

**BEFORE THE STATE CORPORATION COMMISSION  
OF THE STATE OF KANSAS**

In the matter of the failure of Tailwater, Inc.	)	Docket No. 21-CONS-3032-CPEN
(Operator) to comply with K.A.R. 82-3-603 at	)	
the South Kempnich Lease in Anderson County,	)	CONSERVATION DIVISION
Kansas.	)	
_____	)	License No. 32461

**PRE-FILED DIRECT TESTIMONY**

**OF**

**TAYLOR HERMAN**

**ON BEHALF OF COMMISSION STAFF**

**NOVEMBER 25, 2020**

1 **Q. What is your name and business address?**

2 A. Taylor Herman, 137 E. 21<sup>st</sup> Street, Chanute KS 66720.

3 **Q. By whom are you employed and in what capacity?**

4 A. I am employed by the Conservation Division of the Kansas Corporation Commission (KCC  
5 or Commission), District #3 Office, as a District Geologist.

6 **Q. Would you please briefly describe your educational background and work experience?**

7 A. In 2002, I graduated from Fort Hays State University with a Bachelor of Science Degree in  
8 Geology. I began working for the Kansas Corporation Commission in April of 2005 as an  
9 Environmental Compliance and Regulatory Specialist (ECRS). In May of 2017, I began work  
10 in my current position of District Geologist. On November 20, 2020 I obtained my licensure  
11 as a Kansas Professional Geologist (P.G.). Prior to my employment with the Kansas  
12 Corporation Commission I worked for Osborn Energy where I assisted with administrative  
13 matters and created maps.

14 **Q. Have you previously testified before this Commission?**

15 A. No.

16 **Q. What duties does your position with the Conservation Division involve?**

17 A. As a District Geologist, I am responsible for the monitoring, investigation, and the  
18 remediation of contamination sites throughout KCC District #3. I compose legislative reports  
19 for these contamination sites along with the Professional Geologist Supervisor. My job also  
20 involves performing inspections, documentation, investigations, and consultation with lease  
21 operators, landowners, and Commission Staff on compliance issues related to oil and gas  
22 production in Kansas. I witness and monitor the drilling and completion of oil, gas, and  
23 injection and disposal wells. My duties also include providing guidance to the District #3

1 ECRSS on spill cleanup and the protection of fresh and usable water zones during plugging  
2 and completion of wells. I also propose remediation recommendations for soils that have been  
3 impacted by brine or hydrocarbons.

4 **Q. What is the purpose of your testimony in this matter?**

5 A. The purpose of my testimony is to discuss the evidence supporting the Commission's finding  
6 in regard to the violations issued against Tailwater, Inc. (Operator) in Docket No. 21-CONS-  
7 3032-CPEN (21-3032 Docket).

8 **Q. Please provide a brief overview of the 21-3032 Docket.**

9 A. Operator was penalized for twenty-three violations of K.S.A. 55-172 and K.A.R. 82-3-603(e)  
10 because Operator did not clean up oil spills at the South Kempnich Lease (Subject Lease) in  
11 a timely manner. The Commission issued one first violation, one second violation, and  
12 twenty-one third violations of K.A.R. 82-3-603(e) and assessed Operator a total of \$108,500  
13 in penalties. Additionally, the Commission ordered Operator to take immediate remedial  
14 action to obtain proper surface control to the satisfaction of Commission District #3 Staff. The  
15 Commission's Order also provided that if Operator fails to comply, then Staff may take any  
16 action necessary to prevent continuing leaks at the Subject Lease regardless of whether  
17 Operator requests a hearing on the Penalty Order in the 21-3032 Docket.

18 **Q. What is the penalty for failure to comply with K.A.R. 82-3-603(e)?**

19 A. K.A.R. 82-3-603(f) states that the penalty for the failure to contain and clean up the spill or  
20 escape in accordance with this regulation shall be punishable by a \$1,000 penalty for the first  
21 violation, a \$2,500 penalty for the second violation, and a \$5,000 penalty and an operator  
22 license review for the third violation.

1 **Q. Would you please explain the requirements of K.A.R. 82-3-603(e)?**

2 A. Yes. K.A.R. 82-3-603(e) provides that each operator shall clean up any spill which requires  
3 notification within 10 days after discovery or knowledge, or by the deadline prescribed in  
4 writing by the district office, and that each operator shall clean up any spill which does not  
5 require notification upon completion of the routine operation or condition that caused the leak,  
6 drip, or escape, or within 24 hours of discovery or knowledge, whichever occurs sooner.

