



ISSUANCE DATE AND SIGNATURE PAGE
U.S. ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT: CLASS I

Permit Number AK-11018-A

In compliance with provisions of the Safe Drinking Water Act (SDWA), as amended, (42 U.S.C. 300f 300j 9), and attendant regulations incorporated by the U.S. Environmental Protection Agency (EPA) under Title 40 of the Code of Federal Regulations (CFR), Hilcorp Alaska, LLC (Permittee) is authorized to inject non-hazardous industrial waste utilizing two underground injection control (UIC) Class I injection wells (KU 12-17 and KU 24-7RD) at the Kenai Gas Field, located south of Kenai, Alaska, in accordance with conditions set forth herein. This permit does not authorize injection of hazardous waste as defined under the Resource Conservation and Recovery Act, as amended, (42 USC 6901) or radioactive wastes (other than naturally occurring radioactive material from pipe scale).

The EPA has exempted portions of the aquifer into which these wells inject from protection as an underground source of drinking water (USDW) under the SDWA. This aquifer exemption action is taken concurrently with but separately from this permit issuance. The exempted portions of the aquifer are those that are within $\frac{3}{4}$ miles of the KU 12-17 wellbore between 3600 and 4200 feet total vertical depth (TVD) and within $\frac{3}{4}$ miles of the KU 24-7 wellbore between 3720 and 3960 feet TVD.

This permit shall become effective at midnight on the issuance date below in accordance with 40 CFR § 124.15. This permit and the authorization to inject shall expire ten years from the day it is signed at midnight, unless terminated on a prior date. Figures and appendices are referenced to the Kenai Gas Field UIC Class I Permit Application dated July 31, 2019.

Issuance Date: 9/24/2021

/s/ September 24, 2021

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PART I
GENERAL PERMIT CONDITIONS

A. EFFECT OF PERMIT

The Permittee is authorized to engage in underground injection in accordance with the conditions of this permit. Notwithstanding any other provisions of this permit, the Permittee must not conduct any underground injection activity in a manner that allows the movement of fluid containing any contaminant into a USDW, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 141 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in the permit is prohibited. Compliance with this permit during its term constitutes compliance for purposes of enforcement with Part C of the SDWA. Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, or any other common or statutory law.

Issuance of this permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. This permit does not authorize any above ground generating, handling, storage, or treatment facilities.

B. PERMIT ACTIONS

1. Modification, Re-issuance or Termination

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§ 144.39 and 144.40. In addition, the permit can undergo minor modifications for cause as specified in 40 CFR § 144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

2. Transfer of Permits

This permit is not transferable to any person except after notice to the EPA Region 10 Water Division Director (the Director) on APPLICATION TO TRANSFER PERMIT (EPA Form 7520-7) and in accordance with 40 CFR § 144.38. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the SDWA. Upon request, email submittal may be approved by an EPA authorized representative.

C. SEVERABILITY

The provisions of this permit are severable, and, if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and 40 CFR § 144.5, any information submitted to the EPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed in 40 CFR § 2.203 and on the application form or instructions, or, in the case of other submissions, by stamping the words “confidential” or “confidential business information” on each page containing such information.

If no claim is made at the time of submission, the EPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information).

Claims of confidentiality for the following information will be denied:

- a. The name and address of the Permittee.
- b. Information which deals with the existence, absence, or level of contaminants in drinking water.

E. GENERAL DUTIES AND REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the Permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under 40 CFR § 144.34.

2. Penalties for Violations of Permit Conditions

Any person who violates a permit requirement is subject to civil penalties and other enforcement action under the SDWA. Any person who willfully violates permit requirements may be subject to criminal prosecution.

