



September 30, 2021

TECUMSEH PRODUCTS COMPANY
ATTN: CARRIE WILLIAMSON, GENERAL COUNSEL
5683 HINES DRIVE
ANN ARBOR, MI 48108
[Via Electronic Mail Only to carrie.williamson@tecumseh.com]

Subject: Review of Site Investigation Work Plan and Quality Assurance Project Plan dated June 10, 2021
HARP Downstream of Hayton Millpond Dam, BRRTS # 02-08-587108

Dear Ms. Williamson:

Thank you for submitting the Site Investigation Work Plan (SIWP) and Quality Assurance Project Plan (QAPP) for the HARP Downstream of Hayton Millpond Dam, dated June 10, 2021. The SIWP and QAPP are not approved. The specific comments from the Wisconsin Department of Natural Resources (DNR) on the SIWP and QAPP are attached.

This SIWP misconstrues site investigation requirements and remedial action goals. The purpose of a site investigation is to "... define the nature, degree and extent of contamination." Wis. Admin. Code § NR 716.01. A site investigations are iterative processes where information collected informs the need for further investigation to meet the overall objectives at the remedial action site. While the initial investigation area extending 2 miles downstream of the Hayton Dam on the South Branch Manitowoc River is acceptable at this time, additional downstream investigation may be necessary to meet the overall objective to define the degree and extent of contamination. Additionally, the site investigation process includes evaluation of all potential media, pathways, and receptors present at a remedial action site to conduct a complete site investigation. This SIWP excludes potential media, pathways and receptors.

The definition of the degree and extent of contamination in all media must be based on established standards (e.g. Wis. Admin. Code ch. NR 720, and chs. NR 102-105) and/or guidelines (e.g. Consensus Based Sediment Quality Guidelines, and fish advisory levels), not site-specific remedial action goals. A surface weighted average concentration (SWAC) is only to be used with DNR concurrence and approval as a performance verification metric following remediation and in conjunction with a not to exceed threshold value. Discussion related to a SWAC downstream of the dam is not relevant to this SIWP. Neither a SWAC nor a site-specific remedial action goal should be used to characterize the material, assess risk, or evaluate the need for additional sampling requirements, so both should be removed from the SIWP.

As stated in Section XIV of the Negotiated Agreement, "nothing herein shall preclude the State from requiring Tecumseh to undertake other or additional environmental response actions at the Site that may otherwise be require of Tecumseh as a responsible party pursuant to Wis. Stats. ch. 292 and the Wis. Admin. Code ch. NR 700 administrative rule series." The site investigation activities for the Hayton Area Remediation Project site (BRRTS #: 02-08-281506) demonstrate the complexity of the site. Remedial actions conducted to date only serve to limit transport of impacts downstream following remediation, but critically do not address the impacts from past erosion and deposition prior to upstream remedial actions at this segment of the waterway.

Additional site investigation action is necessary at this remedial action site due to the complexity of this site. In the attached comments, DNR specifies the use of a ponar grab sampler to ensure that the core sampler is adequately recovering the fine-grained fraction for PCB analysis (page 2, SIWP comment 7). Additional field investigation is required to address all receptors and media to include additional sampling of invertebrates to evaluate the uptake of sediment and water column PCBs to the invertebrates and to the consumers of the invertebrates (page 2, SIWP comment 5). DNR has authority to require specific, additional site investigation activities under Wis. Admin. Code § NR 716.17(1).

The comments provided in this letter and the attached document are intended to refine the SIWP to improve the work product and assist with compliance with the regulations. The comments should not be interpreted as all of the changes to the SIWP that will be necessary to successfully meet the regulatory requirements of Wis. Admin. Code ch. 716 regarding remedial action site investigations and the statutory obligation of the Spills Law to restore the environment to the extent practicable and minimize harmful effects.

Therefore, DNR directs you, within 60 days of the date of this letter, by November 29, 2021, to revise and re-submit the monitoring plan with the requisite Wis. Admin. Code ch. NR 749 site investigation work plan review fee.