7 **Q. Is spill defined?**

8 A. Yes, K.A.R. 82-3-101(a)(69) defines spill as any escape of saltwater, oil, or refuse by  
9 overflow, seepage, or other means from the vicinity of oil, gas, injection, service, or gas  
10 storage wells, or from tanks, pipelines, dikes, or pits, if the wells, tanks, pipelines, dikes, or  
11 pits are involved in or related to the exploration or drilling for oil or gas; the lease storage,  
12 treatment, or gathering of oil or gas; or the drilling, operating, abandonment, or post-  
13 abandonment of wells.

14 **Q. Does this regulation also provide guidance as to what vicinity means?**

15 A. Yes, for purposes of this regulation, “vicinity” means the area within six feet of the wellhead.

16 **Q. Does K.A.R. 82-3-603 clarify what discovery or knowledge is considered to mean?**

17 A. Yes, for purposes of K.A.R. 82-3-603, discovery or knowledge is the point when the operator  
18 knew or reasonably should have known of the spill.

19 **Q. What cleanup methods or techniques do you approve for spills or escapes?**

20 A. Depending on the spill type (oil or brine), type of soil, and degree of impact (both visual and  
21 lab analysis) the cleanup techniques deemed appropriate and acceptable to a district office  
22 will include physical removal, dilution, treatment with soil amendments, and/or  
23 bioremediation. Except as otherwise required by law or regulation the operator shall complete



1 the cleanup of the spill or escape within 10 days after discovery or knowledge of the spill or  
2 escape, or by the deadline prescribed in writing by the district office.

3 **Q. How did the spills on the Subject Lease come to your attention?**

4 A. On October 21, 2019, Keith Carswell, District #3 ECRS, notified me that Operator failed to  
5 properly clean up and remediate multiple spills on the Subject Lease, and visible impacts to  
6 the soil and vegetation were apparent at these spill locations. I collected soil samples from 7  
7 of the 23 sites during the dates of November 5, 2019, and November 7, 2019. Also on  
8 November 7, 2019, District Staff and I met with Mr. John Chappell, attorney for Operator, on  
9 the Subject Lease to review current conditions at all spill sites. On November 8, 2019, I sent  
10 Operator a letter in reference to the 23 brine-impacted soils sites on the Subject Lease. The  
11 letter was attached to the Penalty Order in the 21-3032 Docket as Exhibit D. The letter gave  
12 a recommendation for the initial treatment to be conducted at each spill site and a deadline to  
13 complete the remediation at each site by 5:00 pm on December 11, 2019. The  
14 recommendation for each site specifically states Operator is to till the impacted area to a depth  
15 of 12" or bedrock, evenly apply a given amount of pelletized gypsum, incorporate the soil  
16 amendment through tillage, and lastly implement erosion controls over the entire impacted  
17 area. This letter stated that failure to implement the recommendations would result in a fine  
18 pursuant to K.A.R. 82-3-603. Attached to that letter were Google Earth Maps, where I had  
19 outlined the areas of brine-impacted soil on the Subject Lease in red.

20 **Q. What is the importance of incorporating the gypsum into the soil through tillage?**

21 A. The importance of these actions is to facilitate the dispersal of the gypsum throughout the  
22 typical "root zones" of vegetation to facilitate the dilution of chlorides from this critical zone  
23 to vegetation's ability to germinate/thrive and to implement erosion controls to protect

1 remaining topsoil. If topsoil erodes, whether it is brine impacted or not, there is no other option  
2 other than to “replace” the top soil since you cannot remediate that which is no longer present.

