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REVIEWED
By Olivia Yu at 3:32 pm, Jun 15, 2018

May 31, 2018

Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division, District 1
1625 N. French Drive
Hobbs, NM 88240

Re: State A-10
2018 Remediation Activities – Scope of Work
Case No. 1RP-3637
Lea County, New Mexico

Dear Ms. Yu,

Please find enclosed for your files copies of the following report:

- 2018 Remediation Activities - Scope of Work – State A-10, Buckeye Field; Lea County, New Mexico.

The scope of work was prepared by Arcadis U.S. Inc. (Arcadis) on behalf of Chevron Environmental Management Company (CEMC) propose remedial activities for the site.

Please do not hesitate to call Brett Krehbiel with Arcadis at 916-786-5382 or myself at 713-372-0289, should you have any questions.

Sincerely,

Jason Michelson

Encl. 2018 Remediation Activities - Scope of Work – State A-10

C.C. Amy Barnhill, Chevron/MCBU

ARCADIS Design & Consultancy for natural and built assets

Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division – District I
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ENVIRONMENT

Subject:
2018 Remediation Activities – Scope of Work
2018 HES Transfer Site – State A-10
NMOCD Case No. 1RP-3637
Lea County, New Mexico

Date:
May 31, 2018

Contact:
Brett Krehbiel

Phone:
916.786.5382
Email:
Brett.Krehbiel@arcadis.com

Our ref:
B0048616

ARCADIS U.S., Inc.
TX Engineering License # F-533

Dear Ms. Yu:

Arcadis U.S., Inc. (Arcadis) has prepared this scope of work (SOW) for Chevron Environmental Management Company (CEMC) to perform environmental remediation services at the State A-10 project site, located in Lea County, New Mexico (Figure 1).

A project summary and specific tasks for the proposed SOW are detailed below.

Project Summary

According to the submitted New Mexico Oil Conservation Division (NMOCD) Notification of Release and Correction Action (Form C141), a release of barrels (bbls [42 gallons per bbl]) of oil and 5.57 bbls of produced water occurred at the site on May 3, 2015 due to the failure of a rod blowout preventer located below the stuffing box. Initial response activites were conducted by Chevron personnel from the Mid-Continent Business Unit (MCBU). Approximately 1-foot of visually affected soil in the area were excavated and four discrete confirmation soil samples were collected from the base of the excavation on July 6, 2015 by Chevron MCBU personnel. After collecting the soil samples, the excavated area was reportedly backfilled with imported soil.

Arcadis conducted soil assessment activities in June 2016, September 2016 and December 2017. Five soil borings (State A10-01 through State A10-05 were

advanced to depths ranging from 30 to 70 feet below ground surface (bgs) and two soil borings (State A10-06 and State A10-07) was advanced to 4 feet bgs.

Total petroleum hydrocarbons – gasoline range organics (TPH-GRO) was detected the 20-foot bgs sample collected from State A10-04 at a concentration of 16 milligrams per kilogram (mg/kg). All other total petroleum hydrocarbon fraction concentrations were not detected above laboratory reporting limits. Chloride was detected at concentrations greater than the NMOCD soil remediation action level of 600 mg/kg for vertical delineation in soil samples collected from State A10-02 (50 and 70 feet bgs). Chloride was detected at concentrations greater than the NMOCD soil remediation action level of 250 mg/kg for lateral delineation in soil samples collected from State A10-01 (4 feet bgs) and State A10-02 (20, 30, 50, and 70 feet bgs).

On December 6 and 7, 2017, Arcadis performed an electromagnetic conductivity survey over accessible areas of the site covering approximately 2.3 acres to determine background electrical conductivity (EC) response and identify EC anomalies within the surveyed area to assess the lateral extent of possible produced water-related soil and impacts. No significant elevated EC responses are observed within the vicinity of the red outline spill extent on site. Low to moderate EC response surrounding the pumpjack at the southern edge of the spill zone is likely attributed to metallic interference. Approximately 70 feet south of the outlined spill, an area of high EC response located west of monitoring well State A10-MW1, does not intersect the outlined spill extent and therefore does not appear to be associated with a release within the State A-10 area. Two small perched high conductivity zones located outside of the outlined spill area (west of soil boring State A10-01) are discontinuous and isolated to approximately 7 to 16 feet bgs. The features do not appear to be associated with a release within the State A-10 spill area.

Groundwater monitoring wells State A10-MW1, State A10-MW2, and State A10-MW3 were installed in September 2016. Groundwater samples were collected from the three monitoring wells and submitted to the project laboratory in September 2016 and June 2017. Chloride was detected at concentrations less than the NMOCD screening level of 250 milligrams per liter (mg/L) in groundwater samples collected from State A10-MW1, State A10-MW2, and State A10-MW3.

