To: Deschambault, Lynda[Deschambault.Lynda@epa.gov]
Cc: Cohen, Adam[Adam.Cohen@dgslaw.com]; Wirtschafter, Joshua[Wirtschafter.Joshua@epa.gov]; Johnson, Mike (COPPER ENVIRONMENTAL CONSULTING)[Mike.Johnson@copperenv.com]; McCarthy, Dave T (Copper Environmental Consulting)[dave.mccarthy@copperenv.com]; Lombardi, Marc (marc.lombardi@amecfw.com)[marc.lombardi@amecfw.com]
From: Brown, Anthony R (RM)
Sent: Tue 4/18/2017 9:36:48 AM
Subject: Revised Leviathan Weekly Update for Lynda
LMS_Summary of April 5-12, 2017 ARC Activities.pdf

Hi Lynda, per your request, see attached. Hope this helps… Tony…

From: Deschambault, Lynda [mailto:Deschambault.Lynda@epa.gov]
Sent: Monday, April 17, 2017 4:46 PM
To: Brown, Anthony R (RM)
Cc: Johnson, Mike (COPPER ENVIRONMENTAL CONSULTING); Lombardi, Marc (marc.lombardi@amecfw.com); Deschambault, Lynda
Subject: FW: Leviathan Weekly Update

Tony per last week emails, today's various voice mails --and our conversation just now.

Please update the attached weekly report by end of day today or tomorrow morning. As agreed.

Much appreciated. The latest attached weekly report appears unchanged other than ARC added an updated Table 1

EPA's comments from last week remain unaddressed. Please incorporate, and send a revised updated report.

I've tried to summarize what I could here;

- Please add in the additional Waterboard photos as requested. They should be included as they add a good timeline and definitely show a full story. See notes below.

- Site Access. please revise "no site access" to "ARC determined unsafe conditions to access" (we are proudly reporting that both the waterboard and TKT were on site 7 days a week. To be consistent)

- Flow Rates. No flow rates taken, but volumes into Leviathan creek can also be estimated based on gauges. If ARC has an estimate, please support that with backup calculations.

- EPA concurs that there does not seem to be an impact on the pH downstream of the discharge. Burleson is reviewing other water quality parameters. ARC was asked to take point of discharge samples. We do not have Leviathan Creek Samples. EPA will likely take full laboratory list of COCs for surface water samples this week.

- EPA asked ARC to include both ASB and Pond4HDS data. Please incorporate all of the ASB information, including the charts and figures from the email from Mike Johnson dated Friday, April 07, 2017 12:00 PM and the mike Johnson email dated Wednesday, April 12, 2017 8:04 PM. Include also the details regarding your email about historical ASB exceedances.

- ARC was asked to insert a table similar to the pond4HDS table 1---for the available ASB data. Please list all results alongside the discharge levels and shade/highlight any exceedences. i.e. Mike Johnson notes that that the 3/20/17 sampling event "indicated that all discharge standards were met with the exception of dissolved iron (7.9 mg/L)" Please include water quality parameters such as pH etc. ARC was trying to provide some historical perspective on this exceedance as compared to exceedances in other high flow years. And a summary regarding what is agreed to in the AOC. Please include.

- EPA looks forward to receiving the rush turnaround time laboratory samples and any other recent results and chemistry data collected for the compliance samples/ discharges at both ASB and Pond 4 HDS as soon as data is available.

- ARC notes that EPA's MRAM states that discharge criteria are not applicable during winter months when access to the site is limited. Agree it is important to note in the ARC report that there should be No HDS discharge during the winter and further to clarify that this isn't just CUD and Delta Seep water. Please provide additional detail on the HDS set up and the Pond 4 contents. For consistency and messaging it is important to note that we highlighted to the stakeholders that Pond 3 treated water had a slight copper exeedence of .047 (vs .026 is the discharge criteria);

Pond 4 HDS has **Copper released at .27**. To to be consistent ---and other levels to be reviewed such as Iron at 7 from the ASB.

- ARC notes that their field personnel observations showed that the discharge from the Pond 4 overflow pipe actually decreased following the initial round of repairs on April 7. That is true. But it is also true as EPA stated that the photos show that during the repair it did in fact "continue at a more accelerated rate" as stated in our summary and documented in the time stamped photos. And yes Photos show that the flow stopped after the second round of repairs.

- EPA calculated an acre foot and came up with 325,000 gallons, ARC notes that it would be closer to 200,000 gallons. Please have your Contractors confirm calculations.

- The PH of the water released from Pond 4 is 2.13. ARC says is precipitation (snow melt and rain). Please add additional clarification on the contents that it does also include passive drainage from the seep drains that the Water Board installed south and east of the pond during initial pond construction.

