U.S. EPA Response to Lac du Flambeau Comments
on the Tetra Tech Pilot Study Workplan (a/k/a Statement of Work) September 2017
October 12, 2017

EPA has inserted its responses in red text to the comments sent by LDF.

The Following was utilized in the review:
Weston Figures
Bristol September 2016 Repot
Bristol October 2016 Report
Bristol April 2016 Report
LIF Report
Weston's Comparison Table
EPA- Site Figure

Table 1:
Corrections:
Existing Environmental/Geologic conditions:
Private Well Contamination:
Motel- in addition to benzene, the well was contaminated with ethylbenze, toluene, xylenes, lead scavenger 1,2 DCA.
Tower Standard-The most recent VOC sample was collected by EPA on January 4, 2008. A low level of naphthalene was present in this sample. The most recent motel sample was completed in 2015.

The Tribe and EPA opened enforcement action cases in 2015.
Subsequent environmental investigations occurred in 2011 and 2013 by EPA and the Tribe. Smear Zone location (see Weston's Figure 2A and Bristol's VOCs in Soil Map)
Contamination sourced from the Tower Standard tank basins, piping and pumping has spread and currently approximately 1/3 of the known contamination is on the Tower Standard Property and 2/3 have migrated onto the neighboring property. EPA and the Tribe have recognized a data gap on the Subject Property near the former pump islands and piping areas a nd at depth. During the EPA/Tribe's jointly proposed well placement work this data gap was recognized and instead of filling the gap with a well, excavation trenching was discussed as a better option.

Haskell Lake: Haskell lake is an ecological receptor, porewater and sublake sampling show the plume is impacting the lake. Haskell lake is a designated wild rice water body.

EPA has decided to remove the introductions and site history sections of these reports so these comments were conveyed to Tetra Tech for information only and not for editing purposes.

Please provide the sampling data indicating that the lake is impacted by site contaminants.
Missing:
COCs at the site include VOCs, lead, cadmium, lead scavengers, and solvents (that may not be explained by lab error)

COCs will be listed in the IM/CMS document.

Also Please see Weston's Comments on Table 1 addressing significant information that should be included in the CSM

Project Purpose:
It is our understanding that the pilot test and feasibility study purpose was to evaluate the effectiveness of excavation, AS/SVE, and a combination excavation and AS /SVE. We also understood this to be interim action.

The purpose of the pilot test is to evaluate AS/SVE and excavation separately.

3.1
The Tribe requests the email sent from Sherry Kamke.

The email asked for Tetra Tech to add free product confirm ation tests as a work plan activity.

It is our understanding that the pilot test will evaluate the effectiveness of excavation, AS /SVE, and a combination excavation and AS /SVE

See above answer to project purpose comment.

LNAPL evaluation -please see Weston's comparison table (Weston, August 29 2017)
Mobile NAPL:
Groundwater monitoring has not included NAPL measurements. Sample techniques are tub ing inserted into the well to a depth near the base of the well screen and pumping via peristaltic pump (REI) or pumping with a bladder pump. Mobile N APL measurements were not made during field work. On EPA's advisement a bailer measurement was made in Jul y 2017 from the MW20 well nest. MW20 D showed film approximately 1/8 ' thick and MW20 showed strong sheen. Also, the most recent sampling event in MW20D provided total VOCs in excess of 159,000 micrograms / liter and benzene concentrations of 44,900 micrograms/liter.

The presence of LNAPL will be evaluated during the pilot test. Details will be included in the pilot test plan.

Other Reference
NAPL has been observed on soil cores, soil cuttings, and LIF work (see Dakota 2016 LIF report)

Unassessed Mobile NAPL
NAPL presence has only been measured in 1 well. This is also the only well screened approximately 20 - 25 feet below grade. The vertical and horizontal extent of NAPL is undefined in the source area. There is also a potential for NAPL at depth downgradient from the s ource area (see Weston's table comments)

Understanding
The Tribe understood that an evaluation of the degree and extent NAPL would be completed in advance of Air sparging work.

See above. The NAPL evaluation will be done in the field at the time of the pilot test.

3.2
List Tribal Personnel

3.3.1.1.1
The Tribe requests a list of all technical representatives from the EPA Environmental Response Team (ERT).

Tom Kady and Karla Guerrero are from EPA ERT and were on the call to discuss comments.

Please provide documents that determined or lead to the draft pilot study document SOW, Stakeholders, technical requirements, and schedule. Note that Tribal Input was ex cluded from the schedule.

The pilot test work plan was provided to LDF.

3.3.1.1.2
The Tribe and or Tribal Contractor needs to participate and be able to provide comments directly to Tetra Tech. This should be included in the workplan.

This has occurr ed and discussions will continue with LDF.

