BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the failure of Merit Energy Company, LLC (Operator) to comply with K.A.R. 82-3-603 at its WMSU lease in Morton County, Kansas.	)	Docket No. 23-CONS-3273-CPEN
	)	CONSERVATION DIVISION
	)	License No. 32446

COMBINED PRE-FILED DIRECT AND REBUTTAL TESTIMONY OF

ANTHONY R. MELLINI, JR., P.G.

ON BEHALF OF

MERIT ENERGY COMPANY, LLC

Q. Please state your name and business address for the record.

A. My name is Anthony R. Mellini, Jr.; I go by Tony. The business address of the company I work for, Terracon Consultants Inc. ("Terracon"), is 1815 South Eisenhower Street, Wichita, Kansas. Terracon is a national company with more than 5,000 employees and 175 offices with considerable site investigation and remediation expertise.

Q. What is the purpose of your testimony today?

A. I am providing testimony concerning Merit Energy Company LLC's ("Merit") efforts and activities to remediate the spill at issue in this docket, and to manage the Chloride (CL) impacted soils removed in connection with spill remediation. The spill occurred in the area of the Webb A1 and A3 wells and their associated lease roads, which are part of the Wilburton Morrow Sand Unit ("WMSU").

Specifically, I will testify about industry best standard practices to remediate saltwater spills. I will also testify as to the various remediation practices and processes evaluated and employed by Merit in connection with the spill, and the challenges encountered in obtaining Kansas Corporation Commission staff ("Staff") and Kansas Department of Health and Environment ("KDHE") review and approval for treatment and management of the impacted soil Merit removed from the spill area.

Q. What is your relationship with Merit?

A. Merit is a client of Terracon's Client.

I am a Senior Associate and Environmental Department Manager with Terracon. I have been working with Sean Craven at Merit and have been providing site investigation and remediation services to Merit for the last 5 years.

Q. Can you please summarize your educational background and work experience?

A. I obtained a Bachelor of Science in Geology from University of Wisconsin in 1979, and took post-graduate courses in hydrogeology and contaminant hydrogeology.

I have worked in environmental consulting and engineering fields for more than 40 years, including the last 17 years at Terracon.

I am a licensed professional geologist in Kansas, Texas, Florida, Wisconsin, Illinois, and Indiana.

My technical expertise covers:

- Site Investigation and Remediation, including large scale refinery investigations, manufacturing facilities, and spills and releases.
- Landfill Permitting, Monitoring, Design, & Construction.
- Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and Resource Conservation Recovery Act (RCRA) sites and facilities.
- Hydrogeologic Investigations.
- Environmental Site Assessments for Due Diligence.
- Stormwater Permitting and Management for various facilities and sites

Q. Are you familiar with the spill that is the subject of the Penalty Order in this docket?

A. Yes, I am familiar with the spill at issue. Merit engaged Terracon's services after the release occurred and initial cleanup performed. Terracon developed a site investigation plan, conducted an investigation of the release area, evaluated remedial measures, and developed remediation plans to remove CL impacted soils from the release area and manage impacted soils. Terracon also provided oversight for field work.

Q. How are spills like this typically remediated?

A. In my experience, releases like this are typically managed in-situ—meaning in its original place—by blending gypsum into the CL impacted soil to facilitate flushing of the CL from within the root zone downward to beneath it, effectively washing the CL out of the top portion of the soil column where vegetation grows. The flushing process can occur through natural precipitation (i.e., rainwater) and/or water addition.

Q. Were Merit's actions to remediate the impacted soil consistent with typical practices?

A. Merit took a more aggressive approach for remediation than would ordinarily be required. Merit did so in part, because the release occurred over roadways and well pads located on leased property, and Merit wanted to restore the property as soon as possible to avoid further impact to the agricultural operation. Accordingly, the potential CL impacts to the root zone were an area of focus since the surrounding land is comprised of active and inactive agricultural land. At great expense, Merit excavated most of the CL impacted soil from the release area to the extent practicable and treated the residual CL concentrations in-situ at the excavation floors by adding gypsum. Soil was excavated to depth where CL

concentrations were below 500 ppm and/or electrical conductivity measurements were below 4 mmho/cm or 4 mS/cm, which is below phototoxicity levels to grow crops, in some cases as deep as 10 feet. Ten feet is well below any root zone depth for the crops in this area. Gypsum was then applied, at prescribed rates based on the residual CL concentrations, which was implemented with Staff approval. As explained in greater detail in Mr. Craven's testimony, the impacted soils were then transported about a mile away to a parcel of land owned by Merit for staging and treatment within a lined cell.

The excavation areas were then backfilled with clean soil purchased from the landowner. This overall remediation approach was employed with Staff approval on several other occasions in the prior three years.

Q. In your role as environmental consultant, did you work with Merit and Commission staff to come to an acceptable remediation plan?

