

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-141  
Revised April 3, 2017  
Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

## Release Notification and Corrective Action

1 NAB1729751209 **OPERATOR** ☒ Initial Report ☐ Final Report

Name of Company WJ Sweatt	OGRID# 24375	Contact Bill Sweat
Address PO BOX 827, Artesia, NM 88210		Telephone No. 575-365- 6807
Facility Name Sun Federal #1 Battery		Facility Type Production Pit
Surface Owner United States (BLM)	Mineral Owner United States	API No. 30-15-05711

## LOCATION OF RELEASE

Unit Letter L	Section 20	Township 19S	Range 31E	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
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Latitude 32.643609 Longitude -103.896065 NAD83 (Google Earth)

## NATURE OF RELEASE

Type of Release Seepage from previously-authorized production pit	Volume of Release Unknown	Volume Recovered 0
Source of Release Seepage from unlined production pit	Date and Hour of Occurrence 1962-present	Date and Hour of Discovery
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*  
Upon notice by BLM, the operator ceased discharges to the production pit

Describe Area Affected and Cleanup Action Taken.\*  
The attached Remediation Plan calls for additional investigation, closure, and surface restoration of the tank battery, and in-place closure of the pit.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

## OIL CONSERVATION DIVISION

Signature: <u>Randall Hicks</u>	Approved by Environmental Specialist: <u>Accepted for record</u>	
Printed Name: Randall Hicks	Approval Date: <u>10/24/17</u>	Expiration Date: <u>N/A</u>
Title: Agent	Conditions of Approval: <u>see attached</u>	
E-mail Address: <u>r@rthicksconsult.com</u>	Attached <input checked="" type="checkbox"/> <u>20P-4149</u>	
Date: September 15, 2017	Phone: (505) 238-9515	

\* Attach Additional Sheets If Necessary

10/24/17 AB

Operator/Responsible Party,

The OCD has received the form C-141 you provided on **9/15/17** regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP4449 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District II office in Artesia on or before 10/15/17. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

**Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.**

**Jim Griswold**

OCD Environmental Bureau Chief

1220 South St. Francis Drive

Santa Fe, New Mexico 87505

505-476-3465

jim.griswold@state.nm.us

## Weaver, Crystal, EMNRD

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Friday, September 15, 2017 3:46 PM  
**To:** hprice@blm.gov; Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** mike@rthicksconsult.com; Randy Hicks; buddy\_delong@msn.com  
**Subject:** Sweat - Sun Fed #1 Remediation Plan  
**Attachments:** SunFed1RemedPlan\_complete.pdf

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

**From:** [Weaver, Crystal, EMNRD](#)  
**To:** "Kristin Pope"; [hprice@blm.gov](mailto:hprice@blm.gov); [Bratcher, Mike, EMNRD](#)  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); [Randy Hicks](#); [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan  
**Date:** Monday, November 20, 2017 12:45:00 PM  
**Attachments:** [1. 4449 - COAs and signed C-141 Initial.pdf](#)

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RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

I have included a scanned copy of the Initial C-141 Remediation Permit, that was accepted for record, along with an attached Conditions of Approval. The OCD tracking number for this event is 2RP-4449. Please remit a newly written work plan that includes the updated items we discussed during meeting of 11/9/17 by no later than 11/30/17.

Thank you,

## Crystal Weaver

Environmental Specialist  
OCD – Artesia District II  
811 S. 1<sup>st</sup> Street  
Artesia, NM 88210  
Office: 575-748-1283 ext. 101  
Cell: 575-840-5963  
Fax: 575-748-9720

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**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

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Carlsbad Field Office  
575.302.6755

## Bratcher, Mike, EMNRD

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**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Monday, November 20, 2017 1:36 PM  
**To:** Weaver, Crystal, EMNRD; hprice@blm.gov; Bratcher, Mike, EMNRD  
**Cc:** mike@rthicksconsult.com; 'Randy Hicks'; buddy\_delong@msn.com  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

Thanks. Working it out now....

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

---

**From:** Weaver, Crystal, EMNRD [mailto:Crystal.Weaver@state.nm.us]  
**Sent:** Monday, November 20, 2017 12:46 PM  
**To:** Kristin Pope; hprice@blm.gov; Bratcher, Mike, EMNRD  
**Cc:** mike@rthicksconsult.com; Randy Hicks; buddy\_delong@msn.com  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

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<[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

Cc: [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

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Carlsbad Field Office  
575.302.6755



**Bratcher, Mike, EMNRD**

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Tuesday, November 21, 2017 4:42 PM  
**To:** Weaver, Crystal, EMNRD; hprice@blm.gov; Bratcher, Mike, EMNRD  
**Cc:** mike@rthicksconsult.com; 'Randy Hicks'; buddy\_delong@msn.com  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan  
**Attachments:** CompletePitRemedPlan\_SunFed1.pdf

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.

Hope y'all have a great Thanksgiving holiday.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

---

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**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** Sweat - Sun Fed #1 Remediation Plan

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Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996  
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

November 21, 2017

Mr. Mike Bratcher, Ms. Crystal Weaver  
New Mexico Oil Conservation Division  
811 S. 1st Street  
Artesia, NM 88210  
Via E-Mail

Ms. Henryetta Price  
Bureau of Land Management  
620 E. Greene Street  
Carlsbad, NM 88220  
Via E-mail

RE: Sun Federal #1 Production Pit Remediation Plan  
API #30-015-05711, Case # 2RP-4449

Dear Mr. Bratcher, Ms. Weaver, and Ms. Price:

Thank you for discussing this project with us on November 9, 2017. On behalf of WJ Sweat (operator), Hicks Consultants submits the following:

- Summary of work to date, presentation of data and interpretations (Appendix A, B)
- A sampling and analysis plan for additional characterization
- A Corrective Action Plan for the former production pit

As discussed during the recent meeting, we will re-submit a surface restoration plan to replace the one previously-submitted on September 15 after delineation and remediation of the former pit area detailed herein is complete.

## Proposed Remediation Plan for Production Pit

### Presumptive Corrective Action

The goal of the corrective action presented below is to prevent upward migration of deleterious hydrocarbons in vadose zone water upward to the root zone. Additionally, the proposed corrective action will minimize or prevent downward migration of deleterious hydrocarbons in vadose water. We propose the following:

- A. Create a health and safety plan for the work described below.
- B. Based upon physical characteristics, place impacted material in one stockpile and what appears to be clean material in a separate stockpile.
- C. Currently, the depth of the pit floor is approximately 4 feet below surrounding surface. The pit floor is compacted and mounded such that it would shed infiltrating water. Expand the existing 20 x 30 excavation at the former produced water pit and use physical observations during excavation to determine the horizontal extent of impact of hydrocarbons to the depth of at least 4 feet. The excavation will extend 2-feet *beyond* the area of impact into clean earth material on all sides.

November 21, 2017

Page 2

- D. Throughout the process, slope the sidewalls of the excavation as necessary to comply with any OSHA requirements.
- E. Collect four (four) samples along the east, west, north and south walls of the excavation to quantify the lateral extent of impact from past authorized disposal to the pit and more recent disposal practices.
- F. Over a sloped surface of compacted, impacted material and adjacent clean earth in the excavation, place 20-mil, string-reinforced LLDPE liner. At the center of the pit, a conduit pipe will be placed through the liner to facilitate a soil boring. The liner will be secured to the riser pipe with tape, cement and any other mechanisms recommended by the liner manufacturer.
- G. Over the liner, place 3 feet of clean excavated material plus 1-foot of earthen material that will support vegetation, which may be borrowed dune sand in this area.
- H. Conduct a soil boring to delineate vertical extent of hydrocarbon impact.
  - 1. Collect a split-spoon sample every five feet of depth beginning at 10 feet.
  - 2. Evaluate all samples in the field for chloride concentrations and volatile organic compounds (hydrocarbons) using the titration method described in Appendix C and the heated headspace method using a photoionization detector (PID) manufacturer's instructions respectively. Advancement will terminate when physical characteristics and PID readings from the samples indicate that measured volatile hydrocarbons are less than 100 ppm.
  - 3. Submit at least 20% of the samples to a laboratory for analysis of chloride and BTEX, including but not limited to the 10-foot sample and the last/deepest sample.
  - 4. If the soil boring is terminated because volatile hydrocarbons do not extend to within 50-feet of groundwater, then the boring will be sealed with bentonite.
  - 5. If our observations indicate a hydrocarbon threat to groundwater, the boring may remain open or converted into a vapor extraction well in consultation with OCD. If this is the case, a plan will be submitted to OCD addressing a threat to groundwater caused by un-authorized disposal of produced water in the pit (i.e. disposal after 2003).

Stockpiles of soils excavated for the liner installation will be analyzed for chloride concentration for suitability of use in a subsequent plan for surface restoration of the entire battery location.

### **Schedule of Implementation**

OCD and BLM will be notified 48 hours prior to any significant field work of this plan. We will begin implementation the following work elements after written approval from OCD:

- Collect lateral samples from each direction from the pit
- Install liner as described
- Install conduit pipe at the center of the former pit and through the liner, extending above the final backfill surface
- Backfill as described
- Vertical delineation with a soil boring. If analyses indicate that hydrocarbon impact from the pit may be a threat to groundwater, a subsequent plan will be submitted to address this threat.

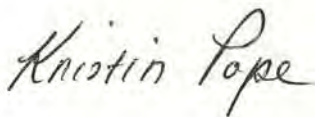
November 21, 2017

Page 3

If hydrocarbon impact dissipates with depth before threatening groundwater, a Surface Restoration Plan for the tank battery location and historic crude releases will be submitted for the approval of the surface owner (BLM) with a copy to OCD. After the surface restoration work is completed, a report and final C-141 form will be submitted to OCD and BLM.

Sincerely,

R. T. Hicks Consultants

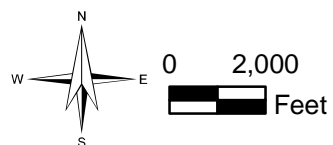
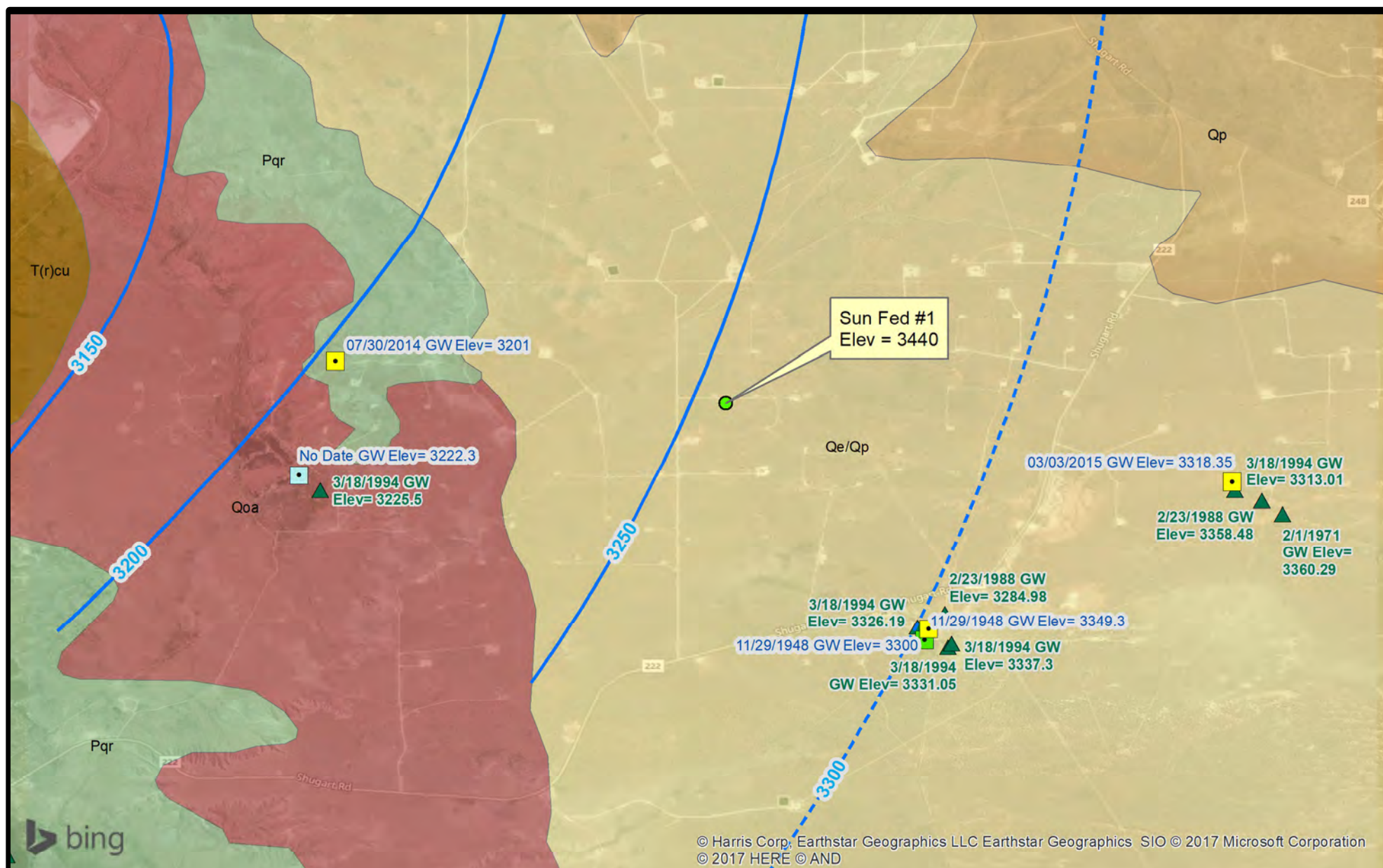
A handwritten signature in cursive script that reads "Kristin Pope". The signature is written in dark ink on a light-colored background.

