

KANSAS UNDERGROUND INJECTION
CONTROL PERMIT
CLASS I NONHAZARDOUS WASTE INJECTION WELL

Pursuant to the provisions of Kansas Statutes Annotated (65-164, 65-165, 65-166, 65-170g and 65-171d) and Kansas Administrative Regulations (Chapter 28, Article 46),

Owner/Operator:	ONEOK, Inc.
Owner/Operator Mailing Address:	P.O. Box 871 Tulsa, OK 74102-0871
Telephone Number:	(620) 562-3287
Facility Name:	Bushton Processing Plant
Facility Location:	Bushton, Kansas
Well Identification:	#7
Well Location:	SW SW NE 31-17-9W, Ellsworth County, Kansas 2964' fsl and 2630' fel of SE Corner
Receiving Formation:	Arbuckle

is authorized to inject non-hazardous liquid wastes from this facility in accordance with the construction, operation, monitoring and reporting requirements as set forth herein.

The permittee shall comply with all conditions in this permit, federal and state regulations governing Class I non-hazardous waste injection wells and the requirements of the Kansas Department of Health and Environment (KDHE).

This permit shall become effective _____, supersedes the previous UIC permit KS-01-053-006, and expires _____.

FACILITY DESCRIPTION: The facility is a hydrocarbon processing plant and hydrocarbon storage well facility.

Secretary, Kansas Department of Health and Environment

Date

I. INJECTION LIMITATIONS, MONITORING, REPORTING AND TESTING REQUIREMENTS

- A. The permittee is authorized to inject non-hazardous liquid waste from this facility consisting of waste brines from the hydrocarbon storage operation; wastewater from hydrocarbon dehydrators; cooling tower water; RO unit wastewater; laboratory wastewater; boiler blow-down; wastewater from engine room and plant floor drains; knock-out water from hydrocarbons from incoming pipelines; water softener regenerate wastewater; steam condensate, and non-hazardous equipment wash water.
- B. Such injection shall be controlled, limited and monitored by the permittee as specified in this permit. Monitoring data required to be submitted to KDHE on a monthly basis shall be submitted no later than twenty-eight (28) days after the last day of the month for which the monitoring data are being reported. Monitoring data required to be submitted to KDHE on a quarterly basis shall be submitted no later than twenty-eight (28) days after the last day of the calendar quarter for which monitoring data are being reported. All monitoring data required for reports shall be submitted on forms prescribed by KDHE. Monitoring reports and other information required by this permit shall be directed to:

Kansas Department of Health and Environment
Bureau of Water
1000 SW Jackson St., Suite 420
Topeka, Kansas 66612-1367

C.

Injection and Operational Parameters	Injection or Parameter Limitation	Measurement or Analysis Frequency	Reporting Requirement	Sample or Measurement Type
Injection Pressure (inches mercury or pounds per square inch gauge)	Gravity flow, no pump pressure allowed	*	Monthly	Gauge and Continuous Recording Device ***
Maximum Daily Injection Volume (gallons per day)	2,000,000 gpd	*	Monthly	Meter or Continuous Recording Device ***
Injection Rate (gallons per minute)	Monitor	*	Monthly	Meter or Continuous Recording Device ***

