

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

|   |                              |
|---|------------------------------|
| In the Matter of the Application of Mid- )      | Docket No. 21-CONS-3126-CUIC |
| Continent Energy Corp. for a permit to )        |                              |
| Authorize the Injection of Saltwater into the ) | CONSERVATION DIVISION        |
| Pawnee and Fort Scott formations at the )       |                              |
| Seamster #1A well in Section 9, Township )      | License No. 5205             |
| 34 South, Range 8 East, Cowley County, )        |                              |
| Kansas. )                                       |                              |

**PRE-FILED DIRECT TESTIMONY OF**

**JEFFREY BURK**

**ON BEHALF OF**

**MID-CONTINENT ENERGY CORP.**

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

2 A. Jeffrey Burk. My business address is 1822 S. Longfellow Cir, Suite 10, Wichita, Kansas.

3 **Q. What is your occupation?**

4 A. I am a geological and oilfield consultant with 38 years of experience in areas of exploration  
5 and exploitation geology, new and remedial well completions, and environmental  
6 regulatory compliance. My consulting company is called Peterra Energy Services, LLC,  
7 and Mid-Continent Energy Corp. ("Mid-Continent") has been a client of mine for  
8 numerous years.

9 **Q. Please summarize your work experience and educational background.**

10 A. I am currently a consulting Petroleum Geologist and have been active in the oil and gas  
11 industry for the past 38 years. I primarily have worked in Kansas, Oklahoma, Texas, and  
12 Utah. I earned a Bachelor of Arts in Geology from the University of Kansas in 1983, and  
13 studied geology at both the University of Kansas and Wichita State University. I have also  
14 maintained an active membership in the Kansas Geological Society for the past 38 years.  
15 After returning to Wichita in 1983, I became a partner in a small geological firm, Burk &  
16 Landes, Inc. In 1985, I was offered a full time geological position with one of my clients,  
17 H-30 Drilling, Inc., of Wichita, Kansas. I was originally hired as a geologist, but I was  
18 soon promoted to the position of Exploration & Production Manager. During the years I  
19 worked for H-30, from 1985-1990, I obtained significant experience in drilling contracts,  
20 drilling operations, drilling and completion troubleshooting, well completions, and  
21 regulatory compliance within several state jurisdictions and the federal jurisdiction. In  
22 1990, H-30 Drilling, Inc. was sold to another company and I entered the consulting market.  
23 Since 1990, I have maintained my consulting offices in Wichita, Kansas. I also briefly had  
24 an office in Guthrie, Oklahoma. I have actively consulted in East Texas, West Texas,  
25 Kansas, Oklahoma, Colorado, Nebraska, and Utah.

26 **Q. Are you familiar with the Application for Injection Authority ("Application") for the**  
27 **Seamster #1A well that is the subject of this docket?**

28 A. Yes. I prepared and submitted the original Application on behalf of Mid-Continent.

29 **Q. Is the subject matter of the Application within the scope of your engagement with**  
30 **Mid-Continent?**

1 A. Yes. I have on occasion consulted on both KCC regulatory issues and other projects in my  
2 capacity as a geologist and a completion consultant. I regularly assist clients in the  
3 permitting injection wells in Kansas, along with designing the injection well and enhanced  
4 oil recovery or re-pressuring projects.

5 **Q. What is the purpose of the Application?**

6 A. To obtain authority to inject saltwater into the Seamster #1A well. Mid-Continent is  
7 requesting approval to re-inject the saltwater produced from the Seamster and Jarboe well  
8 into the Pawnee and Ft. Scott zones beneath those leases. Mid-Continent had been  
9 injecting into these same zones at the Seamster B #1 well, which was only about 1,000'  
10 West of the Seamster #1A, for almost 30 years until it encountered mechanical issues and  
11 had to be plugged and abandoned in November of 2019. In our view, the Seamster #1A  
12 is a replacement well for the Seamster B #1, and is intended to be a pressure maintenance  
13 well for the Pawnee and Ft. Scott production from the Seamster and Jarboe leases. The  
14 Seamster #1A has produced oil from the Pawnee and Ft. Scott formations since 1986, but  
15 daily production has declined enough to justify converting it to an injection well.

