Smith, Cory, EMNRD

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Thursday, September 5, 2019 7:51 AM
To: Smith, Cory, EMNRD
Cc: Josh Hatch
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, the following is the plugging plan that HEC will use for the Phillips 2E:

The casing has been plugged by pouring approximately 10 bags of bentonite down casing and then filling the top 4' of 8" PVC casing with cement. To plug the ¾" vent tube bentonite will be pack in, as much as possible. Once the bentonite expands and stops water flow, a cement slurry will be added to complete the plugging job. A rubber expansion plug will then be installed just below ground level. This will insure the vent will not freeze and break off as it previously has.

Please let us know if you have any questions.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Wednesday, August 28, 2019 10:20 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Josh Hatch <jhatch@hilcorp.com>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

OCD considered the water issues resolved and does not have any issues with moving forward with plugging. Please provide the plugging plans HEC intends to use for record keeping. I will assemble our emails/sampling results and the plans into a pdf and put It in the well file.

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Monday, August 26, 2019 9:39 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Josh Hatch <jhatch@hilcorp.com>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Good morning Cory. I wanted to circle back with you on this site/issue. We did not receive a reply from this email so I asked Josh to hold off on the action as I discussed below. I meant to follow up with you sooner but it fell off my radar. Josh circled back with me this morning so I thought I would check in with you before I gave him the green light to plug this cathodic. Let me know if you are okay with us proceeding.

Thank you,
Clara

From: Clara Cardoza
Sent: Tuesday, June 25, 2019 10:20 AM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, please find attached the results of the last water sampling event at the Phillips 2E taken on 6/10. With these results HEC intends to plug the cathodic well to prevent any future water flow.

Please let me know if you have any questions.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Monday, June 17, 2019 7:22 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

Thanks for the update, please send the results when HEC gets them back.

Cory Smith
Environmental Specialist
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1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Tuesday, June 11, 2019 8:59 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD

<Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, below are the field notes from the sampling Josh and I did at the Philips 2E. As we did last time we submitted a sample to Envirotech and will share those results once we received them.

Field notes from sampling event on 6/10:
1st sample (@ 5 gallons) – 9:05 a.m. pH 8.0 temp 20C
2nd sample (@ 10 gallons) – 9:09 a.m. pH 7.4 temp 18.9C
3rd sample (@ 15 gallons) – 9:11 a.m. pH 7.26 temp 17.9C
4th sample (@ 20 gallons) – 9:14 a.m. pH 7.43 temp 17.3C
5th sample (@25 gallons) – 9:16 a.m. pH 7.23 temp 18.0C

Thank you,
Clara

From: Clara Cardoza
Sent: Wednesday, June 5, 2019 10:00 AM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, let this serve as notice for the Phillips 2E cathodic well follow-up sampling event for Monday June 10th at 9 a.m. Please let me know if you have any questions or concerns.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Monday, March 25, 2019 11:34 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

It looks like the water has stabilized. As previously mentioned please keep these results on hand, HEC will follow up in June to ensure the water In the well is still within range.

Once that's complete We can put the results into the well file for record keeping.

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division

Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Monday, March 25, 2019 10:44 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, attached please find the lab results from the water sample taken on 3/15 at the Phillips 2E.

Field notes from sampling event on 3/15:
1st sample (@ 5 gallons) – 10:27 a.m. pH 8.01 temp 17.16C
2nd sample (@ 10 gallons) – 10:30 a.m. pH 7.35 temp 15.3C
3rd sample (@ 15 gallons) – 10:33 a.m. pH 7.26 temp 14.9C
4th sample (@ 20 gallons) – 10:35 a.m. pH 7.25 temp 14.0C
5th sample (@25 gallons) – 10:38 a.m. pH 7.23 temp 13.9C

Please let me know if you have any questions.

Thank you,
Clara

From: Clara Cardoza
Sent: Thursday, March 7, 2019 3:34 PM
To: 'Smith, Cory, EMNRD' <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Water Sampling
Hilcorp Energy will conduct field sampling for water analysis at the Phillips 2E cathodic well on Friday March 15th at 9:00 a.m.

Water samples from the Phillips 2E cathodic well will be collected for API water and pH laboratory analysis.

Water Quality Parameters
During cathodic well purging, water quality parameters will be measured with a EcoSense pH and temperature at 5 gallon intervals and recorded.

Sample Collection
All samples collected for laboratory analysis will be placed into new, clean, laboratory-supplied containers and labeled, placed on ice and logged onto sample chain of custody records. Samples will be maintained on ice until delivery to the analytical laboratory, Envirotech in Farmington NM.

Prior to sample collection, approximately three well volumes will be purged from the well to confirm that the groundwater within the well has reached a state of equilibrium.

Laboratory Analyses
Once the cathodic well has been purged, water samples will be collected for the following laboratory analyses:

- pH
- API Water

Deliverables
Once cathodic well water laboratory analytical results are obtained, a copy will be forwarded to NMOCD.

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Tuesday, March 5, 2019 10:59 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

Any update on the submittal of a plan?

