

**From:** [Oberding, Tomas, EMNRD](#)  
**To:** [Randall Hicks](#); [Yu, Olivia, EMNRD](#)  
**Cc:** ["Fernando Ibarra"](#); ["Martin Lebrun"](#); [brett\\_fulks@dmv.com](#); ["Tucker, Shelly"](#); [Billings, Bradford, EMNRD](#); [mike@rthicksconsult.com](#); [kristin@rthicksconsult.com](#)  
**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy MODIFICATION OF APPROVED PLAN  
**Date:** Tuesday, March 7, 2017 2:13:01 PM  
**Attachments:** image001.png  
image005.png

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Aloha Mr. Hicks et al,

Thank you for providing the photos. The OCD is in the process of reviewing the documents and proposals.

Mahalo  
-DOc

Tomáš 'Doc' Oberding PhD  
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一期一会

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

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**From:** Randall Hicks [<mailto:r@rthicksconsult.com>]  
**Sent:** Monday, March 6, 2017 5:16 PM  
**To:** Oberding, Tomas, EMNRD <[Tomas.Oberding@state.nm.us](mailto:Tomas.Oberding@state.nm.us)>; Yu, Olivia, EMNRD <[Olivia.Yu@state.nm.us](mailto:Olivia.Yu@state.nm.us)>  
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**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy MODIFICATION OF APPROVED PLAN

Ms. Tucker, Dr. Oberding and Ms. Yu –

On 12/29/16, we submitted the assembled remediation plan as requested by and negotiated with OCD. On that date, we said we would ship you some photographs of the completed remedy. Finally, we attach said images. The post construction sampling data did not show good correlation (attached), but the samples were highly heterogeneous. For the next round of sampling, we will use bigger samples for the titration and provide the lab with bigger samples too.

Our tardiness in submitting the photos and data provides an excellent excuse for OCD's lack of a response to our submission – you were waiting for the images! Now you have them. **Let us know what, if anything, we need to do. Better yet, you can approve the modification.**

To undertake the experiment originally requested by OCD, we need to build the remedy quickly and not let nature implement the clean-up as was done here.

We installed the rain gauge as requested – but there has been little to no rain at the site since the email of 12/29. As indicated in our 12/29/16 submission:

We are due to take photographs sometime this month and will download the precipitation data at that time.

If we see some volunteer vegetation and the site experienced a large precipitation event, we will send OCD and BLM a map showing where we propose to take the samples to a depth of 4 feet.

If, as we suspect, the area lacks vegetation and there has been no meaningful precipitation, we will transmit the photos and rain data and wait for some heavy precipitation to finish the flushing of salt.

Thanks for your attention to this matter.

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**From:** Randall Hicks [<mailto:r@rthicksconsult.com>]  
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**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy MODIFICATION OF APPROVED PLAN

All

Happy New Year.

Attached a stand-alone document that modifies the approved plan. All of the communications (emails and meetings) that occurred after the approval are included in

this plan.

Good news first – As shown in the precipitation chart below for 2016, several large precipitation events spaced over 7-10 days occurred between the July sampling event (upon which we based the remedy) and the post construction sampling event in November. Rain is good for everyone and several large events spaced closely together is especially good for soil flushing. This short period of precipitation effectively completed the flushing remedy for this site. One more similar event and the job is done.

If there is bad news, here it is – the plan to measure applied fresh water and soil flushing and comparison of storm water diversion for flushing with natural precipitation is moot for this site. The soil flushing boat sailed when it rained like crazy in July/August of 2016.

The solution to this dilemma, perhaps, is to identify a fresh release that is sufficiently large to implement the experiment that was requested by OCD and BLM. We have the rain gauge, we know how to build the berms better/cheaper now, we understand what BLM and OCD desire with respect to the flushing data.

We will be measuring rainfall at the site and will be conducting follow up sampling after we see several large events over the course of 7-14 days.

Some additional post-construction sampling data and photographs will be forthcoming in January/February.

Cheers to the New Year

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**From:** Oberding, Tomas, EMNRD [<mailto:Tomas.Oberding@state.nm.us>]  
**Sent:** Tuesday, October 18, 2016 1:24 PM  
**To:** Randall Hicks; Lynch, Kristen, EMNRD  
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**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy

Sounds good, keep us informed, and this is a safety measure, the pit rule is a bit different ;)

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**From:** Randall Hicks [<mailto:r@rthicksconsult.com>]  
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**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy

We are on the same page. I keep on making that brain-typo of 800 v. the 600 ppm chloride that is the same as the soil cover under the Pit Rule.

