To: Egan, Robert[egan.robert@epa.gov]; Greenwater, Anthony[greenwater.anthony@epa.gov]; Manville, Jennifer[manville.jennifer@epa.gov]; Dee.allen@ldftribe.com[Dee.allen@ldftribe.com]; Kamke, Sherry[Kamke.Sherry@epa.gov]; lwawronowicz@ldftribe.com[lwawronowicz@ldftribe.com]
From: Hanson, Kristen
Sent: Wed 5/3/2017 6:53:33 PM
Subject: Source data answer from Bristol/S2C2- EPA-Tribe Tracking Matrix 2B Tribal comments submitted and incorporated- Model #3 Groundwater comments
image003.wmz
image005.wmz
image013.wmz
image020.wmz

Bob,

Thank you for the report entitled Supplemental Data Analysis and Data Visualization for the Tower Standard Site dated March 20, 2017 provided to the Tribe on April 28,2017. The Report includes the source data used, information on how the visualization was created, QA/QC information, and reference to applicable confidence bound factors. This report certainly expedites the review of the model files provided on April 3, 2017. I found the report useful to 4dm model review. Because of the pressing monitoring well placement discussions, two of the six 4dm files were prioritized for review.

Data Visualization #3:

4 dim files: dated March 13, 2017, provided to the Tribe post webinar, April 3, 2017

Includes:

Tower_HRSC_CSM_Groundwater.4dm

Tower_HRSC_CSM_GroundwaterVolumetrics.4dm

Tower_HRSC_CSM_DirectSensing.4dm

Tower_HRSC_CSM_Geology.4dm

Tower_HRSC_CSM_Soil.4dm

Tower_HRSC_CSM_SoilVolumetrics.4dm

Source Data: Data Analysis and Visualization Report dated March 20, 2017, provided to the Tribe April 28, 2017

For Reference:

Model Questions, Request for Information and comments were also provided for Data Visualization #2 on 2/21, 2/23. 3/16, 3/23, and 4/14. Some of the same questions/comments reoccur in our review of Data Visualization #3.

Data Visualization #2

4dim files provided to the Tribe on February 17, 2017

Includes:

DraftUpdatedHRSC_CSM_Soil_LIF_Eva4.4dm

DraftUpdatedHRSC_CSM_GWEval.4dm

DraftUpdatedHRSC_CSM_Geology.4dm

Overall

Data Errors: Monitoring Well Construction details and elevation screens are in error in the source data. The actual screened interval elevations differ from well construction records for 11 monitoring wells.

