 800 mg/kg
- x- Fence Line
- Estimated Lead > 400 mg/kg
- Concrete Lined Ditch
- Estimated Benzo(a)pyrene > 2100 µg/kg
- Stream
- Estimated PCB > 25 mg/kg
- Surface Water
- Estimated PCB > 1 mg/kg
- Roads
- SWMU 21 Boundary

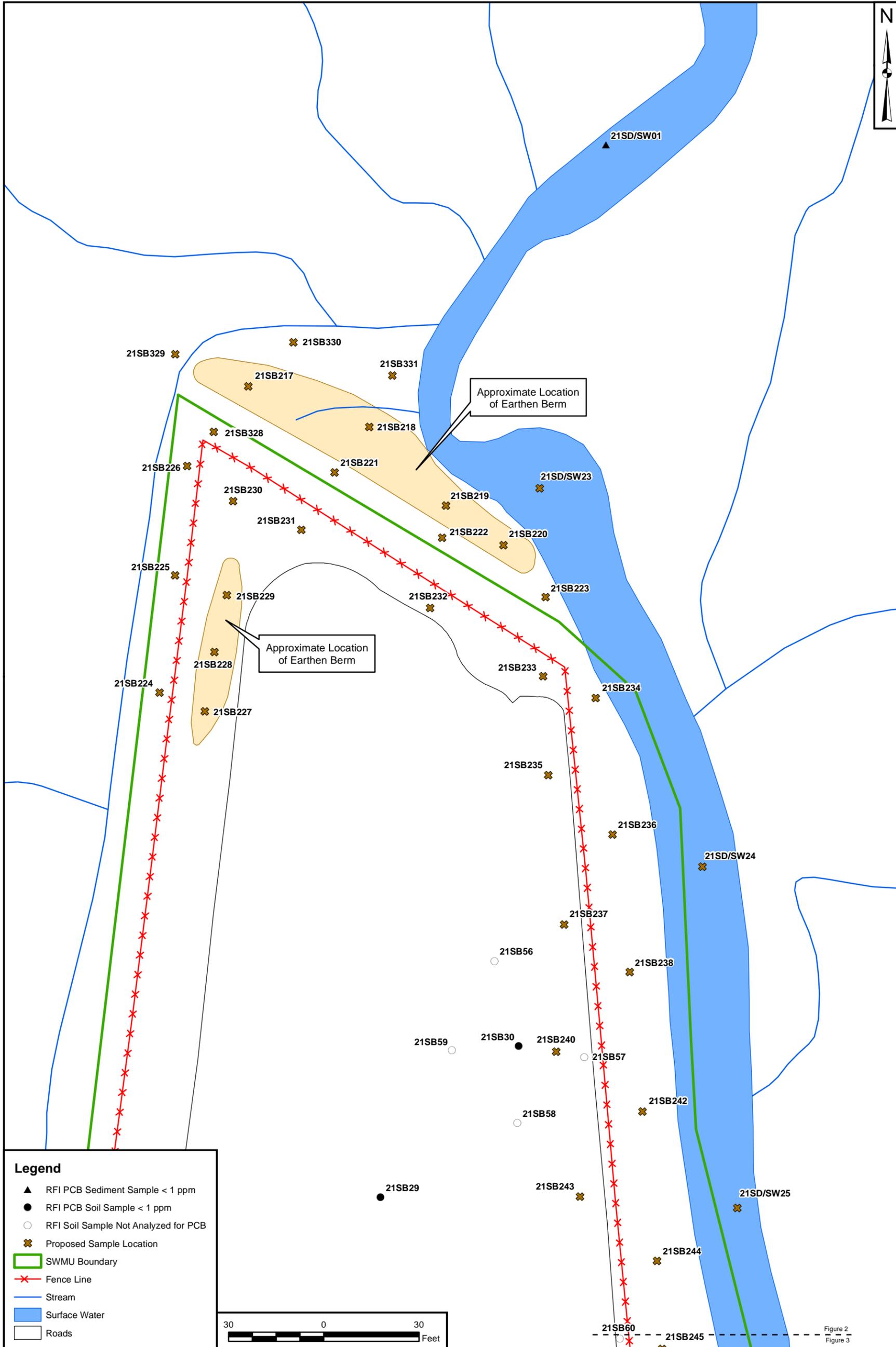


DRAWN BY	DATE
J. ENGLISH	09/20/12
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L. FOSTER	06/06/13
REVISED BY	DATE
J. ENGLISH	06/06/13
SCALE AS NOTED	



FIGURE INDEX MAP
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	06/06/13
FIGURE NO.	REV
1	0



Legend

- ▲ RFI PCB Sediment Sample < 1 ppm
- RFI PCB Soil Sample < 1 ppm
- RFI Soil Sample Not Analyzed for PCB
- ✕ Proposed Sample Location
- ▭ SWMU Boundary
- ✕ Fence Line
- Stream
- ▭ Surface Water
- ▭ Roads

