RESPONSE TO AGENCY COMMENTS TO THE DRAFT TECHNICAL MEMORANDUM NO. 2: RESULTS FROM THE 2009 FIELD SAMPLING PROGRAM TO SUPPORT THE ECOLOGICAL RISK ASSESSMENT OF KOPPERS POND KENTUCKY AVENUE WELLFIELD SUPERFUND SITE OPERABLE UNIT 4, HORSEHEADS, NEW YORK

PREFACE

This document provides our response to the USEPA Region II and NYSDEC comments dated March 16, 2010 to the draft of the Technical Memorandum No. 2 that summarized the results from the 2009 field sampling performed at Koppers Pond to support the Ecological Risk Assessment. The original scope of work was approved in the acceptance of the draft of Technical Memorandum No. 1. The comments have been enumerated for clarity.

The revised document was also reformatted to be consistent with Integral's report requirements. To facilitate agency review, we have also attached a table (Table RTC-1) that cross-references the agency comments and corresponding pages from the draft document to the edited pages in the final document.

GENERAL COMMENTS

GC-1: Although the report was reviewed for technical content, numerous and transcription errors were noted throughout the document. The text, tables and figures should be given a comprehensive editorial review. In particular, inconsistencies between the data presented in the tables and text should be identified and corrected.

> ***Response***: The revised document has undergone an editorial review, including resolution of several of the items identified in the Specific Comments. These are also identified under the response to the Specific Comments.

SPECIFIC COMMENTS

Section 2.0 Results of the Slender Pondweed Survey at Koppers Pond and Outlet Channels, page 4 and Figure 2.1:

SC-1: The correct acronym for the New York Citizens Statewide Lake Assessment Program is CSLAP.

> ***Response***: This was corrected in the text as well as in the new List of Acronyms.

SC-2a: Page 4 – it is noted that field measurements of nine parameters were collected to determine whether the water quality was consistent with the preferred habitat for the slender

pondweed. Please provide information regarding what values for each of these parameters are desirable for slender pondweed.

> ***Response***: The water quality parameters were collected for two reasons: First, this information was collected to allow comparisons to applicable data for the slender pondweed. The second objective was to collect a similar set of water quality parameters relative to that collected from the 2008 sampling effort of Koppers Pond to determine whether there have been any changes in these parameters with time.
>
> We added a new Section 2.2 that discusses the limited information (pH only) on the water quality requirements for this species. The pH results from the 2008 and 2009 sampling events were compared to the reported range in a new section (2.4.1) that was added to the revised report.

SC-2b: Details regarding the preferred habitat for Slender Pondweed relative to the water quality parameters measured should be provided. Additionally, the general habitat requirements of this species should be provided that are specific to Koppers Pond and are more detailed than that included in the Maine Department of Conservation, Natural Areas Program Slender Pondweed fact sheet.

> ***Response***: Our detailed review of the literature showed limited additional information on the slender pondweed habitat preferences beyond those referenced in the fact sheet in the comment. We have added a new section (2.2) that summarizes the relevant information that was available from the published literature.

SC-2c: Technical Memorandum No. 1 mentions that survey locations will be based on the availability of "suitable substrate" (see page 5 of that document). Please describe characteristics that would make the substrate suitable.

> ***Response***: The "suitable substrate" stated in Technical Memorandum No. 1 was referring to general observations on the nature of the sediment substrate – i.e., whether it was hard gravel, sandy, mucky, etc. – since this can affect whether rooted macrophytes (like the slender pondweed) can establish root holds in the sediment. In a review of the literature on this species, we were able to find limited information regarding its substrate preferences, and this information was included in a new Section 2.2 that discusses the life history information for this species.
>
> We have also added a new Section 2.5 to Technical Memorandum No. 2 that discusses the substrate information discussed above.