Cory Smith
Environmental Specialist
Oil Conservation Division
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1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Thursday, February 7, 2019 7:56 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Thank you for looking into this Cory. Hilcorp is working on a sample plan and will submit that to you soon.

Thanks again,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Thursday, February 7, 2019 7:48 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

I did some further research after our onsite Tuesday at the Philips #2E in regards to the pH hold times. HEC is correct that the hold time for pH is 15 minutes. In the past EPA documents recommended pH hold time As Soon As Possible and have recently clarified that to be 15 minutes.

As I mentioned OCD witness the collected of water samples that run pH all the time, Typically when collecting water samples the operator checks the field parameters and ensure that the water being collected is stable prior to collecting the sample. These parameters can range for TDS, pH, Temperature, conductivity etc. These field parameters are then confirmed via the laboratory sample.

As previously discussed HEC needs to provide to the OCD a plan to sample the ground water.

Cory Smith
Environmental Specialist
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1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Wednesday, January 30, 2019 2:10 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory,
Hilcorp has found a way to auger into the cathodic well. We have done some field testing and would like to sample again with the NMOCD present on Tuesday, February 5th at 9 a.m. Hilcorp will calibrate the field testing equipment the morning of sampling which you are welcome to witness at 8:15 a.m. at the Aztec office.

Please let me know if you have any questions or concerns.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Tuesday, January 15, 2019 9:42 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

OCD denies HEC request for No Further Action, Although there is no longer any surface flow sampling has shown an impact to the groundwater. Without access to the water there is no way to verify the water quality. It is HilCorp's responsibility under 19.15.30 NMAC and 20.6.2.6 NMAC to verify there is no longer water contamination.

Please provide to the OCD District III no later than January 30, 2019 a plan to sample ground water.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
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(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Wednesday, January 9, 2019 4:06 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory,
Hilcorp does not have a solution for entering this cathodic well. As a result of this well being sealed off to the surface it is no longer a threat to freshwater, human health or the environment. We therefore request NFA required at this facility.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Wednesday, January 2, 2019 11:26 AM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

Thank you for the update it is unfortunate that the integrity the well has been compromised however, Hilcorp still needs to be able to collect ground water samples from the Cathodic well to show that the pH level is within standards as previous communicated and the cathodic well does not present a threat to fresh water, human health or the environment.

Please provide to the OCD no later than January 9, 2019 a plan to sample ground water.

Cory Smith
Environmental Specialist
Oil Conservation Division

Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Thursday, December 27, 2018 1:52 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory,

HEC installed a pressure gauge and valve on the ground bed vent tube on the Phillips 2E, as requested by NMOCD. HEC representative went out a couple of days later, to check on the ground bed since the temperatures had been dropping so low and found the vent tube had frozen and had broken off inside the casing. HEC had to cut the casing at ground level to repair the vent tube.

After digging around it and cutting the casing off at ground level, a break in the vent tube was found. We temporally plugged the vent tube with an expandable rubber plug to stop any water from flowing out while we completed repair. It seems that after the vent froze and broke, the water started building up inside the casing and froze and possibly swelled up and pulled the collar off of the next section. We had to dig further, to around 5' below surface to get to the collar. We were able to get it set back in place. We backfilled with bentonite and then cement to make sure the collar stayed sealed and we didn't have any more issues with it. We also pored a bag of bentonite and then a bag of cement into the casing to make sure it was sealed up. There was still no water coming out of the ground bed outside the casing or inside the casing and the plug was still in place in the vent tube.

HEC rep came out the next day after the cement had time to set up to extend the vent tube, tie the junction box back in and clean up. The cement seemed to seal everything up well and there was no water at all at the surface. He removed the plug from the vent and found that there wasn't any water at the surface of the vent or as far down as he could see. We purchased a pH and temperature test pen and he wanted to see how the pH looked and how the pen worked. He attempted to drop a bailer tube down to get a sample. The bailer got hung up and wouldn't go any deeper than maybe 6 or 7 feet and no water sample was collected.

It seems that the vent tube could have had a secondary brake further below the repair and took in some of the bentonite and or cement and sealed off.

Currently there is absolutely no water coming to the surface of this ground bed and no way to get another sample. The issue of surface water has been resolved.

Please let us know if you have any questions.

Thank you,

Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Tuesday, December 18, 2018 3:56 PM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

What is the status of getting this work done at the Cathodic Well?

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Thursday, November 29, 2018 10:47 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, see below in red for answers to your questions.

Thank you,
Clara

-----Original Message-----
From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Wednesday, November 28, 2018 4:56 PM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

OCD is ok with the proposed path forward however we do have some questions.

How is HEC going to apply the lime to the well? HEC will determine an appropriate ratio of hydrated lime solution to apply based on the amount necessary to neutralize a representative sample from the well.

What is the well construction look like? Example how deep is the well? How deep are the anodes? How deep is the water column etc? Construction information This is a heritage COPC Ground Bed and construction information was not provided to HEC. Typical construction is an 8" casing at a depth of 300'-350'.

How long does HEC plan to monitor/sample the well after the application of lime? How does HEC plan to sample the well after the application of lime? The well will need to be purge at a minimum 3 well volumes prior to sampling.