16 By injection fluid back into the producing zones, Mid-Continent will be adding pressure  
17 back into the producing zones which should assist in maintaining current production from  
18 the other Seamster and Jarboe wells, and, over time, potentially increase oil production that  
19 would otherwise be lost due to declining formation pressures. This should allow for an  
20 increased economic life of the other Seamster and Jarboe wells, which will prevent waste.  
21 The re-pressuring process entails taking all of the produced saltwater from the Seamster  
22 lease that covers the W/2 NW/4 of Section 9-T34S-R8E, and the adjoining Jarboe lease  
23 that covers E/2 NW/4 of the same section, transporting that saltwater to the Seamster #1A  
24 well via existing buried lines, and re-injecting the saltwater down through the existing  
25 wellbore perforations into the Pawnee and Ft. Scott formations. Although we have  
26 requested 150# as a maximum injection pressure, we have, in the past, never needed to use  
27 any pressure at the surface.

28 Authorizing injection at the Seamster #1A solves several issues. First, it will stabilize  
29 declining pressures in the Pawnee and Ft. Scott zones, which should help maintain current  
30 oil production from the other wells producing from those zones. Second, it will eliminate

1 the necessity to haul the produced saltwater to other remote sites for disposal. Piping  
2 saltwater is a much safer environmental alternative than trucking it, and it will also save  
3 the operator \$18,000 to \$24,000 annually in hauling and disposal fees, thereby extending  
4 the economic life of these two leases and preventing waste. Without the injection well, the  
5 economic life of these Seamster and Jarboe wells will be significantly reduced, which could  
6 cause the premature plugging of the Seamster and Jarboe wells. This would effectively  
7 reduce landowner royalties, county taxes, state taxes, and the investment returns to the  
8 original investors, and also waste proven oil reserves.

9 I note several of the Seamster and Jarboe wells produce from the Cattleman Sand  
10 formation. Although saltwater will not be injected into the Cattleman Sand because it is  
11 not present in the Seamster #1A, the wells producing from that zone will benefit  
12 economically through the savings associated with not having to haul saltwater.

13 **Q. Is it your opinion that the proposed injection well is engineered to prevent the**  
14 **pollution of freshwater?**

15 A. Yes. This well will have multiple layers of protections to prevent pollution of freshwater.  
16 First, are the original surface and production casing strings that have been cemented in  
17 place to a depth of 500' to surface, which protect the freshwater table. Second, the  
18 produced water will be injected through steel tubing set inside of the casing strings down  
19 to the injection zones, which are more than 2,000' deep. A packer set at a depth of about  
20 2,030' will prevent the injected saltwater from coming up the backside of the tubing to  
21 surface. Third, the water is being injected into zones that underlie an impermeable rock  
22 system that has trapped oil and water for millions of years. Over the almost 30 years that  
23 saltwater was injected through the Seamster B #1 into these same zones, there has never  
24 been any evidence that saltwater has escaped the formation into the freshwater table.

25 I would also note that injection of this produced saltwater is far safer to the environment  
26 than hauling the produced fluid on a truck to an offsite saltwater disposal well, because  
27 there is far more likely to be an accident with a vehicle traveling on a highway than water  
28 travelling through a pipeline. Obviously, the less time saltwater is on the surface and fewer  
29 times it is handled by human or machine, the less chance there is for an accident that could  
30 result in surface pollution.

1 **Q. Will the produced saltwater injected into the Seamster #1A remain confined to the**  
2 **proposed zones of injection?**

3 A. Yes. The proposed injection well is currently only perforated in the Pawnee and Ft. Scott  
4 zones and the other producing zone in the area, the Cattlemen Sand, is geologically not  
5 developed in this well. Therefore only the Pawnee and Ft. Scott zones will be affected.  
6 Migration of fluids from the intended injection zone is highly unlikely for two reasons:  
7 First, we have a packer which will be isolating the injection zones and the annular space  
8 will be full of packer fluid and monitored. Second, we have a cement bond log (CBL) that  
9 indicates good bond from the pipe to cement and the cement to the formation bonds. This  
10 too will contain any possible migration.

11 The normal static fluid level for these injection zones is about 1000' from the surface. It  
12 should also be noted that the previous injection well never required any pressure to initiate  
13 the injection. Since the zonal pressures are significantly reduced, the zones should take  
14 this small amount of fluid without any anticipated pressure. The amount of hydrostatic  
15 pressure being exerted is therefore insufficient to exceed the "FRAC" gradient, at that  
16 depth and are highly unlikely to cause fluid to migrate outside of the injection zones. The  
17 requested rates and injection pressures were requested more as a stop gap so that, should  
18 the formation start plugging up, that we could continue to inject until the zone could be  
19 cleaned up.