3 **Q. Have you conducted any follow-up inspections?**

4 A. Yes. I conducted follow-up inspections on June 17, August 21, and October 19, 2020.

5 **Q. What was the purpose of your inspection at the Subject Lease on June 17, 2020?**

6 A. On June 17, 2020, I inspected all 23 sites and an additional 4 other sites. The 4 other sites  
7 were 1-T, 29-T, 26-IW, and the location East of the tank battery. During the inspection I  
8 collected soil samples from all 27 sites I investigated. At each spill site, I collected multiple  
9 samples from across the impacted area. Then I mixed the samples together in order to gather  
10 a homogenized mixture for the entire site at each well. The farmer had just worked the ground  
11 and planted row crops which made it difficult to delineate impacted soils at the time of the  
12 inspection. The soil samples were sent to the Kansas State University Soil Testing Laboratory  
13 for processing. One of the most important tests to take into account in regards to soil sample  
14 testing is the Electrical Conductivity (EC) test because this test will indicate the ability of a  
15 soil solution to carry electrical current.<sup>1</sup> The greater the ability to carry the electrical current  
16 indicates a higher salt content in the soil.

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<sup>1</sup> According to the Kansas State Extension publication MF-1022 Management of Saline and Sodic Soils; "Electrical conductivity, abbreviated EC, is the ability of a soil solution to carry electrical current, and salts increase this ability. The units that EC is reported in from soil testing laboratories can be given in either milisiemens per centimeter (mS/cm) or millimhos per centimeter (mmhos/cm). These units are equal. When a solution extracted from saturated soil is 4.0 mS/cm or greater, the soil is saline." Soils with an Electrical Conductivity of 0-2 mS/cm are given a low salt rank and are considered to show little impact to all plants. Soils with an Electrical Conductivity of 2-4 mS/cm are given a moderate salt rank and may show impact to sensitive plants and seedlings. Soils with an Electrical Conductivity of 4-8 mS/cm are given a high salt rank and most non-salt tolerant plants will show impacts and sensitive plants will show severe impacts. Soils with an Electrical Conductivity of 8-16 mS/cm are given an excessive salt rank and only salt-tolerant plants will grow while others will show severe impacts. Soils with an Electrical Conductivity greater than 16 mS/cm are given a very excessive salt rank and very few plants will be tolerant or grow.

**Q. What were your findings during your August 21, 2020, field inspection of the Subject Lease?**

A. On August 21, 2020, I investigated the 23 sites plus an additional 5 sites and collected soil samples from each site. During this investigation I collected a second sample from the 23 sites using the same methods as in June. I also collected a background soil sample from an area on the lease that did not have any known impacts related to oil and gas activity in order to compare the EC of non-impacted soils to that of the brine impacted soils. At the time of investigation there were noticeable visual impacts to soils, crops, and vegetation at the spill sites. Most of the impacts appeared to be related to brine impacted soils, however, some sites had crude oil saturated soils which were preventing vegetation or crop growth.

**Q. Have you received any results from the soil samples that you collected from the Subject Lease during you June 17<sup>th</sup> and August 21<sup>st</sup> field inspections?**

A. Yes, soil sample EC results for samples collected on June 17, 2020, and August 21, 2020, are listed in the table below.

Electrical Conductivity Values for Collected Soil Samples			
Lab #(s)	Sample Name	Sample Collected June 17, 2020 EC mS/cm	Sample Collected August 21, 2020 EC mS/cm
304015	Background		0.49
304014	1-T		1.52
300865	2-T	18.70	12.25
300878	3-T	3.30	7.84
300875	4-T	23.20	24.70
300866	5-T	1.40	2.31
300869	7-T	1.40	1.28
300855	8-T	5.80	4.16
300870	9-T	2.00	3.01
300857	13-T	1.00	1.17
300861	14-IW	12.00	23.40
300868	14-T	1.10	14.89
300871	15-T	0.80	9.20

300864	16-T	4.20	5.61
300879	17-T	1.40	4.71
300862	18-T	2.30	5.10
300874	20-T	21.20	15.54
300859	22-T	0.60	0.52
300867	23-T	11.50	5.26
300881	24-T	0.90	1.26
300880	25-T	2.30	5.89
300877	Cornfield	3.00	2.29
300872	26-IW	11.00	22.30
300860	26-T	0.80	1.57
300873	27-T	0.80	7.89
300863	28-T	1.80	1.48
300876	29-T	3.80	4.72
300858	30-T	5.30	7.12
300856	TB (East of Tank Battery)	6.10	21.80

Samples taken from spill sites not included in the original 23 site letter

It is important to note on the soil sample results document that the background sample had an Electrical Conductivity of 0.49 mS/cm, whereas all brine impacted samples from the most recent collection date ranged from 0.52 mS/cm on the low end to 24.70 mS/cm on the high end. Sites with an Electrical Conductivity less than 2 mS/cm but with visual impacts to soils, vegetation, and crops may be impacted by crude saturated soils preventing vegetation or crop growth. As noted in the footnote above, soils with an EC greater than 16 mS/cm are given a very excessive salt rank and very few plants will be tolerant or grow in such soil.

