



November 20, 2017

Mr. Andrew Schmidt, P.G.  
Remedial Project Manager  
U.S. EPA Region 8, 8EPR-SR  
1595 Wynkoop Street  
Denver, CO 80202

RE: Review Comments on the Libby Groundwater Superfund Site Proposed Controlled Groundwater Area Meeting

Mr. Schmidt:

This letter is in response to the discussions at the Libby Groundwater Superfund Site Proposed Controlled Groundwater Area (CGA) meeting held on November 6, 2017 in Libby, Montana. This letter is also on behalf of the Lincoln County Port Authority (Port Authority), of Libby, Montana. We understand that the proposed CGA will be permanent control area and that a focused feasibility study (FFS) is being prepared that will evaluate additional remediation technologies.

Below we have outlined some general discussion points that need further clarification, and have attached technical review comments to this letter pertaining to AECOM's technical memorandum on the *Numerical Modeling to Evaluate a Proposed Controlled Groundwater Area, revision 3, Draft-Final* dated September 26, 2017. Our attached technical comments are organized by the section number for which they apply. The memorandum references past reports and studies which are not available on EPA's website. In order to perform a technical review of the model, all of the applicable reports, studies, maps, and documents are needed in an electronic format for review.

The Port Authority is concerned about resource damages and understanding the process used to determine the need for the proposed permanent CGA institutional control. Responses to the following questions may help the Port Authority understand the rationale, and could help the Port Authority in discussions with International Paper about this concern. The general concerns and information requests are:

- Was a natural resource damage assessment performed? Please provide references and documents used to perform the initial or recent natural resources damage assessment.
- Please provide the alternatives screening matrix evaluation prepared per Environmental Protection Agency (EPA) guidelines or the references to those evaluations in current Facility documents. What other alternatives were evaluated prior to selecting the CGA as the preferred alternative to prevent exposure to groundwater from the Libby Groundwater Superfund Site?



Mr. Andrew Schmidt, P.G.

November 20, 2017

Page 2

- It is our understanding from the November 6, 2017 meeting with EPA and IP that the proposed CGA is being filed as permanent. AECOM noted that the draft FFS provides treatment optimization actions, but will likely not remediate the source areas. Please provide confirmation of this statement, along with the rationale for a permanent CGA, and a copy of the draft FFS.
- From an enforcement perspective, it may be difficult to evaluate who is affected by this CGA and if there are currently any wells being used that would affect the model simulations. Was an online or physical well inventory performed within the CGA? Were these wells sampled to support the model? Were any wells identified within the CGA, but outside of City limits, that will be affected by the CGA?

The attached technical comments primarily involve questions and rationale that help the Port Authority better understand the groundwater modeling parameters and simulations. Trihydro would be willing to help facilitate a review meeting with AECOM project managers/model staff, DNRC personnel, and the Lincoln County Board of Health to review these questions.

In addition to the technical and resource concerns, the Port Authority has a concern on linking the Libby Groundwater Superfund Site proposed CGA with the Libby Asbestos Superfund progress. The Port Authority received a letter from Max Greenblum, EPA legal, on September 21, 2017, which indicated that a copy was provided to you. The September 21, 2017 EPA letter notifies the Port Authority that they are expected to provide a letter of support for the proposed CGA prior to EPA and Montana Department of Environmental Quality moving forward on a deed restriction on an asbestos environmental covenant/institutional control for Operable Unit 5 for the Libby Asbestos Superfund Site. At a minimum, this will inhibit progress on the Libby Asbestos Superfund site. The Port Authority is curious if you have been working with the Libby Asbestos Superfund project manager and attorney to share the complexity and timing of a permanent CGA and scientific basis for linking the two distinct Superfund sites? This is particularly concerning as there has been no assurance from International Paper regarding the resolution to the loss of the resource at this time.

