Peabody, Daniel (EGLE)

From:	Peabody, Daniel (EGLE)
Sent:	Thursday, March 9, 2023 5:12 PM
To:	saric.james@epa.gov
Cc:	Greg Baker; Williams, Lisa; John Kern; Roberts, Keegan (robertsk@cdmsmith.com); Diana, Matthew (DNR); Gunderman, Brian (DNR); Mills, Mark (DNR); Kline, David (EGLE); Walczak, Joseph (EGLE); Roush, Dawn (EGLE)
Subject:	Kalamazoo River OU5 Site-Wide_EGLE Comments on the Fish and Surface Water LTM Data Report
Attachments:	FINAL_EGLE Cover Letter and Comments_OU5 Fish and Surface Water LTM Data Report.pdf

Jim,

Attached are EGLE's comments on the OU5 Fish and Surface Water LTM Data Report. Please let me know if you have any questions.

As discussed, I included a few examples of templates we would like to see utilized for figures in this report. However, per your request, I did not provide all the templates we produced for each location. A complete set of templates can be provided upon request, but what is provided in the comments should be sufficient for discussion.

Thanks,

Daniel Peabody
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Remediation and Redevelopment Division
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STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING

GRETCHEN WHITMER
GOVERNOR

DANIEL EICHINGER
ACTING DIRECTOR

March 9, 2023

VIA E-MAIL and U.S. MAIL

Jim Saric
Remedial Project Manager
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (S-6J)
Chicago, Illinois 60604-3511

Dear Jim Saric:

SUBJECT: Michigan Department of Environment, Great Lakes, and Energy (EGLE) comments on the Fish and Surface Water Long-Term Monitoring Data Report (Report), Operable Unit 5 (OU5), Allied Paper Inc./Portage Creek/Kalamazoo River Superfund Site (Site).

By way of this correspondence, EGLE formally submits this cover letter and detailed comments (attached) on the subject Report for inclusion in the Administrative Record for the Site. The comments provided were drafted by the Michigan Department of Natural Resources (MDNR) Fisheries Division, the EGLE Water Resource Division – Surface Water Assessment Section, and the EGLE Superfund Section following our review of the Report.

EGLE appreciates the opportunity to review and comment on the subject Report for OU5. If you have any questions, please contact Daniel Peabody, Environmental Quality Analyst, Remediation and Redevelopment Division at 517-285-3924; PeabodyD@Michigan.gov; or EGLE, P.O, Box 30426, Lansing, Michigan 48909-7926

Sincerely,

Daniel Peabody
Environmental Quality Analyst
Superfund Section
Remediation and Redevelopment Division

att/cc:

Greg Baker, National Oceanic and Atmospheric Administration
Lisa Williams, United States Fish and Wildlife Service
Dr. John Kern, Kern Statistical Services, Inc.
Dr. Keegan Roberts, CDM Smith
Matt Diana, MDNR
Brian Gunderman, MDNR
Mark Mills, MDNR
David Kline, EGLE
Joseph Walczak, EGLE
Dawn Roush, EGLE

Allied Paper Inc./Portage Creek/Kalamazoo River Superfund Site
Fish and Surface Water Long-Term Monitoring Data Report
OU5 – Kalamazoo River Site-Wide
January 2023

GENERAL COMMENTS

Commenting Organization: EGLE
General Comment #1: It would be helpful if the Respondents at the Site that are anticipated to or already have long-term monitoring (LTM) obligations could work together to implement LTM activities and reporting. A cooperative effort would ensure collection methods are standardized and consistent across time and space, the data collection and reporting would be sequenced so that is comprehensive and centralized, the number of fish taken from Operable Unit 5 (OU5) and the reference reaches would be reduced, and it would eliminate the need for each Respondent to draft a separate summary report that would require Agency review.

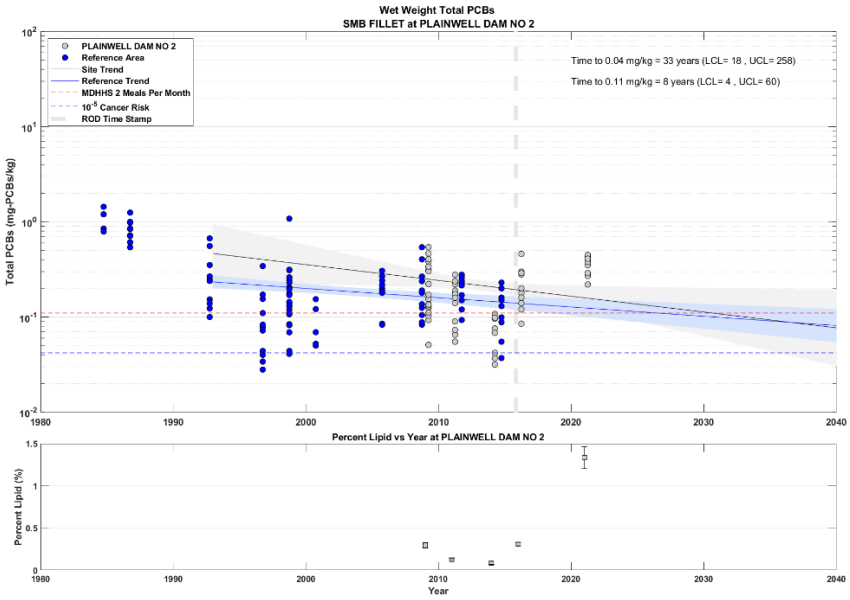
Commenting Organization: EGLE
General Comment #2: The Report needs to be optimized and streamlined so that it serves a clear purpose. Key content in the report (figures and graphics) need to be adjusted so that they clearly present and convey relevant information about the Site. Some general thoughts on the Report are included below.