20 This injection wellbore has also been specifically engineered to protect all fresh water and  
21 any usable water in the area. This was accomplished by the original cemented surface  
22 casing and the secondary cementing process performed on June 30, 1986, which cemented  
23 the open hole from 501' to the surface. All of this was performed and supervised as  
24 required by the Commission staff at the time.

25 **Q. The protesters have raised concerns that injecting saltwater into the Seamster #1A**  
26 **could cause earthquakes, toxic leaks and water contamination. Do you have a**  
27 **response to those concerns?**

28 A. In my prior testimony I have explained the processes in place to protect all usable water  
29 and how migration of waters is mitigated. In my experience, where seismic activity has  
30 increased in Oklahoma and South Central Kansas, most all of those wells were more than

1 5,000' deep, often had significant horizontal legs, and disposed of in excess of 2,000 barrels  
2 of water per day. These deep injection points, typically the Arbuckle or Granite Wash, set  
3 upon or are the basement rock. The proposed zone of injection section is only 2,050' deep,  
4 well above basement, and the proposed rate of injection is only 250 bbls of fluid per day.  
5 As such, there is significant formation overburden below to distribute any hydrostatic  
6 pressure. It should also be noted that the Seamster B #1 was successfully used for injection  
7 over the past 30 years without any seismic activity noted. I have also reviewed the latest  
8 Kansas Geological Survey seismic data base for the past year and was unable to find any  
9 earthquake activity in either Cowley or Chautauqua Counties.

10 **Q. Has Commission Staff raised any issues with the Application?**

11 A. Yes, Staff has identified two issues.

12 First, Commission Staff identified that the original Notice of Application that was  
13 published in the local paper described the wrong well and land. It turns out there are two  
14 Seamster #1A wells in the vicinity, and the wrong well was described.

15 Second, there is an old plugged and abandoned well called the Seamster #1 located about  
16 1,000' southwest of the Seamster #1A well that does not have a cement plug above the  
17 proposed injection zones. Staff has requested that remedial plugging work be performed  
18 on this well before injection operations can commence at the Seamster #1A. On Exhibit  
19 B-1 I have identified the Seamster #1A well with a yellow circle and the old Seamster #1  
20 with a red square.

21 **Q. Has the first issue concerning publication of Notice of the Application been corrected?**

22 A. Yes. Notice of the Application was re-published on April 1, 2021. The corrected notice  
23 described the correct Seamster #1A well and its location. A copy of the publisher's  
24 affidavit is attached as Exhibit B-2. The publisher's affidavit was filed in this docket today,  
25 April 5, 2021.

26 **Q. Have representatives from Mid-Continent consulted with Commission Staff as to the  
27 nature of the remedial work that it has requested be performed at the old Seamster  
28 #1?**

29 A. Yes. During our discussions with Commission Staff it was determined that the Seamster  
30 #1, although properly plugged at the time it was drilled by a different operator, does not

1 meet the current standards to protect the usable water. Commission staff has conditioned  
2 the approval of injection authority at the Seamster #1A on Mid-Continent attempting to re-  
3 plug the Seamster #1. This would entail washing the Seamster #1 down to a depth of 2050',  
4 setting an open hole plug above the Altamont/Pawnee, and then setting a second plug at  
5 500' and circulating cement to the surface. This process will isolate the Pawnee and Ft.  
6 Scott section and protect the lowest usable water zone at approximately 450'. Mid-  
7 Continent has agreed, assuming this permit is approved, to attempt to re-enter and re-plug  
8 this well in an effort to protect the areas fresh and usable waters and any other shallow  
9 hydrocarbon bearing formations.

10 **Q. When does Mid-Continent anticipate performing the remedial work at the Seamster**  
11 **#1, and the other required work at the Seamster #1A well?**

12 A. As soon as Mid-Continent has approval to do so.

13 A drilling permit will need to be obtained for the purpose of re-plugging the Seamster #1  
14 well. Then, a rig sufficient to accomplish the task will be hired to drill out the existing  
15 plugs, both of which are located in the original surface pipe at a depth less than 160' deep.  
16 Once the existing plugs are drilled out, we will continue to wash down the well to the top  
17 of the Altamont/Pawnee zone at an approximate depth of 2,050'. A plug will be set at that  
18 depth and then a second and final plug will be set at 500' and cement will be circulated to  
19 surface. Commission staff will provide the specific instructions for these new cement  
20 plugs. If all goes well, the remedial work at the Seamster #1 could be accomplished in  
21 three days from start to finish.