- As far as equating this to the all season release of CUD and Delta Seep, ARC is correct that None of this water came from the CUD or Delta Seep, other than the very small residual volume left in the pond at the end of the 2016 treatment season. That should be included in the report.

- As ARC notes the Sediment in Pond 4 is primarily made up of residual treatment solids (lime sludge) that settled out when Pond 4 was used as a settling pond for effluent discharged from earlier configurations of the treatment system. Perhaps ARC can provide some chemistry knowledge of that material? It is unclear to EPA if the intense coloration we are seeing in the discharge pipe is because the sediment got stirred up during the pipe repair and/or was in the discharge pipes or some other chemistry (Fe Oxidation)? It is unclear of we have actual point of discharge water sample that EPA requested? Is data tested for Total metals and Dissolved or just dissolved?

- It is important to know if the results in Table 1 are representative of the highly colored discharge in the photos. ARC notes that the Pond 4 pH measurement was taken just below the surface near the overflow pipe. Unclear if that is also where the laboratory full list of metals was taken? And if so is this representative of what was discharged? ARC notes that there is a lot of snowmelt/ and waterboard also noted that there was about 2 inches of new precipitation on the day(s) of the repair as well

- Agree with ARC that we should point out that Atlantic Richfield does not normally have personnel at the site at this time of year, and the “equipment damage” was not the result of any human-caused activity.

- Please provide more details of the changes made at the ASB. ARC notes that Aspen Seep Bioreactor effluent is not bypassing the settling pond and into the aeration channel, Please have your contractors check on the accuracy of this statement and provide text with an accurate update.

- In the report please provide additional text regarding the plumbing modifications: ARC notes that the plumbing modifications made to increase the diameter of the effluent line did not result in any discharge of untreated water or adversely affect the functionality of the bioreactor, as your summary implies. Please add text to clarify if the residence time was reduced: The plumbing modifications were to ensure the water went out of the system faster and that the the effluent rate to equilibrate with the influent rate.

- Please add text to clarify ARC position that the Bioreactor performance is more directly related to the recirculation rate within the bioreactor and the feed rates for sodium hydroxide and ethanol, which have been adjusted to keep pace with the higher influent flow rate. EPA still questions the ongoing efficacy of a system with more flow thru and less residence time.

- Please let us know a date of when we can expect ARC to provide EPA’s request for an assessment of the short and long term impacts. And to assess if the system and the discharges were in compliance with the discharge permit

Please continue to provide weekly updates during this high flow season.

Lynda

From: Deschambault, Lynda
Sent: Friday, April 14, 2017 12:39 PM
To: Greg Reller <gr@burlesonconsulting.com>; Patty Cubanski <pc@burlesonconsulting.com>; Cory Koger <Cory.S.Koger@usace.army.mil>
Cc: Doug Carey <douglas.carey@waterboards.ca.gov>
Subject: FW: Leviathan Weekly Update

Any additional input or comments to ensure consistency on field observations?

From: Deschambault, Lynda
Sent: Friday, April 14, 2017 12:37 PM
To: 'Brown, Anthony R (RM)' <anthony.brown@bp.com>
Cc: Halsey, Ronald H <ronald.halsey@bp.com>
Subject: RE: Leviathan Weekly Update

Thank you! Much appreciated, Reviewing now. Initial review concurs that the EPA data sondes monitoring data shows that pH did not change significantly in Leviathan Creek below the discharge between the time the Water Board first observed the separation on April 6 and when Atlantic Richfield completed the second round of repairs on the morning of April 11.

Appreciate that ARC doesn't have additional flow measurements, But could you please confirm my estimate using what we do know----that the pond was lowered by one foot, and that pond 4 is about one acre => hence 325,000 gallons?

And what do we know about the water in pond 4 compared to the winter flows of CUD and delta seep? The photos show a significant difference in coloration, and I'd like to know more about your assessment of the sediment in pond 4 or in the discharge pipe?

Also, how was the pond 4 sample collected (i.e. at the surface, or at the repaired opening, or a composite, stirred with sediment?)

Lynda

From: Brown, Anthony R (RM) [mailto:anthony.brown@bp.com]
Sent: Friday, April 14, 2017 11:58 AM
To: Deschambault, Lynda <Deschambault.Lynda@epa.gov>
Cc: Halsey, Ronald H <ronald.halsey@bp.com>
Subject: RE: Leviathan Weekly Update

Hi Lynda – Here is the Weekly Update report including the revised Table 1, containing the additional monitoring results for the April 7, 2017 Pond 4 discharge sample, which Mike Johnson sent to you separately last night. We have not determined flow rates or discharge volumes from the Pond 4 overflow pipe. We don't have flow measurements, and we don't know when the pipe separation first occurred, how large the opening was, the level of water prior to the separation occurring, the rate of water flow into the pond, or the length, diameter and condition of the subsurface piping. We do know, again as confirmed from the EPA data sonde monitoring data, that pH did not change significantly in Leviathan Creek below the discharge between the time the Water Board first observed the separation on April 6 and when Atlantic Richfield completed the second round of repairs on the morning of April 11. We do not have any other information to provide at this time.