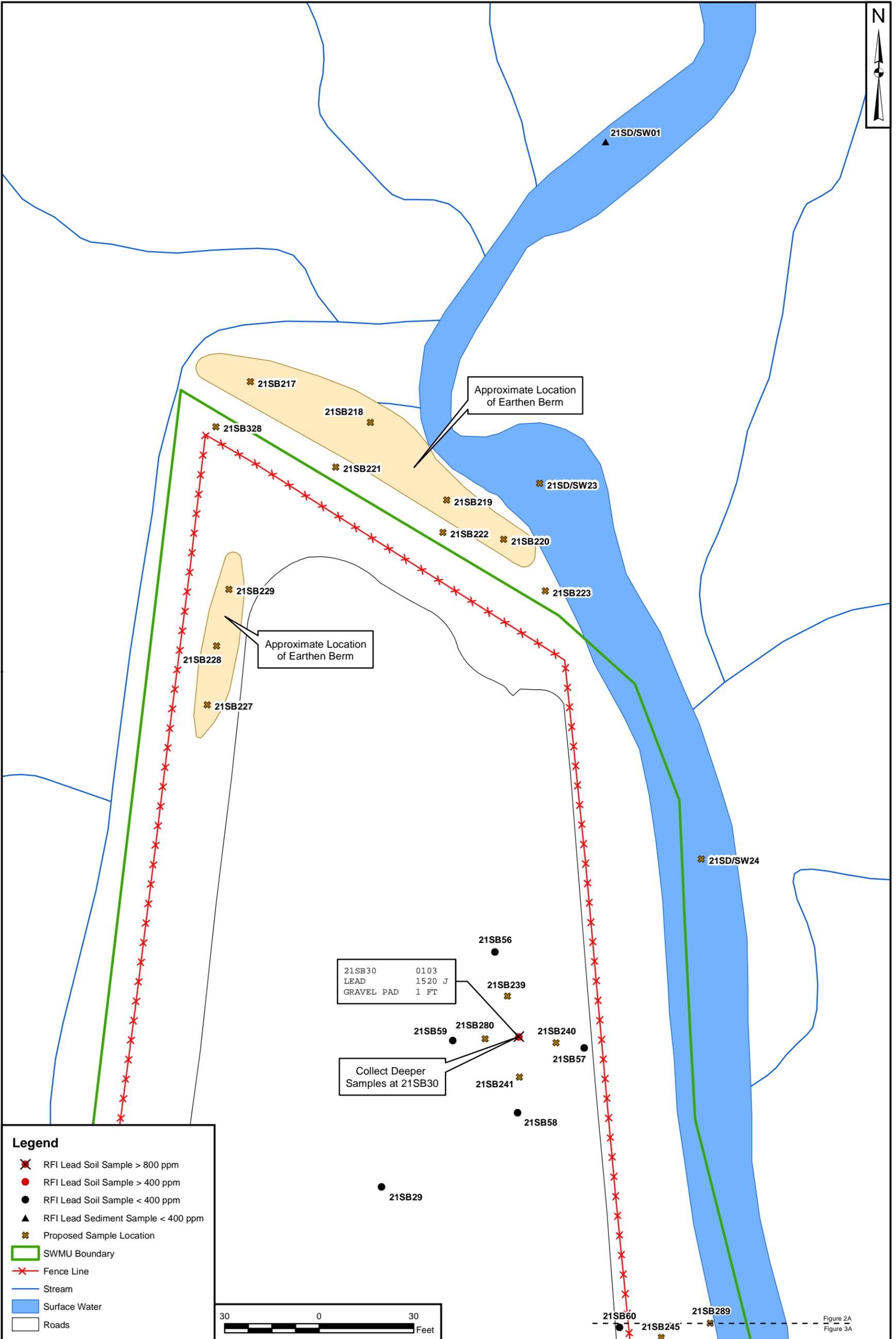


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K. LYONS	02/10/14
REVISED BY	DATE
D. COUCH	02/10/14
SCALE AS NOTED	



**NORTH AREA - PROPOSED PCB
 SOIL SAMPLE LOCATIONS
 SWMU 21 - DRMO STORAGE LOT
 NSA CRANE
 CRANE, INDIANA**

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/10/14
FIGURE NO.	REV
2	0



Legend

- ✕ RFI Lead Soil Sample > 800 ppm
- RFI Lead Soil Sample > 400 ppm
- RFI Lead Soil Sample < 400 ppm
- ▲ RFI Lead Sediment Sample < 400 ppm
- * Proposed Sample Location
- ▭ SWMU Boundary
- x- Fence Line
- Stream
- ▭ Surface Water
- ▭ Roads