Please contact me at (920) 510-8277 or at sarah.krueger@Wisconsin.gov if you wish to discuss any aspect of this letter further.

Regards,



Sarah Kruger, P.G.
HARP Project Manager

Attachment: DNR Comments on the Site Investigation Work Plan and Quality Assurance Project Plan,
HARP Downstream of Hayton Millpond Dam, BRRTS # 02-08-587108

cc: Jason Smith, Tecumseh Products Co. – jason.smith@tecumseh.com
Chris Harvey, TRC - CHarvey@trcompanies.com
William J. Nelson, DNR – William.Nelson@wisconsin.gov

Previous Comments –

1. General Comment 2 & Specific Comment 8 - DNR Response: The evaluation of all potential media should be included as part of the initial Site Investigation Work Plan (SIWP). The iterative process mentioned means that as new data is received previously unknown impacted media may need to be investigated, the area being investigated may need to be expanded, or new contaminants of concern may need to be analyzed. This process is not meant to exclude investigation that will be required by DNR as part of a complete Site Investigation.

The work plan should consider plant and animal species and humans as potential receptors.

Additionally, past site investigations upstream demonstrate the complexity of the site, and past remedial actions only limit transport of new impacted material downstream and do not address impacts from past deposition prior to upstream remedial actions.

2. Specific Comment 5 and 7d - DNR Response: The intent of a SIWP is not to “evaluate” the degree and extent, but rather define it. The initial investigation area extending 2 miles downstream of the Hayton Dam on the South Branch Manitowoc River is acceptable at this time; however, a site investigation may be an iterative process where information collected may inform the need for further investigation to meet the overall objective of the site investigation. The site investigation process is not meant to exclude potential media, pathways, and receptors required by DNR as part of a complete Site Investigation.

Definition of the degree and extent of contamination should be based on established standards (e.g. Wis. Adm. Code ch. NR 720) and/or guidelines (e.g. Consensus Based Sediment Quality Guidelines), not site-specific remedial action goals. Discussion related to a surface weighted average concentration (SWAC) downstream of the dam and sample results relative to the site-specific remedial action goal is not relevant to this SIWP. A SWAC and site-specific remedial action goal should not be used to characterize the material, define the remedial footprint, assess risk, or evaluate the need for additional sampling requirements and should be removed from the SIWP. Additionally, Tables 1 through 4 should be updated to include relevant environmental standards and guidelines, Wis. Adm. Code NR 720 soil standards and the Consensus Based Sediment Quality Guidelines. Remove the site-specific remedial action goal from the tables.

3. Specific Comment 10 - DNR Response: Include texture and classification of sediment.
4. Specific Comment 11b - DNR Response: PCBs in water are strongly correlated to temperature, suspended organic matter, and total suspended solids (TSS). Past United States Geological Survey (USGS) monitoring had shown orders of magnitude variation between sampling dates. The monitoring plan should develop a baseline of PCBs in surface water for HARP. The SIWP should include monthly monitoring of PCBs in water during the expected peak water PCB concentration during the summer months of May through August. Additionally, water samples must be analyzed for PCB congeners, total organic carbon (TOC), dissolved organic carbon (DOC), and TSS. Water temperature at the sample collection point must be obtained, recorded, and reported with the sample results.

5. Specific Comment 11c - DNR Response: While fish tissue sampling will be addressed under a separate monitoring plan as part of the HARP Site Long Term Monitoring (BRRTS #: 02-08-587669), the purpose of this SIWP is to define the nature, degree and extent of contamination downstream of the Hayton Dam which includes evaluating the uptake of sediment and water column PCBs to the invertebrates and to the consumers of invertebrates. Invertebrates should be collected from soft organic sediment and sand/gravel areas using appropriate manual sampling protocols for wadable streams such as bulk grab sediment collection and nets. If this work plan fails to evaluate relevant media and receptors, additional investigations will be required in the future.
6. Specific Comment 11d and 12 - DNR Response: Section 5.3.2 still references collecting 3-cores 10 feet of the left and right banks and from the center of the channel rather than basing the core collection location on the sediment probing that is now included in the SIWP. The comment response has not been adequately incorporated into the text of the SIWP and discussion of sampling based on proximity to the banks or center of the channel should be removed. If 3 cores are necessary, provide additional reasoning since only one of the 3 cores, the one with the thickest soft sediment will be sampled.