3.3.2.1
QAPP
Please provide QAPP and Sample Parameter Plans for the site for review and comment.

The QAPP will be provided at the same time as the Field Test Plan .

3.3.2.2
Tribal Emergency Management needs to be contacted. How will the general public be informed or noticed?

EPA is interested in LDF's input into what communication with tribal emergency management and the general public is needed for the pilot work.

3.3.2.3
Appropriate Reme dial Objectives:
IM/CMS- we understood this to be an interim action pilot and feasibility study
Percent Mass Reduction Goal -
Please explain how the curr ent mass was calculated and what data was used.
Limited and questionable analytical soil data is available. Sampling attempts of source soils located below groundwater produced low and questionable recovery with the method utilized (single tube).

The concern is the current mass may not be reflective or even close to actual mass.

EPA believes we have enough infor mation to scope the pilot test and we do not need greater precision about mass to conduct a pilot test.

The Remedial Objective should include effectiveness for Site COCs.
Tribal Groundwater Standards are not included.
Source Soils and Excavation Depth:

Mip logs indicated interbedded soils from approximately 5 -15 feet within the source area (and not outside the source area).

Bristol's April 2016 Report (page 6) describes source soils
"There has been li mited soil sample collection in the saturated soils . Soil sample collection in the saturated soils is also hampered by heaving sands. The presence of fine-grained soil especially clay, interspersed within the sand and gravel are zones where petroleum hydrocarbons can readily adsorb onto the soil particles and become long term sources to the dissolved phase groundwater plume"

Mip logs indicated interbedded soils from approximately from approximately 5 feet to 14 -15 feet within the source area (and not outside the source area).

LIF logs show NAPL within these finer interbedded soils.

Bristol's October 2016 Report (page 3) revie ws the LIF results and reports
The largest area of soil contamination is present in the smear zone soil from a depth of 8 to 12 feet bgs, or an elevation from 1,568 to 1,564 feet above msl. This zone represents the largest mass and volume of petroleum impacted soils that directly impact the groundwater contamination. Figure 3 presents the approximate extent of the smear zone soil contamination. Review of individual LIF logs and S2G model cross sections show that the vertical extent of soil contamination below the water table is not vertically continuous. Soil contamination may be present in thin discrete layers with contamination present from 8 to 9 feet bgs and 11 to 12 feet bgs.

Please explain the depth of the excavation or data used to support a depth of 16 -18 feet.

Borings will be logged in the field during the pilot test work to evaluate for fine -grained layers in the source area. The volumetric estimates used were from the 4DIM images in the 3D imaging effort. This information was already provide d to LDF. Data gap analy sis will be conducted in the IM/CMS and/or the remedial design documents.

3.3.3
Please include the Tribe's contractor Weston. Please provide Mr. Kady's materials referenced.

A figure to depict the location of the AS/SVE pilot test array will be included in the draft field plan.

3.3.3.6
There is no Tribal Agreement in place. Any disposal will need to meet federal permit and Tribal Water Quality standards.

No disposal of waste within reservation boundaries is anticipated or planned. Any point source to surface water will meet applicable Federal requirements, including federally approved t ribal water quality standards.

3.4
Tribal incorporation of comments should be part of this workplan and addressed.

Tribal comments are beingconsidered for the field plan documents.

4.0
LDF requests all citations and references.
Missing Information:
AS/SVE pilot-provide locations and maps of pilot system and associated wells and monitoring points.
Identification and notice of all contractors or sub -contractors to be on site or involved in the project

planning needs to be provided

This information will be part of the field test plans.

Final Workplan will be presented to Tribal council for approval.

Final Plans will be provided to the LDF.

Proposed Excavation
It is unclear excavation in a former building basement area will from are a a substantial distance from the source area predict excavation feasibility a substantial distance from the source will predict site conditions.

Thank you for this information. The test pit area will be moved from this area to avoid the former restaurant building basement /foundation structures.

Comment regarding the location of the excavation -

LDF and Weston advocated for the excavation pit to be located in the source area. This is not possible due to the high cost of disposal of contaminated soil and groundwater and associated waste - management /staging/treatment. Disposal costs alone would make the total project expenses far beyond our available Trust Fund resources. Also, the location suggested by Weston and LDF northeast of the site building is too near the site building, the highway, and monitoring wells, and may affect the integrity · of these structures. In addition, the following factors have been considered:

1. The difficulty in determining the bottom of the smear zone while excavating in the contaminated area. Expected inflow of groundwater and sloughing of the sidewalls of the pit will obscure confirmation that the bottom of the highly-contaminated zone has been reached by excavating.
2. The need for a large open area for ingress/egress, move and stage materials, trucks, and other equipment as the work proceeds. The EPA-preferred location offers more space for these activities.
3. The physical movement of soil and groundwater in the smear zone may result in increased contamination in the groundwater near this area.
4. Backfilling of the test pit with clean soil could result in this clean material becoming contaminated by contaminants migrating from the remaining source-area soils and groundwater water adjacent to the pilot test excavation.
5. The EPA-preferred location is in an off-pavement area to avoid the cost of restoring damaged asphalt/concrete.