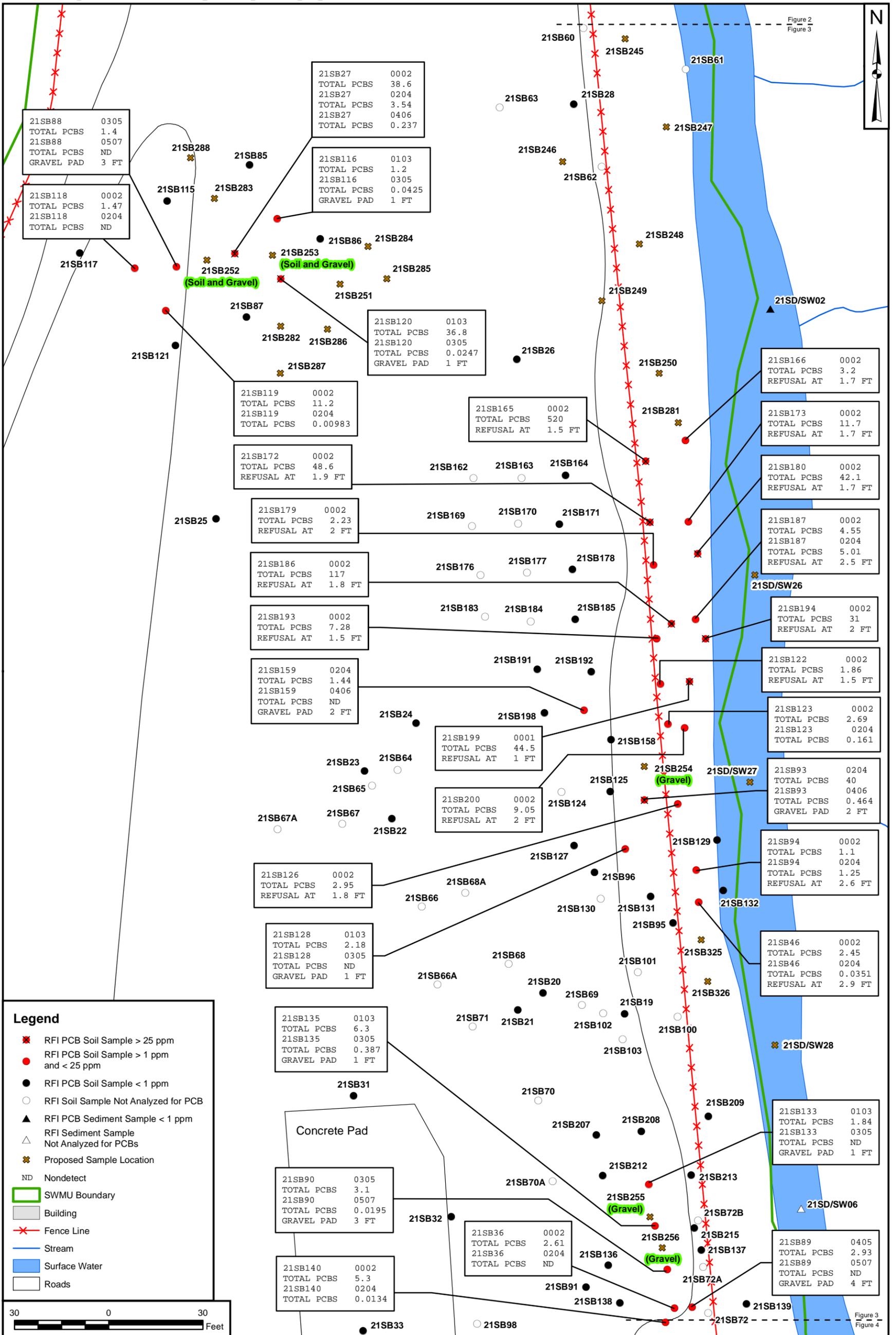


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K. LYONS	02/12/14
REVISED BY	DATE
D. COUCH	02/12/14
SCALE AS NOTED	



NORTH AREA - PROPOSED LEAD SOIL SAMPLE LOCATIONS
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/12/14
FIGURE NO.	REV
2A	0



Legend

- ✖ RFI PCB Soil Sample > 25 ppm
- RFI PCB Soil Sample > 1 ppm and < 25 ppm
- RFI PCB Soil Sample < 1 ppm
- RFI Soil Sample Not Analyzed for PCB
- ▲ RFI PCB Sediment Sample < 1 ppm
- △ RFI Sediment Sample Not Analyzed for PCBs
- ✖ Proposed Sample Location
- ND Nondetect
- ▭ SWMU Boundary
- ▭ Building
- Fence Line
- Stream
- ▭ Surface Water
- ▭ Roads



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K. LYONS	02/10/14
REVISED BY	DATE
D. COUCH	02/10/14
SCALE	
AS NOTED	



**NORTH CENTRAL AREA - PROPOSED PCB
 SOIL SAMPLE LOCATIONS
 SWMU 21 - DRMO STORAGE LOT
 NSA CRANE
 CRANE, INDIANA**

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/10/14
FIGURE NO.	REV
3	0

Figure 2
Figure 3

Figure 3
Figure 4

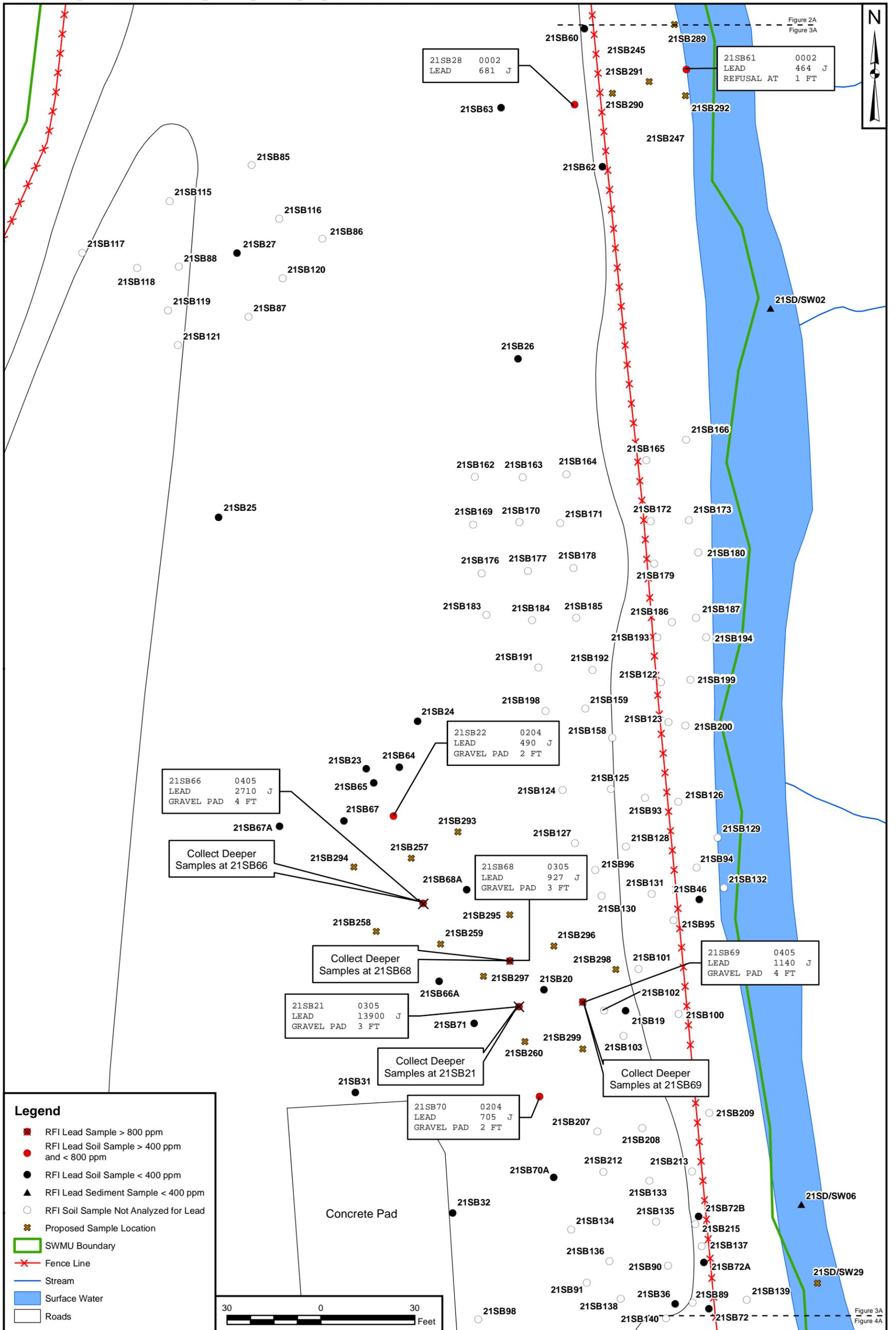


Figure 2A
Figure 3A

Legend

- ✖ RFI Lead Sample > 800 ppm
- RFI Lead Soil Sample > 400 ppm and < 800 ppm
- RFI Lead Soil Sample < 400 ppm
- ▲ RFI Lead Sediment Sample < 400 ppm
- RFI Soil Sample Not Analyzed for Lead
- ✖ Proposed Sample Location
- ▭ SWMU Boundary
- - - Fence Line
- Stream
- ▭ Surface Water
- ▭ Roads