Half of the sample transect locations presented on Figure 2 appear to be in narrow, straight sections of the river, and insufficient information has been provided to evaluate the preliminary sample placement. The sample transects should be located in areas with greater sediment deposition based on geomorphology. Please include a field geomorphic evaluation of the distribution of soft anthropogenic sediment to ensure sampling locations correspond to field verified areas of deposition and thickest soft sediment deposits, prior to finalizing transects and core locations as part of the SIWP. General transect locations can be developed based on the aerial photo review but these should be updated to focus on depositional areas, not narrow, straight sections of the river. Using a standard interval between transects is not recommended as it is unlikely the sediment is universally impacted, which past sampling results support.

Additionally, the purpose of the SIWP is to define the degree and extent of contamination and not necessarily to confirm past results. Sampling should not only be biased to areas of deposition, but also serve to further delineate the extent of contamination. 6 of the 16 currently proposed sediment transects are located within 50 feet of past sampling locations, greatly reducing the area being investigated along the 2 mile stretch of the South Branch of the Manitowoc River.

7. Specific Comment 11d. ii. - DNR Response: 50% of sediment sample locations must be sampled by both a ponar grab sampler (or approved equivalent) and with a core sampler for comparison of the results to ensure that the core sampler is adequately recovering the fine-grained fraction, per Wis. Adm. Code § NR 716.17(1).
8. Specific Comment 11d. iii. - DNR Response: Please provide information as to timing allowed for settling of sediment in a core tube prior to verifying sample recovery. Please note that the soft sediment thickness is expected to vary across the site, and the 18 inches required for retrieval should be removed from section 5.3.2. The text should be updated to indicate that if 75% recovery is not achieved up to three attempts at that location will be made and if 75% recovery is still not achieved an alternative method of sample collection will be performed.

Additionally, include the possibility for a thicker soft sediment deposit than 18 inches which could necessitate additional samples from the sediment core in 1-foot intervals, to characterize the full extent of contamination within the sediment.

These changes in the SIWP must be reflected in updates to the Quality Assurance Project Plan (QAPP).

9. Specific Comment 14 - DNR Response: Please include procedures to address observations of fines or other sediment being discharged in the water drained from the core tube and incorporate those procedures into the QAPP.

Additionally, this section needs more information on transport and protection of the integrity of unprocessed samples. Transporting core samples in core tubes has risks of disturbing the sample. Explain what will be done to protect the samples during long distance transport such as travel to Madison for processing.

10. Specific Comment 16a, b, and e - DNR Response: The response to comment 16a and 16b defines both field quality measures described as field duplicates. Section 5.9.1 and 5.9.2 mixes the terminology/definition of replicate samples and field duplicates. To assure appropriate data interpretation, please define and use these terms consistently. See comments on the QAPP.

Additional Comments –

11. Section 3.1 and 4: Neither the history nor the information in section 4 address the how or when the thalweg changed downstream of the dam. Historic oxbows are apparent to the north of the existing channel (Figure 2). This is relevant to understanding potential pathways and risk for PCB contamination beyond the streambanks. As indicated in other comments, the drawings do not show the extent of floodplains (e.g. 2-yr, 10yr), and the proposed sampling locations in relationship to them. Because the objective is determining extent of contamination, this is a relevant assessment and important for determining the overall adequacy of the sampling plan.
12. Section 3.14, pg. 14: The information presented in the SIWP does not provide supporting information for the selection of sampling locations in the overbank soil or extent in the wetland area. Although elevation information is presented in Figure 1 and the ordinary high water mark (OHWM) is presented on Figure 2, floodplain elevations and wetlands are not present on the figures. This information informs placement of upland samples to determine the potential extent of contamination.
13. Section 4.2, pg. 15: Discussion of significant hydrogeologic features is limited to the OHWM. The contours of the floodplain (e.g. 2-year, 10-year) are relevant to evaluating potential extent of contamination.
14. Section 5.1, pg. 17: The poling proposed is limited to the vicinity of the 16 selected transects. No information in Section 4 or the associated figures show the extent of soft sediments within the 2-mile reach (e.g. the 2015 reconnaissance study). It would be useful for Figure 2 to map soft sediment thickness from past investigations and/or provide a more comprehensive poling of the 2-mile stretch. In the six years since the initial reconnaissance study, it is expected that sediment thickness may have changed due to storm events and normal stream dynamics.
15. Section 5.1, pg. 17 and 5.5.1, pg. 21: Targeting overbank soil samples to low locations that flood is reasonable; however, overbank locations do not appear to consider locations where oxbows existed

