From: Wetmore, Cynthia
To: Warren, Scott@DTSC
Cc: Barton, Dana; MARTINEZ, YARISSA; Mayer, Kevin
Subject: Re: Batch Test Results
Date: Friday, December 12, 2014 11:21:01 AM

Hi Scott,

Dana said it was fine to release the sampling results. My points about the data are:
1- influent is probably a little higher than what we will see in start-up and shakedown
2-the non-detect for pCBSA after the GAC is not what we will see in operation
3- the system can achieve the required cleanup levels (they did without the GAC).
4 - emissions for air stack are non-detect

Since the tested effluent is ND, I asked Montrose to re-run the test after injecting the clean water into the injection system. They expect to run that test either Monday or Tuesday, and I will forward preliminary results after I receive them. Typically after that we would run a '5 day' test where each day the plant operated longer and longer. But I am waiting to hear from my management about whether or when this testing would occur.

Thoughts about HiPox
1- expensive (high energy demand to create ozone)
2 - effective - but requires exponentially more ozone/hydrogen peroxide for lower effluent standards

Thoughts on cost:
Thanks for being general about costs - I think that is a good idea
1 - current HiPox system will cost just under $700K to operate - so $1/2 million is a good round number
2 - a larger system to treat to low levels (about 100 ug/L) will be about $15 million.
3- a larger HiPox system would cost over $2 million to operate each year.

Good luck, and let me know if you need anything else. Cynthia

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From: Warren, Scott@DTSC <Scott.Warren@dtsc.ca.gov>
Sent: Friday, December 12, 2014 5:54 AM
To: Wetmore, Cynthia
Subject: RE: BAtch Test Results

Cynthia,

The meeting is at 1000 hours but we will leave here around 0830. I don't need to have a lot of data, they understand I'm not an expert. If we have a follow-up convening in January with Cynthia, CalEPA and USEPA, that would be a good place for more substantial data.

I'll soften my language and round off a few numbers. If USEPA doesn't mind, I could say HiPOX O&M is on the order of $1/2 mil/yr, which could go up to as much as $2 mil/yr if the cleanup level went down substantially. As I said, I'll be very general.

Thank you and have a nice flight back.

Scott

From: Wetmore, Cynthia [mailto:Wetmore.Cynthia@epa.gov]
Sent: Thursday, December 11, 2014 4:50 PM
To: Warren, Scott@DTSC
Subject: Re: BAtch Test Results

HI Scott - what time is your meeting on Monday? I have a slide that I cut from the presentation about the HiPox system that might be helpful in your discussion. I can also give some bullet points about the system and cost.

I want to get the ok from Dana before releasing the data. It's probably ok, but you never know. I will give some bullet points about the data. I don't want to leave the impression that we can get down to ND for pCBSA. Maybe just influent. after hiPox and after air stripper because the after GAc results are not real data.

I'll be hime tomorrow afternoon, if you want to talk. Cynthia

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From: Warren, Scott@DTSC <Scott.Warren@dtsc.ca.gov>
Sent: Thursday, December 11, 2014 4:37 PM
To: Wetmore, Cynthia
Subject: RE: BAtch Test Results

Cynthia,

Thank you. Would it be ok for me to share the laboratory data and some estimated costs at the meeting Monday? For example I was going to show the treatment system and ay that HiPOX annual costs are on the order of $650K/Yr, probably operate at least a year and then when influent is less than some magic number like 24 PPM, the HiPOX system would be shut down.

I'd like to throw in that treating pCBSA to less than 100 ug/L would be on the order of $70Mil etc. just so folks in the room have an idea of what numbers we are talking about. I'm not an engineer so I can only talk very broadly about the treatment system and I'll show a treatment system illustration (Based on the figure Geosyntec provided in June 2011).

I really appreciate your help.

Scott.

From: Wetmore, Cynthia [mailto:Wetmore.Cynthia@epa.gov]
Sent: Thursday, December 11, 2014 4:15 PM
To: Warren, Scott@DTSC
Cc: Barton, Dana; Mayer, Kevin; MARTINEZ, YARISSA
Subject: BAtch Test Results

Hi Scott,
Here are the results from the batch test. As I mentioned in the call, these were from running the system for about 25 minutes which may have misleading results. For example, the ND for pCBSA in the effluent is not what we expect in the long term. Before running the system for 25 minutes (which was the maximum storage that I have), we had run clean water through the system. This means that the water exiting the GAC is likely the clean water that remained in the GAC after the clean water test. Also, the influent concentrations are higher than anticipated, probably because the closer wells with higher concentrations reached the treatment plant faster than the further, and less contaminated, dissolved plume wells.

However, even with the limited testing period, the results are positive. And we have confidence now to run the system a little longer without concerns of exceedences.

I would like to talk with Dana about if we can release this to the community since is rush data w/o validation. I'll let you know.

<u>Groundwater Sample Results</u>

Influent

- pCBSA = 51,000 ug/L
- MCB = 6,600 ug/L
- CF = 1,400 ug/L

Post HiPOx

- pCBSA = 30,000 ug/L
- MCB = 2,400 ug/L
- CF = 1,200 ug/L

Post Air Stripper

- pCBSA = 23,000 ug/L
- MCB = 53 ug/L
- CF = 23 ug/L

Post LGAC

- pCBSA = <5 ug/L
- MCB = <0.5 ug/L
- CF = <0.5 ug/L

Air Sample Results

Discharge Stack

- MCB = <0.0005 ppmv
- CF = <0.0005 ppmv
- Benzene = 0.0002 J ppmv

From: Warren, Scott@DTSC <Scott.Warren@dtsc.ca.gov>
Sent: Wednesday, December 10, 2014 8:53 AM
To: Wetmore, Cynthia
Subject: RE: I think Scott's email is incorrect

Cynthia,

I'm a geologist with DTSC and I work on the Montrose and Del Amo sites as well as the larger LA Basin Groundwater Restoration project. I was on the USEPA/CalEPA call yesterday morning regarding the Dual Site Groundwater cleanup system and the reinjection of pCBSA and I will participate in the Convening with Cynthia Babich next Monday 12/15/2014.

During the 12/15/2014 convening, I have been tasked with discussing the lateral extent of contaminants in groundwater. I was also asked to briefly discuss the treatment system (I'm not an engineer, but will do my best to discuss generalities).

I have a few questions that I would really appreciate your help with before the meeting next Monday.

1. USEPA provided a graph showing the expected concentration of pCBSA on startup and after 2 yrs, 5, etc. Can I get a copy of the graph and slides?
2. I think it was you that provided some cost numbers for pCBSA HiPOX operation and a timeline for when HiPOX will be used and when it will be shut down. Can I get the capital cost and O&M cost estimates related to the estimated period of HiPOX operation. Added cost estimates for longer HiPOX operation etc. The cost estimates were very good for Executive staff to know and can help in our general discussion on Monday.
3. Water has been extracted and is being held in tanks. Has any testing been performed on the water in the holding tanks? If so, (and it is has value), can we get and share the data at the 12/15/2014 meeting.

Thank you,

Scott (714) 484-5462

(I’m in meetings all day today but will be available tomorrow if you would like to discuss anything)