We look forward to further discussions of the groundwater model, the proposed CGA, and the impacts to the City of Libby and Lincoln County. If an FTP site is needed to upload the applicable studies and reports, please let us know and we will set one up and send uploading information to you. We will also help facilitate a model discussion meeting to help clarify some of the technical comments.



Mr. Andrew Schmidt, P.G.  
November 20, 2017  
Page 3

Thank you for the November 6, 2017 presentation and the opportunity to review the proposed CGA technical memorandum. We can be reached by e-mail at [sseitz@trihydro.com](mailto:sseitz@trihydro.com), [tsmith@trihydro.com](mailto:tsmith@trihydro.com) or by phone at (406) 558-4180.

Sincerely,  
Trihydro Corporation

Sarah Seitz  
Project Engineer / Geologist

Tom Smith, P.E., P.G.  
Project Manager

41K-001-001

Attachment

cc: Tom Richardson, International Paper  
Tina Oliphant, Lincoln County Port Authority  
Brett McCully, Lincoln County Port Authority  
Kevin Peck, Lincoln County Port Authority  
George Jamison, City County Board of Health  
Kathy Olsen, Montana Department of Natural Resources and Conservation

**LINCOLN COUNTY PORT AUTHORITY DISCUSSION POINTS ON THE:  
TECHNICAL MEMORANDUM: NUMERICAL MODELING TO EVALUATE A PROPOSED CONTROLLED  
GROUNDWATER AREA, LIBBY GROUNDWATER SITE, LIBBY, MONTANA, REVISION 3, DRAFT-FINAL,  
SEPTEMBER 26, 2017**

1. **Section 2.1 Proposed CGA Boundaries, Page 1, general comment:** The boundary conditions do not follow property boundaries or government boundaries – the proposed CGA encompasses both county and city property. The November 6, 2017 meeting addressed this and discussed some enforcement concerns with the City of Libby and CGA boundaries not being consistent.
  - a. Is the Flower Creek boundary a considerably larger “buffer” than the other boundaries?
  - b. Does IP intend these boundaries to supplement the current restriction on wells in place by the City of Libby and will facilitate changing those boundaries to be similar to the CGA?
  - c. As was discussed in the November 6, 2017 meeting, IP does not feel that the proposed CGA will be protective enough for the City of Libby to remove the groundwater restriction ordinance and prefers layers of ICs. Is this the EPA’s understanding that both a City restriction on wells and the CGA are necessary to protect against use of the groundwater resource affected by the Libby Groundwater Superfund Site?
2. **Section 2.1 Proposed CGA Boundaries, Page 1, general comment:** Where are the boundary conditions not dictated by the flow/particulate model but by land ownership, geopolitical, or surface features? Please provide a figure as to the model parameters and the rationale as to buffers associated beyond those areas.
3. **Section 2.1 Proposed CGA Boundaries, Page 1, bullets:**
  - a. How are the surface water bodies treated in the model boundary conditions – more specifically the Kootenai River, Flower Creek, and Libby Creek? Have the water bodies been characterized where reaches gain and lose groundwater? If evaluated, how were the reaches characterized?
  - b. If the eastern proposed CGA boundary is based on a low permeable geology, has AECOM/IP modeled how Libby Creek is connected (i.e. losing or gaining stream/boundary condition)?
  - c. What data was used to assess the model parameters and interaction between Libby Creek and the lower and upper aquifers?
  - d. LCPA has a significant water right in Libby Creek, does the use or removal of this water affect the plume or model boundaries, especially considering that the surrounding aquifer is low permeability lakebed deposits east of the Site?
  - e. Please explain why the upper aquifer and lower aquifer are indistinguishable from the intermediate zone/aquitard during drilling? What density or geotechnical testing has been performed on the formations? How are the aquifers and aquitard are differentiated?
  - f. Does a well cross-gradient from the source area(s) east of Libby Creek also result in pulling the plume? If so, how much?
4. **Section 2.1 Proposed CGA Boundaries, Page 1, paragraph 1:** “The proposed CGA is 1,123 acres in size (Figure 1). It encompasses the existing groundwater plumes and areas of historic and current activities that may have affected groundwater quality, such as historic landfills and ongoing soil treatment operations.” Please explain why the “historic landfills” are included in the proposed CGA and please provide the historic and current data and the assessment of their impacts to the underlying aquifers.