historically which, depending on their age in relationship to the PCB release, may also show contamination. The limited number of locations in the overbank is insufficient to determine the extent to which the floodplain may be contaminated.

16. Section 5.3.3, pg. 20: Sediment must be analyzed for TOC, and the reported results should be unaltered e.g. not normalized.
17. Section 5.4.2, pg. 21: If transfer containers or a peristaltic pump are used for water collection, equipment blanks are necessary and explicit language should be added to 5.9.3.
18. Section 5.4.2, pg. 21: The text needs to be more explicit about the type of transfer container (e.g. Kremmerer bottle, Van Dorn or something else) being used and its logistics (e.g. how representative subsampling or container filling will be assured and appropriate incorporation of field blanks). See comments on the QAPP related to field blanks, quality assurance and quality control (QA/QC) sampling.
19. Section 5.4.2, pg. 21: Selecting an Aroclor-based method for water samples does not provide sufficient sensitivity or accuracy to assess water concentrations at water quality criteria (0.12 or 0.003 ng/L) or effectively evaluate trends over time. Data from a congener method is appropriate for assessment of PCBs in water and trends over time. EPA method 1668 or equivalent is the preferred method. The Fox River long-term monitoring plan uses this method for water analyses and the associated QAPP includes provisions for implementing the procedure successfully.

The only laboratories certified for PCB congeners use high resolution gas chromatography/mass spectrometry (HRGC/MS), the technique in EPA method 1668.

Note: For biota sediment accumulation factor (BSAF) modeling, congener analyses may also be needed for fish tissue. Aroclor data is appropriate for comparison with fish consumption advice.

20. Section 5.6.1, pg. 22: Although the text does not explicitly state the sequence for collecting these samples, this section, as written, implies collection from the toe upwards. The text should indicate that only undisturbed bank material will be collected for analysis. For example, at vertical or near vertical bank slopes, the bank scrape sample for analysis should be free of material mixed as a result sloughing or slumping.
21. Section 5.6.2, pg. 22: Additional procedural information about Scrape Sampling and a diagram are necessary to illustrate the scrape sample collection, particularly the order for sample collection and what will be done operationally to assure that the stratigraphy will be accurately represented, particularly if a spade is used as the sample collection method. Standard operating procedures (SOPs) included as an appendix to the QAPP did not cover this type of soil sampling. This is important documentation to ensure consistent interpretation and reproducible collection procedures.

If the toe of the slope is below water, a spade should not be used to collect the sample, rather a push core should be used.
22. Section 5.9.3, pg. 25: Field blanks will be necessary if a peristaltic pump or a transfer container is used to collect water samples. Field blanks used for water samples, to include transferring blank water to a separate container, account for any potential contribution from ambient air.