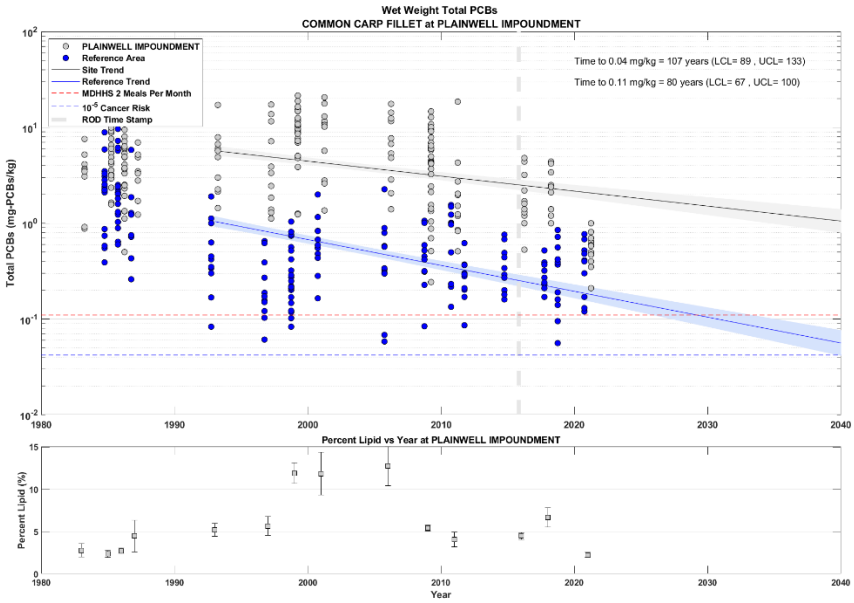
- As submitted, the Report does not include sufficient detail to document and summarize the field efforts that have taken place during implementation of the LTM program. Examples of documentation that must be provided as part of a revised submittal and in future data summary report submittals is discussed in further detail in Specific Comment #11.
- The Introduction in the Report outlines Purposes and Objectives from the LTM Plan and goes on to state that most of the goals of the LTM Plan will not be evaluated as part of the LTM Report.
- Figures that are presented in the Report have been crafted in such a way that they make data interpretation very difficult, and they also do not convey any information related to key milestones and activities that have occurred at the Superfund Site.
- Text throughout the Report is heavily focused on the "Morrow Release" and figures are setup in way that emphasizes that event. In comparison, discussions about other relevant activities and milestones that occurred at the Superfund Site during the reporting period make up a small fraction of the total text and are not depicted in any of the figure sets.

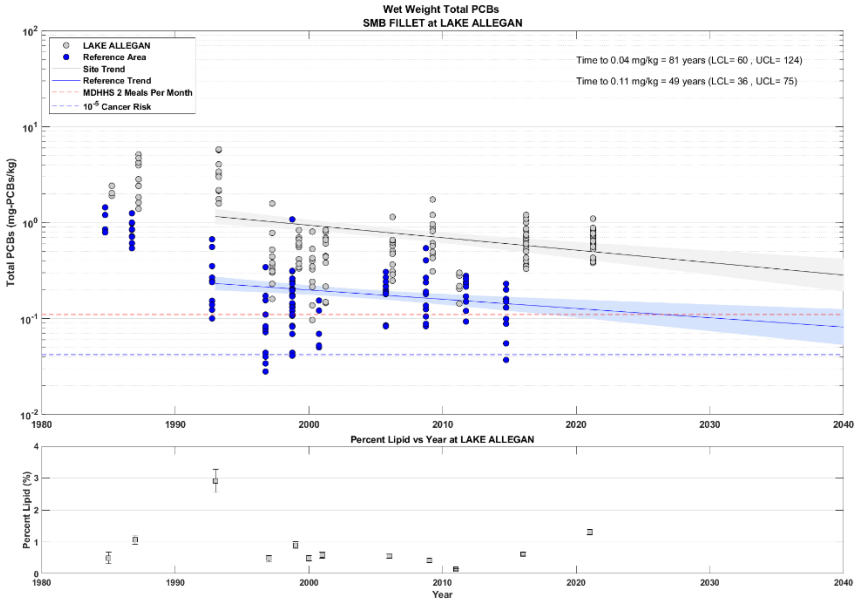
In summary, the Report lacks the documentation that is necessary to adequately summarize the data collection efforts for it to serve as a standalone data summary report, and it provides muted analyses that lack statistical rigor and do not attempt to answer key questions about ongoing processes at the Site that would be required in a LTM report. Discussions and figures in the Report are also focused on the "Morrow Release", which is inappropriate.

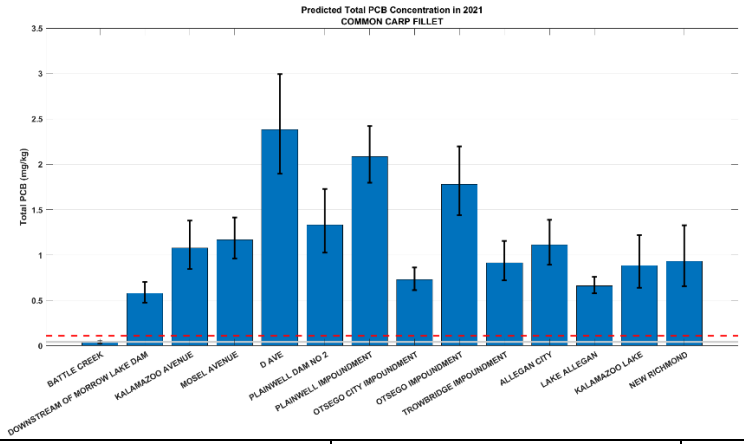
The technical work group should engage in a discussion about how best to improve the text and figures in the revised submittal. The revised Report (and future LTM summary reports) must adequately summarize and document the field efforts throughout the reporting period, convey substantive information of interest to the reader, and clearly identify where information that is not contained in the report can be located. To help facilitate and kick-start these discussions, EGLE has produced templates for figures that include some of the key information that must be included in the revised report and future data summary submittals.