3. Continuation of Expiring Permits

- a. **Duty to Reapply:** If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. To be timely, a complete application for a new permit must be received at least 180 calendar days before this permit expires.
- b. **Permit Extensions:** The requirements of an expired permit continue in force and effect, in accordance with 5 USC § 558(c), until the effective date of a new permit, if:
 - (1) The Permittee has submitted a timely and complete application for a new permit; and
 - (2) The EPA, through no fault of Permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate

The Permittee must take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance

The Permittee must, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit. De-characterized waste may be appropriately disposed in a Class I non-hazardous well [refer to 40 CFR § 148.1(d)].

7. Property Rights

This permit does not convey any property rights or mineral rights of any sort, or any exclusive privilege.

8. Duty to Provide Information

The Permittee must provide to the Director any information that the Director may request to determine whether cause exists for modifying, revoking and reissuing, terminating this permit, or to determine compliance with this permit. The Permittee must also provide to the Director, upon request, copies of records, that are retained under the conditions of this permit.

9. Inspection and Entry

The Permittee must allow the Director or an EPA authorized representative(s), upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records (including logging data) that are retained under the conditions of this permit;
- c. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by SDWA, any substances or parameters at any location.

10. Records

- a. The Permittee must retain records and all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete this permit application for a period of at least five years from the date of the sample, measurement, report or application. These periods may be extended by request of the Director at any time. The Permittee may retain these records in hard copy or electronic format.
- b. The Permittee must retain records concerning the nature and composition of all injected fluids for three years after the completion of plugging and abandonment. At the conclusion of the retention period, if the Director so requests, the Permittee must deliver the records to the Director. The Permittee must continue to retain the records after the three-year retention period unless the Permittee delivers the records to the Director or obtains written approval from the Director to discard the records. The Permittee may retain these records in hard copy or electronic format.
- c. Records of monitoring information must include:
 - (1) The date, exact place, and time of sampling or measurements;
 - (2) The name(s) of the individual(s) who performed the sampling or measurements;
 - (3) The date(s) analyses were performed;
 - (4) The name(s) of the individual(s) who performed the analyses;
 - (5) The analytical techniques or methods used; and
 - (6) The results of such analyses.

- d. Monitoring of the nature of injected fluids must comply with applicable analytical methods cited and described in 40 CFR § 136.3, in Appendix I of 40 CFR Part 261, or, in certain circumstances, by other methods that have been approved by the Director.
- e. As part of the Completion Report for any new, sidetracked, or converted well, the Permittee must submit a Waste Analysis Plan (WAP) that describes the procedures to be carried out to obtain detailed chemical and physical analysis of representative samples of the waste including the quality assurance procedures used including the following:
 - (1) The parameters for which the waste will be analyzed and the rationale for the selection of these parameters;
 - (2) The test methods that will be used to test for these parameters; and
 - (3) The sampling method that will be used to obtain a representative sample of the waste to be analyzed.

At the request of the Permittee and upon approval of the EPA, the WAP submitted with the permit application may be incorporated by reference to satisfy the WAP submittal requirement.

- f. The Permittee must require a written manifest for each batch load of waste received for injection of waste streams that are not hard-piped and continuous. The manifest must contain a description of the nature and composition of all injected fluids, date of receipt, source of material received for disposal, name and address of the waste generator, a description of the monitoring performed and the results, a statement describing whether the waste(s) is exempt from regulation as hazardous waste as defined by 40 CFR § 261.4, and any information on extraordinary occurrences.

For waste streams that are hard-piped continuously from the source to the wellhead, the Permittee must retain:

- (1) Continuous measurement of the discharge rate,
 - (2) A description of the nature and composition of all injected fluids, and
 - (3) A hazardous waste determination as defined by 40 CFR § 261.4.
- g. The Permittee must note dates of most recent calibration or maintenance of gauges and meters used for monitoring required by this permit on the gauge or meter. Earlier records of calibration and maintenance must be available through a computerized maintenance history database.