After applying the hydrated lime solution and bailing out the vent tube water volume 3x, HEC will test on site using a calibrated electronic pH/temp water analysis tool, to insure the water is properly neutralized the water in the vent tube. Once water pH is neutral, HEC will plug vent tube below surface.

As for notifications HEC will need to provide OCD notification 24 hours prior to the application of lime and will need to schedule sample at least 2 business days prior.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Clara Cardoza <ccardoza@hilcorp.com>
Sent: Monday, November 26, 2018 1:19 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, attached please find the lab results for the Phillips 2E cathodic well. The pH has come back outside the neutral range and Hilcorp proposes to treat the well with lime to neutralize and resample. Please let me know what notification NMOCD requires going forward with this plan.

Thank you,
Clara

-----Original Message-----
From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Monday, November 19, 2018 3:06 PM
To: Clara Cardoza <ccardoza@hilcorp.com>
Cc: Matt Henderson <mhenderson@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Josh Hatch <jhatch@hilcorp.com>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Good Afternoon Clara,

Has HEC received the results from the water sampling on November 6, 2018?

Thanks,

Cory Smith

Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Josh Hatch <jhatch@hilcorp.com>
Sent: Monday, November 5, 2018 8:55 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Re: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Sure. See you there tomorrow.

Josh Hatch
Pipeline Foreman
Hilcorp Energy Company
970-946-0922

On Mon, Nov 5, 2018 at 8:47 AM -0700, "Smith, Cory, EMNRD"
<Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>> wrote:

Josh,

I have to be on top of the Rincon at 10AM. IF you want to do it first thing in the morning say 8:15-8:30 it's a possibility.

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Josh Hatch <jhatch@hilcorp.com>
Sent: Monday, November 5, 2018 7:30 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory,

Would it work for you to meet earlier Tuesday? If not, could we push it back to 1 pm on Wednesday?

Thank you,
Joshua Hatch
Hilcorp Energy Company
Pipeline Foreman

970-946-0922
jhatch@hilcorp.com<mailto:jhatch@hilcorp.com>

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Monday, November 5, 2018 7:15 AM
To: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>; Josh Hatch <jhatch@hilcorp.com<mailto:jhatch@hilcorp.com>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

I have a water sampling earlier in the day since this site is close to town can we move this back to about 2:15- 2:30PM?

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>
Sent: Saturday, November 3, 2018 4:13 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>; Josh Hatch <jhatch@hilcorp.com<mailto:jhatch@hilcorp.com>>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, Hilcorp has installed a pressure gauge at the Phillips 2E and will collect a sample on Tuesday November 6th at 1 p.m.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Thursday, November 01, 2018 4:51 PM
To: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>

Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

OCD Is requiring HEC to install a pressure gage and collect an additional laboratory water sampling for General API Water (ph, TDS, Cations/Anions). Please schedule with OCD DIII at least 24 hours prior to the collection of the sample.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Griswold, Jim, EMNRD
Sent: Thursday, November 1, 2018 3:29 PM
To: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Hard to be exact on a photograph, but the indicated pH appears to be 4 or 5, perhaps 6. Groundwater standard is between 6 and 9. The pH scale is logarithmic, so there is a tenfold difference in the concentration of hydrogen ions between 5 and 6, and one hundredfold between 4 and 6. There is also the considerations that the well is pressurized and what is causing the production of acidic water in the first place. I believe further action is required.

Jim Griswold
Environmental Bureau Chief
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us<mailto:jim.griswold@state.nm.us>

From: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>
Sent: Thursday, November 1, 2018 2:27 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>

Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, attached are 2 test results showing the pH to be in an acceptable range. Four separate tests were taken, after letting the water run, in 5 minute intervals and similar results were achieved. Also attached is a picture of the cathodic well fenced off and ball valve installed. As such Hilcorp believes no further action is required at this time. Please let us know if you have any further questions.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Thursday, November 1, 2018 10:24 AM
To: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Clara,

Ok thank you for the follow up please have them in by End of Business November 2, 2018 and previous mentioned.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>
Sent: Thursday, November 1, 2018 10:11 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>; Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Matt Henderson <mhenderson@hilcorp.com<mailto:mhenderson@hilcorp.com>>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory, per your conversation with Matt this morning HEC will be pulling a water sample today from the Phillips 2E cathodic. Once Hilcorp receives the results we will follow-up with a path forward.

Thank you,
Clara

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Thursday, November 1, 2018 7:26 AM
To: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Good morning Christine,

I just wanted to verify the ball valve is HEC solution to secure the cathodic well in lieu of a fence for the protection of human health and the environment, and HEC intends to submit a path forward to neutralize the cathodic well by November 2, 2018?

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Sent: Wednesday, October 31, 2018 3:22 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>
Cc: Clara Cardoza <ccardoza@hilcorp.com<mailto:ccardoza@hilcorp.com>>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>
Subject: [EXT] FW: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Good afternoon Cory –

In order to protect fresh water, human health and environment Hilcorp has installed a ball valve on the vent tubing and the cathodic is no longer leaking. Please let contact me if you have any questions or concerns.