23. Section 5.10.1 and 5.10.2, pg. 26: Water sampling equipment should be included in this section to include the tubing for the peristaltic pump or transfer container which may be dedicated or non-dedicated.
24. Explain the purpose for the reduction in the number of sediment sampling transects from 21 to 16. The 5 additional transects would help provide additional data to better define the degree and extent of contamination.
25. Please note that upon completion of the SIWP and following receipt of results it may become apparent that additional investigation is necessary to complete the Site Investigation. If additional investigation is necessary, it is advisable to submit a new SIWP to fully define the degree and extent of contamination prior to submitting a Site Investigation Report (SIR).
26. As sediment probing and sampler wading of the waterway is likely to resuspend a portion of the sediment, please provide discussion of procedures to limit loss of soft, fine grained, organic-rich sediment, or artificially increased suspended solids in the surface water samples (e.g sampling to be performed down-stream to up-stream). Sediment and water do not necessarily need to be collected at the same locations. There may be benefits in separating the activities to reduce site disturbances from sampling one media to another media.
27. The negotiated agreement includes using BSAF modeling. No mention of this is made in the project plan. If the data generated in this SIWP are intended for use in this model, then it should be stated in the objectives and there needs to be an assurance that the data collection and analyses are appropriate for that modeling effort.
28. Clarify the number of point bar sediment samples and overbank soil samples to be collected. The text indicates 8 point bar sediment samples will be collected opposite each bank scrape sample and 8 overbank samples targeting areas of potential overbank flow and deposition, e.g. flood plains; however, Figure 2 shows 6 of the 8 overbank soil sample locations across from bank scrape sample locations. Add the point bar sediment sample locations to the figure and re-locate the 6 overbank soil sample locations to locations not adjacent to point bar sediment samples.

QAPP Comments:

1. Add additional indexing to the document. Document indexing is insufficient to provide navigation to specific SOPs, congener information, quality manuals or accreditation materials. For example, Appendix B did not index the SOPs included.
2. Elements of the DQO process, particularly step 7, relevant decision levels and decision rules are missing. Ensure they are added to the QAPP.
3. The QAPP and DQO do not mention the potential to use the data for BSAF modeling per the negotiated agreement, Exhibit G point 21. The comments provided on the QAPP do not consider whether the results generated will be appropriate and usable inputs into a BSAF model. If the data from this SIWP downstream of the Hayton Millpond Dam are to be used for that purpose, additional information is necessary in the QAPP.

4. Section 1.5.4, page 1-5: The DQO should identify the basis for the Boundary conditions and what makes that appropriate. Except for the references to Figures 1 and 2 and the extent to approximately 2 miles downstream in Section 1.4, there is little information to support the statement that the boundary is well-defined. The referenced figures do not include information about the extent of relevant floodplains or the basis for using the 5 – 50 feet from the top of the bank as the extent of soil sampling.
5. Section 1.5.5, page 1-5: The text should specify that the calculation in ASTM D2974-87 needs to be modified to be used to calculate results on the appropriate dry weight basis (i.e. the denominator needs to be the wet weight - rather than a dry weight). Note that the laboratory's SOP has the appropriate calculation.
6. Section 1.5.6, page 1-5: There is insufficient performance information for surface water, see subsequent comments on method selection. Method sensitivity must be sufficient to reliably quantify PCBs at ambient water concentrations. The discussion in Step 6 should identify the method sensitivity necessary to make decisions based on the data. Detection limits for Aroclor methods are inadequate and the quantitation methods within that procedure limit the procedure's reliability for quantifying PCBs at surface water concentrations. In addition, Method 8082 is not comparable with historical analyses done in this area.

A laboratory control sample (LCS) is designed to assess the method performance in the laboratory and does not assess precision, representativeness or comparability. The discussion in this section should speak to how the sampling design and specific field procedures that contribute to sample representativeness, comparability issues (e.g. past data) and field quality control necessary to assure reproducible results (precision, accuracy or bias characteristics and representativeness).