11. Reporting Requirements

- a. **Planned Changes:** The Permittee must give notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility or changes in type of injected fluid(s).
- b. **Anticipated Noncompliance:** The Permittee must give notice to the Director of any significant planned changes in the permitted facility or activity that may result in noncompliance with permit requirements at least 5 business days before the change is performed. The Permittee must send this notification by email.
- c. **Compliance Schedules:** The Permittee must submit reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit to the Director no later than 30 calendar days following each schedule date contained in the compliance schedule.

12. Twenty-Four Hour Reporting

- a. The Permittee must report to the Director or an EPA authorized representative any noncompliance that may endanger health or the environment within 24 hours from the time the Permittee becomes aware of the information, including the following:
 - (1) Indication or other information that any contaminant may cause an endangerment to a USDW or may otherwise adversely affect human health.
 - (2) Noncompliance with a permit condition.
 - (3) Malfunction of the injection system.
- b. The Permittee must provide to the Director or an EPA authorized representative a written submission (in electronic format for release to the public) within five calendar days of the time the Permittee becomes aware of the circumstances. The written submission must contain a description of the noncompliance and its cause(s); the period of noncompliance including exact date and times; the anticipated timeframe the noncompliance is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee must provide email notice to affected stakeholders, such as Tribal Governments, if warranted as determined by an EPA authorized representative.

13. Other Noncompliance

The Permittee must include in the monitoring reports information regarding all instances of noncompliance not otherwise reported. The reports must contain the information listed in Permit Condition Part I E.12.b.

14. Reporting Corrections

When the Permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or in any report to the Director, the Permittee must submit such facts and/or information to EPA within 10 calendar days.

15. Signatory Requirements

- a. All permit applications, reports required by this permit, and other information requested by the Director must be signed by a principal executive officer of at least the level of vice-president, or by a duly authorized representative of that person, in accordance with 40 CFR § 144.32. A person is a duly authorized representative only if:
 - (1) The authorization is made in writing by a principal executive of at least the level of vice-president.
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
 - (3) The written authorization record is retained on-site and a copy is submitted by email to the Director. Upon request, the original is submitted to the Director or an EPA authorized representative.
- b. Changes to Authorization: If an authorization under paragraph 15.a. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph 15.a. of this section

must be submitted to the Director. The Permittee may submit this authorization with any reports, information, or applications to be signed by an authorized representative.

- c. Certification: Any person signing a document under paragraph 15.a. of this section must make the following certification:

“I certify under the penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

F. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment

The Permittee must notify the Director no later than 45 calendar days before conversion or abandonment of the well.

2. Plugging and Abandonment Report

The Permittee must plug and abandon the well as provided in the Plugging and Abandonment Plan (7520-6 Attachment E) of UIC Class I Permit Application submitted by the Permittee, which is hereby incorporated as a part of this permit. Within 60 calendar days after plugging any well, the Permittee must submit a report to the Director in accordance with 40 CFR § 144.51(p). The EPA reserves the right to change the manner in which the well will be plugged if the well is not proven to be consistent with EPA requirements for construction and mechanical integrity. The Director may require the Permittee to update the estimated plugging cost periodically.

3. Cessation Limitation

After a cessation of operations of two years, the well is considered to be in temporarily abandoned status. The Permittee must permanently plug and abandon the well in accordance with the approved plan and 40 CFR § 144.52(a)(6) within one year of entering temporarily abandoned status, unless the Permittee:

- a. Provides notice to the Director no later than two years and one month after cessation of operations, and
- b. Provides information that, to the Director’s satisfaction, demonstrates the Permittee’s intent to use the well in the future; or
- c. Describes actions or procedures, satisfactory to the Director, which the Permittee will take to ensure that the well will not endanger USDWs during the period of temporarily abandonment. These actions and procedures must include compliance with the technical requirements applicable to active injection wells unless waived by the Director.

4. Cost Estimate for Plugging and Abandonment

- a. The Permittee is required in the permit application to estimate the per well cost of plugging and abandonment of the permitted Class I UIC well(s). Please refer to the permit application (7520-6 attachment E) for the per well plugging and abandonment cost estimates(s) for the year the application is submitted. Such estimates must be based upon costs that a third party would incur to plug the wells.