21SB66 0405
LEAD 2710 J
GRAVEL PAD 4 FT

Collect Deeper Samples at 21SB66

21SB28 0002
LEAD 681 J

21SB61 0002
LEAD 464 J
REFUSAL AT 1 FT

21SB22 0204
LEAD 490 J
GRAVEL PAD 2 FT

Collect Deeper Samples at 21SB68

21SB21 0305
LEAD 13900 J
GRAVEL PAD 3 FT

Collect Deeper Samples at 21SB21

21SB70 0204
LEAD 705 J
GRAVEL PAD 2 FT

21SB69 0405
LEAD 1140 J
GRAVEL PAD 4 FT

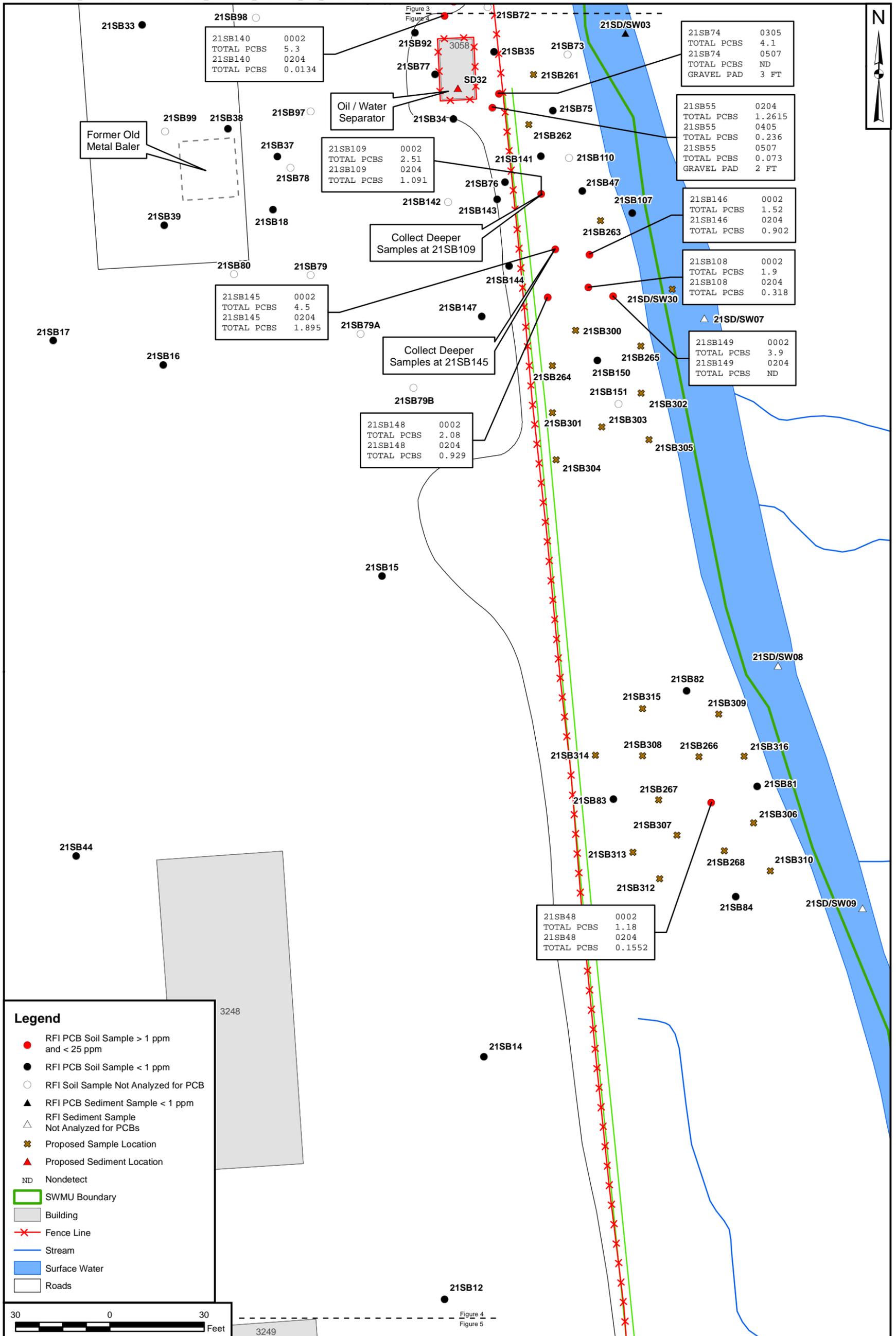
Collect Deeper Samples at 21SB69

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NORTH CENTRAL AREA - PROPOSED LEAD SOIL SAMPLE LOCATIONS
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/10/14
FIGURE NO.	REV
3A	0



Legend

- RFI PCB Soil Sample > 1 ppm and < 25 ppm
- RFI PCB Soil Sample < 1 ppm
- RFI Soil Sample Not Analyzed for PCB
- ▲ RFI PCB Sediment Sample < 1 ppm
- △ RFI Sediment Sample Not Analyzed for PCBs
- ✱ Proposed Sample Location
- ▲ Proposed Sediment Location
- ND Nondetect
- ▭ SWMU Boundary
- ▭ Building
- Fence Line
- Stream
- ▭ Surface Water
- ▭ Roads