22 **Q. Are there any other requirements that will need to be satisfied before the Seamster**  
23 **#1A can be authorized for injection?**

24 A. Yes. One, Mid-Continent may need to run a cement bond log from below 501' to surface  
25 to demonstrate that there is sufficient cement behind the casing strings at those depths.  
26 Doing so would only be necessary if Commission staff does not accept the prior bond log  
27 and completion report as evidence that there is cement behind the casing strings at those  
28 depths. The 1986 completion report states that the 4-1/2" casing was perforated from 500'-  
29 501' and that cement was circulated to surface from that depth using 111 sacks of cement,  
30 which could provide sufficient evidence of adequate cement.

1 Two, the well will need to pass a staff-witnessed casing integrity test. This will be done  
2 by running a 2-3/8' tubing string with a 4-1/2" x 2-3/8" Model AD-1 packer, to a depth of  
3 2,030'. The AD-1 packer will then be set in place with 10,000# of tension, and the annular  
4 space will be loaded with packer fluid. The annulus will then be pressured to 300# to see  
5 if pressure holds. If pressure holds, as we expect it will, it demonstrates that there are no  
6 holes in the casing and that freshwater and other potentially shallower hydrocarbon bearing  
7 zones are adequately protected. Mid-Continent is hoping to have the casing integrity test  
8 scheduled and performed later this week.

9 **Q. Does the Application otherwise meet all of the Commission's requirements to**  
10 **authorize injection at the Seamster #1A?**

11 A. Yes. We have discussed any and all concerns openly with representatives from the  
12 Commission's District #2 office and the central UIC Department, and no other concerns  
13 have been identified. Upon satisfying the items remaining for completion, the Application  
14 should be ready for final consideration and hopefully approval.

15 **Q. Do you believe granting the Application is necessary to prevent waste, while**  
16 **protecting fresh and usable water?**

17 A. Yes. These wells, like many wells in Kansas are now reaching their economic limits. The  
18 approval of this permit allows these wells to remain economically viable, creates a much  
19 safer and long term solution for the handling of produced saltwater, and remediates an old  
20 well in an effort to further protect the usable water in the area. Keeping these wells  
21 producing creates income for the farmers, area schools, state taxes, and also provides a  
22 return to the investors who own an interest in these wells. The engineering and precautions  
23 taken will continue to protect fresh water, usable water, and the environment in the area.

24 **Q. Are there any other facts pertaining to the Application that you would like the**  
25 **Commission to consider?**

26 A. Mid-Continent has made it part of its due diligence to be open and forthright in our request  
27 for this permit. We have met via conference calls and individual calls with both  
28 Commission UIC Staff and District #2 Staff to make sure that all parties are comfortable  
29 with our requests. Mid-Continent has also agreed to re-plug an existing old well that  
30 doesn't meet the current plugging standards, even though Mid-Continent is not responsible



1 for this well. This will further protect any injection waters from migrating out of the  
2 designated injection zones. I am hoping that this effort has helped lessen any concerns and  
3 answered any questions that may have arisen as a result of this application. I remain willing  
4 to address and answer any question that may come up during this process.

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

6 A. Yes.

**VERIFICATION**

STATE OF KANSAS                     )  
  ) ss:  
COUNTY OF SEDGWICK            )

Jeffrey Burk, being first duly sworn, deposes and says that he is the Jeffrey Burk referred to in the foregoing “PRE-FILED TESTIMONY OF Jeffrey Burk” to be filed before the State Corporation Commission of the State of Kansas in Docket No. 21-CONS-3126-CUIC, and that the contents thereof are true and correct to the best of his information, knowledge, and belief.

\_\_\_\_\_  
Jeffrey Burk

SIGNED AND SWORN to before me on this \_\_\_\_ day of **April** , **2021**.

\_\_\_\_\_  
Notary Public

My Commission expires:

## CERTIFICATE OF SERVICE

The undersigned certifies this 5th day of April, 2021, that a true and correct copy of the foregoing **Pre-filed Testimony of Jeffrey Burk on Behalf of Mid-Continent Energy Corp.** has been served as described below:

*Via email to:*

Jonathan R. Myers, Presiding Officer  
And Assistant General Counsel  
Kansas Corporation Commission  
266 N. Main, Ste 220  
Wichita, KS 67202-1513  
Fax: 316-337-6211  
[j.myers@kcc.ks.gov](mailto:j.myers@kcc.ks.gov)