Thanks

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**From:** Oberding, Tomas, EMNRD [<mailto:Tomas.Oberding@state.nm.us>]  
**Sent:** Tuesday, October 18, 2016 1:02 PM  
**To:** Randall Hicks; Lynch, Kristen, EMNRD  
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**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy

Aloha all-

Further Clarification-{YYZ}

- 1) Delineation and flushing must reach a minimum of 6', and be monitored semiannually post for at least 1-2 years to ensure no upward mobility (depending on environmental conditions and sample results); **WHEN SAMPLING SHOWS THAT THE AVERAGE CHLORIDE CONCENTRATION OF 12 SAMPLES (4 LOCATIONS AT DEPTHS OF 1-2, 4 AND 6 FEET DEPTH) ARE LESS THAN 800 PPM, THIS ROUND OF SAMPLING IS OVER?**  
**{As noted minimum of 6' BGS, 8' is preferred. 600mg/kg ~Cl is the target for the lower portions (below 4'), surface to 4' BGS target is background. Please note that complete vertical delineation to 250mg/kg should be conducted to determine extent and form a starting point for rate of migration}**
- 2) Berms must be engineered, reinforced and have a height no less than 8", please provide engineered details of these structures; **NO PE STAMP, JUST SOUND "ENGINEERING" PRACTICE WILL DO THE TRICK?. FOR EXAMPLE, WE ARE THINKING OF SILT FINES BURIED IN THE CENTER OF THE BERM TO CREATE LONG-TERM STABILITY OR STABILIZATION OF THE BERMS WITH JUTE MESH EROSION BLANKET AND SEEDING.**

{Agreed, no PE stamp is required. Detailed drawing of the berms indicating reinforcement (packing with imported clays, silt fences, etc). Reinforcement must account for erosion of the site. Monthly inspection or post rain-event inspection (whichever comes first) must be conducted, reinforcement/rebuilding of containment berms as needed.}

- 3) Complete, updated edging map based on horizontal sampling must be provided along with information regarding placement of the engineered soilwoks;  
WILL DO
- 4) Contamination must remain below 4' BGS no later than 1 year from the date of approval. If contamination is extant above actionable levels (800 PPM CHLORIDE) {600 mg/kg ~Cl} or is found to be migrating towards the surface, a dig all contamination and installation of a liner at 4' BGS, and backfill with 'clean,' tested imported soil will be conducted. UNDERSTOOD – WE TRUST GRAVITY {we trust biological water pumps so just to be sure}

PLEASE KEEP IN MIND THAT CALICHE MAY EXIST AT 4 FEET BENEATH LAND SURFACE. THE APPROVED WORKPLAN CALLS FOR INITIAL SAMPLES TO A DEPTH OF 8 FEET. WE WILL USE A HAND AUGER TO COLLECT SAMPLES TO ABOUT 4 FEET, THEN THE BACKHOE WILL COMPLETE THE SAMPLING TO A DEPTH OF 8 FEET. IF CALICHE IS ENCOUNTERED AND EXCAVATED FOR THE DEEPER SAMPLES, THE CALICHE RUBBLE WILL BE REPLACED IN THE SAMPLING TRENCH AT THE DEPTH IT WAS ENCOUNTERED. THUS, IF WE NEED TO SAMPLE IN THE CALICHE HORIZON, WE WILL BE ABLE TO COLLECT CALICHE CLASTS FROM THE HAND AUGER AT THE 4, 6 OR 8 FOOT DEPTHS TO COMPLETE THE SEMI-ANNUAL SAMPLING REQUIRED IN APPROVED WORKPLAN. {Agreed as long as the caliche layer is discretely sampled to provide an initial baseline}

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**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy

Doc

A few questions and comments for clarity in red below

Expect this same remedy for the second release to come your way in a day or two.

Note that I copied Bradford Billings on this note because we are implementing 4-6 OCD-approved soil flushing remedies in the Loco Hills area for Marker Oil. Upon some guidance from District 2, we can re-work the plans to fit this model.