The example templates that are provided below compare concentrations at monitoring locations within the Superfund Site to fish collected from the Morrow Reference Area and include an example of how to show a key milestone (in this case a Record of Decision). These templates are not final and are only being provided to spur discussion. Other figure sets for fish tissue and surface water would also be updated to show key milestones, including the Morrow Release, in a similar fashion. Separate plots similar to the templates provided would also be made to compare fish data from the Superfund Site to fish data collected from the Ceresco Reference Area. Once a consensus is reached about the content and formatting of the figures, the templates would be updated and submitted in the revised report and future submittals. A few templates for fish tissue are included below and a table summarizing dates for some key milestones is provided thereafter.









Event	Start Date	End Date
Morrow Release	November 1, 2019	December 17, 2020
Portage Creek Time Critical Removal Action	February 25, 2012	December 20, 2013
Plainwell Impoundment Time Critical Removal Action	June 7, 2007	February 21, 2009
Plainwell Dam No. 2 Time Critical Removal Action	June 8, 2009	October 9, 2010
Otsego Township Dam Time Critical Removal Action	September 15, 2016	August 17, 2018
Bryant Mill Pond Time Critical Removal Action	June 1998	October 1999
Area 1 Record of Decision	September 2015	
Area 2 Record of Decision	September 2017	
Area 3 Record of Decision	September 2022	

Commenting Organization: EGLE
General Comment #3: Text, figures, and tables in the LTM Data Report (Report) do not appear to include data from the Pine Creek impoundment, which is a part of Area 3. Please update the Report to include data collected from the Pine Creek impoundment.

Commenting Organization: EGLE
General Comment #4: Text in the document states that the 2020 and 2021 surface water data are not used for trending because of the Morrow Release, and the 2019 data is also not being used because of a change in the analytical method for analyzing surface water samples. However, the 2018 to 2021 fish tissue data are being used to produce and report an average annual percent change for each monitoring location. This seems contradictory. More information is needed to support this process.

Commenting Organization: EGLE
General Comment #5: The Report is a Data Report, but it is unclear what timeframe the report is meant to summarize. It would be helpful if the document clearly outlined what time period it is supposed to cover. This could be accomplished by including the date range in the title of the document or providing more detail in the text that highlights the time period the report is meant to cover For reference, the last LTM report was developed by EGLE (then MDEQ) in 2016 so the Report should document and summarize activities that have occurred since 2016. Based on our understanding of the intent of the Report, it would be more appropriate for the Report to be titled, "Fish and Surface Water Data Summary Report 2016-2021". Revise the document accordingly.

Commenting Organization: EGLE
General Comment #6: The figures showing surface water temporal trends use symbols and colors to distinguish between samples with detections of PCBs (blue) and those with non-detect PCB results (green), and samples collected before and after the "Morrow Release" (triangles and circles, respectively). The figures also use a symbol to callout the 2019 samples analyzed using the Delaware TMDL method (blue squares).

Distinguishing between samples with detections and those with non-detect results is helpful but, by using the "Morrow Release" to breakup the data points in these figures that span a period of nearly thirty years, a significant emphasis is placed on the Morrow Release and the reader is left with the impression that it is the most important event that has occurred at OU5. of the drawdown of Morrow Pond and release of sediment into OU5 that occurred was significant, however; it needs to be put in proper context to the reader and it should not dominate discussions in the Report text or be the main focus of the figures since the purpose of this Report is to document activities related to the LTM program at the Site.

A more reasonable approach would be to identify the dates of the drawdown (November 1, 2019, to December 17, 2020) in the text and as a time band across the x-axis on figures where years are displayed and revise the symbology in the figures to reduce the emphasis of this event. And, for consistency, edit the figures to show time bands for other significant events that occurred at the Site but are related to activities that have been undertaken by the Respondents or Regulatory Agencies (e.g., implementation and completion of source control measures and remedial actions at the land-based OUs, removal actions at OU5, etc.).

Commenting Organization: EGLE
General Comment #7: As mentioned in General Comment #1, it is expected that LTM responsibilities at OU5 will be assigned to multiple Respondents. And, prior to the LTM program being transitioned to Georgia-Pacific in 2015/2016 the State of Michigan completed the LTM data collection and reporting. A data summary report should include text that identifies current and historical documents have been developed to support the LTM program and leaves placeholders for any future documents that are submitted to supplement or augment the program. Revise the Report and insert a Table that includes a list of relevant LTM documents, key milestones, and updates to the LTM program.

Commenting Organization: EGLE
General Comment #8: The trends and annual percent change of PCBs for fish tissue that are shown are significantly different than results from trend analyses for the same fish species that have been produced by EGLE Water Resources Division (WRD). These differences and uncertainties should be discussed in the document. A few examples of key differences for one monitoring location are provided below.

1. Lipid-normalized PCB plots and log-linear trends produced by WRD for carp fillets collected from Lake Allegan from 1990 to 2020 show a much slower average annual rate of change (-1%) than what is shown in the Report, which ranges from approximately –4.8% (Table A.1 and Figure A.1q) to -4.5% (Table 3.1).

2. Lipid-normalized PCB plots and log-linear trends produced by WRD for adult SMB fillets collected from Lake Allegan from 1990 to 2020 show an increasing trend with an annual rate of change of about +4% (R^2= 0.36). In contrast, figures in the Report show a decreasing trend for total PCBs in adult SMB fillet collected from Lake Allegan with an annual rate of decline of approximately -2.8% (Table 3.1 and Figure A.1q).