Thank you,

Christine Brock
Hilcorp Energy Company
San Juan South Regulatory
Office: 505-324-5155
cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>

From: Josh Hatch

On Friday afternoon, I went ahead and installed a ball valve on the vent tubing. It's no longer leaking.

[Image]

Thanks,
Josh Hatch
Pipeline Foreman
Hilcorp Energy Company
970-946-0922
From: Christine Brock
Sent: Friday, October 19, 2018 9:43 AM
To: Josh Hatch <jhatch@hilcorp.com<mailto:jhatch@hilcorp.com>>; Freddie Garcia <fgarcia@hilcorp.com<mailto:fgarcia@hilcorp.com>>; Roman Lucero <rlucero@hilcorp.com<mailto:rlucero@hilcorp.com>>; Trey Sullivan <tsullivan@hilcorp.com<mailto:tsullivan@hilcorp.com>>
Cc: Kandis Roland <kroland@hilcorp.com<mailto:kroland@hilcorp.com>>; Cheryl Weston <cweston@hilcorp.com<mailto:cweston@hilcorp.com>>
Subject: FW: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Please see Cory's note below regarding the test results of the Phillips #2E. Please note the November 2nd deadline.

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Friday, October 19, 2018 9:20 AM
To: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us<mailto:Jim.Griswold@state.nm.us>>; Perrin, Charlie, EMNRD <charlie.perrin@state.nm.us<mailto:charlie.perrin@state.nm.us>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Good Morning Christine,

After reviewing the laboratory results from the Phillip's #2E cathodic well the pH is significantly below the 3103 standards for fresh water (typically within the range of 6-9) and is acidic. HEC needs to provide the OCD a path forward to neutralize and monitor the water no later than November 2, 2018. In the meantime HEC need to fence and secure the cathodic well for the protection of fresh water, human health and the environment.

If you have any additional questions please give me a call.

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources

1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Sent: Thursday, October 18, 2018 9:32 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Good morning Cory,

I thought I had sent these to you. I apologize that I must have missed it. Here are the reading we took during inspection and the water sample results.

Thank you,
Christine

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Thursday, October 18, 2018 7:51 AM
To: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>
Subject: RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Christine,

Any results from the water sample?

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

From: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Sent: Thursday, October 4, 2018 7:35 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us<mailto:Cory.Smith@state.nm.us>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>
Subject: [EXT] RE: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Cory –
This cathodic on the subject well has been inspected. There we no H2S or LEL present. A water sample was collected and sent in for testing. I will send those to you as soon as I received them.

Thank you,
Christine Brock
Hilcorp Energy Company
San Juan South Regulatory
Office: 505-324-5155
cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>

From: Smith, Cory, EMNRD [mailto:Cory.Smith@state.nm.us]
Sent: Monday, September 24, 2018 8:59 AM
To: Christine Brock <cbrock@hilcorp.com<mailto:cbrock@hilcorp.com>>
Cc: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us<mailto:Vanessa.Fields@state.nm.us>>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us<mailto:Brandon.Powell@state.nm.us>>; Vermersch, Thomas, EMNRD <Thomas.Vermersch@state.nm.us<mailto:Thomas.Vermersch@state.nm.us>>
Subject: [EXTERNAL] Phillips #2E 30-045-24407 Cathodic Well

Christine,

An OCD inspector found a Cathodic well at the Phillips #2E that is leaking liquids from around the top near a vent cap.

HEC needs to inspect the cathodic well and make sure no LEL levels are emitting from the wellhead and collect a water sample testing for General API Water (ph, TDS, Cations/Anions)

Please notify the OCD when an inspection will occur and when HEC receives the sample back.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us<mailto:cory.smith@state.nm.us>

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envirotech
Analytical Laboratory

Analytical Report

Report Summary

Client: Hilcorp Energy Co

Samples Received: 3/15/2019
Job Number: 17051-0002
Work Order: P903027
Project Name/Location: Phillips 2E Cathotic

Report Reviewed By: Walter Hinchman Date: 3/21/19

Walter Hinchman, Laboratory Director

NELAP ACCREDITED TNI LABORATORY

Envirotech Inc. certifies the test results meet all requirements of TNI unless footnoted otherwise.
Statement of Data Authenticity: Envirotech, Inc, attests the data reported has not been altered in any way.
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envirotech
Analytical Laboratory

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Phillips 2E	P903027-01A	Water	03/15/19	03/15/19	Poly 250mL