Thanks for the approval, it is what I expected based upon our conversations.

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**From:** Oberding, Tomas, EMNRD [<mailto:Tomas.Oberding@state.nm.us>]  
**Sent:** Tuesday, October 18, 2016 10:37 AM  
**To:** Randall Hicks; Lynch, Kristen, EMNRD  
**Cc:** 'Fernando Ibarra'; 'Martin Lebrun'; [brett\\_fulks@dvn.com](mailto:brett_fulks@dvn.com)  
**Subject:** RE: Raging Bull-Devon - Trionyx Release Remedy

Mr. Hicks et al,

Thank you for the updated information regarding the proposed remediation on this site.  
The OCD conditionally approves the pilot project with the following stipulations-

- 1) Delineation and flushing must reach a minimum of 6', and be monitored semiannually post for at least 1-2 years to ensure no upward mobility (depending on environmental conditions and sample results); **WHEN SAMPLING SHOWS THAT THE AVERAGE CHLORIDE CONCENTRATION OF 12 SAMPLES (4 LOCATIONS AT DEPTHS OF 1-2, 4 AND 6 FEET DEPTH) ARE LESS THAN 800 PPM, THIS ROUND OF SAMPLING IS OVER?**
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WILL DO
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**CALICHE IS ENCOUNTERED AND EXCAVATED FOR THE DEEPER SAMPLES, THE CALICHE RUBBLE WILL BE REPLACED IN THE SAMPING TRENCH AT THE DEPTH IT WAS ENCOUNTERED. THUS, IF WE NEED TO SAMPLE IN THE CALICHE HORIZON, WE WILL BE ABLE TO COLLECT CALICHE CLASTS FROM THE HAND AUGER AT THE 4, 6 OR 8 FOOT DEPTHS TO COMPLETE THE SEMI-ANNUAL SAMPLING REQUIRED IN APPROVED WORKPLAN.**

Please reference the RP for this site in all future communications, as well as documents, and keep us informed.  
Let me know if you have any questions.

Mahalo  
-Doc

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**Subject:** Raging Bull-Devon - Trionyx Release Remedy

Dr. Oberding

We understand the concern of OCD that flushing salt from the soil horizon willy-nilly for 800 release sites per Section can result in a significant salt load into any shallow aquifer.

Thus, the changes we discussed are made –

1. One more monitoring/sampling event– as this remains a bit of a pilot test for OCD – we agree that the rate of salt migration requires additional examination
2. The post flushing soil cap construction to prevent continued ponding over the release and to promote localized recharge near the release – this is what keeps the salt from moving downward at a mass flux rate that may cause concern after the flushing
3. Appendix is strictly environmental setting and the boring log is included – there is shallow water in the area, but there is no hydrogeologic evidence that such water exists in any areas near the release sites. That is, there are no closed depressions or drainages that could cause localized perched water that can be of beneficial use.

Appendix B is forthcoming – two peer reviewed papers referenced in the CAP Amendment.

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Subject: FW: Raging Bull-Devon - Trionyx Pilot Test  
Date: Tuesday, January 10, 2017 4:05:03 PM  
Attachments: Image001.png  
RemediationContractorInstructions11-2-16.pdf

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Subject: Raging Bull-Devon - Trionyx Pilot Test

Doc and Bradford –

The attached is what will be installed by Monday or Tuesday. Here is the plan

1. Spill footprint is outlined in green dashed line – it is approximate
2. The yellow 50 foot by 50 foot square is isolated from storm water run-on. This is the plot that will get fresh water from a pipeline or truck. We should have 1 deep sample in this area.
3. The area of Rain Only + Hay is bounded on the north and south by ridges created by pipelines. The reinforced berms to the east and west of this area isolate it from storm water run-on. We have one deep sample location in this part of the pilot study.
4. The south-western "leg" of the release footprint will not have hay tilled in. We will isolate this area from storm water run-on. One deep sample is planned here
5. The eastern portion of the spill footprint will receive storm water run-on. Two deep sampling points are planned for this area.

I have some ideas to figure out the depth of ponding in the storm water catchment/flushing area. Let me work those out a bit. If we know the depth of the water and the area that was flooded, we can determine pretty well how much water came onto the storm water flushing area.

We will get some kind of a weather station/rainfall gauge out there

Let me know what you think.



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