From: Williams, Jonathan
To: Scott.Miller@deq.idaho.gov; Zavala, Bernie; Ross, Randall
Cc: mbeljin@cinci.rr.com; McDonnell, Kimberlee
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy
Date: Wednesday, November 18, 2015 10:34:50 AM

We need to also invite the Tribes. I spoke with Kelly Wright earlier this morning. He can be available next Monday at 1 pm Pacific Time. He's also available this coming Friday afternoon.

Jonathan Williams, LHG
Remedial Project Manager
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1200 Sixth Avenue, Suite 900, ECL-111
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From: Scott.Miller@deq.idaho.gov [mailto:Scott.Miller@deq.idaho.gov]
Sent: Wednesday, November 18, 2015 5:26 AM
To: Zavala, Bernie <Zavala.Bernie@epa.gov>; Ross, Randall <Ross.Randall@epa.gov>
Cc: Williams, Jonathan <Williams.Jonathan@epa.gov>; mbeljin@cinci.rr.com
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

I have set 1 pm pacific on the 23rd aside.

Scott A. Miller, P.G.
Hydrogeologist | Idaho DEQ
ph: (208) 373-0328

From: Zavala, Bernie [mailto:Zavala.Bernie@epa.gov]
Sent: Tuesday, November 17, 2015 3:38 PM
To: Scott Miller; Ross, Randall
Cc: Williams, Jonathan; mbeljin@cinci.rr.com
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

It is hard to get folks together and I know we are all very busy, so how does this sounds. Option 1- if Randall and Milovan can make Monday Nov.23rd at 1:00 pm pacific time let us do this call then. If not option 2- Jonathan and I will call Randall and Milovan this Friday (Nov.20th) and then Jonathan and I will call Scott on Monday Nov. 23rd. Let me know what works and would be great if you can let me know by today. Thanks

Bernie
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Bernie Zavala, Hydrogeologist, LG LHG
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From: Scott.Miller@deq.idaho.gov [mailto:Scott.Miller@deq.idaho.gov]
Sent: Tuesday, November 17, 2015 2:10 PM
To: Ross, Randall <Ross.Randall@epa.gov>; Zavala, Bernie <Zavala.Bernie@epa.gov>
Cc: Williams, Jonathan <Williams.Jonathan@epa.gov>; mbeljin@cinci.rr.com
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

Sorry, I can't make Friday, I have Monday the 23rd open.

Scott A. Miller, P.G.
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From: Ross, Randall [mailto:Ross.Randall@epa.gov]
Sent: Tuesday, November 17, 2015 2:17 PM
To: Zavala, Bernie
Cc: Williams, Jonathan; mbeljin@cinci.rr.com; Scott Miller
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

Friday Nov. 20 at 10:30 PST/12:30 CST/1:30 EST works for me.

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From: Zavala, Bernie
Sent: Tuesday, November 17, 2015 1:54 PM
To: Ross, Randall
Cc: Williams, Jonathan; mbeljin@cinci.rr.com; Scott.Miller@deq.idaho.gov
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

Randall,

Thanks for the follow up regarding our discussion both Jonathan and I would like to have a discussion with this team or everyone on this email to discussion our observations and next steps regarding this modeling effort. It sounds like you (Randall) are in training this afternoon and I will also be in training on Wednesday and Thursday of this week. Is it possible to have a call late morning pacific time this Friday November 20th? Scott it would be great to have you on this call too. So if everyone can check their calendar for Friday Nov. 20th let's say 10:30 a.m. pacific time and get back with me, that would be great. Thanks and once I hear from you all I will send out an invite for your calendar.

Bernie

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From: Ross, Randall
Sent: Tuesday, November 17, 2015 10:29 AM
To: Zavala, Bernie <Zavala.Bernie@epa.gov>
Cc: Williams, Jonathan <Williams.Jonathan@epa.gov>; mbeljin@cinci.rr.com; Scott.Miller@deq.idaho.gov
Subject: RE: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

Greetings Bernie,

I want to follow up on our discussion yesterday afternoon. Here is my line of thinking at this time.

First, I want to acknowledge the effort that FMC has put into the slug testing and modeling effort to date. Their slug test results confirmed the presence of very high K sediments in the eastern portion of the model domain associated with the Michaud gravels. The slug tests also indicated that the "old" model values were higher than observed values in 10 of the 12 wells located west of the Simplot site.

Our hope was that the new slug test data would be used to constrain the K distribution within the model. However, it appears that the range of K values (up to 30,000+ ft/d) was applied across the entire site within PEST, resulting in a K distribution with a low RMSE, but does not fit the geologic conceptual model. From a hydrogeologic point of view, I can envision depositional settings with extremely high K values (e.g., Michaud gravels). However, I'm not convinced that these same extreme K values are present in the area west of Simplot where most of the observed K values are less than about 150 ft/d and only two are higher (e.g., MW108A and MW501). When I asked the MWH modeler about this he invoked debris flows from of the Bannock range and basically stated that we couldn't prove otherwise. Both of these points I disagree with, and in hind sight should have done so

vociferously during the calls. During a previous conference call we were asked to give some guidelines regarding the acceptable K values in the model. We told them that an order of magnitude difference from the field measurements is acceptable. However, it is not only the values I am concerned with but also the distribution and shapes of the K zones that appear to be due more to the numerical experiments than due to the real geologic processes.

The simulated pumping system was optimized, based on the pre-determined number of wells, as well as the total pumping volume. However, the next step was not take – simulate what configuration would be required to ensure the complete capture. I suspect this will occur in the near future.

On the positive side, assuming the current K distribution is overly biased high, any groundwater extraction system that is simulated/designed to maintain capture of the plume will have a conservative design (e.g., it will be overdesigned).

Another underlying problem with this modeling effort relates to the lack of data from the Simplot site and the input from the hydrogeologists who worked on the Simplot site for years. This can only result in problems down the line.

I'll be glad to talk about these issues more at your convenience. However, I will be in training most of the afternoon.
Best regards,
rrr

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From: Zavala, Bernie
Sent: Monday, November 16, 2015 5:12 PM
To: Ross, Randall
Cc: Williams, Jonathan
Subject: Further discussions regarding the FMC flow model for design of extraction network for Superfund remedy

Randall,

Jonathan and I call you this afternoon around 2:00 p.m. and you were not in the office. We wanted to discuss in further detail the short conversation we had this morning regarding your second thoughts on the modeling runs that were presented last Friday by MWH/FMC, which took place last Friday 11/13/2015. You mentioned that you would be willing to put together comments that EPA-Region 10 could forward to MWH regarding concerns on what was presented on November 11th, please do so. I also have some concerns and it could of been addressed if I was present during the call or because I didn't hear the narrative that went with the presentation. It looks, from my observation that pumping 505 gpm with 11-extraction wells will not contain the groundwater flow field that needs to be contained and the distributions of "K" map or distribution of known K doesn't

match with the updated model. The updated K distributions seem odd. Also, why wasn't a model run performed to determine what was needed to contain all of the flow paths.

I'm available tomorrow from 8:30 a.m. to 10:00 a.m. and then again any time after 12:00 p.m. tomorrow.

Bernie

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