5. **Section 2.2 Criteria for Establishing a CGA, MCA 85-2-506 (5) (e), paragraph 1:** "... plumes exceed State drinking water standards..." Did the model only look at DEQ May 2017 Montana Numeric Water Quality Standards (Circular 7) or were RSLs also considered when establishing the proposed CGA? Note the tapwater RSL for pentachlorophenol is lower than the MCL and the Circular 7 standard (0.041 µg/L for cancer-based tapwater RSL vs. 1 µg/L for MCL and DEQ Circular 7 standard). Also, please provide documentation or references to available documents that indicate other groundwater constituents that are at or near the screening levels based on the properties in the proposed CGA.
6. **Section 2.2 Criteria for Establishing a CGA, MCA 85-2-506 (5) (e), paragraph 2:**
  - a. Discussion of the historical landfills and their potential for groundwater degradation needs additional support as to why it is included as a reason for establishing a CGA. It is not typical that a CGA is needed for DEQ permitted landfill areas or reclaimed landfill areas, especially if they contain log yard ash and debris, and do not have (or are suspected to have) constituents of concern.
  - b. Based on this discussion, the landfills do not appear to be, or have been, monitored or evaluated for the model. Please remove the landfills and their discussion from the justification for the CGA.
  - c. Please also provide additional justification for why high total organic carbon and TDS are a concern for the landfills. Perhaps the 2016 URS report in the references, or other reports, may contain this information? Please provide these other reports to support the assumptions and sections where they are discussed in these reports.
7. **Section 2.2 Criteria for Establishing a CGA, MCA 85-2-506 (5)(e), paragraph 3, page 2:**
  - a. Please include the constituents of concern and their tabulated analytical results for soil and groundwater that exceed applicable screening levels (leaching potential and groundwater) in this discussion in support of the CGA establishment.
  - b. If "COC concentrations in the underlying groundwater are routinely monitored and found to be low, but occasionally exceed the State groundwater standards for some COCs," then there does not appear to be sufficient data for a need to establish a CGA.
  - c. What other alternatives were considered and why is removal of water resources from 1,123 acres extending outside of IP's property the preferred alternative as opposed to other/additional remediation efforts?
  - d. What other remediation technologies were tested and/or implemented, and what were their results? Why were these other remediation technologies deemed not feasible? Please provide additional justification and background information to support the proposed CGA.
8. **Section 2.2 Criteria for Establishing a CGA, MCA 85-2-506 (5) (e), paragraph 4, page 2:** Extent of groundwater contamination from PCP – please provide more information and justification on how the "buffer zone" was established. If this is based on the 2016 URS report, please provide the report and sections where it is discussed.
9. **Section 2.2 Criteria for Establishing a CGA, MCA 85-2-506 (5) (c), paragraph 1, page 2:** Again, please indicate the data and information behind the use of surface water as a boundary. Which reaches of the Kootenai River are classified as a losing stream? How were these reaches characterized? Please provide the basis and data for that model boundary condition.