Commenting Organization: EGLE
General Comment #7: Although preliminary remediation goals (PRGs) for surface water have not been adopted for OU5, it would be helpful if figures showing surface water data included State and Federal surface water quality criterion that are relevant and appropriate at the Site (see below), and if the text were updated to reference the various surface water criterion for total PCBs. Revise the document accordingly.

Action/Medium	Requirements	Prerequisite	Citation	Applicable to Sediment/Soil Alternatives	
				Sediment	Soil
Protection of surface water and sediment	Establishes effluent standard for toxic compounds including PCBs. Applies to discharges to navigable waters. The ambient water quality criterion for navigable waters is 0.001 µg/L total PCB.	Discharges to waters of the State of Michigan - **relevant and appropriate**	40 CFR Part 129.105 Toxic Pollutant Effluent Standards	X	X
Protection of aquatic life and human health	Water quality criterion for protection of aquatic life for continuous concentration (chronic) is 0.014 µg/L PCBs in freshwater. Water quality criterion for protection of human health is 0.000064 µg/L PCBs in freshwater.	PCB concentrations in surface water - **relevant and appropriate**	63 Fed. Reg. 68354 (December 10, 1998) Clean Water Act	X	
Protection of surface water, sediment, and soil	Water quality criteria for 29 pollutants and detailed methodologies to develop criteria for additional pollutants; implementation procedures to develop more consistent, enforceable water quality-based effluent limits in discharge permits, as well as total maximum daily loads of pollutants that can be allowed to reach the Great Lakes and their tributaries from all sources; and antidegradation policies and procedures. The Great Lakes States must adopt water quality standards, antidegradation policies and implementation procedures for waters within the Great Lakes System. The PCB human health criterion is 3.9 × 10-6 µg/L for both drinking and non-drinking water, and the wildlife protection criterion is 7.5 × 10-5 µg/L.	Effluent discharges to the Great Lakes and/or their tributaries - **relevant and appropriate**	40 CFR Parts 9, 122, 123, 131, and 132 Final Water Quality Guidance for the Great Lakes System	X	X
Protection of potential drinking water sources	The Safe Drinking Water Act regulations establish maximum contaminant levels (MCL) and maximum contaminant level goals (MCLG) for public water supplies. The MCL for PCBs is 0.5 µg/L and the MCLG is 0.0 µg/L.	PCB concentrations in a potential drinking water source - **relevant and appropriate**	40 CFR 141 Safe Drinking Water Act		
Protection of surface water	Establishes water quality requirements for surface waters in the State. Part 4 rules specify standards for all waters of the State, and require that all deseignated uses of the receiving water be protected, including aquatic life and wildlife. Applicable to remedial activities. The approved water quality standard for protection of wildlife and human health are 1.2×10^{-4} µg/L and 2.6×10^{-5} µg/L PCBs, respectively. Prior Substantive Requirement Documents (SRDs) at the Site have specified PCB discharge limitations of 2.6×10^{-5} µg/L.	Discharges to waters of the State of Michigan -- standards are applicable to venting groundwater, storm water, and discharges associated with remedial action - **relevant and appropriate, except as noted in citation**	Michigan NREPA, MCL 324.3101-3133; Mich. Admin. Code R 323.1041-1097, R 323.1100-1117 (Part 4 Rules), and R 323.1201-1221 (Part 8 Rules) R 323.1098, Michigan's Antidegradation Rule, is **relevant but NOT APPROPRIATE** for this site. The Antidegradation Rule may be relevant and appropriate when TMDLs are established for PCBs entering the Kalamazoo River	X	

SPECIFIC COMMENTS

Commenting Organization: EGLE
Section: 1.0 Introduction **Page #: 1-1**
Specific Comment #1: Text in the Introduction states, "Fish LTM collection activities occur at multiple locations and frequencies for each fish type: common carp (Cyprinus carpio), smallmouth bass (SMB; Micropterus dolomieu), and sunfish (Lepomis spp.)."

The LTM program has included the collection of additional fish that are not listed. While listing all species may not be necessary, the text should be updated to acknowledge that other species have been targeted and sampled historically and recently across OU5 but that these are the primary fish being collected as part of the current LTM program for the main stem of the Kalamazoo River Superfund Site.

Section: 1.0 Introduction **Page #: 1-1**
Specific Comment #2: The last sentence in the Introduction states, "Surface water sampling typically occurs at similar locations in conjunction with fish sampling events". This seems to suggest that surface water sampling locations may be adjusted from year to year, is that accurate? There may be times where accessing the same location isn't possible, but the document should identify why, when, and where that occurred. Revise the text and clarify what is meant.

Section: 1.1 Purposes and Objectives **Page #: 1-1**
Specific Comment #3: Text in Section 1.1 states, **"**The LTM Program data will also serve as a baseline for fish tissue and surface water concentrations prior to remedial activities. Further, the LTM Program data may provide valuable insights into episodic events such as severe weather or events like the 2020 Morrow Dam release of sediment at the upstream boundary of OU5."

Delete the second sentence since the stated goal is not part of the LTM program and the Agency's did not review or approve any work plans aimed at evaluating the impacts associated with the 2020 release. Revise the document and insert the language provided below.

The LTM Program data will also serve as a baseline for fish tissue and surface water concentrations prior to remedial activities. Fish samples have been processed and analyzed for total PCBs and lipid content to monitor PCB concentrations, inform remediation, and yield data for fish consumption advisory guidance published by Michigan Department of Health and Human Services. Surface water samples have been collected for a variety of reasons such as evaluation of the actual or potential hazards to public health and the environment, gathering of data to support risk assessments, evaluation of remedial alternatives, and monitoring.