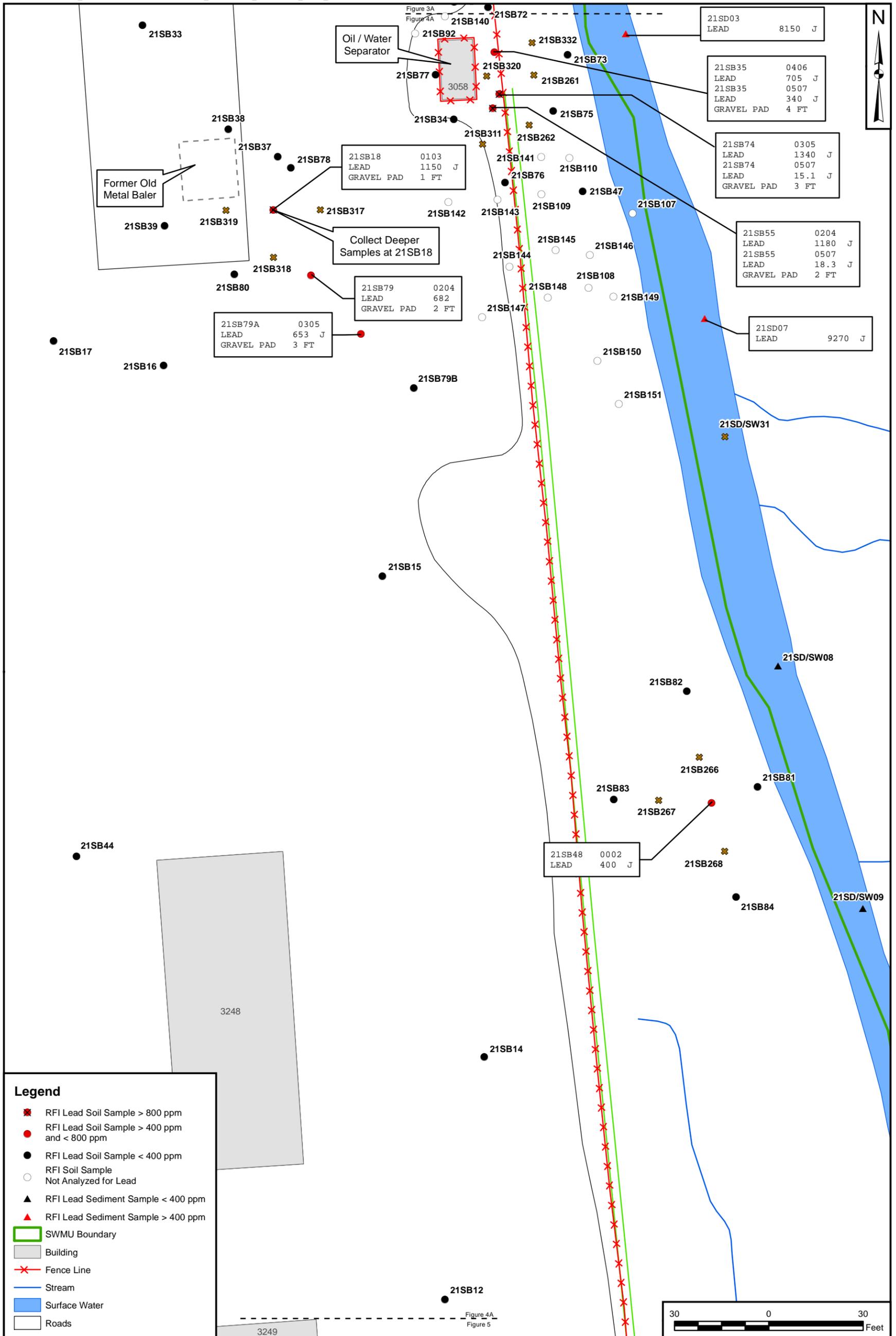


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K. LYONS	02/13/14
REVISED BY	DATE
D. COUCH	02/13/14
SCALE	
AS NOTED	



**CENTRAL AREA -
PROPOSED PCB SOIL SAMPLE LOCATIONS
AND PROPOSED SEDIMENT LOCATION
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA**