A. Yes and No. Yes, we did agree on the soil removal and in-situ treatment approach for the excavation floors at well sites and leases roads in the release area. This remediation approach was eventually approved by Staff. However, prior to implementing remedial efforts to remove the impacted soil, Staff rejected any plan to place impacted soil on Merit's property. Without a viable place to stage and treat the impacted soil, all work had to be stopped until a viable option was established for impacted soil management.

Terracon had to evaluate other options for impacted soil management before soil removal work could proceed. As explained in greater detail in Mr. Craven's testimony, at this point, discussions were initiated first with Staff and then with the KDHE about other alternatives for managing the impacted soil. To complicate matters neither agency had clearly defined regulations for managing CL impacted soils from spills, but rather the regulations focused on the landspreading of drilling waste from Oil & Gas Exploration. This left us without clear options to handle impacted soils, and two agencies pushing us back and forth.

Terracon explored soil management options with the agencies including landspreading (K.A.R. 28-29- 1600 through 1608) with the Commission and landfarming (K.S.A 65-3407c(a)(2)) with the KDHE. However, both agencies would not allow Merit to apply these regulations for our site-specific conditions for CL impacted soil, even though the oilfield waste the regulations applied to is typically far more chloride concentrated and

impactful. In the end, staff deferred to landfilling the soil. As Mr. Craven explains and I agree, landfilling the impacted soil was not economically feasible or practical, nor an environmentally sound soil management alternative.

Q. K.A.R. 82-3-603(e)(1) Kansas Administrative Regulation for Cleanup of Spills provides that appropriate cleanup techniques include physical removal, dilution, treatment and bioremediation. Did Terracon's remediation approaches employ these techniques?

A. Yes. Terracon's remediation approaches generally employ these techniques for the spill site. Terracon's proposed remediation plans with respect to impacted soil management, employed physical removal of impacted soils from the release area, dilution of impacted soils through mixing, ex-situ treatment of soil with gypsum, and flushing through natural precipitation.

The dilution of soil occurred when over-excavating the more impacted soil from the surface with lesser impacted soils, thereby diluting or lowering the overall CL concentration.

As an added measure, gypsum was applied to the excavation bottoms, with Staff approval, to treat the residual CL that could not be removed due to site constraints or that did not need to be removed due to the depth of the impact. The gypsum treatment process was also applied for ex-situ treatment of excavated soils in a containment cell on Merit's property away from the spill area. Therefore, the remediation techniques suggested and ultimately used conformed with this regulation.

Terracon previously proposed to Staff the direct placement of impacted soil on the ground within a bermed area on Merit property and generally following this process along the same lines as the landspreading regulations for drilling mud. However, due to Staff and the KDHE's refusal to allow landspreading or landfarming, Merit implemented a more conservative and environmentally sound approach and constructed a bermed and lined cell to contain, monitor, and treat excavated soils. This approach also allowed for confirmation that the soil meets the 500 ppm CL target level for potential future beneficial reuse. Terracon's "Soil Treatment Report" attached as Exhibit M-4 to Mr. Craven's testimony, demonstrates that this approach has been effective.

Q. In your experience, does Terracon's remediation approach for soil removal and management use best standard practices.

A. Yes. Terracon's approach employs best standard practices for soil removal and in-situ treatment which Staff approved. Merit also employed environmentally sound and best standard practices for ex-situ soil management and treatment on Merit's property. The ex-situ treatment process also employs the use of gypsum, and the process appears to be effective based on the test results provided in our Soil Treatment Report. *See* Ex. M-4.

Q. Do you have an understanding of the rationale for Staff's demand to have impacted soil hauled to landfill rather than to than Merit's property for treatment?

A. I do not have clear understanding as to why Staff proposed landfilling rather than treatment on Merit's property. I do not think Staff considered the overall impacts associated with landfilling and its associated drawbacks.

We evaluated the different landfilling options including:

Hauling to the Morton County Landfill. This was the closest and best landfill for disposal, however the County refused to allow impacted soils to be taken to this site.

Hauling to the Stevens County Landfill in Hugoton. This landfill would not allow impacted soils to be received and disposed at its landfill.

Hauling to the Waste Connections Landfill in Liberal. This would have been a significant haul distance, approximately 104 miles round trip. It was quickly determined that landfilling was not an economically feasible option given the transportation costs and tipping fees since it is a sub-Title D landfill with higher disposal costs. As Mr. Craven explains, the estimated cost to haul here would have been $650,000.

More importantly, hauling impacted soils to any landfill would be detrimental to the environment and public safety. This is due to the number of truck loads, haul distances, transport risk, health and safety of public, and air pollution associated with transportation. It is also not an environmentally sound or sustainable approach since it requires use of valuable landfill space for soil that could be treated and used for beneficial reuse.

Landfilling would also eliminate the beneficial reuse option for soil, which was previously approved by Staff.