The previous LTM plan was implemented by MDEQ in 1999 to understand the impact of PCB releases on surface water and fish tissue within various reaches and site wide. This was accomplished by collecting baseline PCB data and subsequent trend monitoring data to evaluate natural recovery and effectiveness of removal actions at exposure endpoints (i.e., resident fish). The goals for surface water and fish tissue monitoring under the current LTM Program for OU5 include measuring PCB concentrations and lipids in fish tissue from OU5 and the reference areas; measuring PCB concentrations in surface water from OU5 and the reference areas; establishing rates of decline and evaluating timeframes to meet remediation goals for fish tissue based on those rates of decline, and; evaluating temporal variations in surface water PCB concentrations.

Section: 1.2 Location and Description **Page #: 1-2 to 1-3**
Specific Comment #4: Section 1.2 contains several paragraphs discussing the release of sediment that occurred in 2020 from Morrow Pond, but the Section is titled Location and Description. Delete all text after the sentence on page 1-2 that says, "Background and reference areas for OU5 extend approximately 40 RMs upstream of Morrow Dam to RM 115 and include Morrow Lake and the former Ceresco Reservoir (Figure 1.1)", since it is not relevant to the location and description for OU5 and the reference areas. Revise the document accordingly.

Commenting Organization: EGLE
Section: 1.3 PCB Sources, Fate, and Transport **Page #: 1-3**
Specific Comment #5: Text in the first paragraph states, "Non-paper sources of PCBs are also present in the watershed (e.g., atmospheric deposition, PCB sources contributing to Morrow Lake) and contribute to background/upstream PCB sediment, surface water, and fish concentrations (BBL 2002, BBL 2003, ARCADIS 2012)."

Revise the text to state:

"Non-paper sources of PCBs are also present in the watershed. Low-level continuing sources of PCBs from the atmosphere, upstream areas, urbanized areas of the watershed, and unremediated sediments and floodplain soils within the Kalamazoo River Superfund Site may ultimately limit the lowest achievable levels of PCBs in fish and surface water."

Commenting Organization: EGLE
Section: 1.3 PCB Sources, Fate, and Transport **Page #: 1-4**
Specific Comment #6: The Potential Exposure Pathways shown in the figure on the top of page 1-4does not clearly convey key items that are part of the conceptual site model (CSM), and the figure could easily be improved to convey more important information to the reader. Key elements of the CSM that are not clearly shown include the presence of PCB contaminated materials in the sediment bed, river banks and floodplains; the erosion of PCB contaminated materials from riverbanks; the transport of PCBs in groundwater through the sediment bed and into the water column, etc. Please add additional elements to the figure highlighting the current potential exposure pathways that are present and incorporate elements of the CSM into the figure. Similar figures have been presented in other SRI/FS and RD/RA submittals. Please also add a very brief discussion to the text in Section 1.3 that describes some of these processes in greater detail. Revise the document accordingly.

Commenting Organization: EGLE
Section: 1.4 Regulatory Status **Page #: 1-5**
Specific Comment #7: The second, third, and fourth paragraphs on page 1-5 generally discuss source control measures that have been put in-place or are in progress at the land-based Operable Units (OUs) and the removal actions that have occurred at OU5. To supplement the text surrounding OU5, a figure is included on page 1-6 that shows where each Area of OU5 is in the CERCLA process and where removal actions have occurred. Revise the text to include the timeframes for when the remedial and removal actions occurred at the various OUs. Revise the figure on page 1-6 to include steps in the CERCLA process that occur after remedial action is completed.

Commenting Organization: EGLE
Section: 2.0 Long-Term Monitoring Program **Page #: 2-1**
Specific Comment #8: The main body of text in Section 2.0 (and portions of text in subsequent subsections) discusses some of the variation and changes to the LTM program that have occurred since its inception, including the transfer of the program from the Michigan Department of Environmental Quality (MDEQ, now EGLE) to Georgia-Pacific and the request from the Michigan Department of Natural Resources (MDNR) to phase out collection of young-of-year (YOY) smallmouth bass (SMB).

The request from MDNR led to the temporary collection of YOY rock bass as a surrogate for YOY SMB and for meeting YOY SMB goals outlined in the Long-Term Monitoring Plan (e.g., evaluate progress toward achieving the ecological PRG for the mink, evaluate conditions before and after remedial activities associated with remedial action or time-critical removal actions [TCRAs], etc.). Ultimately, a request was made to abandon the collection of YOY rock bass as part of the LTM program because there was a limited abundance of YOY rock bass observed in the field, and Georgia-Pacific proposed switching to year 1 (Y1) sunfish (a combination of bluegill and pumpkinseed). In October 2021, the US EPA approved the collection of Y1 sunfish (bluegill and pumpkinseed) as a replacement for the Rock Bass and to serve a surrogate for the YOY SMB for monitoring short-term river impacts.

Details of current protocols may be buried in the Quality Assurance Project Plan (QAPP), but the 2017 LTM Plan and the main body of the Report do not capture and describe the changes that were made in 2018/2019 to the YOY SMB sampling protocols, which included providing flexibility to use a less number of fish (mass) per sample as part of an effort aimed at generating more samples at each monitoring location while adhering to the requirements established in the Scientific Collectors Permit from MDNR. The Report and LTM Plan also do not describe the temporary transition from YOY SMB to YOY rock bass, or the approval and transition from YOY rock bass to Y1 sunfish. Revise Section 2.0 (and relevant subsections) to reflect changes made to the YOY SMB sample protocols in 2018/2019 and 2021.

Commenting Organization: EGLE
Section: 2.0 Long-Term Monitoring Program **Page #: 2-1**
Specific Comment #9: Statistical comparisons of YOY SMB and YOY sunfish should be completed to determine if historical datasets can be utilized. Revise the document to include comparisons between YOY SMB and Y1 sunfish.