**Q. Was there a change in the EC between the samples that you took in June and the samples you took in August?**

A. Yes. As seen in the table above, the EC generally increases from the June 17, 2020 sample to the August 21, 2020 sample. This is most likely caused from continued spillage of formation fluids onto the affected area and/or better ability for me to delineate the impacted soils in growing crops.

1   **Q. What did you find on your October 19, 2020, inspection of the Subject Lease?**

2   A. On October 19, 2020, I conducted a follow-up inspection of the 23 sites plus the additional 5  
3       sites on the Subject Lease. At the date of the inspection Operator had not contacted me or the  
4       District #3 Office as required in the NOV letter to give notice of remediation work to be done.  
5       I did not see any visual evidence of remediation work at the time of the inspection and visual  
6       impacts to soils, crops, and vegetation were still apparent at the spill sites. I have also attached  
7       aerial photographs from 2018 and 2019 in which visible impacts from spills are evident. The  
8       field report and aerial photographs are attached to my testimony as *Exhibit TH-1*.

9   **Q. Please summarize your recommendations.**

10   A. The Penalty Order should be affirmed. Operator failed to install surface controls and clean up  
11       the spills on the Subject Lease. As described above, Operator was given a multitude of  
12       opportunities to address the issues on the Subject Lease, but repeatedly failed to take the  
13       necessary remedial actions.

14   **Q. Does this conclude your testimony?**

15   A. Yes.

## KCC OIL/GAS REGULATORY OFFICES

Inspection Date: 10/19/2020 District: 3 Incident Number: 7186

- ☐ New Situation ☐ Lease Inspection  
☒ Response to Request ☐ Complaint  
☐ Follow-up ☒ Field Report

Operator License No: 32461 API: Q3: Q2: Q1:  
Operator Name: Tailwater, Inc. SEC 22 TWP 20 RGE 20 RGEDIR: E  
Address: 6421 Avondale Dr Ste 212 FSL:  
City: Oklahoma City FEL:  
State: OK Zip Code: 73116 Lease: South Kempnich Well No.:  
Phone contact: 405-810-0900 County: AN

### Reason for Investigation:

Request from Wichita legal staff for an update on remediation efforts performed by the operator on 28 previous spill sites.

### Problem:

The operator has not met the remediation requirements at the time of this field report.

### Persons contacted:

### Findings:

I inspected the 27 remediation sites on 10-19-2020. At the date of the inspection the operator had not contacted myself or the district office, as was required in the notice of violation letter, to give notice of remediation work to be done. I did not see any visual evidence of remediation work at the time of the inspection. The remediation requirements given to the operator were as follows:

- 1.) Till impacted area to a depth of 12' or bedrock.
- 2.) Even application of pelletized gypsum. (amount of gypsum varied by acreage impacted)
- 3.) Incorporate soil amendments through tillage.
- 4.) Implement erosion controls over entire impacted area (i.e., Native hay mulch etc.).

The last date of remediation performed by the operator was on 12-11-2019 when 800 pounds of gypsum were applied at spill site 29-T. The operator spread the gypsum on to the soil but did not incorporate it through tillage.

Actions / Recommendations Follow-up Required ☐ Deadline Date:

I will forward this field report to Wichita legal staff.

☐ RBDMS ☐ KGS ☐ KOLAR **Report Prepared By:** Taylor Herman  
☐ District Files ☐ Courthouse **Position:** District Geologist

**Photo's Taken:** 31

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0355
Subject: Remediation Site at 1-T	PIC Orientation: Facing East
FSL: 3914	Latitude: 38.298866
FEL: 5136	Longitude: -95.19375
API#: 15-003-24507	
Date: 10-19-2020	Time: 12:44 PM
Staff: Taylor Herman	