7. Section 1.6, page 1-6: Include the Wisconsin laboratory accreditation number for any laboratory that will perform analyses for this project. PACE Green Bay laboratory is certified for PCBs as Aroclors but not for PCBs as Congeners. For PCB congener determinations, the only laboratories with appropriate Wisconsin accreditation are certified for HRGC/MS, the technique used in Method 1668 (PACE Minneapolis holds this certification). The technology used in Method 8082 is Gas Chromatography (GC).
8. Section 2.1.1, page 2-1: The second paragraph references analyses as "Aroclor congeners and total PCBs". This is ambiguous language. Total PCBs are either calculated as the sum of Aroclors or the sum of congeners. With few exceptions, these analyses are not comparable. A similar ambiguity exists in Table 1 although the table seems to indicate that both will be done. See comments on Table 1.
9. Section 2.2, page 2-4: Please reference relevant sections of the SIWP and SOPs where additional sample collection information can be found.
10. Section 2.2.2, page 2-5, Surface Water Sample Collection: The second paragraph indicates that a peristaltic pump may be used. It's important to determine its necessity in the planning stage so equipment blanks are incorporated appropriately in the QAPP and SIWP. See SIWP comment 20 on section 5.9.3 of the SIWP.

11. Section 2.2.2, page 2-6, Scrape (Soil) Sample collection: The attached SOPs do not cover this type of sampling. Additional procedural information and a diagram are necessary to illustrate the scrape sample collection. See SIWP comment 19 on section 5.6.2 of the SIWP.
12. Section 2.2.3, page 2-6: The text in this section should contain relevant information about how the sample will be processed. At a minimum, the text should reference relevant sections of the SIWP and SOPs. Explicitly state that photo documentation of the cores will be completed. Additional text may be warranted if project-specific modifications to the SOPs are necessary.
13. Section 2.4.1, page 2-7: As indicated in comment 5, analyzing water samples for PCBs as Aroclors by method 8082 is problematic as no laboratories are certified in Wisconsin for the technology used in method 8082. Method 1668 or equivalent for PCBs as Congeners is the recommended procedure.
14. Section 2.5.1, page 2-8: NR 716.13(6) Wis. Adm. Code § NR 716.13(6) presents minimum requirements for quality control and quality assurance. The QAPP (and SIWP) should specify QA/QC samples that are necessary to document the overall quality and integrity of the data collection effort and the decisions to be made based on that data, in support of the negotiated agreement whether or not they are explicitly identified in NR 716.13(6). Laboratory QA/QC has been standardized and is regularly audited by Wisconsin's Laboratory Certification Program. Field operations have fewer controls so field QA/QC samples play a vital role in assessing data integrity and reliability. Please include all relevant field QA/QC sampling for Sediment and Surface Water.
15. Section 2.5.1, page 2-8: Please present the QA/QC information in a table that specifies the frequency of QA/QC samples, associated matrix and whether it's associated with a field or laboratory operation. Identifying the number of containers needed can be useful for ensuring that the laboratory receives the sufficient sample to perform its quality checks. (e.g. two 1-liter sample containers of water are insufficient to do the sample analysis as well as the matrix spike and matrix spike duplicate).
16. Section 2.5.1, page 2-8: As indicated in the SIWP comment 9 (specific comment 16) on section 5.9, the definition for Blind field duplicate appears to identify the same preparation technique as Replicate Samples i.e. splitting the same sample into two containers after processing. Mixing definitions for duplicates and replicates create potential for error and misinterpretation of data. In addition, the sampling SOPs identify duplicates as aliquots taken from the same sample post homogenization. Please use the duplicate and replicate terms consistently for the type of sample processing. In the overall context, the term "Replicate" should be used for samples that are split pre-homogenization.
17. Section 2.5.1, page 2-9, Equipment Blanks: Please be explicit about incorporating Equipment Blanks when a peristaltic pump is used for water samples. This will be particularly important for congener determinations. This is recommended even if new tubing is used with each water sample as ambient air PCB concentrations can influence (bias) results.
18. Section 2.5.1, page 2-9, Matrix Spike/Matrix Spike Duplicate (MS/MSD): Additional sample volume should be planned for water samples for PCBs (A one-liter sample is extracted for each analysis so the planned volumes will be insufficient to perform these QA/QC analyses. This is consistent with the eighth sentence "MS/MSD samples typically consist of a triple volume of an existing sample".