Commenting Organization: EGLE
Section: 2.0 Long-Term Monitoring Program **Page #: 2-1**
Specific Comment #10: The main body of text in Section 2.0 and subsequent subsections (e.g., Section 2.1.2 – Fish Collection) do not mention the collection of fish tissue split samples by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Water Resources Division that occurs as part of the LTM program and is used to evaluate the status of the current Fish Consumption Advisory (FCA) for the Kalamazoo River. Revise the document and insert language that reflects the periodic collection of fish tissue split samples by EGLE WRD.

Commenting Organization: EGLE
Section: 2.0 Long-Term Monitoring Program **Page #: 2-1**
Specific Comment #11: A data summary report should summarize and document all elements the field effort and would be expected to include photographic logs, sampling sheets, field notes, chain-of-custody forms, and other relevant documentation. A data summary report should also include submission of electronic files that are being used to support analyses that are presented.

The Report that was submitted is missing key information that would normally be submitted as part of a data summary report, including (but not limited to) items previously mentioned above. Tables 2-3 and 2-4 in the Multi-Area Data Management Plan list field data that will be collected during surface water and biota sampling activities. The Respondents should utilize those Tables and other relevant documents (e.g., the 2017 LTM Plan) to identify materials that should be included as an attachment to this report and future submittals. Revise the Report and insert Appendices that contain all relevant documentation collected to support LTM activities for the time period since 2016, which is the last time a LTM report was submitted. Also, include an electronic submission of "working" files as an attachment to the revised Report and future submittals.

Commenting Organization: EGLE
Section: 2.1.1 Fish Sampling Locations and Figures 3.2a to 3.2o **Page #: 2-2**
Specific Comment #12: Examining the figures that show total PCB results in surface water samples (Figures 3.2a through 3.2o) a few things are evident:

1. The surface water samples collected in 2019 using the Delaware TMDL method were collected from nearly all surface water monitoring locations that have been established.
2. Total PCB results in the 2019 samples from OU5 were generally higher than recent samples that were collected. In a few instances, the 2019 samples appear to show the highest total PCB concentration reported for a decade or more (e.g., Figure 3.2i, 3.2j, 3.2l, 3.2m, 3.2n, and 3.2o).
3. Total PCB results in the 2019 samples from OU5 appear similar to total PCB results in the 2020 and 2021 samples.
4. Total PCB results in pre-2019 samples are heavily influenced by non-detect results.
5. Total PCB concentrations in the 2019 samples appear consistent across OU5, with results hovering around 10 ng/l.
6. Total PCB concentrations in surface water at OU5 are generally one-to-two orders of magnitude higher than total PCB concentrations in samples collected from the reach upstream of the papermills and from the established reference reaches outside and upstream of OU5.
7. Total PCB concentrations in surface water at OU5 exceed the surface water quality criterion of 0.12 ng/l for protection of wildlife.

Based on our review of the SWWP, it is unclear why the Delaware TMDL method was used during the 2019 LTM event since the SWWP and associated QAPP update only covered activities focused in Area 5 and Area 6. Please provide background on why the Delaware TMDL method for surface water was used during the 2019 LTM event. Please also provide background on why the 2020 and 2021 LTM events utilized "other" protocols for surface water sampling and whether or not these protocols were consistent with those that were implemented by Georgia-Pacific prior to 2019.

Data collected in 2019 under the SWWP and as part of various monitoring programs that have been

implemented to evaluate natural recovery utilize and are meant to supplement the existing baseline LTM dataset. But, the Report states that these data are not comparable to each other.

If the surface water sampling results from 2019 are "different" than pre-and post-2019 data such that they are not usable for the LTM program how does that impact the results and conclusions from data collected as part of the OPTICS study or other studies that are dependent on these data? Have surface water sampling protocols for total PCBs changed while the OPTICS program has been ongoing (i.e.., from the Delaware TMDL method back to the "standard" method?). While these questions may not need to be addressed in this Report, they warrant a response since these data are being used for multiple objectives and prior to submission of the Report there was no indication that there were any issues with comparability or usability of the 2019 LTM dataset.

Commenting Organization: EGLE
Section: 2.1.1 Fish Sampling Locations **Page #: 2-2**
Specific Comment #13: Section 2.1.1 identifies Morrow Pond as "Background" and Ceresco as a "Reference Location" and makes attempts to distinguish between the classification of each, although the benefit and intent of doing so is not clear in the text. This terminology is inconsistent with language in the US EPA-approved LTM Plan, which refers to Morrow Pond and Ceresco as "Reference Locations". For clarity and consistency, remove the term "Background" and replace it with "Reference Location(s)" from Section 2.1.1 (and other Sections of the Report) when referring to Morrow Pond and/or Ceresco. Revise the document accordingly.

Commenting Organization: EGLE
Section: 2.2.2 Surface Water Collection **Page #: 2-5**
Specific Comment #14: Text in Section 2.2.2 provides a basic explanation of how surface water samples are collected and how the collection procedures have been augmented since the LTM program was taken over by Georgia-Pacific, which has included switching from discrete samples to composites and adopting the Delaware River Total Maximum Daily Load (TMDL) method in 2019.

The text states, "*In 2019, LTM surface water samples were analyzed via a low-level PCB method (i.e., Delaware River Total Maximum Daily Load method) in association with the data collected as part of the Surface Water Work Plan. The 2020 and 2021 LTM samples were collected during and after the Morrow Dam sediment release which resulted in a substantial change in sediment and water quality conditions in the Kalamazoo River. At this time, these data are presented on figures but are not included in the statistical evaluations because the data are not comparable due to changing episodic conditions or analytical methods.*"

The Surface Water Work Plan (SWWP) and associated QAPP amendment, along with the Response to Comments (RTC) on those documents, provide important information about how data collected as part of the SWWP, and OPTICS monitoring programs were supposed to be used, the purpose for collecting those data, and the benefits associated with the Delaware TMDL method.