Kristin Pope  
Project Geologist

Enclosures: plates, appendices as stated

Copy: WJ Sweatt  
Buddy DeLong

# Plates 1 and 2



R.T. Hicks Consultants, Ltd  
901 Rio Grande Blvd NW Suite F-142  
Albuquerque, NM 87104  
Ph: 505.266.5004

Geology and Groundwater Elevation

Plate 1

Sweatt - Sun Federal #1

Nov 2017



**Legend****Potentiometric Surface  
(Feet MSL)**

- Inferred Isocontour  
— Isocontour

**USGS Gauging Station (GW Elev, Date)****Aquifer Code, Well Status**

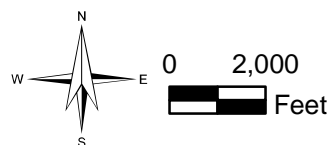
- ▲ Rustler

**NM Geology****Map Unit, Description**

- Pqr, Paleozoic-Quartermaster and Rustler Formations; Upper Permian  
■ Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian  
■ Qe/Qp, Quaternary-Eolian Piedmont Deposits  
■ Qoa, Quaternary-Older Alluvial Deposits  
■ Qp, Quaternary-Piedmont Alluvial Deposits  
■ Qpl, Quaternary-Lacustrine and Playa Deposits  
■ T(r)cu, Triassic-Upper Chinle Group

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Geology and Groundwater Elevation	Plate 1 LEGEND
	Sweatt - Sun Federal #1	Nov 2017





R.T. Hicks Consultants, Ltd  
901 Rio Grande Blvd NW Suite F-142  
Albuquerque, NM 87104  
Ph: 505.266.5004

Surface Water, Wetlands and Mapped Watercourses

Plate 2

Sweatt - Sun Federal #1

Nov 2017

# **Appendix A**

## **Site History**

## Appendix A Site History

### Hydrogeologic Setting and Natural Vegetation

Our investigation of available data conclude:

1. The depth to groundwater at the site is about (3440-3260=) 180 feet (Plate 1).
2. Groundwater flows from southwest to northeast based upon USGS well data from the Quartermaster/Rustler Formation that are shown on the map.
3. The Quartermaster Formation is dominated by silty sandstones and siltstones. The sandstone beds of the Quartermaster may be the saturated unit from which stock and domestic wells located southeast and east of the Sun Federal #1 draw water. Alternatively, these wells may draw water from the underlying Rustler.
4. There are no down-gradient wells between the Sun Federal battery and the potash tailings pond aside from one oilfield supply well measured by Hicks Consultants in 2014. The well consisted of above-ground metal casing and groundwater elevation was recorded at 3201 feet ASL (Plate 1). We have not visited the well since then and are unsure if it still exists.
5. Plate 2 shows that the nearest surface water and mapped watercourses are about 1 mile northwest of the site. The tailings pond is visible in the northwest corner of this Plate.
6. The surface near the battery is characterized by low sand dunes that are stabilized by shinnery oak, shrubs and grass.

### Authorized Waste Disposal and Operational History

The Sun Federal #1 well was drilled in late 1961 and went into production early in 1962. When the well began production, all produced water was discharged to an unlined production pit, which was an allowable practice at the time. In April of 1986, WJ Sweatt took over operations of this well from Mewbourne Oil. At this time, production pits for all wells in this area continued to receive produced water. We understand that a primary reason that discharge of produced water to unlined production pits in this field was allowed until the late 1990s and early 2000s is the proximity of the unlined potash tailings pond to the west. Plate 1 suggests that tailings pond overlies the recharge area (outcrop) of the Permian rocks that are the source of groundwater in the area as well as the shallow alluvium within the drainage.

Past actions authorized by OCD Rules created conditions at the Sun Federal #1 battery and nearby oil and gas wells that now may be considered environmental threats. The files show that OCD inspected the well (and presumably the battery) in 2005 and issued a notice of violation due to the lack of signage for the well. No mention of the production pit is found in the OCD online files. Presumably, OCD and BLM inspected the well and battery numerous times over the past several decades. Upon notification by BLM in late 2016 that the unlined produced water disposal pit was not authorized, WJ Sweat ceased discharge into the pit. The unlined potash tailings pond that lies down gradient with respect to groundwater has not been restored and would continue to be a groundwater recharge area to underlying sediments and rocks.

### Discussion and Conclusions

Authorized disposal of produced water in the unlined production pit occurred from the 1960s to the early 2000s, the same authorized practice occurred throughout the oil field. Concurrently, the unlined potash tailings pond has caused seepage to the subsurface for many decades and

## Appendix A Site History

continues to do so. With respect to groundwater flow, the seepage of brine from the tailings pond to the subsurface occurs directly down gradient of the Sun Federal #1 battery and other batteries in the oil field.

These data permit a conclusion that threats to groundwater quality in the area are the unlined potash tailings pond, which operates in compliance with New Mexico Rules, and past actions in the oil field that were authorized by OCD. Compared to these other sources, the contribution of the unauthorized discharge to the Sun Federal #1 pit is so small as to be nil.

### Characterization of Former Unlined Production Pit

To provide site-specific data suitable for a remediation plan under Part 29 of OCD Rules, Hicks Consultants conducted the following work elements.

On August 2, 2017, stockpiles of clean material were staged to isolate the pit from run-on of stormwater. With the backhoe at the same level as the bottom of the pit (2-3 feet bgs), excavation of a sampling trench found visually-impacted soil material to a depth of 10 feet bgs. Because of the nature of the “flowing sands” and obvious hydrocarbon staining in the excavation, additional, deeper sampling would be appropriate. While samples were collected at two foot intervals by the backhoe, only three samples were evaluated in the laboratory (see Table 1 and Appendix A). Excavated material from the sampling trench and adjacent to the pit was placed on a plastic liner and later hauled to an approved disposal facility.

On August 9, 2017, an excavator provided samples from beneath the pit to 25 feet and laboratory analysis are presented in Table 1 and Appendix A. We elected to evaluate samples for chloride as a conservative tracer to determine the vertical extent of impact by produced water. Observations of the physical nature of the samples (staining and odor) were sufficient to determine that impact by hydrocarbon present to total depth of the sampling trench.

**Table 1**

Analytical Results Beneath Pit					
Depth ft BGS	Sample Date	Chloride mg/kg	BTEX mg/kg	GRO+DRO mg/kg	TPH mg/kg
3	8/2/2017	1300	2.67	6204	7654
6	8/2/2017	1010	55.6	9560	11500
10	8/2/2017	848	20	4243	5009
10	8/9/2017	752	HYDROCARBON STAIN AND/OR ODOR OBSERVED		
15	8/9/2017	784			
20	8/9/2017	1520			
25	8/9/2017	1020			

# **Appendix B**

## **Laboratory Analyses**





PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

---

August 11, 2017

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: SUN FEDERAL #1

Enclosed are the results of analyses for samples received by the laboratory on 08/03/17 15:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received:	08/03/2017	Sampling Date:	08/03/2017
Reported:	08/11/2017	Sampling Type:	Soil
Project Name:	SUN FEDERAL #1	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

**Sample ID: BH -1 0' (H702042-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/10/2017	ND	2.03	102	2.00	1.52	
Toluene*	<0.050	0.050	08/10/2017	ND	1.88	94.1	2.00	0.520	
Ethylbenzene*	<0.050	0.050	08/10/2017	ND	1.93	96.7	2.00	0.352	
Total Xylenes*	<0.150	0.150	08/10/2017	ND	5.84	97.4	6.00	0.213	
Total BTX	<0.300	0.300	08/10/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	688	16.0	08/09/2017	ND	464	116	400	7.14		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<100	100	08/08/2017	ND	173	86.6	200	3.06		
DRO >C10-C28	3360	100	08/08/2017	ND	175	87.5	200	4.21	QM-07, QR-03	
EXT DRO >C28-C36	859	100	08/08/2017	ND						

Surrogate: 1-Chlorooctane 73.6 % 28.3-164

Surrogate: 1-Chlorooctadecane 140 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received: 08/03/2017  
 Reported: 08/11/2017  
 Project Name: SUN FEDERAL #1  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 08/03/2017  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: BH -1 3' (H702042-03)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.200	0.200	08/10/2017	ND	2.03	102	2.00	1.52		
Toluene*	<0.200	0.200	08/10/2017	ND	1.88	94.1	2.00	0.520		
Ethylbenzene*	<0.200	0.200	08/10/2017	ND	1.93	96.7	2.00	0.352		
Total Xylenes*	2.67	0.600	08/10/2017	ND	5.84	97.4	6.00	0.213		
Total BTEX	2.67	1.20	08/10/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 136 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1300	16.0	08/09/2017	ND	464	116	400	7.14		
TPH 8015M		mg/kg		Analyzed By: MS						S-06

TPH 8015M	mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	404	100	08/08/2017	ND	173	86.6	200	3.06	
DRO >C10-C28	5800	100	08/08/2017	ND	175	87.5	200	4.21	
EXT DRO >C28-C36	1450	100	08/08/2017	ND					

Surrogate: 1-Chlorooctane 98.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 164 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received: 08/03/2017  
 Reported: 08/11/2017  
 Project Name: SUN FEDERAL #1  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 08/03/2017  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: BH -1 6' (H702042-05)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<1.00	1.00	08/10/2017	ND	2.03	102	2.00	1.52	
Toluene*	3.81	1.00	08/10/2017	ND	1.88	94.1	2.00	0.520	
Ethylbenzene*	14.5	1.00	08/10/2017	ND	1.93	96.7	2.00	0.352	
Total Xylenes*	37.2	3.00	08/10/2017	ND	5.84	97.4	6.00	0.213	
Total BTEx	55.6	6.00	08/10/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 112 % 72-148

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1010	16.0	08/09/2017	ND	464	116	400	7.14		

TPH 8015M		mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	1750	100	08/08/2017	ND	173	86.6	200	3.06		
DRO >C10-C28	7810	100	08/08/2017	ND	175	87.5	200	4.21		
EXT DRO >C28-C36	1940	100	08/08/2017	ND						