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Phillips 2E

P903027-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Wet Chem/Gravimetric									
Total Dissolved Solids	**3460**	10.0	mg/L	1	1911030	03/15/19	03/21/19	SM2540C	
Dissolved Metals by 6010									
Sodium Absorption Ratio	**6.49**		N/A	1	1912018	03/20/19	03/20/19	[CALC]	
Calcium	**465**	1.00	mg/L	1	1912001	03/18/19	03/19/19	EPA 6010C	
Iron	ND	2.00	mg/L	1	1912001	03/18/19	03/19/19	EPA 6010C	
Magnesium	**25.6**	1.00	mg/L	1	1912001	03/18/19	03/19/19	EPA 6010C	
Potassium	**11.7**	1.00	mg/L	1	1912001	03/18/19	03/19/19	EPA 6010C	
Sodium	**531**	2.00	mg/L	1	1912001	03/18/19	03/19/19	EPA 6010C	
Anions by 300.0/9056A									
Fluoride	ND	25.0	mg/L	100	1911019	03/18/19	03/18/19	EPA 300.0/9056A	
Chloride	ND	200	mg/L	100	1911019	03/18/19	03/18/19	EPA 300.0/9056A	
Nitrite-N	ND	25.0	mg/L	100	1911019	03/18/19 10:47	03/18/19 17:13	EPA 300.0/9056A	H2
Nitrate-N	ND	25.0	mg/L	100	1911019	03/18/19 10:47	03/18/19 17:13	EPA 300.0/9056A	H2
o-Phosphate-P	ND	25.0	mg/L	100	1911019	03/18/19 10:47	03/18/19 17:13	EPA 300.0/9056A	H2
Sulfate	**2300**	200	mg/L	100	1911019	03/18/19	03/18/19	EPA 300.0/9056A	
Wet Chemistry									
pH @25°C	**7.40**		pH Units	1	1912002	03/18/19 10:49	03/18/19 13:25	9040C/4500 H+B	H1
Specific Conductance (@ 25 C)	**4070**	10.0	uS/cm	1	1912006	03/18/19	03/18/19	9050A/2510 B	
Total Alkalinity (as CaCO3 at pH 4.5)	**96.5**	10.0	mg/L	1	1912005	03/18/19	03/19/19	SM2320B	
Bicarbonate Alkalinity (as CaCO3)	**96.5**		mg/L	1	1912005	03/18/19	03/18/19	SM2320B	
Hydroxide Alkalinity (as CaCO3)	0.00		mg/L	1	1912005	03/18/19	03/18/19	SM2320B	
Carbonate Alkalinity (as CaCO3)	0.00		mg/L	1	1912005	03/18/19	03/18/19	SM2320B	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Wet Chem/Gravimetric - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1911030 - Wet Chemistry Preparation										
Blank (1911030-BLK1)				Prepared: 03/15/19 1 Analyzed: 03/21/19 1						
Total Dissolved Solids	ND	10.0	mg/L							
LCS (1911030-BS1)				Prepared: 03/15/19 1 Analyzed: 03/21/19 1						
Total Dissolved Solids	76.0	10.0	mg/L	100		76.0	50-150			
Duplicate (1911030-DUP1)	**Source: P903023-01**			Prepared: 03/15/19 1 Analyzed: 03/21/19 1						
Total Dissolved Solids	367	10.0	mg/L		381			3.74	5	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Dissolved Metals by 6010 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1912001 - Metals Water Hotblock Digestion EPA 3010A/200.2										
Blank (1912001-BLK1)				Prepared: 03/18/19 0 Analyzed: 03/19/19 1						
Calcium	ND	1.00	mg/L							
Iron	ND	2.00	"							
Magnesium	ND	1.00	"							
Potassium	ND	1.00	"							
Sodium	ND	2.00	"							
LCS (1912001-BS1)				Prepared: 03/18/19 0 Analyzed: 03/19/19 1						
Calcium	44.3	1.00	mg/L	50.0		88.6	80-120			
Iron	92.2	2.00	"	100		92.2	80-120			
Magnesium	48.6	1.00	"	50.0		97.1	80-120			
Potassium	4.69	1.00	"	5.00		93.8	80-120			
Sodium	17.6	2.00	"	20.0		87.9	80-120			
LCS Dup (1912001-BSD1)				Prepared: 03/18/19 0 Analyzed: 03/19/19 1						
Calcium	52.6	1.00	mg/L	50.0		105	80-120	17.1	20	
Iron	108	2.00	"	100		108	80-120	15.6	20	
Magnesium	52.7	1.00	"	50.0		105	80-120	8.12	20	
Potassium	5.11	1.00	"	5.00		102	80-120	8.65	20	
Sodium	18.8	2.00	"	20.0		94.2	80-120	6.92	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Anions by 300.0/9056A - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1911019 - Anion Extraction EPA 300.0/9056A										
Blank (1911019-BLK1)				Prepared & Analyzed: 03/18/19 1						
Fluoride	ND	0.250	mg/L							
Chloride	ND	2.00	"							
Nitrite-N	ND	0.250	"							
Nitrate-N	ND	0.250	"							
o-Phosphate-P	ND	0.250	"							
Sulfate	ND	2.00	"							
LCS (1911019-BS1)				Prepared & Analyzed: 03/18/19 1						
Fluoride	2.39	0.250	mg/L	2.50		95.7	90-110			
Chloride	25.0	2.00	"	25.0		100	90-110			
Nitrite-N	2.42	0.250	"	2.50		96.8	90-110			
Nitrate-N	2.44	0.250	"	2.50		97.6	90-110			
o-Phosphate-P	12.1	0.250	"	12.5		97.1	90-110			
Sulfate	24.6	2.00	"	25.0		98.5	90-110			
Matrix Spike (1911019-MS1)		**Source: P903023-01**		Prepared & Analyzed: 03/18/19 1						
Fluoride	2.80	0.250	mg/L	2.50	0.339	98.3	80-120			
Chloride	47.4	2.00	"	25.0	22.5	99.3	80-120			
Nitrite-N	2.48	0.250	"	2.50	ND	99.3	80-120			
Nitrate-N	2.54	0.250	"	2.50	ND	102	80-120			
o-Phosphate-P	15.6	0.250	"	12.5	3.97	92.9	80-120			
Sulfate	122	2.00	"	25.0	100	85.5	80-120			
Matrix Spike Dup (1911019-MSD1)		**Source: P903023-01**		Prepared & Analyzed: 03/18/19 1						
Fluoride	2.80	0.250	mg/L	2.50	0.339	98.4	80-120	0.0715	20	
Chloride	47.4	2.00	"	25.0	22.5	99.6	80-120	0.156	20	
Nitrite-N	2.50	0.250	"	2.50	ND	99.9	80-120	0.562	20	
Nitrate-N	2.53	0.250	"	2.50	ND	101	80-120	0.158	20	
o-Phosphate-P	15.6	0.250	"	12.5	3.97	93.2	80-120	0.179	20	
Sulfate	122	2.00	"	25.0	100	86.1	80-120	0.118	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Wet Chemistry - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1912002 - Wet Chemistry Preparation										
LCS (1912002-BS1)				Prepared & Analyzed: 03/18/19 1						
pH	7.97		pH Units	8.00		99.8	98.75-101.25			
Duplicate (1912002-DUP1)		**Source: P903023-01**		Prepared & Analyzed: 03/18/19 1						
pH	8.10		pH Units		8.10			0.00	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Wet Chemistry - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1912005 - Wet Chemistry Preparation										
LCS (1912005-BS1)				Prepared & Analyzed: 03/18/19 1						
Total Alkalinity (as CaCO3 at pH 4.5)	255	10.0	mg/L	250		102	70-130			
LCS Dup (1912005-BSD1)				Prepared & Analyzed: 03/18/19 1						
Total Alkalinity (as CaCO3 at pH 4.5)	235	10.0	mg/L	250		94.0	70-130	8.16	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Wet Chemistry - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1912006 - Wet Chemistry Preparation										
Blank (1912006-BLK1)				Prepared & Analyzed: 03/18/19 1						
Specific Conductance (@ 25 C)	ND	10.0	uS/cm							
LCS (1912006-BS1)				Prepared & Analyzed: 03/18/19 1						
Specific Conductance (@ 25 C)	1420	10.0	uS/cm	1410		101	98-102			
Duplicate (1912006-DUP1)		**Source: P903027-01**		Prepared & Analyzed: 03/18/19 1						
Specific Conductance (@ 25 C)	4120	10.0	uS/cm		4070			1.22	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathotic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	03/21/19 15:26