Injection and Operational Parameters	Injection or Parameter Limitation	Measurement or Analysis Frequency	Reporting Requirement	Sample or Measurement Type
Minimum Allowable Operating Annulus Pressure (pounds per square inch gauge)	60 psig	*	Monthly	Gauge and Continuous Recording Device ***
pH (standard units)	5.0-10.0	Weekly	Monthly	Grab
Seal Pot Liquid Level (inches)	Liquid level must be visible in sight glass	*	Monthly	Sight Glass ***
Temperature (°F)	Monitor	Weekly	Monthly	Grab
Chloride (mg/l)	Monitor	Weekly	Monthly	Grab
Benzene Daily Maximum (mg/l)	**L.T. 0.5	Quarterly	Quarterly	Grab
Conductivity (Mmhos)	Monitor	Quarterly	Quarterly	Grab
Total Alkalinity as CaCO ₃ (mg/l)	Monitor	Quarterly	Quarterly	Grab
Total Hardness as CaCO ₃ (mg/l)	Monitor	Quarterly	Quarterly	Grab
Calcium (mg/l)	Monitor	Quarterly	Quarterly	Grab
Magnesium (mg/l)	Monitor	Quarterly	Quarterly	Grab
Sulfate (mg/l)	Monitor	Quarterly	Quarterly	Grab
Iron (mg/l)	Monitor	Quarterly	Quarterly	Grab
Total Dissolved Solids (mg/l)	Monitor	Quarterly	Quarterly	Grab

* Conduct one daily inspection reading for reporting purposes

** L.T. denotes "less than"

*** The gauge, meter, continuous recording device or sight glass shall at all times be maintained operational and shall at all times be located to properly measure the activity being monitored.

Note: Quarterly analysis frequency and reporting is based on calendar quarters.

- D. Inspection readings of injection flow rate and volume, wellhead annulus pressure, wellhead injection pressure and seal pot liquid level shall be made daily and reported in the monthly monitoring report submitted to KDHE. The inspection readings for wellhead annulus pressure and injection pressure shall include readings of both the gauge and the continuous recording device. The date and time these readings are taken and the initials of the person taking the readings shall be included in the monthly monitoring report.
- E. The monthly average, maximum and minimum values for the daily inspection readings of injection flow rate and volume, wellhead annulus pressure and wellhead injection pressure for the month shall be reported in the monthly

monitoring report submitted to KDHE. The monthly average for injection flow rate and volume shall be calculated using only the number of days for which injection occurred during the month. The total volume of liquid injected for the month shall also be reported in the monthly monitoring report submitted to KDHE.

- F. The maximum and minimum values determined from the continuous recording data for the entire month for wellhead annulus pressure and wellhead injection pressure shall be reported in the monthly monitoring report submitted to KDHE.
- G. The analytical results of representative wastewater samples required by this permit shall be reported in the monitoring reports submitted to KDHE. The wastewater samples shall be collected from the waste stream during a time that the well is being used for injection. The data reported shall include the date the sample was collected, the date the sample was analyzed, analytical results, the name of the laboratory conducting the analyses and the laboratory certification number. All analyses of wastewater required by this permit shall be conducted by a laboratory certified by KDHE to analyze for the constituents listed in this permit.
- H. The following shall also be reported to KDHE by the permittee:
 - 1. Any well treatment procedures used, including those associated with normal maintenance and malfunction correction, and all well workovers shall be reported to KDHE within thirty (30) days of completion. A well treatment plan or workover plan shall be submitted to KDHE for review and approval prior to commencing a well treatment or workover. No well treatment or workover shall commence until the permittee has obtained approval for the well treatment or workover plan from KDHE.
 - 2. Immediate notification of KDHE of all spills associated with the operation of the injection well or well system.
 - 3. Notification of KDHE of any well malfunction or failure within twenty-four (24) hours of becoming aware of the circumstances.
 - 4. The results and interpretation of mechanical integrity tests and any other tests or logs of the injection well or injection zone within thirty (30) days of completion.
 - 5. A written description and explanation of any noncompliance with the operating limitations as specified by this permit for wellhead injection pressure, injection flow volume or injection limits occurring during the month being reported shall be submitted with the monthly monitoring report.

6. Any addition of liquid to the annulus seal pot shall be reported in the monthly monitoring report. The date the liquid was added and the volume added shall be included in the monthly monitoring report.
 7. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to KDHE, the permittee shall submit such facts or corrected information to KDHE within five (5) days of becoming aware of the circumstances.
- I. The monitoring of the pressure buildup in the injection zone shall be conducted annually including, at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. A plan for this test shall be submitted to KDHE for review and approval prior to conducting the test. The test shall not commence until approval of the test plan has been obtained from KDHE. The test results and interpretation of this test shall be submitted to KDHE within thirty (30) days of test completion.
 - J. The static fluid level of the injection interval shall be measured annually. The method used to measure the static fluid level shall have the prior approval of KDHE. The results of the measurements shall be submitted to KDHE within thirty (30) days of completion of the measurement.