Surrogate: 1-Chlorooctane 165 % 28.3-164

Surrogate: 1-Chlorooctadecane 201 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received: 08/03/2017  
 Reported: 08/11/2017  
 Project Name: SUN FEDERAL #1  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 08/03/2017  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: BH -1 10' (H702042-07)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.500	0.500	08/04/2017	ND	2.27	113	2.00	1.36	
Toluene*	<0.500	0.500	08/04/2017	ND	2.10	105	2.00	0.0527	
Ethylbenzene*	7.60	0.500	08/04/2017	ND	2.19	110	2.00	1.11	
Total Xylenes*	12.2	1.50	08/04/2017	ND	6.57	109	6.00	0.942	
Total BTEX	20.0	3.00	08/04/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 112 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	848	16.0	08/04/2017	ND	432	108	400	3.64		

TPH 8015M	mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	633	50.0	08/04/2017	ND	188	94.2	200	2.39	
DRO >C10-C28	3610	50.0	08/04/2017	ND	194	97.0	200	2.57	
EXT DRO >C28-C36	766	50.0	08/04/2017	ND					

Surrogate: 1-Chlorooctane 135 % 28.3-164

Surrogate: 1-Chlorooctadecane 161 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

BILL TO

ANALYSIS REQUEST

Company Name: R.T. Hedges Consulting  
Project Manager: Mike Stoddard  
Address: 2411 S. 15th  
City: Alameda State: NM Zip: 88210  
Phone #: 505-365-5054 Fax #:  
Project #: Project Owner:  
Project Name: Sun Federal No. 1  
Project Location:  
Sample Name: Mike Stoddard  
P.O. #:  
Company: Antonia Consulting  
Attn: Antonia  
Address:  
City: San Juan  
State: Zip:  
Phone #: Fax #:

FOR LAB USE ONLY

(G)RAB OR (C)OMP.

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

SAMPLING

8015M TPH Ext.

8021B BTEX

Total Chloride

Hold

Push

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Lab I.D.

Sample I.D.

4702042

1 BH-1 0'

2 BH-1 1'

3 BH-1 3'

4 BH-1 4'

5 BH-1 6'

6 BH-1 8'

7 BH-1 10'

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8/3/17 34:55

8/3/17 35:00

8/3/17 35:15



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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August 17, 2017

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: SUN FEDERAL #1

Enclosed are the results of analyses for samples received by the laboratory on 08/11/17 16:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager





PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received: 08/11/2017  
 Reported: 08/17/2017  
 Project Name: SUN FEDERAL #1  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 08/09/2017  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: BH-1 10' (H702129-01)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	752	16.0	08/17/2017	ND	400	100	400	3.92	

**Sample ID: BH-1 15' (H702129-02)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	784	16.0	08/17/2017	ND	400	100	400	3.92	

**Sample ID: BH-1 20' (H702129-03)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1520	16.0	08/17/2017	ND	400	100	400	3.92	

**Sample ID: BH-1 25' (H702129-04)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1020	16.0	08/17/2017	ND	400	100	400	3.92	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



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 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received: 08/11/2017  
 Reported: 08/17/2017  
 Project Name: SUN FEDERAL #1  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 08/09/2017  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: S-2 STOCKPILED SOIL (H702129-05)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/15/2017	ND	1.77	88.7	2.00	2.16		
Toluene*	<0.050	0.050	08/15/2017	ND	1.68	83.8	2.00	1.72		
Ethylbenzene*	<0.050	0.050	08/15/2017	ND	1.75	87.5	2.00	1.81		
Total Xylenes*	<0.150	0.150	08/15/2017	ND	5.26	87.7	6.00	1.90		
Total BTEX	<0.300	0.300	08/15/2017	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	08/17/2017	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	08/15/2017	ND	212	106	200	0.639	
DRO >C10-C28	4100	50.0	08/15/2017	ND	211	105	200	1.44	
EXT DRO >C28-C36	1570	50.0	08/15/2017	ND					

Surrogate: 1-Chlorooctane 69.5 % 28.3-164

Surrogate: 1-Chlorooctadecane 182 % 34.7-157

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Celey D. Keene, Lab Director/Quality Manager

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

---

### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

---

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager





## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Company Name: <b>RT. High Consultants</b> Project Manager: <b>Mika Stubbels</b> Address: <b>24115, 15th Street</b> City: <b>Alfred</b> State: <b>NM</b> zip: <b>88700</b> Phone #: <b>505.868.0334</b> Fax #: <b></b> Project #: <b></b> Project Owner: <b>WP Sweet</b> Project Name: <b>Son Federal N61 Tank Battery</b> Project Location: <b></b> Sampler Name: <b>Mike Sweet</b> FOR LAB USE ONLY		P.O. #: <b></b> Company: <b>Sweet</b> Attn: <b>Art Hicks</b> Address: <b></b> City: <b></b> State: <b></b> zip: <b></b> Phone #: <b></b> Fax #: <b></b>	
Lab I.D. <b>HT02128</b> Sample I.D. <b></b>	(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER :	MATRIX ACID/BASE: ICE / COOL OTHER :	DATE TIME
1 BH-1 10' 2 BH-1 15' 3 BH-1 20' 4 BH-1 25' 5 S.2 Stockpiled soil	/ / / / /	/ / / / /	8/9/00 3:09P 3:39P 3:49P 3:59P 4:18P
Total chloride <b>4500</b> 8015M TPH 8021 R BTEX			

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusion remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: **mao Sweet** Date: **8-11-17** Received By: **Juana Delacruz**  
 Relinquished By:  Date:  Received By:   
 Time: **4:20**  
 Sample Condition: ☒ Cool ☒ Intact ☐ Yes ☐ No  
 Checked By: **Y. #75**  
 Remarks:   
 Phone Result: ☐ Yes ☐ No Add'l Phone #:   
 Fax Result: ☐ Yes ☐ No Add'l Fax #:

# **Appendix C**

## **Chloride Field Test Protocol**

R.T. HICKS CONSULTANTS, LTD.

## FIELD PROCEDURE

### Chloride Titration Using 0.282 Normal Silver Nitrate Solution

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#### 1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil and other solids (e.g. drilling waste).

#### 2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

#### 3.0 Sample Collection and Preparation

- 3.1 Collect at least 80 grams of soil from the sample collection point. Take care to ensure that the sample is representative of the general area of concern to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area.
- 3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.
- 3.3 The sealed sample bag should be massaged to break up any clods.

#### 4.0 Sample Preparation

- 4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 10 grams of reverse osmosis water or distilled water to the soil sample and shake or agitate for 20 seconds.
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.
- 4.4 Carefully pour the free liquid extract from the sample, through a paper filter if necessary, into a clean plastic cup.

#### 5.0 Titration Procedure

- 5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.

**R.T. HICKS CONSULTANTS, LTD.**

- 5.2 Add 2-3 drops potassium chromate ( $K_2CrO_4$ ) to mixture.
- 5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide ( $H_2O_2$ ) to mixture.
- 5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.5 Record the ml of silver nitrate used.

**6.0 Calculation**

To obtain the chloride concentration, insert measured data into the following formula:

$$\frac{.282 \times 35,450 \times \text{ml AgNO}_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on a field form.

## Additional Notes

- 1) Make sure the scale is weighing in grams.
- 2) “Zero” the scale with clean, empty 40 ml container (including the cap) sitting on the scale.
- 3) Add 10 to 20 grams of sample soil to the container. Record the weight.
- 4) “Re-zero” the scale.
- 5) Add distilled water to almost fill the container. Record the weight.
- 6) Screw the cap on, and shake the container to thoroughly mix the sample with the distilled water. Set aside to allow settling of the sample. This will take only a few minutes for coarse grained material and up to 20 minutes for very fine grained sediments. The solution does not need to be perfectly clear to continue the procedure.
- 7) Add 3 drops of Potassium Chromate to a small, clean, plastic cup.
- 8) Extract 10 ml (using a large pipette – at least 10 ml) of solution from the sample container and put it into the plastic cup. Record ml of solution placed in the cup.
  - a. This can be kept track of by careful recording of “before” and “after” fluid levels in the pipette.
  - b. Or: Place the plastic cup on the scale with the potassium chromate and “zero” the scale. Add solution to the cup until 10 grams is indicated on the scale.
- 9) Swirl the solution and the potassium chromate to mix them.
- 10) Using a 1 ml pipette, add silver nitrate to the mixed solution drop by drop while swirling. The entire solution will change from a pale lemon yellow color to a brick red color when sufficient silver nitrate has been added. STOP when it all turns brick red. It does not need to be a deep brick red color. This will result in an overly high result. Record ml of silver nitrate used.
- 11) The chloride concentration of the sample is given by:

$$C_{\text{sam}} = (35,450 * 0.282) * \frac{(\text{grams of water})}{(\text{grams of soil})} * \frac{(\text{ml of silver nitrate})}{(\text{ml of solution})}$$

or:

$$C_{\text{sam}} = (9997) * \frac{(\text{grams of water (Step 5)})}{(\text{grams of soil (Step 3)})} * \frac{(\text{ml of silver nitrate (Step 10)})}{(\text{ml of solution (Step 8)})}$$

Units are: mg(of chloride)/kg(of soil)

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**Equipment List:**

Scale

10 ml pipettes

1 ml pipettes

Controllers for pipettes (small and large),

press pipette into open end (carefully)

40 ml sample containers

Small plastic cups

Silver Nitrate

Potassium Chromate

Distilled water

Waste container for final solution. A robust plastic jug with lid will do for field use.

DO NOT pour this down a drain. Dispose of with a chemical lab.

Waste bags for used plastic cups (rinse and pour rinsing fluid into robust jug)

Calculator

Nitrile gloves

Safety glasses

Paper towels

Safety Data

[http://ptcl.chem.ox.ac.uk/~hmc/hsci/chemicals/silver\\_nitrate.html](http://ptcl.chem.ox.ac.uk/~hmc/hsci/chemicals/silver_nitrate.html)

[http://ptcl.chem.ox.ac.uk/~hmc/hsci/chemicals/potassium\\_chromate.html](http://ptcl.chem.ox.ac.uk/~hmc/hsci/chemicals/potassium_chromate.html)

## Bratcher, Mike, EMNRD

---

**From:** Price, Henryetta <hprice@blm.gov>  
**Sent:** Wednesday, November 22, 2017 10:58 AM  
**To:** Kristin Pope  
**Cc:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; Randy Hicks; BUDDY DELONG  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

I have no issues with the proposed remediation plan. No samples will be taken or field tested without my oversight. Thank you.

### Henryetta Price

Environmental Protection Specialist  
Bureau Of Land Management

[Hprice@blm.gov](mailto:hprice@blm.gov)

Phone 575-234-5951

Cell 575-706-2780

Fax 575-234-5927

On Tue, Nov 21, 2017 at 4:42 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.

Hope y'all have a great Thanksgiving holiday.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office



575.302.6755

---

**From:** Weaver, Crystal, EMNRD [mailto:[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)]  
**Sent:** Monday, November 20, 2017 12:46 PM  
**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

I have included a scanned copy of the Initial C-141 Remediation Permit, that was accepted for record, along with an attached Conditions of Approval. The OCD tracking number for this event is 2RP-4449. Please remit a newly written work plan that includes the updated items we discussed during meeting of 11/9/17 by no later than 11/30/17.

Thank you,

**Crystal Weaver**

Environmental Specialist

OCD – Artesia District II

811 S. 1<sup>st</sup> Street

Artesia, NM 88210

Office: 575-748-1283 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720



---

**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]  
**Sent:** Friday, September 15, 2017 3:46 PM  
**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

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Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

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**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Monday, December 4, 2017 8:36 AM  
**To:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** hprice@blm.gov; mike@rthicksconsult.com; 'Randy Hicks'; 'BUDDY DELONG'  
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Carlsbad Field Office  
575-302.6755

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**Subject:** Sweat - Sun Fed #1 Remediation Plan

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**Sent:** Monday, December 4, 2017 9:44 AM  
**To:** Kristin Pope  
**Cc:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; Randy Hicks; BUDDY DELONG  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

Kristen,

I will be out the 20-22 Dec so don't schedule any sampling during that time unless someone is present to witness.  
Thanks.