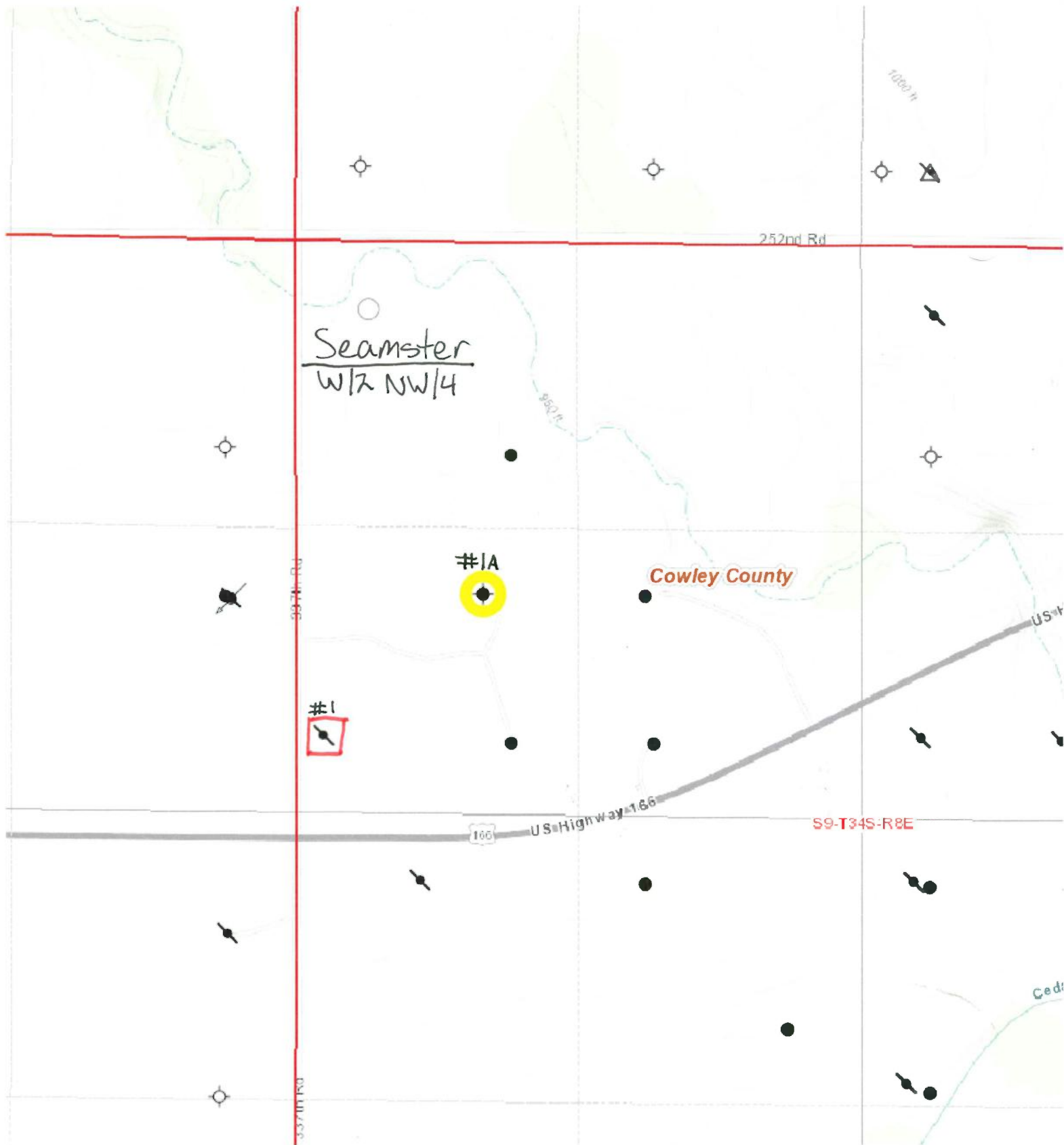
Kelcey Marsh, Litigation Counsel  
Kansas Corporation Commission  
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Wichita, KS 67202-1513  
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*Via email and first class mail to:*

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/s/ Jonathan A. Schlatter  
Jonathan A. Schlatter



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

|   |   |                              |
|---|---|------------------------------|
| In the matter of the application of Mid-Continent | ) | Docket No. 21-CONS-3126-CUIC |
| Energy Corp. for a permit to authorize the        | ) |                              |
| injection of saltwater into the Pawnee and Fort   | ) | CONSERVATION DIVISION        |
| Scott formations at the Seamster#1A well in       | ) |                              |
| Section 9, Township 34 South, Range 8 East,       | ) | License No. 5205             |
| <u>Cowley County, Kansas.</u>                     | ) |                              |

**AFFIDAVIT OF PUBLICATION**

Submitted by:  
MORRIS, LAING, EVANS, BROCK  
& KENNEDY, CHTD.