Section 2.1 Modifications to the Proposed Survey Protocol, page 5:

SC-3a: Per Technical Memorandum No. 1, New York Guidance documents and the CSLAP protocol were to be followed for the survey. In general, these methods use a systematic approach with grid nodes or survey points placed at regular spaced intervals throughout a lake and/or along a shoreline. Further, page 5 of Technical Memorandum No. 1 specifically indicated the following:

> Shoreline Survey
> The shoreline survey will consist of the following.
> - A visual survey will be performed by walking along the readily accessible portions of the shoreline, and the adjoining littoral zone will be inspected for the presence of slender pondweed.
> - An estimate of the total macrophyte cover in the littoral zone will be made at regularly spaced locations along the readily accessible portions of the shoreline.

It does not appear that this protocol was followed. Rather, it appears that several discrete and randomly selected locations were selected for the survey. Please provide information relative to these bullet points and/or clarify the protocol followed.

Response: The New York Guidance documents and the CSLAP protocol are destructive sampling techniques, and since the focus of this survey was to attempt to identify the presence or absence of a rare macrophyte, last reported in the 1940s in this area, it was felt it would be more appropriate to use elements of the guidance documents and CSLAP protocol, as appropriate.

The comment concerning the shoreline survey may be due to semantics. The field ecologist did in fact walk the perimeter of the pond as part of this survey (although some areas were not accessible due to heavy terrestrial vegetation growth). The survey points were locations where water quality measurements were collected and a more detailed visual inspection of the pond was performed. We have added some clarifying text to Section 2.3.1 (renamed from XXX of the revised technical memorandum.

SC-3b: Technical Memorandum No. 1 indicates that a "worksheet similar to the NYSCSLAP Aquatic Plant Survey Form (NYCSLAP, 2009) will be used for this survey (Figure 2-1)." Please include these worksheets in an appendix to this report.

Response: The two field worksheets were added as part of a new Attachment 2. These are in a similar format as used by the CSLAP aquatic plant survey form, but the content was adjusted to reflect the non-destructive survey method that was used for the 2009 survey. The existing Attachments 2 and 3 from the draft technical memorandum were

renumbered, and the appropriate references from the text to these attachments were updated.

Section 2.2 Slender Pondweed Survey Results for Koppers Pond, pages 5-7:

SC-4a: Substantial effort was focused on an evaluation of water quality parameters including a statistical comparison of 2008 and 2009 data. It would be helpful if the authors provided additional detail regarding the habitat requirements of Slender Pondweed. Without this, the utility of the effort is somewhat meaningless relative to the objective of the survey.

Response: The water quality sampling that was performed had two primary objectives. First, this information was collected to allow comparisons to available comparable data for the northern slender pondweed, which was restricted to pH range from waterbodies where this species has been identified. We have added this comparison and a small text table showing this comparison in Section 2.4.1 of the revised report.

The second objective was to collect a similar set of water quality parameters relative to that collected from prior sampling efforts of Koppers Pond to determine whether there have been any changes in these parameters with time. This analysis was summarized in the referenced section of Technical Memorandum No. 2.

SC-4b: The authors point out that the pond was "well oxygenated at the time of the sampling." The significance of this observation relative to the habitat requirements of Slender Pondweed should be detailed.

Response: The statement regarding whether the pond was well oxygenated at the time of the sampling" was more in reference to the comparison to the dissolved oxygen results from the prior (2008) sampling event. We were unable to locate any specific DO requirements for the slender pondweed.

SC-4c: Page 5 – Please provide the location of the beaver dams and aquatic vegetation identified (coontail and lesser duckweed) in site figures. The last paragraph notes that eight survey points identified as "SP09" were identified along the entire perimeter of Koppers Pond. However, these sample locations are identified as "SP0*" in Figure 2-1. Please correct this discrepancy.

Response: The beaver dam was not located within the survey area or the immediate vicinity of the pond. Rather, this comment was added to the text since it was mentioned by the site contact (from Hardinge) prior to starting the 2009 survey that a beaver dam had been reconstructed, and since (as noted in Section 1.1 of the draft report) in the past a beaver dam has been present in a pond outlet. However, since we did not locate the

beaver dam during the 2009 sampling, reference to its presence has been deleted from the revised technical memorandum.