### Henryetta Price

Environmental Protection Specialist  
Bureau Of Land Management  
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Cell 575-706-2780  
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**Sent:** Monday, November 20, 2017 12:46 PM

**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

I have included a scanned copy of the Initial C-141 Remediation Permit, that was accepted for record, along with an attached Conditions of Approval. The OCD tracking number for this event is 2RP-4449. Please remit a newly written work plan that includes the updated items we discussed during meeting of 11/9/17 by no later than 11/30/17.

Thank you,

**Crystal Weaver**

Environmental Specialist

OCD – Artesia District II

811 S. 1<sup>st</sup> Street

Artesia, NM 88210

Office: 575-748-1283 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720

---

**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]

**Sent:** Friday, September 15, 2017 3:46 PM

**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575-302.6755

## Bratcher, Mike, EMNRD

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Tuesday, December 12, 2017 3:54 PM  
**To:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** hprice@blm.gov; mike@rthicksconsult.com; 'Randy Hicks'; 'BUDDY DELONG'  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

Crystal and Mike,

Would OCD allow us to perform the lateral delineation from the pit in order to install the liner and complete the backfill so that we can prepare the surface for the soil boring?

We would like to get this work done before Henryetta is out on Dec. 20 so that the site will be prepped for the soil boring after the holiday. Please let us know if we can proceed with the lateral delineation, liner installation, and backfill in accordance with the submitted plan. Thanks.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

---

**From:** Kristin Pope [mailto:kristin@rthicksconsult.com]  
**Sent:** Monday, December 04, 2017 8:36 AM  
**To:** Crystal Weaver (Crystal.Weaver@state.nm.us); Mike Bratcher  
**Cc:** hprice@blm.gov; 'mike@rthicksconsult.com'; 'Randy Hicks'; 'BUDDY DELONG'  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

Crystal and Mike,

Please let me know if I can answer any questions you have regarding the plan for the pit. As you can see, we'll need to perform some lateral delineation to install the liner. Then the backfill will need to be prepared for the drilling rig. As the holiday approaches, the schedule is filling up for the drilling rig. Thank you.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

**From:** Price, Henryetta [mailto:hprice@blm.gov]  
**Sent:** Wednesday, November 22, 2017 10:58 AM  
**To:** Kristin Pope  
**Cc:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD; [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; BUDDY DELONG  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

I have no issues with the proposed remediation plan. No samples will be taken or field tested without my oversight. Thank you.

**Henryetta Price**

Environmental Protection Specialist  
Bureau Of Land Management

[Hprice@blm.gov](mailto:Hprice@blm.gov)

Phone 575-234-5951

Cell 575-706-2780

Fax 575-234-5927

On Tue, Nov 21, 2017 at 4:42 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.

Hope y'all have a great Thanksgiving holiday.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

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**From:** Weaver, Crystal, EMNRD [mailto:[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)]

**Sent:** Monday, November 20, 2017 12:46 PM

**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

I have included a scanned copy of the Initial C-141 Remediation Permit, that was accepted for record, along with an attached Conditions of Approval. The OCD tracking number for this event is 2RP-4449. Please remit a newly written work plan that includes the updated items we discussed during meeting of 11/9/17 by no later than 11/30/17.

Thank you,

## Crystal Weaver

Environmental Specialist

OCD – Artesia District II

811 S. 1<sup>st</sup> Street

Artesia, NM 88210

Office: 575-748-1283 ext. 101

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Fax: 575-748-9720

---

**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]

**Sent:** Friday, September 15, 2017 3:46 PM

**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

## Bratcher, Mike, EMNRD

---

**From:** Weaver, Crystal, EMNRD  
**Sent:** Thursday, December 21, 2017 3:16 PM  
**To:** Kristin Pope  
**Cc:** hprice@blm.gov; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; Randy Hicks; buddy\_delong@msn.com  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings:

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If ground water impact is verified no further activities will persist at this location until consultation with OCD is conducted. The conduit will remain in place until the next step is agreed upon.

As mentioned in the work plan proposal it has been previously requested that 48 hour advance notice be provided so that OCD and BLM representatives have the opportunity to arrange for witnessing of activities during this project. Preferably, if a schedule were able to be generated by the operator/contractor indicating times and stages of the process that would be most beneficial.

Thank you,

Crystal Weaver  
Environmental Specialist  
OCD - Artesia District 2  
811 S. 1st Street  
Artesia, NM 88210  
Office: 575-748-1238 ext. 101  
Cell: 575-840-5963  
Fax: 575-748-9720

On Nov 21, 2017, at 4:43 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.



Hope y'all have a great Thanksgiving holiday.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

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**From:** Weaver, Crystal, EMNRD [<mailto:Crystal.Weaver@state.nm.us>]  
**Sent:** Monday, November 20, 2017 12:46 PM  
**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

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Thank you,

**Crystal Weaver**  
Environmental Specialist  
OCD – Artesia District II  
811 S. 1<sup>st</sup> Street  
Artesia, NM 88210  
Office: 575-748-1283 ext. 101  
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**Sent:** Friday, September 15, 2017 3:46 PM  
**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>

## Bratcher, Mike, EMNRD

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Friday, January 5, 2018 1:29 PM  
**To:** 'Price, Henryetta'; Weaver, Crystal, EMNRD  
**Cc:** Bratcher, Mike, EMNRD; mike@rthicksconsult.com; 'Randy Hicks'; buddy\_delong@msn.com  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

Please accept this notice of sampling at the Sun Fed #1 site on Tuesday, Jan. 9, 2017 at 9:00 am. If this time is not acceptable to you, please let us know ASAP.

We will delineate in accordance with our plan and OCD's conditions. Thank you for your help.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575-302.6755

**From:** Price, Henryetta [mailto:hprice@blm.gov]  
**Sent:** Tuesday, January 02, 2018 3:36 PM  
**To:** Weaver, Crystal, EMNRD  
**Cc:** Kristin Pope; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; Randy Hicks; buddy\_delong@msn.com  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

Good Afternoon,

I hope everyone enjoyed the holidays. Just checking to see if any dates have been scheduled for sampling?

**Henryetta Price**  
Environmental Protection Specialist  
Bureau Of Land Management  
[Hprice@blm.gov](mailto:Hprice@blm.gov)  
Phone 575-234-5951  
Cell 575-706-2780  
Fax 575-234-5927

On Thu, Dec 21, 2017 at 3:16 PM, Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)> wrote:

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Environmental Specialist  
OCD - Artesia District 2  
[811 S. 1st Street](#)  
[Artesia, NM 88210](#)  
[Office: 575-748-1238](#) ext. 101  
Cell: 575-840-5963  
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**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

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**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

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R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>

## Bratcher, Mike, EMNRD

---

**From:** Price, Henryetta <hprice@blm.gov>  
**Sent:** Friday, January 5, 2018 2:23 PM  
**To:** Kristin Pope  
**Cc:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; Randy Hicks; BUDDY DELONG  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

Tuesday at 0900 works for me. Please let me know if there is any changes. Thank you.

### Henryetta Price

Environmental Protection Specialist  
Bureau Of Land Management

[Hprice@blm.gov](mailto:hprice@blm.gov)

Phone 575-234-5951

Cell 575-706-2780

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**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

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Thank you,

**Crystal Weaver**

Environmental Specialist

OCD – Artesia District II

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[Artesia, NM 88210](#)

[Office:](#) 575-748-1283 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720

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**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]

**Sent:** Friday, September 15, 2017 3:46 PM

**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** Sweat - Sun Fed #1 Remediation Plan

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Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>



## Bratcher, Mike, EMNRD

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Friday, January 19, 2018 4:03 PM  
**To:** Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; hprice@blm.gov  
**Cc:** Bratcher, Mike, EMNRD; Randy Hicks; buddy\_delong@msn.com  
**Subject:** UPDATE: Sweatt - Sun Fed #1

A quick update regarding the Sweatt – Sun Fed #1 (2RP-4449) location:

Last week we found the lateral extent of impact (using visual observations and chloride field tests) from each direction of the existing 77 x 28 excavated pit. The eastern side was already extended significantly to allow for deeper delineation last year and the southern edge was extended 10 ft south. Each sample was submitted for lab analyses of BTEX, TPH, and Cl and we are waiting on results.

Also at that time, vertical delineation was conducted at the former open-top tank, at the location where the heater-treater spill occurred, and at an area of impact outside of the southern fence of the location where a historic spill occurred. The deepest of each of these samples were also submitted to the lab.

The pit excavation walls were squared and evened to 77 x 38 x 4-ft-deep. When lab results confirm that we have found the lateral extent in these dimensions, we will extend each wall 2 more feet laterally as specified in our approved plan and place a liner over the entire excavation.

The excavated spoils have been separated into two categories of visually-impacted and soil that appears (and smells) clean. We collected a composite sample of the “dirty” spoils this week and also submitted it to the lab so that we can determine its disposition or suitability for backfill or cover.

We will continue to notify you of any progress. If you have any questions, please don’t hesitate to contact me. Thanks.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

## Bratcher, Mike, EMNRD

---

**From:** Price, Henryetta <hprice@blm.gov>  
**Sent:** Friday, January 19, 2018 4:16 PM  
**To:** Kristin Pope  
**Cc:** Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; Randy Hicks; BUDDY DELONG  
**Subject:** Re: UPDATE: Sweatt - Sun Fed #1

Thank you Kristin.

### Henryetta Price

Environmental Protection Specialist  
Bureau Of Land Management

[Hprice@blm.gov](mailto:hprice@blm.gov)

Phone 575-234-5951

Cell 575-706-2780

Fax 575-234-5927

On Fri, Jan 19, 2018 at 4:02 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

A quick update regarding the Sweatt – Sun Fed #1 (2RP-4449) location:

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The pit excavation walls were squared and evened to 77 x 38 x 4-ft-deep. When lab results confirm that we have found the lateral extent in these dimensions, we will extend each wall 2 more feet laterally as specified in our approved plan and place a liner over the entire excavation.

The excavated spoils have been separated into two categories of visually-impacted and soil that appears (and smells) clean. We collected a composite sample of the “dirty” spoils this week and also submitted it to the lab so that we can determine its disposition or suitability for backfill or cover.



We will continue to notify you of any progress. If you have any questions, please don't hesitate to contact me. Thanks.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

## Bratcher, Mike, EMNRD

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Thursday, February 22, 2018 6:47 PM  
**To:** 'Price, Henryetta'  
**Cc:** Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; 'Randy Hicks'; 'BUDDY DELONG'  
**Subject:** NOTICE OF WORK SCHEDULED: Sweatt - Sun Fed #1

All,

We will begin the work described below at 9am on Tues., Feb. 27 beginning with the release area south of the location. Please contact me if you have any questions. Thanks.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

---

**From:** Kristin Pope [mailto:kristin@rthicksconsult.com]  
**Sent:** Wednesday, February 21, 2018 8:54 PM  
**To:** 'Price, Henryetta'  
**Cc:** 'Mike Bratcher'; 'Crystal Weaver'; 'Randy Hicks'; 'BUDDY DELONG'  
**Subject:** RE: UPDATE: Sweatt - Sun Fed #1

Henryetta,

I apologize to everyone for the delay. I noticed the lab was taking extraordinarily long with the results and found out I was left out of the email list. Then when I tried to log in to our account, the report wasn't showing up for me. I worked it out with the lab last week and we found the report.

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R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

**From:** Price, Henryetta [mailto:hprice@blm.gov]  
**Sent:** Tuesday, February 20, 2018 1:51 PM  
**To:** Kristin Pope  
**Cc:** Mike Bratcher; Crystal Weaver; Randy Hicks; BUDDY DELONG  
**Subject:** Re: UPDATE: Sweatt - Sun Fed #1

Good Afternoon Kristen,

Do you have an update for the location?