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/13/14
FIGURE NO.	REV
4	0



Legend

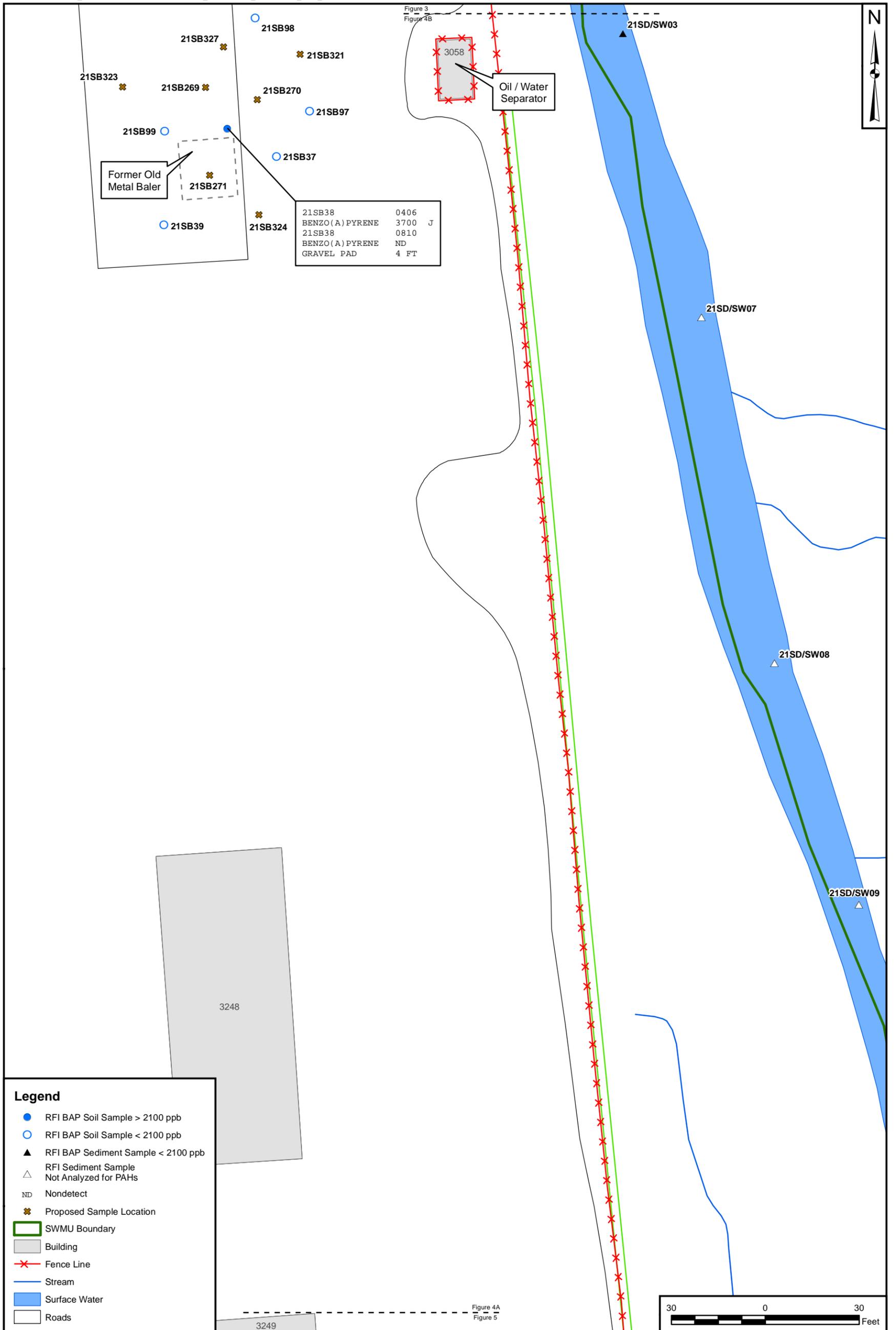
- ✖ RFI Lead Soil Sample > 800 ppm
- RFI Lead Soil Sample > 400 ppm and < 800 ppm
- RFI Lead Soil Sample < 400 ppm
- RFI Soil Sample Not Analyzed for Lead
- ▲ RFI Lead Sediment Sample < 400 ppm
- ▲ RFI Lead Sediment Sample > 400 ppm
- SWMU Boundary
- Building
- ✖ Fence Line
- Stream
- Surface Water
- Roads

DRAWN BY	DATE
J. ENGLISH	12/05/12
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K. LYONS	02/10/14
REVISED BY	DATE
D. COUCH	02/10/14
SCALE	AS NOTED



**CENTRAL AREA -
PROPOSED LEAD SOIL SAMPLE LOCATIONS
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA**

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/10/14
FIGURE NO.	REV
4A	0



Legend

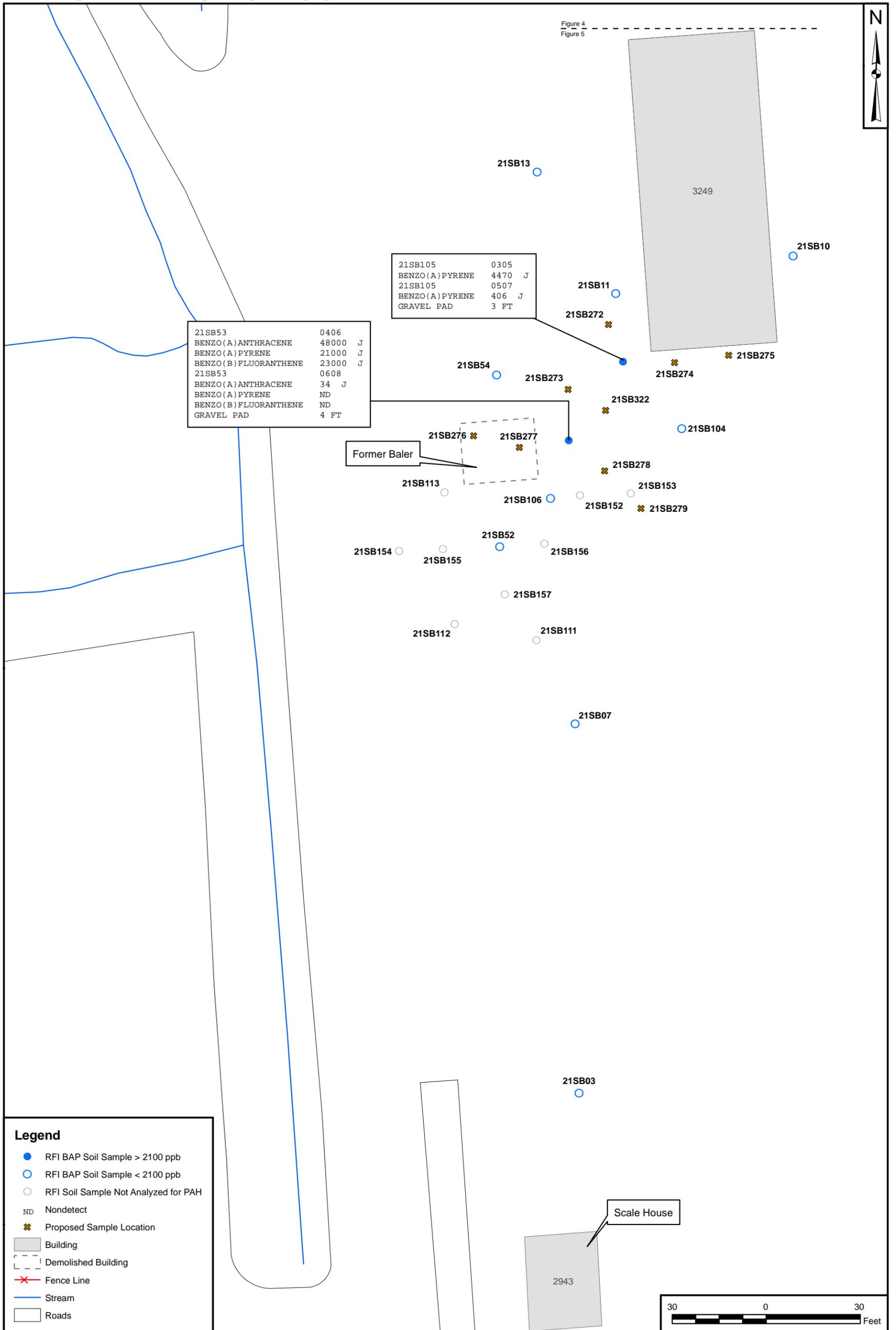
- RFI BAP Soil Sample > 2100 ppb
- RFI BAP Soil Sample < 2100 ppb
- ▲ RFI BAP Sediment Sample < 2100 ppb
- △ RFI Sediment Sample Not Analyzed for PAHs
- ND Nondetect
- ✱ Proposed Sample Location
- ▭ SWMU Boundary
- ▭ Building
- ✂ Fence Line
- Stream
- ▭ Surface Water
- ▭ Roads

