Jason Michelson
Project Manager

Chevron Environmental Management Company
1500 Louisiana Street, #38116
Houston, Texas 77002
Work: 832-854-5601
Cell: 281-660-8564
jmichelson@chevron.com

October 24, 2019

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

Re: Lovington Paddock Unit No. 89 Well Site
Case No. 1RP- 4017
2019 Work Plan
Lea County, New Mexico

Dear whom it concerns,

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

- Lovington Paddock Unit No. 89 Well Site 1RP-4017 2019 Work Plan

The submittal was prepared by Arcadis U.S., Inc. (Arcadis) on behalf of Chevron Environmental Management Company (CEMC).

Please do not hesitate to call Scott Foord with Arcadis at 713-953-4853 or myself at 832-854-5601, should you have any questions.

Sincerely,

Jason Michelson

Encl. Lovington Paddock Unit No. 89 Well Site 1RP-4017 2019 Work Plan

C.C. Amy Barnhill, Chevron/MCBU

ARCADIS Design & Consultancy for natural and built assets

New Mexico Oil Conservation Division – District I
Upstream Business Unit
1625 N. French Drive
Hobbs, New Mexico 88240

Arcadis U.S., Inc.
1004 North Big Spring Street
Suite 121
Midland
Texas 79701
Tel 432 687 5400
Fax 432 687 5401
www.arcadis.com

ENVIRONMENT

Subject:
2019 Remediation Work Plan
Lovington Paddock Unit No. 89 Well Site
Case No. 1RP-4017
Lea County, New Mexico

Date:
October 24, 2019

Contact:
Scott Foord

Phone:
713.953.4853

Email:
William.foord@arcadis.com

Our ref:

ARCADIS U.S., Inc.
TX Engineering License # F-533
Geoscientist License # 50158

Dear New Mexico Oil Conservation Division:

PROJECT SUMMARY

The Lovington Paddock Unit No. 89 (LPU No. 89) (the Site) is located in Unit E, Section 31, Township 16 South, Range 37 East, approximately 5.00-miles southeast of the City of Lovington (COL), in eastern Lea County, New Mexico. Arcadis U.S., Inc. (Arcadis) understands the surface property is owned by the COL and the minerals are managed by the New Mexico State Land Office (NMSLO). The LPU No. 89 well was plugged and abandoned in July 2010. A dry hole marker is present at the location and surface equipment has been removed from the Site.

NMOCD CLOSURE REQUIREMENT CRITERIA FOR SOILS

Historic subsurface investigation activities were completed in accordance with the Guidelines for Remediation of Leaks, Spills, and Releases Rule 19.15.29 New Mexico Administrative Code (NMAC) from the New Mexico Oil Conservation Division (NMOCD) dated August 13, 1993. The former site-specific Recommended Remediation Action Levels (RRALs) previously applied to this location by the NMOCD were 10 milligrams per kilogram (mg/kg) for benzene, 50 mg/kg for total BTEX, 100 mg/kg for total TPH, and 600 mg/kg for horizontal and 250 mg/kg for vertical delineation of chloride.

Rule 19.15.29 was revised and reissued on August 14, 2018. The following criteria from Table 1 (below) within NMAC 19.15.29.12 was utilized to determine site-specific screening limits.

New Mexico Oil Conservation
Division
October 24, 2019

Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l TDS	Constituents	Limit*
≤50 feet	Chloride**	600 mg/kg
	TPH (GRO + DRO + MRO)	100 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

* Numerical limits or natural background level, whichever is greater.

** This applies to release of produced water or other fluids which may contain chloride.

Localized depth to groundwater was confirmed to be approximately 100 feet below ground surface (bgs) in 2018 based on gauging information from monitoring wells MW-1 through MW-5 associated with the LPU-96 Site (RP-1665) located approximately 0.5 miles south/southwest of the Site. Additionally, information available from various sources including the New Mexico Office of the State Engineer (NMOSE) Points of Diversion (POD) Location Mapping Portal, Petroleum Recovery Research Center (PRRC) Mapping Portal, currently managed groundwater site(s) data by Arcadis, and the United States Geological Survey (USGS) Current Water Database for the Nation, concludes:

a) the depth to groundwater at the Site is estimated at 100-feet bgs;

b) the site is not within 300 feet of any continuously flowing watercourse;

c) the site is not within 200 feet of any lakebed, sinkhole or playa lake;

d) the site is not within 300 feet of an occupied permanent residence, school, etc.;

e) the site is not within 500 feet of a spring or private, domestic fresh water well;

f) **the site is within 500 feet of a fresh water well** or spring (Lovington Municipal Water Supply well is located approximately 350 feet north of the Site);

g) the site is not within incorporated municipal boundaries or within a defined municipal fresh water well field;

h) the site is not within 300 feet of a wetland;

i) the site is not within an area overlying a subsurface mine;

j) the site is not within an unstable area; and

k) the site is not within a 100-year floodplain.