**Henryetta Price**

Environmental Protection Specialist

Bureau Of Land Management

[Hprice@blm.gov](mailto:Hprice@blm.gov)

Phone 575-234-5951

Cell 575-706-2780

Fax 575-234-5927

On Fri, Jan 19, 2018 at 4:15 PM, Price, Henryetta <[hprice@blm.gov](mailto:hprice@blm.gov)> wrote:

Thank you Kristin.

**Henryetta Price**

Environmental Protection Specialist

Bureau Of Land Management

[Hprice@blm.gov](mailto:Hprice@blm.gov)

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On Fri, Jan 19, 2018 at 4:02 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

A quick update regarding the Sweatt – Sun Fed #1 (2RP-4449) location:

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Environmental Protection Specialist  
Bureau Of Land Management

[Hprice@blm.gov](mailto:hprice@blm.gov)

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Kristin Pope

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575-302.6755



**Bratcher, Mike, EMNRD**

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Thursday, April 19, 2018 10:12 AM  
**To:** Weaver, Crystal, EMNRD; hprice@blm.gov; Bratcher, Mike, EMNRD  
**Cc:** mike@rthicksconsult.com; 'Randy Hicks'; buddy\_delong@msn.com  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan  
**Attachments:** UPDATE\_SunFed1.pdf

Crystal, Henryetta, and Mike,

I'm attaching a quick update on the project. We're on the schedule for the soil boring (can't confirm the date yet) and we'll have the liner installed before then. I'll notify you once the date is firmed up. Let me know if you have any questions.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

---

**From:** Weaver, Crystal, EMNRD [mailto:Crystal.Weaver@state.nm.us]  
**Sent:** Thursday, December 21, 2017 3:16 PM  
**To:** Kristin Pope  
**Cc:** hprice@blm.gov; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; Randy Hicks; buddy\_delong@msn.com  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings:

The current proposed work plan submitted to OCD on 11/21/17 is approved with the following conditions:

Soil sampling for horizontal sidewall delineation will occur at both the 2ft depth and the 4ft depth working outward from the outline of the pit until laboratory confirmation samples show clean for TPH extended range, BTEX and chlorides (600ppm or less on chlorides).

If ground water impact is verified no further activities will persist at this location until consultation with OCD is conducted. The conduit will remain in place until the next step is agreed upon.

As mentioned in the work plan proposal it has been previously requested that 48 hour advance notice be provided so that OCD and BLM representatives have the opportunity to arrange for witnessing of activities during this project. Preferably, if a schedule were able to be generated by the operator/contractor indicating times and stages of the process that would be most beneficial.

Thank you,

Crystal Weaver  
Environmental Specialist  
OCD - Artesia District 2  
811 S. 1st Street  
Artesia, NM 88210  
Office: 575-748-1238 ext. 101  
Cell: 575-840-5963  
Fax: 575-748-9720

On Nov 21, 2017, at 4:43 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.

Hope y'all have a great Thanksgiving holiday.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

---

**From:** Weaver, Crystal, EMNRD [<mailto:Crystal.Weaver@state.nm.us>]  
**Sent:** Monday, November 20, 2017 12:46 PM  
**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

I have included a scanned copy of the Initial C-141 Remediation Permit, that was accepted for record, along with an attached Conditions of Approval. The OCD tracking number for this event is 2RP-4449. Please remit a newly written work plan that includes the updated items we discussed during meeting of 11/9/17 by no later than 11/30/17.

Thank you,

**Crystal Weaver**  
Environmental Specialist  
OCD – Artesia District II  
811 S. 1<sup>st</sup> Street

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Cell: 575-840-5963  
Fax: 575-748-9720

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**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]  
**Sent:** Friday, September 15, 2017 3:46 PM  
**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>

## R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996  
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

April 19, 2018

Mr. Mike Bratcher, Ms. Crystal Weaver  
New Mexico Oil Conservation Division  
811 S. 1st Street  
Artesia, NM 88210  
VIA EMAIL

Ms. Henryetta Price  
Bureau of Land Management  
620 E. Greene Street  
Carlsbad, NM 88220  
VIA EMAIL

RE: Sweatt - Sun Federal #1 Production Pit Remediation Plan and  
Surface Restoration Plan, 2RP-4449

Dear Mr. Bratcher, Ms. Weaver, and Ms. Price:

On behalf of WJ Sweat (operator), Hicks Consultants submits the following update on the delineation and remediation of the former production pit and historic releases at the above-referenced site. Lateral delineation of the pit was conducted in accordance with the November 21, 2017 Production Pit Remediation Plan and Surface Restoration Plan (Plan) using a backhoe on January 9 and February 27, 2018. Vertical delineation at locations of interest to and selected by BLM and OCD also occurred at these times. Chloride field tests were performed on each sample and confirmation samples were submitted to Hall Environmental Analysis Laboratory in Albuquerque for BTEX, TPH (DRO+GRO+MRO), and chloride evaluation. These results are summarized in Plate 1 and Table 1.



2/27/2018: Sampling historic release location; view east

The current pit excavation is 77 x 38 x 4-feet deep and as outlined in the Plan, two additional lateral feet will be excavated in each direction to anchor the liner. After the liner is installed, the blended excavated fill will be used to backfill to grade. Lab analysis confirms that this blended material is suitable for re-establishment of vegetation.

To complete vertical delineation of the pit, a soil boring will be conducted in May 2018, following the procedure stated in the Plan. If hydrocarbon impact dissipates with depth before threatening groundwater, a Surface Restoration Plan for the tank battery location and historic crude releases will be submitted for the approval of the surface owner (BLM) with a copy to OCD.

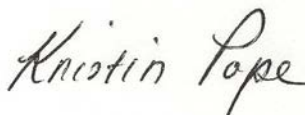
April 19, 2018

Page 2

BLM and OCD will be given at least 48 hours' notice of installation of the liner and the scheduled soil boring. Please contact me with any questions regarding this update.

Sincerely,

R. T. Hicks Consultants

A handwritten signature in cursive script that reads "Kristin Pope". The signature is written in dark ink on a light-colored background.

Kristin Pope  
Project Geologist

Enclosures: Plate 1, Table 1

Copy: WJ Sweatt  
Buddy DeLong





R.T. Hicks Consultants, Ltd. 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, New Mexico 87104	Vertical and Lateral Delineation Sample Locations		Plate 1
	Sweatt - Sun Federal #1 Location with Former Pit		April 2018

**LATERAL DELINEATION OF FORMER PIT**

From Walls of Existing Pit Excavation

Depth ft BGS	Field Cl mg/kg	Lab Cl mg/kg	Field Cl mg/kg	Lab Cl mg/kg	Field Cl mg/kg	Lab Cl mg/kg	Field Cl mg/kg	Lab Cl mg/kg	Field Cl mg/kg	Lab Cl mg/kg
	Existing North Wall		Existing West Wall		Existing South Wall		10 ft South		36 ft E of orig. E Wall	
2	78	ND	79	31	1579	---	32	ND	413	270
	BTEX = ND	TPH = 1160	BTEX = ND	TPH = ND			BTEX = ND	TPH = 2690	BTEX = ND	TPH = 12
4	38	ND	354	320	1715	---	175	120	465	100
	BTEX = ND	TPH = 920	BTEX = ND	TPH = ND			BTEX = ND	TPH = 2790	BTEX = ND	TPH = ND

2/27/18 delineation trenches only

Depth ft BGS	DRO+GRO mg/kg	TPH mg/kg	DRO+GRO mg/kg	TPH mg/kg
	20 ft North of Pit		40 ft North of pit	
2	1630	1630	ND	ND
4	2410	2410	ND	ND

**SAMPLE TRENCHES FOR VERTICAL DELINEATION**

Former Open-top Tank Location

Depth ft BGS	Field Cl mg/kg	Lab Cl mg/kg
0	85	---
2	297	---
4	559	---
6	513	---
8	363	---
10	871	---
12	483	460
	TPH = ND	BTEX = ND

Former Treater Location (past release)

Depth ft BGS	Field Cl mg/kg	Lab Cl mg/kg
0	561	---
2	126	---
4	336	---
6	346	330
	TPH = ND	BTEX = ND

Historic Release in Veg. (outside location)

Depth ft BGS	Field Cl mg/kg	Lab Cl mg/kg
0	200	---
2	200	---
4	200	---
6	200	ND
	TPH = 11450	BTEX = 1.2
12	---	770
	TPH = ND	BTEX = ND

**Bratcher, Mike, EMNRD**

---

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**Sent:** Thursday, April 19, 2018 5:02 PM  
**To:** Kristin Pope  
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**Subject:** Re: [EXTERNAL] RE: Sweat - Sun Fed #1 Remediation Plan

Thank you for the update.

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\*\*\* Lesser Prairie Chicken (LPC) timing stipulations are in effect 1 Mar- 15 June annually.

\*\*\* Tis the season for African Rue. Please do a 360 scan around your well locations and lease roads.

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

**Confidentiality Warning:** This message along with any attachments are intended only for use of the individual or entity to which it is addressed and may contain information that is privileged or confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately.

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Environmental Specialist

OCD - Artesia District 2

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**Sent:** Monday, November 20, 2017 12:46 PM

**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

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Environmental Specialist

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811 S. 1<sup>st</sup> Street

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Office: 575-748-1283 ext. 101

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**Sent:** Friday, September 15, 2017 3:46 PM  
**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
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R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>

**Bratcher, Mike, EMNRD**

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Wednesday, April 25, 2018 8:38 PM  
**To:** 'Price, Henryetta'  
**Cc:** Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD; mike@rthicksconsult.com; 'Randy Hicks'; 'BUDDY DELONG'  
**Subject:** RE: [EXTERNAL] RE: Sweat - Sun Fed #1 Remediation Plan

Everyone,

We'll be ready to install the liner in the former pit excavation on Friday, April 27 at 8:00 am. We will then backfill and contour using excavated soil. The soil boring is scheduled for May without a definite date yet. Please contact me with any questions.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

**From:** Price, Henryetta [mailto:hprice@blm.gov]  
**Sent:** Thursday, April 19, 2018 5:02 PM  
**To:** Kristin Pope  
**Cc:** Weaver, Crystal, EMNRD; Mike Bratcher; mike@rthicksconsult.com; Randy Hicks; BUDDY DELONG  
**Subject:** Re: [EXTERNAL] RE: Sweat - Sun Fed #1 Remediation Plan

Thank you for the update.

**Henryetta Price**  
Environmental Protection Specialist  
Bureau Of Land Management  
[Hprice@blm.gov](mailto:hprice@blm.gov)  
Phone 575-234-5951  
Cell 575-706-2780  
Fax 575-234-5927

\*\*\* Lesser Prairie Chicken (LPC) timing stipulations are in effect 1 Mar- 15 June annually.

\*\*\* Tis the season for African Rue. Please do a 360 scan around your well locations and lease roads.

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

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On Thu, Apr 19, 2018 at 10:12 AM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

I'm attaching a quick update on the project. We're on the schedule for the soil boring (can't confirm the date yet) and we'll have the liner installed before then. I'll notify you once the date is firmed up. Let me know if you have any questions.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Weaver, Crystal, EMNRD [mailto:[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)]

**Sent:** Thursday, December 21, 2017 3:16 PM

**To:** Kristin Pope

**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD; [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings:

The current proposed work plan submitted to OCD on 11/21/17 is approved with the following conditions:

Soil sampling for horizontal sidewall delineation will occur at both the 2ft depth and the 4ft depth working outward from the outline of the pit until laboratory confirmation samples show clean for TPH extended range, BTEX and chlorides (600ppm or less on chlorides).

If ground water impact is verified no further activities will persist at this location until consultation with OCD is conducted. The conduit will remain in place until the next step is agreed upon.