Q. Can you explain how the contaminated soil is being treated on Merit's property?

A. Terracon's ex-situ treatment approach was developed to meet the 500 ppm CL target level so the soil could be used for beneficial reuse. This approach employs best standard practices for containment, dilution, monitoring, and treatment.

First, prior to moving excavated impacted soil from the spill site, Merit constructed a bermed and lined cell approximately 1 acre in size for containment of impacted soil for treatment and monitoring. The cell floor and berm were lined with 6-mil low-density polyethylene (LDPE) sheeting to protect the site from contamination.

Second, impacted soil was placed in approximate 1-foot thick lift, generally diluting impacted soils through mixing of higher and lesser impacted soil during excavation and placement in cell.

Third, following placement of the 1st 1-foot lift, a 5-point composite sample was collected from each of the four quadrants and analyzed to monitor CL concentrations.

Fourth, pre-treatment samples from three of four quadrants were already less than 500 ppm CL, indicating most of the soil was eligible for beneficial reuse.

Fifth, based on the residual CL concentrations present in each quadrant; a prescribed volume of gypsum was applied to each quadrant for further treatment. Gypsum application rates for the excavation floors were pre-approved by Staff, so we used the same prescribed gypsum application rates for ex-situ treatment of soils within the cell as were being employed in-situ in excavation bottoms at the spill site.

Sixth, follow-up monitoring of treated soil is being conducted for the one quadrant where CL concentrations exceed the 500 ppm CL target level.

Seventh, test results indicate the proposed ex-situ remediation approach has been effective for containment, dilution, monitoring, and treatment of impacted soils. This is shown in Exhibit M-5 attached to Mr. Craven's testimony.

Q. Did you believe the spill has been remediated using best standard practices, and in accord with the Merit and Staff's agreed upon plan of remediation?

A. Yes. Best standard practices were employed for impacted soil investigation and removal at the spill site, and ex-situ soil management on Merit's property. Prior to soil removal, Terracon conducted a geoprobe investigation to assess the lateral and vertical extent of impacts to depths of 6 feet in the well pad and roadway areas. Terracon's "Soil Excavation

Report" attached as Exhibit M-5 presents the pre-excavation soil sample results used to establish excavation depths and project residual CL concentrations (well pad areas) and electrical conductivity measurements (lease roads) below the proposed final excavation depths. This process was employed to eliminate the need for post-excavation confirmation sampling of the excavation floors and expedite backfilling time especially in critical areas along the lease roads. The geoprobe results can be used in place of excavation floor samples to establish the residual concentrations. Therefore, additional sampling at the final excavation depths was not planned or required, as Mr. Sullivan suggests. Please refer to Exhibit M-5 for more details.

Additionally, the site work was conducted in general accordance with Merit and Staff's approved plans for impacted soil removal from source areas. Gypsum was also applied at prescribed rates to excavation bottoms for residual CL prior to backfilling with clean soil. This approach was approved by Staff and has been employed at other sites as well. Terracon's "Soil Excavation Report" (Ex. M-5) indicates that impacted soils were remediated in general accordance with Staff approved plans; however, Staff has refused to approved the ex-situ soil treatment plan for Merit's property, or acknowledge its effectiveness.

Test results indicate that the ex-situ soil treatment plan appears to be an effective approach for managing the impacted soil. The process will allow for additional management, treatment, and beneficial reuse of soils. This is a far better, more appropriate and sustainable remediation method than hauling to a far-off landfill for disposal.

In addition, Terracon's remediation approach appears to generally follow the spill cleanup regulations.

Q. Does this conclude your testimony?

A. Yes.

VERIFICATION

STATE OF KANSAS)
) ss:
COUNTY OF SEDGWICK)

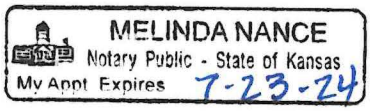
Anthony R. Mellini, Jr., being first duly sworn, deposes and says that he is the Anthony R. Mellini, Jr. referred to in the foregoing "COMBINED PRE-FILED DIRECT AND REBUTTAL TESTIMONY OF ANTHONY R. MELLINI, JR." to be filed before the State Corporation Commission of the State of Kansas in Docket No. 23-CONS-3273-CPEN, and that the contents thereof are true and correct to the best of his information, knowledge, and belief.

Anthony R. Mellini, Jr.

SIGNED AND SWORN to before me on this 16th day of February, 2024.

Notary Public

My Commission expires:



CERTIFICATE OF SERVICE

I, Jonathan A. Schlatter, hereby certify that on this 16th day of February, 2024, I caused the original of the foregoing **Combined Pre-Filed Direct and Rebuttal Testimony of Anthony R. Mellini, JR., P.G., on Behalf of Merit Energy Company, LLC** to be electronically filed with the Conservation Division of the State Corporation Commission of the State of Kansas, and caused true and correct copies of the same to be delivered by electronic mail to the following persons:

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