Consequently, the anticipated site-specific screening limits to be applied to this location by the NMOCD remain unchanged from previous regulations and continue under the revised Rule as 10 mg/kg for benzene, 50 mg/kg for total BTEX, 100 mg/kg for total TPH, and 600 mg/kg for chloride.

Per 19.15.29.13, Restoration, Reclamation, and Re-vegetation, the impacted area must be remediated a minimum of 4-feet bgs with non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. Soil cover must consist of topsoil at a thickness comparable to background topsoil thicknesses, or one foot of suitable earthen material capable of establishing and maintaining vegetation at the site. Reclamation is considered complete when all disturbed areas have established vegetative cover with a life-form ratio of plus or minus 50 percent of pre-remedial levels, and plant cover of a minimum of 70 percent of previous levels, excluding noxious weeds.

Evaluation of the analytical data obtained from soil assessment and delineation activities performed from 2015 through 2018 indicate horizontal and vertical delineation of chloride impacts has been achieved at the Site to support remediation activities (excavation and lining of the area).

SCOPE OF WORK

The scope of work for this project in 2019 will involve soil remediation activities inclusive of excavation, sampling, lining the excavation, backfilling, and restoration (reseeding) of the impacted area and additionally the entire well pad area (see Figure 1).

Chloride impacted caliche well pad material and soil will be excavated accompanied by confirmation soil sample analysis. Field screening of soils for chloride will be performed in order to guide excavation activities. Subsequently, the excavation will be lined, backfilled with clean caliche material and soil, graded and contoured to ensure proper surface area drainage, and the soil (off-pad areas) fertilized and re-seeded. The following outlines basic project details that will be completed by Arcadis and Chevron subcontractors.

Field Program

- Prior to mobilizing excavation equipment to the Site, a New Mexico 811 utility notification will be made at least 48-hours prior to mobilization.
- In addition to the utility locate, data from the geophysical survey conducted prior to 2018 drilling activities will be re-evaluated for the proposed excavation area.
- Following all utility clearance activities, a Chevron Dig Plan will be prepared and approved by Chevron prior to performing any excavation activities.
- Underground utilities in proximity to the proposed excavation area will be day-lighted via hydroexcavation prior to remedial excavation activities.
- Approximately 1,400 cubic yards (cy) of shallow sub-surface area consisting of caliche well pad materials and off-pad soil areas will be excavated (see Figure 1). Impacted soil in the affected area will be excavated until field screening indicates that the soil is below the limit for chloride (600 mg/kg) specified in NMMAC 19.15.29.13 D (1) until a depth of 4 feet bgs is reached or continued excavation becomes impractical from the presence of shallow bedrock.

- Soils will be field screened for chloride during excavation activities utilizing Hach® chloride test strips. Soils with field screening results above 600 mg/kg will be transported to an approved disposal facility.
- Five-point composite confirmation soil samples will be collected from the excavation floor and sidewalls at 200 square feet intervals for analysis of chloride by EPA Method 300. Lateral limits of the excavation will halt once confirmation sample analytical results are 600 mg/kg chloride or less.
- If impacts appear to extend past four feet bgs, the sides of the excavation will be sloped, and a 20-mil polyethylene liner will be placed in the bottom of the excavation. Liner seams will be overlapped a minimum of 24 inches. Each liner will be placed without rips or tears.
- The excavation will be backfilled with caliche and soil from an off-site borrow pit (Pearce Ranch Trust) to grade.
- In addition to the remediation area, the remaining well pad area will be removed and restored (backfilled with soil from an off-site borrow pit).
- The disturbed area will be fertilized and re-seeded with a Bureau of Land Management-approved seed mix.

Quality Assurance/ Quality Control

Confirmation soil sampling will be completed in accordance with our standard Quality Assurance/ Quality Control procedures designed to minimize cross-contamination between samples and to provide reliable laboratory results.

Reporting

A report summarizing remediation activities will be submitted to the NMOCD and New Mexico State Land Office (NMSLO). The report will include a Site description, project history, description of field events, a discussion of results, and recommendations (if any).