As mentioned in the work plan proposal it has been previously requested that 48 hour advance notice be provided so that OCD and BLM representatives have the opportunity to arrange for witnessing of activities during this project. Preferably, if a schedule were able to be generated by the operator/contractor indicating times and stages of the process that would be most beneficial.

Thank you,

Crystal Weaver

Environmental Specialist

OCD - Artesia District 2

811 S. 1st Street

Artesia, NM 88210

Office: 575-748-1238 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720

On Nov 21, 2017, at 4:43 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.

Hope y'all have a great Thanksgiving holiday.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

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**From:** Weaver, Crystal, EMNRD [<mailto:Crystal.Weaver@state.nm.us>]  
**Sent:** Monday, November 20, 2017 12:46 PM  
**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

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Greetings,

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Thank you,

**Crystal Weaver**



Environmental Specialist

OCD – Artesia District II

811 S. 1<sup>st</sup> Street

Artesia, NM 88210

Office: 575-748-1283 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720

---

**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]

**Sent:** Friday, September 15, 2017 3:46 PM

**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD <[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)

**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>

**From:** Price, Henryetta  
**To:** [Kristin Pope](#)  
**Cc:** [Billings, Bradford, EMNRD](#); [Bratcher, Mike, EMNRD](#); [Pruett, Maria, EMNRD](#); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); [BUDDY DELONG](#); [Randall Hicks](#); [Shelly Tucker](#); [Crystal Weaver](#)  
**Subject:** Re: [EXTERNAL] RE: Sweat - Sun Fed #1 (2RP-4449)  
**Date:** Monday, September 24, 2018 1:52:04 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image001.png](#)

---

Kristin,

I am assuming NMOCD has accepted all remediation activities and will approve the closure request for this location? Please provide acceptance/ approval from NMOCD for this site prior to plugging the soil bore. Thank you.

## Henryetta Price

Environmental Protection Specialist  
Bureau Of Land Management  
[Hprice@blm.gov](mailto:Hprice@blm.gov)  
Phone 575-234-5951

\*\*\*\* I will be leaving the BLM Carlsbad field office 01 OCT 2018. Please communicate with Shelly Tucker regarding spill events. Crystal Weaver will be the contact for other questions or issues I have been tracking (Abandonments, interim reclamation, Notice of Written Orders, and other notifications).

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

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On Wed, Sep 12, 2018 at 10:45 AM Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

OCD, BLM, et. al.,

With the abundance of recent rains, we have elected to plug the soil boring at the Sun Fed #1 site on Monday, September 17, 2018. The entire bore hole will be plugged with hydrated bentonite and work will begin around 8:30 am. The procedure will include:

1) gauge boring depth with a weighted tape (when we left it had collapsed to 34 feet below top of the PVC conduit).

- 2) Dig out around the conduit to about 1 ft BGS
- 3) Cut PVC conduit
- 4) load boring with hydrated bentonite chips
- 5) fill the upper 6" with native fill

Please contact me with any questions. The next submission you may expect is a plan for the restoration of the surface of the location. Thank you.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Kristin Pope [mailto:[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)]  
**Sent:** Tuesday, August 28, 2018 1:45 PM  
**To:** 'Randall Hicks'; 'Billings, Bradford, EMNRD'; 'Bratcher, Mike, EMNRD'; 'Pruett, Maria, EMNRD'  
**Cc:** '[hprice@blm.gov](mailto:hprice@blm.gov)'; '[mike@rthicksconsult.com](mailto:mike@rthicksconsult.com)'; '[buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)'  
**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Brad,

Will you be the contact with OCD for this project? I'd like to call and discuss. Thanks.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Randall Hicks [mailto:[r@rthicksconsult.com](mailto:r@rthicksconsult.com)]  
**Sent:** Monday, August 20, 2018 3:58 PM  
**To:** 'Billings, Bradford, EMNRD'; 'Kristin Pope'; 'Bratcher, Mike, EMNRD'; 'Pruett, Maria, EMNRD'  
**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Brad

Here is what we said:



The footnote that describes the Quartermaster as gypsum being the primary cement is



Page 296 of the reference states:

So it is our opinion that a post-depositional fluid that precipitated CaSO<sub>4</sub> as 20-30% of the rock would also contain a relatively high concentration of NaCl. That



is why we are not surprised  
by the observed  
concentrations in bedrock.

Randall Hicks

R.T. Hicks Consultants

Cell: 505-238-9515

Office: 505-266-5004

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**Sent:** Monday, August 20, 2018 3:11 PM  
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**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Hi,

So have read report and looked at references for the statement about 933 ppm Cl being “typical” for the Quartermaster/Dewy Lake formation. Not sure I found this statement in the indicated references. Can you point this out to me, or offer other reference?

May have a couple more questions soon. Thanks.

Brad Billings

---

**From:** Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)>

**Sent:** Friday, August 17, 2018 1:39 PM  
**To:** Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); 'Randy Hicks' <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Mike and Bradford:

Please find the attached remediation report for the Sweatt – Sun Fed #1. **The borehole is still open and we would like OCD approval to plug it ASAP.** Although the pdf is 101 pages, the report itself is only six.

Our next step is evaluating the surface for fertility and restoration. We will turn in final C-141 forms when we provide documentation of the revegetation work.

Please don't hesitate to contact me with any questions. Thank you.

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R.T. Hicks Consultants

Carlsbad Field Office

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Thank you,

Crystal Weaver

Environmental Specialist

OCD - Artesia District 2

811 S. 1st Street

Artesia, NM 88210

Office: 575-748-1238 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720



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**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
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Environmental Specialist

OCD – Artesia District II

811 S. 1<sup>st</sup> Street

Artesia, NM 88210

Office: 575-748-1283 ext. 101

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<[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD

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**Subject:** Sweat - Sun Fed #1 Remediation Plan

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<CompletePitRemedPlan\_SunFed1.pdf>

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**Cc:** [Billings, Bradford, EMNRD](#); [Bratcher, Mike, EMNRD](#); [Pruett, Maria, EMNRD](#); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); [BUDDY DELONG](#); [Randall Hicks](#); [Shelly Tucker](#); [Crystal Weaver](#)  
**Subject:** Re: [EXTERNAL] RE: Sweat - Sun Fed #1 (2RP-4449)  
**Date:** Monday, September 24, 2018 6:46:34 PM

---

Henryetta:

It's done. We haven't received any response from OCD since Bradford's question.

I'm currently waiting on lab results from surface samples (0-4 ft) I collected last week during the P&A.

Kristin Pope  
R.T. Hicks Consultants  
575.302.6755

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R.T. Hicks Consultants

Carlsbad Field Office

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**Cc:** '[hprice@blm.gov](mailto:hprice@blm.gov)'; '[mike@rthicksconsult.com](mailto:mike@rthicksconsult.com)'; '[buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)'

**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

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R.T. Hicks Consultants

Carlsbad Field Office

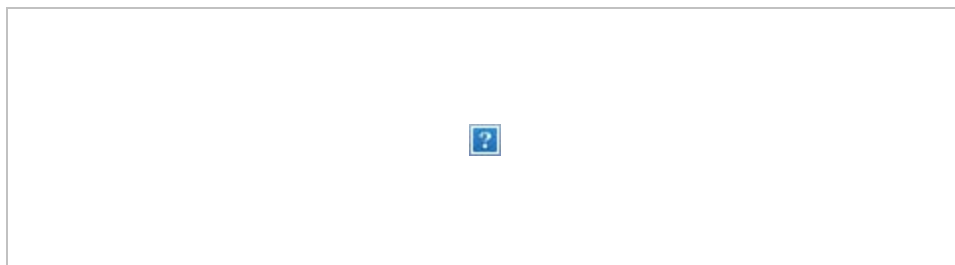
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Brad

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**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); 'Randy Hicks' <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
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**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings:

The current proposed work plan submitted to OCD on 11/21/17 is approved with the following conditions:

Soil sampling for horizontal sidewall delineation will occur at both the 2ft depth and the 4ft depth working outward from the outline of the pit until laboratory confirmation samples show clean for TPH extended range, BTEX and chlorides (600ppm or less on chlorides).

If ground water impact is verified no further activities will persist at this location until consultation with OCD is conducted. The conduit will remain in place until the next step is agreed upon.

As mentioned in the work plan proposal it has been previously requested that 48 hour advance notice be provided so that OCD and BLM representatives have the opportunity to arrange for witnessing of activities during this project. Preferably, if a schedule were able to be generated by the operator/contractor indicating times and stages of the process that would be most beneficial.

Thank you,

Crystal Weaver

Environmental Specialist

OCD - Artesia District 2

811 S. 1st Street

Artesia, NM 88210

Office: 575-748-1238 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720

On Nov 21, 2017, at 4:43 PM, Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

Crystal, Henryetta, and Mike,

Thanks for your patience for this resubmission. After speaking to the drilling company, the safest way to complete the boring would be to have the site backfilled first. We propose a remediation plan for the pit that completes the lateral delineation, installs a liner with a conduit for the soil boring, and backfill ready for the rig to complete vertical delineation via soil boring.

Hope y'all have a great Thanksgiving holiday.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Weaver, Crystal, EMNRD [<mailto:Crystal.Weaver@state.nm.us>]  
**Sent:** Monday, November 20, 2017 12:46 PM  
**To:** Kristin Pope; [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

I have included a scanned copy of the Initial C-141 Remediation Permit, that was accepted for record, along with an attached Conditions of Approval. The OCD tracking number for this event is 2RP-4449. Please remit a newly written work plan that includes the updated items we discussed during meeting of 11/9/17 by no later than 11/30/17.

Thank you,

**Crystal Weaver**

Environmental Specialist

OCD – Artesia District II

811 S. 1<sup>st</sup> Street

Artesia, NM 88210

Office: 575-748-1283 ext. 101

Cell: 575-840-5963

Fax: 575-748-9720

---

**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]  
**Sent:** Friday, September 15, 2017 3:46 PM  
**To:** [hprice@blm.gov](mailto:hprice@blm.gov); Weaver, Crystal, EMNRD  
<[Crystal.Weaver@state.nm.us](mailto:Crystal.Weaver@state.nm.us)>; Bratcher, Mike, EMNRD  
<[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks  
<[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

Randy's Outlook isn't working smoothly today so I'm submitting the attached plan for him, on behalf of WJ Sweat. Please contact Randy with any questions. Thank you and have a good weekend.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>

**Bratcher, Mike, EMNRD**

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Thursday, December 13, 2018 12:38 PM  
**To:** Weaver, Crystal  
**Cc:** mike@rthicksconsult.com; buddy\_delong@msn.com; Randy Hicks; Billings, Bradford, EMNRD; Bratcher, Mike, EMNRD; Pruett, Maria, EMNRD  
**Subject:** [EXT] Sweat - Sun Fed #1 (2RP-4449)  
**Attachments:** SweattSurfacePlanBLM\_12.13.2018.pdf

Crystal,

Please find the attached Surface Restoration Plan for the Sweatt Sun Fed #1 site. Mr. Sweatt passed away last month and his estate would like to get this work completed as soon as possible.  
Let me know if you approve. Thanks.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996  
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

December 13, 2018

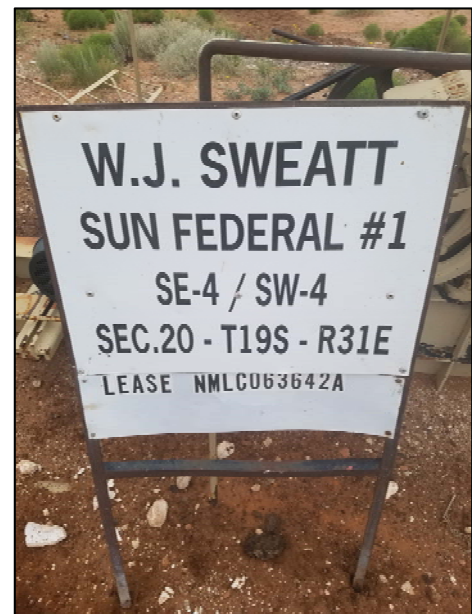
Ms. Crystal Weaver  
Bureau of Land Management  
620 E. Greene Street  
Carlsbad, NM 88220  
Via E-Mail

Mike Bratcher  
NM Oil Conservation Division  
811 S. 1st Street  
Artesia, NM 88210  
Via E-Mail

RE: Sweatt - Sun Federal #1 Production Pit API #30-015-05711  
Remediation Report, Case # 2RP-4449

Dear Ms. Weaver,

On behalf of W.J. Sweat (operator), R. T. Hicks Consultants, Ltd. (Hicks Consultants) submits the following surface restoration plan with the aim toward final abandonment of the location referenced above. On August 17, 2018, Hicks Consultants submitted a report of delineation/remediation results to OCD and BLM that presented soil boring data at the former pit location. Chloride and BTEX concentrations from the soil boring samples support closure under *Table 1-Closure Criteria for Soils Impacted by a Release* of the new Spill Rule (Rule 19.15.29 NMAC) given a projected depth to groundwater of 180 feet. After several days of heavy rainfall and no feedback from NMOCD, Sweatt and Hicks Consultants decided the plug the open borehole to eliminate a potential safety hazard. Email notice was sent to NMOCD and BLM on September 12, 2018 and the borehole was plugged on September 17.