Certification requires and section 2.5.4 indicates that MS/MSD samples be collected at a frequency of 1/20 samples. As indicated in QAPP comment 13 on this section, please include this information in a table that summarizes the project QA/QC samples.

19. Section 2.7.1, page 2-12: The summation routine for calculating total PCBs must be specified.
20. Section 2.7.2, page 2-12: Identify who will be responsible for evaluating data usability. This responsibility is not identified in 1.2.1.
21. Section 2.7.3, page 2-14: Wisconsin regulations require reporting results to the detection limit (LOD). That requirement needs to be reflected in the QAPP. Results between the LOD and the limit of quantitation (LOQ) or reporting limit typically are qualified and this is specified in the QAPP. The final laboratory report should also include any data qualifiers with their definitions. The deliverables and reporting to DNR should also be specified. This report should include relevant field information.
22. Section 3.0, page 3-1: Include the following text: DNR reserves the right to perform field oversight at its discretion.
23. Table 1: Include a footnote on the Laboratory Method Detection Limit column to indicate that Wisconsin requires reporting to the detection limit. Per Pace Analytical Services Quality Manual, reporting conventions below quantitation limits are part of the customer agreement.
24. Table 1: Include a footnote on the Laboratory Reporting Limit column to indicate that data below the reporting limit should be qualified as estimated between LOD and LOQ.
25. Table 1: The listing for PCBs for each matrix is misleading. Method 8082 is primarily a PCB Aroclor method. The associated method detection limits and reporting limits are appropriate for the Aroclors, (Congener information would need to include listing for each congener in the target analyte list.) Precision, accuracy and completeness goals may be the similar for congeners; however, this needs to be reviewed in context of the actual laboratory performance information.
26. Table 1: Laboratory limits for LCS performance, precision (MS/MSDs) and matrix spike recovery should be included in a table for ready access during data verification or validation.
27. Table 1, footnote 2: Footnote 2 indicates that PCB congeners are included in Appendix A. Beyond the definition of congeners, no specific information about congeners could be located in Appendix A. The target congeners, any coelutions, detection limits, method that identifies congeners as target analytes and laboratory performance criteria (quality limits) need to be included.

Note: The PCB SOP identifies only Aroclors as target analytes with the associated laboratory performance information.

28. Appendix A: The PACE Quality Manual and SOPs in Appendix A appear to be in picture format, making it difficult to search them. This was particularly a problem with locating congener information that was referenced as being present in this Appendix.

Note: If any analyses are subcontracted (e.g. PCB congeners), the laboratory certification information and an appropriate SOP needs to be included in this appendix.

29. Appendix B, SOP ERC 003 – Soil Sampling, Section 2.2.1: The text as written, indicates that for surface soil sampling methods, the sample will be taken from the bottom of the interval, e.g. 12-inches below ground surface. Update the SOP to either sample across the entire interval from 0 to 12-inches or identify the sample as a discrete sample at the depth of the hole dug. Depending on the change to the SOP, updates may be necessary to the SIWP so soil is adequately characterized as part of the OU5 site investigation.
30. Appendix B, SOP ERC 003 – Soil Sampling, Section 2.2.2: Ensure similar to section 2.2.1 that only the “thick, matted root zone, leaf layer, gravel, surface debris, concrete, etc.” is removed, the text as written currently allows for the removal of “the first several inches of surface soil”.

Additionally, during the special consideration for slough, please provide additional information as to how slough will be identified from in-situ soil to prevent a bias in the homogenization process. A similar consideration is presented for split spoon sampling in section 2.2.4 that should also be updated.

31. Appendix B, SOP ERC 003 – Soil Sampling, Section 2.2.3, Procedure 4: Update the procedure such that the location of the sample is not to be adjusted for core recovery as there are multiple factors influencing core recovery. This will also affect SOP ERC 008 – Sediment Sampling, Section 2.3.
32. Appendix B: There are two references to “non-volatile organic compound (VOC) parameters” in SOP ERC 003 and SOP ERC 008 respectively; these references are believed to be typos. Provide clarification or update the language to correctly use the volatile organic compound (VOC) acronym.