From: Deschambault, Lynda [mailto:Deschambault.Lynda@epa.gov]
Sent: Friday, April 14, 2017 8:27 AM
To: Brown, Anthony R (RM)
Cc: tavassoli, lily; Wirtschafter, Joshua
Subject: RE: Leviathan Weekly Update

Tony, my request was to have your One Complete Summary or incident report by EOD yesterday.

So that EPA can provide an update to the stakeholders today.

Could you please utilize whatever resources needed to complete the report EPA requested asap?

Lynda

From: Brown, Anthony R (RM) [mailto:anthony.brown@bp.com]
Sent: Friday, April 14, 2017 6:41 AM
To: Deschambault, Lynda <Deschambault.Lynda@epa.gov>
Subject: RE: Leviathan Weekly Update

Hi Lynda, Mike Johnson is out on leave today (Good Friday) and through the Easter holiday weekend (along with a bunch of others.) The note below will be relayed. As a reminder – we have the regularly scheduled monthly update call next week on Tuesday morning. Hope this helps… Tony…

From: Deschambault, Lynda [mailto:Deschambault.Lynda@epa.gov]
Sent: Thursday, April 13, 2017 5:50 PM
To: Carey, Douglas@Waterboards
Cc: Greg Reller; Cory Koger; Wirtschafter, Joshua; Brown, Anthony R (RM); Cohen, Adam; Johnson, Mike (COPPER ENVIRONMENTAL CONSULTING); Lombardi, Marc (marc.lombardi@amecfw.com); Stetler, Chris@Waterboards; Ferguson, Scott@Waterboards; Tom Bloomfield (tbloomfield@thegallaghergroup.com) (tbloomfield@thegallaghergroup.com); Coupe, David@Waterboards; Kouyoumdjian, Patty@Waterboards
Subject: RE: Leviathan Weekly Update

Thank you.

Tony/Mike, please incorporate these in to your revised weekly report with appropriate title.

As noted the text should Includeapproximate estimates of flow rates, and volumes.

Please include the before and after staff readings

Thank you.

From: Carey, Douglas@Waterboards [mailto:douglas.carey@waterboards.ca.gov]
Sent: Thursday, April 13, 2017 3:34 PM

To: Deschambault, Lynda <Deschambault.Lynda@epa.gov>
Cc: Greg Reller <gr@burlesonconsulting.com>; Cory Koger <Cory.S.Koger@usace.army.mil>; Wirtschafter, Joshua <Wirtschafter.Joshua@epa.gov>; Brown, Anthony R (RM <anthony.brown@bp.com>; Cohen, Adam <Adam.Cohen@dgslaw.com>; 'Mike Johnson' <mike.johnson@copperenv.com>; Lombardi, Marc (marc.lombardi@amecfw.com) <marc.lombardi@amecfw.com>; Stetler, Chris@Waterboards <Chris.Stetler@waterboards.ca.gov>; Ferguson, Scott@Waterboards <scott.ferguson@waterboards.ca.gov>; Tom Bloomfield (tbloomfield@thegallaghergroup.com) (tbloomfield@thegallaghergroup.com) <tbloomfield@thegallaghergroup.com>; Coupe, David@Waterboards <David.Coupe@waterboards.ca.gov>; Kouyoumdjian, Patty@Waterboards <patty.kouyoumdjian@waterboards.ca.gov>
Subject: RE: Leviathan Weekly Update

Email 3 of 3

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Lynda,

As requested, attached are a few additional photos of the Pond 4 (near HDS) area taken by Water Board personnel between April 6 and April 11, 2017. The time and date stamp on the photos is helpful to follow the situation as originally observed on April 6 through the April 11, 2017 standpipe repair. I'll send photos in three parts as some firewalls are very restrictive.

Photo 170406 tz 013 is when the damaged standpipe in Pond 4 was first observed by Water Board personnel. Note approximate staff reading.

Photos 170407 tz 002, 003 and 005 are during initial repair activities.

Photo 170407 tz 046 is of failed initial repair.

Photo 170411 tz 015 is of final repair. Note staff reading.

Note: During the storm that passed through the area April 6 through April 9, 2017, approximately 2 to 3 inches of precipitation (liquid) fell on the site.

Douglas Carey, P.G.

Senior Engineering Geologist

Leviathan Mine

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