We did not include the location of the coontail in the revised Figure 2-1 since it was sporadically observed. Similarly, the locations of the lesser duckweed were not shown since this is a floating macrophyte whose location on waterbodies are governed in part by the prevailing wind directions.

The labels were corrected to reflect the prefix "SP09" in the revised Figure 2-1. These were incorrectly shown as "SP08" in the draft of Figure 2-1.

SC-4d: Page 7 – Please indicate the purpose of statistically comparing water quality parameters between the spring 2008 sampling event and fall 2009 sampling event.

Response: See response to Comment SC-2a.

SC-4e: The discussion of Outlet Channel water quality data should be moved to Section 2.3.

Response: We have re-organized this section in the revised technical memorandum to better segregate the visual survey and water quality assessment.

Section 2.3 Slender Pondweed Survey Results for the Outlet Channels, pages 7 – 8:

SC-5: The habitat requirements of Slender Pondweed relative to the nature of the outlet channels should be detailed. In particular, does this species typically inhabit flowing water and will the substrate support this species?

Response: We have added a new section (2.2) that summarizes the available life history information for this species.

Section 2.4 Slender Pondweed Survey Summary and Conclusion, page 8:

SC-6: Field measurements and an inspection of the substrate were used to conclude that the habitat is not appropriate for Slender Pondweed. The habitat requirements of this species relative to water quality and substrate were not provided, nor was data concerning the substrate inspection. Please provide this information and revise this section accordingly.

Response: As discussed above, unfortunately there is very limited information regarding the water quality requirements of the slender pondweed or sediment requirements. We have added a general discussion of its life history to (a new) Section 2.2. It has been

reported in waters with pH ranging from 7.3 to 9.1, and sediments of marl ponds or lakes.

Section 3.2 Field Reconnaissance Results of Candidate Reference Ponds, pages 10 – 12:

SC-7a: While it is understood that existing information, discussions with landowners, and/or visual observations were relied on to develop an understanding of the candidate ponds, it is not entirely clear how characteristics such as substrate and fish assemblages were determined and evaluated. Please clarify.

Response: Consistent with Table 3-1 from Technical Memorandum No. 1, the field ecologists visually inspected the ponds for the types of sediment surfaces that were present in the shallow areas and the type(s) of biota that may be present. This can be readily performed by walking along the edges of the ponds, although clearly one cannot determine the sediment characteristics in areas with poor water clarity or at deeper depths.

The types of biota can also be discerned from visual inspection. As a general example, bluegill sunfish often construct small nesting areas in shallow waters and these are readily apparent form the edges of ponds. Although clearly a detailed fisheries survey using sweep nets or gill nets was not performed (nor necessary for this reconnaissance), the readily apparent pond structure and hydrologic setting can be used to presume the presence of fish species typically encountered from such waterbodies. For example, Renschke (1990) summarized typical fish species that may be found in New York lakes[1], and this information is then used to characterize the types of species that could be found in the different ponds that were included in this reconnaissance.

SC-7b: While a brief discussion was provided, more detailed criteria should be provided regarding the selection of ponds, 1, 8 and 9 and potential reference ponds.

Response: It is unclear what types of additional specific information are required. Table 3-1 provides the detailed comparisons for the different ponds that were included in the reconnaissance. To avoid redundancy, this information was not repeated as text. However, we did provide some additional clarifying text to Section 3.3 in the final Technical Memorandum No. 2 (see also response to comment SC-8b). The

[1] Reschke, C. 1990. *Ecological Communities of New York State.* Available at: http://www.dec.ny.gov/animals/29389.html. New York Natural Heritage Program. New York State Department of Environmental Conservation. Latham, N.Y. 96p. +xi

recommended path forward for selecting the reference pond is discussed in Section 4.1.2 of the draft ERAGS Steps 3 through 5 Report that was submitted on February 8, 2010.