- b. The Permittee must submit financial assurance and a revised estimate prior to April 30 of each year. The estimate must be made in accordance with 40 CFR § 144.62. The Director or an EPA authorized representative may approve email submittal of this requirement provided the Permittee retains the original and submits the original upon request.
- c. The Permittee must keep the latest plugging and abandonment cost estimate at the Facility or at the Permittee's central files in Alaska during the operating life of the Facility.
- d. When the cost estimate changes, the Permittee must amend the financial assurance instrument submitted under condition G of this permit to ensure that appropriate financial assurance for plugging and abandonment is maintained continuously.

G. FINANCIAL RESPONSIBILITY

The Permittee must demonstrate and continuously maintain financial responsibility and resources sufficient to close, plug, and abandon the underground injection operation as provided in the Plugging and Abandonment Plans and consistent with 40 CFR §144 Subpart F, which the Director has chosen to apply. The Permittee must not substitute an alternative demonstration of financial responsibility for that which the Director has approved, unless it has previously submitted evidence of that alternative demonstration to the Director and the Director notifies the Permittee that the alternative demonstration of financial responsibility is acceptable.

Consistent with 40 CFR § 144.63 and regarding incapacity of owners or operators, guarantors, or financial institutions, the Permittee must notify the Director by registered mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 business days after the commencement of the proceeding. Furthermore, an owner or operator must notify the Regional Administrator by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 business days after the commencement of the proceeding.

Prior to beginning construction of any new well, conversion to an injection well, or sidetracking of an existing injection well, the Permittee must demonstrate to the EPA that financial responsibility has been established for such planned activity. The value of this financial assurance must meet the requirements in Part I.F.4 of this permit. The Permittee must not begin construction of any new well, conversion to an injection well, or sidetracking of an existing injection well without first receiving approval from the Director or an EPA authorized representative.

PART II WELL SPECIFIC CONDITIONS

A. CONSTRUCTION

1. Casing and Cementing of Wells

The Permittee must ensure that injection occurs only into the approved injection interval through wells that are cased and cemented (see Part II.C.3., below). The Permittee must install casing and cement in accordance with a casing and cement program approved submitted by the Permittee for approval by the Director and in accordance with EPA UIC Class I well construction practices (40 CFR § 146.12) and all applicable State of Alaska laws and regulations. For any future Class I wells to be drilled under this permit (including replacement or sidetrack wells), in addition to the above requirements, the Permittee must provide not less than 30-calendar days advance notice to the Director or an EPA authorized representative to witness all cementing operations. The Director or an EPA authorized representative may increase or decrease the duration of the advance notice requirement.

The Permittee must cement the surface casing of each well back to the surface. If primary cement returns to surface are not observed, the Permittee must notify the Director or an EPA authorized representative as to the nature of any augmented testing proposed to ensure the integrity of the cement bond and adequacy of any Top Job procedure. The intermediate casing (i.e., long string casing) must be cemented from the casing shoe to at least 200 feet above the upper confining zone as identified in the Fact Sheet.

During construction activities that involve the emplacement of cement, the Permittee must run Cement Bond/Ultrasonic Imaging or other logs and pressure tests (e.g., leak off test and/or formation integrity test) for both the surface and production casings to confirm zonal isolation and verify casing integrity. The Permittee must provide final logs to the Director or an EPA authorized representative with the Completion Report.

The casing, cementing and well construction must comply with the procedures outlined in proposed well construction plan contained in the permit application. Should a change(s) be required to the previously approved casing and cementing program due to unanticipated conditions, the Permittee must notify the Director or an EPA authorized representative in writing (hard copy or email) as to the nature of the change(s) and the unanticipated conditions requiring the change. The Permittee must not construct the proposed change without approval from the Director or an EPA authorized representative.