Additional Information: Bine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0356
Subject: Remediation Site at 2-T	PIC Orientation: Facing East
FSL: 2335	Latitude: 38.29452
FEL: 4830	Longitude: -95.19267
API#: 15-003-24646	
Date: 10-10-2020	Time: 12:46 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0357
Subject: Remediation Site at 3-T	PIC Orientation: Facing East
FSL: 2462	Latitude: 38.29486
FEL: 4483	Longitude: -95.19146
API#: 15-003-24647	
Date: 10-19-2020	Time: 12:47 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0358
Subject: Remediation Site at 4-T	PIC Orientation: Facing East
FSL: 2462	Latitude: 38.29485
FEL: 4173	Longitude: -95.19038
API#: 15-003-24648	
Date: 10-19-2020	Time: 12:49 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0359
Subject: Remediation Site at 5-T	PIC Orientation: Facing South
FSL: 2346	Latitude: 38.29452
FEL: 3829	Longitude: -95.18918
API#: 15-003-24649	
Date: 10-19-2020	Time: 12:50 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0370
Subject: Remediation Site at 7-T	PIC Orientation: Facing West
FSL: 2041	Latitude: 38.293726
FEL: 5167	Longitude: -95.193840
API#: 15-003-24651	
Date: 10-19-2020	Time: 1:11 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent vegetation.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0369
Subject: Remediation Site at 8-T	PIC Orientation: Facing East
FSL: 2056	Latitude: 38.293754
FEL: 4804	Longitude: -95.192574
API#: 15-003-24652	
Date: 10-19-2020	Time: 1:10 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0367 and IMG_0368
Subject: Remediation Site at 9-T	PIC Orientation: Facing South and East
FSL: 2145	Latitude: 38.293992
FEL: 4559	Longitude: -95.191722
API#: 15-003-24653	
Date: 10-19-2020	Time: 1:08 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0366
Subject: Remediation Site at 13-T	PIC Orientation: Facing South
FSL: 1857	Latitude: 38.293171
FEL: 3599	Longitude: -95.188377
API#: 15-003-24687	
Date: 10-19-2020	Time: 1:05 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent vegetation growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0382 & IMG_0383
Subject: Remediation Site at 14-IWL	PIC Orientation: Facing East
FSL: 1655	Latitude: 38.292594
FEL: 2941	Longitude: -95.186080
API#: 15-003-26280	
Date: 10-19-2020	Time: 1:38 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0360
Subject: Remediation Site at 14-T	PIC Orientation: Facing East
FSL: 2334	Latitude: 38.29474
FEL: 3188	Longitude: -95.18695
API#: 15-003-25017	
Date: 10-19-2020	Time: 12:53 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0365
Subject: Remediation Site at 15-T	PIC Orientation: Facing East
FSL: 2110	Latitude: 38.29474
FEL: 3256	Longitude: -95.18695
API#: 15-003-25018	
Date: 10-19-2020	Time: 1:02 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth. Composite soil sample electrical conductivity 9.20 mS/cm.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0371
Subject: Remediation Site at 16-T	PIC Orientation: Facing East
FSL: 1710	Latitude: 38.292813
FEL: 5087	Longitude: -95.193559
API#: 15-003-25019	
Date: 10-19-2020	Time: 1:17 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0372
Subject: Remediation Site at 17-T	PIC Orientation: Facing North
FSL: 1764	Latitude: 38.292952
FEL: 4780	Longitude: -95.192488
API#: 15-003-25020	
Date: 10-19-2020	Time: 1:19 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0373
Subject: Remediation Site at 18-T	PIC Orientation: Facing North
FSL: 1842	Latitude: 38.293158
FEL: 4488	Longitude: -95.191473
API#: 15-003-25021	
Date: 10-19-2020	Time: 1:20 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent vegetation growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0378
Subject: Remediation Site at 20-T	PIC Orientation: Facing East
FSL: 1597	Latitude: 38.292461
FEL: 3757	Longitude: -95.188925
API#: 15-003-25023	
Date: 10-19-2020	Time: 1:29 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0379
Subject: Remediation Site at 22-T	PIC Orientation: Facing North
FSL: 1827	Latitude: 38.293078
FEL: 3340	Longitude: -95.187474
API#: 15-003-25025	
Date: 10-19-2020	Time: 1:31 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0375
Subject: Remediation Site at 23-T	PIC Orientation: Facing South
FSL: 1445	Latitude: 38.292077
FEL: 4847	Longitude: -95.192720
API#: 15-003-25026	
Date: 10-19-2020	Time: 1:24 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0376
Subject: Remediation Site at 24-T	PIC Orientation: Facing East
FSL: 1479	Latitude: 38.292160
FEL: 4459	Longitude: -95.191369
API#: 15-003-25027	
Date: 10-19-2020	Time: 1:26 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0377
Subject: Remediation Site at 25-T	PIC Orientation: Facing South
FSL: 1496	Latitude: 38.292194
FEL: 4111	Longitude: -95.190156
API#: 15-003-25028	
Date: 10-19-2020	Time: 1:27 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0362 and IMG_0363
Subject: Remediation Site at 26-IW	PIC Orientation: Left: Facing NE Right: Facing SW
FSL: 2292	Latitude: 38.294344
FEL: 2962	Longitude: -95.186161
API#: 15-003-25162	
Date: 10-19-2020	Time: 12:57 PM and 12:59 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0384
Subject: Remediation Site at 26-T	PIC Orientation: Facing East
FSL: 1476	Latitude: 38.292114
FEL: 3306	Longitude: -95.187351
API#: 15-003-25029	
Date: 10-19-2020	Time: 1:41 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0381
Subject: Remediation Site at 27-T	PIC Orientation: Facing South
FSL: 1807	Latitude: 38.293011
FEL: 2960	Longitude: -95.186150
API#: 15-003-25030	
Date: 10-19-2020	Time: 1:36 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0374
Subject: Remediation Site at 28-T	PIC Orientation: Facing East
FSL: 1480	Latitude: 38.292181
FEL: 5094	Longitude: -95.193582
API#: 15-003-25163	
Date: 10-19-2020	Time: 1:22 PM
Staff: Taylor Herman	