Notes and Definitions

H2	Sample was analyzed after regulatory hold-time exceeded for target analyte.
H1	Sample was received after regulatory hold-time exceeded for target analyte.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
**	Methods marked with ** are non-accredited methods.

Project Information | Chain of Custody | Page 1 of 1

Project Information		Report Attention		Lab Use Only		TAT		EPA Program		
Client: Hilcorp Energy		Report due by:		Lab WO# P903027	Job Number 17051-0002	1D	3D	RCRA	CWA	SDWA
Project: Phillips 2E Cathotic		Attention: Clara Cardoza								
Project Manager: Clara Cardoza		Address:		Analysis and Method					State	
Address:		City, State, Zip							NM CO UT AZ	
City, State, Zip Aztec NM 87410		Phone:								
Phone: 505.564.0733		Email: ccardoza@hilcorp.com								
Email: ccardoza@hilcorp.com										

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	TPH 418.1	EPA pkg					Remarks
10:38am	3/15/19	Water	-	Phillips 2E	1								X					

Additional Instructions: VIS ice in cooler

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: _____

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Clara Cardoza	3/15/19	11:23am	Rana Lopez	3-15-19	11:23
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Lab Use Only
Received on ice: Y / N
T1 _____ T2 _____ T3 _____
AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other _____

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboraotry is limited to the amount paid for on the report.

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Three Springs • 65 Mercado Street, Suite 115, Durango, CO 81301 | Ph (970) 259-0615 Fr (800) 362-1879
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laboratory@envirotech-inc.com

envirotech
Analytical Laboratory

Analytical Report

Report Summary

Client: Hilcorp Energy Co

Samples Received: 6/10/2019
Job Number: 17051-0002
Work Order: P906032
Project Name/Location: Phillips 2E Cathodic

Report Reviewed By: Date: 6/17/19

Walter Hinchman, Laboratory Director

NELAP ACCREDITED TNI LABORATORY

Envirotech Inc. certifies the test results meet all requirements of TNI unless footnoted otherwise.
Statement of Data Authenticity: Envirotech, Inc, attests the data reported has not been altered in any way.
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Envirotech, Inc, currently holds the appropriate and available Utah TNI certification NM009792018-1 for the data reported.