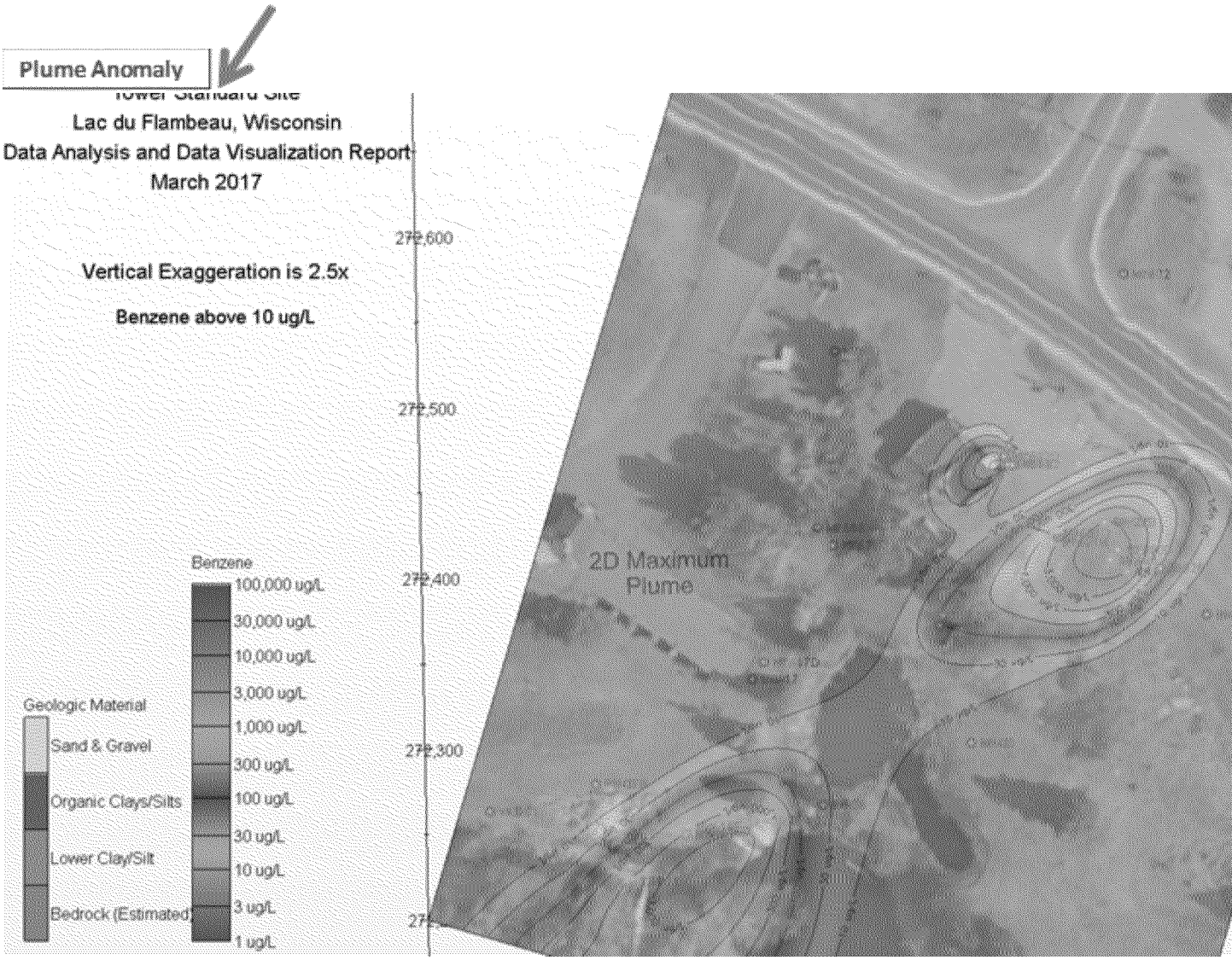
Data Removed at Request of Client: In some visualization slides some data was removed at the request of the client. We are not comfortable removing BH17 data and sharing the files as agreed Conceptual Site Models.

Representation shows contamination further to the east than data supports and in the area of documented clean soil and groundwater. It appears that the model is skewed to the east and underrepresented to the west.

The plume represented in the two groundwater figures do not agree.