DRAWN BY	DATE
J. ENGLISH	10/04/12
CHECKED BY	DATE
K. LYONS	02/10/14
REVISED BY	DATE
D. COUCH	02/10/14
SCALE AS NOTED	



CENTRAL AREA -
PROPOSED PAH SOIL SAMPLE LOCATIONS
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	02/10/14
FIGURE NO.	REV
4B	0



Legend

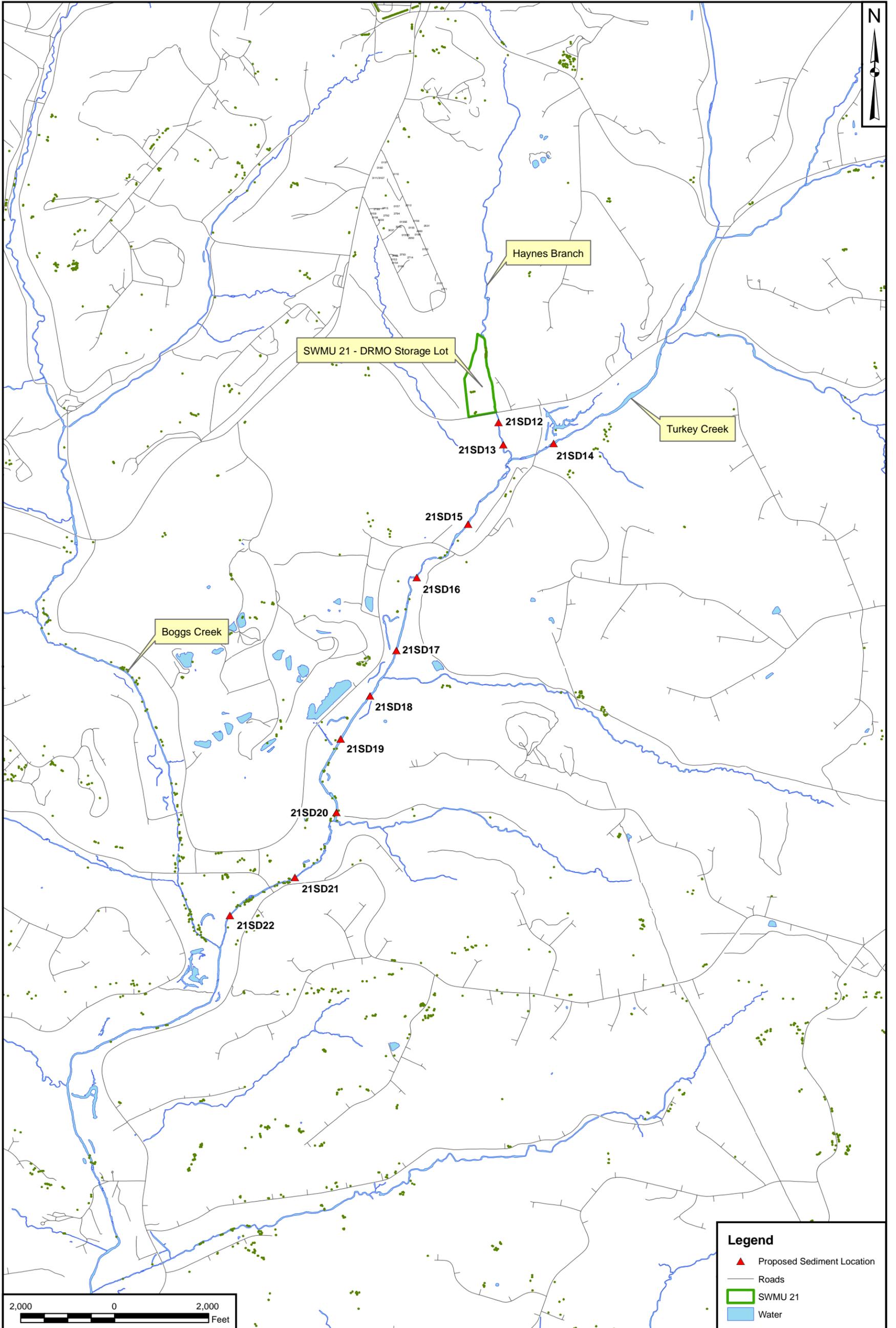
- RFI BAP Soil Sample > 2100 ppb
- RFI BAP Soil Sample < 2100 ppb
- RFI Soil Sample Not Analyzed for PAH
- ND Nondetect
- ✖ Proposed Sample Location
- Building
- ▭ Demolished Building
- Fence Line
- Stream
- Roads

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L. FOSTER	06/14/13
REVISED BY	DATE
J. ENGLISH	06/14/13
SCALE	
AS NOTED	



SOUTHWEST AREA -
PROPOSED PAH SOIL SAMPLE LOCATIONS
SWMU 21 - DRMO STORAGE LOT
NSA CRANE
CRANE, INDIANA

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
—	—
APPROVED BY	DATE
K. LYONS	06/14/13
FIGURE NO.	REV
5	0