2. Tubing and Packer Specifications

The Permittee must inject fluids through wells containing tubing with a packer. The Permittee must install tubing and packer in accordance with the procedures in the well construction plan submitted by the Permittee to the Director or an EPA authorized representative. In the event that a packer needs to be set or reset at a revised depth at a later date, the Permittee must perform a mechanical integrity test, submit the necessary information as determined by an EPA authorized representative, and obtain authorization from the Director or an EPA authorized representative prior to resuming injection. The Permittee must set the packer no more than 200 feet measured depth above the top of the injection interval unless an alternative placement is specified and authorized by the Director or an EPA authorized representative.

The EPA hereby approves the packer placement in well KU 12-17 and well KU 24-7RD as of the issuance date of this permit.

3. New Wells in the Area of Review (AOR)

The EPA has set a 3/4 mile radius as the AOR for this Class I UIC permit. If any development or service wells are drilled in the future that penetrate the injection interval within the AOR, these wells

must have casing cemented to the formation throughout the entire section from 200 feet TVD below to 200 feet TVD above the (proposed, revised or updated) injection zone as identified in the permit application.

B. CORRECTIVE ACTION

The Permittee identified 22 wells that may intersect the injection interval within the 3/4 mile AOR of injection wells KU 12-17 and KU 24-7RD. The Permittee provided records for wells in the AOR. These records show that casings of all of these wells are cemented to the formation through the injection zone. Therefore, EPA requires no corrective action to prevent injected fluids from moving above the confining zone.

If the Permittee later discovers that a well or wells within the AOR require(s) corrective action to prevent fluid movement, then the Permittee must inform EPA upon such discovery and provide a corrective action plan for the Director or an EPA authorized representative to review and approve. If EPA or the Permittee discovers that fluids have moved above the upper confining zone along a wellbore within the AOR, then the Permittee must cease injection until the fluid movement problem can be diagnosed and corrected.

C. WELL OPERATION

1. Requirements Prior to Commencing Injection

Unless the well has previously (within the last 180 calendar days) fulfilled the requirements of Part II C.1. of this permit, prior to commencing injection into a newly constructed, converted, or sidetracked injection well, the Permittee must fulfill the requirements listed in parts Part II.C.1 (a), (b) and (c).

- a. The Permittee must submit the COMPLETION FORM FOR INJECTION WELLS (EPA Form 7520-18) with logging data; and either:
 - (1) The Director or an EPA authorized representative will inspect or otherwise review the newly constructed, converted, or sidetracked injection well and find it complies with the conditions of the permit; or
 - (2) The Permittee has not received notice from the Director or an EPA authorized representative of intent to inspect or otherwise review the new, converted, sidetrack or replacement injection well within 13 business days of receipt of the Completion Report, in which case the EPA waives prior inspection or review.
- b. The Permittee must demonstrate that the well has mechanical integrity as described in Part II.C.2., to the satisfaction of the Director or an EPA authorized representative. The Permittee must notify the EPA at least 10 business days prior to conducting the initial mechanical integrity test so that an EPA authorized representative may witness the test.
- c. The Permittee must conduct a step-rate injection test and submit to EPA a preliminary report that summarizes the results. Upon approval by the Director or an EPA authorized representative, the Permittee may submit the results of a previously conducted step-rate injection test to satisfy this requirement.

The Permittee submitted step-rate injection test results in support of the permit application that satisfy this requirement.