<u>Groundwater Model Visualization Based Groundwater on Sampling Data</u>

HRSC_CSM_Groundwater.4dm - slide 8



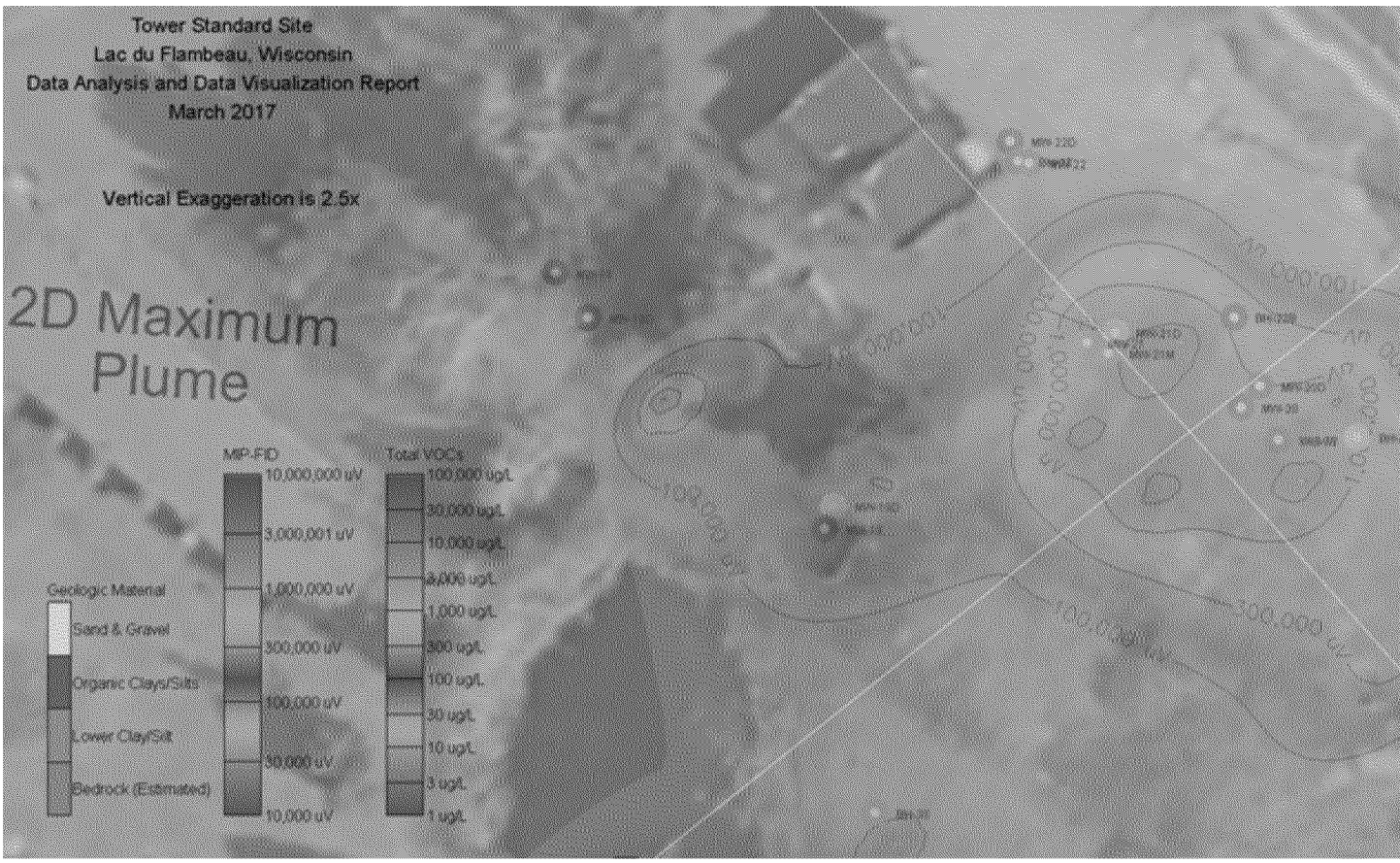
Plume Anomaly- Well Construction Data Errors

The Anomaly shows part of the tank basin, pump islands, and piping are all outside of the plume. It appears that the anomaly could be due to data errors. Monitoring well construction details including screened intervals listed in the Data Visualization Report differ from well log. These data errors occur for: MW-1, MW-2, MW-3, MW-16, MW-17, Mw-18, MW 18D, MW-19, MW21, MW22, MW-22-D. Because of the 3 dimensional representation, inaccurate depths in one dataset, compared to accurate depths in another dataset could be misrepresenting the plume.