Legend	
	Proposed Sediment Location
	Roads
	SWMU 21
	Water

DRAWN BY	DATE
J. NOVAK	08/27/12
CHECKED BY	DATE
L. FOSTER	06/04/13
REVISED BY	DATE
J. ENGLISH	06/04/13
SCALE	
AS NOTED	



**PROPOSED HAYNES BRANCH AND TURKEY CREEK
 SEDIMENT SAMPLE LOCATIONS
 SWMU 21 - DRMO STORAGE LOT
 NSA CRANE
 CRANE, INDIANA**

CONTRACT NUMBER	CTO NUMBER
2122	F274
APPROVED BY	DATE
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APPROVED BY	DATE
K. LYONS	06/04/13
FIGURE NO.	REV
6	0

STANDARD OPERATING PROCEDURE

STANDARD OPERATING PROCEDURE SOP-20

FIELD USE OF EKMAND OR PONAR DREDGE FOR

SEDIMENT SAMPLES

1.0 PURPOSE

This Standard Operation Procedure (SOP) procedure is for the collection of sediment sample from beneath a shallow or deep aqueous layer using either the Ekman or Ponar Dredge. This SOP for the collection of sediment samples from the SWMU 21 open pit oil/water separator. This procedure is based on the United States Environmental Protection Agency (USEPA)- Environmental Response Team/Response Engineering and Analytical Contract SOP #2016 Rev 0.0

REQUIRED FIELD FORMS AND EQUIPMENT

The following field forms and equipment are required for sediment sampling.

Sediment Sample Log Forms: A copy of this form is attached at the end of this SOP.

Writing utensil (preferably black pen with indelible ink)

Indelible marker

Bound field logbook

Disposable plastic trowels

Labeled sample containers: See SOP-02 for sample identification procedures. Sample containers are certified clean by the laboratory supplying the containers.

Sealable polyethylene bags

Shipping containers (containing ice)

Disposable medical-grade gloves (e.g., latex, nitrile)

Chain-of-Custody Form

Stainless Steel Pan

Ekman dredge

Ponar dredge

3.0 SEDIMENT SAMPLE LOCATION SELECTION

In general, sediments are composed of fined-grained materials that may act as a sink or reservoir for adsorbing heavy metals and organic contaminants. Therefore, it is important to locate the specific sampling points where the sediment has the greatest percentage of fine particles. The sampling personnel will determine specific sampling locations with these goals in mind.

Collection of sediment can be accomplished with a system consisting of a remotely activated device (dredge) and a deployment system or pressure release system. This technique consists of lowering a sampling device (dredge) to the surface of the sediment by use of a rope, cable, or extended handle. The mechanism is activated, and the device entraps sediment in spring loaded or lever operated jaws.

4.0 SEDIMENT SAMPLING PROCEDURES WITH EKMAN DREDGE

An Ekman dredge is a lightweight sediment sampling device with spring activated jaws. It is used to collect moderately consolidated, fine textured sediment. The following procedure will be used for collecting sediment with an Ekman dredge:

- 4.1 The sampler will wear clean, disposable medical-grade gloves.
- 4.2 Attach a sturdy nylon rope or stainless steel cable through the hole on the top of the bracket, or secure the extension handle to the bracket with machine bolts.
- 4.3 Attach springs to both sides of the jaws. Fix the jaws so that they are in open position by placing trip cables over the release studs. Ensure that the hinged doors on the dredge top are free to open.
- 4.4 Lower the sampler to a point 4 to 6 inches above the sediment surface.
- 4.5 Drop the sampler to the sediment.
- 4.6 Trigger the jaw release mechanism by lowering a messenger down the line, or by depressing the button on the upper end of the extension handle.
- 4.7 Raise the sampler and slowly decant any free liquid through the top of the sampler. Care should be taken to retain the fine sediment fraction during this procedure.
- 4.8 Open the dredge jaws and transfer the sample into a stainless steel, plastic or other depressing the button on the upper end of the should be taken to retain the fine sediment appropriate composition (e.g., Teflon) container.

- 4.9 Ensure that non-dedicated containers have been adequately decontaminated. If necessary, continue to collect additional sediment grabs until sufficient material has been secured to fulfill analytical requirements.
- 4.10 Thoroughly homogenize and then transfer sediment to sample containers appropriate for the analyses requested. Samples for volatile organic analysis must be collected directly from the bucket before homogenization to minimize volatilization of contaminants.

5.0 SEDIMENT SAMPLING PROCEDURES WITH PONAR DREDGE

A Ponar dredge is a heavyweight sediment sampling device with weighted jaws that are lever or spring activated. It is used to collect consolidated fine to coarse textured sediment. The following procedure will be used for collecting sediment with a Ponar dredge:

- 5.1 The sampler will wear clean, disposable medical-grade gloves.
- 5.2 Attach a sturdy nylon rope or steel cable to the ring provided on top of the dredge
- 5.3 Arrange the Ponar dredge with the jaws in the open position, setting the trip bar so the sampler remains open when lifted from the top. If the dredge is so equipped, place the spring loaded pin into the aligned holes in the trip bar
- 5.4 Slowly lower the sampler to a point approximately two inches above the sediment
- 5.5 Drop the sampler to the sediment. Slack on the line will release the trip bar or spring loaded pin; pull up sharply on the line closing the dredge
- 5.6 Raise the dredge to the surface and slowly decant any free liquid through the screens on top of the dredge. Care should be taken to retain the fine sediment fraction during this operation
- 5.7 Open the dredge and transfer the sediment to a stainless steel, plastic or other appropriate composition (e.g., Teflon) container. Ensure that non-dedicated containers have been adequately decontaminated. If necessary, continue to collect additional sediment until sufficient material has been secured to fulfill analytical requirements.
- 5.8 Thoroughly homogenize the sediment and then transfer sediment to sample containers appropriate for the analyses requested. Samples for volatile organic analysis must be collected directly from the bucket before homogenization to minimize volatilization of contaminants

6.0 ATTACHMENTS

1. Soil and Sediment Sample Log Sheet

7.0 REFERENCES

USEPA (U.S. Environmental Protection Agency), Environmental Response Team/Response Engineering and Analytical Contract SOP #2016 Rev 0.0