The SWWP and QAPP discuss that the lower detection and reporting limits associated with the Delaware TMDL method will provide a better comparison to screening levels and that by increasing the sample size (volume) and changing the extraction method the method will be able to achieve cleaner background levels and less matrix interference. The data collected as part of programs aimed at evaluating natural recovery were not meant to replace or be completed outside of existing LTM program activities and they were supposed to utilize and supplement the existing baseline LTM

dataset that goes back to the 1990s.

While differences in the analytical method may result in some variability in the total PCB result, sample data should not be wholly discounted based solely on analytical methodology. And, the significant shift that is observed when comparing from 2019 data to pre-2019 data highlights the tremendous amount of uncertainty in total PCB concentrations in surface water and our understanding of long-term trends. This type of uncertainty should be discussed in the document rather than dismissing the 2019 results as "unrepresentative" due to changes in the analytical technique, which were specifically implemented with the expectation that data quality would improve.

Commenting Organization: EGLE
Section: 3.0 Fish and Surface Water Results **Page #: 3-1**
Specific Comment #15: The fourth sentence defines lipid correction as PCB concentration per unit of lipid. Revise the text to include the actual formula used to lipid-correct the tissue concentration/lipid data (e.g., concentration in fish tissue wet weight divided by the fraction of lipid (grams lipid/grams wet weight of tissue)).

Commenting Organization: EGLE
Section: 3.0 Fish and Surface Water Results **Page #: 3-1**
Specific Comment #16: The last sentence in the first paragraph states, "Regressions with p-values between 0.05 and 0.10 are symbolized differently (i.e., dashed trend line rather than a solid line) and discussed in this report as being suggestive of potentially significant trends". Delete this sentence since the statements being made are outside of the confidence interval that was identified ($p<0.05$).

Commenting Organization: EGLE
Section: 3.1 Fish **Page #: 3-1**
Specific Comment #17: Text at the end of the first paragraph on page 3-1 states, "*Loglinear regressions of lipid-corrected PCB concentrations (1987 to 2021 data, where available) are presented in this report. Estimated average annual percent decline of PCB concentrations in fish are calculated using the loglinear regression equation and the years 2018 to 2021 which is the most recent period of fish collection.*"

Table 2.1, which summarizes the collection of the current fish species of interest at the Site, shows that there are a limited number of datasets available for the four years identified (2018, 2019, 2020, and 2021). By limiting the timeframe to this four year range the number of available datasets for adult carp and young of year (YOY) smallmouth bass (SMB) available at several monitoring locations is reduced a single dataset for one or both species (e.g., portions of Area 1, Area 3, Area 4, Area 5, and Area 7). At three locations (Area 1 – Downstream of D. Ave., Area 1 – PD No. 2, and Area 2 – Otsego City) this range eliminates all datasets for YOY SMB. Additionally, there is only one dataset for adult SMB available at nearly all monitoring locations for the timeframe that was identified, which is from 2021. The exceptions to that are Morrow Pond, Area 3, and Area 4, where there are no adult SMB datasets available for the timeframe that is being utilized.

It is unclear why the regression was completed for all years, but a period of three years was used to represent the average annual percent change. It is also unclear how an annual percent change can be calculated for any species at a monitoring location using only one or perhaps zero datasets. There is significantly more data available that should be utilized. This approach is misleading, and

the result may not match the trend. Language needs to be added to explain why these years were used and why this approach leads to the most accurate understanding of the average annual percent decline. Was any effort made to evaluate the average annual percent decline over the entirety of the dataset? If so, what does that analysis show? Does that analysis show that recovery rates have changed over time? Revise the document to include an overall percent change. Discussions could be added to the Report that discuss changes observed in recent years.

Commenting Organization: EGLE
Section: 3.1.1 Fish Trends – Adult SMB **Page #: 3-2**
Specific Comment #18: In what way are the 2016 and 2021 Area 5 and Area 6 data inadequate for trending? Additional detail needs to be added to the text. Prior to submission of the Report there was no indication that there were any issues with comparability or usability of the 2016 and 2019 LTM datasets.

Commenting Organization: EGLE
Section: 3.1.1 Fish Trends – Adult SMB **Page #: 3-2**
Specific Comment #19: The last sentence in the SMB YOY paragraph states, "*The low percentage of lipids is hypothesized to be due to stress or potentially limited prey capture due to the turbid water from the Morrow Dam release.*" Revise the sentence to state, "*The low percentage of lipids is hypothesized to be due to <u>contaminant</u> stress or potentially limited prey capture due to the turbid water from the Morrow Dam release*".

Commenting Organization: EGLE
Section: 3.1.1 Fish Trends – YOY SMB **Page #: 3-3**
Specific Comment #20: Text in the SMB YOY paragraph near the top of page 3-3 states, "SMB YOY PCB concentrations in the Former Plainwell Dam area and in Allegan City Impoundment are suggestive of statistically significant declines, using $p < 0.10$ instead of $p < 0.05$." This statement is misleading. Delete the sentence.

Commenting Organization: EGLE
Section: 3.2 Surface Water **Page #: 3-3**
Specific Comment #21: The second sentence states that surface water data from 2019 through 2021 are not currently used in trending due to changes in the analytical method and potential impacts from the Morrow Dam sediment release. A discussion as to why the analytical methods are not comparable needs to be added. Any limitations to the data can be captured and explained but sample data should not be wholly discounted based solely on analytical methodology. And, the 2019, 2020, and 2021 data should be incorporated into the trending analyses. See Specific Comment #12, Specific Comment #13, and Specific Comment #22.