Groundwater contamination in the plume anomaly appears to be a function of depth. Direct sensing in the area shows a distinct change in estimated hydraulic conductivity, and HPT Pressure at a depth of 14.5 feet suggesting more transmissive soils. Contaminated groundwater and significantly contaminated soils were identified in BH17 located near the corner of the building. A groundwater well near this location is screened from 4.4 -14.4 feet and 11/15/2015 sampling results provide 238 ug/l total VOCs. The adjacent BH17 includes a temporary well installed from 10-15 feet and the sampling results provide 24,867 ug/l. It is clear that contaminated groundwater is encountered between 14.4 and 15 feet (and likely deeper). The problem is the source data sees both data sources at the same depth (15 feet) when actual depth difference is present. If monitoring well depth were properly entered, the visualization would likely extend the plume beneath the anomaly area.

Groundwater Model Visualization Based Groundwater on Direct Sensing Data

HRSC_CSM_Direct Sensing.4dm - slide 9

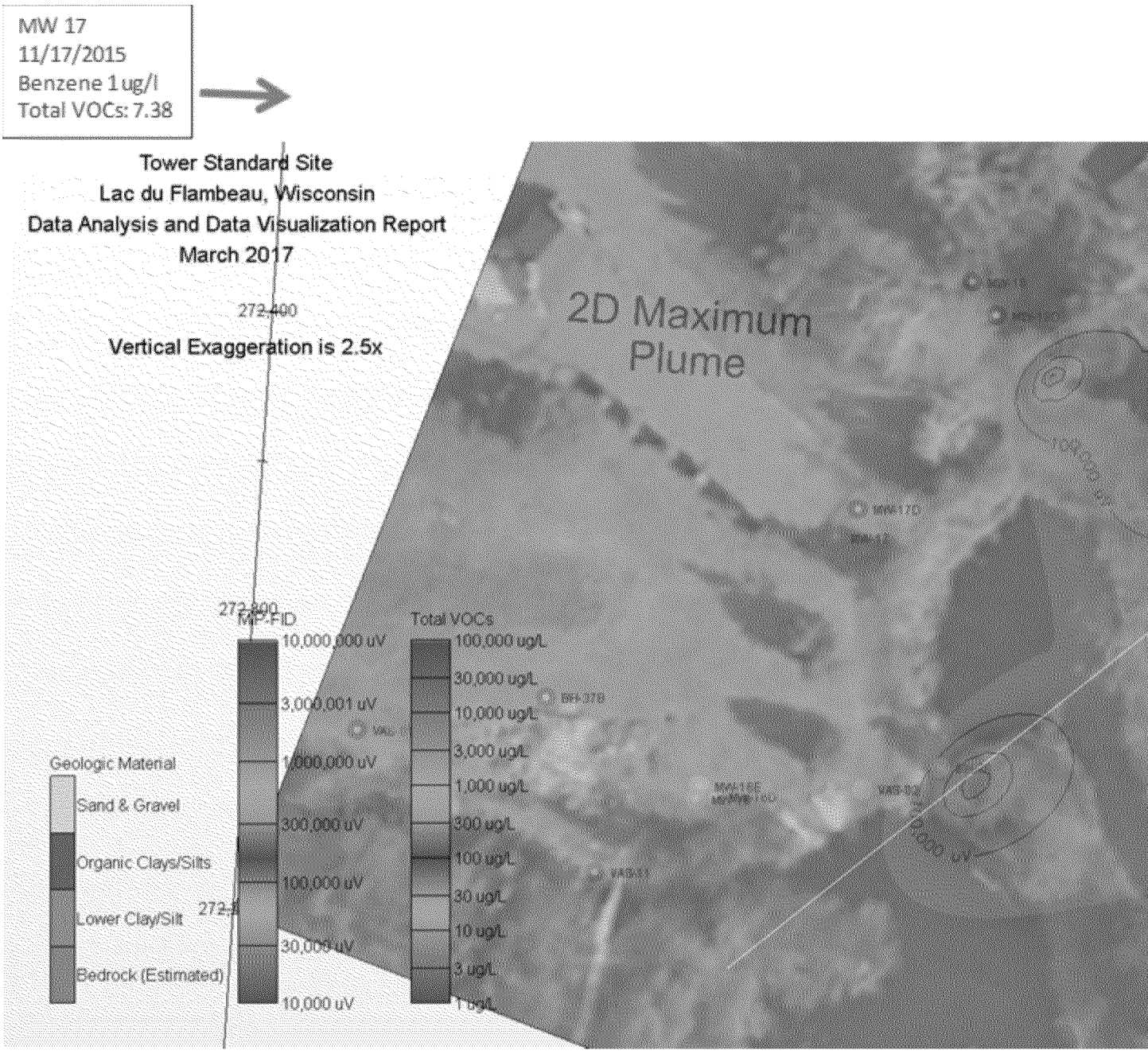


Control Points Skew Representation to the East

East Control Points:

The represented plume extends further east and north than data supports. This may be from the data addition of two control points, CP01 and CP02, located north and south of VAS 04 (based on coordinates- the control points do not appear on any map). The additional data points include 24 feet of MIP-PID response 10,000 uv.

This extends the represented contamination well east of documented directly measured clean BH25. BH25 shows No detection for PID screening, no detection for soil samples, and no detection for groundwater. Similarly, BH 27 provides documented clean conditions, but the represented plume extends north and east of this location.



West Control Points underrepresents plume to the west :

The represented plume direct sensing plume appears to underrepresent the plume to the west. This may be attributed the data addition of control points at MW17. The additional data points for MW17 include 39 feet of MIP-PID response of 1,000 uv. The Groundwater data utilized in this model was collected by the State Contractor REI on 11/17/2015 utilizing a vacuum peristaltic pump. It should be noted that this method is not recommended and may underrepresent VOC's by volatizing under vacuum. The total VOCs from the 11/18/2015