## Surface Restoration Plan

### *Surface Soils Evaluation*

All production equipment has been removed from the facility. Surface soils at the former location consist of medium dune sand, similar to surrounding soils. Two composite samples of surface soils were used to evaluate chloride and hydrocarbon concentrations with respect to restoration potential:

- A “5 point comp. impacted pile” sample was collected from the spoils from the former pit excavation on January 12, 2018. This material was then used to backfill the pit

December 10, 2018

Page 2

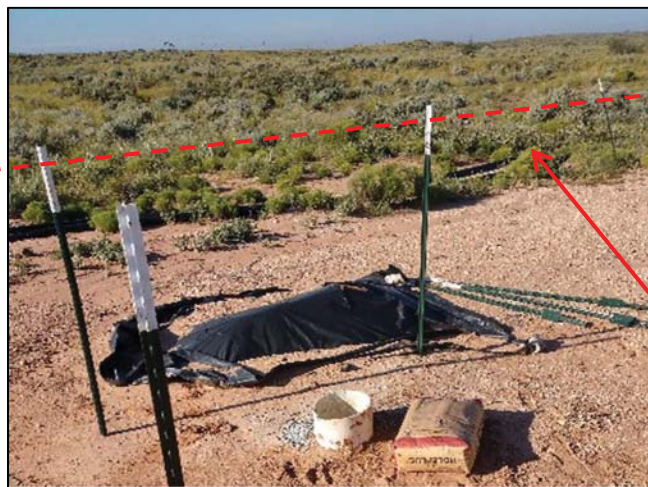
excavation below and on top of the cap liner as described in the August 17, 2018 Remediation Report.

- At the same time the soil bore hole was plugged on September 17, 2018, a “5-pt Surface Comp” sample was collected from surface soils at the remainder of the location (excluding the pit) from 0 to 4 feet below ground surface (BGS).

As shown in the table below, laboratory confirmation demonstrates that the constituents of concern in both samples were below Table 1 Closure Criteria (NMAC 19.15.29):

LABORATORY ANALYSIS OF SURFACE SOILS

Sample ID	Sample Date	Chloride mg/kg	GRO+DRO mg/kg	TPH GRO+DRO+MRO	Benzene mg/kg	BTEX mg/kg
5-pt Surface Comp	9/17/2018	130	<295	<795	<0.025	<0.505
5 point Comp Impacted Pile	1/12/2018	460	<12.1	<50.1	<0.023	<0.208
Table 1 NMAC 19.15.29 0-4 ft "not in use"		600	----	2500	10	50



Visual inspection of the site displays native vegetation encroaching adequately around the perimeter of the former location, consisting of Shinnery Oak and other shrubs and grasses.

New, emerging vegetation encroaching on the site.

Plugging soil bore 9/17/2018

### Proposed Actions

This surface restoration plan proposes the following actions for revegetation:

1. Till the surface to break up localized hardpan pieces from the former location and to increase aeration.
2. Seed the area immediately with Winter Wheat using a drill at an application rate provided by the supplier.
3. Spring 2019, evaluate the encroachment of native vegetation and stand of Winter Wheat.
4. If vegetative cover is not progressing adequately, seed again using BLM seed mixture #2.

December 10, 2018

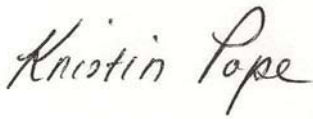
Page 3

5. After the first seeding event (winter 2018/2019) is completed, a report and final C-141 form will be submitted to OCD and a Sundry Form (Subsequent Report-Reclamation) to BLM with documentation of the actions.
6. Once adequate vegetation cover is firmly established, a final Sundry Form (Final Abandonment Notice-Reclamation) will be submitted to BLM.

After written BLM approval of this Surface Restoration Plan, BLM and OCD will be notified at least 48 hours prior to the seeding of Winter Wheat as described above.

Sincerely,

R. T. Hicks Consultants

A handwritten signature in black ink that reads "Kristin Pope". The signature is written in a cursive, flowing style.

Kristin Pope  
Senior Project Geologist

Enclosures: Laboratory reports, email string (notice of P&A)

Copy: W.J. Sweatt estate (Buddy DeLong)



**From:** [Kristin Pope](#)  
**To:** [Price, Henryetta](#)  
**Cc:** [Billings, Bradford, EMNRD](#); [Bratcher, Mike, EMNRD](#); [Pruett, Maria, EMNRD](#); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); [BUDDY DELONG](#); [Randall Hicks](#); [Shelly Tucker](#); [Crystal Weaver](#)  
**Subject:** Re: [EXTERNAL] RE: Sweat - Sun Fed #1 (2RP-4449)  
**Date:** Monday, September 24, 2018 6:46:18 PM

---

Henryetta:

It's done. We haven't received any response from OCD since Bradford's question.

I'm currently waiting on lab results from surface samples (0-4 ft) I collected last week during the P&A.

Kristin Pope  
R.T. Hicks Consultants  
575.302.6755

On Sep 24, 2018, at 1:51 PM, Price, Henryetta <[hprice@blm.gov](mailto:hprice@blm.gov)> wrote:

Kristin,

I am assuming NMOCD has accepted all remediation activities and will approve the closure request for this location? Please provide acceptance/ approval from NMOCD for this site prior to plugging the soil bore. Thank you.

### Henryetta Price

Environmental Protection Specialist  
Bureau Of Land Management  
[Hprice@blm.gov](mailto:Hprice@blm.gov)  
Phone 575-234-5951

\*\*\*\* I will be leaving the BLM Carlsbad field office 01 OCT 2018. Please communicate with Shelly Tucker regarding spill events. Crystal Weaver will be the contact for other questions or issues I have been tracking (Abandonments, interim reclamation, Notice of Written Orders, and other notifications).

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

**Confidentiality Warning:** This message along with any attachments are intended only for use of the individual or entity to which it is addressed and may contain information that is privileged or confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately.

On Wed, Sep 12, 2018 at 10:45 AM Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)> wrote:

OCD, BLM, et. al.,

With the abundance of recent rains, we have elected to plug the soil boring at the Sun Fed #1 site on Monday, September 17, 2018. The entire bore hole will be plugged with hydrated bentonite and work will begin around 8:30 am. The procedure will include:

- 1) gauge boring depth with a weighted tape (when we left it had collapsed to 34 feet below top of the PVC conduit).
- 2) Dig out around the conduit to about 1 ft BGS
- 3) Cut PVC conduit
- 4) load boring with hydrated bentonite chips
- 5) fill the upper 6" with native fill

Please contact me with any questions. The next submission you may expect is a plan for the restoration of the surface of the location. Thank you.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Kristin Pope [mailto:[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)]

**Sent:** Tuesday, August 28, 2018 1:45 PM

**To:** 'Randall Hicks'; 'Billings, Bradford, EMNRD'; 'Bratcher, Mike, EMNRD'; 'Pruett, Maria, EMNRD'

**Cc:** '[hprice@blm.gov](mailto:hprice@blm.gov)'; '[mike@rthicksconsult.com](mailto:mike@rthicksconsult.com)'; '[buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)'

**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Brad,

Will you be the contact with OCD for this project? I'd like to call and discuss.  
Thanks.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Randall Hicks [mailto:[r@rthicksconsult.com](mailto:r@rthicksconsult.com)]  
**Sent:** Monday, August 20, 2018 3:58 PM  
**To:** 'Billings, Bradford, EMNRD'; 'Kristin Pope'; 'Bratcher, Mike, EMNRD'; 'Pruett, Maria, EMNRD'  
**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Brad

Here is what we said:



The footnote that describes the Quartermaster as gypsum being the primary

cement is



Page 296 of the reference states:



So it is our opinion that a post-depositional fluid that precipitated CaSO<sub>4</sub> as 20-30% of the rock would also contain a relatively high concentration of NaCl. That is

why we are not surprised by the observed concentrations in bedrock.

Randall Hicks

R.T. Hicks Consultants

Cell: 505-238-9515

Office: 505-266-5004

---

**From:** Billings, Bradford, EMNRD [mailto:[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)]  
**Sent:** Monday, August 20, 2018 3:11 PM  
**To:** Kristin Pope; Bratcher, Mike, EMNRD; Pruett, Maria, EMNRD  
**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); 'Randy Hicks'; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Hi,

So have read report and looked at references for the statement about 933 ppm Cl being “typical” for the Quartermaster/Dewy Lake formation. Not sure I found this statement in the indicated references. Can you point this out to me, or offer other reference?

May have a couple more questions soon. Thanks.

Brad Billings

---

**From:** Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)>  
**Sent:** Friday, August 17, 2018 1:39 PM  
**To:** Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); 'Randy Hicks' <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 (2RP-4449)

Mike and Bradford:

Please find the attached remediation report for the Sweatt – Sun Fed #1. **The borehole is still open and we would like OCD approval to plug it ASAP.** Although the pdf is 101 pages, the report itself is only six.

Our next step is evaluating the surface for fertility and restoration. We will turn in final C-141 forms when we provide documentation of the revegetation work.

Please don't hesitate to contact me with any questions. Thank you.

Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

---

**From:** Weaver, Crystal, EMNRD [<mailto:Crystal.Weaver@state.nm.us>]  
**Sent:** Thursday, December 21, 2017 3:16 PM  
**To:** Kristin Pope  
**Cc:** [hprice@blm.gov](mailto:hprice@blm.gov); Bratcher, Mike, EMNRD; [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Re: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

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Environmental Specialist

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811 S. 1st Street

Artesia, NM 88210

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Crystal, Henryetta, and Mike,

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Hope y'all have a great Thanksgiving holiday.