Commenting Organization: EGLE
Section: 3.2 Surface Water **Page #: 3-3**
Specific Comment #22: The second sentence states that surface water data from 2019 through 2021 are not currently used in trending due to changes in the analytical method in 2019 and the Morrow Dam sediment release in 2020 and 2021. However, these data should be incorporated into the trending analyses to demonstrate the spike in concentration and the eventual downward trend.

The next paragraph states that future monitoring will consider the potential for a shifted baseline. The figures showing the 2019 to 2021 data but not including them in the analyses should be replicated with the 2019 to 2021 data included in the analyses.

Also, the drawdown of Morrow Pond began on November 1, 2019, and ended on December 17, 2020, when reservoir refill operations began. Reservoir refill operations were completed and the dam returned to normal operations on January 12, 2021. Therefore, only the 2020 samples were collected during the period of the drawdown. Text throughout the document is misleading and seems to suggest that the drawdown began in 2020 and continued through 2021, which is not accurate. Revise the document (text, figures, and tables) so that the dates of the drawdown are accurate and clear.

Commenting Organization: EGLE
Section: 3.2.1 Surface Water Trends **Page #: 3-5**
Specific Comment #23: Text in Section 3.2.1 discusses statistically significant decreases in PCB concentrations in surface water over time, which are stated to range from 6 to 15 percent annually. It is important to indicate that although they are significant trends according to the p-value they are weak trends based on the reported R-squared, which is typically between 0.06 and 0.18 with a few exceptions (i.e., M-89 and Calkins Dam). Insert discussions about the R-squared values associated with the observed trends at each monitoring location. Revise the document accordingly.

Commenting Organization: EGLE
Section: 3.2.2 Multivariate Surface Water Trends **Page #: 3-5**
Specific Comment #24: Multivariate regressions were performed and reported to show multiple relationships. The regressions are stated to be considered in trending but evidence or explanation of how they are considered is not presented. The trends presented appear to be raw values taken at face value. Site-specific surface water studies have been conducted looking at relationships between key variables of interest. The technical work group should discuss the text surrounding the multi-variate surface water trends (and associated figures) to determine what is appropriate to include in this Report and future data summary reports.

Commenting Organization: EGLE
Section: 4.0 Conclusions **Page #: 4 -1**
Specific Comment #25: The conclusions presented are generally weak and key points of discussion should be added. For example, there are no discussions on how the recovery rates for surface water and fish tissue at OU5 compare to recovery rates from the Reference Locations; there are no discussions on how the recovery rates for surface water and fish tissue at remediated reaches compare to recovery rates from the unremediated reaches; there are no comparisons of data collected before and after completion of the source control measures that are discussed in the text; there are no discussions comparing total PCBs in surface water and fish tissue collected from the

reference locations and OU5; there are no discussions about lipid content and changes in measured lipid content that have occurred, etc. The reader is left having to study the figures and tables, which include some of the details listed above but generally do a poor job conveying information because of how they are drafted (See Specific Comment #28 and General Comment 2). A statistically significant decline alone does not tell the story of how remediation work is benefiting PCB concentrations in fish tissue, which should be the primary focus of the Report. The technical work group should discuss this Section (and other Sections) to determine what conclusions are appropriate for this Report and future data summary reports.

Commenting Organization: EGLE
Section: Table 2.1 **Page #: NA**
Specific Comment #26: The LTM program has included the collection of more species of fish than what is shown in the table. Update the table to show all fish species and samples that have been collected since the LTM program has been ongoing. Insert a footnote to acknowledge which fish are the primary fish currently being collected as part of the current LTM program for the main stem of the Kalamazoo River Superfund Site. Fish tissue sampling in the Pine Creek impoundment, which is part of Area 3, includes a unique list of species. The Pine Creek impoundment monitoring locations and species collected from that location should be identified in the table.

Commenting Organization: EGLE
Section: Table 3.1 **Page #: NA**
Specific Comment #27: The period of record for trends is not presented. What is the annual percent change from onset of program? Pages included signoffs to indicate calculations are checked, but calculations are not presented or provided. Revise the Report and insert calculations.

Commenting Organization: EGLE
Section: Figure 3.1(a-s) **Page #: NA**
Specific Comment #28: Why do plots go to 50 millgrams per Kilogram (mg/Kg) and use inserts rather than just making smaller scale? There appears to be only one value over 20 mg/kg, unless other values are covered by the insert. Evaluate and adjust figures.

Additionally, the large and zoomed-in panels that are shown for each species appear to be inconsistent with each other and data displayed in one may not be displayed in the other. For example, the large panel shown on Figure 3.1p for smallmouth bass (SMB) young-of-year (YOY) whole body (WB) composites shows samples collected from 1999, 2000, 2001, 2006, 2011, 2016, 2018, 2020, and 2021, but the zoomed in panel above only shows SMB YOY WB composite sample data for 2011 and 2021. The large and zoomed-in panels for adult carp and adult SMB that are included on Figure 3.1p also appear to be inconsistent with each other. Revise all Figures in the set and ensure all data is being utilized. If using inserts, revise the figures so that what is being displayed is consistent across the panels.

Commenting Organization: EGLE
Section: Figure 3.2 **Page #: NA**
Specific Comment #29: A few comments on this set of figures:

1. More discussion of Delaware River TMDL method comparability is warranted. See Specific Comment #12 and Specific Comment #13.
2. Are natural log (Ln) Total PCBs really in ng/L units? Showing both Ln and total PCBs with same units is contradictory.
3. Figures suggest data are collected at multiple times of year, but text says data are collected only in fall. Add clarifying note to figures to identify which samples are collected outside of the normal fall timeframe.

For this Figure (and relevant Sections of the text) add discussions about impacts associated seasonality when introducing comparisons that span different months/seasons in relevant Sections of the text.

Revise the document accordingly.