sampling event was 7.38. The MIP-FID equivalent to the low level concentrations would be closer to 30,000 uV. However the control point used in the representation is 1,000 uv. Underrepresenting the control point may be skewing the visualization to the east.

I look forward to your response to comments.

Kristen Hanson

Environmental Response Program Coordinator

Lac du Flambeau Tribal Natural Resource Department

Office: 715-588-4290

Cell : 715-614-4644

From: Egan, Robert [mailto:egan.robert@epa.gov]
Sent: Friday, April 28, 2017 2:53 PM
To: Hanson, Kristen
Cc: Kamke, Sherry; Greenwater, Anthony; Manville, Jennifer; Allen, Dee; Wawronowicz, Larry; Kady, Thomas
Subject: RE: Source data answer from Bristol/S2C2

Kristen,

Attached is the revised report from S2C2. The original report was sent to you in an e-mail on October 5, 2016.

I spoke to Tom Kady about the question regarding the confidence of the model. Tom reminded me that although we call the program a model for convenience, it is actually a data visualization software program. It is not a model in the predictive sense such as a groundwater transport model where sensitivity analyses are run as part of the modeling effort, so there is no level of confidence that can be assigned to it.

Your comments have been sent to Bristol for their review. However, since we are now out of funds to have S2C2 provide additional software support at this time, Bristol may not be able to provide responses in the near term. As you know, additional funding for this type of support from S2C2 or another subcontractor is planned for the next task order.

Bob Egan

Corrective Action Manager

Underground Storage Tanks Section

RCRA Branch

EPA Region 5

(312) 886-6212

(312) 692-2911 (fax)

From: Hanson, Kristen [mailto:KHanson@ldftribe.com]
Sent: Thursday, April 27, 2017 10:46 AM
To: Egan, Robert <egan.robert@epa.gov>
Cc: Kamke, Sherry <Kamke.Sherry@epa.gov>; Greenwater, Anthony

<greenwater.anthony@epa.gov>; Manville, Jennifer <manville.jennifer@epa.gov>; Dee.allen@ldftribe.com; lwawronowicz@ldftribe.com
Subject: RE: Source data answer from Bristol/S2C2

Good Afternoon Bob,

Jason offered the following:

"All the Ctech formatted data files that were used in the data visualization are provided in the pdf report."