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Phillips 2E	P906032-01A	Aqueous	06/10/19	06/10/19	Poly 500mL

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Phillips 2E

P906032-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Wet Chem/Gravimetric									
Total Dissolved Solids	**3630**	10.0	mg/L	1	1924044	06/13/19	06/17/19	SM2540C	
Dissolved Metals by 6010									
Calcium	**479**	1.00	mg/L	1	1924020	06/12/19	06/13/19	EPA 6010C	
Iron	ND	2.00	mg/L	1	1924020	06/12/19	06/13/19	EPA 6010C	
Magnesium	**27.4**	1.00	mg/L	1	1924020	06/12/19	06/13/19	EPA 6010C	
Potassium	**12.5**	1.00	mg/L	1	1924020	06/12/19	06/13/19	EPA 6010C	
Sodium	**630**	20.0	mg/L	10	1924020	06/12/19	06/16/19	EPA 6010C	
Sodium Absorption Ratio	**7.58**		N/A	1	1925006	06/17/19	06/17/19	[CALC]	
Anions by 300.0/9056A									
Chloride	**8.14**	2.00	mg/L	1	1923029	06/11/19	06/12/19	EPA 300.0/9056A	
Fluoride	**0.767**	0.250	mg/L	1	1923029	06/11/19	06/12/19	EPA 300.0/9056A	
Nitrate-N	ND	0.250	mg/L	1	1923029	06/11/19 09:15	06/11/19 15:14	EPA 300.0/9056A	
Nitrite-N	ND	0.250	mg/L	1	1923029	06/11/19 09:15	06/11/19 15:14	EPA 300.0/9056A	
o-Phosphate-P	ND	0.250	mg/L	1	1923029	06/11/19 09:15	06/11/19 15:14	EPA 300.0/9056A	
Sulfate	**2160**	10.0	mg/L	5	1923029	06/11/19	06/12/19	EPA 300.0/9056A	
Wet Chemistry									
Total Alkalinity (as CaCO3 at pH 4.5)	**94.1**	10.0	mg/L	1	1924015	06/12/19	06/12/19	SM2320B	
Specific Conductance (@ 25 C)	**3960**	10.0	uS/cm	1	1925001	06/17/19	06/17/19	9050A/2510 B	
pH @25°C	**7.13**		pH Units	1	1924012	06/12/19 07:57	06/12/19 12:09	9040C/4500 H+B	H1