U.S. EPA Response to Weston Solutions, LLC Comments
on the Tetra Tech Pilot Study Workplan (a/k/a Statement of Work) September 2017
October 12, 2017

EPA has inserted its responses in red text to the comments sent by Weston Solutions, LLC .

These review comments do not include grammatical/punctuation/spelling/acronym/technical editing items observed during our review: We understand this is a working draft.

Table 1 Existing Environmental/Geological Information, 2nd Paragraph: Some significant information should be added that more fully describes pertinent aspects of the conceptual site model;

- The former groundwater extraction system lowered the water table and drew mobile LNAPL (primarily free-phase gasoline) deeper within the aquifer, creating deeper residual NAPL zones that continue to act as dissolved phase groundwater contaminant sources (along with current smear zone residual contaminants).
- A sheen and/or LNAPL film has been observed recently on the MW-20 nested well water.
- Revise the third sentence describing Haskell Lake groundwater plume conditions, as current data confirms the plume has already migrated southward beyond the northern lake margin.

The above information has been provided to Tetra Tech (TT)

Table 1 Project Purpose: Assess whether "corrective measures study (CMS)" is the appropriate term for this non-RCRA feasibility study.

This is a RCRA project, thus the terms are correct.

Section 3.3.1.1.1: Also indicate the LDF Tribal representatives were not included in this meeting.

Noted.

Section 3.3.2.3, 1st Paragraph: LDF Tribal representatives should also be listed as document reviewers.

Tribal comments will be included with EPA comments and passed on to TT.

Page 6, 1st Paragraph beneath the soil profile graphic: Weston understands one purpose of the excavation pilot study is to determine slope stability, and therefore, the use of trench boxes is not cited. Consideration for their use should be given as a contingency should targeted depths not be achievable during the pilot study. Aquifer recharge into the excavation could be assessed via up-flow from the excavation bottom and through perforations made in the bottom 5 feet of the trench box.

The use of a trench box would not provide conditions similar to what is expected during a full scale excavation due to the size of the source area. The pilot test has been designed to create a small version of what is expected to occur if excavation would be implemented across the entire site source area.

Page 6, 2nd Paragraph beneath the soil profile graphic: Consideration should be given to segregating "clean versus dirty" vadose zone soils during the excavation, based on field observations, for placement back into the excavation if deemed appropriate. This could significantly reduce transportation and disposal costs, and imported fill costs.

The pilot test does not plan to excavate contaminated soil due to the cost, material handling issues, proximity to existing monitoring wells and the AS/SVE pilot wells, among other issues.

Page 6, 2nd to Last Paragraph: Please add a description here, of the pilot study excavation footprint that comprises the 612 cubic yard soil estimate. It is provided on page 8.

Maps/figures of the area will be provided with the test plans.

Figures illustrating the conceptual layouts of the AS/SVE and excavation pilot study components are needed.

These will be included in the test plans.

Section 3.3.3.1 Page 7, AS/SVE: Given the extensive soil boring effort needed for the well installations, laboratory analyses of selected vadose and saturated zone soil samples (and groundwater samples collected from the new wells and while drilling as grab samples) could be performed to address data gaps and better quantify mass levels/future reductions.

Soils will be logged duri ng soil boring activities and samples from the new wells will be collected for groundwater.

Also, please add a description in this bullet list of the various means to be used to assess LNAPL during this drilling effort and using the newly installed wells.

A NAPL evaluation will be performed during the pilot test. Details will be provided in the test plans.

Section 3.3.3.1 Page 8, First Sentence: Please provide further details of the EPA's treatment trailer such as blower and vacuum specification pertinent to the conceptual AS/SVE well array planned for the pilot study.

We can pass this information on when it is available. The EPA trailer may or may not be adequate for this pilot test. TT may need to rent a system to use for this test. This is still in evaluation.

Section 3.3.3.1 Page 8, Last Bullet: Additional analysis of the full contaminants of concern list of parameters from the side wall soil samples, beyond TPH only, would provide beneficial information; comparison to existing soil boring data, side wall variability, improved disposal planning, etc.

No sampling of soils is planned for the pilot excavation.

Section 3.3.3.4, 2nd Paragraph: A black light box may also be useful in the field for soil sample screening for NAPL.

Noted.

Section 3.4: Add discussion of the soil excavation portion of the pilot study.

This will be included in the test plans.