2. Mechanical Integrity

a. Standards

The injection well must have and maintain mechanical integrity pursuant to 40 CFR § 146.8.

b. Prohibition without Demonstration of Mechanical Integrity

This permit prohibits injection operations at the permitted wells after the effective date of this permit unless the Permittee has demonstrated mechanical integrity by conducting the following tests and submitted the results to the Director:

- (1) The Permittee must demonstrate there is no significant leak in the casing, tubing or packer by conducting a mechanical integrity test of the tubing/casing inner annulus (MITIA). To start the test, the Permittee must bring the annulus to a starting pressure of at least 2200 pounds per square inch (psi), but not to exceed 70% of the minimum yield strength of the casing. The Permittee must observe the pressure in the tubing, inner annulus, and (if present) outer annulus of the well for the duration of the test. The results of the test must satisfy either (i) or (ii) below:
 - i. the inner annulus pressure does not decline by more than 10% of the starting pressure during the test period and the loss in the second half of the test period is less than 50% of the loss in the first half of the test period, or
 - ii. the inner annulus pressure does not decline by more than 2% of the starting pressure during the test period and the loss in the second half of the test period is less than the loss in the first half of the test period.

If the well fails to satisfy (i) or (ii) during the first 30-minute test period, the test may be extended by an additional 30 minutes to demonstrate stabilization.

The Permittee must notify the Director or an EPA authorized representative 30 calendar days prior to commencement of the MITIA. After the initial test, the Permittee must conduct an MITIA annually if the well is active and once every two years if the well is inactive until expiration of the permit. The Director or an EPA authorized representative may extend the due date for the MITIA up to three months. Also, the Director or an EPA authorized representative may revise (either increase or decrease) the frequency with which the Permittee must conduct the MITIA.

- (2) The Permittee must conduct an approved fluid movement test to detect fluid migration outside of the permitted injection intervals at an injection pressure at least equal to the average continuous injection pressure observed at the well in the previous six months. Approved fluid movement test methods include, but are not limited to: tracer surveys, temperature survey logs (conducted after a 12-hour shut-in, at a minimum, unless otherwise authorized by the EPA authorized representative), noise logs, oxygen activation/water flow logs, borax pulse neutron logs, or other equivalent logs. The Permittee must notify the Director or an EPA authorized representative 30 calendar days prior to commencement of the fluid movement test and request approval for any testing procedure not previously used to satisfy this requirement. The Permittee must initially conduct a fluid movement test and submit the logs of this test upon completion of the well and prior to initiation of injection at a new, converted, sidetracked well. After the initial test, the Permittee must conduct a fluid movement test and submit test logs and results every two years while the well is active until expiration of the permit. The Director or an EPA authorized representative may extend the due date of this testing requirement up to three months. Also, the Director or an EPA authorized representative may revise (either increase or decrease) the frequency with which the Permittee must conduct a fluid movement test.
- (3) The Permittee must conduct tubing inspection tests to monitor condition, thickness, and integrity of the downhole tubing. The Permittee must notify the Director or an EPA authorized representative 30 calendar days prior to commencement of the tubing inspection test and request approval for any testing procedure not previously used to satisfy this requirement. The Permittee must conduct a tubing inspection test and submit test logs and results every two years while the well is active until expiration of the permit. The Director or an EPA authorized representative may extend the due date for the tubing inspection up to

three months. Also, the Director or an EPA authorized representative may revise (either increase or decrease) the frequency with which the Permittee must conduct the tubing inspection test.

c. Terms and Reporting

- (1) The Permittee must submit a copy of the log(s) and a descriptive and interpretive report of the mechanical integrity tests identified in Part II. C. 2. b. (2) and (3) to EPA within 45 calendar days of completion in hard copy or electronic format, unless waived by an EPA authorized representative. Immediately after well logging activities, the Permittee must submit a copy of any log(s) to an EPA authorized representative, if requested. This includes logging events associated with construction activities and mechanical integrity testing.
- (2) The Permittee must demonstrate mechanical integrity by the MITIA in Part II. C. 2. b. (1) prior to resuming injection if, at any time, the tubing is removed from the well or a loss of mechanical integrity becomes evident during operation. The Permittee must report the results of such tests within 45 calendar days of completion of the tests.
- (3) The Director will notify the Permittee of the acceptability of the mechanical integrity demonstration within 10 business days of receipt of the results of the mechanical integrity tests. The Permittee may continue to inject during this review period. If the Director does not notify the Permittee within 10 business days, the Permittee may continue to inject.
- (4) In the event that the well fails to demonstrate mechanical integrity during a test or a loss of mechanical integrity occurs during operation, the Permittee must halt injection immediately and must not resume injection until the Director or an EPA authorized representative gives approval to resume injection.
- (5) The Director may, by written notice, require the Permittee to demonstrate mechanical integrity at any time.