As discussed with yourself and Bradford Billings at the NMOCD on February 13, 2018, a mass removal approach will be exercised, due to the presence of surface and subsurface features/facilities, to remove majority of Chloride impacts in soil to 4 feet bgs were practically feasible. Following execution of remedial activities, a letter report will be submitted to the NMOCD summarizing the assessment, electromagnetic conductivity survey and excavation activities.

Utility Determination Survey and Soil Excavation

Arcadis will conduct the following activities associated with utilities identification and excavation activities:

- Coordinating utility clearance activities (e.g. New Mexico State One Call, private locating service, Dig Plan process and wet vac).
- Potholing to expose the buried lines within or in proximately to the proposed area of excavation.

- Sidewall samples will be field tested for chloride content to assist in determining excavation limits.
- If the field testing results of sidewall samples are below the regulatory limit of 600 part per million (ppm) or where surface or subsurface infrastructure inhibit continued excavation, field personnel will submit confirmation soil samples in laboratory-supplied sample containers, labeled, placed on ice, and provided to a New Mexico certified laboratory under chain of custody protocol. Expedited turnaround time (2 business days) laboratory analysis will be requested for all soil samples. Each sample will be analyzed for Chloride by Environmental Protection Agency (EPA) Method 300.0. Only the excavation sidewall samples will be collected.
- Once chloride impacted soils have been excavated, either to below the regulatory limit or to the extent possible due to the location of subsurface or surface infrastructure, a liner will be placed within the limits of the excavation footprint and clean fill will be used to backfill the excavated areas.
- The excavation will not extend within 10 feet of subsurface lines or 30 feet of surface structures. Excavated soil will be characterized and disposed of at regulatory approved/permitted disposal facility.

If you have any questions or comments, please contact Brett Krehbiel at 916.786.5382 or by email at brett.krehbiel@arcadis.com or Greg Cutshall at 859.287.0242 or by e-mail at greg.cutshall@arcadis.com.

Sincerely,

Arcadis U.S., Inc.

Brett Krehbiel
Certified Project Manager

Greg Cutshall
Program Manager

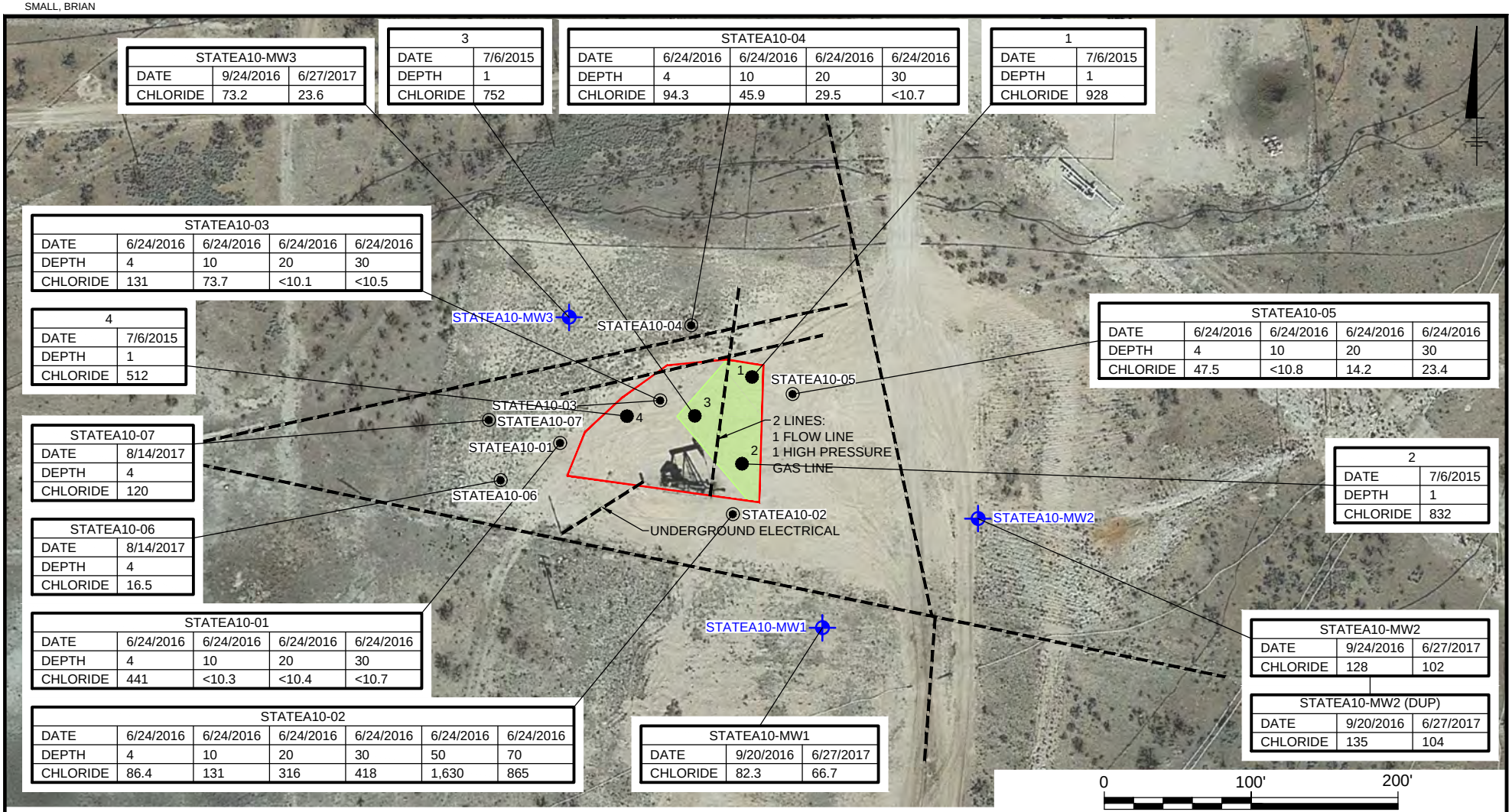
Copies:

File

Enclosures:

Figure
1 State A-10 Soil and Groundwater Analytical Results

CITY: MANCHESTER DIV/GROUP: ENVCAD DB: B.SMALL PM: TM
C:\Users\BSSmall\OneDrive - ARCADIS\BIM 360 Docs\CHEVRON CORPORATION\State A-10\2018\B0048625.1701\01-DWG\Data-Soil-Fig1.dwg LAYOUT: 2 SAVED: 4/26/2018 7:22 PM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 5/1/2018 2:11 PM BY: SMALL, BRIAN



STATEA10-MW3		
DATE	9/24/2016	6/27/2017
CHLORIDE	73.2	23.6

3	
DATE	7/6/2015
DEPTH	1
CHLORIDE	752

STATEA10-04				
DATE	6/24/2016	6/24/2016	6/24/2016	6/24/2016
DEPTH	4	10	20	30
CHLORIDE	94.3	45.9	29.5	<10.7

1	
DATE	7/6/2015
DEPTH	1
CHLORIDE	928

STATEA10-03				
DATE	6/24/2016	6/24/2016	6/24/2016	6/24/2016
DEPTH	4	10	20	30
CHLORIDE	131	73.7	<10.1	<10.5

4	
DATE	7/6/2015
DEPTH	1
CHLORIDE	512

STATEA10-05				
DATE	6/24/2016	6/24/2016	6/24/2016	6/24/2016
DEPTH	4	10	20	30
CHLORIDE	47.5	<10.8	14.2	23.4

STATEA10-07	
DATE	8/14/2017
DEPTH	4
CHLORIDE	120

2	
DATE	7/6/2015
DEPTH	1
CHLORIDE	832

STATEA10-06	
DATE	8/14/2017
DEPTH	4
CHLORIDE	16.5

STATEA10-01				
DATE	6/24/2016	6/24/2016	6/24/2016	6/24/2016
DEPTH	4	10	20	30
CHLORIDE	441	<10.3	<10.4	<10.7

STATEA10-MW2		
DATE	9/24/2016	6/27/2017
CHLORIDE	128	102

STATEA10-MW2 (DUP)		
DATE	9/20/2016	6/27/2017
CHLORIDE	135	104

STATEA10-02						
DATE	6/24/2016	6/24/2016	6/24/2016	6/24/2016	6/24/2016	6/24/2016
DEPTH	4	10	20	30	50	70
CHLORIDE	86.4	131	316	418	1,630	865

STATEA10-MW1		
DATE	9/20/2016	6/27/2017
CHLORIDE	82.3	66.7

LEGEND:

- JULY 2015 ASSESSMENT SOIL SAMPLING LOCATION
- SOIL BORING LOCATION
- MONITORING WELL LOCATION
- APPROXIMATE EXTENT OF RELEASE
- UNDERGROUND UTILITY LINE
- PROPOSED EXCAVATION AREA

NOTES:

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO.
2. FMT REQUIRES BORING TO BE AT MINIMUM 10 FEET FROM UNDERGROUND UTILITIES.
3. ALL RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/kg) FOR SOIL AND MILLIGRAMS PER LITER (mg/L) FOR GROUNDWATER.
4. NEW MEXICO OIL CONSERVATION DIVISION (NMOCD) SOIL REMEDIATION ACTION LEVEL OF 250 mg/kg FOR LATERAL DELINEATION
5. NMOCD SOIL REMEDIATION ACTION LEVEL OF 600 mg/kg FOR VERTICAL DELINEATION
6. NMOCD GROUNDWATER REMEDIATION ACTION LEVEL OF 250 mg/L

VACUUM/LOVINGTON FUNCTIONAL MANAGEMENT TEAM UNITS
LEA COUNTY, NEW MEXICO

2018 REMEDIATION ACTIVITIES SCOPE OF WORK

STATE A-10 SOIL AND GROUNDWATER ANALYTICAL RESULTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2