10. **Section 2.2 Criteria for Establishing a CGA, MCA 85-2-506 (5)(f), paragraph 1, page 2:** Please provide the report or basis for the statement that pumping groundwater in the lower and upper plumes “may alter the plumes configuration such that previously non-impacted groundwater becomes impacted, enters a well or surface water body, and poses a potential unacceptable risk...” While it is clear that the PCP concentrations in much of the plume areas are above the applicable standards for drinking water, it is not clear how it was determined that impacted waters could enter a well or surface water body. Please expand on this public health basis for the proposed CGA justification.
11. **Section 2.3 Proposed CGA Restrictions, paragraph 1, page 3:** Was the proposed CGA based on the uncertainty of the PCP NAPL locations or other data? Did IP consider a conditional use or type-use permit like the Bozeman Solvent Site CGA? Were current irrigation and private wells taken into account when establishing these proposed restrictions (or is there an avenue for a survey to be performed to determine if wells in the current City area or wells in the current county areas exist? There are several private wells that likely are used for irrigation and St. John’s Hospital has several in the proposed CGA area. How are these treated with a CGA and their current use?
12. **Section 3 Modeling Approach, paragraph 1, page 3:** The first two sentences indicate that the proposed CGA boundaries were set first and then the model was used to simulate pumping outside those proposed boundaries. Is this section a simplified discussion of an iterative process where closer pumping well model simulations determined the proposed CGA boundaries, or were the proposed boundaries of the CGA set first based on geography and land features and the model was used to see if they were protective? Please provide more background on the modeling process.
13. **Section 3 Modeling Approach, paragraph 1, general comment, page 3:** The 2016 transport model report by URS would be helpful and possibly answer several of our questions. Please upload this report and other applicable reports to the EPA site for the project:  
<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.scs&id=0800412&doc=Y&colid=33864&region=08&type=SC>.
14. **Section 3 Modeling Approach, paragraph 2, page 3:** Later paragraphs note that there is connectivity between the upper and lower aquifers; however, the model used a well either screened in the upper or lower aquifers for simulation.
  - a. Why was it decided not to model a well screened across both aquifers? Is this due to the length of wells screen required or is this solely based on the Driscoll 1986 guidance on maximum yield in pumping wells (paragraph 4)?
15. **Section 3 Modeling Approach, Table 1, page 4:**
  - a. From the November 6<sup>th</sup> meeting, we understand that a southern well was simulated at one point. Can we please see the simulations and pumping rates associated with that simulation?
  - b. Were other areas simulated for maximum pumping rates?
16. **Section 3 Modeling Approach, paragraph 1 (after Table 1), page 4 on model pump simulations:**
  - a. Please explain if current wells for irrigation and private use were simulated along with the maximum pumping rates of modeled wells?
  - b. Did the private wells outside the boundary have any influence on the plume over longer term >10 year evaluation?

- c. Did IP talk with any of the private well owners to assess their use or does the City have information after their well ban on these existing wells and their uses?
17. **Section 3 Modeling Approach, paragraph 2 (after Table 1), page 4:** Please note who performed the “reasonableness” review.
  - a. Was this by geologists/engineers and modelers with professional experience to assess if the drawdown was sufficient based on typical well performance?
  - b. Did this include looking at the aquifer properties and assumptions to see if they fit within published parameters, etc.?
18. **Section 4 Modeling Results, paragraph 2, page 4:** Please provide the document referenced for PCP “effective solubility of 1,000 µg/L.” The AECOM 2017 report is not available on the Site website for EPA.
  - a. Please include the factors that allow for a much lower solubility and/or a reference to recent groundwater concentrations in the NAPL zone. Is this based on the pH or observed soil conditions specific to the aquifer thus reducing the solubility of PCP, which is typically 10,000 – 20,000 µg/L, in water as reported in literature?
  - b. Please indicate why 1,000 µg/L was used when several wells shown in the 2016 Annual Groundwater Monitoring Report for the Upper and Lower Aquifers, Figure 3-1B (<https://semspub.epa.gov/work/08/1817874.pdf>) show groundwater concentrations of PCP greater than 1,300 µg/L in the middle of the LCPA property and in the source area range from 2,000 to >8,000 µg/L in groundwater (Arrowhead Engineering, 2016).
  - c. As we understand from the November 6<sup>th</sup> meeting, these are these places with NAPL occurrence, correct? Does the proposed FFS discuss actions for NAPL in both aquifers?
19. **Section 4 Modeling Results, pages 5-6, general comment:**
  - a. Many of the attenuation parameters and retardation factors are dependent on the AECOM 2017 report, which has not been released for review. Similar comment for Appendix A on Bulk Attenuation – much of the attenuation is dependent on the original concentrations and decay calculations provided in the Draft Feasibility report. It is difficult to assess if the assumptions are realistic or conservative without this report. Please provide the 2017 Feasibility Report.
  - b. Furthermore, it is difficult to assess the long-term effects of the proposed CGA without an understanding of the remediation or proposed remediation that could affect the particulate transport and perhaps reduce over time.
20. **Section 5 Uncertainty, bullets – 1<sup>st</sup> bullet, page 7:**
  - a. What is the timeframe associated with the monitoring data used to model the contaminant concentrations “to date”?
  - b. Are the current conditions reflected in the effective solubility used to model contaminant transport?
21. **Section 5 Uncertainty, bullets – 2<sup>nd</sup> bullet, page 7:**
  - a. Please provide reports and other geological/hydrogeological data that show extrapolating hydraulic properties from beneath the tank farm area in the upper aquifer is appropriate for the lower, confined aquifer?