II. MECHANICAL INTEGRITY TESTING

A two-part mechanical integrity test (MIT) to check for internal and external mechanical integrity shall be conducted at least once every five (5) years. The internal MIT is to check for significant leakage in the casing, tubing and packer and the external MIT is to check for significant fluid movement through vertical channels adjacent to the wellbore. Whenever KDHE believes that because of a down-hole problem the continued use of the well constitutes a threat to human health, or the fresh and/or usable waters or the soils of the State, or the release of injected fluid into an unauthorized zone is occurring, the permittee shall be required to immediately cease injection and conduct a MIT. If determined necessary by KDHE, a MIT shall be conducted when there has been a well workover. A MIT plan shall be submitted to KDHE for review and approval prior to conducting any MIT. No MIT work shall commence until approval of the MIT has been obtained from KDHE. The internal MIT shall be witnessed by KDHE. If the well fails a MIT, the requirements of Section III (B) of this permit shall be implemented by the permittee. The results and interpretation of a MIT shall be submitted to KDHE within thirty (30) days of test completion.

III. ANNULUS PRESSURE DECLINE, ANNULUS LIQUID LOSS, ANOMALOUS OPERATIONAL DATA, LOSS OF MECHANICAL INTEGRITY

- A. If the annulus pressure declines below sixty (60) psig, or loss of annulus liquid indicating a loss of mechanical integrity occurs, or anomalous operational data indicating a loss of mechanical integrity occurs, the permittee shall 1) immediately investigate and identify the cause of the annulus pressure decline, annulus liquid loss or anomalous operational data and 2) notify KDHE within twenty-four (24) hours of becoming aware of the circumstances. The results of this investigation shall be reported to KDHE within twenty-four (24) hours of completion. If the well appears to be lacking mechanical integrity, the permittee shall:
1. Immediately cease injection of waste fluids.
 2. Take all steps required by KDHE to determine the presence or absence of mechanical integrity. If the well is determined to have mechanical integrity, injection may resume after the permittee has obtained authorization from KDHE.
- B. If a loss of mechanical integrity is determined pursuant to Section III (A) of this permit or as the result of a MIT, the permittee shall:
1. Immediately cease injection of waste fluids.
 2. Notify KDHE within twenty-four (24) hours of the determination.
 3. Take all steps determined necessary by KDHE to determine whether there may have been a release of waste into any unauthorized zone. If there is evidence there may have been a release into an unauthorized zone, the permittee shall orally notify KDHE within twenty-four (24) hours of the determination. A written notice shall also be provided to KDHE within five (5) days of the determination including a description of the release.

permittee shall orally notify KDHE within twenty-four (24) hours of the determination. A written notice shall also be provided to KDHE within five (5) days of the determination including a description of the release.
 4. Comply with any immediate corrective or remedial action specified by KDHE. If determined necessary by KDHE, the permittee shall submit to KDHE a remediation and corrective action plan and implementation schedule for review and approval. Work shall not commence until approval of the remediation and corrective action plan has been obtained from KDHE.
 5. Restore and demonstrate mechanical integrity to the satisfaction of KDHE. A plan for any well workover or MIT shall be submitted to KDHE for review and approval. Work shall not commence until the

permittee has obtained approval of the workover or MIT plan from KDHE.