By: /s/ Jonathan A. Schlatter  
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*Attorneys for Mid-Continent Energy Corp.*

**AFFIDAVIT OF  
PUBLICATION**

See Proof on Next Page

**Cowley CourierTraveler**  
**200 East Fifth Avenue**  
**(620) 442-4200**

I, David Allen Seaton, of lawful age, being duly sworn upon oath, deposes and says that I am the Publisher of Cowley CourierTraveler, a publication that is a "legal newspaper" as that phrase is defined for the city of Arkansas City, for the County of Cowley County, in the state of Kansas, that this affidavit is Page 1 of 2 with the full text of the sworn-to notice set forth on the pages that follow, and that the attachment hereto contains the correct copy of what was published in said legal newspaper in consecutive issues on the following dates:

**PUBLICATION DATES:**

Apr. 1, 2021

**Notice ID:** izCC7ucuphWNQkU4aLEy

**Notice Name:** Mid-Continent Energy Corp.

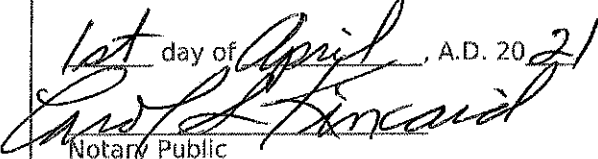
**PUBLICATION FEE:** \$56.17

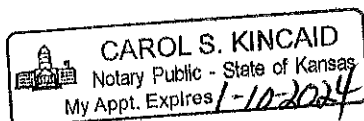
  
Publisher

**VERIFICATION**

STATE OF KANSAS  
COUNTY OF COWLEY COUNTY

Signed or attested before me on this

1st day of April, A.D. 2021  
  
Notary Public



(First published in the Cowley  
Courier/Traveler Thursday, 04/01,  
2021.)

**BEFORE THE STATE CORPO-  
RATION COMMISSION**

**OF THE STATE OF KANSAS**  
In the Matter of the Application of  
Mid-Continent Energy Corp. for a  
permit to authorize the injection of  
saltwater into the Pawnee and Fort  
Scott formations at the Seamster  
#1A well in Section 9, Township 34  
South, Range 8 East, Cowley Coun-  
ty, Kansas.

Docket No. 21-CONS-3126-CUIC  
CONSERVATION DIVISION  
License No. 5205

**NOTICE OF APPLICATION**

This notice corrects the notice pre-  
viously published on December 2,  
2020.

**TO: ALL OIL AND GAS OP-  
ERATORS, PRODUCERS AND  
LESSEES, OIL AND GAS LES-  
SORS AND ROYALTY OWNERS,  
MINERAL INTEREST OWNERS,  
LANDOWNERS, AND ALL OTH-  
ER PERSONS CONCERNED:**

You and each of you are hereby  
notified that Mid-Continent En-  
ergy Corp. ("Mid-Con") has filed an  
Application with the Kansas Cor-  
poration Commission ("Commis-  
sion") to commence the injection of  
saltwater into the Pawnee and Fort  
Scott formations at the Seamster  
#1A well, API No. 15-035-23501-  
0001, located approximately 3,630'  
from the South line and 900' from  
the West line of Section 9, Township  
34 South, Range 8 East, Cowley  
County, Kansas.

The Application is pending with  
the Commission. Any persons who  
object or protest to the granting of  
the Application shall be required to  
file their objections or protests in  
writing with the Commission within  
30 days after the date of this pub-  
lication. If a written protest is not  
timely filed, the Application may be  
determined administratively by the  
Commission and may thereby be  
granted without hearing or further  
notice to any interested party. All  
objections and protests shall clearly  
state the reasons why granting the  
Application will cause waste, vio-  
late correlative rights, or pollute wa-  
ter resources. Objections or protests  
shall be mailed to the Kansas Cor-  
poration Commission, Conservation  
Division, 266 N. Main St., Ste. 220,  
Wichita, KS 67202, with a copy to  
Mid-Con's attorneys listed below.  
All parties in any way interested or  
concerned shall take notice of the  
foregoing and govern themselves  
accordingly.

Mid-Continent Energy Corp.  
5920 E Central, Suite #200  
Wichita, Kansas 67208  
Phone: 316-263-9501

4/01