- b. Please provide a basis for the determination of the aquifers and aquitard hydraulic properties.
22. **Section 5 Uncertainty, bullets – 3<sup>rd</sup> bullet, page 7:** Considering this is directly affecting existing well owners within the City boundary and immediate adjacent properties in the county, a discussion of the current and future water uses and needs in the proposed CGA area is important to include. Including a reference to resource loss discussions if those occurred in other, earlier, Superfund documents.
- a. Are the residences and businesses in the proposed CGA served by municipal, private wells, or other water sources? The impact of the modeled simulations needs this context and could be included in an earlier section of the document.
  - b. Please produce a figure and table of the landowners and properties with water supplied by private wells and city water. Please add shading to the properties on the figure to show those with private wells and those serviced by city water to delineate the impacts of the proposed CGA. Please also delineate which city water lines within the plume and boundary are PVC and which are impervious to PCP and the other COCs.
  - c. Please discuss how IP will replace the water services to the impacted properties within the proposed CGA.
  - d. Does the City of Libby have the ability and water resources to supply county areas within the proposed CGA with adequate water resources for current and future anticipated land uses?
  - e. Please address MCA 85-2-506(2)(ii) in the technical memorandum.
23. **Section 5 Uncertainty, conservative assumption bullets – 1<sup>st</sup> bullet, page 7:**
- a. Please add additional definition to the “buffer” that was used and the basis for the buffer for the proposed CGA boundary.
  - b. Is this based on professional experience or a defined contaminant transport distance?
24. **Section 5 Uncertainty, conservative assumption bullets – 2<sup>nd</sup> bullet, page 7:** Maximum well yield may be appropriate if the proposed CGA goal is for no other use beyond monitoring and remediation. Were there other model simulations that would allow for a modified use or type of use similar to the Bozeman Solvent Site CGA type categories?
25. **Section 6 Summary and Conclusions, page 5:** The discussion of the summary and conclusions is dependent on the previous discussions and understanding the goal of the proposed CGA by IP and discussion with the Lincoln County Board of Health.
26. **Section 7 References, pages 7 and 8:** Please provide the AECOM 2017 and URS 2016 documents for reference/review during the discussion and additional comment period.
27. **Additional general comment on Technical Memo:**
- a. Were other well pumping limits modeled and evaluated?
  - b. Were any other cross-gradient or up-gradient wells modeled to determine the eastern and southern boundaries? It is our understanding that the Libby golf course may have wells in some of these areas.
  - c. As noted during the November 6, 2017 meeting, a southern well was simulated, but not included in boundary reasoning in the memo. Would an upgradient well pull the contamination or would the higher conductivity in the contamination area not be affected?



- d. Are there any other wells in the south/up-gradient that could help establish the influx/origin of upgradient groundwater (i.e. it looks like the upgradient hydraulic conductivity and model results are mostly influenced by model calibration parameters rather than field data and well/potentiometric surface data)?