Section 3.3 Reference Pond Reconnaissance summary, page 12:

SC-8a: Three ponds or pond groups were selected (ponds 1, 8 and 9), not four as indicated. Please revise.

Response: The text stated this as four ponds since the two Lowe Ponds (Ponds #8a or #8b) were enumerated separately. However, for consistency in the use of the phrase "pond groups" we have revised the text to present these as three ponds or pond groups.

SC-8b: Additional detail regarding the path forward should be provided including the specific criteria that will be used to select the reference pond.

Response: Technical Memorandum No. 2 presented the results of the reference pond reconnaissance, while the recommended path forward for selecting the reference pond is discussed in Section 4.1.2 of the draft ERAGS Steps 3 through 5 Report submitted on February 8, 2010. Additional clarifying text was added to Section 3.3 in the final Technical Memorandum No. 2.

Figures

SC-9a: Figure 2-1 – The survey locations on this figure are designated with the code SP08nnn rather than SP09nnn as in the text.

Response: The labels were corrected to reflect the prefix "SP09" in the revised Figure 2-1.

SC-9b: Figure 2-1 – Revise to indicate sample location SP09-001.

Response: SP09-001 was added to the revised Figure 2-1.

SC-9c: Figure 2-1 – Two mudflat sample locations are identified on this figure. More information regarding these sample locations should be provided; e.g. what were these locations samples for.

Response: Please refer to the Site Characterization Study report for information regarding the two mudflat samples and their analytical results. Figure 2-1 was prepared using one of the figures (Figure 7) from that report.

SC-9d: Figure 3-1 – Location of Pond #s 7a and b were not included on the figure. Please note whether the random "squares" on the figure represent these pond areas.

Response: These were added to the revised Figure 3-1. The random blue-colored squares located between the labels for Ponds #4 and #5 were remnants from the base map image and could not be removed.

Table RTC-1. Cross Reference of Draft and Revisions to Technical Memorandum No. 2

Agency Comment	Draft Report Page(s)	Revised Report Page(s)	Comment
GC-1	NA	NA	See response to comments
SC-1	4, 13	v, 2-1, 4-1	Included with new List of Acronyms
SC-2a	4	2-6 through 2-7	
SC-2b	4	2-2 through 2-3 Figure 2-2	Added new Section 2.2 that provides life history information for the slender pondweed. Added new figure that shows reported distribution in New York State.
SC-2c	NA	2-2 through 2-3, 2-7	Added new Section 2.5 that discusses substrate requirements.
SC-3a	5	2-4	
SC-3b	NA	2-4, 2-5, 3-4	Added field log sheets as new Attachment 2. This also required renumbering of the two remaining attachments.
SC-4a	5 through 7	2-2	
SC-4b	NA	NA	See response to comments
SC-4c	5	2-4	Deleted reference to beaver dam, which was not located in the 2009 survey.
SC-4d	7	2-1	
SC-4e	7 through 8	2-5 through 2-7	Sections were re-organized to discuss the plant survey results seperately from the water quality comparisons.
SC-5	NA	2-2 through 2-3 Figure 2-2	Added new Section 2.2 that provides life history information for the slender pondweed. Added new figure that shows reported distribution in New York State.
SC-6	NA	NA	See response to comments
SC-7a	10-12	3-4	
SC-7b	10-12	3-4	
SC-8a	12	3-4	
SC-8b	12	3-4	
SC-9a	Figure 2-1	Figure 2-1	
SC-9b	Figure 2-1	Figure 2-1	
SC-9c	NA	NA	See response to comments
SC-9d	Figure 3-1	Figure 3-1	

Notes:

The agency comment identifiers are provided in the response to comments.

This table was prepared to facilitate agency review since different report formats were used for the draft and final technical memorandum. The pages in the revised document are organized as [section]-[page]; for example, page 2-5 is the fifth page in section 2.

NA: not applicable. See response to comments document for discussion.