3. Injection Zone

The Permittee may only inject fluid into the designated injection zone for each permitted well.

For well KU 12-17, the injection zone includes the A10, A11, B1 and B2 sands of the Sterling Formation Pool 3 and Pool 4.

For well KU 24-7RD, the injection zone includes the A10 and A11 sands of the Sterling Formation Pool 3.

These injection zones are described in the Fact Sheet and depicted in the Completion and Type Log in the permit application. The Permittee may not inject at a pressure that causes the propagation of fractures in the injection zone or the confining zones.

EPA exempts the portions of the aquifers in the injection zones of wells KU 12-17 and KU 24-7RD within $\frac{3}{4}$ miles of the wellbore from protection as a USDW under SDWA. The aquifer exemption is separate from, but concurrent with, this permit issuance.

4. Injection Pressure Limitation

The Permittee must not inject at a pressure that initiates new fractures or propagates existing fractures in the injection zone or the upper confining zone, as described in the Fact Sheet. The Permittee must not inject at a pressure exceeding the maximum injection pressure of 2200 psi, measured at the wellhead, except as follows:

- a. If a plant is shut-down or outage (unrelated to fluid injection activities) occurs.

- b. If a well stimulation is required.

In such instances, the Permittee must notify the Director or an EPA authorized representative by telephone or email within 24 hours of the initial exceedance of 2200 psi and must submit a written incident report not later than 10 calendar days thereafter.

The Permittee must never inject above the working pressure for which the well components are rated.

5. Annulus Pressure Limitation

The Permittee must fill the tubing-casing annulus with a corrosion inhibiting solution. The Permittee must not allow the positive surface pressure in the tubing-casing annulus to exceed 2000 psi. The difference between the annulus pressure and the injection pressure must be sufficient to easily detect pressure communication.

EPA does not intend the authorization of up to 2000 psi on the inner annulus to allow the Permittee to continue to injection in the event of a loss of mechanical integrity or if pressure communication exists between the inner annulus and the tubing or outer annulus.

6. Injection Fluid Limitation

This permit authorizes the Permittee to inject only wastes identified in the permit application that are not characterized as hazardous. De-characterized waste must be disposed of appropriately (refer to 40 CFR § 148.1(d)). The Permittee may dispose of waste generated from construction, repair, operation and maintenance of Class I injection wells and associated injection well piping in this Class I non-hazardous injection well. This permit does not authorize injection of radioactive wastes, other than naturally occurring radioactive material (NORM) from pipe scale and/or radioactive tracer beads. If third party wastes are accepted, the third party must certify the wastes are eligible for injection pursuant to the terms of this permit.

Furthermore, this permit authorizes the Permittee to inject only common oil and gas industry-related wastes. The common oil and gas industry-related waste streams listed in Exhibit 2 of the "Wells KU 12-17 and KU 24-7RD Class I Disposal Waste Analysis Plan (WAP)" submitted by Hilcorp with the UIC Class I permit application and in Appendix A of the Fact Sheet.

D. MONITORING

1. General Monitoring Requirements

The Permittee must ensure that all wells authorized by this permit are monitored 24 hours per day by trained and qualified personnel while injection is occurring.

Samples and measurements collected for the purpose of monitoring must be representative of the monitored activity.

2. Monitoring Continuous Waste Injection

The Permittee must install, maintain, and use monitoring devices to continuously monitor injection pressure and rate for those waste streams that are hard-piped and continuous, and to monitor the pressure of non-freezing solution in the tubing-casing annulus. Calculated flow data or periodic monitoring are not acceptable except as a back-up system if the primary continuous injection rate device malfunctions or power outage occurs.