The report will include:

- A scaled Site plan showing the locations of the excavation, confirmation soil samples, and other Site features;
- Tabulation of field screening and laboratory analytical results; and
- Geotagged photographic documentation of field activities.

Vegetation Monitoring

Following completion of soil remediation activities at the Site, and as required by the NMSLO, Arcadis will conduct vegetation monitoring visits to the Site. The status of vegetative growth within the remediated and restored former well pad area will be documented with photographs and in field notes during each visit. A closure request report will be completed following one year of monitoring for submittal to NMSLO if growth conditions at the Site are acceptable.

New Mexico Oil Conservation
Division
October 18, 2019

WORK PLAN APPROVAL REQUEST

Arcadis is prepared to initiate the scope of work immediately. If you have any questions or comments with regards to this work plan, please do not hesitate to contact our Houston office at (713) 953-4853. Your timely response to this correspondence is appreciated.

Sincerely,

Arcadis U.S., Inc.

Greg Cutshall

Program Manager

Scott Foord

Project Manager

Copies:

Jason Michelson - CEMC

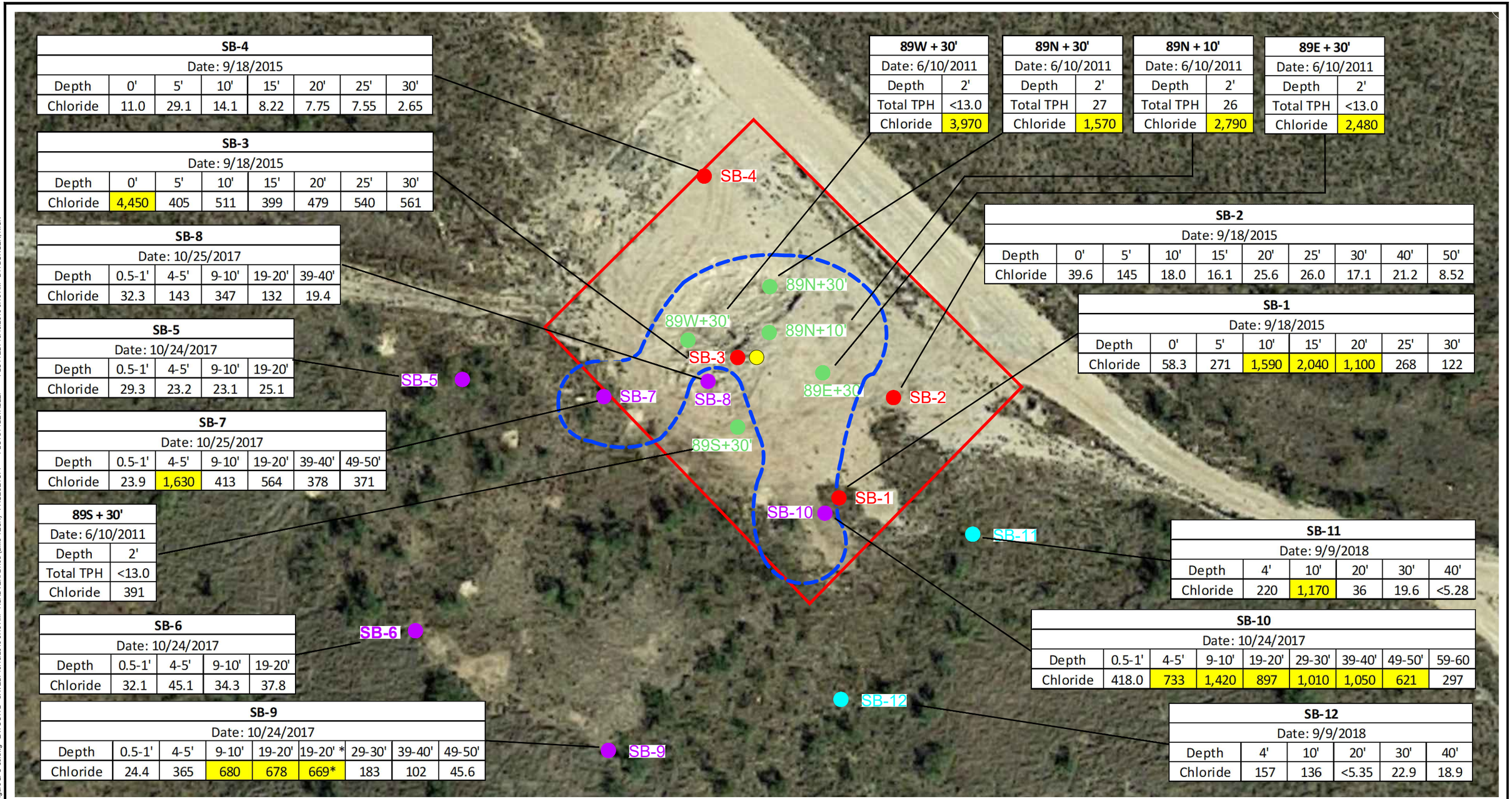
Figures

1 Proposed Excavation and Pad Restoration Map

07/09/2021 Approved

Bradford Billings

Bradford Billings Envi. Spec.A
EMNRD/OCD



SB-4							
Date: 9/18/2015							
Depth	0'	5'	10'	15'	20'	25'	30'
Chloride	11.0	29.1	14.1	8.22	7.75	7.55	2.65

SB-3							
Date: 9/18/2015							
Depth	0'	5'	10'	15'	20'	25'	30'
Chloride	4,450	405	511	399	479	540	561

SB-8					
Date: 10/25/2017					
Depth	0.5-1'	4-5'	9-10'	19-20'	39-40'
Chloride	32.3	143	347	132	19.4

SB-5				
Date: 10/24/2017				
Depth	0.5-1'	4-5'	9-10'	19-20'
Chloride	29.3	23.2	23.1	25.1

SB-7						
Date: 10/25/2017						
Depth	0.5-1'	4-5'	9-10'	19-20'	39-40'	49-50'
Chloride	23.9	1,630	413	564	378	371

89S + 30'	
Date: 6/10/2011	
Depth	2'
Total TPH	<13.0