Additional Information: Produced fluids leak from well head. Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0361
Subject: Remediation Site at 29-T	PIC Orientation: Facing East
FSL: 2625	Latitude: 38.29525
FEL: 2711	Longitude: -95.18529
API#: 15-003-25164	
Date: 10-19-2020	Time: 12:55 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0364
Subject: Remediation Site at 29-T & 26-IW	PIC Orientation: Facing East
FSL: 2414	Latitude: 38.294669
FEL: 2656	Longitude: -95.185095
API#: 15-003-25164	
Date: 10-21-2020	Time: 1:00 PM
Staff: Taylor Herman	

Additional Information: Corn cut along previous spill area.



## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0380
Subject: Remediation Site at 30-T	PIC Orientation: Facing East
FSL: 2039	Latitude: 38.293642
FEL: 2750	Longitude: -95.185418
API#: 15-003-25165	
Date: 10-19-2020	Time: 1:33 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.

## KCC DISTRICT III OFFICE FIELD REPORT PHOTO ID FORM



Operator: Tailwater, Inc.	KLN: 32461
Lease: Kempnich	Legal: 22-20-20E
County: Anderson	PIC ID#: IMG_0385
Subject: Remediation Site East of Tank Battery	PIC Orientation: Facing East
FSL: 1474	Latitude: 38.292115
FEL: 3542	Longitude: -95.188172
API#: NA	
Date: 10-19-2020	Time: 1:42 PM
Staff: Taylor Herman	

Additional Information: Brine impacted soils evident from stunted or non-existent crop growth.



# South Kempnich Lease 2018 Aerial Photograph

Tailwater, Inc. South Kempnich Lease 22-20S-20E Anderson County

## Legend

○ Well Location

N/E Osage Rd

Cornfield

1-T 2-T 3-T 4-T 5-T 7-T 8-T 9-T 13-T 14-T 14-IWL 15-T 16-T 17-T 18-T 20-T 22-T 23-T 24-T 25-T 26-T 26-IW 27-T 28-T 29-T 30-T TB

Background Sample

Google Earth

Image © 2020 Maxar Technologies



1000 ft  
Exhibit TH-1  
Page 30 of 31



38.29459, -95.18588 (WGS84)

# 2019 Aerial Photograph of South Kempnich Lease



18-T

13-T

15-T

30-T

22-T

27-T

14-IWL

20-T

26-T

Tank Battery

200 ft

## **CERTIFICATE OF SERVICE**

21-CONS-3032-CPEN

I, the undersigned, certify that a true copy of the attached Prefiled Testimony of Taylor Herman has been served to the following by means of electronic service on November 25, 2020.

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/S/ Paula J. Murray  
\_\_\_\_\_  
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