3. Monitoring Batch Waste Injection

The Permittee must continuously staff and visually monitor batch waste injection operations at the well site. During these operations, the Permittee must maintain a chronological record of injected wastes, including the time and date, description of waste, volume, injection pressure, injection rate,

waste generating company and location, transport company/driver, and Hilcorp official confirming Class I eligibility.

4. Alarms and Operational Modifications

The Permittee must install, continuously operate, and maintain alarms to notify operators when injection or annular pressure is outside of the normal operating range. These alarms must be sufficient to alert operators in all operating spaces including, but not limited to, the control room. The Permittee must install and maintain an emergency shutdown system stop injection if there is a loss of mechanical integrity in the inner annulus.

The Permittee must submit plans and specifications for the alarms to the Director or an EPA authorized representative prior to the initiation of injection.

E. REPORTING REQUIREMENTS

1. Quarterly Reports

The Permittee must submit quarterly reports by email to the Director or an EPA authorized representative. The reports must include the following information:

- a. Monthly average, maximum, and minimum values for injection pressure, rate, and volume must be reported on INJECTION WELL MONITORING REPORT (EPA Form 7520-8).
- b. Daily or hourly monitoring data in electronic spreadsheet format approved by the Director or EPA authorized representative. This data must include average and maximum values for: injection pressure, inner annulus pressure, and injection rate.
- c. Graphical plots of continuous injection pressure, inner annulus pressure, and injection rate.
- d. Physical, chemical, and other relevant characteristics of the injected fluid.
- e. A list of all batch injections. The list must show time and date, description of waste, volume, waste generating company and location, and Hilcorp official confirming Class I eligibility.
- f. Descriptions of any well workover or other significant maintenance of downhole or injection-related surface components.
- g. Results of all mechanical integrity tests performed since the previous report, including any maintenance-related tests and “practice” tests.
- h. Reports of changes in annular pressures in any wells in the AOR that could be indicative of pressure communication between those wells and the UIC Class I injection wells authorized by this permit.
- i. Results of any other tests required by the Director.

2. Annual Reports

The Permittee must submit to the Director an annual performance report for the period of October 1 through September 30. This report must be submitted by November 30 of each year. (For example, injection data from October 1, 2019, through September 30, 2020, should be reported by November 30, 2020). The annual performance report must include, but not be limited to:

- a. Rate and pressure performance.
- b. Surveillance logging and results.
- c. Fill depth.

- d. Volumetric analysis of the disposal storage.
- e. Annual or cumulative injection volumes.
- f. Estimated fracture growth and any updates to fracture model analyses.
- g. Indications of communication between the injection wells and other wells in the AOR.
- h. Updates of operational plans.
- i. An overview of the commercial activities for the year.
- j. A list of companies with whom Hilcorp has a facility user agreement or a road use agreement.

Some information may not be available every year, if those activities did not take place during the reporting period (examples: surveillance logging, fill depth, and survey results).

3. Report Certification

All reports and notifications required by this permit must be signed and certified in accordance with Part I.E.15; stored and maintained in electronic format at the Permittee's Facility or company headquarters; submitted by email to the Director or an EPA authorized representative; and, upon request by the Director or an EPA authorized representative, submitted as a hard copy to the following address:

U.S. Environmental Protection Agency Region 10
Ground Water and Drinking Water Section, UIC Program (19-H16)
1200 Sixth Avenue, Suite 155
Seattle, Washington 98101-3140

**APPENDIX A
REPORTING FORMS**

PDF copies of following forms are available on the EPA's web site at:

<https://www.epa.gov/uic/underground-injection-control-reporting-forms-owners-or-operators>

- 7520-7 APPLICATION TO TRANSFER PERMIT
- 7520-8 INJECTION WELL MONITORING REPORT
- 7520-18 COMPLETION REPORT FOR INJECTION WELLS