We do not have the referenced pdf report. There is a chance that the interpreted data supporting the model and the logged notes shown in the webinar are provided in the pdf report that the modeler refers to. Please provide the referenced pdf reports for both Model 2 (February 16 version) and Model 3 (April 3 version). This will allow for quicker review and comment on Model 3 that was shared with the Tribe on April 3, 2017.

I have also attached our model comments submitted on March 21, 2017 that include questions and information requests. Your consideration of these questions and information requests are appreciated.

In addition, our Natural Resource Director has asked about the confidence level of the model. Information supporting a confidence level is appreciated.

Kristen Hanson

Environmental Response Program Coordinator

Lac du Flambeau Tribal Natural Resource Department

Office: 715-588-4290

Cell : 715-614-4644

From: Egan, Robert [mailto:egan.robert@epa.gov]
Sent: Thursday, April 27, 2017 10:18 AM
To: Hanson, Kristen
Cc: Kamke, Sherry; Greenwater, Anthony; Manville, Jennifer
Subject: Source data answer from Bristol/S2C2

Kristen,

I passed this message on to Sherry earlier in the week, but I'm not sure if she forwarded it to you. She is out of the office for a couple of days so I thought that I would send it just in case.

Please let me know if this answers your question about the model.

Thank you.

Bob Egan

Corrective Action Manager

Underground Storage Tanks Section

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(312) 886-6212

(312) 692-2911 (fax)

From: Faust, Matt [mailto:mfaust@bristol-companies.com]
Sent: Monday, April 24, 2017 11:25 AM
To: Egan, Robert <egan.robert@epa.gov>
Subject: FW: Today's WebX

Bob,

Here's the answer from S2C2 re: source data. Sounds like everything other than lithology is in the Scribe database.

--Matt

Matt Faust, P.G.
Project Manager/Geologist
Bristol Environmental Remediation Services, LLC
Phone : (907) 743-9346

From: Jason Ruf [mailto:jruf@s2c2inc.com]
Sent: Monday, April 24, 2017 4:06 AM
To: Faust, Matt <mfaust@bristol-companies.com>
Subject: RE: Today's WebX

Matt,

You are correct, Studio files are all text files and I opened a few of these during the webX to show the documentation of control points. Source data is the Scribe database for all analytical and direct-sensing detector data. Geologic interpretation picks from boring logs is not in the Scribe database. All the Ctech formatted data files that were used in the data visualization are provided in the pdf report. The geologic interpretation picks are included in these text file pdfs. I have some working excel worksheets that were created from Scribe as an intermediary step in creating the final formatted Ctech files, but there is no other database source. Let me know if you need anything else.

Regards

Jason

Jason Ruf
Senior Geologist/Manager Data Visualization Services
S2C2 inc.
5 Johnson Drive
Suite 12
Raritan, New Jersey 08869

Cell – 908-256-2710

From: Faust, Matt [mailto:mfaust@bristol-companies.com]
Sent: Friday, April 21, 2017 3:28 PM
To: Jason Ruf <jruf@s2c2inc.com>
Subject: RE: Today's WebX

Hi Jason,

I've attached an email that includes a request from the LDF tribe to share the "source data" that you were able to refer to during your recent model presentation. My assumption is that you were looking at the data files in the C Tech application, is that correct?

I know that there is also the Scribe database, and I have referred EPA to that source. Apparently, LDF has not found that format very useful, but maybe they are not using the Scribe program itself.

I just need to confirm with you that S2C2 didn't create some other (third) database containing all site data in one place.

Thanks,

--Matt

Matt Faust, P.G.
Project Manager/Geologist
Bristol Environmental Remediation Services, LLC
Phone : (907) 743-9346