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R.T. Hicks Consultants

Carlsbad Field Office

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**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** RE: Sweat - Sun Fed #1 Remediation Plan

RE: W. J. Sweatt \* Sun Federal #1 \* 30-015-05711 \* 2RP-4449

Greetings,

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Thank you,

**Crystal Weaver**

Environmental Specialist

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<[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** [mike@rthicksconsult.com](mailto:mike@rthicksconsult.com); Randy Hicks  
<[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; [buddy\\_delong@msn.com](mailto:buddy_delong@msn.com)  
**Subject:** Sweat - Sun Fed #1 Remediation Plan

Crystal, Henryetta, and Mike,

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Kristin Pope

R.T. Hicks Consultants

Carlsbad Field Office

575.302.6755

<CompletePitRemedPlan\_SunFed1.pdf>



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

January 25, 2018

Mike Stubblefield

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW

Suite F-142

Albuquerque, NM 87104

TEL: (505) 266-5004

FAX (505) 266-0745

RE: Sun Federal No 1

OrderNo.: 1801981

Dear Mike Stubblefield:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/19/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order **1801981**

Date Reported: 1/25/2018

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** R.T. Hicks Consultants, LTD**Client Sample ID:** 5 point comp impacted pile**Project:** Sun Federal No 1**Collection Date:** 1/12/2018 2:55:00 PM**Lab ID:** 1801981-001**Matrix:** SOIL**Received Date:** 1/19/2018 9:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CJS</b>
Chloride	460	30		mg/Kg	20	1/24/2018 4:10:48 PM	36176
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	130	7.5		mg/Kg	1	1/24/2018 9:45:08 AM	36119
Motor Oil Range Organics (MRO)	260	38		mg/Kg	1	1/24/2018 9:45:08 AM	36119
Surr: DNOP	110	70-130		%Rec	1	1/24/2018 9:45:08 AM	36119
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/22/2018 3:36:42 PM	36117
Surr: BFB	86.6	15-316		%Rec	1	1/22/2018 3:36:42 PM	36117
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.093		mg/Kg	1	1/22/2018 3:36:42 PM	36117
Benzene	ND	0.023		mg/Kg	1	1/22/2018 3:36:42 PM	36117
Toluene	ND	0.046		mg/Kg	1	1/22/2018 3:36:42 PM	36117
Ethylbenzene	ND	0.046		mg/Kg	1	1/22/2018 3:36:42 PM	36117
Xylenes, Total	ND	0.093		mg/Kg	1	1/22/2018 3:36:42 PM	36117
Surr: 4-Bromofluorobenzene	93.7	80-120		%Rec	1	1/22/2018 3:36:42 PM	36117

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 5
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801981  
25-Jan-18

Client: R.T. Hicks Consultants, LTD  
Project: Sun Federal No 1

Sample ID	MB-36176	SampType:	mblk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	36176	RunNo:	48666					
Prep Date:	1/24/2018	Analysis Date:	1/24/2018	SeqNo:	1566124	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-36176	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	36176	RunNo:	48666					
Prep Date:	1/24/2018	Analysis Date:	1/24/2018	SeqNo:	1566125	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.6	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank	Page 2 of 5
D Sample Diluted Due to Matrix	E Value above quantitation range	
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits	
ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
PQL Practical Quantitative Limit	RL Reporting Detection Limit	
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801981

25-Jan-18

Client: R.T. Hicks Consultants, LTD  
Project: Sun Federal No 1

Sample ID	LCS-36119	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	36119	RunNo:	48591					
Prep Date:	1/19/2018	Analysis Date:	1/22/2018	SeqNo:	1563023	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.8	70	130			
Surr: DNOP	4.0		5.000		79.9	70	130			

Sample ID	MB-36119	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	36119	RunNo:	48591					
Prep Date:	1/19/2018	Analysis Date:	1/22/2018	SeqNo:	1563024	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.9		10.00		89.0	70	130			

Qualifiers:		
* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank	
D Sample Diluted Due to Matrix	E Value above quantitation range	
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits	Page 3 of 5
ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
PQL Practical Quantitative Limit	RL Reporting Detection Limit	
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801981  
25-Jan-18

Client: R.T. Hicks Consultants, LTD  
Project: Sun Federal No 1

Sample ID	MB-36117	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	36117	RunNo:	48595					
Prep Date:	1/19/2018	Analysis Date:	1/22/2018	SeqNo:	1563288	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	940		1000		93.9	15	316			

Sample ID	LCS-36117	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	36117	RunNo:	48595					
Prep Date:	1/19/2018	Analysis Date:	1/22/2018	SeqNo:	1563289	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.6	75.9	131			
Surr: BFB	1000		1000		102	15	316			

Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 4 of 5

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801981

25-Jan-18

Client: R.T. Hicks Consultants, LTD

Project: Sun Federal No 1

Sample ID	MB-36117	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles						
Client ID:	PBS	Batch ID:	36117	RunNo:	48595						
Prep Date:	1/19/2018	Analysis Date:	1/22/2018	SeqNo:	1563305	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	ND	0.10									
Benzene	ND	0.025									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120				

Sample ID	LCS-36117	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles						
Client ID:	LCSS	Batch ID:	36117	RunNo:	48595						
Prep Date:	1/19/2018	Analysis Date:	1/22/2018	SeqNo:	1563306	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	0.80	0.10	1.000	0	80.2	70.1	121				
Benzene	0.91	0.025	1.000	0	90.8	77.3	128				
Toluene	0.91	0.050	1.000	0	91.3	79.2	125				
Ethylbenzene	0.89	0.050	1.000	0	89.1	80.7	127				
Xylenes, Total	2.7	0.10	3.000	0	91.2	81.6	129				
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120				

Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 5 of 5



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: RT HICKS

Work Order Number: 1801981

RcptNo: 1

Received By: Isaiah Ortiz

1/19/2018 9:45:00 AM

Completed By: Sophia Campuzano

1/19/2018 10:57:06 AM

Reviewed By: ENM

1/19/18

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH: \_\_\_\_\_  
( $<2$  or  $>12$  unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good	Yes			







Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

October 02, 2018

Kristin Pope

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW

Suite F-142

Albuquerque, NM 87104

TEL: (505) 266-5004

FAX (505) 266-0745

RE: Sweatt Sun Fed #1(- Pit)

OrderNo.: 1809D31

Dear Kristin Pope:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/21/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued September 28, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809D31

Date Reported: 10/2/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: R.T. Hicks Consultants, LTD

Client Sample ID: 5-pt Surface Comp

Project: Sweatt Sun Fed #1(- Pit)

Collection Date: 9/17/2018 8:45:00 AM

Lab ID: 1809D31-001

Matrix: SOIL

Received Date: 9/21/2018 8:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	130	30		mg/Kg	20	9/28/2018 2:43:37 AM	40640
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/25/2018 11:40:44 PM	40538
Surr: BFB	94.4	70-130		%Rec	1	9/25/2018 11:40:44 PM	40538
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>lrm</b>
Diesel Range Organics (DRO)	290	9.9		mg/Kg	1	9/27/2018 3:37:03 PM	40568
Motor Oil Range Organics (MRO)	500	50		mg/Kg	1	9/27/2018 3:37:03 PM	40568
Surr: DNOP	104	50.6-138		%Rec	1	9/27/2018 3:37:03 PM	40568
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	0.025		mg/Kg	1	9/25/2018 11:40:44 PM	40538
Toluene	0.32	0.050		mg/Kg	1	9/25/2018 11:40:44 PM	40538
Ethylbenzene	ND	0.050		mg/Kg	1	9/25/2018 11:40:44 PM	40538
Xylenes, Total	0.11	0.10		mg/Kg	1	9/25/2018 11:40:44 PM	40538
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	9/25/2018 11:40:44 PM	40538
Surr: Toluene-d8	90.8	70-130		%Rec	1	9/25/2018 11:40:44 PM	40538

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 5
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range	
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1809D31  
02-Oct-18

Client: R.T. Hicks Consultants, LTD  
Project: Sweatt Sun Fed #1(- Pit)

Sample ID	MB-40640	SampType:	mblk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	40640	RunNo:	54496					
Prep Date:	9/27/2018	Analysis Date:	9/28/2018	SeqNo:	1806702	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-40640	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	40640	RunNo:	54496					
Prep Date:	9/27/2018	Analysis Date:	9/28/2018	SeqNo:	1806703	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.4	90	110			

Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 2 of 5

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1809D31  
02-Oct-18

Client: R.T. Hicks Consultants, LTD  
Project: Sweatt Sun Fed #1(- Pit)

Sample ID	LCS-40568		SampType:	LCS		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	LCSS		Batch ID:	40568		RunNo:	54424				
Prep Date:	9/25/2018		Analysis Date:	9/26/2018		SeqNo:	1805098		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	48	10	50.00	0	96.9	70	130				
Surr: DNOP	5.1		5.000		101	50.6	138				

Sample ID	MB-40568		SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS		Batch ID:	40568		RunNo:	54424				
Prep Date:	9/25/2018		Analysis Date:	9/26/2018		SeqNo:	1805099		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	10									
Motor Oil Range Organics (MRO)	ND	50									
Surr: DNOP	11		10.00		106	50.6	138				

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 5

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1809D31  
02-Oct-18

Client: R.T. Hicks Consultants, LTD  
Project: Sweatt Sun Fed #1(- Pit)

Sample ID	Ics-40538		SampType: LCS4		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC		Batch ID: 40538		RunNo: 54391					
Prep Date:	9/24/2018		Analysis Date: 9/25/2018		SeqNo: 1802177		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	97.0	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	105	80	120			
Xylenes, Total	3.2	0.10	3.000	0	105	80	120			
Surr: 4-Bromofluorobenzene	0.50		0.5000		99.3	70	130			
Surr: Toluene-d8	0.47		0.5000		93.6	70	130			

Sample ID	mb-40538		SampType: MBLK		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	PBS		Batch ID: 40538		RunNo: 54391					
Prep Date:	9/24/2018		Analysis Date: 9/25/2018		SeqNo: 1802178		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.56		0.5000		112	70	130			
Surr: Toluene-d8	0.46		0.5000		92.2	70	130			

Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 4 of 5



QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1809D31  
02-Oct-18

Client: R.T. Hicks Consultants, LTD  
Project: Sweatt Sun Fed #1(- Pit)

Sample ID	lcs-40538		SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	LCSS		Batch ID: 40538			RunNo: 54391				
Prep Date:	9/24/2018		Analysis Date: 9/25/2018			SeqNo: 1802094		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	101	70	130			
Surr: BFB	460		500.0		91.6	70	130			

Sample ID	mb-40538		SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	PBS		Batch ID: 40538			RunNo: 54391				
Prep Date:	9/24/2018		Analysis Date: 9/25/2018			SeqNo: 1802095		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		100	70	130			

Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 5 of 5



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87106  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: RT HICKS

Work Order Number: 1809D31

RcptNo: 1

Received By: Jazzmine Burkhead

9/21/2018 8:55:00 AM

Completed By: Ashley Gallegos

9/22/2018 11:37:57 AM

Reviewed By: ENM

9/24/18 Labeled by: JAB 09/24/18

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: JAB

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.4	Good	Yes			





## Bratcher, Mike, EMNRD

---

**From:** Bratcher, Mike, EMNRD  
**Sent:** Thursday, December 13, 2018 1:07 PM  
**To:** 'Kristin Pope'; Weaver, Crystal  
**Cc:** mike@rthicksconsult.com; buddy\_delong@msn.com; Randy Hicks; Billings, Bradford, EMNRD  
**Subject:** RE: [EXT] Sweat - Sun Fed #1 (2RP-4449)

RE: WJ Sweatt \* Sun Federal 1 \* 2RP-4449

Kristin,

OCD approves this proposal, which will lead to a final closure of the site, pending BLM approval as well. My apologies for OCD being unresponsive on past submittals.

Thank you,

Mike Bratcher  
NMOCD District 2  
811 South First Street  
Artesia, NM 88210  
575-748-1283 Ext 108

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.

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Thursday, December 13, 2018 12:38 PM  
**To:** Weaver, Crystal <caweaver@blm.gov>  
**Cc:** mike@rthicksconsult.com; buddy\_delong@msn.com; Randy Hicks <r@rthicksconsult.com>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Pruett, Maria, EMNRD <Maria.Pruett@state.nm.us>  
**Subject:** [EXT] Sweat - Sun Fed #1 (2RP-4449)

Crystal,

Please find the attached Surface Restoration Plan for the Sweatt Sun Fed #1 site. Mr. Sweatt passed away last month and his estate would like to get this work completed as soon as possible.  
Let me know if you approve. Thanks.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

**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  
  
Action 385200

CONDITIONS

Operator:  W J SWEATT P.O. Box 827 Artesia, NM	OGRID:  24375
	Action Number:  385200
	Action Type:  [IM-SD] Incident File Support Doc (ENV) (IM-BNF)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	Historical document upload.	9/19/2024