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Wet Chem/Gravimetric - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1924044 - Wet Chemistry Preparation										
Blank (1924044-BLK1)				Prepared: 06/13/19 1 Analyzed: 06/17/19 1						
Total Dissolved Solids	ND	10.0	mg/L							
LCS (1924044-BS1)				Prepared: 06/13/19 1 Analyzed: 06/17/19 1						
Total Dissolved Solids	94.0	10.0	mg/L	100		94.0	50-150			
LCS Dup (1924044-BSD1)				Prepared: 06/13/19 1 Analyzed: 06/17/19 1						
Total Dissolved Solids	91.0	10.0	mg/L	100		91.0	50-150	3.24	5	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Dissolved Metals by 6010 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1924020 - Metals Water Hotblock Digestion EPA 3010A/200.2										
Blank (1924020-BLK1)				Prepared: 06/12/19 1 Analyzed: 06/13/19 1						
Calcium	ND	1.00	mg/L							
Iron	ND	2.00	"							
Magnesium	ND	1.00	"							
Potassium	ND	1.00	"							
Sodium	ND	2.00	"							
LCS (1924020-BS1)				Prepared: 06/12/19 1 Analyzed: 06/13/19 1						
Calcium	49.7	1.00	mg/L	50.0		99.4	80-120			
Iron	101	2.00	"	100		101	80-120			
Magnesium	48.0	1.00	"	50.0		96.0	80-120			
Potassium	4.88	1.00	"	5.00		97.6	80-120			
Sodium	17.9	2.00	"	20.0		89.4	80-120			
Matrix Spike (1924020-MS1)	**Source: P906034-01**			Prepared: 06/12/19 1 Analyzed: 06/13/19 1						
Calcium	95.5	1.00	mg/L	50.0	42.6	106	75-125			
Iron	119	2.00	"	100	11.6	107	75-125			
Magnesium	55.1	1.00	"	50.0	2.40	105	75-125			
Potassium	9.53	1.00	"	5.00	3.33	124	75-125			
Sodium	142	2.00	"	20.0	122	97.0	75-125			
Matrix Spike Dup (1924020-MSD1)	**Source: P906034-01**			Prepared: 06/12/19 1 Analyzed: 06/13/19 1						
Calcium	105	1.00	mg/L	50.0	42.6	124	75-125	9.31	20	
Iron	130	2.00	"	100	11.6	118	75-125	8.94	20	
Magnesium	56.4	1.00	"	50.0	2.40	108	75-125	2.35	20	
Potassium	9.70	1.00	"	5.00	3.33	127	75-125	1.77	20	SPK1
Sodium	147	2.00	"	20.0	122	125	75-125	3.80	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Anions by 300.0/9056A - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1923029 - Anion Extraction EPA 300.0/9056A										
Blank (1923029-BLK1)				Prepared: 06/07/19 0 Analyzed: 06/12/19 1						
Fluoride	ND	0.250	mg/L							
Chloride	ND	2.00	"							
Nitrite-N	ND	0.250	"							
Nitrate-N	ND	0.250	"							
o-Phosphate-P	ND	0.250	"							
Sulfate	ND	2.00	"							
LCS (1923029-BS1)				Prepared: 06/07/19 0 Analyzed: 06/11/19 2						
Fluoride	2.56	0.250	mg/L	2.50		103	90-110			
Chloride	25.3	2.00	"	25.0		101	90-110			
Nitrite-N	2.43	0.250	"	2.50		97.3	90-110			
Nitrate-N	2.56	0.250	"	2.50		102	90-110			
o-Phosphate-P	12.3	0.250	"	12.5		98.8	90-110			
Sulfate	24.1	2.00	"	25.0		96.3	90-110			
LCS Dup (1923029-BSD1)				Prepared: 06/07/19 0 Analyzed: 06/11/19 2						
Fluoride	2.59	0.250	mg/L	2.50		104	90-110	0.970	20	
Chloride	25.6	2.00	"	25.0		102	90-110	0.955	20	
Nitrite-N	2.45	0.250	"	2.50		97.8	90-110	0.574	20	
Nitrate-N	2.58	0.250	"	2.50		103	90-110	0.972	20	
o-Phosphate-P	12.5	0.250	"	12.5		100	90-110	1.17	20	
Sulfate	24.3	2.00	"	25.0		97.4	90-110	1.14	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Wet Chemistry - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1924012 - Wet Chemistry Preparation										
LCS (1924012-BS1)				Prepared: 06/12/19 0 Analyzed: 06/12/19 1						
pH	7.99		pH Units	8.00		99.9	98.75-101.25			
Duplicate (1924012-DUP1)		**Source: P906032-01**		Prepared: 06/12/19 0 Analyzed: 06/12/19 1						
pH	7.15		pH Units		7.13			0.280	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Wet Chemistry - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1924015 - Wet Chemistry Preparation										
LCS (1924015-BS1)				Prepared: 06/12/19 0 Analyzed: 06/12/19 1						
Total Alkalinity (as CaCO3 at pH 4.5)	255	10.0	mg/L	250		102	70-130			
Duplicate (1924015-DUP1)	**Source: P906032-01**			Prepared: 06/12/19 0 Analyzed: 06/12/19 1						
Total Alkalinity (as CaCO3 at pH 4.5)	98.0	10.0	mg/L		94.1			4.06	20	

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Wet Chemistry - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1925001 - Wet Chemistry Preparation										
Blank (1925001-BLK1)				Prepared: 06/17/19 0 Analyzed: 06/17/19 1						
Specific Conductance (@ 25 C)	ND	10.0	uS/cm							
LCS (1925001-BS1)				Prepared: 06/17/19 0 Analyzed: 06/17/19 1						
Specific Conductance (@ 25 C)	1420	10.0	uS/cm	1410		100	98-102			
Duplicate (1925001-DUP1)		**Source: P906032-01**		Prepared: 06/17/19 0 Analyzed: 06/17/19 1						
Specific Conductance (@ 25 C)	3940	10.0	uS/cm		3960			0.506	20	

QC Summary Report
Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values my differ slightly.

Hilcorp Energy Co	Project Name:	Phillips 2E Cathodic	
PO Box 61529	Project Number:	17051-0002	**Reported:**
Houston TX, 77208	Project Manager:	Clara Cardoza	06/17/19 17:10

Notes and Definitions

SPK1	The spike recovery is outside of quality control limits.
H1	Sample was received after regulatory hold-time exceeded for target analyte.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
**	Methods marked with ** are non-accredited methods.

Project Information | Chain of Custody | Page 1 of 1

Project Information		Report Attention		Lab Use Only		TAT		EPA Program		
Client: Hilcorp		Report due by:		Lab WO# P906032	Job Number 17051-0002	1D	3D	RCRA	CWA	SDWA
Project: Phillips 2E Cathodic		Attention: Clara Cardoza								
Project Manager: Clara Cardoza		Address:		Analysis and Method					State	
Address:		City, State, Zip							NM CO UT AZ	
City, State, Zip		Phone:								
Phone: 505.564.0733		Email:								
Email: CCardoza@hilcorp.com										

Time Sampled	Date Sampled	Matrix	No Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	TPH 418.1	APT	Cation/Anion				Remarks
9:16	6/10	Water	1	Phillips 2E	1									X				

Additional Instructions: Billing Attn: Clara Cardoza

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: Josh Hatch

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	6/10/19	9:40	[signature]	6/10/19	9:40
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Lab Use Only
Received on ice: (Y) / N
T1 T2 T3
AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboraotry is limited to the amount paid for on the report.

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