Chloride	391

SB-6				
Date: 10/24/2017				
Depth	0.5-1'	4-5'	9-10'	19-20'
Chloride	32.1	45.1	34.3	37.8

SB-9								
Date: 10/24/2017								
Depth	0.5-1'	4-5'	9-10'	19-20'	19-20' *	29-30'	39-40'	49-50'
Chloride	24.4	365	680	678	669*	183	102	45.6

89W + 30'	
Date: 6/10/2011	
Depth	2'
Total TPH	<13.0
Chloride	3,970

89N + 30'	
Date: 6/10/2011	
Depth	2'
Total TPH	27
Chloride	1,570

89N + 10'	
Date: 6/10/2011	
Depth	2'
Total TPH	26
Chloride	2,790

89E + 30'	
Date: 6/10/2011	
Depth	2'
Total TPH	<13.0
Chloride	2,480

SB-2									
Date: 9/18/2015									
Depth	0'	5'	10'	15'	20'	25'	30'	40'	50'
Chloride	39.6	145	18.0	16.1	25.6	26.0	17.1	21.2	8.52

SB-1							
Date: 9/18/2015							
Depth	0'	5'	10'	15'	20'	25'	30'
Chloride	58.3	271	1,590	2,040	1,100	268	122

SB-11					
Date: 9/9/2018					
Depth	4'	10'	20'	30'	40'
Chloride	220	1,170	36	19.6	<5.28

SB-10								
Date: 10/24/2017								
Depth	0.5-1'	4-5'	9-10'	19-20'	29-30'	39-40'	49-50'	59-60
Chloride	418.0	733	1,420	897	1,010	1,050	621	297

SB-12					
Date: 9/9/2018					
Depth	4'	10'	20'	30'	40'
Chloride	157	136	<5.35	22.9	18.9

LEGEND

SB-1	Soil Boring Location - 2011		Well Pad Restoration Area
SB-1	Soil Boring Location - 2015		Proposed Excavation Limits
SB-1	Soil Boring Location - 2017	DEPTH	Depth of Sample (FT)
SB-1	Soil Boring Location - 2018	*	Indicates Duplicate Sample
	LPU #89 Well Marker	TPH	Total Petroleum Hydrocarbons in (mg/kg)

**NOTE: 1. All analytical results are reported in mg/kg; 2. Yellow shaded cells exceeded the 600 mg/kg screening limit for chloride depicted in 19.15.29 NMAC; 3. "<" Indicates below laboratory detection limit.

0 40' 80'

GRAPHIC SCALE

LOVINGTON PADDOCK UNIT #89
CEMC
LEA COUNTY, NEW MEXICO

PROPOSED EXCAVATION & PAD RESTORATION

ARCADIS

FIGURE 1

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: Arcadis U.S., Inc 630 Plaza Drive Highlands Ranch, CO 80129	OGRID: 329073
	Action Number: 2077
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bbillings	Approved work plan as written.	7/9/2021