6. Injection shall resume only upon authorization from KDHE.

IV. PLUGGING, ABANDONMENT

The well shall be plugged and abandoned upon reaching the end of its useful life or when determined necessary by KDHE to protect human health or the fresh and/or usable waters or the soils of the State. The permittee currently has a plugging and abandonment plan on file with KDHE. The permittee shall revise and update the plugging and abandonment plan when required by KDHE. The permittee shall notify KDHE at least sixty (60) days prior to plugging and abandonment of the well. With the notice, the permittee shall submit a revised and updated plugging and abandonment plan to KDHE for review and approval. The permittee shall conform to all plugging and abandonment requirements of state and federal regulations and KDHE. The well shall be plugged in a manner which will not allow the movement of fluids into or between sources of fresh and/or usable water or allow the movement of injected fluids out of the injection zone. Plugging and abandonment work shall not commence until approval of the plugging and abandonment plan has been obtained from KDHE. The report of plugging and abandonment and related information shall be submitted to KDHE within thirty (30) days after completion of the plugging operation on forms provided by KDHE.

V. FINANCIAL RESPONSIBILITY FOR PLUGGING AND ABANDONMENT

The permittee shall maintain financial responsibility and financial resources to close, plug and abandon the underground injection well and appurtenances in a manner required by KDHE. The permittee shall show evidence of financial responsibility to KDHE by the submission of a surety bond or other adequate financial assurance such as financial statements or other materials acceptable to KDHE. Financial assurance documents shall be revised and updated when required by KDHE. The permittee currently demonstrates financial assurance by submission of a financial test.

VI. CONSTRUCTION REQUIREMENTS

- A. The well shall be cased and cemented such that: 1) injected fluids and injection zone or other formation fluids do not cause deterioration of the water quality of fresh and/or usable water zones, 2) the loss of fresh and/or usable water due to downward migration is prevented, and 3) the release of injected fluids into an unauthorized zone is prevented.

B. Borehole, casing, tubing and cement specifications for disposal well:

Borehole Size	Casing or Tubing Size & Material	Weight lbs/ft	Casing Seat Depth	Type of Cement & Additives	Number of Sacks of Cement
17 1/2"	13 3/8" H-40 Steel	32.0	450'	60/40 Pozmix, 4% Gel, 3% CaCl	275
				60/40 Poxmix, 2% Gel, 3% CaCl	200
12 1/4"	9 5/8" K-55 Steel	40.0	3335'	<u>First Stage:</u> 60/40 Pozmix, 2% Gel, 10% Salt	125
				ASC 2% Gel, 10% Salt	150
				<u>Second stage:</u> 60/40 Pozmix, 2% Gel, 10% Salt	305
				<u>Third Stage:</u> 60/40 Poxmix, 2% Gel, 10% Salt	450
N/A	7" J-55 Steel	6.5	3340'	N/A	N/A

Packer Type: Brown Model AD@ Liner Hanger
Packer Seating Depth: 3300'

A schematic illustrating the completion of the well is included as Attachment II.

N/A = Not Applicable

B. Type of Annulus Fluid: Fresh water with corrosion inhibitor.

Minimum Annulus Pressure: 60 psig

C. Injection is into the Arbuckle formation through open-hole from 3335 to 3800 feet.

VII. SPILL PREVENTION AND CONTAINMENT

A fiberglass storage tank and lined storage pit may be used for waste retention purposes.

VIII. CONVERSION

A notice of conversion of the well to a use other than disposal of industrial waste shall be submitted to KDHE at least sixty (60) days prior to conversion. A conversion plan shall be submitted with the notice to KDHE for review and approval. The well shall not be converted until approval of the conversion plan has been obtained from KDHE.

IX. SCHEDULE OF COMPLIANCE

1. This well shall not be operated until a pressure MIT witnessed by KDHE has been conducted and deemed satisfactory by KDHE.
2. This well shall not be operated until all drilling, casing and cementing records and all log and log interpretations have been submitted to and approved by KDHE.

X. STANDARD CONDITIONS - ATTACHMENT I

In addition to the specified conditions stated herein, the permittee shall comply with the provisions of Attachment I.

XI. OTHER CONDITIONS

None.